Panasonic

EBL512 G3
V. 3.8.X

PLANNING INSTRUCTIONS

Fire alarm solutions
5000S Series

www.panasonic-fire-security.com

Table of Contents

1. INTRODUCTION

This document describes the EBL512 G3 system for 5000S series, S/W version 3.8.x, and is intended to be used for planning, commissioning and service.

This document should be read in conjunction with:

- EBL512 G3 Operating Instructions MEW03040
- Technical descriptions, for the control and indicating equipment and all other units

Normally, information found in one of the documents is not found in another document. The documents complement each other.

5000S SERIES

The 5000S series (5000S/5000SPRT/5001S), is an EBL512 G3 control unit with main board 5012 and MMI board 5015.

Article no	Product name
5000S	EBL512 G3 CU 5000
5000SPRT	EBL512 G3 CU 5000 w. printer
5001S	EBL512 G3 Control Unit 5001
5012	Main board
5015	MMI board
5017	COM loop board

DRAWINGS / CONNECTION DIAGRAMS

Resulting from continual development and improvement, all dimensions quoted are approximate only and subject to change without notice, as are other technical features and data.

More information on characteristics, mounting, connections and technical data for the control unit and all other units, is found in each Technical description respectively.

NATIONAL REGULATIONS

When planning a fire alarm installation, the national regulations must be obeyed. Detector coverage area and positioning of detector in the room / building are not described in this document.

EBL512 G3 is very flexible. Many functions / facilities are built-in the system, for example in the S/W and EBLWin. When downloading S/W and SSD, different settings, conventions, languages, and so on. can be set to fulfil national regulations.

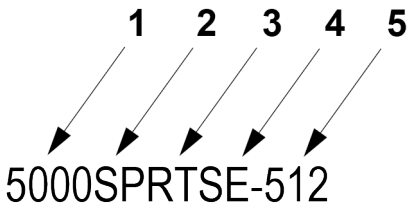
Since the EBL512 G3 control unit (CIE) is produced for many countries the look, the texts, the functions and so on might vary.

Some functions are adapted to different countries regulations and are described separately in special country specific documents.

TYPE NUMBER - ARTICLE NUMBER - PRODUCT NAME

A product consists of one or more parts (HW) according to a Product Parts List. A product has a type number.

An article number is often the same as the type no. but a country code can be added, S for main board 5012, or PRT for printer. The CIE can be configured for 128, 256 or 512 alarm points, which can be added in the article number.
Example of an article number:



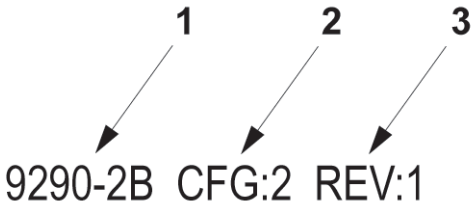
1) Type number (EBL512 G3 CIE with display)
2) With main board 5012
3) With printer
4) Country code
5) Configured for 512 alarm points

Example of a product name:
EBL512 G3 CU, 512 alarm points, with printer

Hardware (HW), for example a printed circuit board (PCB), has:

- a type number
- an article number
- a product name
- a PCB number
- sometimes a S/W

Example of a PCB number:



1) PCB number
2) Configuration
3) Revision

Software (S/W) has:

- a version number (for example V2.9.0)
- sometimes additional information, such as Convention, Language, Number of addresses.

PC S/W, a program used for programming, commissioning and so on, has:

- a version number (for example V2.9.0)

2. ABBREVIATIONS

PFSEU AB	Panasonic Fire & Security Europe AB
Alarm points	Units, which can generate a fire alarm (in the control unit), i.e. analog detectors (sensors), conventional detectors, manual call points, etc.
Smoke detector	Analog or conventional photoelectric (optical) smoke detector
Sensor	Sensor = Analog detector
Analog detector	Contains an A/D-converter. The Control Unit pick up the digital values ("sensor values") for each detector individually. All evaluations and "decisions" are then made by alarm algorithms in the CU As from version 2.0.x the latest detector generation (440x) can be used in "Advanced mode", i.e. the alarm algorithms are in the detector instead. Analog detectors are addressable – an address setting tool 4414 is used for the detector's COM loop address and mode settings. An analog detector has to be plugged in an Analog Sensor Base (ASB).
Analog Sensor Base (ASB)	An analog detector is plugged in an ASB, which is connected to a COM loop (see below).
Conventional detector	A detector with only two statuses, i.e. normal or fire alarm. The detector has a "closing contact" and a series alarm resistor. Normally plugged in a conventional detector base CDB (see below), which is connected to a conventional zone line input. Some types (e.g. water proof types) are connected directly on zone line. An end-of-line device has to be connected in the last unit on the zone line.
Conventional Detector Base (CDB)	A conventional detector is plugged in a CDB, connected to a conventional zone line input.
Addressable	A unit with a built-in address device. Each unit is individually identified, handled and indicated in the Control Unit. (The unit can be an I/O unit with a zone line input, to which one or more conventional "alarm points" can be connected.)
Conventional zone line input / External line	Input intended for one or more conventional alarm points. End-of-line device in the last alarm point on the line.
Output unit	Addressable unit with programmable control outputs. Connected to a COM loop (see below).
Output / Control output	Defined or programmable function. Relay output or voltage output (supervised / monitored or not), in the Control Unit or an output unit connected on a COM loop.
Display unit (D.U.)	Addressable unit (RS485 line) for fire alarm presentation (incl. user definable alarm text), alert annunciation, etc.
COM loop	Loop = a cable, twisted pair, to which all the addressable units can be connected. Starts in the Control Unit and returns back to the C.U.
Control Unit / CU / CIE	Control Unit = Control and Indicating Equipment (CIE) = Unit to which the alarm points are connected (via e.g. a COM loop). Indicates fire alarm, fault condition, etc. Fire Brigade Panel & Control Panel, i.e. the front, included or not included. Printer included or not included.
Control panel (CP)	A part of the control unit (a part of the front), intended for the building occupier / officer, service personnel, etc., to "communicate" with the Control Unit / the System.
System / Installation	One control unit or several control units connected via a network (co-operating control units).
Network with network board 5040	A network with network board 5040 is a redundant network. To connect a control unit to a network, two network board 5040 has to be plugged in each control unit. All network programming (configuration) is made in EBLWin

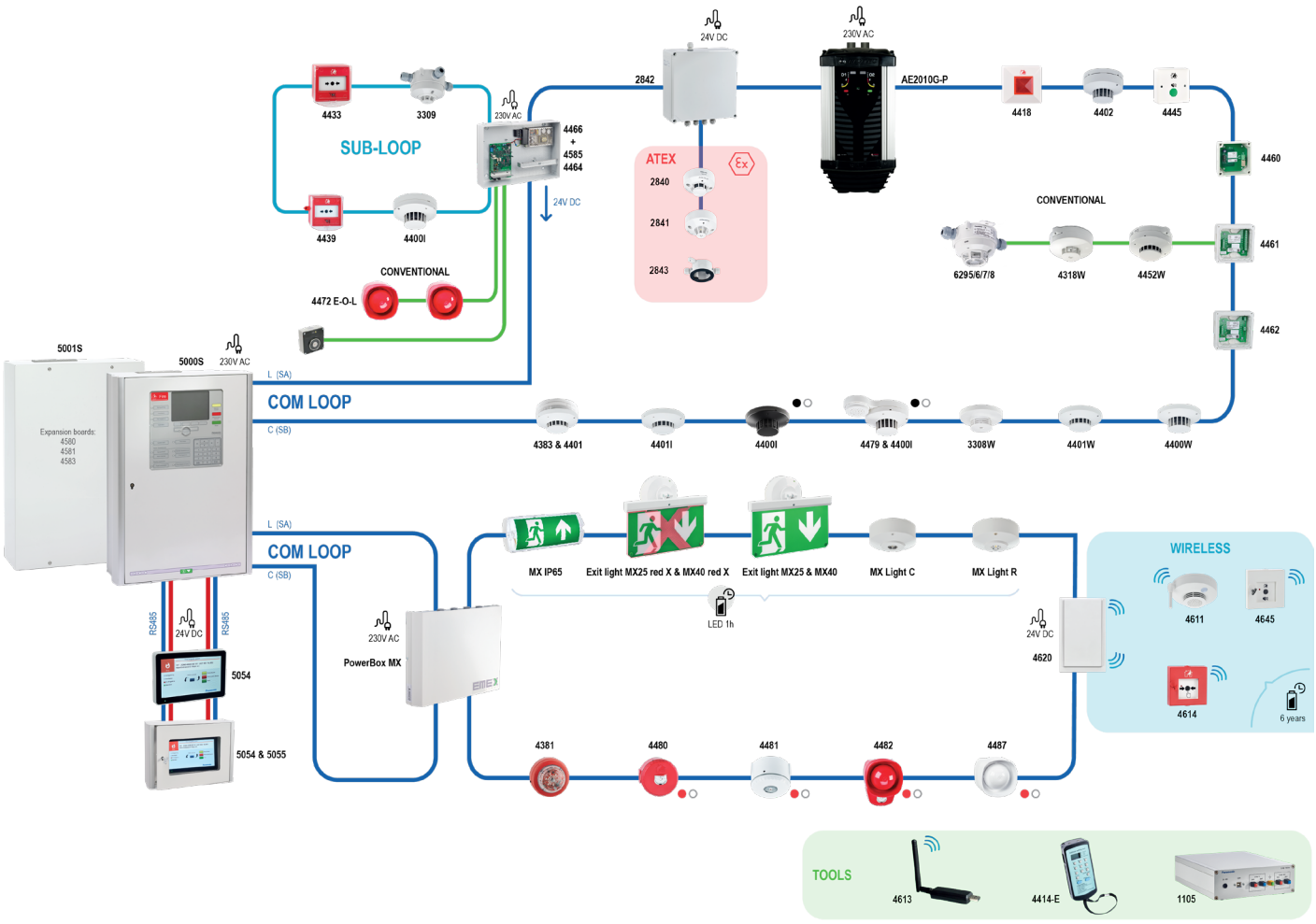
TLON®/ LonWorks® / Echelon / Node / TLON Conn. board/ Channel / Backbone net / Router / Repeater	Brief explanations to the words/expressions to be found in connection with a TLON network. See also separate TLON Technical description. TLON® = TeleLarm Local Operating Network = a LonWorks®- based network for communication between several control units/nodes. The protocol is called LonTalk and the transmission works with doubly-terminated bus topology (Echelon FTT-10). To connect a control unit to a network, a TLON connection board has to be plugged in each control unit. EBL512 G3 also supports a redundant TLON Network. In this case two TLON connection boards have to be plugged in each control unit. A network can be one channel (FTT-10) or several channels, connected via routers. (In a TLON Network a sub net = a channel.) Routers are used for safety reasons in a single TLON Network (up to six control units per channel). Routers can also be used to increase the distance (cable length) between the end nodes in a channel. Router or Repeater is the same type of unit (different configuration). All network programming (configuration) is made with the PC program TLON Manager. See also separate TLON Manager Operating Instructions.
Nuisance alarms	False or unwanted alarms
LED	LED (Light Emitting Diode) = Yellow, green or red optical indicator ("lamp").
External Indicator (Ext. LED)	A unit with a red LED connected to a base (ASB / CDB) or a detector with an output for an ext. LED. Lit when the built-in LED in the detector / base is lit.
Exit light / Emergency light	Customized I/O units with built-in LED. MXE: Indicates recommended exit. MXER: Indicates recommended exit OR blocked exit. MXL: For corridors or open area
Fire Brigade Panel (FBP)	Intended for fire alarm presentation, etc. for the fire brigade personnel. Can be a part of the control unit (a part of the front) or a separate Display Unit (external FBP). In an ext. FBP, a printer can be included.
Display / LCD	LCD (Liquid Crystal Display) = Display (in the CIE or Display unit) for presentation of fire alarms, fault messages, etc. In EBL512 G3 it is a graphical monochrome LCD (320 x 240 dots) with backlight.
Door open (Door / Key switch)	In EBL512 G3 there is a door switch, which is activated when the door is open. An open door is indicated in the LCD (i.e. an "open door" icon).
Site Specific Data (SSD)	The SSD is unique for each installation. All alarm points, presentation numbers, user definable alarm texts, programmable outputs, etc. are created in the PC program EBLWin and also downloaded in EBL512 G3 unit(s) with EBLWin.
Short circuit isolator (ISO)	Addressable unit for automatic disconnection of a part (segment) of a COM loop (see below) in case of short circuit on the loop. (According to EN54-2, one ISO is required per 32 alarm points.)
Software (S/W) / Firmware / System program	The software (S/W) – also called Firmware and System program – makes the control unit (the microprocessor) work. It is factory downloaded but another / new version can, via the PC program EBLWin, be downloaded in EBL512 G3 on site.
EBLWin	PC program used to create and download the SSD in EBL512 G3 unit(s). Also used to upgrade the maximum number of alarm points in EBL512 G3. Can be used during commissioning / maintenance of the EBL512 G3 system (autogenerate COM loop SSD, acknowledge faults, etc.)
EBL Firmware Manager	PC program used to download another / new software version.
Gateway	The Gateway is used to get EBL512 G3 information as well as remote control via a PC (browser) and an intranet / internet. The Gateway is configured via the PC tool EBLWin.
EN54-13	Fire detection and fire alarm systems; Part 13: Compatibility assessment of system components.
Multi master system	Each control unit in a network has access to all information.

3. GENERAL DESCRIPTION

EBL512 G3 is a microprocessor controlled intelligent fire alarm system, intended for analog addressable detectors, as well as conventional detectors and manual call points. It is possible to connect four loops for addressable units. Programmable control outputs and output units are available.

G3 can have up to 1012 addresses, of which up to 512 can be alarm points - according to EN54-2.
EBL512 G3 can be used as a stand-alone control unit or connected to a network. A network can have up to 30 control units.

EBL512 G3 is available in several types, versions and configurations.



TECHNICAL NUMBER

The technical number, NNNNNN, is used when programming all units connected to the COM loops. Technical number is also used to identify which unit has generated a fault.

PRESENTATION NUMBER

Each fire alarm point / input / zone has a presentation number, NNN-NN. The presentation number is shown in the CIE display to identify the point / zone activating fire alarm.

COM LOOP UNITS

Addressable COM loop units are connected directly to a COM loop.

ADDRESS AND MODE

Most of the addressable units must have both address and mode set. This is done in different ways for different units, for example address setting tool, DIP switches, jumpers, or via the CIE display. For more information, please read the Technical descriptions for each unit respectively.

SOFTWARE (S/W) VERSIONS

Due to continual development and improvement, different S/W versions can be found. When installing a new control unit in a system with "older" control units, you might have to upgrade the S/W in the old control units, or download an older S/W version in the new control unit. The same S/W version is required in all control units in a network.

EBLWin

The PC program EBLWin is used for programming and commissioning of one or more control units.

TLON Manager

The PC program TLON Manager is used for the TLON Network programming and installation.

APPLICATIONS

The EBL512 G3 system is intended for small, medium, and large installations. The intelligent control units offer the system designer and end user a technically sophisticated range of facilities and functions.

Programming with the PC programs EBLWin and TLON Manager, and commissioning the system is very easy. Start with one control unit and later when it is required, add more units. The network boards makes it possible to install the control units in one building or in different buildings.

OPTIONS

Options	Clause in EN 54-2:1997/A1:2006
Fault signals from points	8.3
Alarm counter	7.13
Dependencies on more than one alarm signal (Type B)	7.12.2
Delays to outputs	7.11.1 b) + c) + d) + e) + f)
Test condition	10
Output to fire alarm devices	7.8
Output to fore alarm routing equipment	7.9.1
Alarm confirmation input from fire alarm routing equipment	7.9.2
Outputs to fire protection equipment (either Type B or Type C)	7.10.2 or 7.10.3
Fault monitoring of fire protection equipment	7.10.4
Output to fault warning routing equipment	8.9
Standardized input/output interface	11

SOFTWARE TO INSTALL

The following software must be installed on your computer to be able to download software to EBL512 G3.

- EBLWin 2.6.X or higher with mainboard 5012
- Firmware Manager 1.3.4 (used from EBLWin v.2.5)
- HASP Driver
- Driver “Charts” – to view sensor values graph
- Drivers for EBL512 G3 and EBLSniffer

4. EBL512 G3

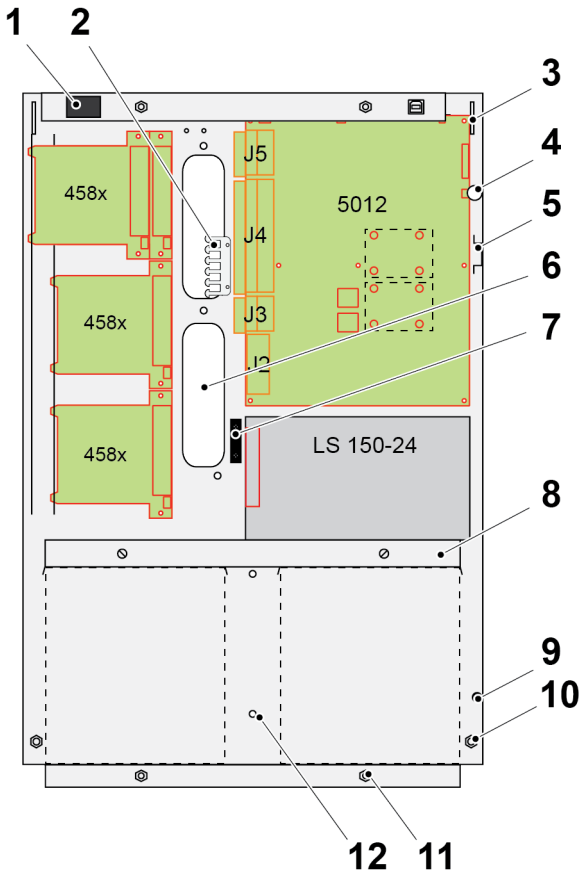
1) EBLG3 Control Unit 5000
2) EBL G3 Control Unit 5001

EACH CONTROL UNIT HAS THE FOLLOWING BASIC CONFIGURATION:

For drawings and connection diagram, see Technical description for the CIE.

- Grey metal cabinet
  - DIN rail for Gateway (5088)
- MMI board (5015) (Not in 5001S)
  - EBL512 G3 front with display (not in 5001S)
- Main board (5012)
  - Four COM loops (0-3) to which the loop units are connected
  - Four programmable supervised voltage outputs (S0-S3)
  - Two programmable relay outputs (R0-R1)
  - Four programmable supervised / not supervised inputs (I0-I3).
  - Six 24 V DC outputs (power supply outputs for RS485 for redundancy / extra channel, routing equipment, and external equipment)
  - Two not programmable relay outputs for routing equipment (Fire alarm output for Fire brigade tx and Fault condition output for Fault tx)
  - Connectors for two network boards (5040, 5090)
  - One RS485 and 24 V DC outputs for Display units (5054 V3)
  - One RS485 for redundancy / extra channel
  - Connector for expansion boards (4580, 4581 & 4583)
  - Connectors for Gateway. See Technical description MEW02670
  - Battery charger
  - Connectors for power supply (rectifier) and batteries
  - Connectors for four COM loop boards 5017
- Built-in power supply
  - Switched power supply (rectifier), 230 V AC / 24 V DC (LS150-24/PAN)
  - Space and connection cables for two Sealed Lead-Acid backup batteries (12 V, 28 Ah)
  - Battery temperature sensor
- Space for up to six expansion boards 458x

The control unit can be configured for up to 128, 256 or 512 alarm points. Normally this is factory set but can be upgraded on site (via EBLWin). This action requires a special download password.



1) Door switch
2) Cable holder for shield to network cables and Display unit cables
3) Slit for hook on the wall mounting plate
4) Magnet
5) Symmetric 35 mm DIN rail for Gateway
6) 2 x cable entry opening, 37 x 128 mm
7) Mains cable clamp
8) Battery holder
9) Battery temperature sensor (5039)
10) 2 x M6 nut for CIE metal housing fixing
11) 4 x M6 nut for CIE cover fixing
12) 5 x hole for factory mounted cable tie

5. COM LOOP UNITS

For more detailed information, for example address setting, mode setting and installation; see the Technical description for each COM loop unit respectively.

Each COM loop (0-3) can handle up to 253 addressable COM loop units. That makes a total up to 1012 COM loop units. Maximum 512 of the 1012 can be alarm points.

Each COM loop unit is added and programmed via EBLWin. Depending on type of unit, regarding:

- Technical address (COM loop address) 001-253
- Name (normally not changed)
- Zone number and Address within the zone
- Alarm text (user definable)
- Regular Alarm algorithm (some units only)
- Options:
- Alternative Alarm algorithm & Time Channel (some units only)
- Alert annunciation & Time Channel (some units only)
- Disablement & Time Channel (some units only)
- Two-units-dependent fire alarm, i.e. co-incidence alarm & Time Channel (some units only)
- Delayed (fire alarm)
- Quiet alarm (Australian function)
- Sequence number
- Sound type
- Type of output
- Argument ……..and so on

ADDRESSABLE SOUNDERS / ALARM DEVICES

Addressable sounders and alarm devices are connected directly to a COM loop.

The Panasonic addressable alarm devices are not intended for supervised (monitored) voltage outputs (S0 – S3 in EBL512 G3). Connections of alarm devices according to the Technical description.

CONVENTIONAL ALARM POINTS

Conventional alarm points, for example detectors, are connected to an 8 zones expansion board, zone line input or a COM loop unit zone line input. Programmable inputs can also be used for flow switches and so on.

ANALOG ALARM POINTS

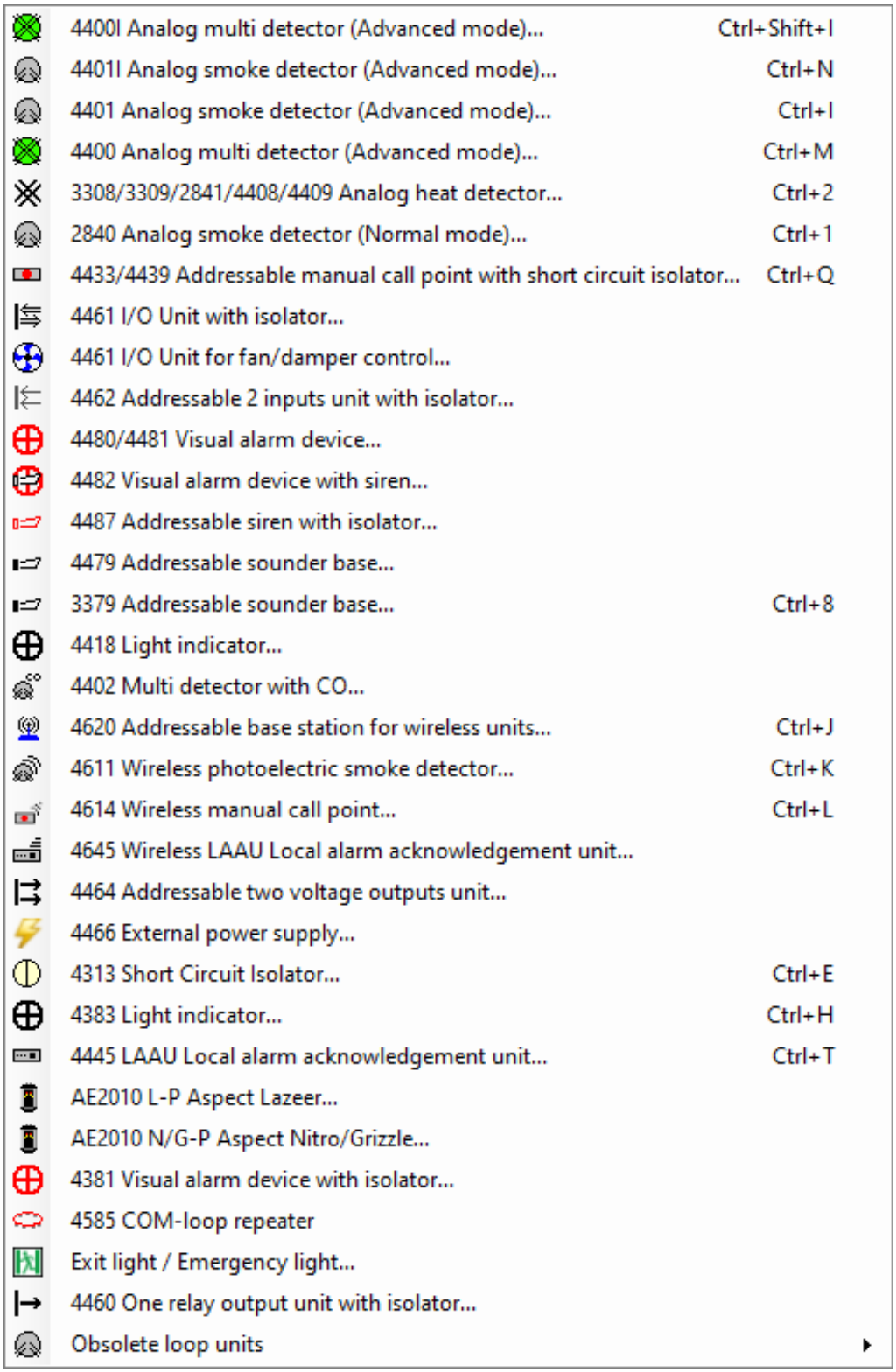
Analog alarm points, for example detectors, are connected directly to a COM loop.

BASES

An analog detector shall be plugged in an analog base, and a conventional detector shall be plugged in a conventional base. The analog base 4313 can be used single-handed as a short circuit isolator. The base has an address label on which the COM loop address of the detector can be written, as well as the isolator's COM loop address. The COM loop address for the detector is set in the detector.

The following units can be connected to the COM loops

For more detailed information on the COM loop units, see the Technical Descriptions respectively.



For information on obsolete loop units, see chapter 29. OBSOLETE UNITS on page 215.

5.1. SUB-LOOP

Each COM loop can have up to four SUB-loops which are connected to the 4585 board mounted inside the 4466 unit. The 4585 and the connected SUB-loop is powered by the 4466.

It is possible to disconnect individual SUB-loops. Disconnection of the main loop will also disconnect the SUB-loops.

When you re-connect a COM loop, any individually disconnected SUB-loops on that COM loop will also be re-connected.

The cable length and current consumption is calculated automatically by EBLWin, see section 23. COM LOOP CABLE LENGTH and 24.1. TOTAL CURRENT CONSUMPTION FOR LOOPS.

5.2. SHORT CIRCUIT ISOLATORS

Up to 128 short circuit isolators per COM loop including SUB-loops can be used, which gives 129 loop segments.

If no short circuit isolators are used, the whole COM loop will be disabled in case of short circuit on the loop.

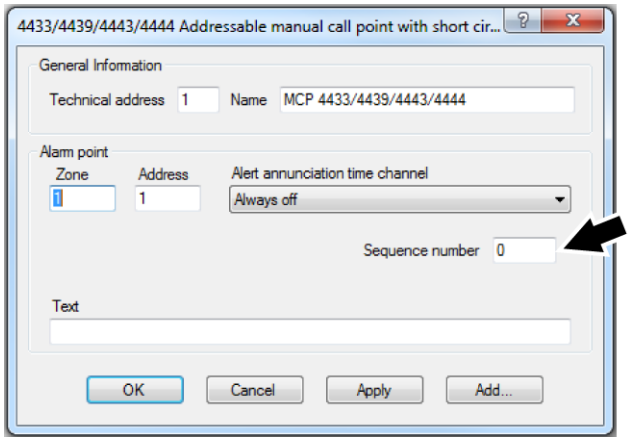
EBL512 G3 has one built-in isolator in the-A direction (no. "A") and one in the B-direction (no. "B").
COM-loop repeater 4585 has one built-in isolator in the-A direction and one in the B-direction for the SUB-loop.

One short circuit isolator per 32 alarm points is required according to EN54-2.

5.2.1. SEQUENCE NUMBER

Each isolator has to be given a Sequence Number, 00-127. The isolators have to be connected consecutively (Sequence Number 00-01-02-03-04-05-06-07-08-09-10-11-12-13-14-15 - - up to 127) in the COM loop's A-direction. The sequence no. is programmed via EBLWin.

Each SUB-loop has its own sequence Number, 00-01-02-03-04-05-06-07-08-09-10-11-12-13-14-15 - - up to 127.
The sequence number will be automatically assigned if the auto address / check loop functions are used.



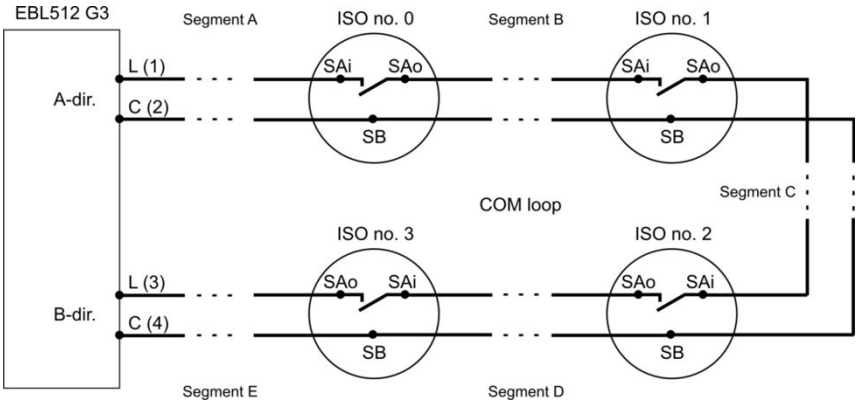
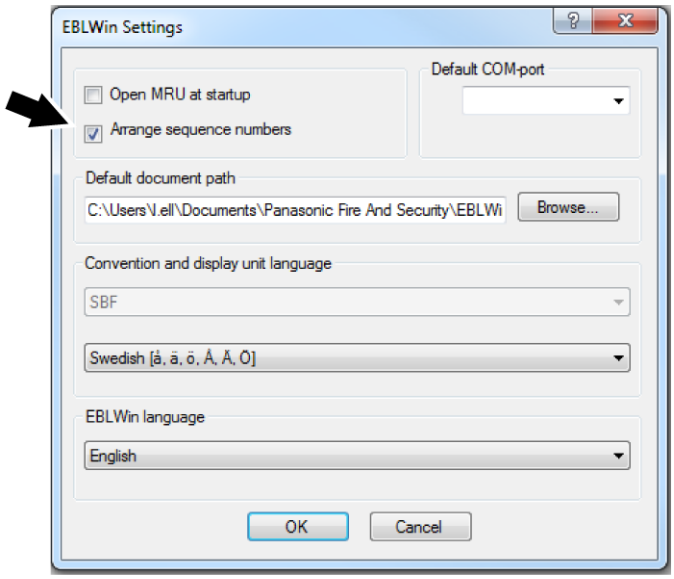


Illustration above: Four isolators connected to a COM loop gives five loop segments, i.e. Segment A (A-00), B (00-01), C (01-02), D (02-03) and E (03-B). If more isolators have to be added, the sequence numbers have to be updated (via EBLWin), for example. if one isolator has to be put in between isolator no. 00 and no. 01 in the figure, the new isolator has to be no. 01 and the old no. 01 has to be no. 02 and so on.

ARRANGE SEQUENCE NUMBERS

In Menu **Tools / Options / EBLWin Settings** dialog there is a check box: 'Arrange sequence numbers'. It is checked by default.



When 'Arrange sequence numbers' is checked, EBLWin will work as follows:

- If a sequence number is inserted, the range after will be increased by one.
- If a sequence number is removed, the range after will be decreased by one.
- If a sequence number is changed to an existing, a swap will be made.

If the checkbox is not checked, the sequence numbers must be arranged manually.

5.2.2. SHORT CIRCUIT / CUT-OFF ON THE COM LOOP

A break or short circuit on a COM loop has to generate a fault in the control unit within 60-100 seconds (EN54-2 requirement).
If one or more short circuit isolators are used, the loop will be divided into "segments" (i.e. the part between two short circuit isolators or between the control unit and one short circuit isolator). Only the affected segment will be isolated, which will minimize the number of units disabled by a short circuit. The fault messages will also show between which isolators the short circuit is situated.

If one of the following occurs:

- com loop end-point voltage <12 v dc or
- com loop short circuit or
- com loop break(s)

This will start a "cycle" as follows: (see reference picture on previous page)

- The whole loop will be disabled, i.e. no voltage on the loop which means that all isolator relays will be powerless (= all isolators disabled), i.e. there will be a “break” on the L (SA) wire in each isolator.
- A control unit algorithm will now try to re-enable the first isolator in the **A-direction** (ISO no. 0 / sequence no. 0). If this is possible, the first isolator in the **B-direction** (ISO no. 3 / sequence no. 3) will be re-enabled, if this is possible. And so on. The control unit algorithm will now try to re-enable all the isolators, alternating A-direction and B-direction. The isolator just before a short circuit cannot be re-enabled.
- Finally all isolators will be re-enabled except the isolator on each side of a short circuit and any isolator(s) between two or more breaks on the loop.
- Communication will be in both directions for 10 minutes. Then a new “cycle” starts.
- If the “fault(s)” are not corrected, the communication will be in both directions for 12 hours before a new cycle starts. After that, the cycle will run every 12th hour until the fault is corrected.
- If the “fault(s)” are corrected, the communication will return to be in the A-direction only. Depending on if it is too low voltage on the loop, short circuit, one break or two or more breaks, the fault messages will be different.
  - **FAULT**: Cut-off Tech addr nnn <-> nnn [sub-loop x] loop x, CU xx

nnn = technical address of the units with short circuit isolators closest to the fault or A/B (for the A/B-direction of the control unit)

  - **FAULT**: Short circ. Tech addr nnn <-> nnn [sub-loop x] loop x, CU xx

nnn = technical address of the units with short circuit isolators closest to the fault or A/B (for the A/B-direction of the control unit)

If there are multiple loop faults, i.e. one or more short circuits and/or one or more Cut-offs, there will be a “multiple COM loop fault” message.

- **FAULT**: Multiple faults, COM loop x, control unit xx

The first fault message will show the first fault found. There will always be a “no reply” message for all units not found in spite of communication in both directions.

- **FAULT**: No reply zone: xxx address xx
  technical number xxxxxx
  Alarm text for xxx-xx

Regarding Fault acknowledge, see the EBL512 G3 Operating Instructions.

After the faults are acknowledged and corrected, it is recommended to disconnect / re-connect the loop to clear the loop faults. Otherwise it may take up to 12 hours before the faults disappear because the cycle only runs every 12th hour.

5.2.3. BUILT-IN ISOLATORS

The units that have a built-in isolator, do not require any separate COM loop address for the isolator. The isolator only require the sequence Number, 00-127.

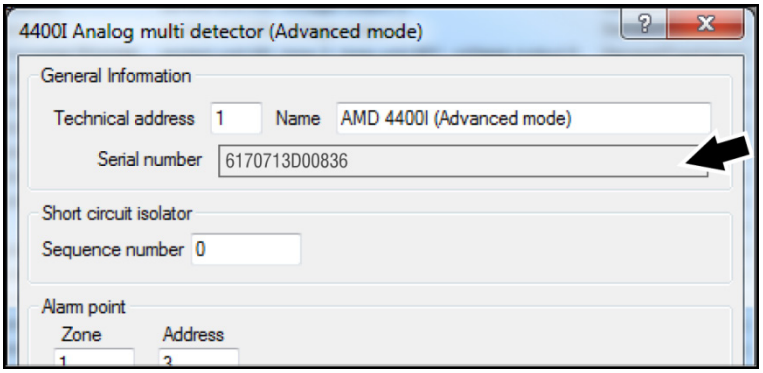
As an option, these units can be used without the isolator in function. If so, they have to be programmed in EBLWin as if they were an obsolete unit:
4433 as 3333
4439 as 3339
4477 as 3377
and via the Address setting tool 4414 E set to 2330 mode instead of NORMAL mode.

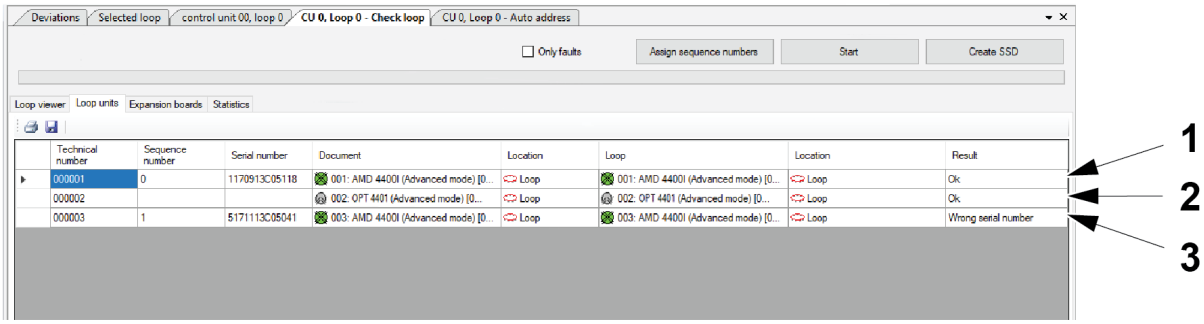
See also EBL512 G3 Operating Instructions MEW03040, chapter "Fault messages".

5.3. SERIAL NUMBER

During check loop and auto-addressing the control unit reads out the serial no of the loop unit and reports it to EBLWin.
In EBLWin the serial number is displayed in the list view tab of the check loop / auto-addressing windows.

EBLWin save the serial numbers in the document when the user chooses to create SSD. The serial numbers are shown in the loop unit dialog, in the loop list view and in the SSD report.





1) The control unit has found a serial number for unit 4400I, via the check loop function
   In this case ok.
2) The control unit has not found any serial number. The unit does not support the feature.
3) The control unit has found a serial number for unit 4400I, via the check loop function
   In this case, the unit´s serial number differs from the serial number saved in the SSD.
   The unit has been changed.

5.3.1. COM LOOP UNITS WITH SERIAL NUMBER

The following units support this function. All future units will have serial number.

SERIAL NUMBER FORMAT FOR 4400, 4400I, 4401, 4401I, AND 4479:
Format 1: CYYWWSTTNNNNN
C = Production cell no
YY = Year
WW = Week
S = Shape (normally 1)
TT = Type code (hexadecimal)
NNNNN = Number

SERIAL NUMBER FORMAT FOR 4381, 4418, 4433/4439, 4460, 4461, 4462, 4464, 4466, 4480, 4481, 4482, 4487, AND 4585:
Format 2: YYWWTTNNNN
YY = Year
WW = Week
TT = Type code (hexadecimal)
NNNN = Number

5.4. SUPPORTED FUNCTIONS TABLE

The table below shows units and supported functions.

Unit	Supports serial number	Supports detect double addresses	Supports mixed polarity
2840	NO	NO	NO
3308/3309/2841/4408/4409	NO	NO	NO
3379	NO	NO	NO
4313	NO	NO	NO
4381	YES (Format 2)	YES	YES
4383	NO	NO	NO
4400	YES (Format 1)	NO	NO
4400I	YES (Format 1)	YES	NO
4401	YES (Format 1)	NO	NO
4401I	YES (Format 1)	YES	NO
4402	NO	YES	NO
4418*	YES (Format 2)	YES	YES
4433/4439*	YES (Format 2)	YES	YES
4445	NO	YES	NO
4460	YES (Format 2)	YES	YES
4461	YES (Format 2)	YES	YES
4462	YES (Format 2)	YES	YES
4464	YES (Format 2)	YES	YES
4466	YES (Format 2)	YES	YES
4479	YES (Format 1)	YES	NO
4480/4481	YES (Format 2)	YES	YES
4482	YES (Format 2)	YES	YES
4487*	YES (Format 2)	YES	YES
4585	YES (Format 2)	YES	YES
4611	NO	NO	N/A
4614	NO	NO	N/A
4620	NO	NO	NO
4645	NO	NO	N/A

Unit	Supports serial number	Supports detect double addresses	Supports mixed polarity
AE2010	NO	NO	NO
Exit light	NO	YES	NO

* All new units supports this function, but there can be older units on the field that do not support this function.

5.5. UNITS FOR HAZARDOUS (EX) AREAS

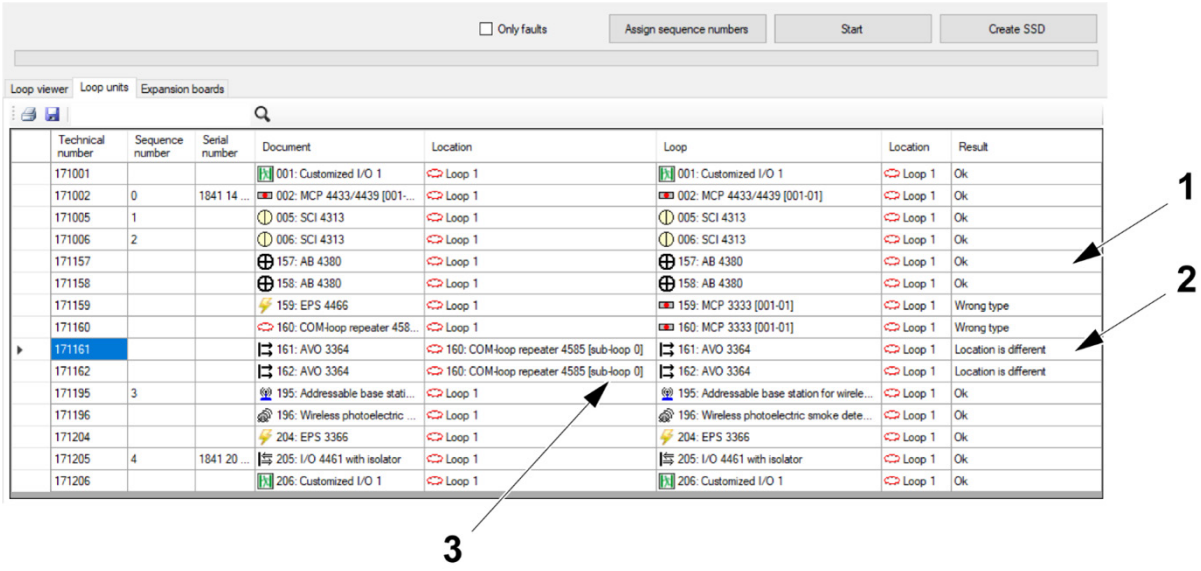
In hazardous (Ex) areas, Intrinsically Safe (IS) and approved products are required. The Intrinsically Safe alarm points are connected to an interface outside the Ex area.
Normally the analog addressable units shall be used, else conventional units.

Conventional units are connected via a Galvanic isolator MTL 5061 (2820) to an expansion board 4580 Ex zone line input, see 10.3. 8 ZONES EXPANSION BOARD 4580 on page 47. See also Technical description MEW01995.

Analog / addressable units are connected to a COM loop via an IS barrier unit 2842. See also Technical description MEW01874.

5.6. LOOP UNIT LOCATION

During check loop and auto-addressing the control unit reads out the location of the loop unit and reports it to EBLWin.
In EBLWin the loop location is displayed in the list view tab of the check loop / auto-addressing windows. The first location column shows the location in EBLWin and the second location column shows the physical location on the COM loop.



Technical number	Sequence number	Serial number	Document	Location	Loop	Location	Result
171001			001: Customized I/O 1	Loop 1	001: Customized I/O 1	Loop 1	Ok
171002	0	1841 14 ...	002: MCP 4433/4439 [001-...	Loop 1	002: MCP 4433/4439 [001-01]	Loop 1	Ok
171005	1		005: SCI 4313	Loop 1	005: SCI 4313	Loop 1	Ok
171006	2		006: SCI 4313	Loop 1	006: SCI 4313	Loop 1	Ok
171157			157: AB 4380	Loop 1	157: AB 4380	Loop 1	Ok
171158			158: AB 4380	Loop 1	158: AB 4380	Loop 1	Ok
171159			159: EPS 4466	Loop 1	159: MCP 3333 [001-01]	Loop 1	Wrong type
171160			160: COM-loop repeater 458...	Loop 1	160: MCP 3333 [001-01]	Loop 1	Wrong type
171161			161: AVO 3364	160: COM-loop repeater 4585 [sub-loop 0]	161: AVO 3364	Loop 1	Location is different
171162			162: AVO 3364	160: COM-loop repeater 4585 [sub-loop 0]	162: AVO 3364	Loop 1	Location is different
171195	3		195: Addressable base stati...	Loop 1	195: Addressable base station for wirele...	Loop 1	Ok
171196			196: Wireless photoelectric ...	Loop 1	196: Wireless photoelectric smoke dete...	Loop 1	Ok
171204			204: EPS 3366	Loop 1	204: EPS 3366	Loop 1	Ok
171205	4	1841 20 ...	205: I/O 4461 with isolator	Loop 1	205: I/O 4461 with isolator	Loop 1	Ok
171206			206: Customized I/O 1	Loop 1	206: Customized I/O 1	Loop 1	Ok

1) The control unit has found the loop location for unit 4380, via the check loop function
   In this case ok.
2) The control unit has found loop location for 3364, via the check loop function
   In this case, the unit´s loop location differs from the physical location on the COM loop.
   The unit has been moved.
3) The control unit has found a unit on the SUB-loop 0.

6. ACCESSORIES

6.1. LABEL HOLDER 3390

To be mounted in an analog base or enclosed analog heat detector.
Intended for a label with "zone-address", "technical address", to be read also when the detector is plugged in its base. 100 label holders per packet. Labels not included.

6.2. LABELS 3391

A packet with self-adhesive white labels for label holder 3390.
10 A4-sheets à 132 labels for laser printer usage. The print-out is done via EBLWin.

6.3. WATERPROOF BOX 3362

3362 is intended for Addressable multipurpose I/O unit 3361 and Addressable 2 voltage outputs unit 3364. A grey polycarbonate box with ingress protection rating IP66 / 67. Four compression glands are included for the cable entries. Dimensions (L x W x H): 175 x 125 x 75 mm.

6.4. DUCT DETECTOR CHAMBER 6377

Duct detector chamber UG-4. The housing is made of grey ABS and the venturi pipe is made of aluminum. It is supplied with four IP65 glands for cable entry.

6377 can be used in conventional as well as analog fire alarm systems, depending on the base and detector mounted inside the housing.
The venturi pipe is available with or without a built-in fan and in three lengths (0.6, 1.5 & 2.8 m). The pipe can easily be shortened to suit the ventilation duct. Mounting bracket and filters are also available. For more information see Technical description for 6377.

7. ALGORITHMS FOR ANALOG DETECTORS

7.1. ADVANCED MODE ALGORITHMS

The latest generation of detectors uses the Advanced mode to activate the newest algorithms. These are described in each Technical description respectively.
The analog detectors 4401 and 4400 can via the address setting tool 4414 be set in different modes. The Advanced mode can be set with the address setting tool 4414. Not with the address setting tool 3314. The detectors are factory set to the NORMAL mode.

The latest generation of detectors are the following:

- Conventional photoelectric smoke detector 4452
- Analog photoelectric smoke detector 4401
- Analog smoke detector with isolator 4401I
- Analog multi detector 4400
- Analog multi detector with isolator 4400I

The conventional detector 4452 uses some of the advanced mode functions.

7.2. NORMAL MODE ALGORITHMS – SMOKE DETECTORS

The information in the following chapters is valid for the analog smoke detectors in NORMAL mode.

7.2.1. SENSOR VALUE

An analog smoke detector is like a "sensor". It detects its environment at all times. Each detected analog value is converted to a digital "sensor value", which for each individual detector, is continuously picked up and evaluated by EBL512 G3.
For analog smoke detectors the sensor values are shown as XX.X % (obscuration) per meter.

7.2.2. DECISION VALUE

In order to secure real fire alarms and reduce the nuisance alarms, a decision value is calculated. The decision value is used to decide if it is normal state, pre-warning, fire alarm, heavy smoke alarm or a smoldering fire. Algorithm. The decision value is calculated, see "Filtering algorithm" in section 7.2.4. ALARM ALGORITHMS – NORMAL MODE on page 33.

7.2.3. WEEK AVERAGE SENSOR VALUE

Read this section in conjunction with "**sensitivity compensation graph**" below.

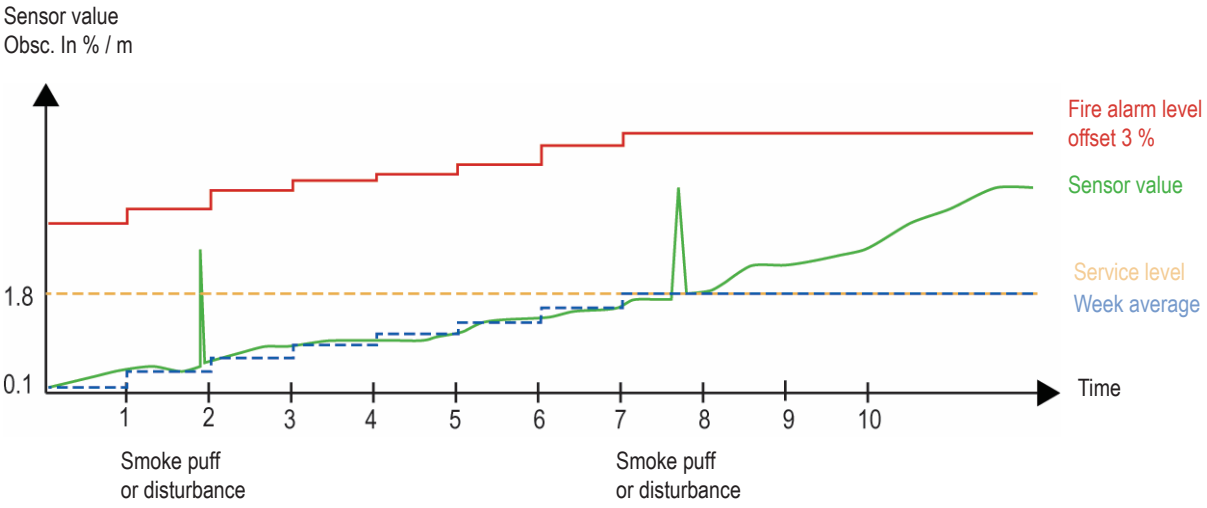
Each hour, one sensor value is stored in a special memory in the CIE, and each week, these stored sensor values are used for a "**week average sensor value**" calculation. This is done for each analog smoke detector individually.
The first week average sensor value will be calculated within 2½ minutes after any restart, which means also after SSD download. During these 2½ minutes all analog smoke detector fire alarms are suppressed.

If the loop is disconnected at startup, or disconnected during the time when the first value is being calculated, the calculation will take stat/restart when the loop is reconnected. Also in this case the calculation will take about 2½ minutes and the fire alarms are suppressed.

Each analog smoke detector has a default sensor value = 0.1 %/m and a week average sensor value = 0.1 %/m at time = 0. A "fire alarm offset" value is added to the week average sensor value to get each detector's "**Fire alarm level**". The fire alarm level will be adjusted in relation to each new week average sensor value in order to keep the detector's fire alarm sensitivity constant. The fire alarm level is parallel with the "**Week average sensor value**", but always 3% /m offset.

At Time = 0 the "week average sensor value" is 0.1 %/m, and the fire alarm offset is 3 %/m = the fire alarm level is 3.1 %/m. Service signal will be given when the week average sensor value for a detector has reached the service level (1.8 %/m). At that level the detector is "dirty" and has to be replaced.
The week average sensor value will now stay on 1.8 %/m, i.e. the detector will be more sensitive until it is replaced with a new one.

SENSITIVITY COMPENSATION GRAPH



"Sensor Information" is available via menu H4/U4. Via EBLWin and a PC connected to EBL512 G3 you can also get continuous "Sensor Information" for one or several detectors. Also via the Gateway you can get "Sensor Information" for one or several analog detectors on a COM loop.

7.2.4. ALARM ALGORITHMS – NORMAL MODE

Each alarm algorithm has three detection levels:

1) **Fire alarm** (fire alarm level = the week average sensor value + the fire alarm offset)
2) **Pre-warning** will be activated (if selected in EBLWin – Control unit Properties) at a lower level (smaller offset) than for fire alarm. Pre-warning will be activated before the fire alarm from the same alarm point.
3) **Heavy smoke alarm** will be activated at a higher level (bigger offset) than for fire alarm. A heavy smoke alarm will be activated later than the fire alarm from the same alarm point.

ALARM ALGORITHM

In order to reduce the nuisance alarms and ensure that the real fire alarms will be activated, six different alarm algorithms are available. See table "**smoke alarm algorithms**". They are based on:

- Normal (N), High (H) or Low (L) sensitivity
- Normal (15 sec.) or slow (35 sec.) detection time

Normal sensitivity (Default) Fire alarm offset is 3.0 % smoke obscuration per meter.
High sensitivity Fire alarm offset is 2.4 % smoke obscuration per meter, which is less than for normal sensitivity. Can be used when an "early" fire alarm is wanted.
Low sensitivity Fire alarm offset is 3.6 % smoke obscuration per meter, i.e. more than for normal sensitivity. Can be used to reduce nuisance alarms.
Normal detection time - 15 sec. (Default) There will always be min. 15 seconds alarm delay. After the fire alarm level is reached, it will take minimum 15 seconds until fire alarm will be activated in the CIE This is a "normal filter" to reduce nuisance alarms.
Slow detection time - 35 sec. There will always be min. 35 seconds alarm delay. After the fire alarm level is reached, it will take minimum 35 seconds until fire alarm will be activated in the CIE This is an "extra filter" to reduce nuisance alarms.

SMOKE ALARM ALGORITHMS

Analog detector	Normal detection time (15 sec.)			Slow detection time (35 sec.)		
	H-15	N-15	L-15	H-35	N-35	L-35
	2.4%, High sensitivity	3.0%, Normal sensitivity	3.6%, Low sensitivity	2.4%, High sensitivity	3.0%, Normal sensitivity	3.6%, Low sensitivity
4300 / 4301 4400 / 4401	X=0.8	X=1.0	X=1.2	X=0.4	X=0.5	X=0.6

FILTERING ALGORITHM

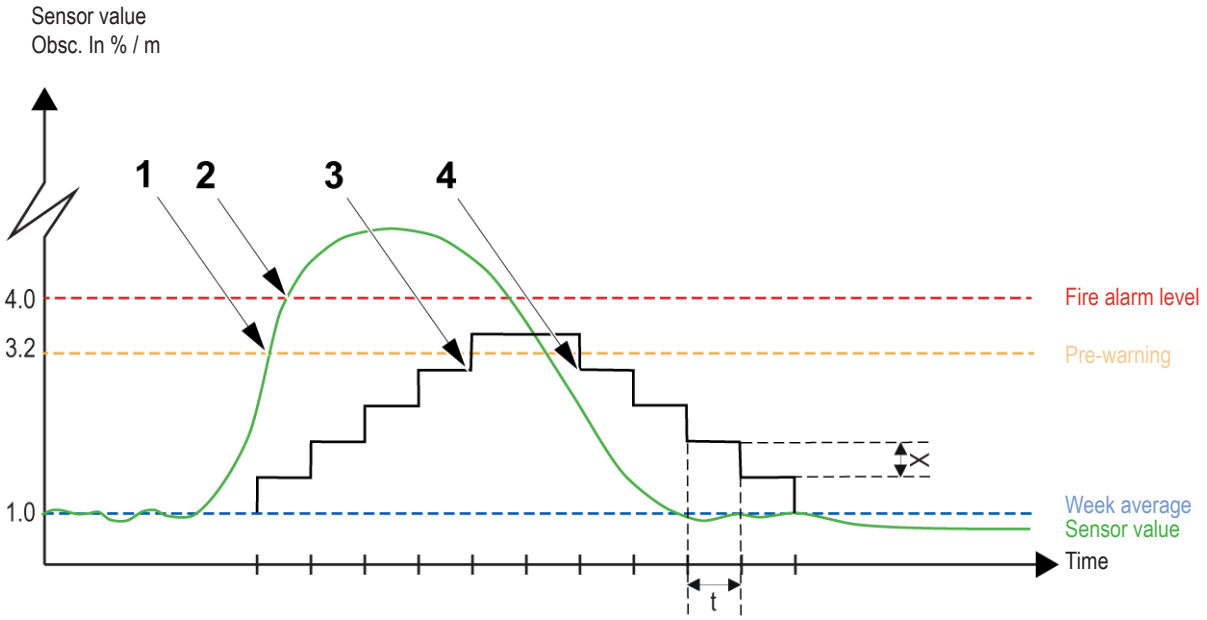
In order to secure a fast detection of real fire alarms and to reduce nuisance alarms to a minimum, a filtering algorithm is used. The filtering algorithm uses the sensor values to calculate a decision value. This calculation will vary depending on which alarm algorithm is in use. The decision value is zero from the beginning. Each time a new sensor value is picked up (sampled) from an analog smoke detector, this new sensor value is compared with the actual decision value and the decision value will be adjusted or not adjusted as follows:

If the difference, between the new sensor value and the actual decision value is < "X", the decision value is set equal to the new sensor value.

If the difference is > "X", the decision value is increased or reduced by "X".

The decision value will consequently not be increased / decreased with a value exceeding the "X" value even if the sensor values are much higher / lower.

FILTERING ALGORITHM GRAPH



1) The sensor value has here reached the pre-warning level but nothing will happen since the decision value has not reached the pre-warning level.
2) The sensor value has here reached the fire alarm level but nothing will happen since the decision value has not reached the fire alarm level.
3) The decision value has here reached the pre-warning level and pre-warning is activated.
4) The decision value is here below the pre-warning level and the pre-warning is automatically reset.

The illustration above is an example of the filtering algorithm for an Analog smoke detector. The step value X is depending on the selected alarm algorithm according to the table in section SMOKE ALARM ALGORITHMS on page 33.

The polling time (t) is 7 seconds in the EBL512 G3 system.

EXPLANATIONS TO “FILTERING ALGORITHM GRAPH”

In this example, the “week average sensor value” is 1.0 %/m at the "starting point, due to contamination. The “pre-warning” level is therefore adjusted to 3.2 %/m (1.0+2.2) and the “**fire alarm level**” to 4.0 %/m (1.0+3.0).

Assume that X=0.5 (Algorithm N-35)

At start, the sensor values and decision values are approximately equal 1.0. When smoke comes into the detector the sensor values are increasing, and are by the fourth polling approximately 2.7.
Since 2.7-1.0 > X=0.5, the decision value (1.0) is increased by X=0.5 to 1.5.

Next polling the sensor value is approx. 4.5. The decision value (1.5) is increased by X=0.5 to 2.0, and so on.

In this example the decision value never comes up to the fire alarm level. When the sensor value is reduced to approx. 2.5, the decision value is set to 3.0, because 3.5-2.5=1.0 > X=0.5. This results in that the decision value 3.5 is reduced by X=0.5 to 3.0, and so on.

SMOULDERING SMOKE ALGORITHM

Read this section in conjunction with the ”**smouldering smoke algorithm graph**”.

The smoke from a smouldering fire brings the sensor value to rise very slowly, without reaching the fire alarm level. A smouldering fire can last for hours and sometimes days. The smouldering smoke algorithm will detect such a fire at an "early" stage.

The smouldering smoke algorithm is depending on and works in parallel with the selected alarm algorithm. That means that the smouldering smoke algorithm can affect the pre-warning and fire alarm levels.

If the decision value has been over the smouldering level for **7 minutes** (1-2 in the graph), the pre-warning and fire alarm levels will be lowered:

- The pre-warning level will be lowered to a level right between the original pre-warning level and the smouldering level.
- The fire alarm level will be lowered to a level right between the original fire alarm level and the pre-warning level.

If the decision value has reached the pre-warning level, but not the fire alarm level, after additional **90 minutes** (2-4 in the graph), the pre-warning and fire alarm levels will be lowered again:

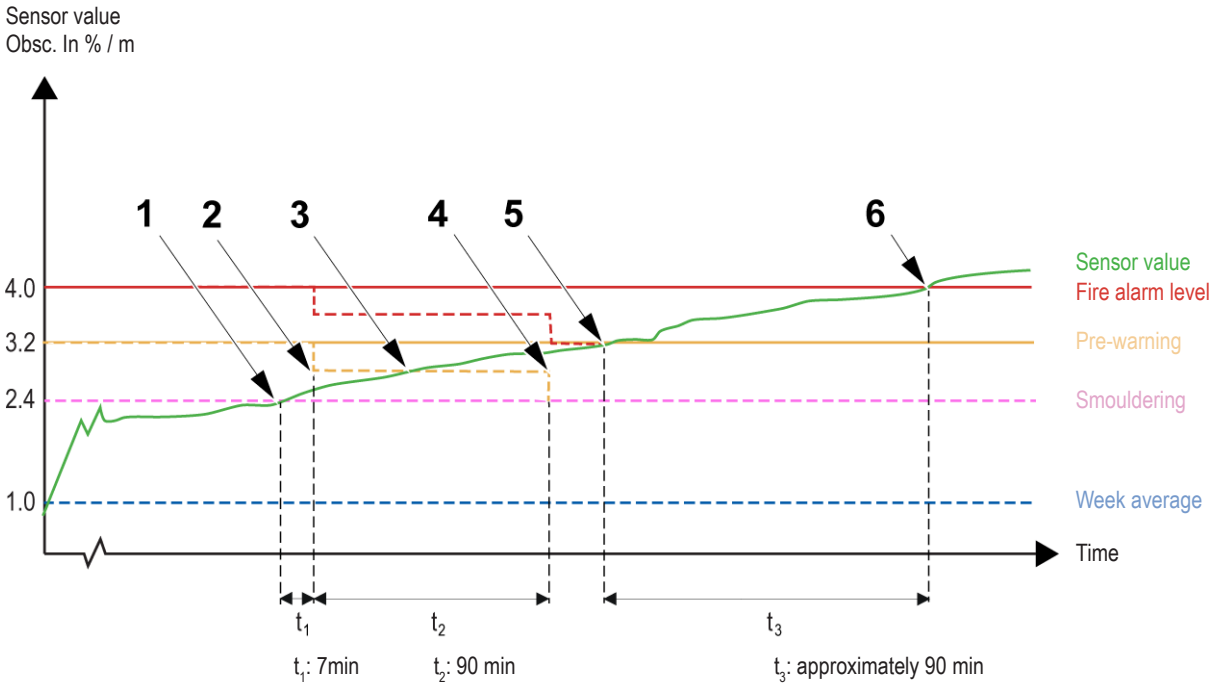
- The pre-warning level will be lowered to the original smouldering level.
- The fire alarm level will be lowered to the original pre-warning level.

If the decision value continue to rise fire alarm will be activated (5 in the graph).

The smouldering smoke algorithm will be aborted and the prewarning and fire alarm levels restored to their original values if:

- The decision value becomes lower than the smouldering level.
- The decision value, after the 90 minutes, has not reached the prewarning level.
- The decision value, after the 90 minutes and additional 120 minutes, has not reached the fire alarm level.

SMOULDERING SMOKE ALGORITHM GRAPH



1) The decision value has here reached the smouldering level. A 7 minutes timer is started.
2) After the 7 minutes the decision value is still over the smouldering level and the pre-warning level and the fire alarm level are lowered. A 90 minutes timer is started.
3) The decision value has here reached the pre-warning level and pre-warning is activated.
4) After the 90 minutes the decision value is still over the prewarning level but has not reached the fire alarm level. The prewarning level and the fire alarm level are lowered again. A 120 minutes timer is started.
5) The decision value has here reached the fire alarm level and fire alarm is activated.
6) The decision value has here reached the original fire alarm level, i.e. the fire alarm would have been activated approx. 90 minutes later than with the smouldering algorithm!

Explanation: In this example, the week average sensor value and the decision value are 1 %/m at the "starting point", due to contamination The smouldering level has been adjusted to 2.4 (1.0+1.4), the pre-warning level to 3.2 (1.0+2.2) and the fire alarm level to 4.0 (1.0+3.0).
When a smouldering fire starts, the sensor values and the decision values will increase slowly upwards from 1.0.

PERFORMANCE FACTOR

To find out how the environment is where an analog smoke detector 430x and 440x in NORMAL mode is mounted, the performance factor can be studied. The performance factor is shown in menu H4/U4 together with the min. and max. sensor values. All three values should be studied together. (E.g. one or two high sensor values will not result in a high performance factor). The performance factor is calculated for each detector individually.

$$f = \frac{1}{p}\sum_{x=0}^{p} |M_x - W|$$

f performance factor
p number of polls during the last 24 hours
M_x momentary sensor values for the last 24 hours
W week average

Each sensor value is compared with the week average sensor value. The absolute difference is saved and each twenty-four hour (at midnight) is an "average value" calculated, i.e. the performance factor.
If the detector is mounted in a very "stable" environment, the performance factor will be low (min. 0 %/m).

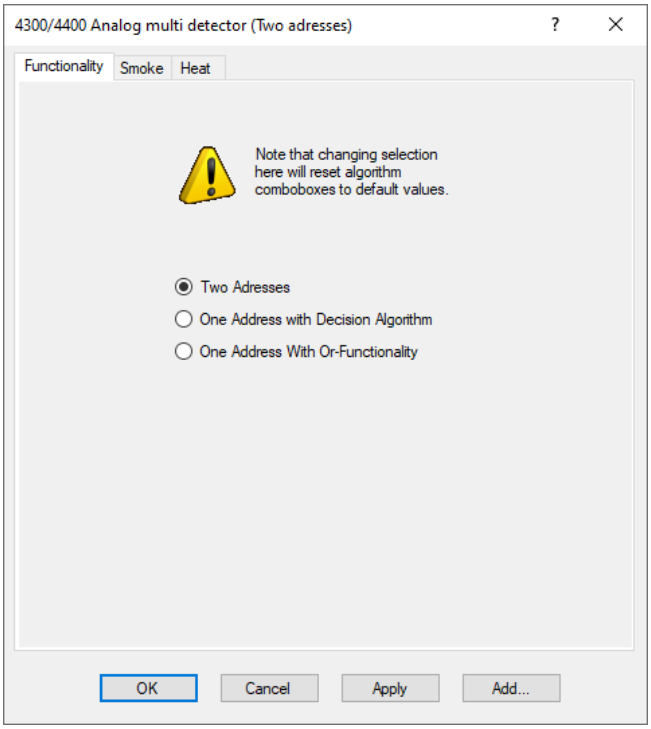
If the detector is mounted in a very "unstable" environment, the performance factor will be high (max. 2.55 %/m).

An "unstable" environment can cause nuisance alarms. Perhaps should another type of detector or alarm algorithm be used, or other functions can be added, for example alert annunciation or two-address dependence.

7.3. NORMAL MODE ALGORITHMS – MULTI DETECTORS

This section is not valid for multi detector with isolator 4400I.

If the multi detector is set in NORMAL mode, the detector can be set to operate in three different ways:



- Two addresses: Two presentation numbers .The detector unit works as two separate detectors. The smoke detector is programmed for one zone-address and the heat detector for another zone-address. The zone number has to be the same for both detectors.

When counting alarm points these "two detectors" are regarded as two alarm points. This can be used to disable for example the smoke detector during working hours and/or in control expressions for programmable outputs.

- One Address with Decision algorithm: The detector unit works as one detector and is programmed for one zone-address. See section 7.3.1. DECISION ALGORITHM on page 40.
- One Address with OR-functionality: Either the heat detector or the smoke detector will activate fire alarm. The detector unit works as one detector and is programmed for one zone-address. This alternative is recommended in most cases.

7.3.1. DECISION ALGORITHM

The decision algorithm may not fulfil the EN54-7 standard regarding fire sensitivity in cold environment.

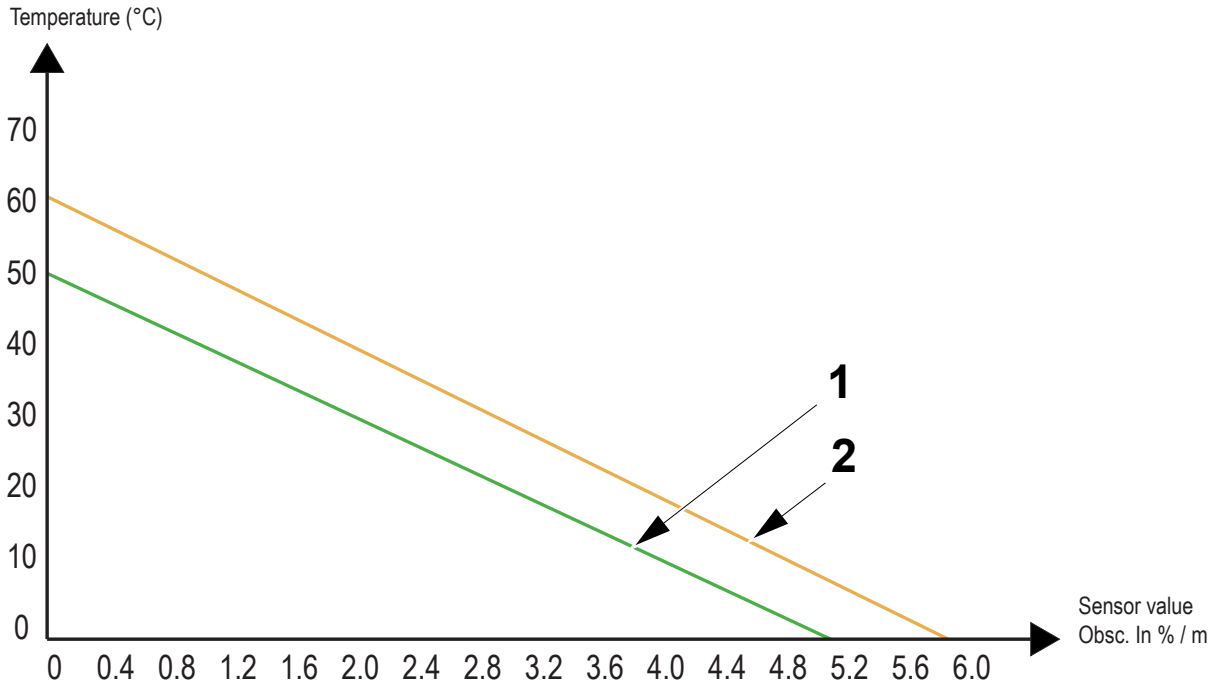
Fire alarm will be activated if: temperature (°C) /10 + smoke value > 5.8.
Pre-warning will be activated if: 5.8 > temperature (°C)/10 + smoke value > 5.0.

The temperature cannot be lower than 0°C in the algorithm / graph.

The decision algorithm can be used to reduce so called false alarms (nuisance alarms), because at a normal room temperature, more smoke is required to activate fire alarm than when the room temperature is high (or is rising). By a real fire, the room temperature will rise rather fast and less and less smoke is required to activate fire alarm. Very little smoke require a "high" temperature to activate fire alarm and very much smoke will activate fire alarm also at a "low" temperature.

The sensitivity is depending on the temperature

20°C → 3.8 %/m
↓ ↓
40°C → 1.8 %/m



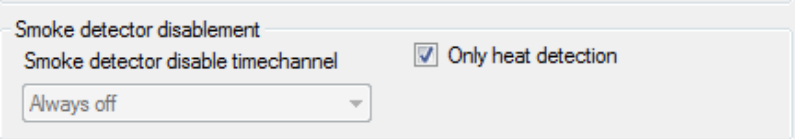
1) Limit for pre-warning
2) Limit for fire alarm

When the calculated value in the decision algorithm exceeds the lower graph, pre-warning will be activated. When it exceeds the upper graph, fire alarm will be activated.

7.4. NORMAL MODE ALGORITHMS – HEAT DETECTORS

This chapter is valid for the analog heat detectors in NORMAL mode.

This chapter is also valid for multi detector with isolator 4400I (always set in Advanced mode) if it is configured as 'Only heat detection' in EBLWin.



The detectors conforms to a class (see EN54-5:2000, clause 4.2) according to the requirements of the tests specified in EN54-5:2000, clause 5.

When the CIE has picked up a sensor value above the fire alarm level (xx °C) for a detector, the next two values from the same detector also have to be above the fire alarm level to activate fire alarm in the CIE. (This results in an approx. 5 seconds alarm delay). The same is valid for pre-warning except it is a lower level (xx °C) than for fire alarm. (If pre-warning shall be generated or not, is selected in EBLWin – Control unit Properties).

The same is valid for heavy heat alarm except it is a higher level than for fire alarm.

See EBL512 G3 Operating Instructions for more information.

7.4.1. CLASS A1 ALGORITHM

Conforms to Class A1.
Typical / max. application temperature 25 / 50 °C.
Max. / min. static response temperature 54 / 65 °C.

The algorithm is as follows:
For a rate-of-rise < 4 °C per minute:

- Fire alarm level is 56 °C.
- Pre-warning level is 46 °C.
- Heavy heat alarm level is 90 °C

Rate-of-rise > 4 °C per minute:

- Fire alarm level is 46 °C.
- Pre-warning level is 36 °C.
- Heavy heat alarm level is 90 °C

The "Class A1 algorithm" will detect a fast temperature rise (rate-of-rise > 4 °C per minute) some minutes earlier than the "Class A2 algorithm".

7.4.2. CLASS A2 S ALGORITHM

Conforms to Class A2 S.
Typical / max. application temperature 25 / 50 °C.
Max. / min. static response temperature 54 / 70 °C.
The algorithm is as follows:

- Fire alarm level is 60 °C.
- Pre-warning level is 50 °C.
- Heavy heat alarm level is 90 °C.

7.4.3. CLASS B S ALGORITHM

Conforms to Class B S.
Typical / max. application temperature 40 / 50 °C.
Max. / min. static response temperature 69 / 85 °C.
The algorithm is as follows:

- Fire alarm level is 74 °C.
- Pre-warning level is 64 °C.
- Heavy heat alarm level is 90 °C.

The "Class B S algorithm" can be used when the application temperature is "high" (compare with the Class A1 and A2 S algorithms).

8. DISPLAY UNIT 5054 - RS485 INTERFACE

For connections and more detailed information on the display unit, see the Technical description for Display unit 5054.

External Display Units are connected directly to the RS485 channel 0 or channel 1, also called the primary and secondary channel. Up to 30 Display Units, type Alert Annunciation Unit, Ext. Presentation Unit, Ext. Fire Brigade Panel, or General Control Panel can be connected to the built-in RS485 interface (J4:37-38) in EBL512 G3.

The number of units that can be power supplied via EBL512 G3 (Power supply at J4:35-36 or an external power supply) is depending on all other units connected to the same CIE / external power supply. Up to 1200 m cable can be used.
One end-of-line resistor 120R shall be connected in the last display unit on the line. For connection, see the Technical description for Display unit 5054.

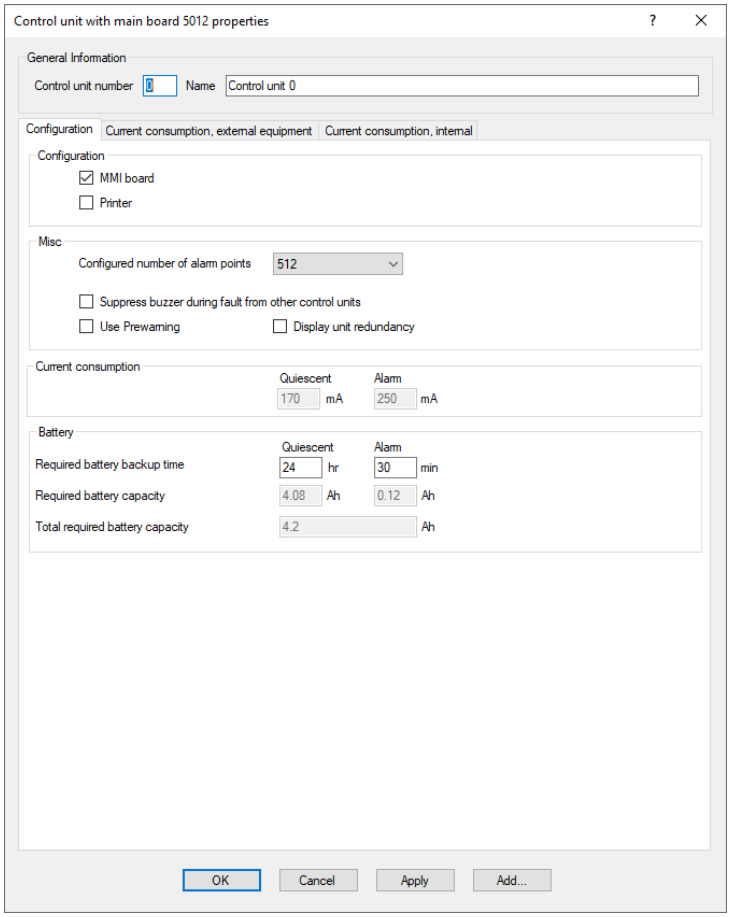
ADDRESS AND S/W MODE SETTINGS

The display and the push buttons (in the unit respectively) are used to set the address. From EBL512 G3 it is possible to set the units in address setting mode, see the Technical description for the unit.

REDUNDANCY

The main board has a RS485 redundant channel on J3:1-2 and J4:39-40.

In the **Control unit properties** dialog there is a check box 'Display unit redundancy'. It is not checked by default.



When '**Display unit redundancy**' is checked, display units can only be added and programmed on Channel 0.

This section is only valid for Display unit version 3.

If '**Display unit redundancy**' is selected, Channel 1 will be the back-up channel, and is only supervising / monitoring until Channel 0 is not working properly.
Normally only Channel. 0 will be in use, and in case of a network fault (i.e. open circuit or short circuit), Channel. 1 will be automatically used until there is no fault on Channel. 0.

If '**Display unit redundancy**' is not selected, Channel 1 can be used as an extra channel, and display units can be programmed on both Channel 0 and Channel 1.

9. GATEWAY – RS232 INTERFACE

For more detailed information on the Gateway, see the Technical Description for the unit.

5088 can be used for:

- presentation of the actual CIE status in a PC using the web browser.
- send e-mails in case of pre-warning, fire alarm, fault, disablement, test mode alarm and/or service signal
- remote control and two-way communication. Ten different users and three access levels
- as a protocol interface to other PC systems etc. The following alternatives are available today:
  - EBL Talk (RS232 or TCP/IP) is an open protocol, used to transmit and present fire alarm information in a separate PC / system.
  - ESPA 4.4.4 (RS232) used to transmit and present fire alarm information in a paging system.
  - SIA (RS232) used to transmit and present fire alarm information in a separate PC application.
  - MODBUS (RS232) used to transmit and present fire alarm information in a separate PC application.
  - OPC UA (TCP/IP) configured by Gateway application tool.
- as a protocol interface to a security management system via EBLnet (TCP/IP). EBLnet licence required.
- the application EBL Graphics. EBLnet licence required
- the application EBLWeb Monitor. EBLnet licence required

A Config tool is included in EBLWin. It is used for the configuration, which is downloaded to the Gateway via TCP/IP. Also the software is downloaded via this tool.

QUICK GUIDE FOR DOWNLOADING S/W AND SSD TO GATEWAY

1) First create the SSD for the installation. In menu "System" select "User data" and check-mark the user names / passwords that shall be used for the Gateway as well.
2) Add a Gateway to a Control Unit. (CU menu: Add Gateway….)
3) Do the Gateway configuration.
4) Download the software (firmware) to the Gateway.
5) Download the configuration to the Gateway.
6) Normally, after 60 seconds the Gateway will automatically restart. If the Gateway is new, do a "power off – power on" restart.

If there is a virtual machine host (Oracle VM VirtualBox, VMWare etc.) installed on the PC, there might be trouble to find the Gateway in the EBLWin. The virtual machine host (can in some cases) make the PC look like it is in a different network.

10. EXPANSION BOARDS

10.1. CONNECTIONS

Inside EBL512 G3 there are spaces and holders for up to six optional expansion boards of the types 4580, 4581 and 4583 to be mounted. One Expansion board connection cable 5089 shall be used for connection of up to six expansion boards to the main board. Connector "J2" on the expansion board respectively, and "J9" on the main board. For connection diagram, see Technical Description for the CIE.

10.2. EXPANSION BOARD ADDRESS SETTING

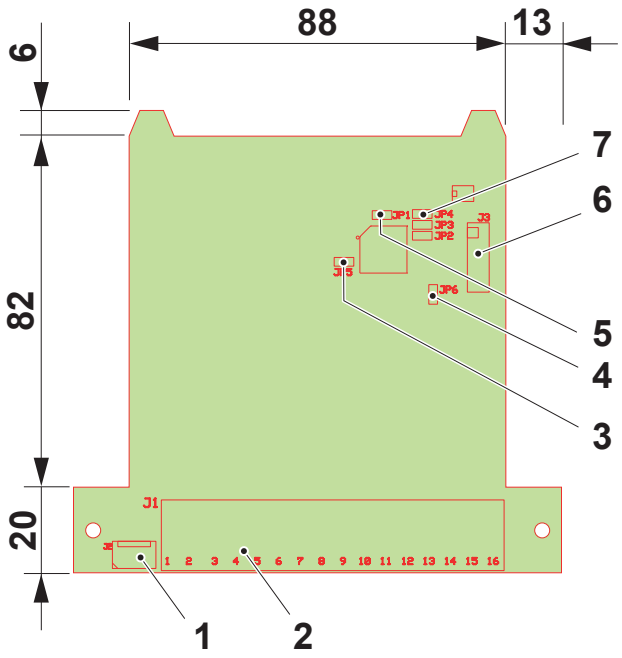
Each expansion board 4580, 4581 & 4583 must have a board address, number 0-5, set physically via jumpers on each board respectively.

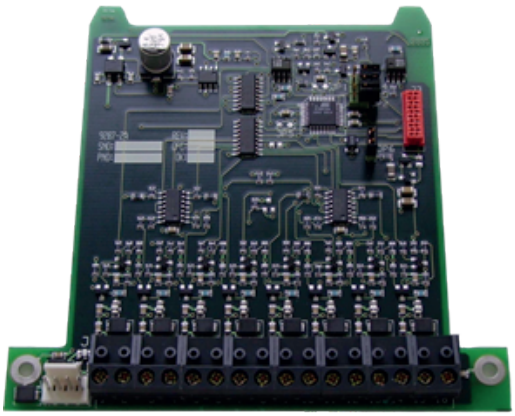
- On boards of type 4580, 4581 and 4583, use jumpers "JP2-JP4"

The board address also needs to be set in the configuration via EBLWin.

Board address	4580, 4681, 4583		
	JP2	JP3	JP4
0	Open	Open	Open
1	Shunted	Open	Open
2	Open	Shunted	Open
3	Shunted	Shunted	Open
4	Open	Open	Shunted
5	Shunted	Open	Shunted

10.3. 8 ZONES EXPANSION BOARD 4580



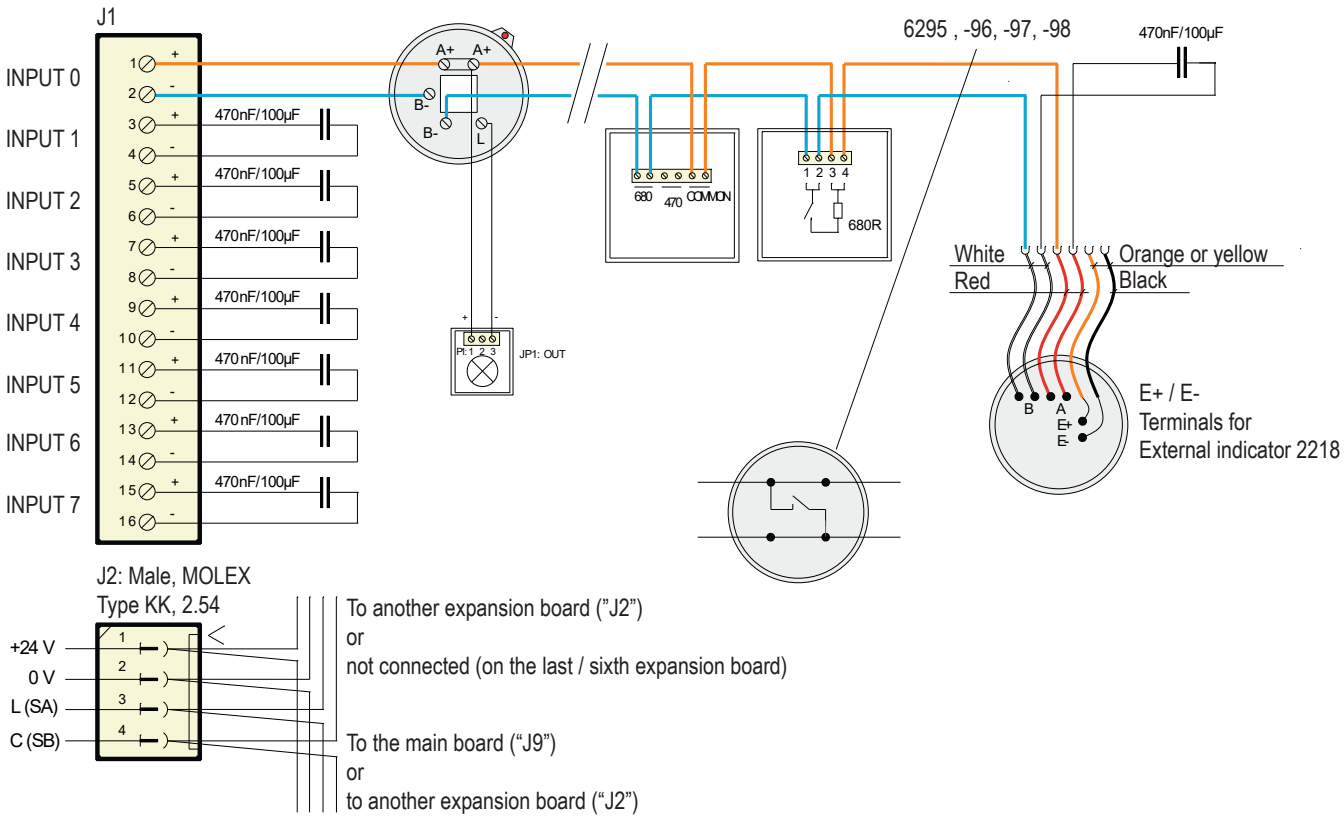


1) J2, For connection to:
   - the main board (J9) and the next exp. board 458X (J2)
   - other expansion boards 458X (J2)
2) J1, 8 zone line inputs (0-7)
   connections to J1 according to next page
3) Not used
4) JP6, For production only (shall be normally shunted)
5) JP1, 8 zones exp. Board restart
6) J3, for production only
7) JP4 (“4”)
   JP3 (“2”)
   JP2 (“1”)
   Jumpers for board no. (address) setting (0-5)

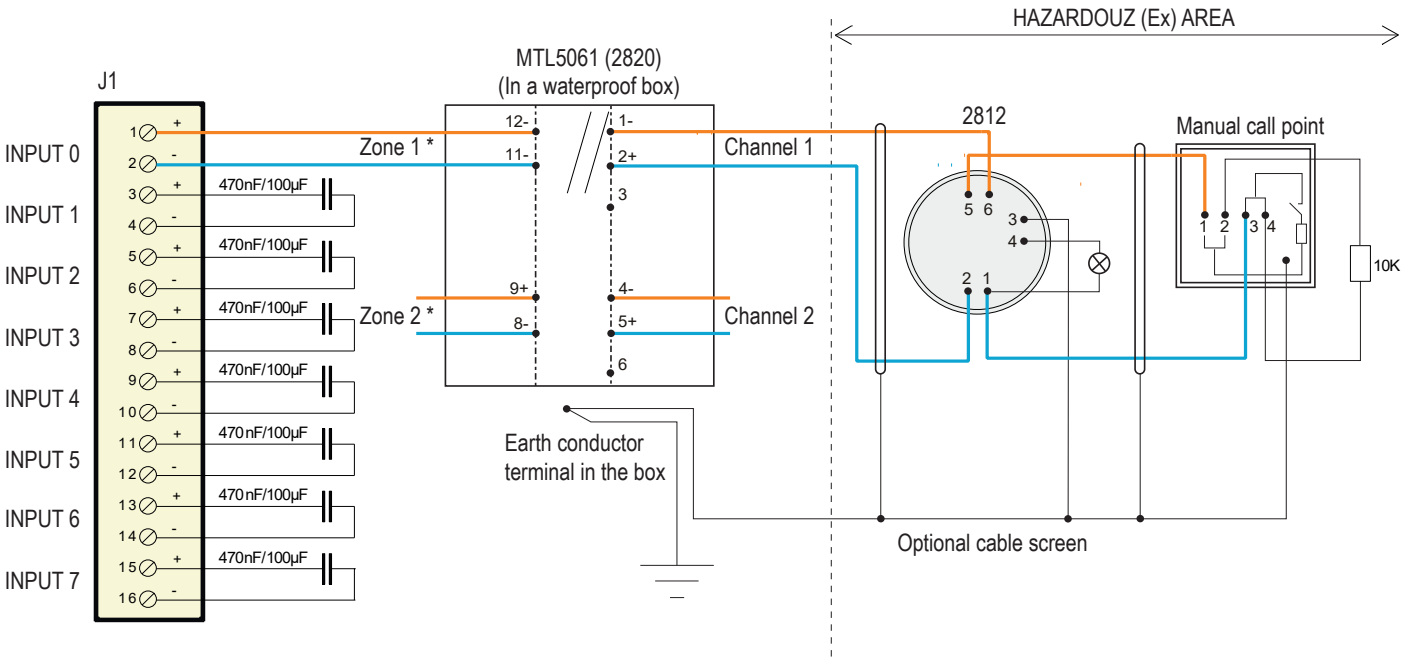
The 4580 board has eight conventional zone line inputs (0-7) intended for conventional detectors. In the last alarm point on each zone line, there has to be an end-of-line device. What type, capacitor or resistor, is depending on the selected "Type of zone line input" in EBLWin.
The input supervision of 4580 fulfils EN54-13.

User installed cables shall be tied together, i.e. safely away from mains terminals.

CONNECTIONS - ZONE LINE INPUT (EOL CAPACITOR)



CONNECTIONS- EX ZONE LINE INPUT (EOL RESISTOR)



Up to five conventional IS detectors and manual call point can be connected via a galvanic isolator 2820 to the expansion board 4580 zone line input. The end-of-line resistor 10K is supplied with 2820.

* Connection of alarm points is not allowed between the expansion board 4580 (J1) and 2820.

10.3.1. EBLWin PROGRAMMING OF 4580

EACH ZONE LINE INPUT HAS TO BE PROGRAMMED VIA EBLWin REGARDING:

- Type of zone line input (see below), depending on detectors / end-of-line device (capacitor or resistor), i.e. different threshold levels etc.
- Alarm at short circuit / No alarm at short circuit (i.e. if short-circuit on the zone line shall generate a fire alarm or a fault)
- Zone number (address optional)
- Fire alarm delay / No fire alarm delay
- Text (Alarm text – if you wish)
- Alert annunciation time channel
- Disablement time channel
- Two-unit dependency time channel
- Type of detectors connected to the zone line input

The terminals of 4580 support a wire size up to 1.13 mm2 (1.2 mm).

Max 32 alarm points on each zone line
Max 512 alarm points in one CIE (EN54-2)

TYPE OF ZONE LINE INPUT

Each Zone line input (0-7) shall be selected as Not used or one of the following types / modes.

- **Zone line input** for 4580 S/W version ≤ 2.0.4 (EOL capacitor). Use 470 nF as end-of-line device.
- **Zone line input** for 4580 S/W version ≥ 2.0.10 (EOL capacitor) Use 100 uF as end-of-line device.
  This type is normally used. It has the lowest zone line current consumption since the end-of-line device is a capacitor. Max. allowed cable resistance is 50 ohm. Maximum allowed cable capacitance is 50 nF. Total detector current consumption < 1.5 mA.
- **Ex zone line input** (EOL resistor). This type shall be used only when units for Hazardous (Ex) areas shall be connected, i.e. via the Galvanic isolator MTL5061 (2820). The end-of-line device has to be a resistor, 10 kΩ (±5 %) with a body surface area > 230 mm2 (supplied with the Galvanic isolator). Max. allowed cable resistance is 40 ohm.
  Max. allowed cable capacitance is 70 nF. Total detector current consumption < 1.0 mA.

INPUT STATES

Each input will be in one of these six states:

- **Normal state**. The normal zone line input state, which means no alarm, no fault and so on,. and the nominal voltage is 24 V DC. Allowed voltage 15-28 V DC. From this state any other state can be reached / activated.
- **High current state**. The maximal current consumption limit for the zone line input is exceeded, which is indicating that too many detectors are connected. The limit is depending on the selected input mode. This generates a fault condition in EBL512 G3. From this state any other state can be reached / activated except the open circuit state.
- **Alarm state**. One alarm point (or more) on the zone line is in alarm state and the alarm limit for the zone line is exceeded. This limit is depending on the selected input mode.
  This activates a fire alarm in EBL512 G3. In this state short-circuit, open circuit, high current and low voltage states cannot be reached / activated. After alarm reset (in EBL512 G3) the zone line input will return to the normal state.
- **Short-circuit state**. The short-circuit current limit is exceeded, indicating short-circuit on the zone line. This normally generates a fault condition in EBL512 G3 but instead a fire alarm can be activated, if this option is selected via EBLWin.
- **Open circuit state**. The open circuit current limit is passed, indicating no or too low zone line current consumption, i.e. the end-of-line device is not detected. This generates a fault condition in EBL512 G3. From this state any other state can be reached / activated.
- **Disconnected state**. Via menu H8/S1 (Disconnect loop / zone line input) the zone line input can be disconnected, which means there is no voltage on the zone line. The disconnection is indicated in EBL512 G3 by the LED Fault / Disablements "General disablements". From this state no other state can be reached / activated.

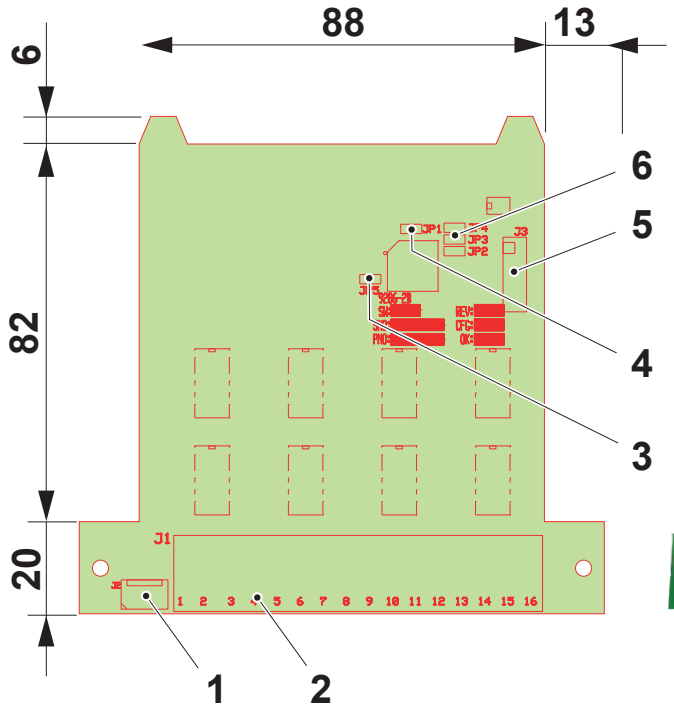
10.3.2. ELECTRICAL INTERFACE OF 4580

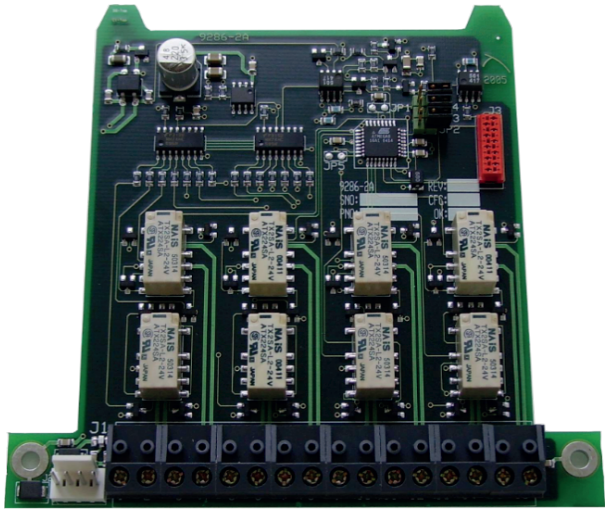
Terminal	All detectors inputs 0 - 7	Voltage, V		Current, A	
J1		Min	Max	Min	Max
	Quiescent, EOL Capacitor	15	30	0.9 mA[1]	2.4 mA[2]
	Quiescent, 10 kΩ EOL Resistor	15	29.4	3.3 mA[1]	4.3 mA[2]
	Fire / Short	0	17.6	26 mA[3]	30 mA[3]

1) Average current consumption at 24V output voltage and EOL device connected.
2) Software limited maximum current included (1.5mA & 1.0 mA).
3) Hardware limited maximum current.

Conductor area max. 1.2 mm3 (Ø=1.2 mm)

10.4. 8 RELAYS EXPANSION BOARD 4581





1) J2, For connection to:
   - the main board (J9) and the next exp. board 458X (J2)
   - other expansion boards 458X (J2)
2) J1, 8 relay outputs (0-7)
   connections to J1 according to next page
3) Not used
4) JP1, 8 relays exp. board restart
5) J3, for production only
6) JP4 (“4”)
   JP3 (“2”)
   JP2 (“1”)
   Jumpers for board no. (address) setting (0-5)

NO or NC relay contacts are programmable.

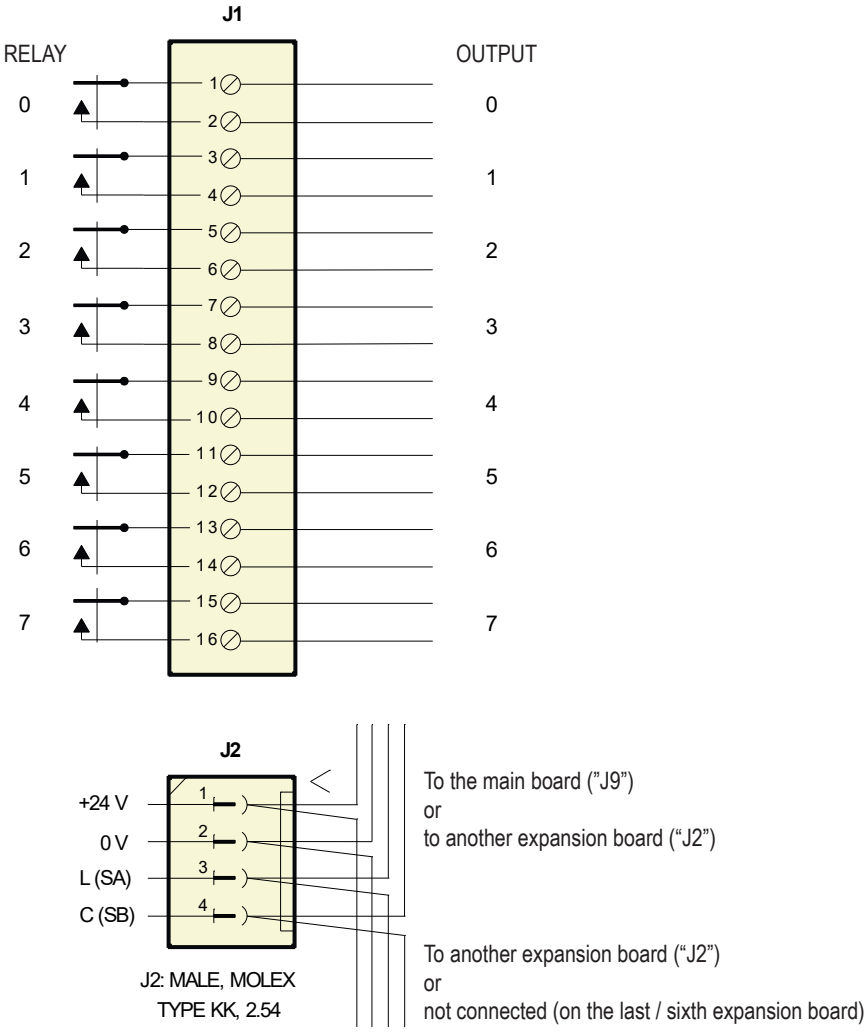
10.4.1. EBLWin PROGRAMMING OF 4581

EACH OUTPUT HAS TO BE PROGRAMMED VIA EBLWIN REGARDING:

- Type of output. Output for Control, Alarm devices, and so on.
- Activation time and type / output signal period. Steady, pulse, delay and so on.
- Logic. Normally open (NO) or normally closed (NC) contacts.
  Relay contact ratings: Max. 2A @ 30 V DC.
- Control expression (one or more trigger conditions)

For more information, see chapter 12. PROGRAMMABLE OUTPUTS on page 65.

10.4.2. CONNECTION DIAGRAM 4581, J1 & J2



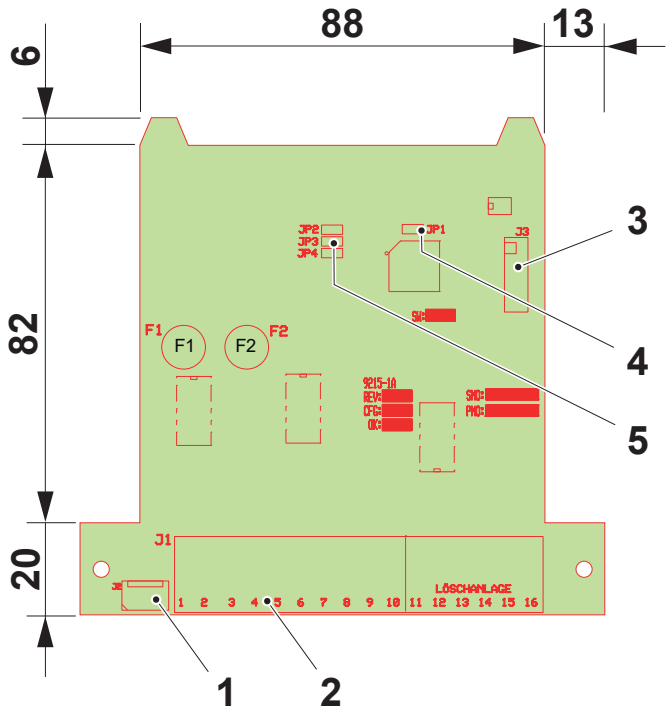
10.4.3. ELECTRICAL INTERFACE OF 4581

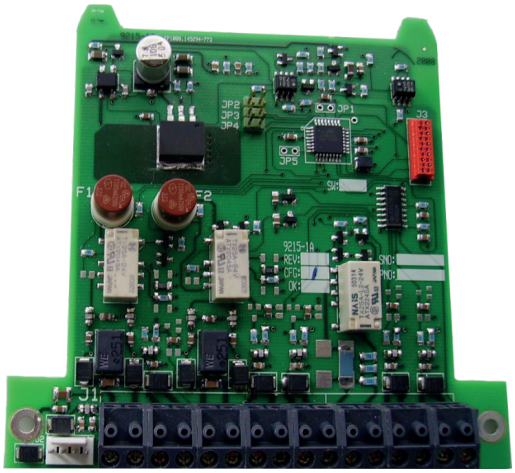
Terminal	Relay name	Voltage, V		Current, A	
J1		**Min**	**Max**	**Min**	**Max**
1, 2	Relay 0 contact	10 mV	30 V[1]	10 µA	2 A[1]
3, 4	Relay 1 contact	10 mV	30 V[1]	10 µA	2 A[1]
5, 6	Relay 2 contact	10 mV	30 V[1]	10 µA	2 A[1]
7, 8	Relay 3 contact	10 mV	30 V[1]	10 µA	2 A[1]
9, 10	Relay 4 contact	10 mV	30 V[1]	10 µA	2 A[1]
11, 12	Relay 5 contact	10 mV	30 V[1]	10 µA	2 A[1]
13, 14	Relay 6 contact	10 mV	30 V[1]	10 µA	2 A[1]
15, 16	Relay 7 contact	10 mV	30 V[1]	10 µA	2 A[1]

1) Maximum 60 W, resistance load

Conductor area max. 1.2 mm2 (Ø=1.2 mm).

10.5. INPUTS AND OUTPUTS EXPANSION BOARD 4583



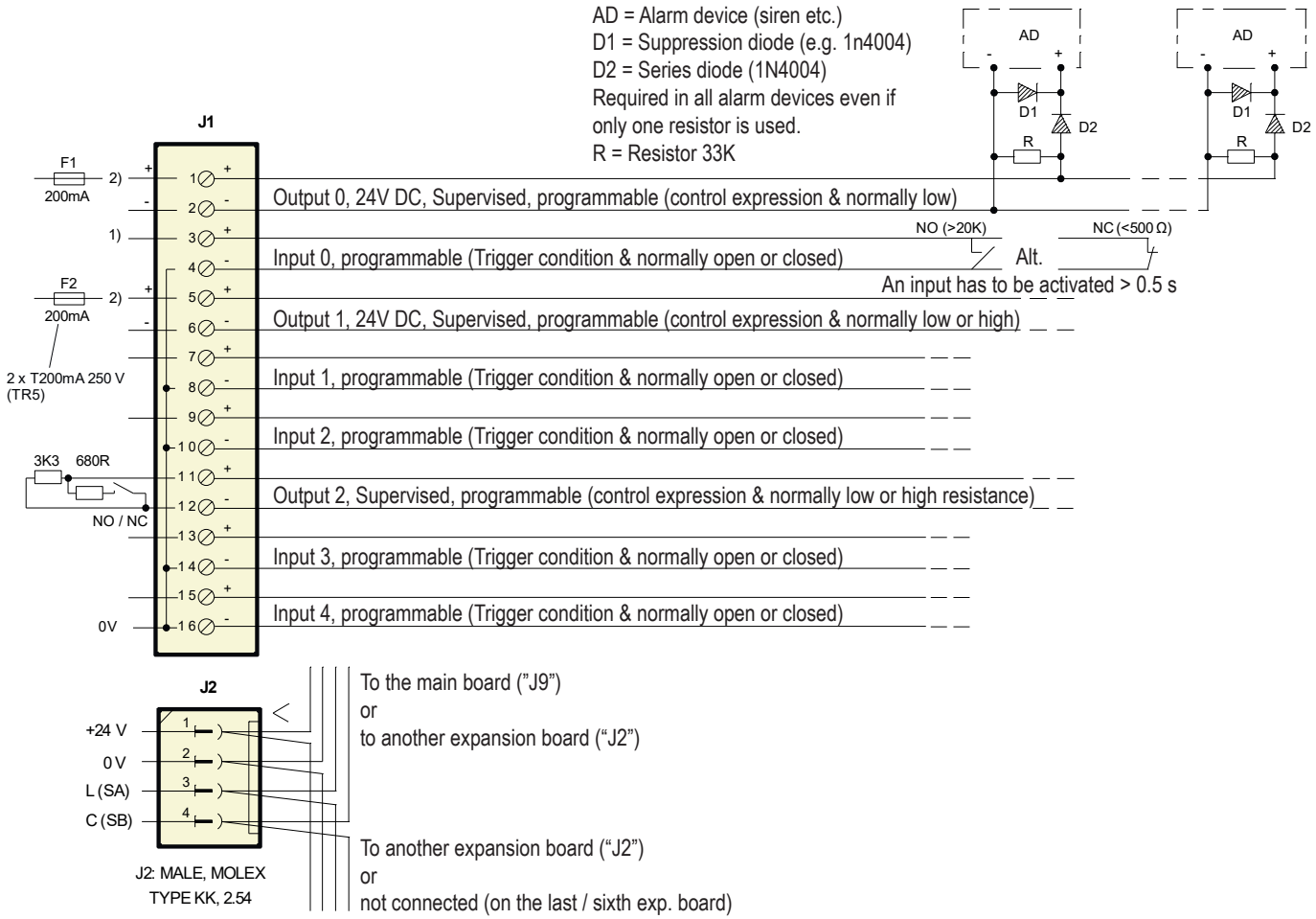


1) J2, For connection to:
   - the main board (J9) and the next exp. board 458X (J2)
   - other expansion boards 458X (J2)
2) J1, 5 inputs (0-4) and 3 outputs (0-2)
3) J3, for production only
4) JP1, Inputs and outputs exp. board restart
5) JP4 (“4”)
   JP3 (“2”)
   JP2 (“1”)
   Jumpers for board no. (address) setting (0-5)

The I/O expansion board 4583 has two programmable supervised / not supervised voltage outputs (Output 0-1), one special / programmable output (Output 2) intended for German extinguishing system, and five programmable supervised / not supervised inputs (Input 0-4).

After connection / commissioning, the supervised outputs have to be calibrated via menu H5/A1, see 13.18. CALIBRATION OF SUPERVISED OUTPUTS on page 110. Only a normally low output can be supervised, alternatively can be programmed as not supervised.

10.5.1. CONNECTION INPUTS & OUTPUTS



24V DC is the nominal voltage when the main power source (rectifier) is used. When the second power source (back-up battery) is used the voltage can be 21.0-28V DC.

Voltage depending on programming:

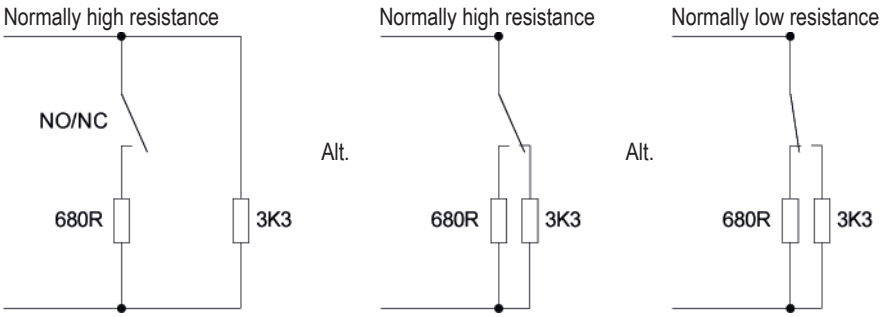
Output 0 & 1		
Programmed as:	Not activated (control expression not true)	Activated (control expression true)
Normally low	Supervision voltage 1.5-3.6 V [1]	24V
Normally high	24V	≤ 4.2V

1) Depending on the number of supervision resistors (1-5).

The supervision voltage has reverse polarity compared to 24V.

10.5.2. CONNECTION SUPERVISED INPUTS

The programmable inputs 0-4 can as alternative be programmed as Supervised:
Connection to 4583 (“J1”), supervised inputs 0-4:



4583 INPUT 0-4, supervised, programmable (trigger conditional & normally high or low resistance), see table:

4583		
Line resistance R	Normally high resistance	Normally low resistance
R > 6K8	Fault	Fault
6K8 ≥ R > 2 K (nom. 680)	Not activated	Activated
2K ≥ R > 70 (nom. 680)	Activated	Not activated
R ≤ 70	Fault	Fault

10.5.3. EBLWin PROGRAMMING OF 4583

OUTPUTS 0-1 HAVE TO BE PROGRAMMED VIA EBLWIN REGARDING:

- Type of output, i.e. output for Control, Alarm devices, etc.
- Activation time and type / output signal period (steady, pulse, delay, etc.)
- Supervised / Not supervised A normally high output cannot be supervised. The supervision voltage is 1.5 – 3.6 V DC, depending on the number of supervision resistors, and the polarity is reverse compared to an activated output.
- Logic. Normally low (default) or normally high (24 V DC).
- Control expression (one or more trigger conditions)

One to five 33 kΩ resistors can be connected. When the connections are finished, a calibration has to be done. Calibration value has to be in the range 4,7 kΩ-40 kΩ. See also the EBL512 G3 Operating Instructions chapter "Calibration of supervised outputs (menu H5/A1)".
Voltage **Output 0** (J1:1-2): Max. 200 mA (Fuse F1).
Voltage **Output 1** (J1:5-6): Max. 200 mA (Fuse F2).

OUTPUT 2 HAS TO BE PROGRAMMED VIA EBLWIN REGARDING:

- Type of output, i.e. output for Control, Alarm devices, etc.
- Activation time and type / output signal period (steady, pulse, delay, etc.)
- Logic, i.e. normally high resistance (default) or normally low.
- Control expression (one or more trigger conditions)

Output 2 (J1:11-12): Normally open or Normally closed.

INPUTS 0-4 HAVE TO BE PROGRAMMED VIA EBLWIN REGARDING:

- Trigger condition (Triggered by)
- Supervised / Not supervised
- Logic. Normally open (high resistance, 3.3 kΩ, when supervised) or Normally closed (low resistance, 680 Ω, when supervised)
- Additional information depending on the selected type

Input 0 (J1:3-4)
Input 1 (J1:7-8)
Input 2 (J1:9-10)
Input 3 (J1:13-14)
Input 4 (J1:15-16)
For more information, see chapter 11. PROGRAMMABLE INPUTS and 12. PROGRAMMABLE OUTPUTS.

10.5.4. ELECTRICAL INTERFACE OF 4583

Terminal	I/O Name	Voltage, V		Current, A	
J1		Min	Max	Min	Max
1, 2	Supervised output (active)	18	30	0	200 mA
1, 2	Supervised output (inactive)	-5	5	0	0.1 mA
3, 4	Input (short / open)	0	5	0	0.8 mA
5, 6	Supervised output (active)	18	30	0	200 mA
5, 6	Supervised output (inactive)	-5	5	0	0.1 mA
7, 8	Input (short / open)	0	5	0	0.8 mA
9, 10	Input (short / open)	0	5	0	0.8 mA
11, 12	Relay / Res. output (3.3 kΩ / 680 Ω)	0	30	0	44 mA
13, 14	Input (short / open)	0	5	0	0.8 mA
15, 16	Input (short / open)	0	5	0	0.8 mA

Conductor area max. 1.2 mm^3 (Ø=1.2 mm)

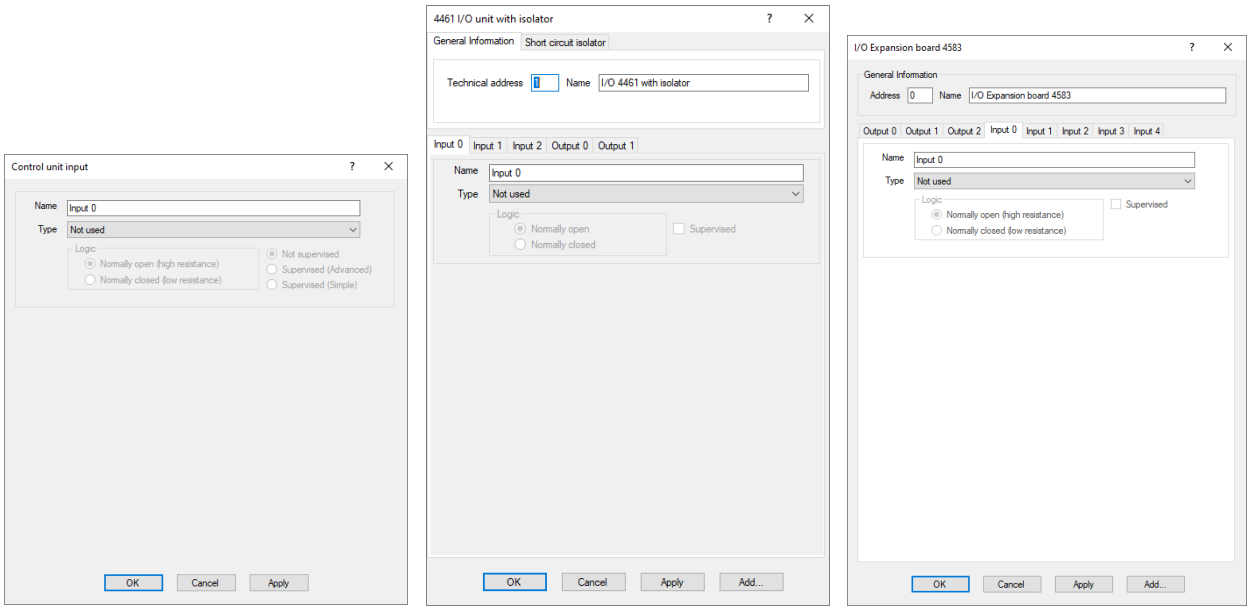
11. PROGRAMMABLE INPUTS

In each control unit are four programmable, supervised / not supervised inputs (I0-I3) available.
In EBL512 G3 can also be mounted the Inputs and Outputs expansion board 4583, with five programmable inputs (Input 0-4). See section 10.5. INPUTS AND OUTPUTS EXPANSION BOARD 4583 on page 53.
These inputs can be supervised or not supervised.
The addressable multipurpose I/O unit with isolator 4461 with three programmable inputs can be connected on the COM loops.

Each input is programmed via EBLWin, see dialog boxes below.

Input devices as key cabinet, timers, external faults, and so on are connected to a programmable input, to COM loop unit (4461) inputs and/or to the control unit inputs (I0-I3).

Technical warnings, external faults, time channels (external and internal), control groups, and zone groups must have unique names.



EBLWin "Input" dialog boxes. Different trigger conditions require different additional information. Only the enabled fields can/shall be filled in.

11.1. CONTROL UNIT INPUTS I0 - I3

Each input has to be programmed regarding:

- Trigger condition (Triggered by)
- Logic, for example normally open (NO) or normally closed (NC) contacts
- Additional information, depending on the selected trigger condition (Fault number, Zone, Address, Fault message)

NOT SUPERVISED

Normally open (R > 10k)
Normally closed (R < 10k)
Activation time: > 1 sec.

Each supervised input can be in different states. Depending on the selected logic, Normally open (high resistance) or Normally closed (low resistance), the following tables are valid:

SIMPLE SUPERVISION

Line resistance R	Normally open (high resistance)	Normally closed (low resistance)
R < 10 k	Active	-
10 k < R < 43 k	Inactive	-
R > 43 k	Fault	-

ADVANCE SUPERVISION

Line resistance R	Normally open (high resistance)	Normally closed (low resistance)
R < 70	Fault	Fault
70 < R < 2 k	Active	Inactive
2 k < R < 3 k	Fault	Fault
3 k < R < 4 k	Inactive	Active
R > 4 k	Fault	Fault

For connections, see the Technical description for the CIE.

11.2. INPUTS 0 - 4 ON EXP. BOARD 4583

For connection diagram, see Technical description for the CIE.
Activation time: > 10 sec.
Not supervised: Normally open (R > 20 kΩ) or Normally closed (R < 500 Ω)
Supervised: Each supervised input can be in different states.

Depending on the selected logic, Normally open (high resistance) or Normally closed (low resistance), the following table is valid:

Line resistance R	Normally open (high resistance)	Normally closed (low resistance)
R > 6,8 kΩ	Fault; Open circuit (cut-off)	Fault; Open circuit (cut-off)
6,8 kΩ > R > 2 kΩ (nom. 3,3 kΩ)	Not activated	Activated
2 kΩ > R > 70 (nom. 680 Ω)	Activated	Not activated
R < 70	Short-circuit	Short-circuit

Input line fault:
If open circuit (cut-off) or short-circuit is detected on a supervised input, a fault will be generated in EBL512 G3 and the following fault message will be displayed:
FAULT: Input x expansion board x, control unit xx

11.3. THE 4461 UNIT'S INPUTS Z / IN0, IN1 & IN2

For connections, see Technical description for 4461.

Input Z/ In0:
Input 0 can be used as a general input (In0) –or used as a zone line input (Z).
If used as a zone line input, use 10 uF end-of-line resistance.
Supervision requiring a 33 kΩ end-of-line resistance, and is applicable for (NO) only.

Input in1:
Input 1 is an isolated optocoupler input.

General input In2:
Supervision requiring a 33 kΩ end-of-line resistance, and is applicable for (NO) only.

When used as Fan/Damper control: One Fan/damper phase fault input can be programmed for several fans.

1) Program the input with the trigger condition: Fan/damper phase fault. Type a name for the Phase fault.

The input should be connected to the fans when programmed.

2) In the properties window for 4461, select the created Phase fault in the Fan/damper phase fault drop down menu.

11.4. THE 4462 UNIT'S INPUTS Z / IN0 & IN2

For connections, see Technical description for 4462.

The inputs Z/In0 and In2 are fixed general inputs.
Supervision requiring a 33 kΩ end-of-line resistance, and is applicable for (NO) only.

11.5. THE 4464 UNIT'S INPUT IN0

For connections, see Technical description for 4464.

The input In0 is a fixed general input.
Supervision requiring a 10 kΩ end-of-line resistance, and is applicable for (NO) only.

11.6. INPUT PROGRAMMING

Input programming is done via EBLWin. Each input has to have an individual Trigger condition ("Type") and Logic. Some inputs can be supervised or not supervised.

11.6.1. TRIGGER CONDITIONS

The following trigger conditions are available (numbering only for the comments below):

0) Activate output (specified COM loop unit output)
1) Activated fault routing equipment (one input per CU)
2) Activated Fire Ventilation (one input per CU)
3) Activated key cabinet (one input per CU)
4) Activated Routing Equipment (one input per CU)
5) Alarm Key Cabinet (one input per control unit)
6) Alert Annunciation Acknowledge
7) Alert Annunciation Reset
8) Disable all alarm devices
9) Disable all control outputs
10) Disable zone
11) Door Closing Test Input
12) Evacuate (one input per CU)
13) External Fault (max. 100 per CU)
14) External Time Channel (one input per time channel. 49 ext. time channels (e.g. 1-49) are available per system)
15) Extinguishing alarm
16) Extinguishing start, All inputs and outputs involved have to be connected to the same CIE.
17) Extinguishing stop, All inputs and outputs involved have to be connected to the same CIE.
18) Extinguishing system fault (one input per CU)
19) Extinguishing system released (one input per CU)
20) Fault Signal External Fuses (one input per control unit)
21) Fault Signal External Power Supply (one input per control unit)
22) Fault warning routing equipment fault (one input per CU)
23) General Fire (max. 100 per CU)
24) Interlocking (400 inputs per CU / 4000 per system)
25) Loss of battery charger to external power supply (one input per CU)
26) Loss of main power source to external power supply (one input per CU)
27) Not used
28) NZ Silence switch (one input per system). Only valid for New Zealand convention.
29) Pre-warning (input and corresponding fire alarm input have to be "connected" to the same CU)
30) Technical warning (max. 200 per CU / only 100 are shown in CU)
31) Zone Line Input Only valid for the Addressable multipurpose I/O unit with isolator 4461 input "In0", used as zone line input (Z).

11.6.2. COMMENTS TO THE TRIGGER CONDITIONS (ABOVE):

0) This trigger condition should be used together with a programmable COM loop unit output in order to test / activate the output via this input. The output is active as long as the input is active. This is valid even if the output is disabled.
1) "Activated Fault routing equipment" signal (feed-back) to EBL512 G3 will light up the LED "Fault tx activated" on the front. Output with trigger condition "Indication Fault tx Activated" will be activated. One input activated in any control unit, will light up the LED respectively in all control units.
2) Activated Ventilation equipment feedback to the EBL512 control unit to light up the LED "Ventilation". One input activated in a control unit, will light up the LED in that control unit.
3) Output with trigger condition "Activated Key cabinet" will be activated.
4) Activated Fire brigade tx feedback to the EBL512 G3 control unit to light up the LED "Fire brigade tx". One input activated in a control unit, will light up the LED in that control unit.
5) If the Key cabinet, where the fire brigade store the key(s) to the building, is opened when no fire alarm is activated, will activate a Key cabinet alarm. See EBL512 G3 Operating Instructions for more information.
6) Alert annunciation, see chapter 13.11. ALERT ANNUNCIATION on page 104 and EBL512 G3 Operating Instructions for more information.
7) Like 6.
8) Activated input will disable / re-enable all alarm devices. Possible to re-enable disabled alarm devices via Output types menu.
9) Activated input will disable / re-enable all control outputs. Possible to re-enable disabled control outputs via Output types-menu.
10) Activated input will disable / re-enable a whole zone. Possible to re-enable disabled zones via Zone menu.
11) When one or more "Fire door closing" outputs are used, these outputs will be activated for 20 seconds by this trigger condition.

Only valid for inputs and outputs connected to the same CIE.

12) Normally used for the New Zealand key switch "Evacuation". The function is like the soft key "Evacuate", which is available in some conventions only, on the CIE front. The input has to be activated as long as the Evacuate function shall be on.
13) Ext. fault will activate a fault in EBL512 G3. A user definable fault message ("Error text") up to 40 characters will be shown.
14) External clock, timer, key switch, etc. can disable / re-enable alarm points. The function Alert Annunciation, etc. can be turned on / off by a time channel. Control outputs can be turned on / off by a time channel.
15) Activated input will activate a fire alarm (Zone), e.g. a sprinkler zone alarm. This trigger condition is normally used for a 4461 unit monitored Input 0 used as a Zone line input (end-of-line capacitor) and as the type "Extinguishing".
16) Used to start a new "countdown", see 14 below. Push button: NO, momentary action. One or more push buttons can be used.
17) Output for Extinguishing equipment (type of output = 2) has to have a delayed activation programmed (a "countdown"). This "countdown" will be stopped when an input with trigger condition 14 is activated. To start a new "countdown", see 13 above. Push button info: NO, latching action. One or more push buttons can be used. Manual reset of push button(s).
18) Activated input will generate a fault in EBL512 G3. Output with trigger condition "Extinguishing system fault" will be activated. The following fault message will be shown:
FAULT: Extinguishing system, control unit xx
19) Activated Extinguishing equipment feedback to the EBL512 G3 control unit to light up the LED "Extinguishing".
20) Ext. fuses (for ext. power supply equipment) fault output will activate a fault in the EBL512 G3 system. The following fault message will be shown:
FAULT: External fuses, control unit xx
21) Ext. power supply equipment fault output will activate a fault in the EBL512 G3 system. The following fault message will be shown:
FAULT: External power supply, control unit xx
22) Activated input (i.e. fault on the fault routing equipment) will generate a fault in EBL512 G3:
FAULT: Fault warning routing equipment, control unit xx
23) A special detector, push button, sprinkler flow switch, etc. can activate a fire alarm in EBL512 G3. Zone no. and Address (+ user definable alarm text).
24) A feed-back from the equipment activated by the corresponding interlocking output. Activated input is shown in menu H9/C1.

See also section 13.4. INTERLOCKING FUNCTION on page 94.

25) "Loss of the battery charger to external power supply equipment" fault output will activate a fault in the EBL512 G3 system. It will have the same time delay, as set for the Loss of main power source fault for the CIE The following fault message will be shown:
FAULT: Charging external power supply, control unit xx
26) "Loss of main power source to external power supply equipment" fault output will activate a fault in the EBL512 G3 system. It will have the same time delay, as set for the Loss of main power source fault for the CIE. The following fault message will be shown:
FAULT: Mains, external power supply, control unit xx
27) Default. Indicating that an input trigger condition is not selected, i.e. the input will not "activate" anything.
28) Used for the "outside switch" (i.e. the New Zealand FB silence switch). Turned on: Alarm devices and the CIE buzzer will be disabled. The following fault message will be shown:
FAULT: FB Silence switch, control unit xx
From Turned on to Turned off: All fire alarms will be isolated, all zones in alarm will be disabled, alarm devices and the CIE buzzer will be re-enabled and the fault will be serviced.
29) Pre-warning, e.g. from a High Sensitive Smoke Detector's pre-warning output. Zone no. and Address have to be set to the same as the corresponding fire alarm (from the same detector).
30) A technical warning is neither an alarm nor a fault. It is activated as long as the input is activated, which is indicated by a symbol in the display. Identified via menu H4/U6. Output with trigger condition "Technical warning (+name)" will be activated.
31) The Addressable multipurpose I/O unit with isolator 4461 monitored Input 0 used as zone line input (Z), i.e. with end-of-line capacitor.

11.7. LOGIC

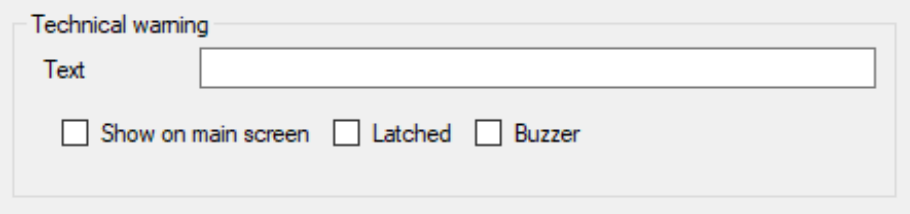
The logic must be set in the EBLWin dialog box "Input":
(•) Normally open / normally low. Normally open contact or normally low optocoupler input.
( ) Normally closed / normally high. Normally closed contact or normally high optocoupler input.

The unit / zone having activated a Co-incidence alarm will be latched in this status for at least 5 minutes and then automatically reset.
During these 5 minutes the push button "Reset", on the CIE front / display unit, can be used to manually reset the Co-incidence alarm.
If, during these 5 minutes, at least one more unit (in the zone) or at least one more zone (in the group) comes into "fire alarm state", the Co-incidence alarm ends and normal fire alarms will be activated in the CIE.

11.8. TECHNICAL WARNING

For the trigger condition Technical warning, there are additional information be set in the EBLWin dialog box "Input".

The following check boxes are available for each technical warning:
Show on main screen: checked = The activated technical warning will be shown on the main screen
Latched: checked = When an active technical warning is deactivated, it will remain in list with the status “Serviced”. A “serviced” technical warning must be reset via menu H4/U6 or the Reset button.
Buzzer: checked = activated technical warning will turn on the CIE buzzer (0.5 / 10 sec.). The buzzer can be silenced. It will be automatically turned on again, if a new technical warning is activated.



12. PROGRAMMABLE OUTPUTS

"Pre-warning", "Fire Alarm" and "Heavy Smoke Alarm" can activate programmable outputs respectively. See section 12.19.6. CONTROL EXPRESSION on page 77. See also EBL512 G3 Operating Instructions MEW02954.

In each control unit are four programmable voltage outputs (S0-S3) and two programmable relay outputs (R0-R1) available.
8 relays expansion boards (4581) and Input and Output expansion board (4583) with three programmable outputs (Output 0-2) can be mounted in each EBL512 G3.
See chapter 10. EXPANSION BOARDS on page 46.
Addressable Multipurpose I/O units with isolator (4461) with two programmable relay outputs (Re0-Re1) per unit and Addressable 2 voltage outputs unit (4464) can be connected to the COM loop.

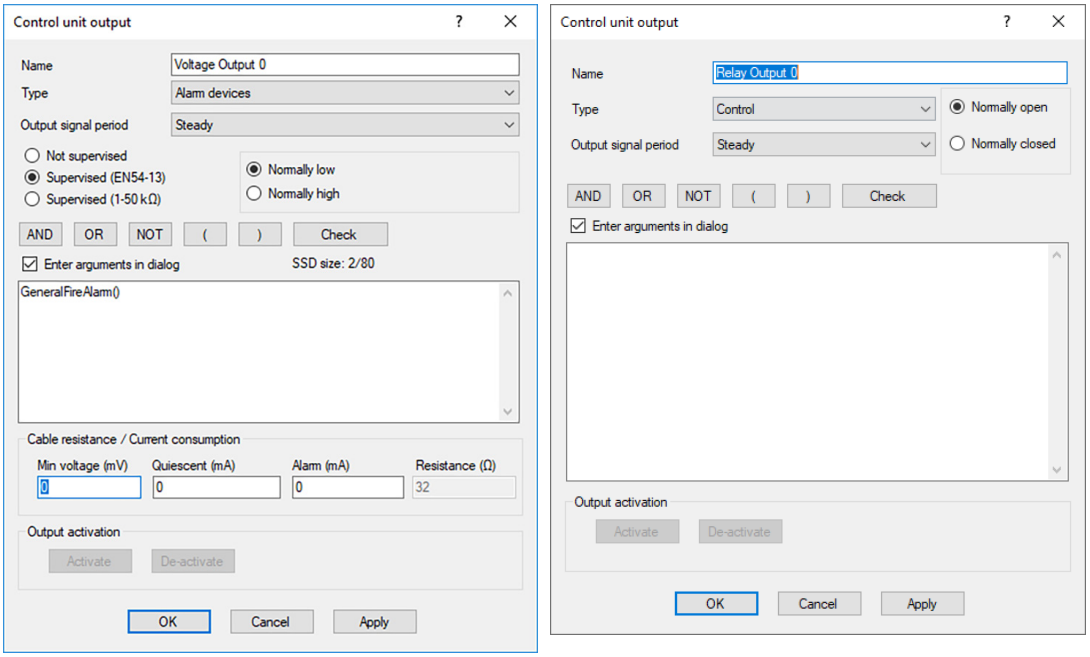
There are COM loop units that have no physical outputs, only siren, sounder and light respectively, for example Addressable siren (4477/4487), Addressable sounder base (3379/4479), Visual alarm device (4480/4481), Visual alarm device with siren (4482), External indicator (4418), and Light indicator (4383).

Routing equipment is normally connected to the control unit outputs "Fire alarm" (for Fire brigade tx) and "Fault condition" (for Fault tx). (Any programmable output can also be used).

For information on test of outputs, se section 15.3. TEST OF OUTPUTS on page 133.

Each output is programmed via EBLWin, see dialog boxes below.

< 512 programmable outputs per CIE can be used.



Example: EBLWin Control unit Voltage Output and Relay Output dialog boxes.

12.1. CONTROL UNIT OUTPUTS S0 – S3

Each control unit has four programmable voltage outputs. Each voltage output has to be programmed to be:

- Normally high or Normally low
- Supervised (EN54-13), Supervised (1-50kΩ), or Not supervised

The outputs are supervised (EN54-13) by default, but via EBLWin it is possible to set each output individually as not supervised (not monitored) or supervised with end-of-line resistor. A normally high output is not supervised.

S0 Supervised (monitored) voltage output.
Voltage: min -5 / max 24V DC, Current: min 0 / max. 500 mA (auto-resettable fuse)

S1 Supervised (monitored) voltage output:
Voltage: min -5 / max 24V DC, Current: min 0 / max. 500 mA (auto-resettable fuse)

S2 Supervised (monitored) voltage output:
Voltage: min -5 / max 24V DC, Current: min 0 / max. 500 mA (auto-resettable fuse)

S3 Supervised (monitored) voltage output:
Voltage: min -5 / max 24V DC, Current: min 0 / max. 500 mA (auto-resettable fuse)

S0-S3 Supervised (EOL) voltage output:
Requires an EOL-device 4472 at the end of the line.

S0-S3 Supervised voltage output:
Requires an end-of-line resistor (1 - 50kΩ) at the end of the line. Backwards compatible with S0-S3 on main board 5010, requires calibration, see section 13.18. CALIBRATION OF SUPERVISED OUTPUTS on page 110.

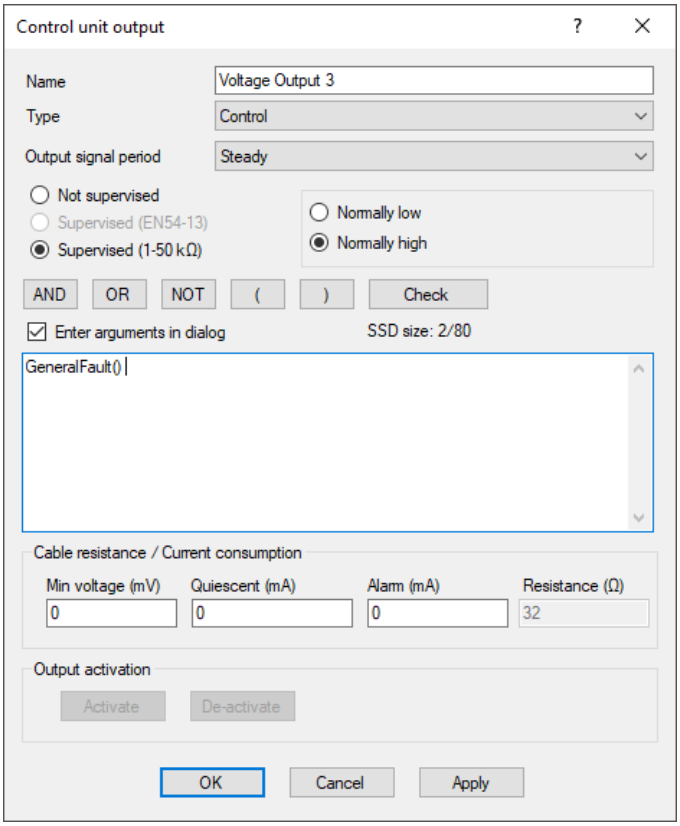
Each output has to have a control expression, i.e one or more output trigger conditions.

Output S3 will be low in case of system fault (via the watch dog reset circuit). It may be used as a supervised voltage output for fault warning routing equipment (Fault tx).

See also the Appendix in Technical Description for the CIE.

12.1.1. OUTPUT S3

It is possible to use S3 as a fault output signal according to EN54-2.
The output shall be programmed (via EBLWin) as "Supervised (1-50kΩ) ", "Normally high", and have the trigger condition "GeneralFault".
The output will always be of type "Fault tx", regardless of which type is selected in the Type drop down list.



This selection is not allowed on S0-S2.

With this programming the control unit will measure the current on the output in normal condition. Valid range for EOL resistor is 200-1000 ohm.

12.2. CONTROL UNIT OUTPUTS R0 & R1

Each control unit has two programmable relay outputs. Each relay output has to be programmed to be Normally Open (NO) or Normally Closed (NC).

R0 Relay output, NO or NC contacts programmable
R1 Relay output, NO or NC contacts programmable
Relay contact ratings: Max. 2A @ 30 V DC.
Connections and more information, see Technical description for the CIE.

Each output has to have a control expression, i.e one or more output trigger conditions.

12.3. 8 RELAYS EXPANSION BOARD 4581 OUTPUT 0 – OUTPUT 7

Each 4581 board has eight programmable relay outputs:
Output 0 Relay output, NO or NC contacts programmable
Output 1 Relay output, NO or NC contacts programmable
Output 2 Relay output, NO or NC contacts programmable
Output 3 Relay output, NO or NC contacts programmable
Output 4 Relay output, NO or NC contacts programmable
Output 5 Relay output, NO or NC contacts programmable
Output 6 Relay output, NO or NC contacts programmable
Output 7 Relay output, NO or NC contacts programmable
Relay contact ratings: Max. 2A @ 30 V DC.
Connections and more information, see section 10.4.2. CONNECTION DIAGRAM 4581, J1 & J2 on page 52.

12.4. I/O EXPANSION BOARD 4583 OUTPUT 0 & OUTPUT 1

Expansion board 4583 has two programmable, supervised voltage outputs: They are supervised by default, but via EBLWin it is possible to set each output individually as not supervised (not monitored). A normally high output is not supervised. See also section 13.18. CALIBRATION OF SUPERVISED OUTPUTS on page 110.

Output 0 Supervised (monitored) voltage output, 24V DC, max. 200 mA (Fuse F1).
Output 1 Supervised (monitored) voltage output, 24V DC, max. 200 mA (Fuse F2).
Min / max current: 0 / 2 A.
Min / max voltage: 0 / 30 V
Min / max voltage with backup batteries: 20 / 28 V DC.

Connections and more information, see section 10.5. INPUTS AND OUTPUTS EXPANSION BOARD 4583 on page 53.
See also the Technical Description for the CIE. regarding system voltage.

12.5. RE0 & RE1 OF THE 4461 UNIT

The unit has two programmable relay outputs: The relay outputs can be used for different control applications.
Relay output (Re0): NC or NO contacts
Relay output (Re1): NC or NO contacts

12.6. VO0 – VO2 OF THE 3364 UNIT

Each 3364 unit has two programmable, supervised voltage outputs. They are supervised by default, but via EBLWin it is possible to set each output individually as not supervised (not monitored). A normally high output is not supervised. See also section 13.18. CALIBRATION OF SUPERVISED OUTPUTS on page 110.

Output VO0 Supervised (monitored) voltage output, 24V DC.
Output VO1 Supervised (monitored) voltage output, 24V DC.
Output VO2 Voltage output, 24 V DC, max. 1A. Normally high. VO2 is a special output, intended for fire door closing, with release magnets, only:
For more information see the Technical Description for 3364.
24 V DC is required from an external power supply unit (3366).

The COM loop address and mode settings have to be done when the unit is powered but not connected to the COM loop.

12.7. VO0 – VO2 OF THE 4464 UNIT

Each 4464 unit has two programmable, supervised voltage outputs. They are supervised by default, but via EBLWin it is possible to set each output individually as not supervised (not monitored). A normally high output is not supervised. See also section 13.18. CALIBRATION OF SUPERVISED OUTPUTS on page 110.

Output VO0 Supervised (monitored) voltage output, 24V DC.
Output VO1 Supervised (monitored) voltage output, 24V DC.
Output VO2 Voltage output, 24 V DC, max. 1A. Normally high. VO2 is a special output, intended for fire door closing, with release magnets, only:
For more information see the Technical Description for 4464.
24 V DC is required from an external power supply unit (4466).

12.8. RE0 OF THE 4418 UNIT

When used in NORMAL mode: The LED is lit at the same time as the LED in the detector/base, that has the same address as the indicator. The LED is always flashing, when activated.

When used in Advanced mode: The LED is programmable by a control expression via EBLWin.

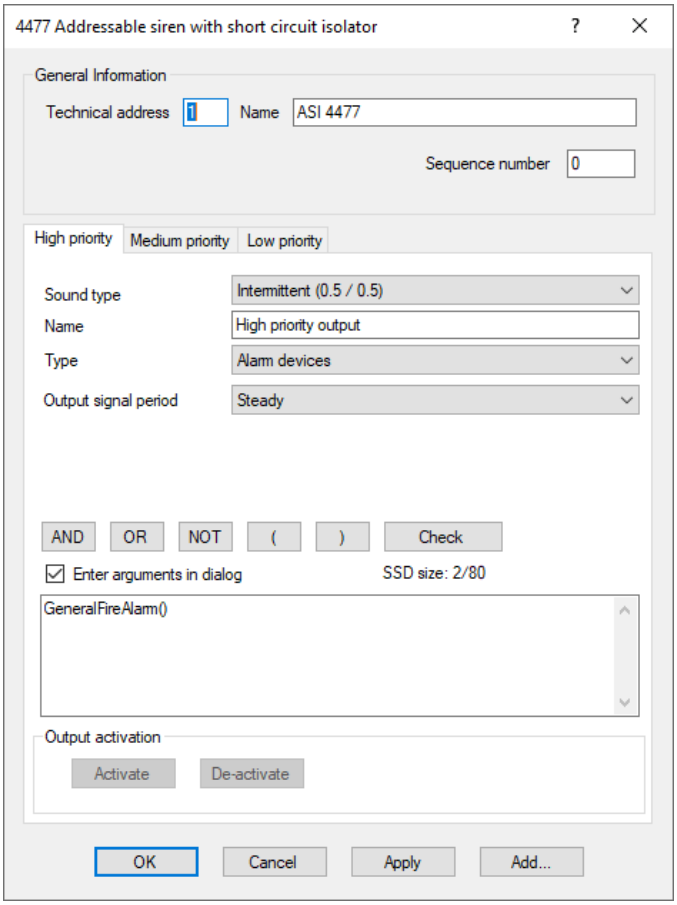
12.9. EXIT LIGHT / EMERGENCY LIGHT

One of the following types shall be selected.

- Exit light (MXE): the LED on Exit light is always lit.
- Exit light (MXER): the Exit light has one programmable output
- Emergency light (MXL): the Emergency light has one programmable output.

12.10. OUTPUT OF THE 4477 UNIT

Each Siren 4477 unit has three programmable outputs.
Three priority levels: High priority / Medium priority / Low priority.
Three types of tones: Steady, Intermittent (0.5 / 0.5 s), Alternating (0.25 / 0.25 s).



EBLWin Addressable siren 4477 dialog box.

12.11. OUTPUT OF THE 3379 UNIT

Each Sounder base 3379 unit has three programmable outputs.
Three priority levels: High priority / Medium priority / Low priority.
Three types of tones: Steady, Intermittent (slow), Intermittent (fast).
Also "High sound output" can be selected for additional 4.5 dB.

12.12. OUTPUT OF THE 4479 UNIT

Each Sounder base 4479 unit has three programmable outputs.
Three priority levels: High priority / Medium priority / Low priority.
Seven types of tones: Continuous, Intermittent, Alternating, German fire (Din 33 404), Dutch fire (NEN 2575), French fire (NFS 32-001), Australian T3.
Also " Low Power SPL" Max 1.5 mA.

12.13. OUTPUT OF THE 4383 UNIT

Each Light indicator 4383 unit has one programmable output:
Output Light indicator (Flash rate 1 Hz.)

12.14. OUTPUT OF THE 4611 UNIT

Each Wireless smoke detector with sounder, 4611, has three programmable outputs.
Three priority levels: High priority / Medium priority / Low priority.
Three types of tones: Steady, Intermittent sweep (0.5 / 0.5 s), Intermittent (0.5 / 0.5 s).

12.15. OUTPUT OF THE 4480 UNIT

Each Addressable wall VAD with isolator unit has one programmable output:
Output frequency Low (Flash rate 0,5 Hz.)
Output frequency High (Flash rate 1 Hz.)
Volume coverage Low (2,5 m)
Volume coverage High (7,5 m)

12.16. OUTPUT OF THE 4481 UNIT

Each Addressable ceiling VAD with isolator unit has one programmable output:
Output frequency Low (Flash rate 0,5 Hz.)
Output frequency High (Flash rate 1 Hz.)
Volume coverage Low (2,5 m)
Volume coverage High (7,5 m)

12.17. OUTPUT OF THE 4482 UNIT

Each Addressable VAD with siren and isolator unit has three programmable outputs for the siren.
Three priority levels: High priority / Medium priority / Low priority.
Seven types of tones: Continuous, Intermittent, Alternating, German fire (Din 33 404), Dutch fire (NEN 2575), French fire (NFS 32-001), Australian T3.
The beacon has one programmable output:
Output frequency Low (Flash rate 0,5 Hz.)
Output frequency High (Flash rate 1 Hz.)
Volume coverage Low (2,5 m)
Volume coverage High (7,5 m)

12.18. OUTPUT OF THE 4487 UNIT

Each Siren 4487 unit has three programmable outputs.
Three priority levels: High priority / Medium priority / Low priority.
Seven types of tones: Continuous, Intermittent, Alternating, German fire (Din 33 404), Dutch fire (NEN 2575), French fire (NFS 32-001), Australian T3.

Connections and more information on unit 4477, 3379, 4383, 4611, 4480, 4481, 4482, 4487, see Technical description for each product.

12.19. OUTPUT PROGRAMMING

Output programming is done in EBLWin. See the EBLWin dialog box respectively.

Each output has to be programmed regarding:

- Type of output, for example output for Control, alarm devices
- Logic, for example normally low (default) or normally high (24 V DC)

A normally high output cannot be supervised.

- Activation time and type / output signal period (steady, pulse, delay)
- Control expression or control group (one or more trigger conditions)

See also chapter 12. PROGRAMMABLE OUTPUTS on page 65.

12.19.1. OUTPUT TYPE

Some output types can be collective disabled. Some output types can when activated, be indicated by an LED. The following types are available (numbering only for the comments below):

0) Control
1) Fire Ventilation
2) Extinguishing
3) Alarm Device
4) Routing equipment (Fire brigade tx)
5) Control, neutral
6) Interlocking
7) Alarm device for evacuation

12.19.2. COMMENTS TO THE OUTPUT TYPES:

0) Default. General (normal) control output. Controlled by menu H2/B3 “Disable / Re-enable output type”.
1) Used to activate fire ventilation equipment. Controlled by menu H2/B3 “Disable / Re-enable output type”. Activated output is indicated by the LED "Ventilation". (Feedback from the fire ventilation equipment to a programmable input can instead light up the LED).
2) Used to activate extinguishing equipment. Controlled by menu H2/B3 Disable / Re-enable output type. Activated output is indicated by the LED "Extinguishing". (Feedback from the extinguishing equipment to a programmable input can instead light up the LED).
3) Used for sounders and such. Controlled by menu H2/B4 Disable / Re-enable Alarm devices and by push button "Silence alarm devices" on the control unit front. Output fault / disabled is indicated by LED Fault / Disablements "Alarm devices" blinking / continuous on.
4) Used for fire brigade tx outputs only. Activated according to its control expression (trigger cond. 43 “Indication Fire brigade tx activated” must not be used). Disabled like the standard control unit "Fire brigade tx" relay output. Activated output is indicated by the LED "Fire brigade tx". (Feedback from the Fire brigade tx to a programmable input can instead light up the LED). Output fault / disabled is indicated by LED Fault / Disablements "Fire brigade tx" blinking / continuous on.

When the Alert Annunciation function shall be used, the following trigger condition has to be added to the control expression: “&!Alert Annunciation activated”. "&!" is the same as "and not".

5) General (normal) control output. No collective disablement and no LED indication.
6) This output is controlled by menu H2/B3 Disable / Re-enable output type. It can be used together with a corresponding interlocking input. See section 13.14. QUIET ALARM on page 107. Activated output is shown in menu H9/C1.
7) Outputs which are programmed with output type ‘Alarm device for evacuation‘ are also activated, supervised and disabled in the same way as an output for alarm devices.
However, they will not be silenced by the button ‘Silence alarm devices’. (SBF110:8).

12.19.3. LOGIC

The logic is set in the EBLWin dialog box "Voltage / Relayed Output":
(•) Normally open / low: Normally open relay contact or normally low voltage output.
( ) Normally closed / high: Normally closed relay contact or normally high voltage output (24V DC).

12.19.4. SUPERVISED / NOT SUPERVISED

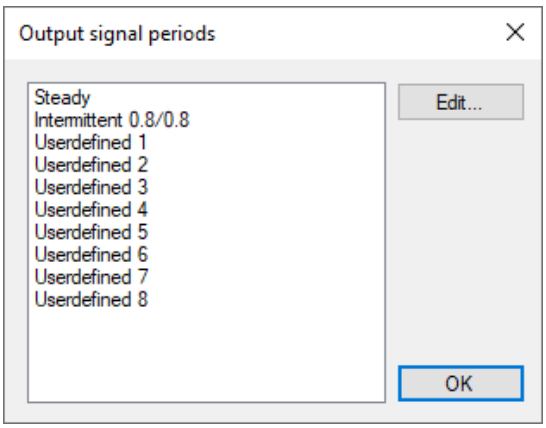
A voltage output is supervised (default). By unmarking the "Supervised" checkbox the voltage output will be not supervised.

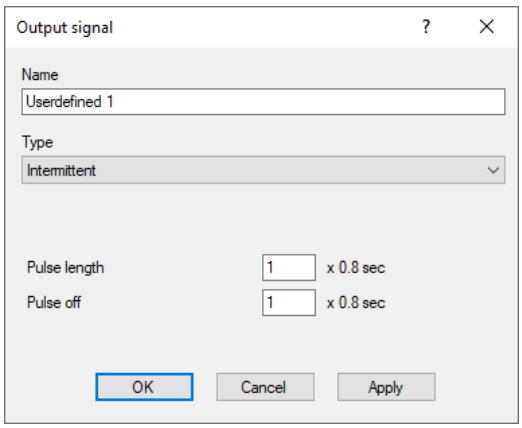
A normally high output cannot be supervised and it will be low for a few seconds during restart of the CIE.

12.19.5. OUTPUT SIGNAL PERIOD

Each output uses an "Output signal period", which controls the output's activation.
In the list (to the left), Steady (continuously) and Intermittent 0.8 s/ 0.8 s are already defined since these alternatives are often used.
It is however, possible to define them to something else.
User defined 1 to 8 have to be defined individually.

Select **System** menu / **Output signal period**. Select one of the periods. Press **Edit** to configure.

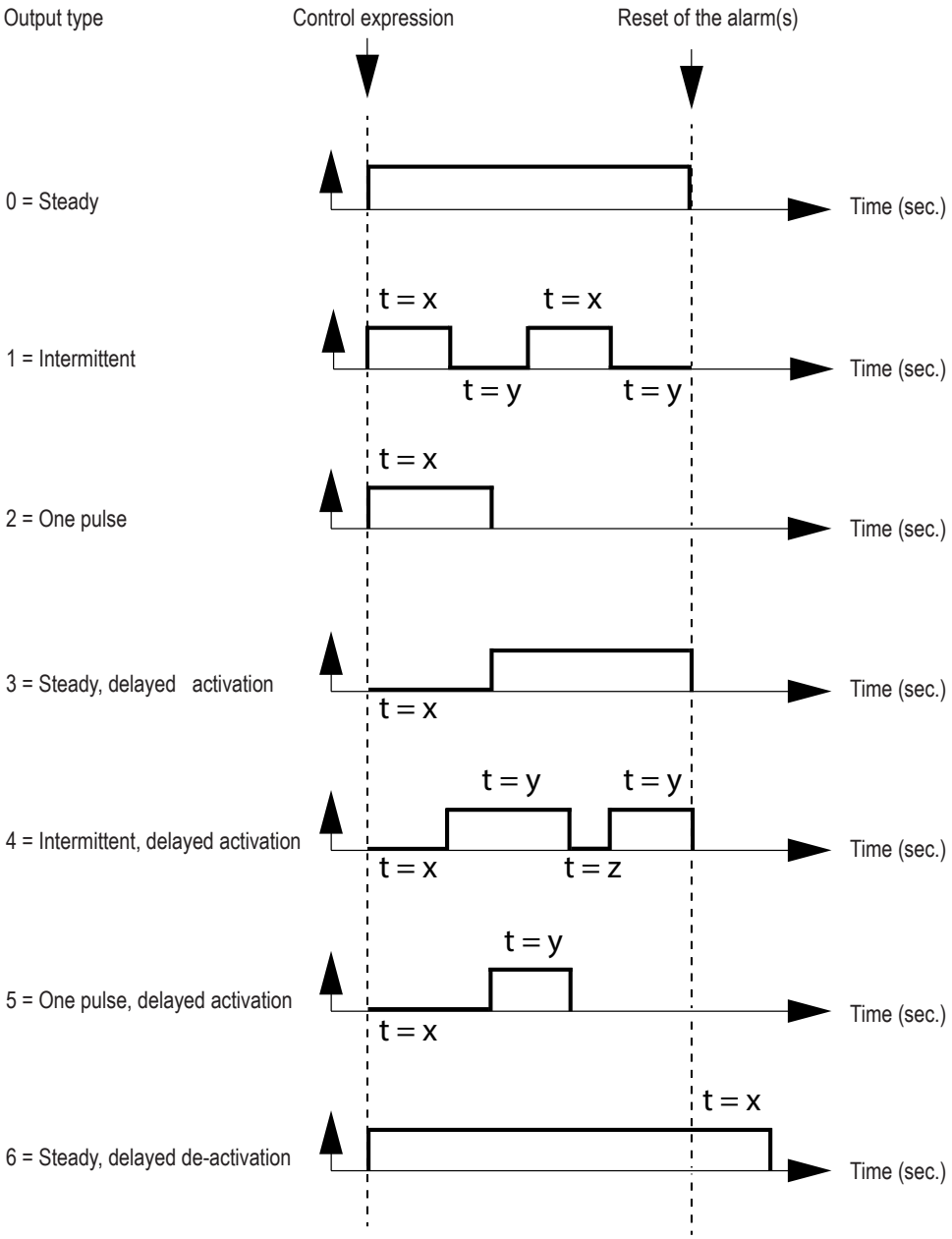




- **Name**: Normally changed to something that describes the output signal (for example “Steady”) or what it is meant for (for example "Alarm devices").
- **Types**:
  0) Steady (continuous)
  1) Intermittent
  2) Pulse
  3) Steady, Delayed Activation
  4) Intermittent, Delayed Activation
  5) Pulse, Delayed Activation
  6) Steady, Delayed De-Activation
- **Times**:
  - Delay time. Can be set to 0 - 65535 x 0.8 = 0 - 52428 sec.
  - Pulse length time. Can be set to 0 - 65535 x 0.8 = 0 - 52428 sec.
  - Pulse off time. Can be set to 0 - 65535 x 0.8 = 0 - 52428 sec.
  - De-activation time. Can be set to 0 - 65535 x 0.8 = 0 - 52428 sec.

A validate warning will be shown if a value higher than 2250 (30 minutes) is entered.

OUTPUT SIGNAL PERIODS – GRAPH OVERVIEW



t = x
t = y x 0,8 sec.
t = z
x, y, z = 0 - 65535 x 0,8 sec. = 0 - 52428 sec.

Delay time, Pulse length, Pulse off and/or De-Activation, have to be set for the type respectively.

The different types can be used together with the different outputs according to the table on the next page.

OUTPUT SIGNAL TYPES – TABLE

Type \ Output	In EBL512 G3				COM loop units					
	S0-S3	R0, R1	4581 board	4583 board	I/O unit 3361	Unit 3364	3377, 3379 4479, 4380, 4381, 4383, 4611, 4460, 4480, 4481, 4482, 4487	Interlocking	I/O unit 4461	Unit 4464
0 Steady (continuous)	X	X	X		X	X	X	X	X	X
1 Intermittent	X	X	XXX			XX				XX
2 One pulse	X	X	XXX		XXXX	XXXX			XXX	XXXXX
3 Steady (continuous), delayed activation	X	X	X	X	X	X	X	X	X	X
4 Intermittent, delayed activation	X	X	XXX			XX				XX
5 One pulse, delayed activation	X	X	XXX		XXXX	XXXX			XXX	XXXXX
6 Steady (continuous), delayed de-activation	X	X	X	X	X	X	X	X	X	X

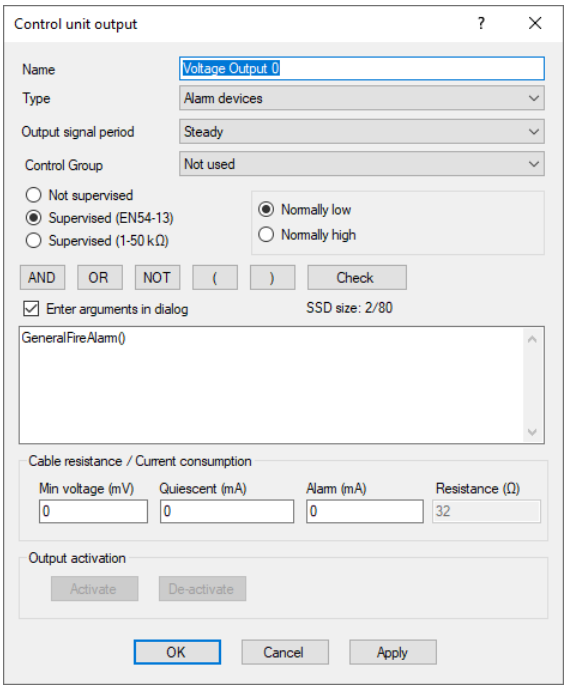
The types that can be used in the "Output signal period" for the programmable output respectively
X = Output type can be used.
XX = Output type can be used but only 0.8s/0.8s.
XXX = Output type can be used but max. 5.6s/5.6s and the pulse max. 5.6s respectively.
XXXX = Output type can be used but the pulse length will always be about 7s.
XXXXX = Output type can be used but the pulse length will always be about 1s.

12.19.6. CONTROL EXPRESSION

A programmable output with no control expression and no control group will be interpreted by the CIE as if it does not exist. If an output is to be used for manual control only, for example an output controlled by input trigger condition 'Activate output', a 'never true' control expression must be programmed. In such a case control expression TimeChannelActivated ('Always off') can be used.

A control expression can either be used to trigger an output directly or be used to trigger a control group which in turn can trigger several outputs. For more information on control groups, see 12.19.12. CONTROL GROUPS on page 88. The control expression is created by so called Boolean algebra. Approximately 4000 trigger conditions can be used in these control expressions.

Trigger conditions (see "Available functions"), logical "Operators" (AND, OR, NOT) and parentheses are used to make a "control expression" containing up to 40 trigger conditions. See also section 12.19.11. CONTROL EXPRESSION EXAMPLES on page 87.
A programmable output will be activated as long as its control expression or its control group is true.



In any output dialog box, click the right mouse button in the large white field. Select Alarm, Interlocking, Disablement or Other to open a "Trigger conditions list". Depending on the selected trigger condition, different arguments / data have to be entered.
In the figure above the trigger condition "General Fire Alarm" is selected by default.

A comment can be added to each trigger conditions. In the white field, write the comment on a separate line.
Start with *//* and then the comment. Press Enter to start a new line for the trigger condition, for example:
// Floor 0
GeneralFireAlarm(1)

All outputs that are normally used for alarm devices has "General Fire Alarm" as default control expression. This includes:

- Voltage outputs on the CU
- Output 0 and 1 on the 4464
- High priority output on 3379, 4477, 4482, 4487 and 4611
- VAD-output on 4480 and 4482
- Output on 4383
- Output on 4381

12.19.7. TRIGGER CONDITIONS

Some trigger conditions require additional information, see information within parentheses (+nnnnn) after the trigger condition respectively below.

The trigger conditions are divided into four groups as follows:

- Alarm
- Interlocking
- Disablement
- Other

The numbering of the trigger conditions is only for "the comments to the trigger conditions" below:

ALARM

1) Fire Alarm Zone (+Zone no.)
2) Fire Alarm Zone Address (+Zone no.+Address)
3) General Fire Alarm
4) Consecutive Fire Alarm (sequence) (+start Zone no. and address +stop Zone no. and address +Quantity)
5) Pre Warning Zone (+Zone no.)
6) Pre Warning Zone Address (+Zone no.+Address)
7) General Pre Warning
8) Consecutive Pre Warning (+start Zone no. and address +stop Zone no. and address +Quantity)
9) Heavy Smoke Alarm Zone (+Zone no.)
10) Heavy Smoke Alarm Zone Address (+Zone no.+Address)
11) General Heavy Smoke Alarm
12) Consecutive Heavy Smoke Alarm (sequence) (+start Zone no. and address +stop Zone no. and address +Quantity)
13) Two Address Dependent Fire Alarm (+Zone no. +Address)
14) Two Zone Dependent Fire Alarm (+Zone no.)
15) Multiple Detector Alarm
16) One Detector Alarm
17) Key Cabinet Alarm
18) LAA Zone Alarm (+LAA Zone no.)
19) Quiet Alarm Zone (+Zone no.)
20) Quiet Alarm Zone Address (+Zone no. +Address)
21) General Fire Alarm Reset
22) Delayed Alarm Zone Address (+Zone no. +Address)
23) Delayed Alarm Zone (+Zone no.)
24) General Delayed Alarm
25) First Zone In Alarm Control Unit (+Zone no. +Control Unit no.)
26) First Zone In Alarm Zone Group (+Zone no. +Zone Group name)
27) Pre Warning Zone Group (+Zone Group name +Quantity)
28) Fire Alarm Zone Group (+Zone Group name +Quantity)
29) Heavy Smoke Alarm Zone Group (+Zone Group name +Quantity)
30) Fire Alarm Smoke Zone
31) Fire Alarm Smoke Zone Address
32) General Fire Alarm Smoke
33) Consecutive Fire Alarm Smoke
34) Fire Alarm Heat Zone
35) Fire Alarm Heat Zone Address
36) General Fire Alarm Heat
37) Consecutive Fire Alarm Heat
38) Fire Alarm MCP Zone
39) Fire alarm MCP Zone Address
40) General Fire Alarm MCP

41) Consecutive Fire Alarm MCP
42) Fire Alarm Multi Zone
43) Fire Alarm Multi Zone Address
44) General Fire Alarm Multi
45) Consecutive Fire Alarm Multi
46) Fire Alarm Other Zone
47) Fire Alarm Other Zone Address
48) General Fire Alarm Other
49) Consecutive Fire Alarm Other

INTERLOCKING

50. Interlocking Input Area Activated (+Area no.)
51. Interlocking Input Area Point Activated (+Area no. +Point)
52. General Interlocking Input Activated
53. Consecutive Interlocking Input Activated (sequence) (+start Area no. and point +stop Area no. and point +Quantity)

DISABLEMENT

54. Fire Brigade Tx Disabled
55. Zone Disabled (+Zone no.)
56. Zone Address Disabled (+Zone no. +Address)
57. General Zone Address Disabled
58. All Control Disabled
59. All Alarm Devices Disabled
60. Control Disabled Control Unit (+Control unit)
61. Alarm Device Disabled Control Unit (+Control unit)
62. General Disablement

OTHER

63. Indication Fire Brigade Tx Activated
64. Indication Fault Tx Activated
65. General Fault
66. General Mains Fault
67. Reset Pulse Zone Address (+Zone no. +Address) Not valid for the 4464 outputs (VO0-VO2).
68. Time Channel Activated (+Time channel name / no.)
69. Alert Annunciation Activated
70. Alert Annunciation Acknowledged
71. Door Open
72. Fire Door Closing (+Zone no. +Address)
73. General Service Signal
74. Fire brigade Tx
75. Door Open Control Unit (+Control unit)
76. Extinguishing System Fault
77. Extinguishing System Released
78. Activated Key Cabinet
79. Fault Control Unit (+Control unit)
80. Consecutive Fault Control Unit (+start Control unit and stop Control unit)
81. Zone Fault (+Zone no.)
82. External Fault (+ext. fault)
83. Technical Warning (+techn. warning)
84. General Technical Warning

12.19.8. COMMENTS TO THE TRIGGER CONDITIONS

ALARM

1) Fire alarm. For more information regarding fire alarm, see EBL512 G3 Operating Instructions MEW03040. Output is activated when the specified Zone is in alarm.
2) See 1. Output is activated when the specified alarm point is in alarm.
3) See 1. Output is activated when any alarm point or Zone is in alarm.
4) See 1. Quantity (1-9): "1" means one unit in alarm is required, "2" means two units in alarm are required to activate the output and so on.
5) Pre-warning. Output is activated when the specified Zone is over the pre-warning level. The trigger condition is true as long as the pre-warning level is exceeded. It is also true as long as the fire alarm level is exceeded even if the option pre-warning detection is disabled (via EBLWin).
   For more information regarding pre-warning, see EBL512 G3 Operating Instructions MEW03040.
6) See 5. Output is activated when the specified alarm point is over the pre-warning level.
7) See 5. Output is activated when any alarm point or Zone is over the pre-warning level.
8) See 5. See also 4. above regarding "Quantity".
9) Heavy smoke / heat alarm. For more information regarding heavy smoke / heat alarm, see EBL512 G3 Operating Instructions MEW03040. Output is activated when the specified Zone is over the heavy smoke / heat level.
10) See 9. Output is activated when the specified alarm point is over the heavy smoke / heat level.
11) See 9. Output is activated when any alarm point is over the heavy smoke / heat level.
12) See 9. See also 4. above regarding "Quantity".
13) Output is activated when only one address (in two-address dependence) is in fire alarm state. For more information, see EBL512 G3 Operating Instructions MEW03040.
14) Output is activated when only one zone (in two-zone dependence) is in fire alarm state. For more information, see EBL512 G3 Operating Instructions MEW03040.
15) Output activated when "Multiple detector alarm" is true, i.e. fire alarm type A.
    See section 13.1.2. FIRE ALARM TYPE A on page 89.
16) Output activated when "One detector alarm" is true, i.e. fire alarm type B.
    See section 13.1.1. FIRE ALARM TYPE B on page 89.
17) General Key cabinet alarm activated. For more information, see EBL512 G3 Operating Instructions MEW03040.
18) Local Alarm Acknowledgement. "Alarm" is activated in the specified LAA zone.
19) Output activated for any "Quiet alarm" in the specified zone.
20) Output activated for one specified "Quiet alarm" in the specified zone-address.
21) This control expression is true (i.e. output activated) for 15 seconds after the last alarm is reset.
22) Output is activated during the delay of the specified Zone-Address. (Delay time set in EBLWin, System Properties.)
23) Output is activated during the delay of the specified Zone. (Delay time set in EBLWin, System Properties.)
24) Output is activated during the delay of any Zone or Zone- Address in the system. (Delay time set in EBLWin, System Properties.)
25) Output is activated only if the first alarm is an alarm in the specified Zone in the specified Control Unit.

This is not valid for manual call points.

26) Output is activated only if the first alarm is an alarm in the specified Zone in the specified Zone Group.
27) Pre-warning. For more information regarding pre-warning, see EBL512 G3 Operating Instructions MEW03040. Output is activated when any of the alarm points in the specified Zone Group is over the pre-warning level. See also 4. above regarding "Quantity".
28) Fire alarm. For more information regarding fire alarm, see EBL512 G3 Operating Instructions MEW03040. Output is activated when any of the alarm points in the specified Zone Group is in alarm. See also 4. Above regarding "Quantity".
29) Heavy smoke / heat alarm. For more information regarding heavy smoke / heat alarm, see EBL512 G3 Operating Instructions MEW03040. Output is activated when any of the alarm points in the specified Zone Group is over the heavy smoke / heat

level. See also 4. Above regarding "Quantity".

30) Fire alarm type smoke. For more information regarding alarm types, see EBL512 G3 Operating Instructions MEW03040. Output is activated when any smoke detector in the specified Zone has generated fire alarm.
31) See 30. Output is activated when the specified alarm point of type smoke has generated fire alarm.
32) See 30. Output is activated when any alarm point of type smoke has generated fire alarm.
33) See 30. See also 4. above regarding "Quantity".
34) Fire alarm type heat. For more information regarding alarm types, see EBL512 G3 Operating Instructions MEW03040. Output is activated when any heat detector in the specified Zone has generated fire alarm.
35) See 34. Output is activated when the specified alarm point of type heat has generated fire alarm.
36) See 34. Output is activated when any alarm point of type heat has generated fire alarm.
37) See 34. See also 4. above regarding "Quantity".
38) Fire alarm type MCP. Output is activated when any MCP in the specified Zone has generated fire alarm.
39) See 38. Output is activated when the specified alarm point of type MCP has generated fire alarm.
40) See 38. Output is activated when any alarm point of type MCP has generated fire alarm.
41) See 38. See also 4. above regarding "Quantity".
42) Fire Alarm type Multi. For more information regarding alarm types, see EBL512 G3 Operating Instructions MEW03040. Output is activated when any multi detector in the specified Zone has generated fire alarm.
43) See 42. Output is activated when the specified alarm point of type multi has generated fire alarm.
44) See 42. Output is activated when any alarm point of type multi has generated fire alarm.
45) See 42. See also 4. above regarding "Quantity".
46) Fire Alarm Other. For more information regarding other alarm, see EBL512 G3 Operating Instructions MEW03040. Output is activated when "Fire Alarm Other Zone Address " is true for the specified Zone.
47) Output is activated when "Fire Alarm Other Zone Address " is true, i.e. fire alarm type B.
See section 13.1.1. FIRE ALARM TYPE B on page 89.
48) General Fire Alarm Other. For more information regarding other alarm, see EBL512 G3 Operating Instructions MEW03040. Output is activated when "General Fire Alarm Other " is true.
49) Output is activated when any "Consecutive Fire Alarm Other " is true, i.e. fire alarm type B.
See section 13.1.1. FIRE ALARM TYPE B on page 89.

INTERLOCKING

50) Output activated when one or more interlocking inputs, in the specified interlocking area, are activated.
51) Output activated when the interlocking input, in the specified interlocking area/point, is activated.
52) Output activated when any interlocking input is activated.
53) Output activated when interlocking inputs, in the specified range, are activated (from interlocking area no./point to interlocking area no./point). See also 4. above regarding "Quantity".

DISABLEMENT

54) Output activated when any Routing equipment output (Fire brigade tx) is disabled. This is indicated by LED Fault / Disablements "Fire brigade tx".
55) Output activated when the specified zone is disabled. The output will not be activated when disabled by time channel.
56) Output activated when the specified alarm point (zoneaddress) is disabled. The output will not be activated when disabled by time channel.
57) Output activated when any alarm point (zone-address) or zone is disabled.
58) The control expression is true (output activated) when all control outputs of the types Control, Fire ventilation and extinguishing in all control units are disabled via menu H2/B3. This output shall be type Control – neutral.
59) The control expression is true (output activated) when all control outputs of type Alarm device in all control units are disabled via menu H2/B4. This output shall be type Control – neutral.
60) The control expression is true (output activated) when all control outputs of the types Control, Fire ventilation and Extinguishing in the specified control unit are disabled via menu H2/B3. This output shall be type Control – neutral.
61) The control expression is true (output activated) when all control outputs of type Alarm device in the specified control unit are disabled via menu H2/B4). This output shall be type Control – neutral.

62) The control expression is true (output activated) when any disablement exists in the system. This is indicated by LED Fault / Disablements "General Disablements".

OTHER

63) The control expression is true (output activated) when LED "Fire brigade tx" is lit, i.e. when any "Fire brigade tx" output is activated (default) or when a programmable input with trigger cond. "Activated Routing Equipment" is activated. This output will also be activated when the routing equipment test is performed via menu H1. This trigger condition must not be used for type of output "Routing equipment (Fire brigade tx)". Used for example when an ext. LED "Fire brigade tx" is required.
64) The control expression is true (output activated) when LED "Fault tx activated" is lit, i.e. when the routing equipment output (Fault tx) is activated. This is indicated by LED Routing equipment "Fault tx activated". This output will also be activated when the routing equipment test is performed via menu H1.
65) Output activated when one or more faults are generated in the system. This is indicated by LED Fault / Disablements "General fault".
66) Output activated for loss of mains (in a CIE or external power supply 4466 / 3366). This is indicated by a symbol in the CIE. display.

The output(s) will be activated immediately but the corresponding fault is normally delayed (set via EBLWin).

67) The control expression is true (output activated) for 5 seconds, whenever a reset pulse is sent to the specified Zone-Address. The control expression can only be used in the same CIE as the specified Zone-Address.
68) Output activated when the specified time channel is activated.
69) Output activated when Alert annunciation alarm is activated (by any alarm point set to activate this function). Valid until the AA alarm is reset or becomes a normal fire alarm. For more information, see EBL512 G3 Operating Instructions MEW03040.
70) Output activated when Alert annunciation alarm is activated (by any alarm point set to activate this function). Valid until the AA alarm is reset or becomes a normal fire alarm. and acknowledged. For more information, see EBL512 G3 Operating Instructions MEW03040.
71) Output activated for Door open in any control unit in the system. This is indicated by a symbol in the CIE display.
72) This trigger condition plus the OR operator shall be used for each detector (Zone-Address) controlling a fire door (normally > two detectors). Type of output is normally "Control, neutral".
73) Output activated when Service signal is activated (by any sensor). Indicated by a symbol in the CIE display.
74) The control expression is true (output activated) when the control unit standard output "Fire brigade tx" is activated. Used for example when a standard "Fire brigade tx" voltage output is required. Used with output type Routing equipment (Fire brigade tx).

If the control unit has "selective fire alarm presentation", the standard output(s) will also be selectively activated.

75) Output activated for Door open in the specified control unit.
76) Output activated when input trigger condition "Extinguishing system fault" is true.
77) Output activated when input trigger condition "Extinguishing system released" is true.
78) Output activated when input trigger condition "Activated key cabinet" is true.
79) Output activated when one or more faults are generated in the specified control unit.
80) Output activated when one or more faults, in the specified range (from control unit to control unit), are generated.
81) Output activated when one or more faults are generated in the specified Zone.
82) Output activated when the specified external fault is generated.
83) Output activated when the specified technical warning is generated.
84) Output activated when one or more technical warnings are generated. Indicated by a symbol in the CIE display.

12.19.9. LOGICAL OPERATORS

The logical operators available in EBLWin are in priority order:
( ) parentheses, changes priority order
NOT not-function (inverts), is written NOT in EBLWin
AND and-function, is written AND in EBLWin
OR or-function, is written OR in EBLWin

12.19.10. CONTROL EXPRESSION THEORY

In order to understand the possibilities to create control expressions, here follow some AND, OR, NOT and ( ) examples and also some control expression examples.

AND
a AND b AND c=y
y is true (=1) when all the conditions a, b, c are true, i.e. a=1 and b=1 and c=1 makes y=1. All other combinations makes y=0.
This is also shown in the following table:

a	b	c	y
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

OR

a OR b OR c=y
y is true if at least one of the conditions a, b, c is true, i.e. a=1 or b=1 or c=1 makes y=1.
This is also shown in the following table:

a	b	c	y
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

NOT

Inverts a condition, e.g. NOT b = NOT 0=1.
a OR NOT b AND c = y
This is shown in the following table:

a	b	c	y
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

PARENTHESES

Changes priority order.
a OR NOT(b AND c) = y (This is same as the previous but completed with parentheses.)
This is shown in the following table:

a	b	c	y
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

12.19.11. CONTROL EXPRESSION EXAMPLES

The AND operator has priority, i.e. a AND b OR c = (a AND b) OR c.
This is perhaps more obvious if you write it: a • b + c.
This means that: a AND b OR c ≠ a AND (b OR c).
Here follows some examples (and explanations) to show the principles how to build a control expression with "conditions" and logical operators.

Example 1 Output: Voltage output **S0**
Control expression: Pre Alarm Zone (90)
Explanation: Pre-warning activated in zone no. 90 will activate the output S0.

Example 2 Output: Relay output **R1**
Control expression: General Control Off ( ) AND NOT Door Open (01)
Explanation: Controls OFF (via menu H2/B4) will activate the output R1 when the door in control unit 01 is not open (i.e. closed).

Example 3 Output: Relay output **R0**
Control expression: Fire Alarm Zone (145) AND Fire Alarm Zone (045) AND General Fault ( )
Explanation: Fire alarm activated in zone 145 and zone 45 will activate the output R0 when there are one or more faults in the system at the same time.

Example 4 Output: Voltage output **S1**
Control expression: Consecutive Fire Alarm (100,10,100,19,1)
OR
Consecutive Fire Alarm (100,21,100,40,1)

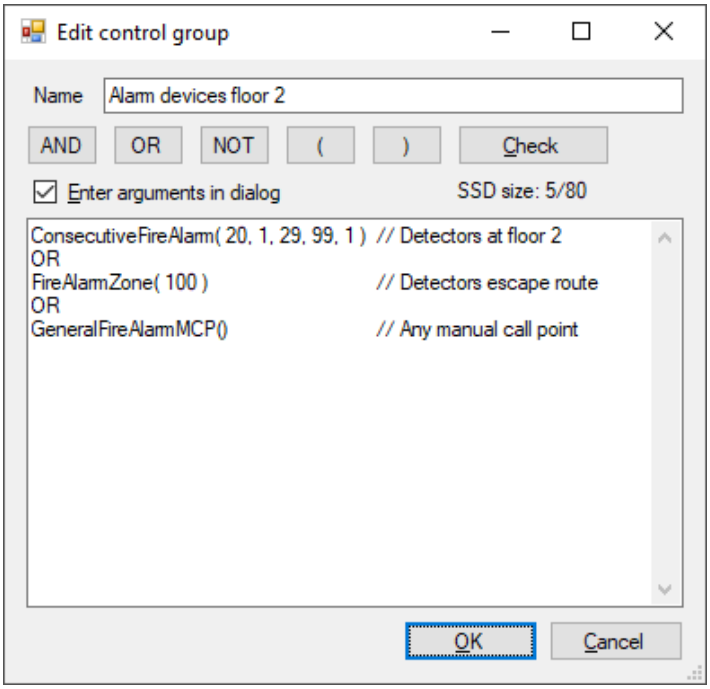
Explanation: Fire alarm activated by one of the alarm points in zone 100 address 10-19 or activated by one of the alarm points in zone 100 address 21-40 will activate the output S1 (i.e. alarm point address 20 in zone 100 will not activate the output S1).

12.19.12. CONTROL GROUPS

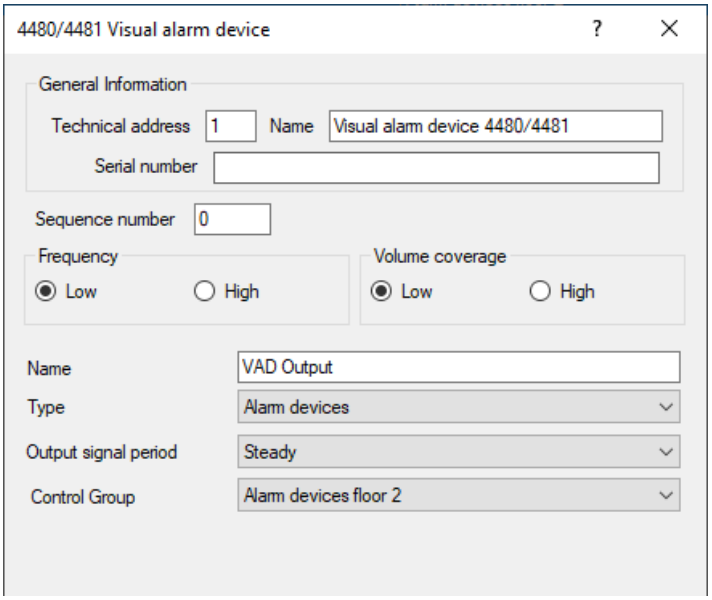
An output can be triggered either by its own unique control expression as shown in 12.19.6. CONTROL EXPRESSION on page 77 or by a control group.

The advantage of using control groups is that if there are several outputs that should be triggered by the same control expression, the control expression has only to be written once. It is also easy to change. Furthermore the control group is global and can be used on any output in the system.

The control group is given a name and a control expression:



After the control group is programmed it can be used on outputs:



Optionally, a control group can be manually activated/de-activated from a display unit 5054. It is also possible to set acknowledgment and investigation times. For more information see Technical description for 5054.

13. FUNCTIONS

13.1. FIRE ALARM

Normally the CIE relay output "Fire alarm" is used for Fire alarm routing equipment (Fire brigade tx). This output is activated for fire alarm from any alarm point or zone line input (General fire alarm).

If the fire alarm routing equipment supports transmission of several fire alarm signals and the alarm receiver supports reception of several fire alarm signals, it is possible to make distinction between type A and type B fire alarm.
The alarm receiver can take different actions depending on if it is a type A or B fire alarm.

A multi detector can have one presentation number (Zone- Address) or two presentation numbers depending on how it is programmed via EBLWin. One presentation number = one detector and two presentation numbers = two detectors regarding fire alarm types A and B.

13.1.1. FIRE ALARM TYPE B

A fire alarm type B will indicate that only one detector is activated, which could be a nuisance alarm.

The output shall be programmed (via EBLWin) as type "Routing equipment" and have the trigger condition "One detector alarm". The output will be activated for fire alarm from one analog addressable smoke, heat or multi detector only, or for fire alarm from a zone line input programmed as type Smoke (B), Heat (B) or Other (B).

13.1.2. FIRE ALARM TYPE A

If a fire alarm type A, multiple detector alarm, is received, the probability that it is a real fire is high.

The output shall be programmed (via EBLWin) as type "Routing equipment" and have the trigger condition "Multiple detector alarm". The output will be activated for fire alarm from:

- Two or more analog addressable smoke, heat or multi detectors.
- Any manual call point
- Any zone line input programmed as type MCP (A) or Other (A).
- Any programmable input with the trigger condition "General Fire"

13.2. ALARM TEXTS

The alarm texts are shown in case of fire alarm. When a fire alarm is activated, the alarm text will be shown in the CIE display and in the external display units. Presentation number (Zone - Address), will also be shown. See also chapter 26. SYSTEM LIMITATIONS.

When a printer is available, the alarm text will be printed, together with the presentation number.

When there is a fault message for an alarm point, zone or zone line input, the alarm text will also be shown.

All alarm texts, up to 40 alphanumeric characters, are created and downloaded with the SSD, via EBLWin.
Each addressable alarm point can have the same alarm text displayed in all the Display units 5054 or a different alarm text in each Display unit.

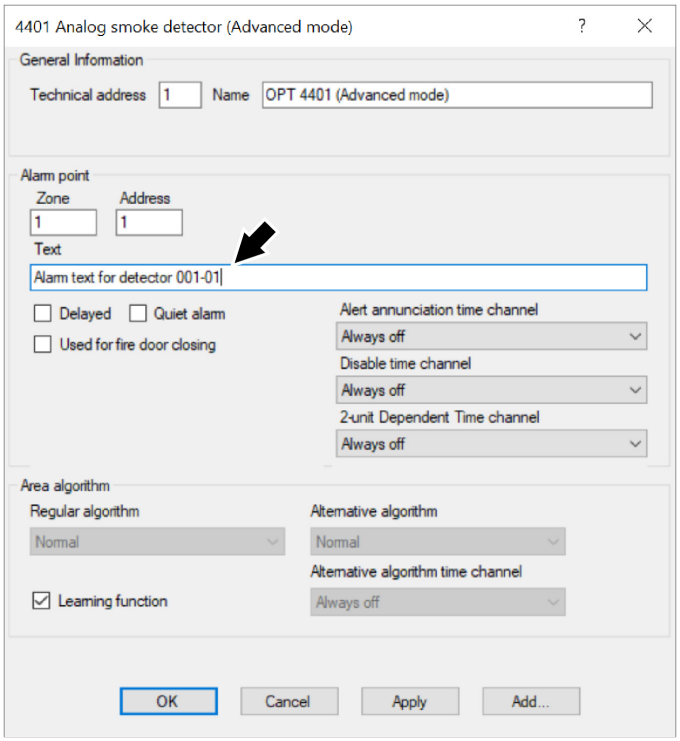
See also EBL512 G3 Operating Instructions MEW02954, chapter "Fire alarm".

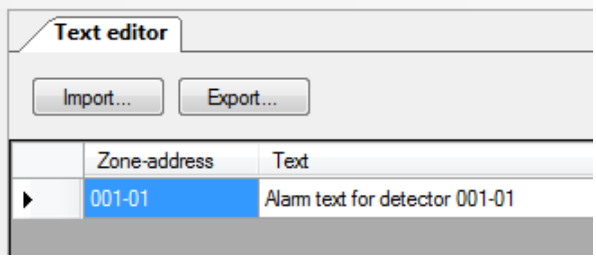
13.2.1. CREATING THE ALARM TEXTS VIA EBLWin

In the EBLWin dialog box for any alarm point, there is a "Text" field where the alarm text for that alarm point can be typed (or edited). The alarm text will be shown in the CIE display when this alarm point has activated fire alarm and also together with the fault message when this alarm point has generated a fault.

TEXT EDITOR

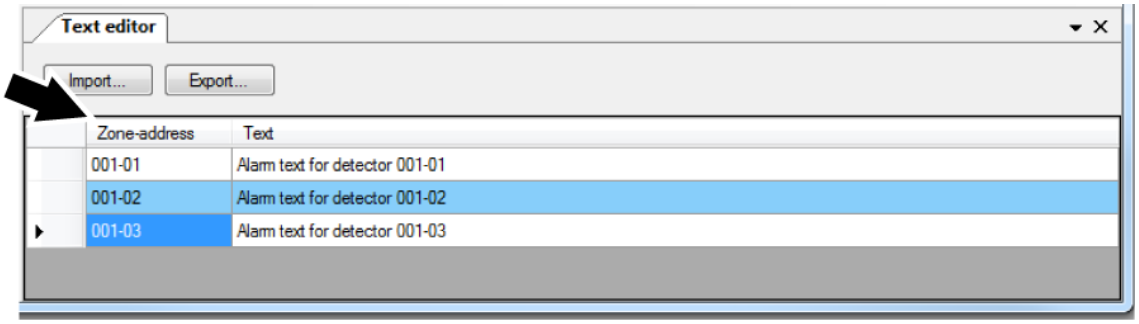
The alarm text can, as an alternative, be typed (or edited) in the EBLWin "Text editor" (**System** menu / **Edit Alarm Texts…**). No matter where the text is typed, it will be shown on both places.





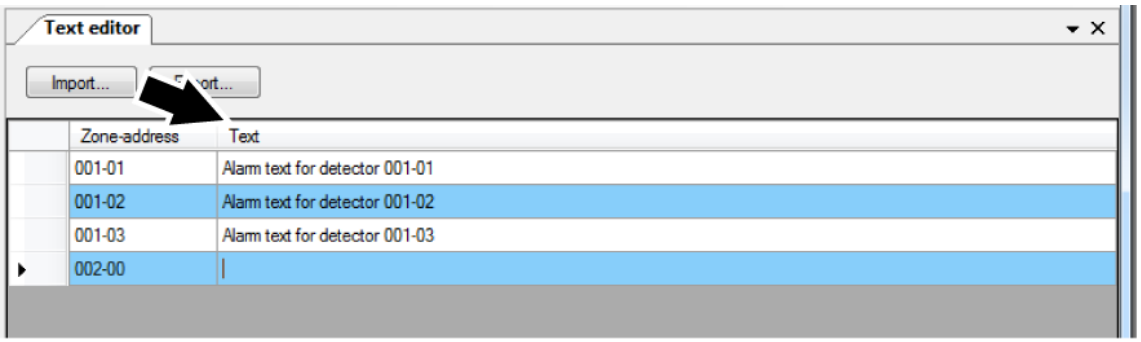
ZONE-ADDRESS COLUMN

This column shows zone-address for the already programmed alarm points (for example 001-01, 001-02, 001-03 and so on). Also I/O unit 4461 zone line inputs programmed with address "00" (i.e. ZZZ – 00) and 8 zones expansion board 4580 zone line inputs.



TEXT COLUMN

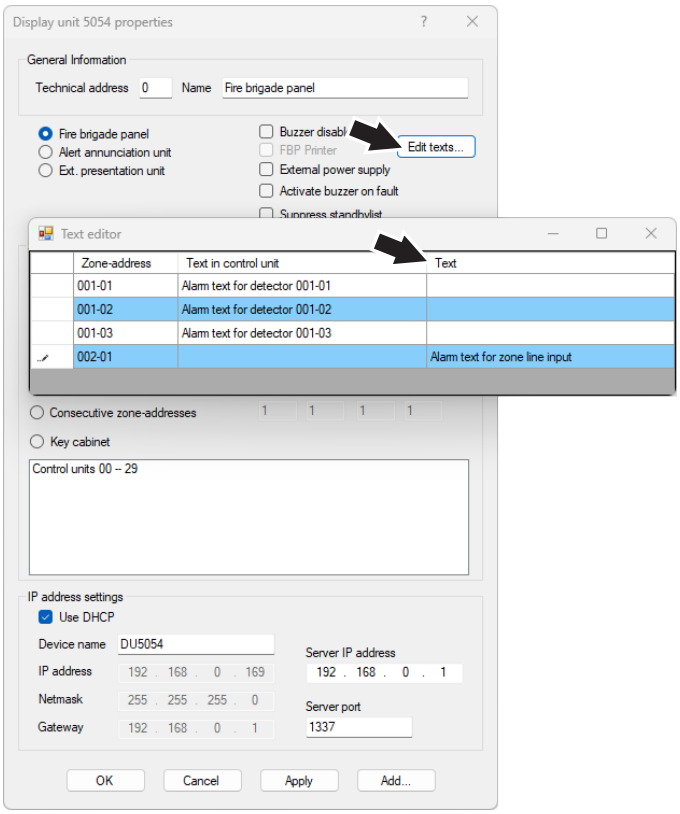
This column shows already programmed alarm texts. Texts can also be typed / edited.



DISPLAY UNIT TEXT COLUMN

If any alarm point shall have a different alarm text in one or more of the Display units 5054, the text must be typed in the EBLWin "Text editor", for each display unit respectively.

a) Go to Properties dialog box for the display unit.
b) Press **Edit texts**.



If text is added in the right column “Text”, this text will now be shown instead of the text in the "Text in control unit" column, for the alarm point / zone respectively.

The middle column “Text in control unit” shows the already programmed alarm texts for each alarm point / zone. This is only information and cannot be edited here.
These texts will be displayed in the CIE and all Display units 5054 **if there are no other texts programmed** in the right text column.

Regarding text priority order and so on, see Technical description (chapter "User definable text messages") for display unit 5054.

13.2.2. DOWNLOADING ALARM TEXTS TO THE DISPLAY UNITS

The texts will be downloaded when the site specific data (SSD) is downloaded via EBLWin.
See Technical description for display unit 5054.

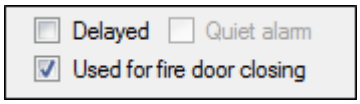
13.3. FIRE DOOR CLOSING

Programmable outputs can be used for fire door closing. A special trigger condition is available (Fire Door Closing). Type of output is normally "Control, neutral". One or more alarm points can control the output, i.e. the detectors on both sides of the fire door.

The alarm points and their "belonging" output have to be in / connected to the same CIE.

In case of one of the following "events", the output will be activated, i.e. the fire door will close:

- Fire alarm (any of the detectors controlling the fire door)
- Quiet alarm (the detectors controlling the fire door are 4401; set to Advanced mode, and checkbox "Used for fire door closing" is checked in EBLWin.) If the 4401 is disabled, and the checkbox "Used for fire door closing" is checked, the detector generates a quiet alarm when it goes into alarm condition. This quiet alarm will activate the door closing function. When either “Quiet alarm” or “Used for fire door closing” are checked they disables each other mutually.



- Fire alarm in "Test mode" (fire doors will close immediately when test mode is activated)
- Fault, which means "no answer" from any of the detectors controlling the fire door, For example if the detector is faulty or if there are two breaks or short-circuit on the COM loop.
- Disablement (any of the detectors controlling the fire door, the zone(s) involved or the COM loop involved)

If an I/O unit 4461 output is used, it is recommended, for safety reasons, to not connect it to the same COM loop as the detectors controlling the fire door.

- A definite time every day, if programmed via EBLWin. The output will be activated for 20 seconds.
- Via a programmable input (trigger condition "Door Closing Test Input"). The output will be activated for 20 seconds. The input has to be in / connected to the same CIE as the alarm points and their "belonging" output.

Zone line inputs (via 4580/4461) cannot be used for this type of Fire Door Closing.

If a magnet contact is available, is it possible to get a "closed fire door verification" via the Interlocking function.
See also section 13.4. INTERLOCKING FUNCTION on page 94.

DOOR RELEASE MAGNETS

In the Panasonic product range, there are no door release magnets. Door release magnets shall always be provided with a "suppression diode" (for example 1N4004) in parallel with the coil, like in the alarm devices.

4461

The I/O unit 4461 can be used for fire door closing, but in case of a power outage the 4461 will not activate the door closing function.

13.4. INTERLOCKING FUNCTION

The interlocking function is used to verify that an output really is activated, i.e. by "combining" an output with an input (feed-back from the equipment controlled by the corresponding interlocking output).

Any type of output can be used in an interlocking combination. However, outputs of type interlocking **must be** used in an interlocking combination.

In EBLWin, normally a physical output is used in an interlocking combination, but other outputs can be used as well. A 'Physical output' means outputs on the control unit, expansions boards, loop units 4464, 4461, and so on, but not the 'internal outputs' on for instance a siren.

13.4.1. PROGRAMMING OF INTERLOCKING FUNCTION

EBLWin is used for the programming. Up to 400 Interlocking Combinations per CIE can be used and up to 4000 in a system.

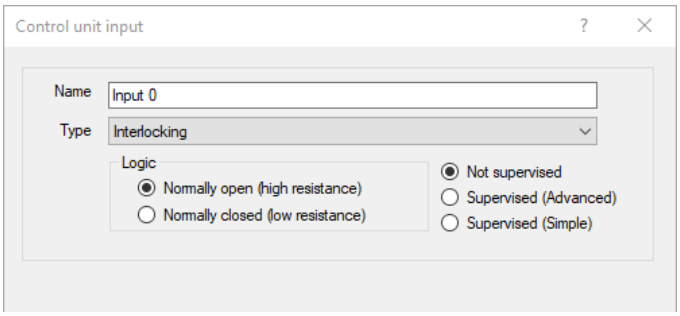
One Interlocking Combination (the input, the output and the area) has to be in / connected to one CIE. An input and an output can only be used in one combination.

INTERLOCKING OUTPUT

The "Voltage Output" / "Relay Output" dialog boxes are used.
Name: The interlocking combination's presentation number (Area- Point) could be added.
Type: "Interlocking" shall be selected, but an output of other type can be used.
Output signal period: Type Steady (continuous) or Type Steady, delayed activation can be selected (checked by the "Validate" function in EBLWin). A Control Expression shall be programmed for the output, i.e. for the equipment to be controlled. Activated output will be indicated in menu H9/C1.

INTERLOCKING INPUT

The "Input" dialog box is used.
Name: The interlocking combination's presentation number (Area- Point) could be added.
Type: "Interlocking" shall be selected.
Activated input will be indicated in menu H9/C1.



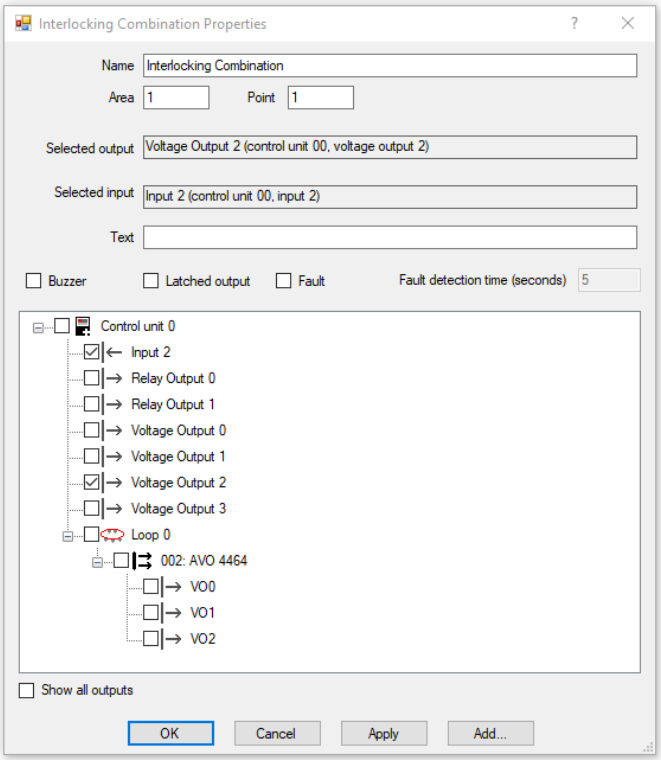
INTERLOCKING COMBINATION

One interlocking output and one interlocking input are programmed in an interlocking combination to get the interlocking functions. Select one input and one output in the tree view in the interlocking combination dialog window.

The interlocking outputs and inputs have to be programmed before the programming of an interlocking combination is possible to do.

An interlocking combination can have only an output or only an input programmed, for example when a user definable text message is wanted to indicate an activated output or input.
In the "Interlocking Combination" dialog box, all the outputs and previously programmed inputs are listed in the tree view.

a) Select one output and one input.
b) Click OK to create the interlocking combination.



Name: Displayed in the EBLWin Tree and List views. Default is "Interlocking Combination" that can be edited when wanted / required. "Area-Point" will be added in the tree view. "Area-Point" will be shown under "Zone-Address" in the list view.
The Available interlocking outputs list displays all the previous programmed outputs,

Area and **Point**: Each "Interlocking Combination" is presented as Area-Point (compare with Zone-Address). Area numbers 1-999 are possible and within each Area, Point numbers 1-99 are possible to use.

Selected output: Shows also where the selected output is situated, for example Control unit 0.

Selected input: Shows also where the selected input is situated, for example Control unit 0.

Text = User definable text message to be shown in the menu H9/C1.

Buzzer checked = activated interlocking input will turn on the CIE buzzer (0.8 / 0.8 sec.). The buzzer can be silenced. It will be automatically turned on again, if a new interlocking input is activated.

Latched output checked = Output reset has to be performed via menu H9/C3. (Automatically output reset will not take place when the control expression becomes false.).

Fault checked = Fault detection ON.
Fault Detection Time: If the input is not activated within 5-255 seconds after the output is activated after the end of the any delay time, a fault will be generated:

- **FAULT**: Interlocking input AAA/PP

Show all outputs checked = allows the user to select any output in the system. The checkbox is static, i.e. it remembers its value when the dialog is closed and opened for another interlocking combination.

INTERLOCKING INDICATIONS IN THE CIE

One or more activated Interlocking Combinations are listed in the CIE display. This indication has the lowest priority and will only be shown if the display was empty.

Disabled interlocking output is indicated by the LED "Disablements".

More information is found in following sections and in the EBL512 G3 Operating Instructions MEW02954.

INTERLOCKING OUTPUTS AND INPUTS (H9)

Menu H9 has the following sub menus:

- Activated interlocking outputs / inputs (H9/C1)
- Activate / deactivate interlocking output (H9/C2)
- Disable / re-enable interlocking output (H9/C3)

An output used for interlocking can also be activated using the output activate function in menu H8/S8.
An output used for interlocking can also be disabled using the output disable function in menu H2/B2.

If the output is of type 'Alarm device' or 'Alarm device for evacuation' it cannot be individually disabled.

INTERLOCKING CONTROL EXPRESSIONS

A programmable output control expression can contain "interlocking" trigger conditions ("Functions") numbers 30-33. This means one or more outputs can be activated when one or more interlocking inputs are activated. See section 12.19.6. CONTROL EXPRESSION on page 77.

13.5. 2-ZONE / 2-ADDRESS DEPENDENCE

(COINCIDENCE ALARM)

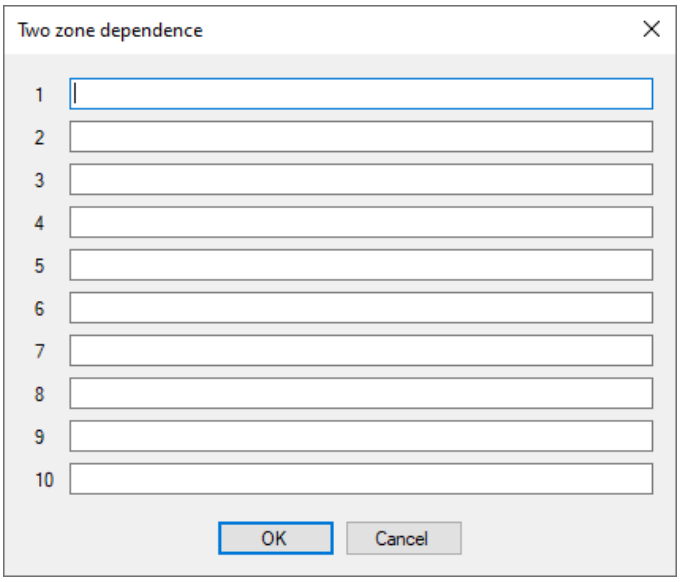
In some premises 2-zone or 2-address dependent fire alarm ("Two unit dependent" in EBLWin) can be used to avoid unwanted / false alarms (nuisance alarms). A time channel can turn on/off this function.

13.5.1. TWO ZONE DEPENDENCE

Each zone in the system can be programmed to be "Two zone dependent" for fire alarm activation. The zone has to belong to one of ten "Two zone dependent" groups (1-10).

Normally, only conventional zones (zone line inputs with conventional detectors) should be used for two-zone dependence. For analog / addressable detectors the two-address (unit) dependence should be used.

Select **System** menu / **Two zone dependence** and this dialog box will open:



Ten (1-10) groups are available.
For each group, write the zone numbers for the two-zone dependent zones in the white field/line.
Use comma as punctuation mark between the zone numbers or a sequence for example zone 3-10.

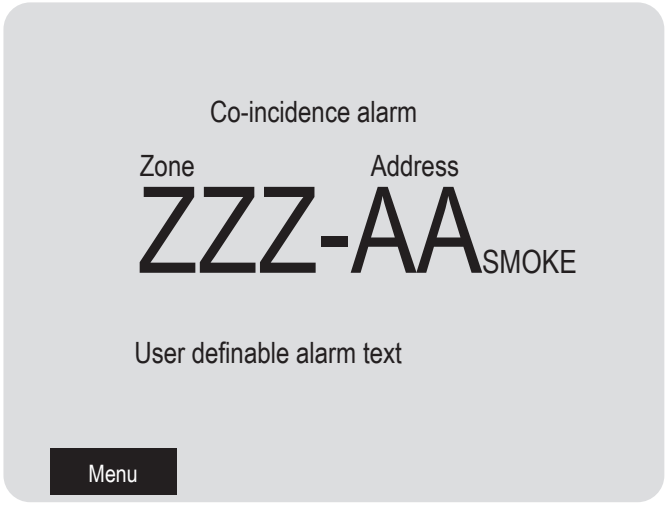
Check so that two or more zones are programmed in each group. A single zone in a group will never be able to activate any fire alarm!

TWO ZONE DEPENDENCE - FUNCTION:

Two or more zones in the same group must be in fire alarm state at the same time to activate fire alarm in the control unit. Fire alarm state is when a fire alarm normally would have been activated in the CIE.

When only one of the zones is in fire alarm state it is indicated in the CIE as follows:

- The buzzer sounds like for pre-warning (0.8 / 5 sec.).
- In the CIE LCD the following information is shown:



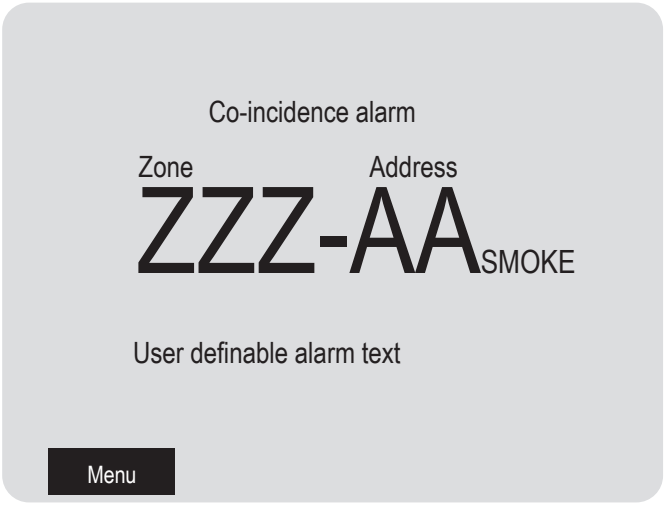
Programmable outputs can be activated by trigger condition "Two Zone Dependent Fire Alarm" but no other outputs will be activated.

13.5.2. 2-ADDRESS (-UNIT) DEPENDENCE

Each analog detector, addressable multipurpose I/O unit (4461) monitored Input 0 (Z) and 8 zones expansion board (4580) input, can be programmed for 2-unit dependent fire alarm activation. (Heat detectors should not and manual call points must not be 2-unit dependent).

Function:
Two or more units in the same zone have to be in "fire alarm state" at the same time to activate a fire alarm in the control unit. When only one unit is in "fire alarm state" it is indicated in the control unit (CIE) as follows:

- The buzzer sounds like for pre-warning (0.8 / 5 sec.).
- In the CIE LCD the following information is shown:



Programmable outputs can be activated by trigger condition "Two Address Dependent Fire Alarm" but no other outputs will be activated.

13.5.3. RESET OF 2-ZONE / 2-ADDRESS DEPENDENCE (CO-INCIDENCE ALARM)

The unit / zone having activated a Co-incidence alarm will be latched in this status for at least 5 minutes and then automatically reset.
During these 5 minutes the push button "Reset", on the CIE front / display unit, can be used to manually reset the Co-incidence alarm.
If, during these 5 minutes, at least one more unit (in the zone) or at least one more zone (in the group) comes into "fire alarm state", the Co-incidence alarm ends and normal fire alarms will be activated in the CIE.

13.6. DELAYED ALARM

In some premises delayed fire alarm activation can be used to avoid unwanted false alarms (nuisance alarms). The delay time will be added at the end when a fire alarm normally would have been activated in the CIE This function is a violation to the EN54-2 standard.

Each analog or addressable detector, each addressable multipurpose I/O unit with isolator (4461) monitored input (Z) and 8 zones expansion board (4580) input in the system can be programmed (in EBLWin) to delayed fire alarm activation. (Heat detectors should not and manual call points must not have delayed fire alarm activation). The delay time can be set (in EBLWin, System Properties) to 0-300 seconds. Default is 30 seconds and a recommended delay time is < 30 seconds.

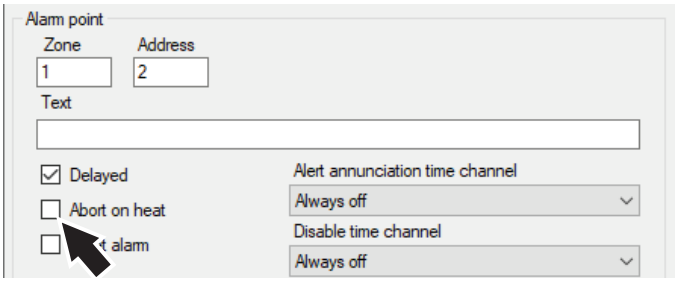
Function for an analog or addressable smoke detector: An alarm point has to be in "fire alarm state" all the delay time, in order to activate a fire alarm in the CIE Fire alarm state is when a fire alarm normally would have been activated in the CIE If an alarm point goes back to "normal state" during the delay time, the delay time will be reset and start again if/when the alarm point comes in "fire alarm state" again.

Function for each addressable multipurpose I/O unit with isolator (4461) monitored Input 0 (Z) and 8 zones expansion board (4580) input: A zone in "fire alarm state" will be recorded in the CIE but fire alarm will not be activated. When the delay time has run out the zone will be automatically reset and if it still is in "fire alarm state" a fire alarm will now be activated in the CIE.

Programmable outputs can be activated during the delay of a specific alarm point, zone or any alarm point / zone.

13.6.1. ABORT TEMPERATURE DELAY TIME

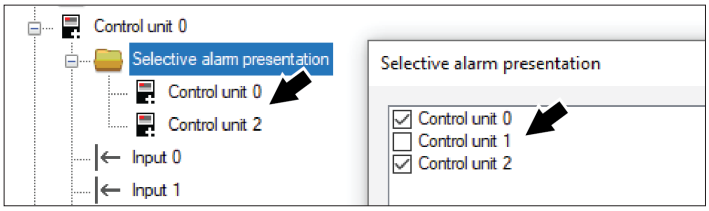
For the multi detectors 4400I and 4400, the alarm delay time for temperature can be aborted in EBLWin. The heat detection will then be at a static temperature of 56°C, corresponding to a class A1 heat detector. If the temperature exceeds the alarm threshold level, the delay time will be immediately overridden, and a full general alarm will be generated.



13.7. SELECTIVE ALARM PRESENTATION

Instead of having all fire alarms presented in all control units (default) it is possible to have Selective alarm presentation, i.e. only fire alarms from selected control units will be presented in the control unit respectively. This selection is done in EBLWin for the control unit respectively.

a) Right click on the folder `Selective alarm presentation` in EBLWin. Select Properties…The dialog window `Selective alarm presentation` will open.
b) Deselect the control units that should not present alarms from this control unit. The deselected control unit will disappear from the tree view.



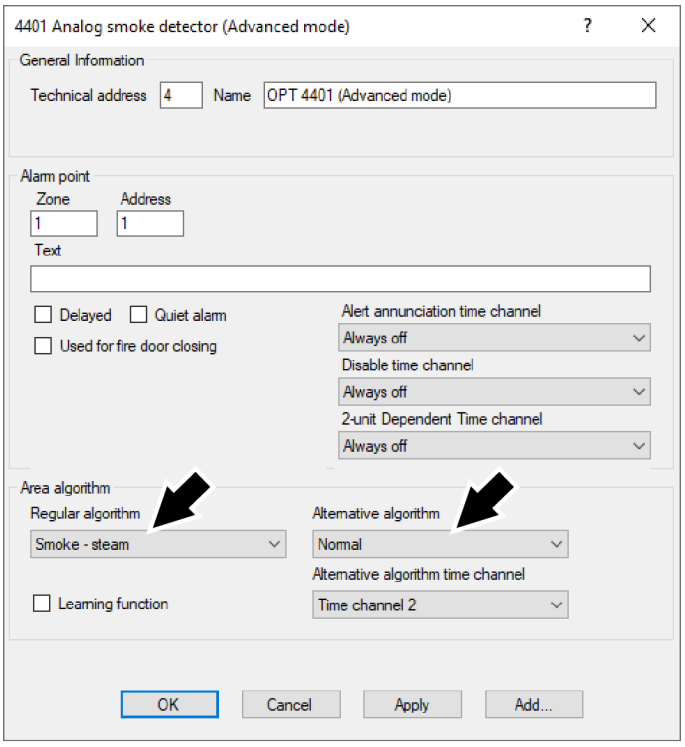
In this example, control unit 1 will not present fire alarms from control unit 0.

When Selective alarm presentation is used the following will happen in the deselected control unit when a fire alarm is activated:

- no fire alarm is presented on the display
- CIE relay output "Fire brigade TX" is not activated
- buzzer will be silent
- LED "Fire brigade tx" is lit
- push button "Silence alarm devices" is possible to use
- outputs programmed with control expression, for example "FireAlarmZone" or "GeneralFireAlarm", will be activated

13.8. ALTERNATIVE ALARM ALGORITHM

Each analog smoke- or heat detector can have two alarm algorithms programmed via EBLWin. One Regular alarm algorithm that is normally used, and one alternative alarm algorithm that is turned on/off via a time channel (internal or external).
This means that normal sensitivity can be used during night-time and low sensitivity during daytime. The alternative alarm algorithm is used to reduce nuisance alarms during working hours. The alarm algorithm in use can be read in menu H4/U4.



See also chapters 7. ALGORITHMS FOR ANALOG DETECTORS on page 31.

If the multi detector is set in NORMAL mode, the detector can be set to operate in three different ways:
See 7.3. NORMAL MODE ALGORITHMS – MULTI DETECTORS on page 39.

13.9. EXTERNAL TIME CHANNELS

49 external time channels (e.g. 1-49) can be used to:

- disable and re-enable alarm points
- turn the Alert Annunciation function on/off
- activate programmable control outputs
- turn Alternative alarm algorithm for analog detector types 430x and 440x on/off
- turn the 2-unit dependence function on/off

The 49 external time channels are for the whole system. One programmable input with trigger condition/type "External Time Channel" is used for each external time channel, which also is given a "Name". The input is controlled by some external equipment, for example another time system, a key switch, a timer, and so on, with a normally open contact (normally low) or a normally closed contact (normally high). When the input is "activated" the time channel is ON.

You must not use more than one input per time channel. (This is checked in the "Validity check" in EBLWin).

Technical warnings, external faults, time channels (external and internal), control groups, and zone groups must have unique names.

13.10. SELF-VERIFICATION

The analog detectors 430x / 440x have a built-in self-verification function. The detector's HW is always supervised by the detector's S/W and CPU. Every minute, each detector will receive a question from the CIE. If the self-verification function has detected any fault it will be reported back to the CIE. A fault will be activated in the system and the following fault message will be shown:

FAULT: Detector xxx-xx
Technical number xxxxxx

13.12. MINIMUM / MAXIMUM SENSOR VALUES

To find out how the environment is, where an analog detector 33xx / 430x / 440x is mounted, the **minimum and maximum sensor values** can be studied. The sensor values are continuously picked up and evaluated by the control unit (CIE) for each detector individually. Every value is checked if it is a new minimum or maximum value for that detector. At midnight every day a memory will be updated and the new minimum and maximum sensor values can be read in menu H4/U4. That means that the min. / max. sensor values shown, are from the previous day.

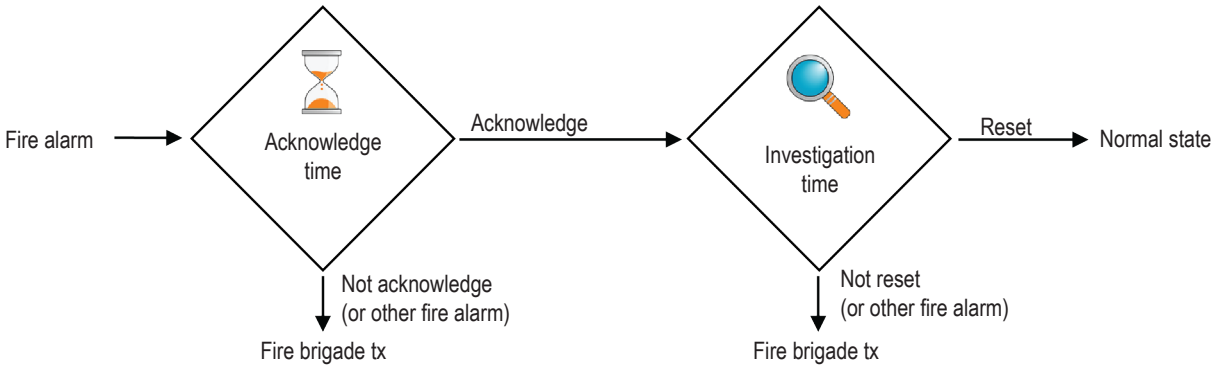
For analog smoke detectors the values are shown as XX.X % (obscuration) per meter.
For analog heat detectors the values are shown as XX°C.

13.11. ALERT ANNUNCIATION

In some installations the Alert Annunciation function can be used to avoid unwanted false alarms (nuisance alarms) to the fire brigade. A time channel can turn this function on/off.

Trained personnel are required on site to locate the fire (the room) and take the correct measures/actions depending on if there is a fire or not.

ALERT ANNUNCIATION FUNCTION FLOW CHART:



Indications, print-outs, actions, etc. for an AA alarm are the same as for a normal fire alarm except the output "Fire alarm" for routing equipment (fire brigade tx) in each CIE that will not be activated directly.

Programmable outputs type "Fire brigade tx" will however be activated if not the following is added to the control expression: AND NOT Alert Annunciation Activated.

For detailed information on Alert Annunciation, see Technical description MEW02951.

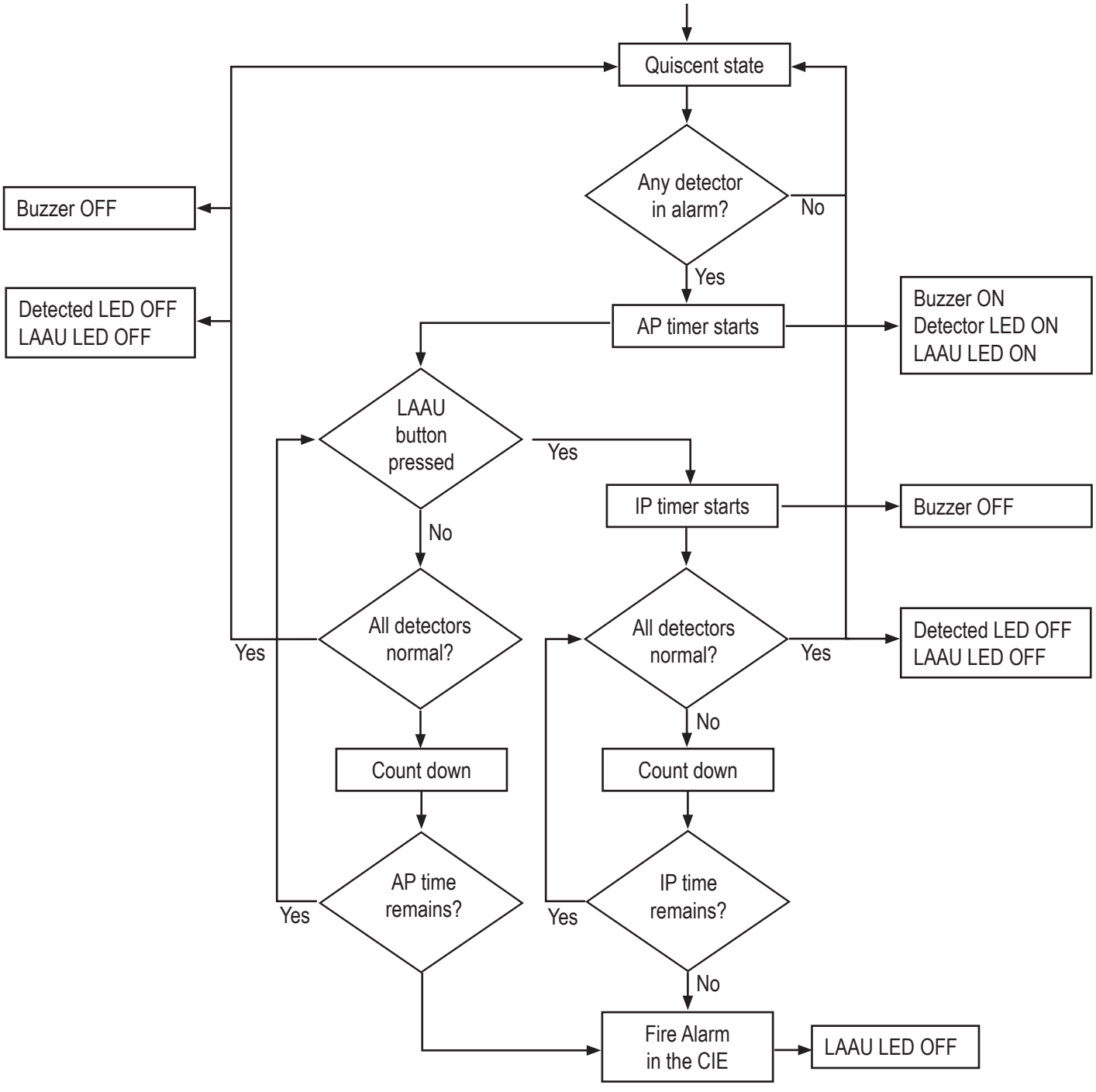
13.13. LOCAL ALARM ACKNOWLEDGEMENT (LAA)

One LAA zone can consist of up to five analog smoke detectors, one LAA buzzer, and one Local Alarm Acknowledgement Unit (LAAU). All connected to a COM loop.

It is possible to connect all detectors in a zone to the LAA zone by entering address 100 in EBLWin LAAU properties window. See Technical description MEW01838.

All devices belonging to an LAA zone must be connected to the same CIE.

LOCAL ALARM ACKNOWLEDGEMENT FUNCTION FLOW CHART:



The number of detectors in a Local Alarm Acknowledgement zone can be up to five. They must not be programmed as 2-unit-dependent and not be controlled by the Alert Annunciation function.

The following detectors / alarm points can be used within a LAA zone:

- 4400
- 4400I
- 4401
- 4401I
- 4611

Maximum 100 LAA zones (00-99) per EBL512 G3 CIE.

The LAA buzzer, for example Sounder base 4479, has to be programmed with the trigger condition "LAA zone alarm" (and other trigger conditions).

For detailed information on Local Alarm Acknowledgement, see Technical description MEW01838.

13.14. QUIET ALARM

Quiet alarm can be used to activate outputs based on smoke detected by a smoke detector without activating fire alarm in the system.

Indications and actions:

- Detector LEDs are turned on (i.e. also a connected ext. LED).
- In the CIE display: Quiet alarm detector ZZZ-AA and a user definable alarm text, if programmed.
- Buzzer in the CIE sounding (0.8 / 5 sec.).
- Programmable outputs for quiet alarm. This means any output with a control expression containing trigger conditions "Quiet Alarm Zone" or "Quiet Alarm Zone Address".

Quiet alarms are non-latching, i.e. they will be automatically reset when the alarm point / zone is no longer above alarm level.

Quiet alarm can also be programmed for a 4461 unit "zone line input". In such a case only non-latching detectors can be used.

A detector programmed for quiet alarm can never generate a real fire alarm.

13.15. REAL TIME CLOCK (RTC)

Each control unit has an RTC. It is used for (date) and time presentation for fire alarms, faults, event logging and the time channels 2-14.
The calendar and clock can be set in any CIE for the whole system.
Every day (at midnight) all calendars and clocks for the whole system will be synchronized.

13.15.1. DAYLIGHT SAVING TIME

The time is automatically changed when the Daylight saving time period starts and stops respectively, if set so in EBLWin. When, is depending on which convention that is used.

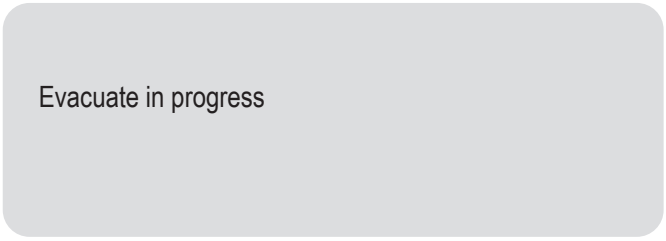
This is valid for all conventions other than Australian and New Zealand:

- Forward 1 hour the last Sunday in March, 02:00 → 03:00.
- Backward 1 hour the last Sunday in October, 03:00 → 02:00.

13.16. EVACUATE

The soft key "Evacuate" is only visible / valid for the Belgian, British Standard, Dutch, Hungarian, Spanish and Ukrainian conventions.

When the soft key "Evacuate" is pressed, or when a programmable input is activated (one input per CIE)., all outputs programmed for type "Alarm devices", will be collective turned ON (steady). This is indicated in the LCD:



The sounders will remain turned ON until they are turned OFF by pressing the soft key "Evacuate off", or when the programmable input is de-activated.

The alarm devices (sounders) will always be activated steady (sound continuously) irrespective of the fact that the outputs can be set to anything else for fire alarm, for example intermittent.

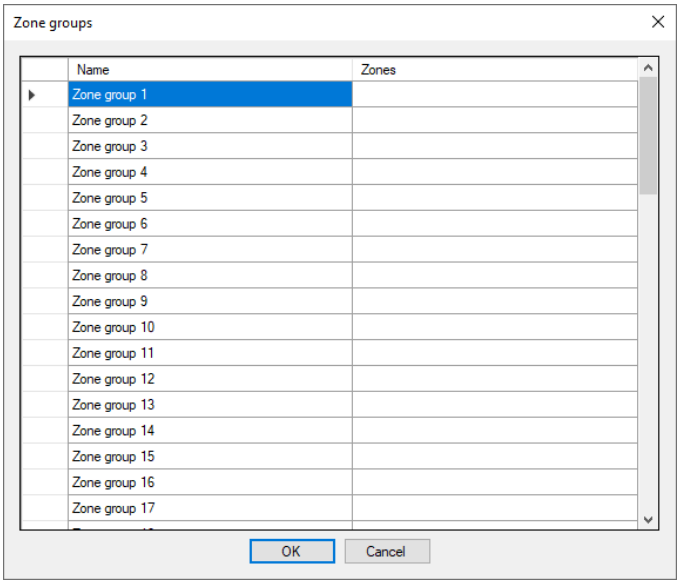
For the alarm devices 4477, 4479, 3379, 4611, 4480, 4481, 4482, and 4487, the tone with the highest priority level (and type "alarm device") will be automatically selected.

13.17. ZONE GROUPS

Zones can be grouped together in a zone group. The zone group is given a name, for example 'Floor 2', and can then be used in control expressions for activation of outputs.
Example: FireAlarmZoneGroup ('Floor 2').

Max 64 zone groups can be defined. Each zone group can contain an unlimited number of zones, but a zone can only be member of one zone group. A zone group can containe zones from different control units.

Select **System** menu / **Zone group**, and this dialog box will open:



Default for all zones is that they do not belong to any zone group.
The default name Zone group 1 - 64 can be changed to a more descriptive name.

It is not possible to give the same name to several zone groups. (This is checked in the "Validity check" in EBLWin).

Technical warnings, external faults, time channels (external and internal), control groups, and zone groups must have unique names.

For each zone group, write the zone numbers for the zones that should be included in the zone group in the white field/line. Use comma as punctuation mark between the zone numbers or a sequence (e.g. xxx-yyy).

A zone can only be a member of one zone group. A validation error will occur if a zone is programmed to more than one zone group. See also section 17.3.7. ZONE GROUPS on page 159.

13.18. CALIBRATION OF SUPERVISED OUTPUTS

Some supervised (monitored) outputs have to be calibrated after the installation. This is done via menu H5/A1 in the CIE.
CIE outputs S0-S3, programmed as Supervised (1-50kΩ): E-o-l resistor 33 kΩ. 1 – 5 resistors (33 kΩ) can be used.
3364 outputs VO0-VO1: E-o-l capacitor 470 nF. 1 – 5 capacitors (470 nF) can be used.

Calibration range is 1 kΩ – 50 kΩ or 470 nF – 5 x 470 nF. If the calibrated value is outside the range respectively or if the actual value differs from the calibrated value ± a small tolerance, a fault will be generated.

During calibration and restart of the CIE. a normally high output will be low for a few seconds.

13.19. SERVICE MODE

When the system/COM loop is in some kind of 'Service mode', it is indicated by:

- LED Fault / Disablements "General disablements" (L10).
- The symbol  is flashing.

During Service mode, the COM loop is disconnected (disabled), and no alarms or faults can be activated.

The system is in 'Service mode' when at least one of the following is valid:

- A COM loop is disconnected
- A Zone line input is disconnected
- A COM loop is in service mode
- When following functions are in progress: `Check loop`, `Auto address`, or `Replace detectors` `Extend loop`.
- When SSD is being downloaded

The indication of 'Service mode' has higher priority than the indication of 'Service signal'.

13.20. SERVICE SIGNAL

All smoke detectors get contaminated no matter what environment they are mounted in. In some environments it goes faster than in others – depending on type of activity and so on.

Conventional smoke detector: The sensitivity will normally increase in most environments. This can result in nuisance alarms, since all conventional smoke detectors (except 4350/4452) have a fixed fire alarm level. Conventional smoke detectors have no service signal output and have to be replaced on a regular basis, before being too contaminated.
Analog smoke detector: The sensitivity will automatically be constant. The detector is supervised at all times and adapts its fire alarm level in relation to the contamination of the detector. Service signal will be activated at a fixed service level.
See section 7.2.3. WEEK AVERAGE SENSOR VALUE on page 32.
For detectors 4300, 4301, 4400 and 4401, all in **normal** mode, service signal will be activated when the week average sensor value is ≥ 1.8 %/m.
For detectors 4400, 4401, 4401I and 4400I in **advanced mode** the service signal will be activated when the sensitivity compensation value is 2 %/m.
Analog multi detector with CO: For detector 4402, in **normal** mode, the Service signal will be activated when the sensitivity compensation value is 2 %/m or 60 months after CO sensor´s
production date. For more information, see EBL512 G3 Operating Instructions MEW02954 chapter "Sensors activating Service signal (H4/U5)" and "Acknowledge Service signal (H8/S3)".

13.21. LIFETIME LIMIT SERVICE SIGNAL

In some countries it is necessary to change the smoke detectors after a certain number of years. The new detector 4400I / 4401I keeps track of its install date to support this function. Therefore, a service signal is normally given for a 4400I / 4401I detector older than 25 years.

See the Technical description for 4400I and 4401I.

The lifetime might differ in some conventions. See chapter 28 APPENDIX for more information.

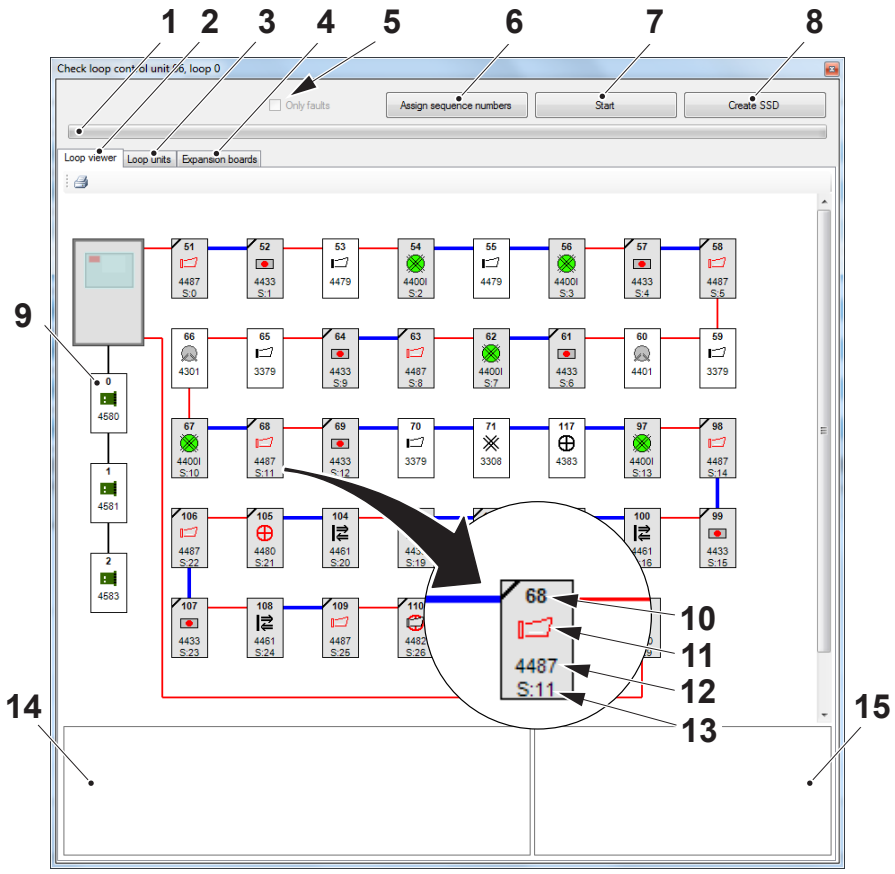
13.22. FAULT SIGNAL (FAULT CONDITION)

Fault signal, fault messages, fault acknowledge, etc. are described in EBL512 G3 Operating Instructions MEW03040, chapter "Fault". Programmable inputs can be used for external equipment to generate fault signal in the EBL512 G3 CIE. See chapter 11. PROGRAMMABLE INPUTS on page 57. For faults from zones and alarm points also the Alarm text (see below) will be shown. The fault list can be printed via menu H6.

13.23. CHECK LOOP

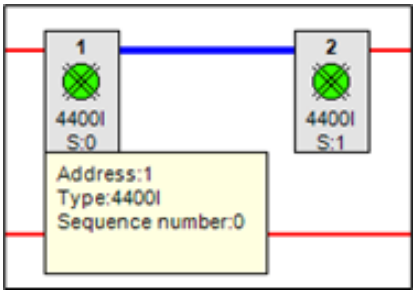
The control unit will find all units that are connected on the selected COM loop. The search is always performed in the A-direction and stops at the first fault found. A fault; a break (cut-off) or short circuit on the loop, will be shown graphically. Repair the fault and press start to resume.
This function can be used after or before the download of SSD.

The latest performed check loop of the COM loop will be saved to the installation (*.ebl). When the installation file is re-opened, the saved check loop can be viewed even when not logged on to the control unit.
To get the current status of the loop, you must log in and perform a new check loop.



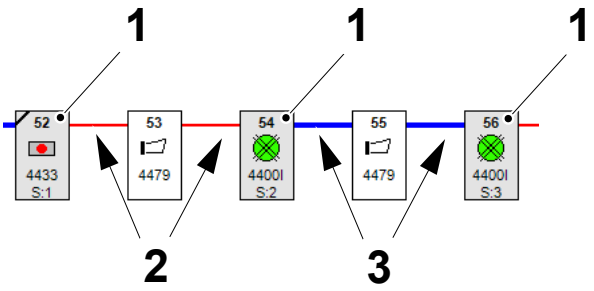
1) Progress bar
2) Loop viewer
3) Loop units
4) Expansion boards tab
5) Only faults
6) Assign sequence numbers button
7) Start button
8) Create SSD button
9) Expansion board
10) Technical number
11) Type symbol
12) Type number
13) Sequence number
14) Area showing missing loop units
15) Area showing double addressed loop units

You can hover over the unit in EBLWin to see an explanation of the different numbers.



Units containing isolators are numbered (sequence number). These units will always come in correct order.

Units without short circuit isolators are visualized in their correct segment. Segments are divided by units containing short isolator. Segments are indicated by red or blue COM loop colour.



1) Loop unit with short circuit isolator
2) Segment between ISO 1 and ISO 2
3) Segment between ISO 2 and ISO 3

For all units, the address (1-253) and the type of unit will be reported to EBLWin. All differences compared to the installation (SSD) that is open in EBLWin will be listed and can be saved and/or printed out.
Each unit has properties / settings, which can be edited before the download of the SSD to the control unit takes place.

Regarding the wireless system:
It takes up to 5 minutes for the base station (type 4620) to re-establish contact with the wireless detectors after a control unit restart. Do not perform check loop during these 5 minutes. The result will not be correct.

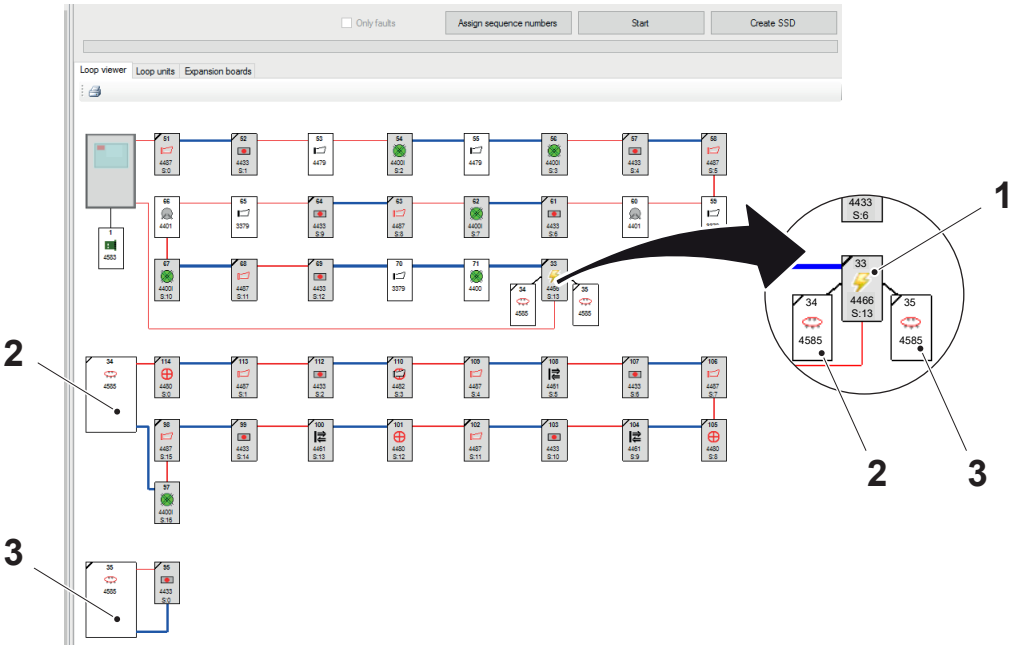
This is valid also when the base station has been set to “register mode”, “un-register mode” or “install mode”.

It is possible to perform check loop on all COM loops at the same time.

During check loop the COM loop will be disabled. See section 13.19. SERVICE MODE on page 110.

13.23.1. SUB-LOOP

Each SUB-loop is shown below the COM loop.

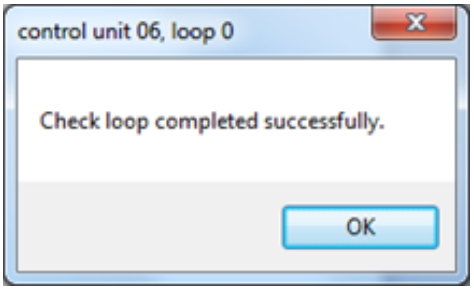


1) 4466
2) SUB-loop 0
3) SUB-loop 1

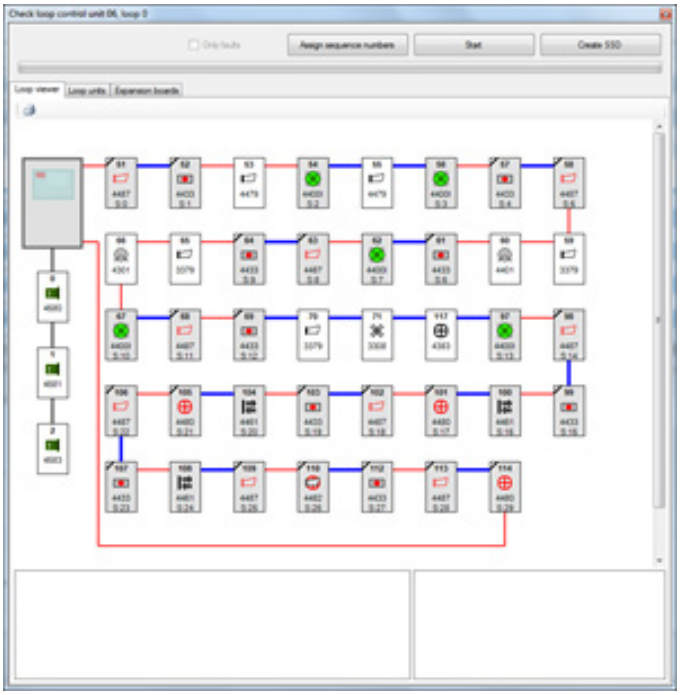
It is not possible to perform check loop on only a SUB-loop. Check loop is always performed on the main loop and any SUB-loops are included.

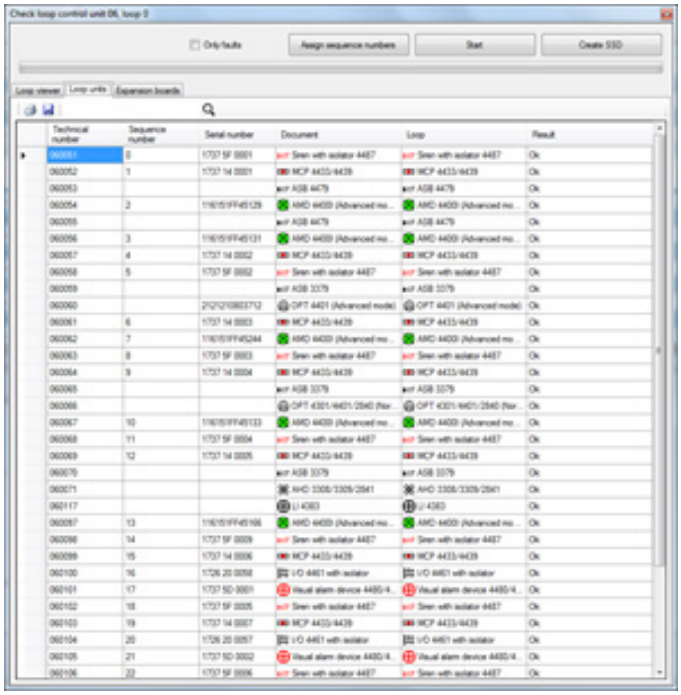
13.23.2. CHECK LOOP OK

When the check loop function is finalized without errors:
The pop up dialog window 'Check loop completed successfully' is shown.

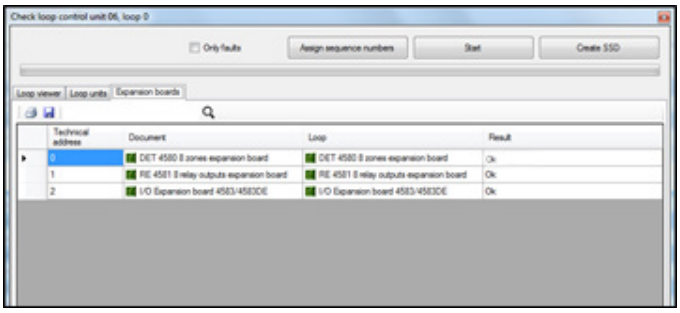


'Missing loop units' area is empty. 'Double addressed loop units' area is empty.
In the Loop units' tab, all units will be signed as 'OK'.



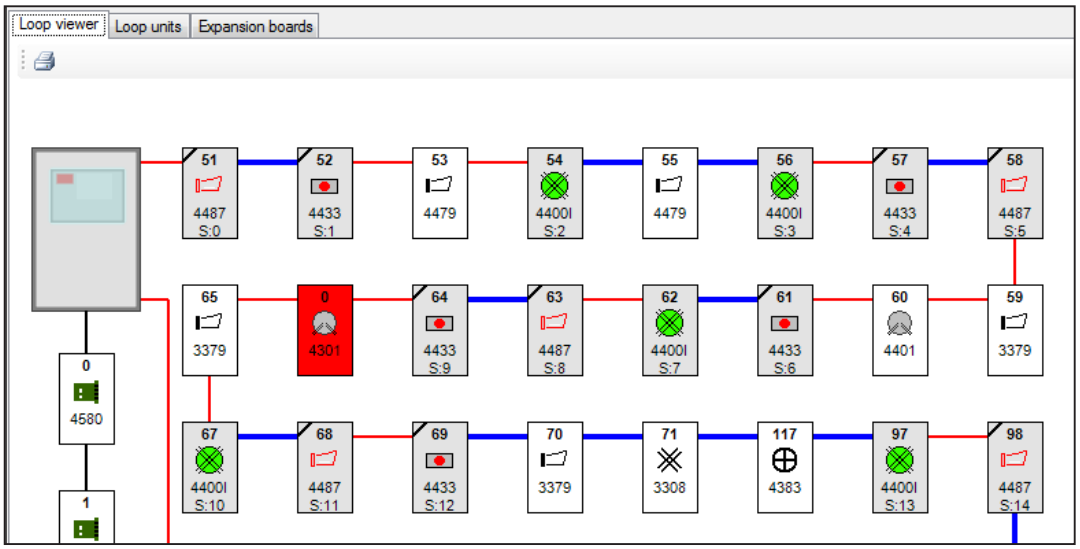


When check loop is performed on COM loop 0, and there are expansion boards connected in the CIE the expansion boards will be shown, both graphically, and in a list view in 'Expansion boards' tab.



13.23.3. LOOP VIEWER

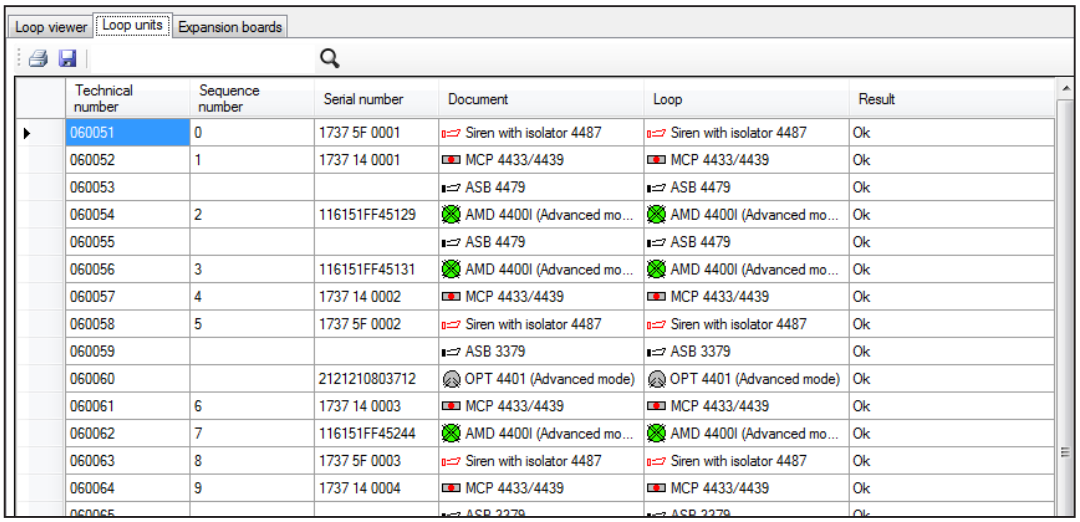
Graphic view of the COM loop.



When check loop is performed on the COM loop, and there are expansion boards connected in the CIE the expansion boards will be shown graphically.
It is possible to print the result of 'check loop' in this tab.

13.23.4. LOOP UNITS

List view of the COM loop

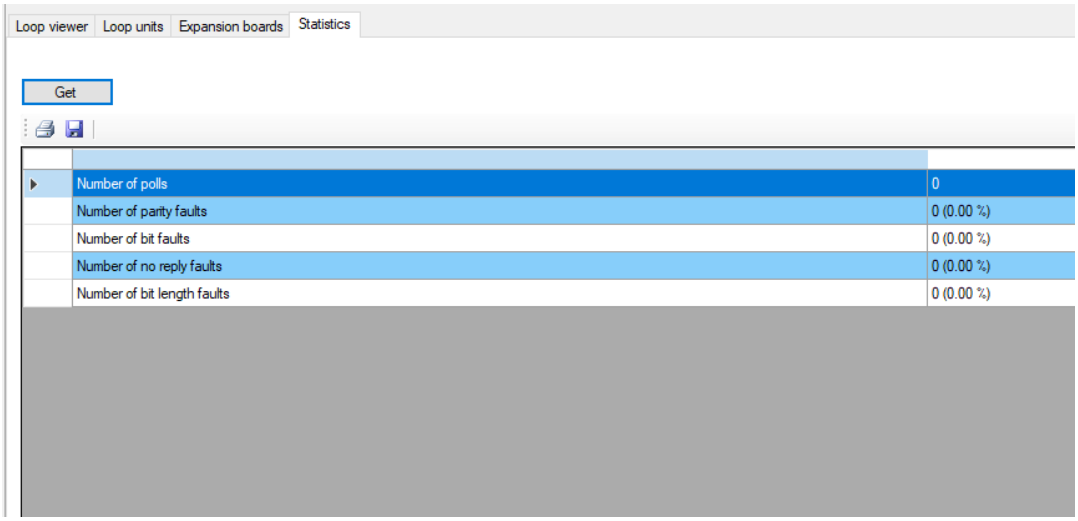


Technical number	Sequence number	Serial number	Document	Loop	Result
060051	0	1737 5F 0001	Siren with isolator 4487	Siren with isolator 4487	Ok
060052	1	1737 14 0001	MCP 4433/4439	MCP 4433/4439	Ok
060053			ASB 4479	ASB 4479	Ok
060054	2	116151FF45129	AMD 4400I (Advanced mo...	AMD 4400I (Advanced mo...	Ok
060055			ASB 4479	ASB 4479	Ok
060056	3	116151FF45131	AMD 4400I (Advanced mo...	AMD 4400I (Advanced mo...	Ok
060057	4	1737 14 0002	MCP 4433/4439	MCP 4433/4439	Ok
060058	5	1737 5F 0002	Siren with isolator 4487	Siren with isolator 4487	Ok
060059			ASB 3379	ASB 3379	Ok
060060		2121210803712	OPT 4401 (Advanced mode)	OPT 4401 (Advanced mode)	Ok
060061	6	1737 14 0003	MCP 4433/4439	MCP 4433/4439	Ok
060062	7	116151FF45244	AMD 4400I (Advanced mo...	AMD 4400I (Advanced mo...	Ok
060063	8	1737 5F 0003	Siren with isolator 4487	Siren with isolator 4487	Ok
060064	9	1737 14 0004	MCP 4433/4439	MCP 4433/4439	Ok

It is possible to save the result of the 'check loop' as a HTML file in the “loop units”-tab (list view).

13.23.5. STATISTICS

Statistics for communcation can be used during commissioning, service, and so on.



When check loop is performed on the COM loop, the statistics for communication will be shown in 'Statistics' tab.
It is possible to view, save and print all loop statistics for one loop.

13.23.6. ONLY FAULTS

When 'Only faults' is checked, the list view in “loop units”-tab will show only faults. Units that are OK are not included in the list.

13.23.7. ASSIGN SEQUENCE NUMBERS

Assign sequence numbers button will correct the sequence numbers in the SSD so that they correspond to the real loop. This button should only be used when there are no other faults on the loop.

13.23.8. START

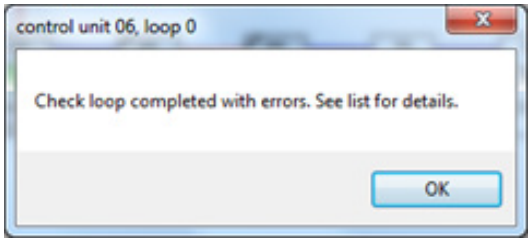
Start the check loop function again. The function can be performed on all COM loops simultaneously, started one after another.

13.23.9. CREATE SSD

The button 'Create SSD' adds units that are on the loop but not in the SSD. It will remove units that are in the SSD but not on the loop, and changes units that are wrong type. It will also correct any wrong sequence numbers and/or and wrong serial numbers. The button can only be used when there were no fatal faults found (open/short circuit etc.).

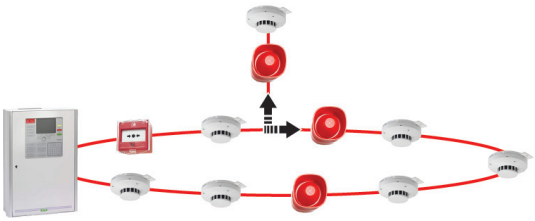
13.23.10. FAULTS - CHECK LOOP

Faults in EBLWin, loop units tab:

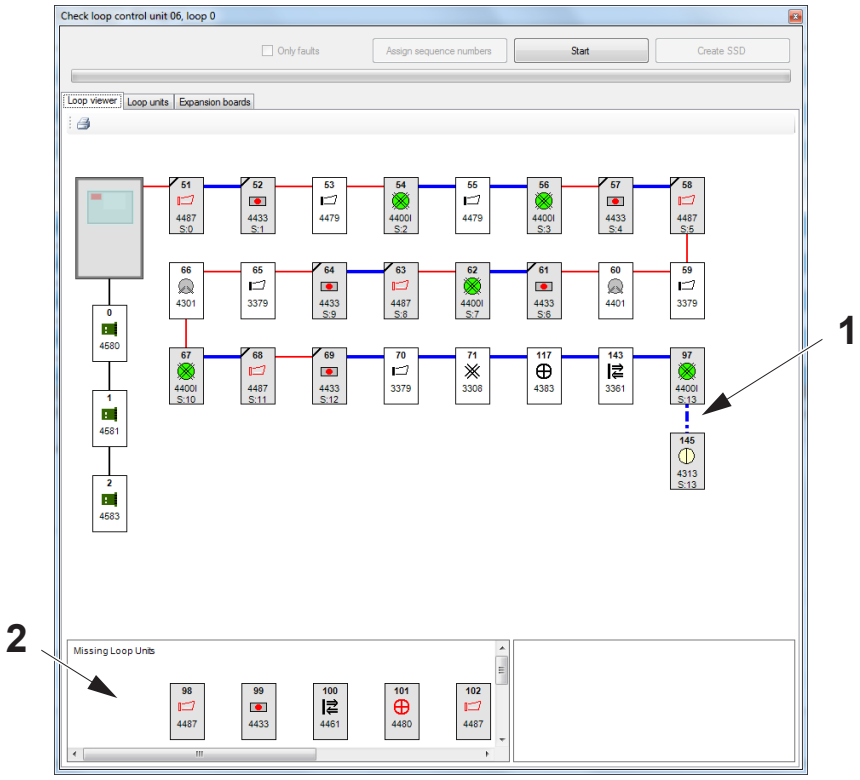


MULTIPLE ISOLATORS IN SAME SEGMENT

This fault will occur if there is a branch with isolator units on the COM loop. The system finds two isolators at the same time, and don't know which way to go further.



The segment with multiple short circuit isolators is graphically indicated with dashed/dotted line. The rest of the loop units will appear in the 'Missing loop units' area.



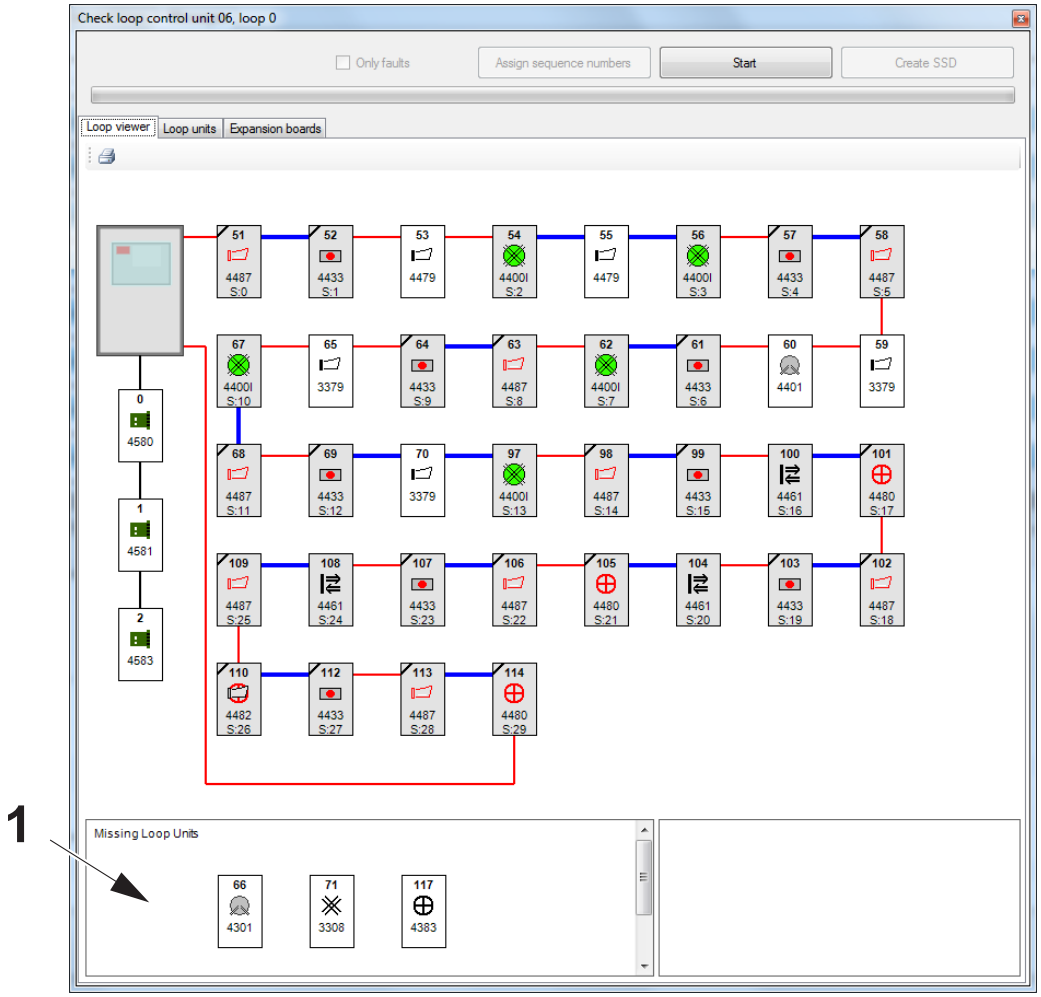
1) Segment with multiple short circuit isolators
2) 'Missing loop units' area

UNEXPECTED REPLY

The system has found a unit which is not included in the SSD.

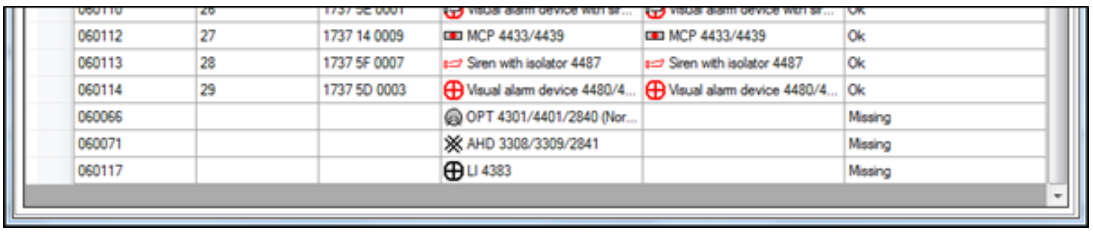
MISSING LOOP UNITS

The system has not found a unit which is included in the SSD.



1) 'Missing loop units' area

In the 'Loop units' tab, all units missing will be put in the bottom of the list and signed as 'Missing'.



WRONG TYPE

The unit is programmed as another type in the SSD.

WRONG SEQUENCE NUMBER

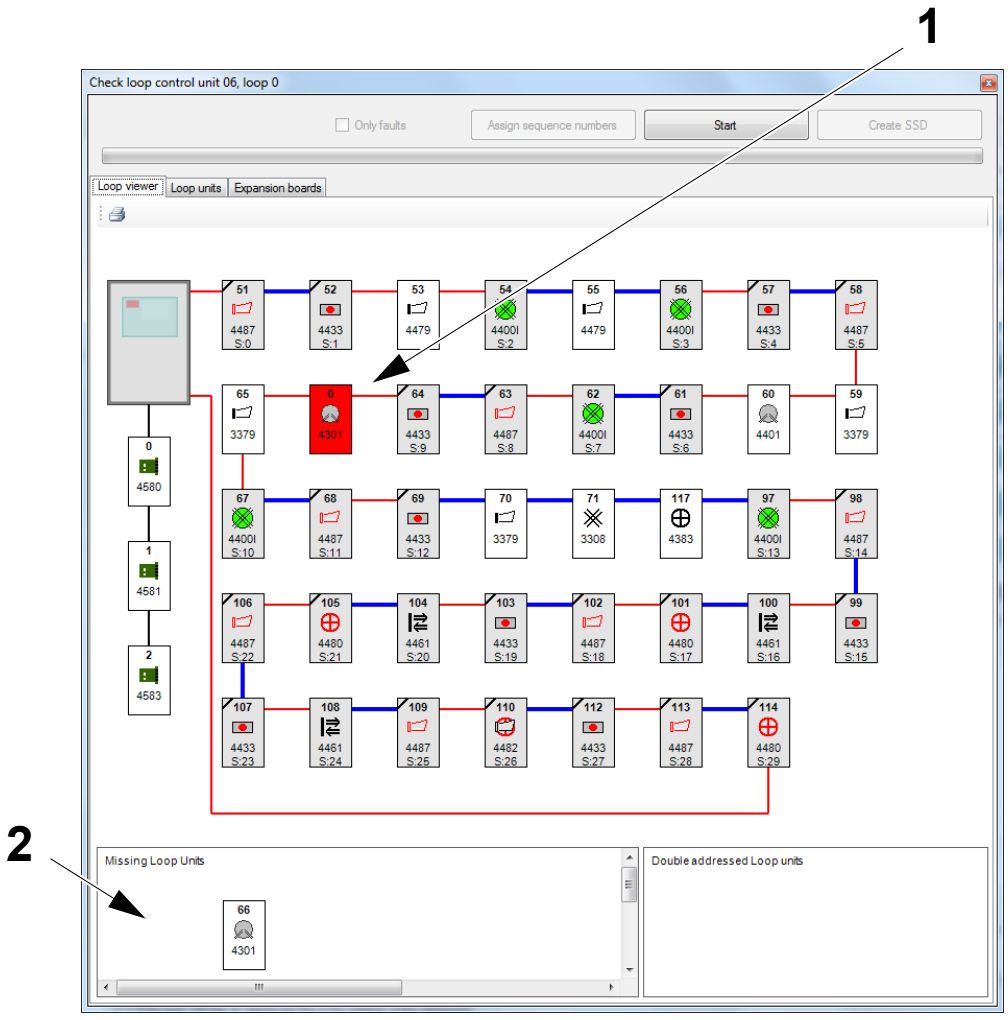
Pop up dialog “Check completed with errors” will appear. Correct unit but wrong sequence number. Go to loop units tab for details. To automatically correct the faulty sequence numbers, press button 'Assign sequence numbers'.

WRONG SERIAL NUMBER

The loop unit is changed. Press 'Create SSD' to update the data base.

ADDRESS ZERO

The loop unit was not addressed during manual addressing procedure. It still has factory setting.



1) Red color indicating not addressed unit
2) 'Missing loop units' area

UNKNOWN TYPE OF UNIT

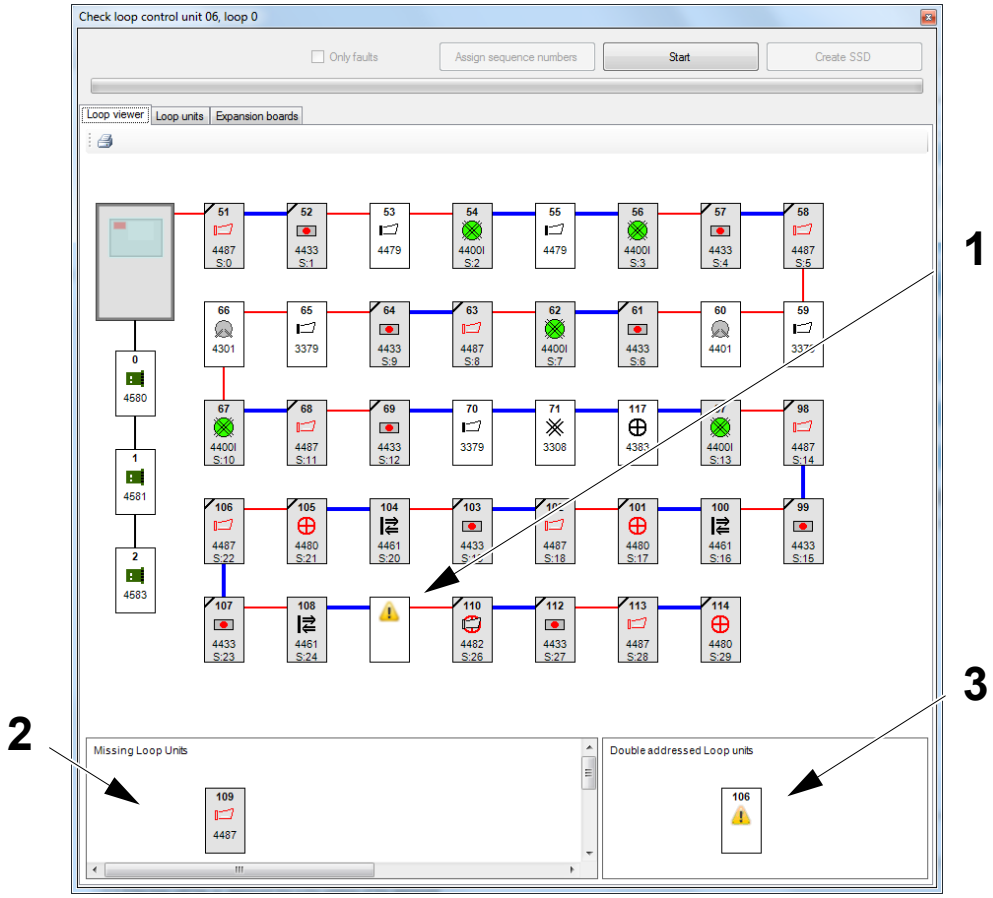
The type cannot be identified because it is an old type or a faulty unit.
See also chapter 29. OBSOLETE UNITS on page 215.

UNKNOWN UNIT / UNKNOWN ADDRESS

The unit is an unknown type of unit, see above. It has also the same address as another unit on the COM loop.
This can also be a case of bad COM loop communication.

DOUBLE ADDRESS

A unit has got the same address as another unit on the COM loop.

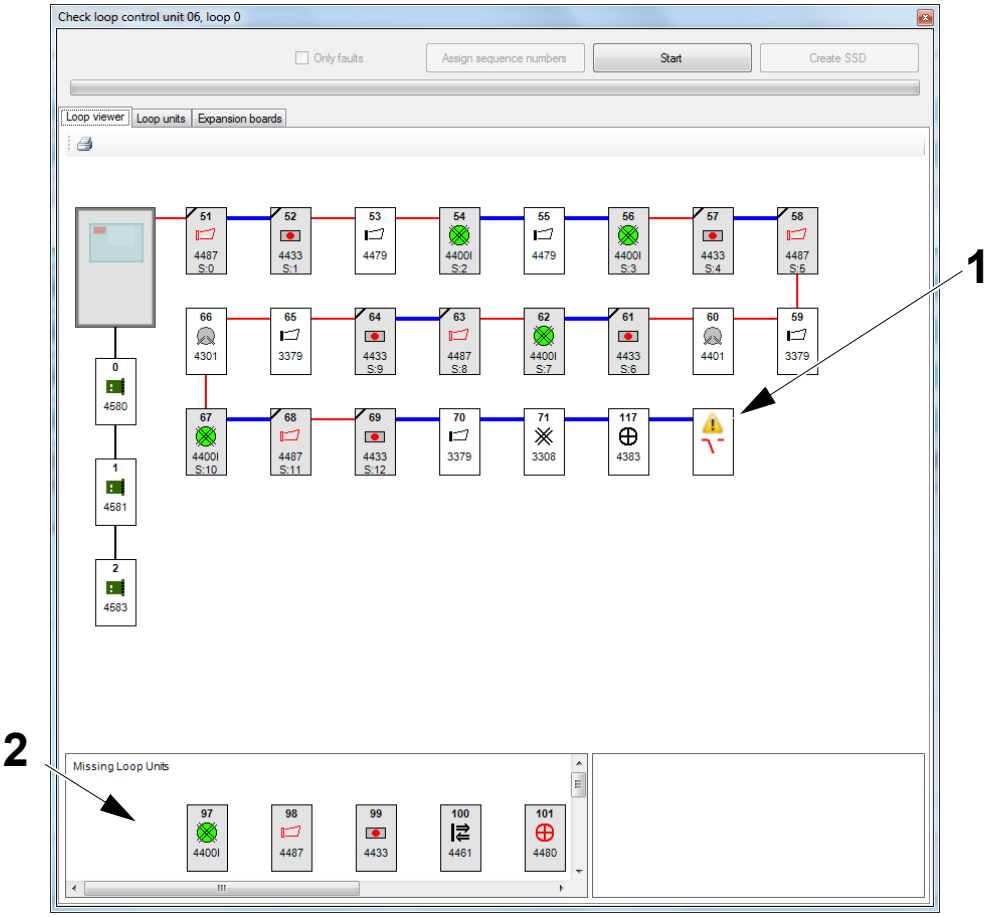


1) Yellow warning sign indicating address not found
2) 'Missing loop units' area
3) 'Double addressed loop units' area

The double address detection requires support from the loop units. Not all units support this feature today; therefore a double address fault may occur as 'Unknown unit' or 'Unknown unit unknown address' (see above). See also section 5.4. SUPPORTED FUNCTIONS TABLE on page 28.

OPEN CIRCUIT

If the system detects an open circuit, the check loop function cannot be completed. The open circuit will be indicated graphically by a sign at the end of the loop. The rest of the units in the SSD will appear in the 'Missing loop units' area.

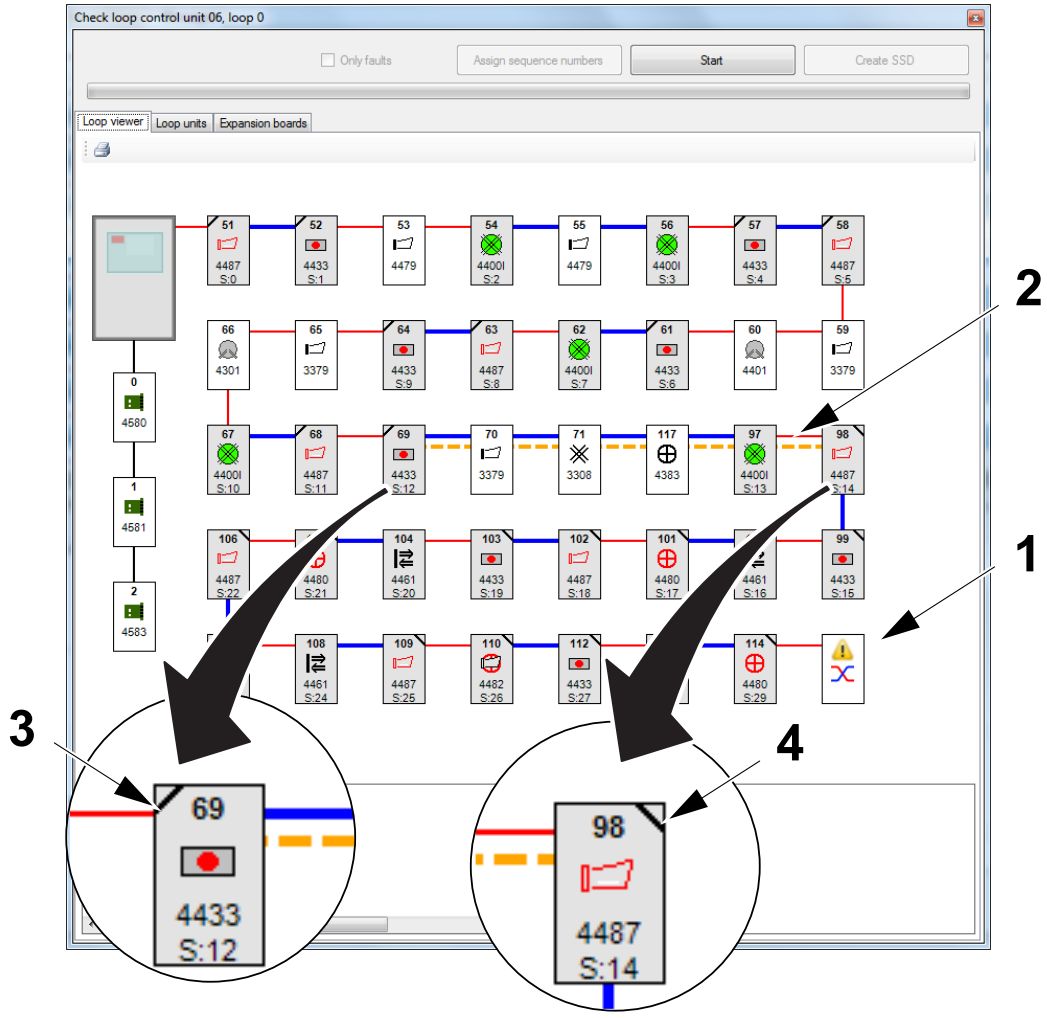


1) Sign indicating open circuit
2) 'Missing loop units' area

COM LOOP POLARITY CHECK

If SA / SB circuits are mixed, this will be indicated graphically by a sign at the end of the loop.
The graphical view will also indicate, with a dashed yellow line, within which sections mixed polarity can be found.
If the graphical projection of a unit has a marking on the upper left corner, the polarity is correct.
If the graphical projection of a unit has a marking on the upper right corner, the polarity is incorrect.

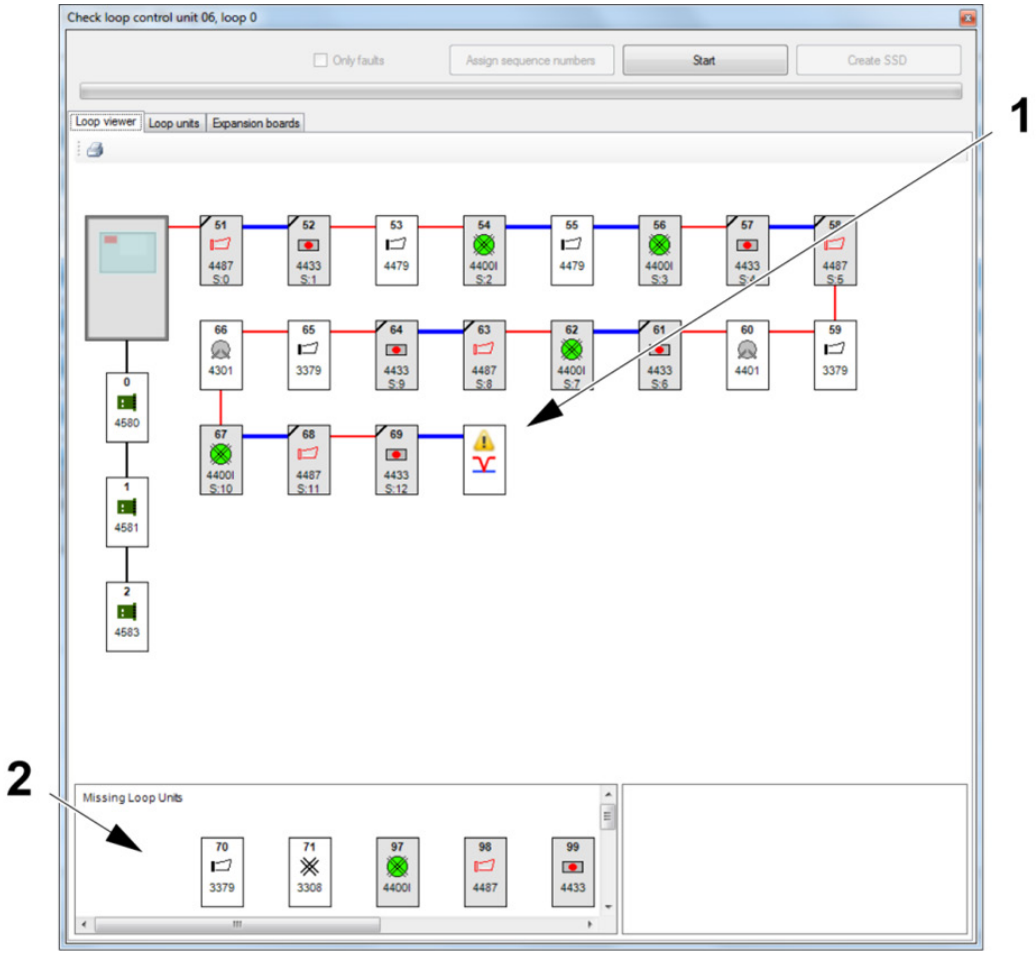
Units with no marking in any upper corner do not support the function "COM loop polarity check".



1) Sign indicating mixed circuit
2) Dashed yellow line indicating faulty area
3) Marking indicating correct polarity
4) Marking indicating incorrect polarity

SHORT CIRCUIT

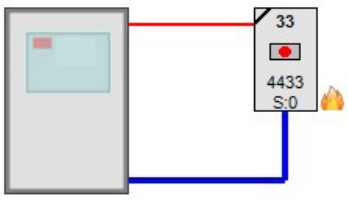
If the system detects short circuit, the check loop function cannot be completed. The short circuit will be indicated graphically by a sign at the end of the loop. The rest of the units in the SSD will appear in the 'Missing loop units' area



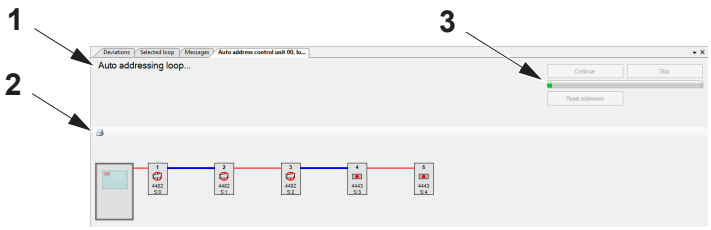
1) Sign indicating short circuit
2) 'Missing loop units' area

MANUAL CALL POINTS

If the system detects a manual call point (3333, 3339, 4433, 4439, 4443, & 4444) with broken glass or installed incorrectly this will be indicated graphically by an icon next to the unit.



13.24. AUTO ADDRESS



1) Wizard text
2) Print
3) Progress bar

13.24.1. GENERAL

Routine for automatically setting addresses on a loop with units that have isolators.
Units without isolators may be connected if they already have an address in the upper address span, 129-248, set by the address setting tool. Alternatively (for units in bases) they could be connected later and be addressed automatically by a separate routine: 'Adding units without isolators'.

All units with isolators must have default address before starting the routine of auto address setting. All units have default address from factory. There is also a routine for clearing addresses on the loop to default values: 'Reset addresses'. See section 13.24.7. RESET ADDRESSES on page 129.
Units with isolators get address 1 to 128.
Units without isolators must have address 129 to 248.

The wizard text will guide the user through the auto address procedure. Click 'Start Wizard' to begin.
The 'Auto address' wizard will go through the following steps;

- Start
- Auto address loop units with short circuit isolators
- Auto address loop units without short circuit isolators
- Check loop
- Create SSD

For explanation of symbols, see section 13.23. CHECK LOOP on page 113.

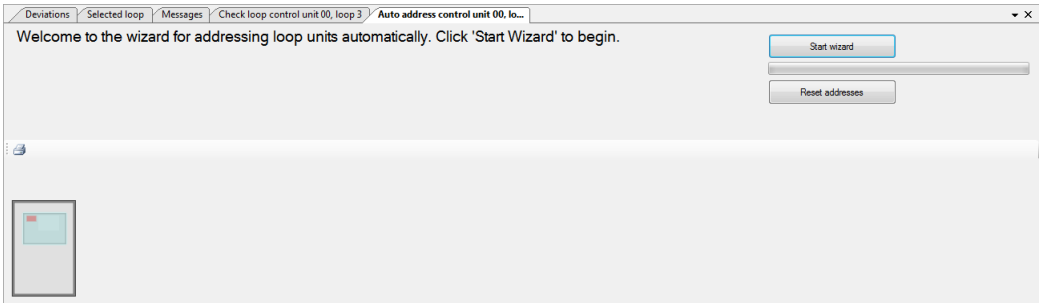
13.24.2. LIMITATIONS

- Units with isolators must have default address
- Units without isolators must have address 129 to 248, if they already have an address.
- Wireless base stations 4620 must have address 144, 161, 178 or 195
- Max 128 units with isolators
- Sounder base 4479 and Indicator 4418 consumes one address in the span of isolators

13.24.3. WORKFLOW FOR NEW INSTALLATIONS

a) Mount:
   - units with isolators (default address)
   - units without isolators (address set with address setting tool to 129-248), except 4400, 4401, 4402 which can be added by the 'Add loop units' procedure

b) Run 'Auto address' procedure. Follow the wizard in EBLWin.



After the auto address procedure, the wizard will also suggest 'check loop' procedure and 'create SSD'.

If something in the procedure fails, correct the error and then try again.

13.24.4. ADD UNITS WITHOUT ISOLATORS

Procedure for automatically setting addresses on units without isolator:

a) Units are connected one by one and the unit must have default address (factory setting).
b) The units will be given an address from 129 to 248.
c) Only units connected to a socket/base are allowed. For other units the address must be set manually with the address setting tool.

13.24.5. FAULTS - ADD UNITS WITHOUT ISOLATORS

Faults that may occur during 'adding units without isolators':

Open Circuit: Was not able to close loop during initialization
Unknown Unit: Failed checking type
Write Address Failed: Failed writing address to new unit
Unit In Wrong Address Span: Either unit with isolator found with address 129-248 or unit without isolator found with address 1-128
Address Out Of Range: Used all available addresses; too many units.

13.24.6. FAULTS - AUTO ADDRESS

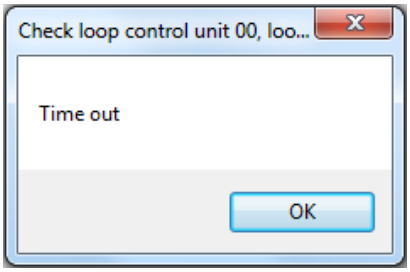
Faults that may occur during 'Auto addressing' (pop up window):

Open Circuit: Was not able to close loop
Short Circuit: Unit with isolator opened relay due to a short circuit.
Unknown Unit: Failed checking type
Write Address Failed: Failed writing address to new unit
Address Out Of Range: Used all available addresses; too many units.
Cables Mixed: L-C mixed on loop
Address Out Of Range: More than 128 isolators
Unit In Wrong Address Span: Either unit with isolator found with address 129-248 or unit without isolator found with address 1-128

See section 13.19. SERVICE MODE on page 110.

TIME OUT – AUTO ADDRESS

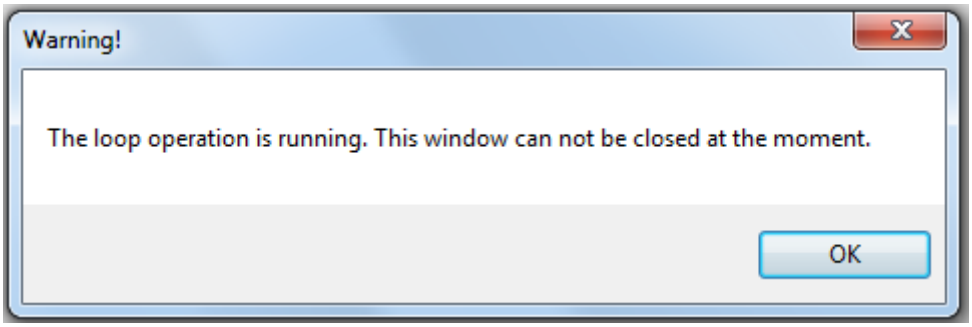
If the control unit aborts the auto address procedure, this fault message will appear:



Check: USB connections or other loose contacts.
Action: Perform a check loop to see the result.

DO NOT ABORT PROCEDURE – AUTO ADDRESS

It is not possible to close down EBLWin during auto address procedure. The auto address procedure cannot be aborted. If, by accident EBLWin is interrupted, maybe the PC unexpectedly shuts down or such, the control unit will continue to run the auto address procedure until finished.
Action: Preform a check loop to see the result.

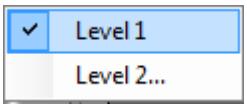


13.24.7. RESET ADDRESSES

This routine resets the units in the address span 1-128 to default addresses.
Default address is 0, 254 (4466, 4585), 255 (4479).
All units have default address from factory.

To enable the function 'Reset addresses':

a) Go to EBLWin menu Tools/Advanced functions/Level 1
b) Activate Level 1. The 'Reset addresses'-button will appear below the progress bar.



In case of wire breakage, the control unit will try to clear the addresses 140 times before the operation is aborted (128 trials+ some margin).

13.24.8. FAULTS - RESET ADDRESSES

Faults that may occur during 'reset addresses':

Open Circuit: Was not able to close loop
Short Circuit: Unit with isolator opened relay due to a short circuit.
Unknown Unit: Failed checking type
Write Address Failed: Failed writing address to default value
Cables Mixed: L-C mixed on loop
Unit In Wrong Address Span: Either unit with isolator found with address 129-248 or unit without isolator found with address 1-128

13.25. REPLACE DETECTORS

Routine for automatically setting addresses on replaced units. Only one unit at a time can be replaced.

WORKFLOW – REPLACE OLD DETECTORS

c) Start the wizard in 'Replace detectors'.
d) Wait until initialization is done.
e) Remove old detector.
f) Mount new detector (with default address).
g) Wait until LED on new detector is unlit, continue with next unit (step c).
h) Stop the routine when you are done.

13.25.1. FAULTS - REPLACE DETECTORS

Wrong Type Of Unit: Trying to replace unit with another type of unit.
Replace Failed: Something failed either when checking type or writing address to new unit

See section 13.19. SERVICE MODE on page 110.

13.26. EXTEND LOOP

Routine for continuing automatically setting addresses on a loop with units that have isolators. This routine is for extending an already existing loop.

Extend loop only works when the existing loop has been previously auto addressed.
If the auto addressed loop contains an addressable sounder base 4479, the unit must be treated as a unit without isolator and the address must be set with the address setting tool.

SSD for the existing loop must be downloaded to the control unit before starting the 'Extend loop' procedure.

WORKFLOW – EXTEND LATER (SSD IS DOWNLOADED)

a) Mount:
   - units with isolators (default address)
   - units without isolators (address set with address setting tool to 129-248).

For units without isolators, the address must be set with the address setting tool before starting the 'Extend loop' procedure.

b) Start the wizard in 'Extend loop'. Follow the procedures.

If only units without short circuit isolators are to be added; start the 'Auto address' wizard. Skip the first part of the 'Auto address' wizard. Then run the rest of the wizard and follow the procedures to add units without isolators one by one (for example 4400, 4401, 4402, and 4479 with default address).

13.26.1. FAULTS - EXTEND LOOP

See section 13.24.6. FAULTS - AUTO ADDRESS on page 128.

If the message "missing units" appears after running extend loop; the system do not find units on the loop, because of wiring fault or such. Function "create SSD" will be disabled.
Perform a check loop to find the fault.

See section 13.19. SERVICE MODE on page 110.

14. DISABLEMENTS

14.1. DISABLE ALARM POINTS AND OUTPUTS

Temporary disablements are made via the menu H2 sub menus. For more information see EBL512 G3 Operating Instructions MEW02954, chapter "Disable or re-enable (H2)". The disablements are re-enabled via the menu H2 sub menus.

Regular disablements are made via time channels, see section 17.3.2. TIME CHANNELS on page 154.

Disabled alarm points and outputs are indicated by LED Fault / Disablements "General disablements" on the CIE front and are listed in menu H4/U1-U2.
The sensor values for a disabled analog smoke detector will not be saved.

14.1.1. ENHANCED DISABLEMENT

(Default) = Fire alarm, pre-warning and fault signal cannot be activated by the disabled alarm point/zone. If only fire alarm and pre-warning shall be disabled, "Enhanced Disablement"
shall not be selected, see section 16.3. SYSTEM PROPERTIES (SETTINGS) on page 142.

14.1.2. DISABLE ZONE

A whole zone (all addresses within a zone, except the manual call points) can be disabled via menu H2/B1. Re-enabled via menu H2/B1.
In H2/B1 you can disable up to 512 zones at the same time. The zones don´t have to be in consecutive order, you can disable any zones between 1-999999.

14.1.3. DISABLE ZONE / ADDRESS

Individual alarm points (zone-address) can be disabled and re-enabled via menu H2/B1. Time channels can be used to disable and re-enable automatically.

DISABLE THE SMOKE SENSOR
It is possible to disable the smoke sensor only in a 4400 / 4400I, if it is set to Advanced mode.
For more information, see the Technical description for Analog multi detector 4400 / 4400I.

14.1.4. DISABLE CONTROL OUTPUT

All outputs (except outputs of type "Alarm Device" and "Alarm device for evacuation") can be individually disabled and re-enabled via menu H2/B2. Disabled output will stay in (or return to) the normal condition for the output respectively.

14.1.5. DISABLE / RE-ENABLE OUTPUT TYPE

The control outputs can be collective disabled via menu H2/B3, type:

- Control (general)
- Extinguishing
- Ventilation
- Interlocking

It is possible to do this for one or more specific control units or for all control units (i.e. the whole system). Re-enabled via menu H2/B3. Disabled outputs will stay in (or return to) the normal condition for the output respectively.

14.2. DISABLE / RE-ENABLE ALARM DEVICES

The control outputs of type "Alarm device (sounder)" can be collective disabled and re-enabled via menu H2/B4. It is only possible to do this for all control units (i.e. the whole system). Disabled outputs will stay in (or return to) the normal condition for the output respectively.

14.3. DISABLE INTERLOCKING OUTPUT

Individually disabled and re-enabled via menu H9/C3. See also the Technical description for the EBL512 G3 Control unit MEW02399.

14.4. DISABLE OUTPUTS FOR ROUTING EQUIPMENT

Disabled and Re-enabled via menu H2/B5. For more information see EBL512 G3 Operating Instructions MEW03040.

14.5. DISCONNECT & RE-CONNECT LOOP / ZONE LINE INPUT

Disconnected and re-connected via menu H8/S1: COM loop, Zone line input, Addressable zone interface (4461 zone line input). For more information see EBL512 G3 Operating Instructions MEW03040.

15. TEST

15.1. TEST MODE

Zones can be set in Test mode. Alarm points / zones can be tested during the Monthly test via menu H1 (in H1 up to four zones at the same time) or separately via menu H7. In H7 you can set up to 100 zones in test mode at the same time. The zones don´t have to be in consecutive order, you can add any zones between 1-999999. For more information see EBL512 G3 Operating Instructions MEW03040. The LED "Test mode" on the CIE front indicates one or more zones in Test mode.
Zones in Test mode are also simultaneously shown in the CIE display.
Disablements, faults and fire alarms have higher priority. This means that the presentation of zones in Test mode will be suppressed during such a condition.

In order to shorten the testing time, any time delay before alarm will be "turned off" in Test mode. Any 2-zone / -address dependence and the function "delayed alarm" will be ignored.

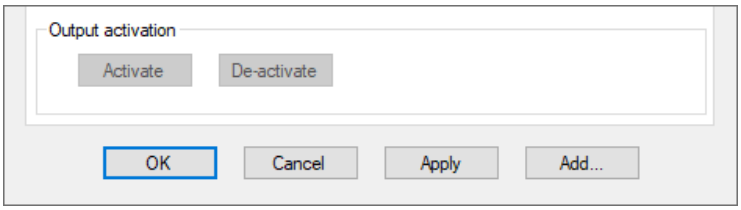
15.2. TEST ALARM DEVICES

The programmable outputs of type "Alarm device" can be collectively activated via menu H8/S4, which make it possible to test the alarm devices. (The test cannot be started if fire alarm already is activated in the system.). One or all control units can be selected. When the test starts the alarm devices will be "on" for 1 second (±1s) (Some COM loop unit outputs might be "on" for a little longer), "off" for 29 seconds (±1s), "on" for 1 second and so on. The output activation will be continuously (steady). For the alarm devices, for example 4482, the tone with the highest priority level (and type "alarm device") will be automatically selected.

Also disabled (and silenced) alarm devices will be tested. The test is stopped via menu H8/S4, if a fire alarm is activated in the system, or after one hour.

15.3. TEST OF OUTPUTS

Test of programmable outputs can be done via EBLWin or via menu H8/S8:
Via EBLWin:
Connect a PC to a control unit. Open EBLWin and log on. Each output can be activated / de-activated.



When starting the test, the output respectively will be activated, no matter if the control expression programmed for the output is false. When ending the test, the output respectively will be de-activated, but only if the control expression at that time is false.

15.4. TEST OF ROUTING EQUIPMENT

Via menu H1 it is possible to test the "Fault condition" and "Fire alarm" outputs for routing equipment (Fault tx, Fire brigade tx, and corresponding programmable outputs). Open door and so on will not affect the test.

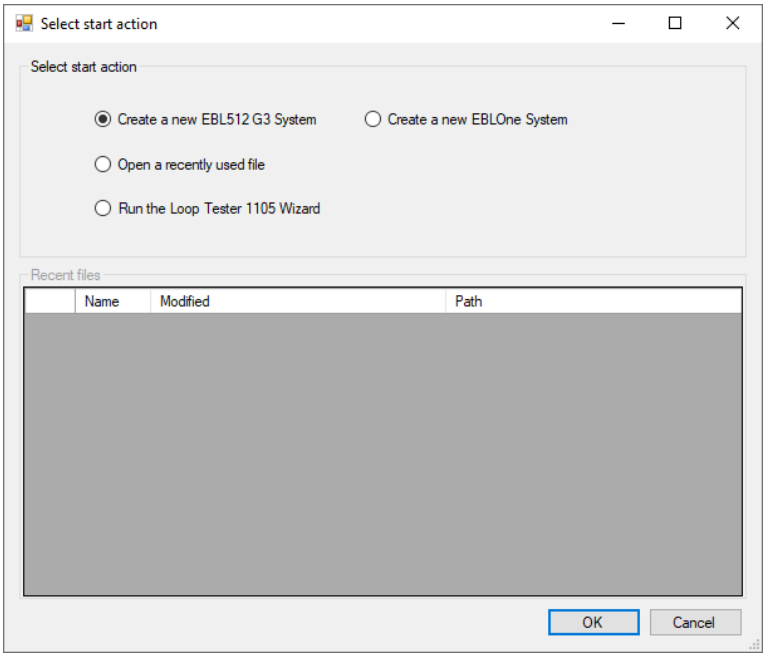
1) In menu H1, select "Yes" and press ↵ to start the test. A 60 seconds count-down starts. The "Fault condition" output will be activated, indicated by LED "Fault tx activated" on the CIE front.
2) After 30 seconds the "Fire alarm" output(s) will also be activated, indicated by LED "Fire brigade tx" on the CIE front.
3) After 30 seconds more (60 sec. in all) the test will be ended and the outputs and LEDs will go back to "normal" status.

Fault condition outputs are normally activated in "normal" state, i.e. they will in this case be de-activated.

16. EBLWin

The PC program EBLWin is used for programming and commissioning of one or more control units.
It can be used to:

- create and download / make a backup (upload) of site specific data (SSD).
- download new software / settings / convention / configurations / control unit & system properties and so on.
- create and download the user definable alarm texts shown in the display in the control units and Display Units.
- see the fire alarms, faults and disablements as well as reset, acknowledge and re-enable respectively.
- configure the Display unit version 3; set IP address for camera picture / drawing and upload default image
- configure the Gateway; create and download / make a backup (upload) of the configuration data as well as download of software.
- Check loop. It identifies the units connected on a COM loop and identifies type of fault at fault searching.
- Scan loop. Used with Loop Tester 1105 to identify the units connected on a COM loop before the CIE is installed.



EBLWin Start page

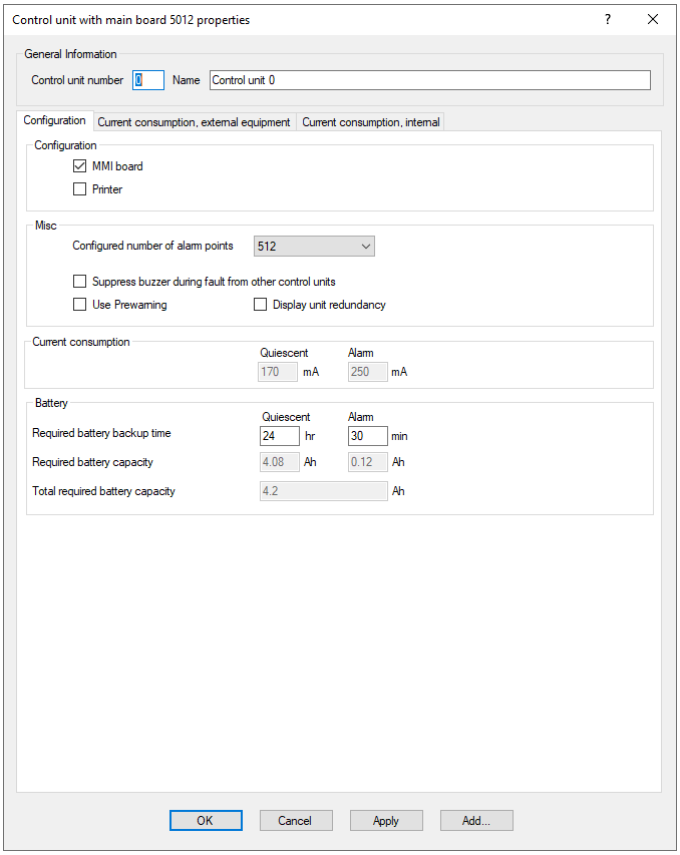
EBLWin shall have the same version number as the EBL512 G3 software version number, for example. 2.9.x and 2.9.x respectively. x indicates only a small correction and is not required to be the same.

Old SSD files can be opened in a newer (higher) version of EBLWin, saved, edited and thereafter downloaded to EBL512 G3 units with the corresponding version.

16.1. CONTROL UNIT PROPERTIES

Default settings in EBLWin might vary depending on convention and main board.

Control unit properties dialog box opens when you add a control unit or via the "Control unit" pop-up menu (Properties...)



16.1.1. GENERAL INFORMATION

- **Control unit number**: A stand-alone control unit has to have no. 0. In a system (network) the control units are numbered from 0 to 29.
- **Name**: Normally not changed but can be changed when required.

16.1.2. CONFIGURATION

- **MMI board** (selected by default): This check box shall be marked when the CIE has a front with display (i.e. EBL512 G3 type 5000).

This check box shall not be marked when the CIE is type 5001.

- **Printer** (only valid for EBL512 G3 type 5000): This check box shall be marked when the CIE is equipped with a printer.

16.1.3. MISC.

- **Configured number of alarm points**: 128, 256 or 512. Factory setting made by delivery.
  See also section 16.2.2. UPGRADE NUMBER OF ALARM POINTS on page 139.

1012 COM loop unit addresses are always available but max. 128 / 256 / 512 of these 1012 addresses can be alarm points.

- **Suppress buzzer during fault from other control units**: This check box shall be marked if faults generated in other control units shall be suppressed in this control unit, i.e. if the buzzer shall sound for faults generated in this control unit only.
- **Use Pre-warning**: This check box shall be marked if the pre-warning detection shall be enabled, i.e. pre-warnings will be activated in this control unit and presented in all control units. All programmable outputs in the system, with trigger condition "Pre-warning", will be activated (if not disabled).
  Checkbox not marked = Pre-warnings will not be activated in this control unit.
- **Display unit redundancy**: This check box shall be marked if the Display unit redundancy shall be enabled.

Only valid for display unit version 3.

16.1.4. CURRENT CONSUMPTION

- Quiescent
- Alarm

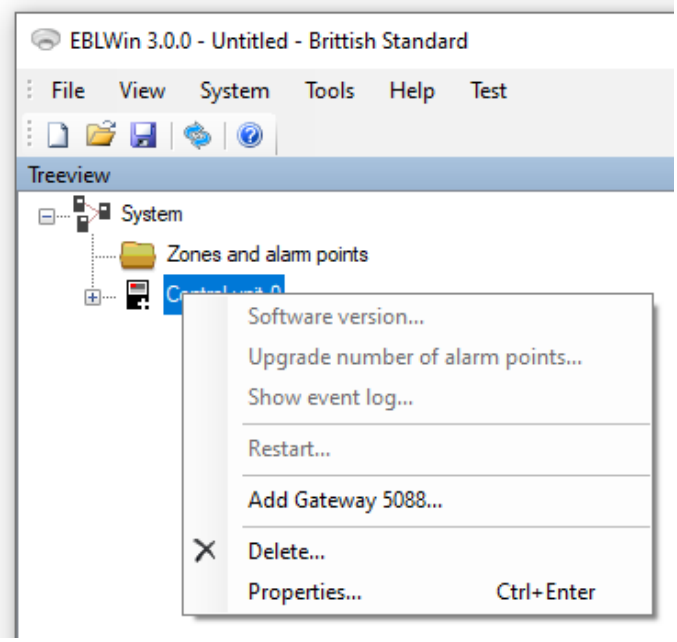
Used for the current consumption calculation of the system. See 24. CURRENT CONSUMPTION on page 191.

16.1.5. BATTERY

- Required battery backup time
- Required battery capacity
- Total required battery capacity

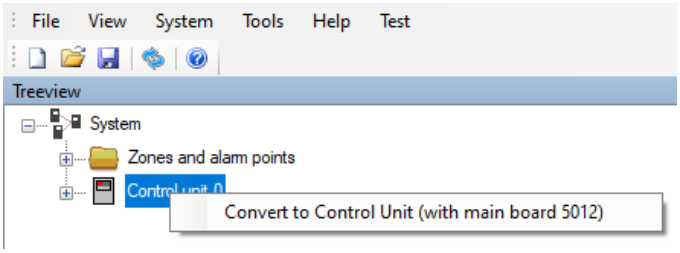
Used for the current consumption calculation of the system. See 24. CURRENT CONSUMPTION on page 191.

16.2. CONTROL UNIT POP-UP MENU



Some commands are disabled since you have to connect and log on to the control unit to be able to select / use them.

If an SSD file for a control unit with main board 5010 is opened, you must convert the control unit via this menu command before the SSD can be edited. All other menu commands will be hidden or disabled until the control unit has been converted.



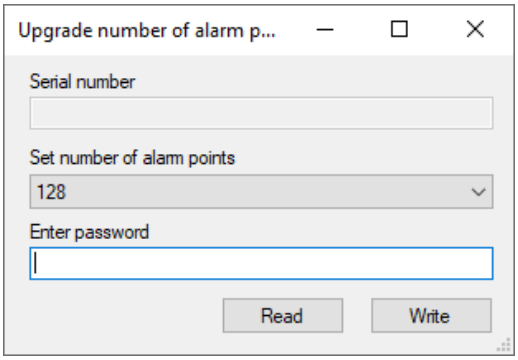
16.2.1. SOFTWARE VERSION

The control unit software (S/W) version will be displayed.

16.2.2. UPGRADE NUMBER OF ALARM POINTS

The control unit is by delivery configured for 128, 256 or 512 alarm points. Number of alarm points can be upgraded on site, via EBLWin. To upgrade the number of alarm points, do as follows:

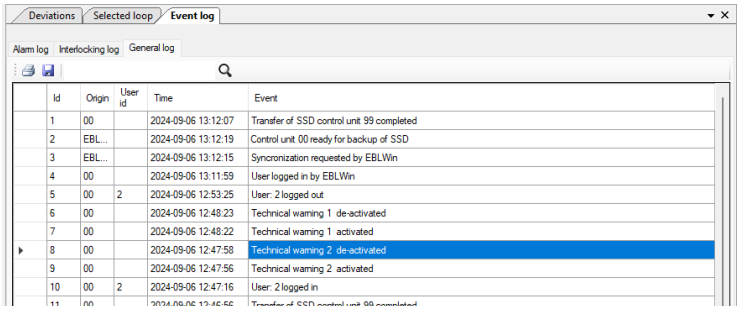
a) Open EBLWin in your PC.
b) Connect the PC to the USB connector in the control unit and log on.
c) Select the control unit icon, right click.
d) Select "Upgrade number of alarm points" and an "Upgrade" dialog box opens.



e) Click "Read" for the valid number of alarm points and the serial number for the control unit you are connected to.
f) If the number of alarm points shall be changed, report the serial number to the producer, in order to receive a password. The password will be generated with a special PC program (with a hardware lock) and is unique for every serial number and number of alarm points combination.
g) Write the new number of alarm points and the received password in the field respectively.
h) Click "Write" to configure the control unit for the new number of alarm points.
i) The "Configured number of alarm points" in the "Control unit properties" dialog box also must be changed.

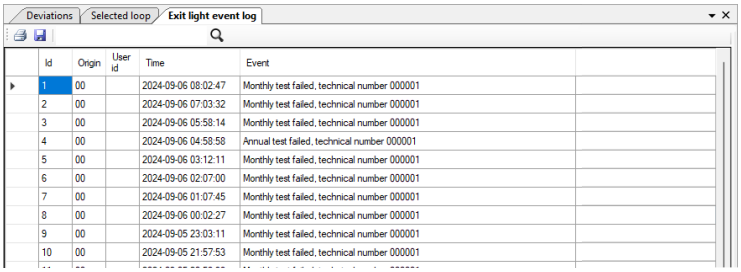
16.2.3. SHOW EVENT LOG

Three different event log lists, Alarm (999 events), Interlocking (999 events) and General log (999 events) can be shown. They are valid for the whole system.



16.2.4. SHOW EXIT LIGHT EVENT LOG

The Exit light event log will show the status of the monthly and annual test of the exit light (999 events).



16.2.5. RESTART

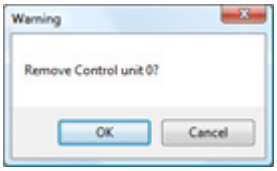
You can restart the control unit via this menu command.

16.2.6. CONVERT TO CONTROL UNIT (WITH MAIN BOARD 5012)

If main board 5012 is installed, as a replacement to main board 5010, you can convert the control unit via this menu command.

16.2.7. DELETE

The selected control unit can be deleted.

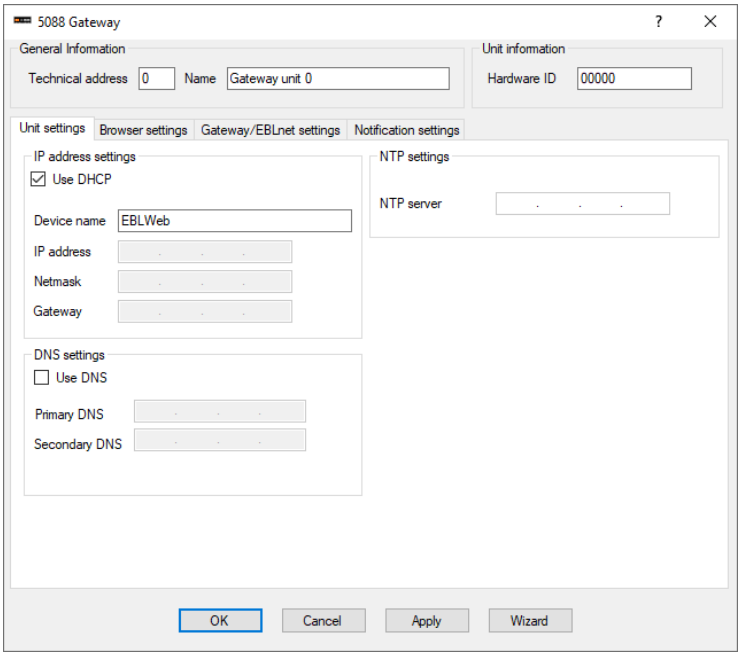


16.2.8. PROPERTIES

See section 16.1. CONTROL UNIT PROPERTIES on page 136.

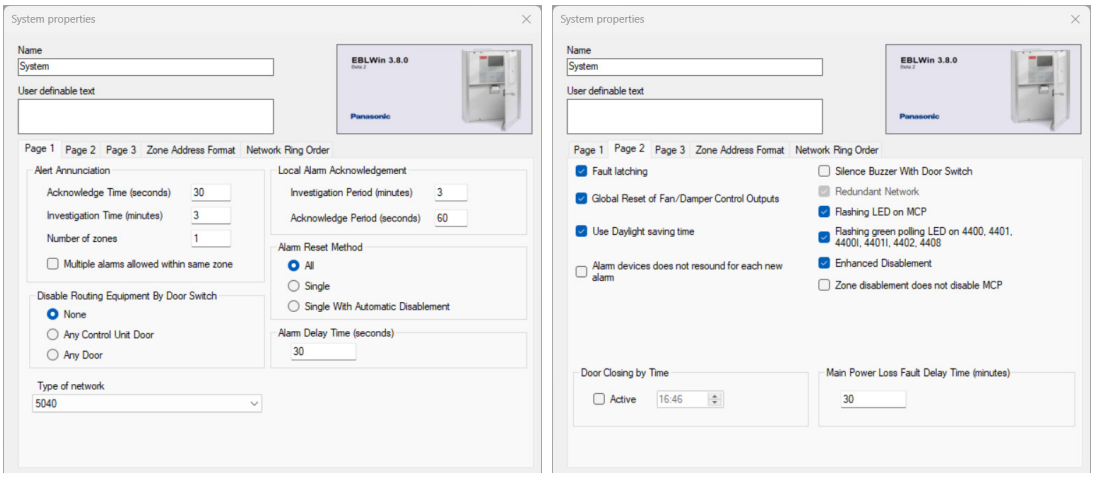
16.2.9. ADD GATEWAY 5088

The Gateway configuration program opens. One Gateway per control unit can be added and max. five (0-4) Gateways in the whole system.



See Technical description MEW02670 for more information.

16.3. SYSTEM PROPERTIES (SETTINGS)



Default settings in EBLWin might vary depending on convention.

16.3.1. SYSTEM PROPERTIES DIALOG BOX

Opens via the "System" pop-up menu or via menu **System /Properties...**.

16.3.2. NAME

Normally the installation name. Maximum 22 characters.

16.3.3. USER DEFINABLE TEXT

For user definable text. Two rows, in total 40 characters. (Carriage return takes 2 characters.) The text will be shown in all control units. See also EBL512 G3 Operating Instructions MEW02954.

16.3.4. SYSTEM PROPERTIES, PAGE 1

ALERT ANNUNCIATION

- **Acknowledgement time**: (30 sec. is default), 0-120 (= 2 min.) is possible.
- **Investigation time**: (3 min. is default), 0-9 is possible.

According to EN54-2, the total delay of fire alarm routing equipment (Acknowledge time + Investigation time) must not exceed 10 minutes.

- **Number of zones**: (1 is default), 1 - 4 is possible.
- **Multiple alarms allowed within same zone**: Normally only one Alert Annunciation alarm is allowed within the zone. If more Alert Annunciation alarms within the zone are allowed, this checkbox shall be marked.

See also section 13.11. ALERT ANNUNCIATION on page 104.

LOCAL ALARM ACKNOWLEDGEMENT

- **Investigation period time**: 3 min. (3 is default) 1-9 is possible.
- **Acknowledge period time**: 60 sec.(60 is default) 10-120 is possible.

See also section 13.13. LOCAL ALARM ACKNOWLEDGEMENT (LAA) on page 105.

DISABLE ROUTING EQUIPMENT BY DOOR SWITCH

Valid for the control unit outputs for routing equipment Fire alarm (for Fire brigade tx) and Fault condition (for Fault tx).

- **None** (default): Door open in a CU will not disable these outputs.
- **Any control unit door**: Door open in any CU will disable these outputs in all CU:s.
- **Any door**: Door open in any CU will disable these outputs in all CU:s.

The display (or via menu H4/U1) will show:
Fire alarm routing disabled (by open door in CU xx) **(xx = CU number)**

ALARM RESET METHOD

One of the following alternatives shall be selected.

- **All** (default): All fire alarms in the system will be reset simultaneously by pressing the "Reset" button (on the CIE front) once.
- **Single**: One fire alarm in the system, i.e. the fire alarm shown in the field in the middle of the control unit display will be reset by pressing the "Reset" button once. Any other fire alarm has to be reset the same way, one by one.

This function is a violation to the EN54-2 standard.

- **Single With Automatic Disablement**: Like "Single" reset but with the Disablement function (see below) as well.

This function is a violation to the EN54-2 standard.

Disablement function: If an alarm point or zone is reset while it still is in alarm state (for example smoke in a smoke detector or a manual call point with a broken glass) this unit will be automatically disabled in order to not activate a new fire alarm within 20 seconds. It will stay disabled until re-enabled via menu H2/B1.
The LED Fault / Disablements "General disablements" on the CIE front is indicating one or more disablement in the system.

ALARM DELAY TIME (SECONDS)

Valid for the detectors and zone line inputs, with this option selected via EBLWin.
30 is default. 0-300 seconds is possible.

This delay time starts when the fire alarm normally should have been activated.

TYPE OF NETWORK

Select the type of network board the control units in the system are equipped with.

16.3.5. SYSTEM PROPERTIES, PAGE 2

- **Fault latching** (default): All faults have to be acknowledged, also corrected faults. Checkbox not marked = No fault latching = Not corrected faults have to be acknowledged but corrected faults will automatically be deleted from the fault list.
- **Global reset of Fan Controls Outputs**: Obsolete function. See older versions of Planning Instruction for information.
- **Use Daylight Saving time**: See section 13.15.1. DAYLIGHT SAVING TIME on page 108.
  Checkbox not marked = Daylight saving time is not used.
- **Alarm devices does not resound for each new alarm**: Can be used in all conventions.
- **Silence Buzzer With Door Switch**: If the buzzer in the CIE shall be silenced when the door is opened, this checkbox shall be marked.

This function is a violation to the EN54-2 standard.

- **Redundant Network**: This checkbox shall be marked when two networks shall be used, i.e. each control unit in the system has to be equipped with two network boards (5040 / 5090).
- **Flashing LED on MCP**: The manual call point (type 3333 / 3339 / 4433 / 4439) built-in LED will flash to indicate communication with the CIE.
  Checkbox not marked = This option is disabled, which means the LED is switched off until the call point is operated.
- **Green polling LED**: Valid for the detectors 440x, including 4400I / 4401I, in Advanced mode and detector 4402 in Normal mode. The detectors 4400, 4400I, 4401, 4401I, and 4402 have a green polling LED.
  Always off = The green polling LED is not used.
  Flash when polled = The green polling LED will be blinking 20 ms / 7 sec. indicating the communication with the CIE.

When the detector 4400, 4401, and 4402 is in test mode the green polling LED will be turned off until the test mode is turned off. 4400I and 4401I, blinks 250ms / 3s during test mode.

- **Enhanced disablements**: Disabled alarm point will not activate pre-warning, fire alarm or fault.
  Checkbox not marked = Disabled alarm point will not activate pre-warning or fire alarm.
  Fault can still be activated.

This function is a violation to the EN54-2 standard.

- **Zone disablement does not disable MCP**: Normally MCPs are included in a zone disablement. When this checkbox is checked, addressable MCPs will not be disabled by a zone disablement.

This function is a violation to the EN54-2 standard.

DOOR CLOSING BY TIME

- **Active**: If all fire doors (trigger condition "Fire Door Closing") shall be closed at a definite time every day, this checkbox shall be marked and the time (hh:mm) set, for example. 23:00.

MAIN POWER LOSS FAULT DELAY TIME (MINUTES)

A fault will be activated mm minutes after loss of mains (230 V AC).
30 is default. 0-300 minutes is possible.

16.3.6. SYSTEM PROPERTIES, PAGE 3

DISPLAY UNIT DEFAULT IMAGE

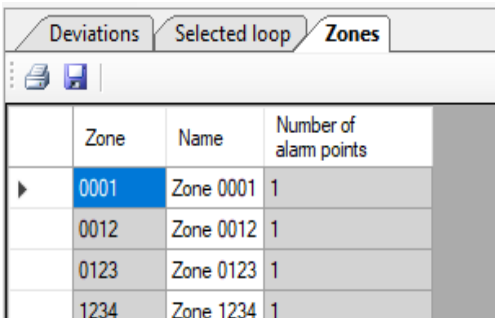
The image will be shown on the display unit information page (non-alarm mode), see Technical description MEW02951.
When selected image is invalid, a default image with Panasonic logo is used. Image validation is done with Validate (F6) before downloading SSD.

16.3.7. SYSTEM PROPERTIES, ZONE ADDRESS FORMAT

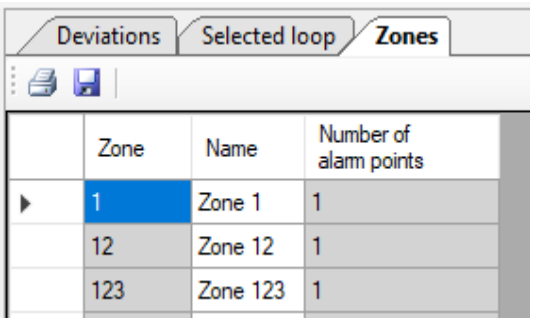
This section is not valid for system with protocol interface ESPA, EBLTalk, or MODBUS2. Only 3 digits are allowed for zone and address when using these protocol interfaces.

Set the number of digits for zone and address.

- **Number of digits in zones**: 3-6 digits is possible (3 is default).
- **Leading zeros in zones**: Checkbox not marked = leading zeros in the zone number will not be shown
- **Leading zeros in address**: Checkbox not marked = leading zeros in the address number will not be shown



With leading zeros



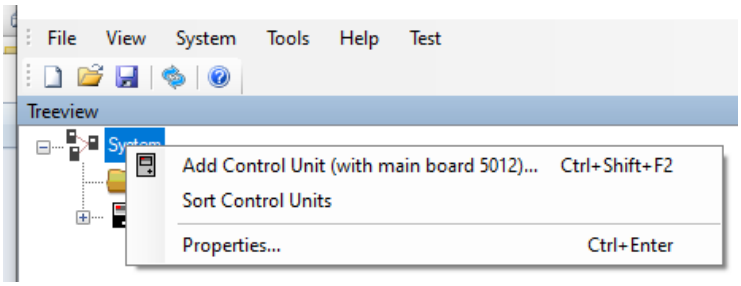
Without leading zeros

If multiple systems are used in EBL Graphics, they must have the same number of digits for zone and address.

16.3.8. SYSTEM PROPERTIES, NETWORK RING ORDER

Enter the network ring order of the control units in the network separated by comma (individual numbers or a range of numbers), for example 1, 2, 4-10, 3.
How the control units are connected to each other can be shown graphically, see 16.4.4. CHECK NETWORK on page 144.

16.4. SYSTEM POP-UP MENU



16.4.1. ADD CONTROL UNIT (WITH MAIN BOARD 5012)

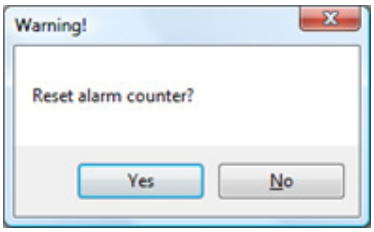
Opens the Control unit properties dialog, see 16.1. CONTROL UNIT PROPERTIES on page 144.

16.4.2. SORT CONTROL UNITS

Automatically sorting the Control Units in sequence, starting from 0.

16.4.3. RESET ALARM COUNTER

The control unit has an alarm counter that can be reset if required. (Level 2, i.e. a special access code is required.)

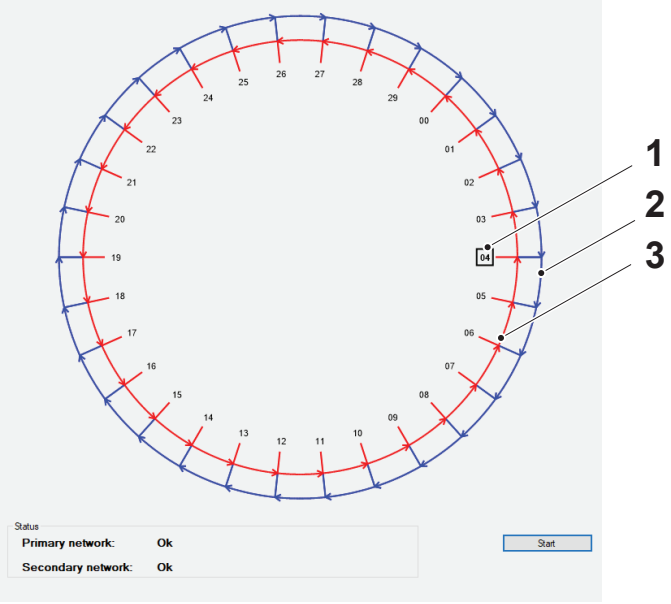


16.4.4. CHECK NETWORK

(When connected and logged on to an EBL512 G3.) Each control unit periodically monitors which control units in the network it has contact with. The information is used to generate the Network fault messages. The same information can be retrieved by the Check network command and shown graphically by EBLWin.

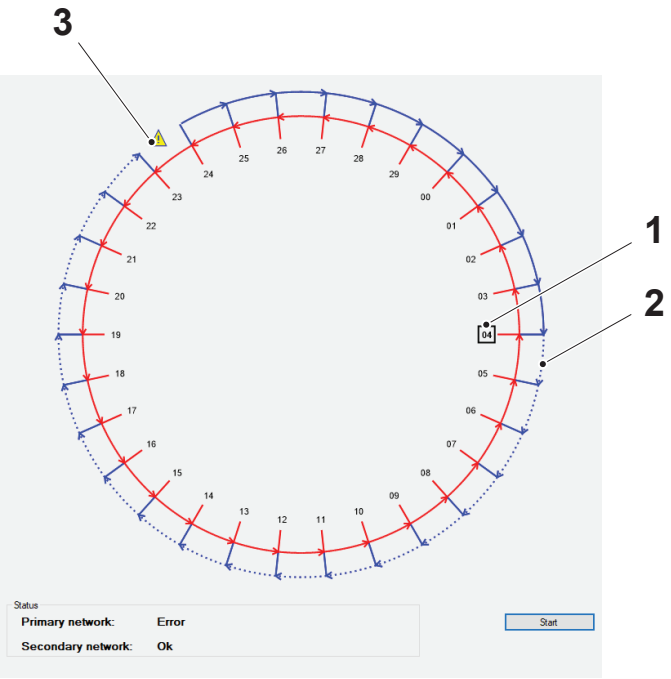
When a change is made to the network, i.e. changing network cables or restarting/shutting down control units, it may take up to 45s before the new status of the network has been concluded. If the Check network command is used during this time the result shown may be incorrect.

This function can only be used when 5040 is selected as type of network in the system properties dialog.



1) Control unit logged on to EBLWin
2) Primary network
3) Secondary network

A fault in the network will be shown graphically with a yellow warning sign. The graphical view will also indicate, with a dotted line, within which network section the not responding control unit can be found.
Repair the fault and press start to resume.



1) Control unit logged on to EBLWin
2) Fault on Primary network
3) Yellow warning sign indicating control unit not found

16.4.5. PROPERTIES

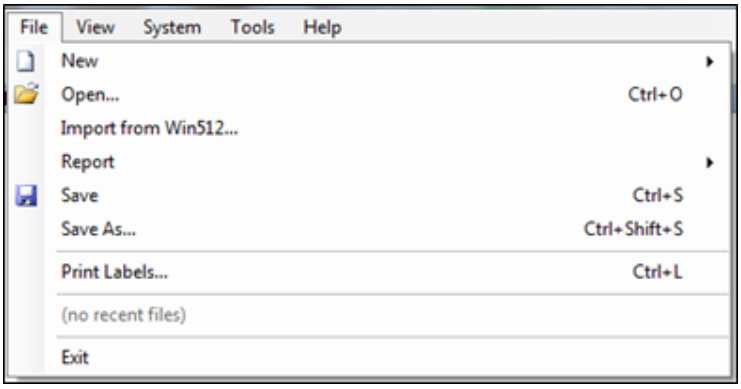
System properties.

17. EBLWin MENUS

When EBLWin is opened, the most recently used / saved (MRU) installation will be opened automatically if the checkbox "Open MRU at startup" is selected in the "EBLWin Settings" (Options) dialog box, else a new EBL512G3 system will be opened.

If the MRU installation is an EBL128 system, a new EBL512 G3 system has to be selected via menu File / New, see section below.

17.1. THE FILE MENU



17.1.1. NEW

To open a new installation. The type of system has to be selected.

- System EBL512 G3 (default)
- System EBL128

17.1.2. OPEN

To open an installation via a standard Windows dialog box "Open".

- EBLWin file (*.ebl)
- WinG3 file (*.WinG3)
- Win128 file (*.Win128)

17.1.3. IMPORT FROM Win512

To open an installation via a standard Windows dialog box "Open".

- Win512 file (*.512).

Only files saved with Win512 version 2.7.x can be imported.

17.1.4. REPORT

- **Installation Document**: All System properties, Control unit properties and so on, will be saved in a file (EBLWin Installation Document.htm), via a standard Windows dialog box "Save As".
- **Alarm points**: A list of all alarm points will be saved in a file (Alarm points report.htm), via a standard Windows dialog box "Save As".
- **Outputs affected by alarm points**: A list of all programmable outputs and which alarm points that will activate them will be saved in a file (Alarm points outputs report.htm), via a standard Windows dialog box "Save As".
- **Alarm points affected by time channels**: A list of settings for alarm points and time channels.
- **Current consumption**: See section 24.7. CURRENT CONSUMPTION REPORT on page 197.

17.1.5. SAVE

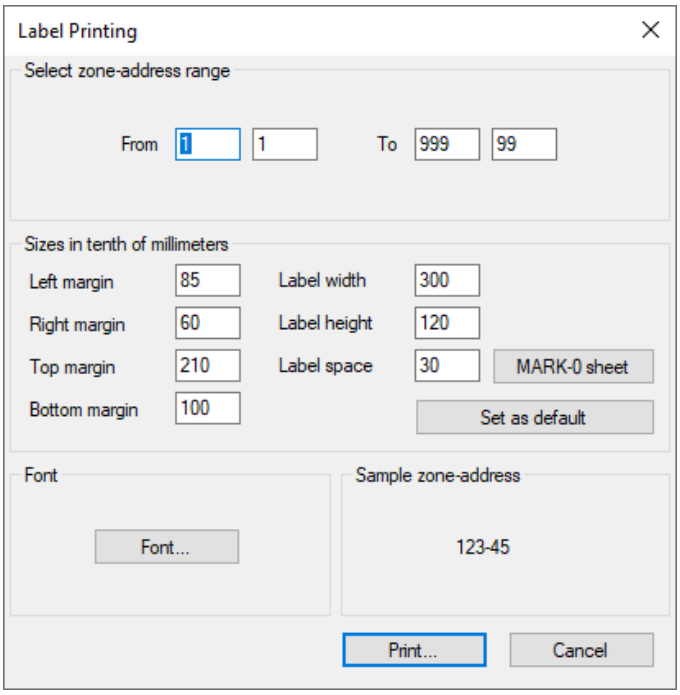
To save an installation (xxxxxx.ebl). The very first time, via a standard Windows dialog box "Save As".

17.1.6. SAVE AS

To save an installation (xxxxxx.ebl), via a standard Windows dialog box "Save As".

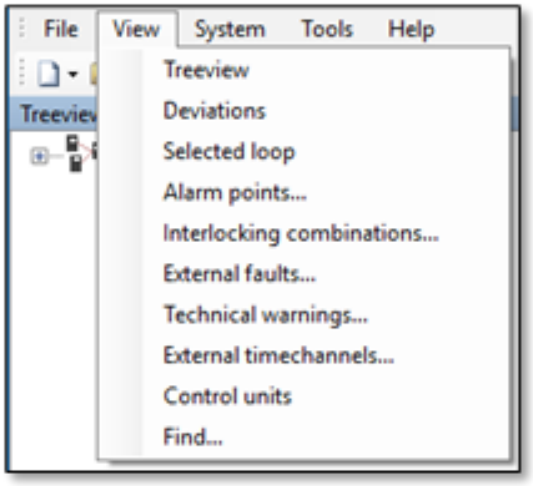
17.1.7. PRINT LABELS

Labels with Zone-Address for the specified range of programmed alarm points will be printed. In order to set the margins etc. the following dialog box will open:



For the Label holder (3390) the MARKO sheet can be used: Labels (3391) 10 sheets à 132 labels.

17.2. THE VIEW MENU



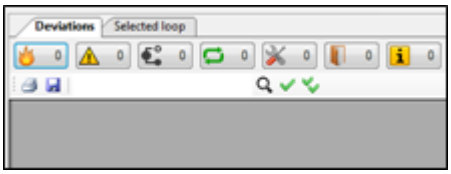
First time EBLWin is opened after installation the tree view will be visible to the left in the window.
(To the right will the tabs "Deviations" and "Selected loop" be available.)

17.2.1. TREE VIEW

Visible / open by default.
If the tree view for some reason has been closed it can be opened again via menu "View" and "Tree view".
The tree view shows the system and will be updated for every unit added to the system.
The colour of the control unit symbol is black in a new system or if its properties have been revised or units have been added or deleted after the latest download of SSD.

17.2.2. DEVIATIONS

To the right of the tree view, the tab "Deviations" is available by default.



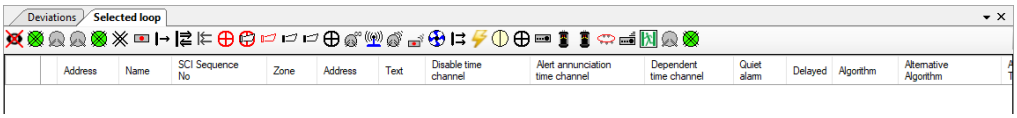
There is a button to open a list of:

- fire alarms (selected or all can be reset)
- faults (selected or all can be acknowledged)
- disablements (selected or all can be re-enabled)
- activated interlocking combinations
- service signals (selected or all can be acknowledged)
- open doors
- technical warnings

You can print and save what you see in the list respectively. A filter function is available.

17.2.3. SELECTED LOOP

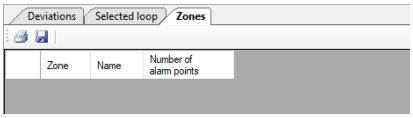
To the right of the tree view, the tab "Selected loop" is available by default.



COM loop units can be added in two ways. Via the tree view (COM loop pop-up menu) or via the "Selected loop" tab. Click a COM loop unit symbol to add the unit to the list. Then edit its properties.
The "Selected loop" list and the tree view will show the same information.
- show/hide the SUB-loops in the list.

17.2.4. ZONES

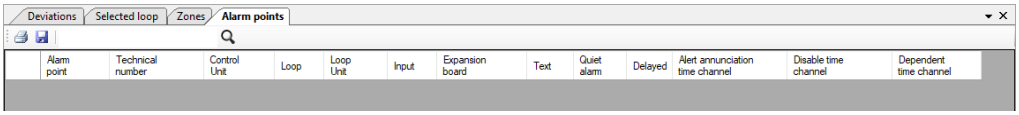
To the right of the of the tree view, the "Zones" tab can be available.



This is a list, for the whole system, showing all zones and their properties.
The list can be sorted by clicking the column header respectively.
Double click an alarm point row to open its dialog box.
You can print and save what you see in the list. A filter function is available.

17.2.5. ALARM POINTS

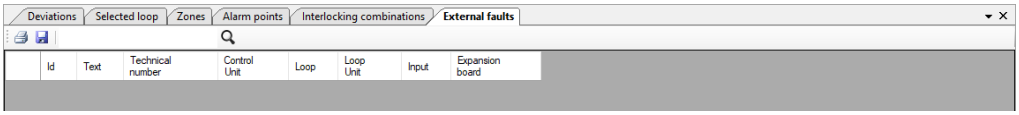
To the right of the of the tree view, the "Alarm points" tab can be available.



This is a list, for the whole system, showing all alarm points and their properties.
The list can be sorted by clicking the column header respectively.
Double click an alarm point row to open its dialog box.
You can print and save what you see in the list. A filter function is available.

17.2.6. INTERLOCKING COMBINATIONS

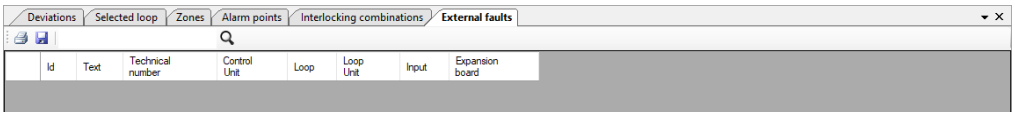
To the right of the tree view, the "Interlocking combinations" tab can be available.



This is a list, for the whole system, showing all interlocking combinations and their properties.
The list can be sorted by clicking the column header respectively.
Double click an interlocking combination row to open its dialog box.
You can print and save what you see in the list. A filter function is available.

17.2.7. EXTERNAL FAULTS

To the right of the tree view, the "External faults" tab can be available.



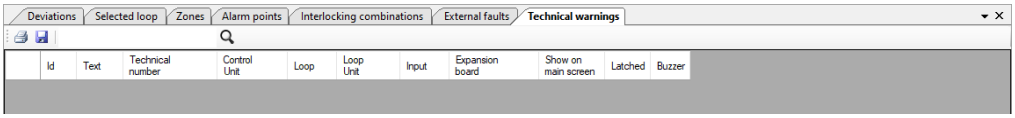
This is a list, for the whole system, showing all external faults and their properties.
The list can be sorted by clicking the column header respectively.
Double click an external fault row to open its dialog box.

Technical warnings, external faults, time channels (external and internal), control groups, and zone groups must have unique names.

You can print and save what you see in the list. A filter function is available.

17.2.8. TECHNICAL WARNINGS

To the right of the tree view, the "Technical warnings" tab can be available.



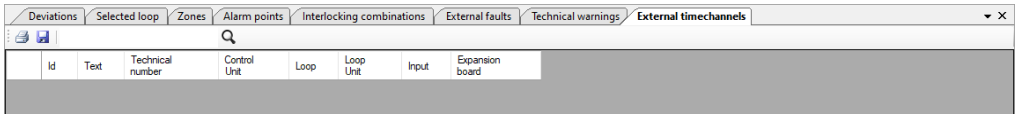
This is a list, for the whole system, showing all technical warnings and their properties.
The list can be sorted by clicking the column header respectively.
Double click a technical warning row to open its dialog box.

Technical warnings, external faults, time channels (external and internal), control groups, and zone groups must have unique names.

You can print and save what you see in the list. A filter function is available.

17.2.9. EXTERNAL TIME CHANNELS

To the right of the tree view, the "External time channels" tab can be available.



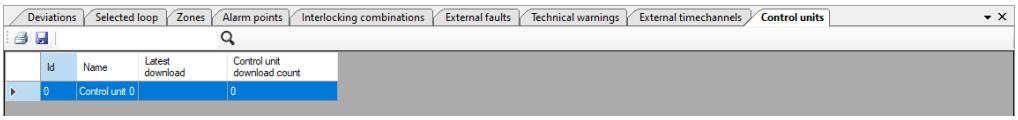
This is a list, for the whole system, showing all external time channels and their properties.
The list can be sorted by clicking the column header respectively.
Double click an external time channel row to open its dialog box.

Technical warnings, external faults, time channels (external and internal), control groups, and zone groups must have unique names.

You can print and save what you see in the list. A filter function is available.

17.2.10. CONTROL UNITS

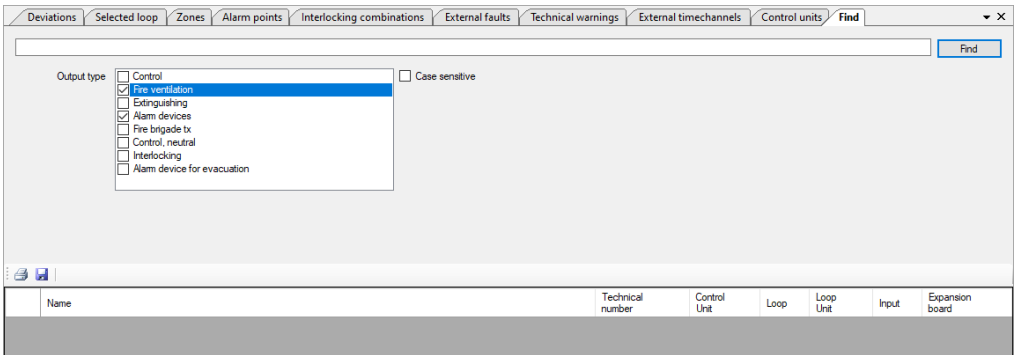
To the right of the tree view, the “Control units” tab can be available.



This is a list, for the whole system, showing all control units and their properties.
The list can be sorted by clicking the column header respectively.
Double click a control unit row to open its dialog box.

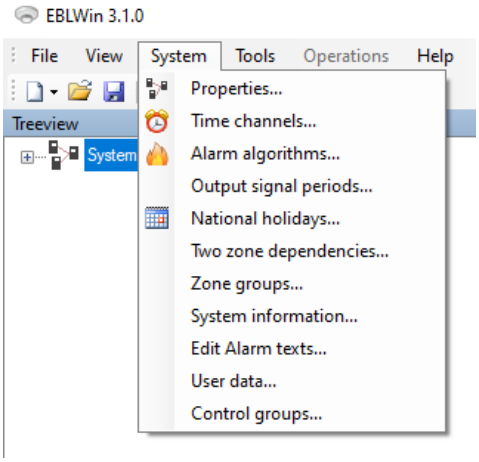
17.2.11. FIND

To the right of the tree view, the “Find” tab can be available.



The list can be sorted by clicking the column header respectively.
This is a search function to locate all units or inputs/outputs with certain criteria. The list can be filtered by using the "Output type" checkboxes.
You can print and save what you see in the list. A filter function is available.

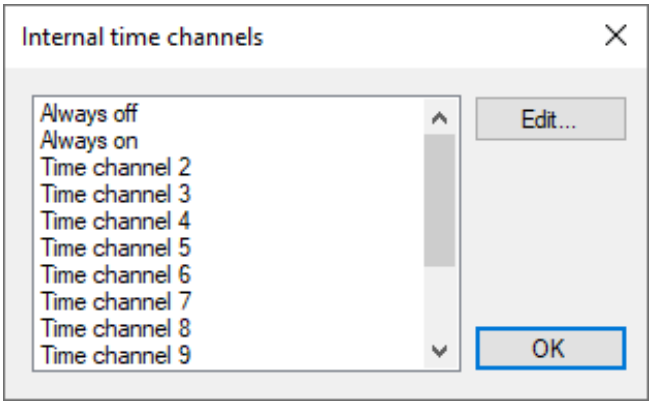
17.3. THE SYSTEM MENU



17.3.1. PROPERTIES

The system properties dialog box opens. See section 16.3.1. SYSTEM PROPERTIES DIALOG BOX on page 142.

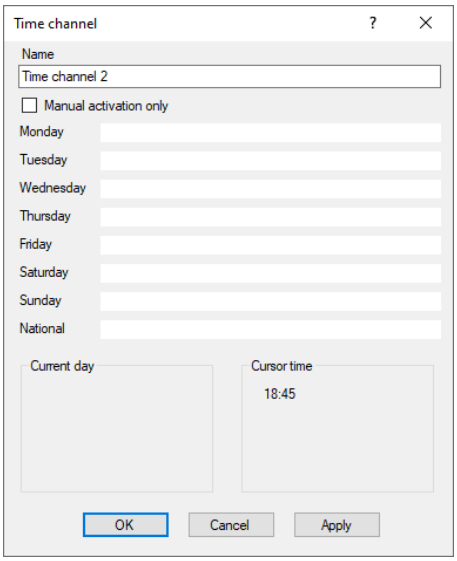
17.3.2. TIME CHANNELS

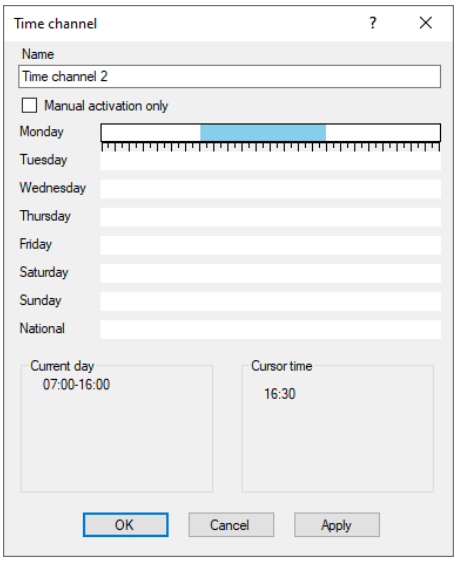


Always off cannot be edited.
The control unit RTC (real time clock) controls the time channels 2-14.
Five intervals (interval = one time on & one time off) can be set for each day in time channel 2-14.
Time channels can:

- disable and re-enable alarm points / zones
- set Alert Annunciation on / off
- activate /de-activate programmable control outputs
- set alternative alarm algorithm for analog detector types 430x / 440x on / off
- set 2-unit dependence function on / off

The properties for the Time channel (2 - 14) and each Day of the week (Monday – Sunday + National Holiday) must be set for each channel respectively.



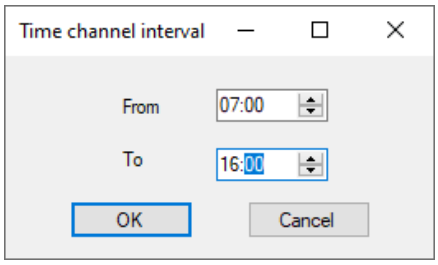


Left: The "Time channel 2" dialog box without any programming done.
Right: One time interval is programmed for the Monday (time channel 2 is "on" 07:00 – 16:00).

- **Name**: "Time channel n" is default. Normally not changed but an informative text can be added for example office hours.

Technical warnings, external faults, time channels (external and internal), control groups, and zone groups must have unique names.

- **Manual activation only**: Only valid for Input type "Manual activation of time channel" or with the Swiss fire brigade panel.
- **Monday to National**: Place the cursor (the "arrow") in the white day field (e.g. Monday). In the "Cursor Time" area (down to the right) is the actual cursor time displayed. Move the cursor in the day field. In the "Cursor Time" area will the corresponding time be displayed. In the correct time position (for example 07:00) click the left mouse button and drag the cursor to the right (or left) to the next time position (for example 16:00) and drop the cursor. There will now be a box in the day field indicating the time interval when the time channel is "on". The time interval is also displayed in the "Current Day" area (down to the left).
  A time interval can be edited by dragging the whole interval (or the left / right side of it) to the left or right in the day field. Alternatively, double click the time interval box in the day field to open a dialog box for easier time editing:



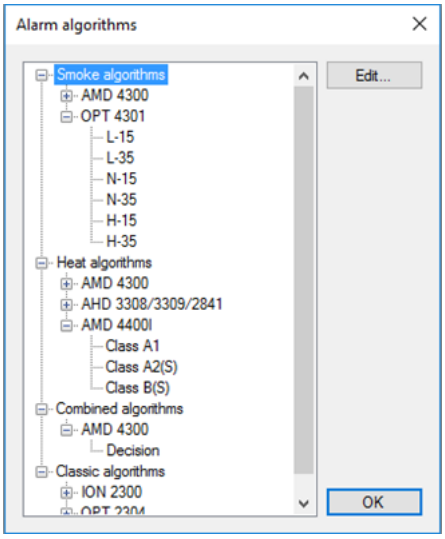
In this dialog it is possible to set the time interval to a full day by entering 00:00-00:00.

- **Current day**: The programmed time intervals (when the time channel is "on") for the selected day, are shown here.
- **Cursor time**: The cursor position (time) in the day field respectively, is shown here.

For each day, five time intervals can be programmed. A time interval can be copied in one day field and pasted into another day field. See also section 17.3.5. NATIONAL HOLIDAYS on page 158.

17.3.3. ALARM ALGORITHMS

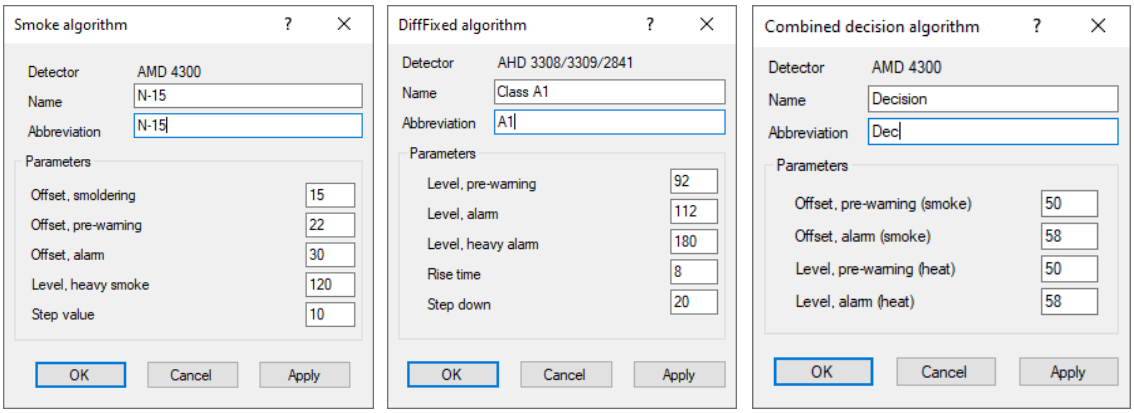
The following is not valid for detectors in Advanced mode. This section is only valid for the alarm algorithms where the fire judgement is made in the CIE.



All the different algorithms for the different detector types are shown in the tree view to the left.

a) Click + to expand and - collapse the tree view.

b) Select one algorithm and click Edit and a dialog box displays depending on the selected algorithm:



Smoke algorithm N-15 for 4301 / 4401, Heat algorithm Class A1 for 3308 and Combined Decision algorithm Dec for 4300 / 4400 respectively. All in NORMAL mode.

- **Detector**: Shortening and Type number.
  OPT = Analog photoelectric (optical) smoke detector
  AHD = Analog heat detector
  AMD = Analog Multi Detector).
- **Name**: Name of the algorithm. Normally not changed.
- **Abbreviation**: The algorithm abbreviation (< six characters) as shown in the EBL512 G3 display, menu H4/U4. Normally not changed.

PARAMETERS FOR SMOKE ALGORITHMS

Valid for the detectors 4300 / 4400 and 4301 / 4401. All in NORMAL mode.

Offset is a fixed value added to the week average sensor value to get the "alarm" level respectively, for example week average sensor value 0.1 + offset 3.0 = 3.1 = the fire alarm level (equivalent to 3.1 % obscuration per meter). The step value gives the alarm delay time to the algorithm respectively.
See section 7.2. NORMAL MODE ALGORITHMS – SMOKE DETECTORS on page 31.

The following example is for the N-15 algorithm for the 4301 detector. The values for other algorithms are different.

- **Offset, smouldering**: Offset value, default 15 = 1.5%/m.
- **Offset, pre-warning**: Offset value, default 22 = 2.2%/m.
- **Offset, alarm**: Offset value, default 30 = 3.0%/m.
- **Level, heavy smoke**: Heavy smoke level, default 150 = 15%/m.
- **Step value**: Default 10.

Changing these parameters will affect the sensitivity and detection time and should be done by authorized personnel only! A special password is required to change the parameters for fire alarm.

PARAMETERS FOR HEAT ALGORITHMS

Valid for the detectors 3308 / 3309 / 4408 / 4409 and the multi detectors 4300 / 4400. All in NORMAL mode.

The "heat alarm" levels are fixed, which means there are no offset values. The sensor values can be 0-200, which is equivalent to 0-100 °C. The rise time and step down gives a rate-of-rise function (used in the A1 algorithm only).
See section 7.4. NORMAL MODE ALGORITHMS – HEAT DETECTORS on page 41.

The following example is for the A1 algorithm for the 3308 / 3309 / 4408 / 4409 detector. The values for other algorithms are different.

- **Level, pre-warning**: Level, default 92 (46 °C)
- **Level, alarm**: Level, default 112 (56 °C)
- **Level, heavy alarm**: Level, default 180 (90 °C)
- **Rise time**: Default 8
- **Step down**: Default 20.

Changing these parameters will affect the sensitivity and detection time and should be done by authorized personnel only! A special password is required to change the parameters for fire alarm.

PARAMETERS FOR COMBINED DECISION ALGORITHM

Valid for the detectors 4300 / 4400. All in NORMAL mode.

Explanation Offset, see PARAMETERS FOR SMOKE ALGORITHMS on page 157.
Explanation Level, see PARAMETERS FOR HEAT ALGORITHMS on page 157.

The following example is for the Decision algorithm for the 4300 detector.

- **Offset, pre-warning**: Offset value, default 50 = 5.0%/m.
- **Offset, alarm**: Offset value, default 58 = 5.8%/m.
- **Level, pre-warning**: Level, default 50 °C.
- **Level, alarm**: Level, default 58 °C.

Changing these parameters will affect the sensitivity and detection time and should be done by authorized personnel only! A special password is required to change the parameters for fire alarm.

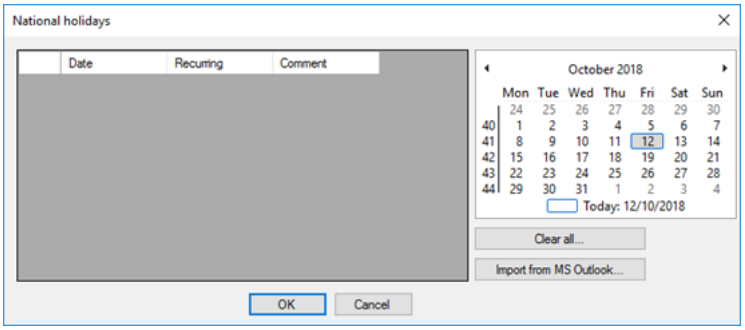
17.3.4. OUTPUT SIGNAL PERIODS

See section 12.19.5. OUTPUT SIGNAL PERIOD on page 74.

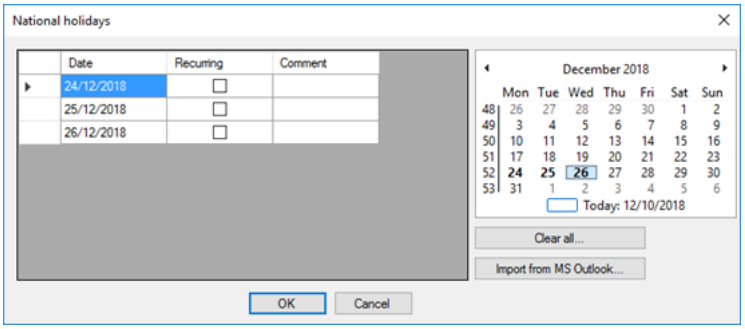
17.3.5. NATIONAL HOLIDAYS

Up to twenty national holidays can be set for the whole system.

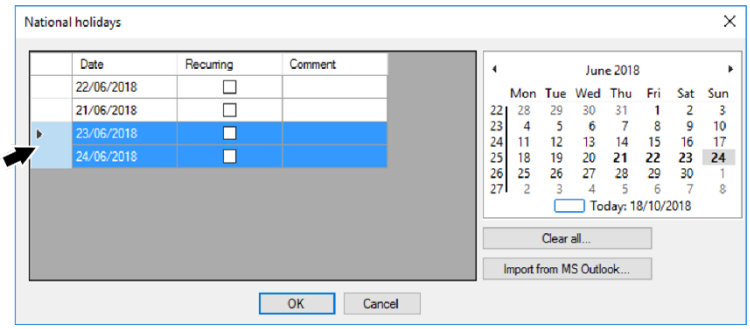
National holidays can be added one by one:
Click with the left mouse button on a date in the calendar (on the right side).



A row with that date will be added in the list (on the left side).



To delete a date in the list, click on the very left column for that date to select a row. The complete row will turn blue. Press delete. To delete all selected dates, press **Clear all**.



If Microsoft® Outlook® is installed on your PC the national holidays can be automatically added in the list by clicking **Import holidays from Outlook**.... Mark the checkbox "Recurring" if a holiday recur the same date every year, for example Christmas Day, Boxing Day and so on.

The National holidays have first to be imported to Microsoft® Outlook. The number and dates of national holidays varies between different countries.

ON/OFF times for each time channel (1 - 14) and every day of the week (incl. national holidays) have to be set.

17.3.6. TWO ZONE DEPENDENCE

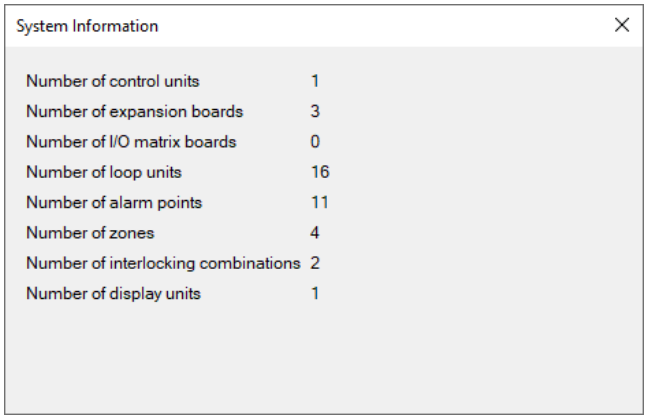
See section 13.5.1. TWO ZONE DEPENDENCE on page 98.

17.3.7. ZONE GROUPS

See section 13.17. ZONE GROUPS on page 109.

17.3.8. SYSTEM INFORMATION

In this dialog box you can read the following information:



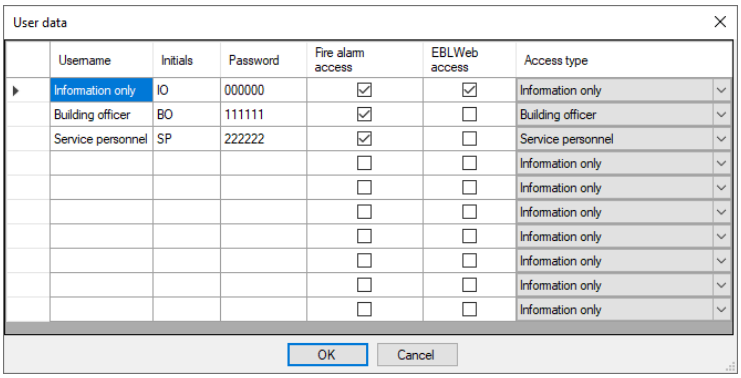
This is what has been programmed so far in the system. The information will be updated when units and so on are added or deleted.

17.3.9. EDIT ALARM TEXTS

The user definable alarm text for each alarm point can be created / edited in the alarm point dialog box respectively or via the menu: System menu / Edit Alarm texts. See section 13.2. ALARM TEXTS on page 90.

17.3.10. USER DATA

To log on to the CIE and/or the Gateway a User name and a password are required.
Up to ten different User names with corresponding passwords can be defined for any of the three different User level Types.



User level Types:

- **Information only**: gives access to the menus H4, H6, H9 and H10.
  (Level 2B according to EN54-2.)
- **Building officer**: gives access to the menus H1 – H4, H6, H7, H9 and H10.
  (Level 2C according to EN54-2.)
- **Service personnel**: gives access to the menus H1 - H10.
  (Level 3A according to EN54-2.)

For more information regarding user names, passwords, user levels, logon to a control unit, etc. see EBL512 G3 Operating Instructions, MEW03040.

It is highly recommended to change the default user names and passwords.
If the same user names and passwords shall be used for the Gateway put checkmarks in the "EBLWeb access" column.

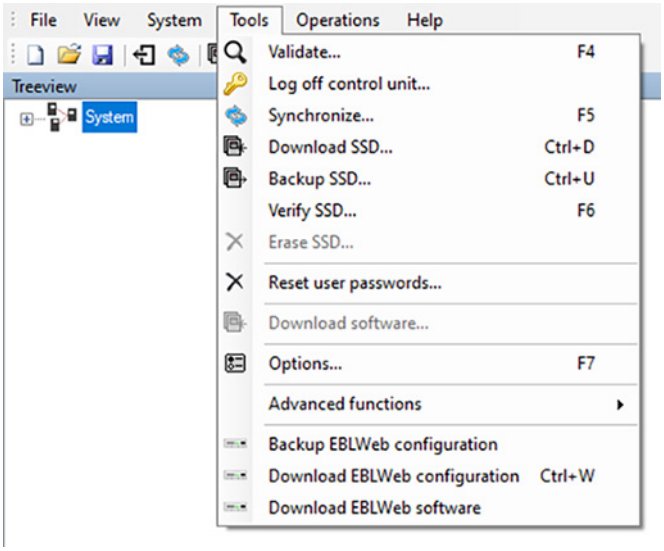
17.3.11. CONTROL GROUPS

Create control groups for activation of outputs. See section 12.19.12. CONTROL GROUPS on page 88.

Maximum 100 control groups per system.

17.4. THE TOOLS MENU

The EBLWin menu "Tools" is used, when the PC is connected to an EBL512 G3 control unit, for example to download / backup SSD.
Some commands are disabled and greyed out if you have not logged on to the control unit.



17.4.1. VALIDATE

The SSD is validated automatically before downloaded to an EBL512 G3 but can also be done via this menu.

17.4.2. LOG ON CONTROL UNIT

Log on / Log off to an EBL512 G3. During logon EBLWin will compare the PC:s clock with the clock in the control unit. If the difference is more than five minutes a message box will be shown allowing the user to set the clock in the control unit to the PC:s clock.

An EBLWin key 5094 must be plugged in a USB port on the PC / Laptop. Make sure you have the EBLWin key driver installed on your computer. The latest HASP driver can be downloaded from https://cpl.thalesgroup.com/software-monetization/sentinel-drivers.

17.4.3. SYNCHRONIZE

(When connected and logged on to an EBL512 G3.) Data, for example faults and disablements, will be synchronized, so there is the same data / information in all control units and EBLWin. This can also be done via menu H8/S7 in the CIE.

17.4.4. DOWNLOAD SSD

(When connected and logged on to an EBL512 G3.) For downloading of SSD to one or more EBL512 G3 control units and connected Display Units.

17.4.5. BACKUP SSD

(When connected and logged on to an EBL512 G3.) For backup (upload) of SSD from all the EBL512 G3 control units and connected Display Units.

17.4.6. VERIFY SSD

(When connected and logged on to an EBL512 G3.) The SSD stored in an EBL512 G3 control unit is compared with the SSD open in EBLWin. If they are the same, the checksums should also be the same.

17.4.7. ERASE SSD

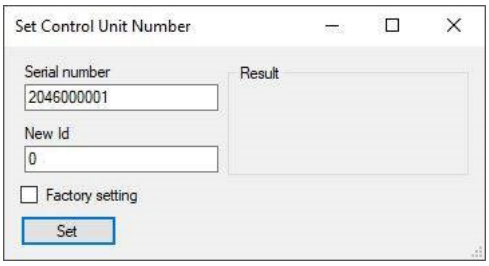
(With EBL512 G3 in boot mode.) The SSD stored in an EBL512 G3 control unit will be erased. Also the SSW (see Operating Instructions) will be erased.

An EBLWin key 5094 must be plugged in a USB port on the PC / Laptop. Make sure you have the EBLWin key driver installed on your computer. The latest HASP driver can be downloaded from https://cpl.thalesgroup.com/software-monetization/sentinel-drivers.

17.4.8. SET CONTROL UNIT NUMBER

(When connected and logged on to an EBL512 G3.) Set the control unit number of a selected control unit. The main board serial number of the control unit EBLWin is connected to, is automatically filled in.

- Serial number: Main board serial number
- New ID: Control unit ID.
- Factory settings: Set the control unit ID to 255



17.4.9. RESET USER PASSWORDS

(When connected and logged on to an EBL512 G3.) If any password has been changed via a control unit menu or via a Gateway, it will be reset to the password downloaded via the SSD, i.e. the passwords in the EBLWin dialog box "User data".

17.4.10. DOWNLOAD SOFTWARE

(When connected and not logged on to an EBL512 G3). For download of S/W to an EBL512 G3 control unit or to a display unit. There is one S/W file for each language / customer:

- EBL512 G3 control unit - .bin file
- Display unit 5054 < 3.4.0 - .dfu file
- Display unit 5054 > 3.4.0 - .bin file

For more information about downloading S/W via EBL Firmware Manager, see MEW02584.

17.4.11. OPTIONS

EBLWin settings. A Convention is selected the very first time EBLWin is opened. Can be changed if Level 2 is selected, see below. Display Unit language can be selected as well as the EBLWin language.

17.4.12. ADVANCED FUNCTIONS

Can be one of three alternatives:

- No Level selected: Alarm algorithm parameters cannot be changed.
- Level 1 selected: All alarm algorithm parameters except the fire alarm parameters can be changed.
- Level 2 selected (which require a special password): All alarm algorithm parameters can be changed. The convention for the open installation can be changed.

17.4.13. BACKUP EBLWEB CONFIGURATION

(When connected to the Gateway – TCP/IP.) Backup of the Gateway configuration.

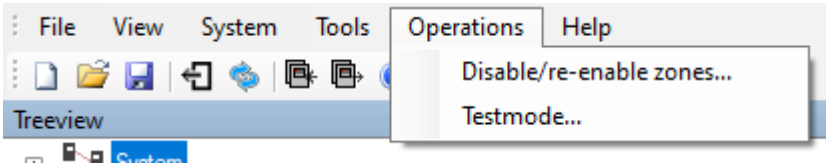
17.4.14. DOWNLOAD EBLWEB CONFIGURATION

(When connected to the Gateway – TCP/IP.) Download of the Gateway configuration.
For more information on the Gateway, see chapter 9. GATEWAY – RS232 INTERFACE on page 45.

17.4.15. DOWNLOAD EBLWEB SOFTWARE

(When connected to the Gateway – TCP/IP.) Download of the Gateway software (S/W).
For more information on the Gateway, see chapter 9. GATEWAY – RS232 INTERFACE on page 45.

17.5. THE OPERATIONS MENU



17.5.1. DISABLE / RE-ENABLE ZONES

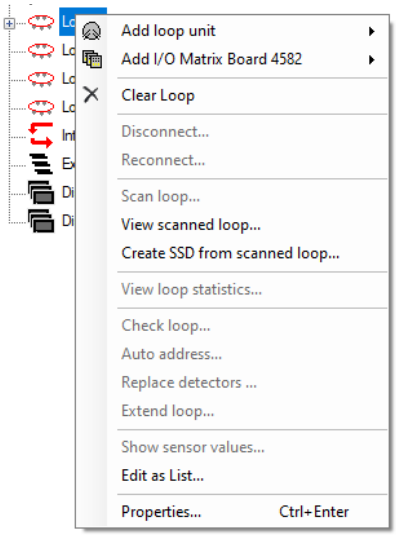
To the right of the tree view, the "Disable / re-enable zones" tab can be available.
Zones in a range (from zone - to zone) can be disabled/re-enabled.
Time setting can be used to re-enable automatically.

17.5.2. TESTMODE

To the right of the tree view, the "Testmode" tab can be available.

17.6. COM LOOP ICON POP-UP MENU

The functions that are greyed out will need log in.



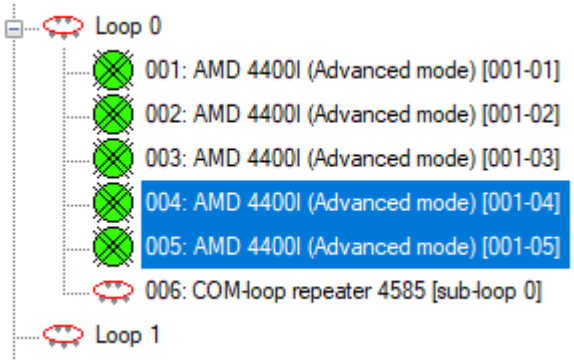
17.6.1. ADD LOOP UNIT

For more information about loop units, see 5. COM LOOP UNITS on page 19.

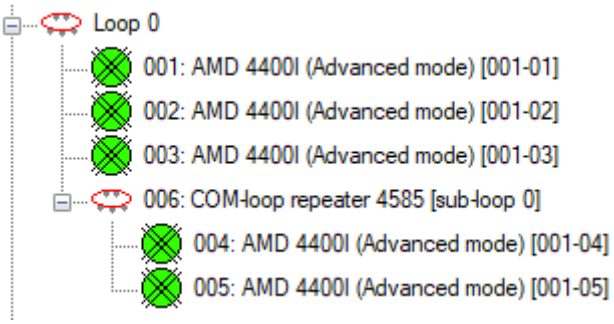
MOVE LOOP UNIT

Loop units can be moved between the main loop and the SUB-loops.
In the tree view, select the units to be moved (selected unit is marked blue). Press, and hold down, the button on the mouse, and drag the selected units between the main loop and the SUB-loop.

If several units are selected, the selected units need to be in sequence number.



Two units are selected to be moved.



The units are moved to the SUB-loop.

The loop units sequence number must be in numerical order, see 5.2.1. SEQUENCE NUMBER on page 22. When the loop units are moved between the main loop and the SUB-loop the sequence numbers will be rearranged automatically.

17.6.2. ADD I/O MATRIX BOARD 4582
Obsolete. See older version of Planning Instruction for information.

17.6.3. CLEAR LOOP
Will clear the loop from all units in EBLWin.

17.6.4. DISCONNECT
Disables the COM loop from EBLWin.

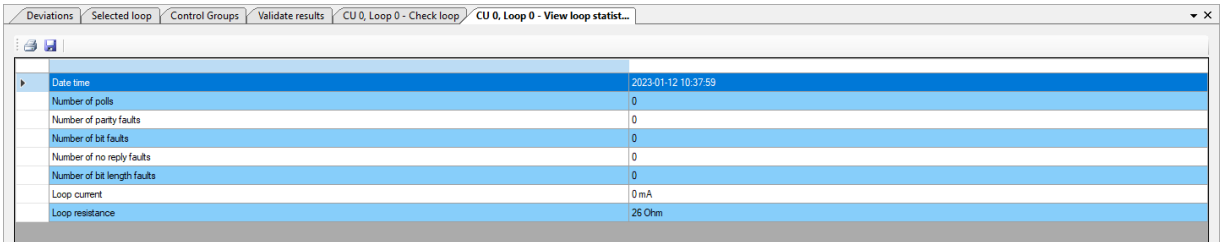
17.6.5. RECONNECT
Re-enables a disconnected COM loop from EBLWin.

17.6.6. SCAN LOOP
Scan the COM loop from EBLWin. Scan loop function is used with Loop tester 1105.

17.6.7. VIEW SCANNED LOOP
Import a scanned COM loop xml-file to view the loop in EBLWin.

17.6.8. CREATE SSD FROM SCANNED LOOP
Adds the units that are scanned on the COM loop to the SSD.

17.6.9. VIEW LOOP STATISTICS
Possibility to view, save and print all loop statistics for one loop. The information is automatically updated every 5th second.
Number of pollings is the number of pollings / "questions" sent out by the control unit to all the units connected on the COM loop.
Parity fault is the received number of parity faults and % (faults in relation to pollings).
Number of bit faults is the received number of bit faults and % (faults in relation to pollings).
Number of no replay faults is the received number of answer faults / no answers and % (faults in relation to pollings).
Number of bit length fault is the received number of bit length faults and % bit length faults in relation to the pollings.



17.6.10. CHECK LOOP

See section 13.23. CHECK LOOP on page 113, for more information.

17.6.11. AUTO ADDRESS

See section 13.24. AUTO ADDRESS on page 126, for more information.

17.6.12. REPLACE DETECTORS

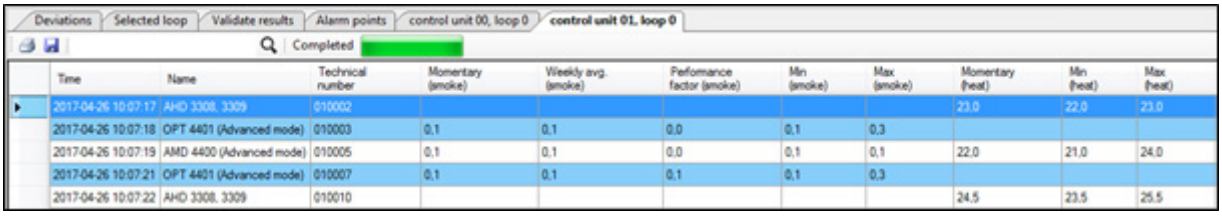
See section 13.25. REPLACE DETECTORS on page 129, for more information.

17.6.13. EXTEND LOOP

See section 13.26. EXTEND LOOP on page 130, for more information.

17.6.14. SHOW SENSOR VALUES

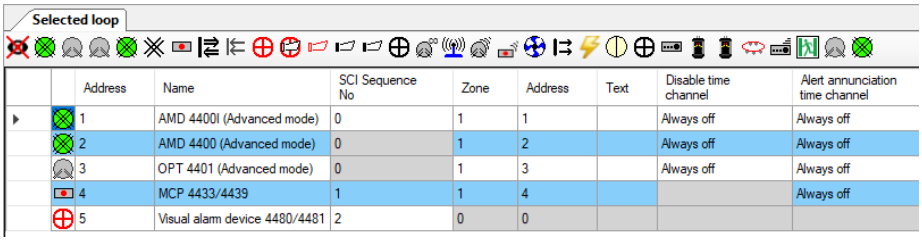
Possibility to view, save and print all sensor values for one loop.



Time	Name	Technical number	Momentary (smoke)	Weekly avg. (smoke)	Performance factor (smoke)	Min (smoke)	Max (smoke)	Momentary (heat)	Min (heat)	Max (heat)
2017-04-26 10:07:17	AHD 3308, 3309	010002						23,0	22,0	23,0
2017-04-26 10:07:18	OPT 4401 (Advanced mode)	010003	0,1	0,1	0,0	0,1	0,3			
2017-04-26 10:07:19	AMD 4400 (Advanced mode)	010005	0,1	0,1	0,0	0,1	0,1	22,0	21,0	24,0
2017-04-26 10:07:21	OPT 4401 (Advanced mode)	010007	0,1	0,1	0,1	0,1	0,3			
2017-04-26 10:07:22	AHD 3308, 3309	010010						24,5	23,5	25,5

17.6.15. EDIT AS LIST

This function offers possibility to edit the properties of all units on one loop in a list, instead of opening the properties window of each unit.



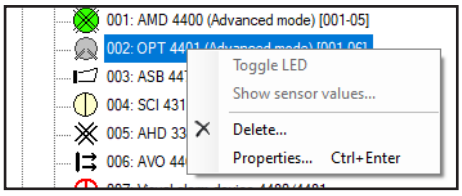
	Address	Name	SCI Sequence No	Zone	Address	Text	Disable time channel	Alert annunciation time channel
	1	AMD 4400I (Advanced mode)	0	1	1		Always off	Always off
	2	AMD 4400 (Advanced mode)	0	1	2		Always off	Always off
	3	OPT 4401 (Advanced mode)	0	1	3		Always off	Always off
	4	MCP 4433/4439	1	1	4			Always off
	5	Visual alarm device 4480/4481	2	0	0			

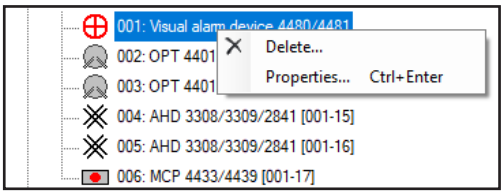
17.6.16. PROPERTIES

Properties for COM-loop.
See 23.1. CALCULATION OF CABLE LENGTH IN EBLWin and 24.1. TOTAL CURRENT CONSUMPTION FOR LOOPS.

17.7. LOOP UNIT ICON POP-UP MENU

In the tree view, right click on a loop unit icon.
The loop unit icon pop-up menu is depending on the functions of the loop unit.



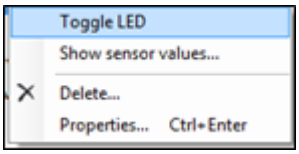


17.7.1. TOGGLE LED

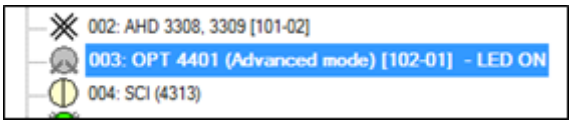
It is possible to identify a loop unit by turning on/off its LED via EBLWin.
The following units support the function “Toggle LED”: 2840, 2841, 3308, 3309, 4300, 4301, 4400, 4400I, 4401, 4401I, 4402, 4408, 4409, 4433, 4439, 4461, 4462, 4611, 4614, 4464, 4466, and 4585.

The unit must be set to NORMAL mode or Advanced mode.

a) In EBLWin, go to the loop unit in the tree view.
b) Right click.
c) Select item 'Toggle LED'.



d) The LED on the unit is lit as if it would be indicating a fire alarm, steady or flashing, depending on which type of unit. In EBLWin tree view the 'Toggle LED'-function is indicated by 'LED ON' for the activated loop unit.



e) To de-activate the function, right click the on the loop unit and select item 'Toggle LED' again.

Only one LED at a time can be lit, per control unit. If a LED is turned on while another one is already on the first one turns off.
If a LED is turned on, and then not turned off, it will turn off automatically after one hour.

If the control unit is in fire alarm state, the toggle LED function is not available.
If the control unit goes into fire alarm state due to another alarm point, while a LED is lit, the LED will turn off.

17.7.2. SHOW SENSOR VALUES

Possibility to view, save and print the sensor value for one sensor, in graph or table.

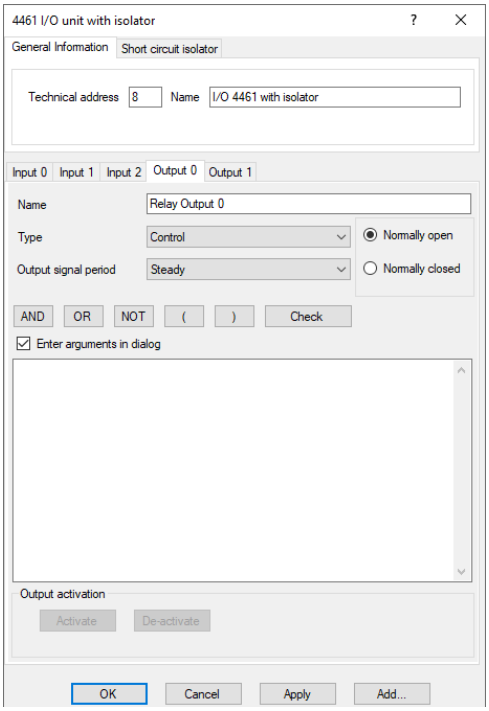
17.7.3. DELETE

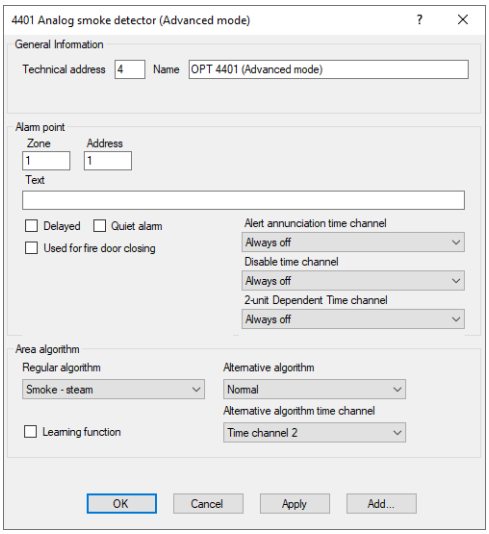
Delete the unit.

17.7.4. PROPERTIES

Each addressable unit has a properties window.

Here it is possible to set for example; technical address, zone address, algorithm, input type, output type, and control argument.





Two examples of properties windows.

18. DOWNLOAD SSD

The PC program EBLWin is used for creating the Site Specific Data (SSD) and to download it to the EBL512 G3 control unit(s) and/or Display Unit(s) 5054.
When the installation is ready, all units connected and the power is turned on, the SSD download can take place.

When a number of control units are connected in a network, the network has to be running before the SSD download can take place.

18.1. VERSION CONTROL FOR SSD DOWNLOAD

When the Download SSD window is opened in EBLWin, EBLWin checks that the SSD file originates from the SSD in the control units. The check is started automatically when the download SSD window is opened. It is not possible to start SSD download until the check is completed (or timeout occurs).

If the check shows that the SSD doesn't match the SSD in one or more control units, there will be a dialog window, asking if the download shall proceed anyway.

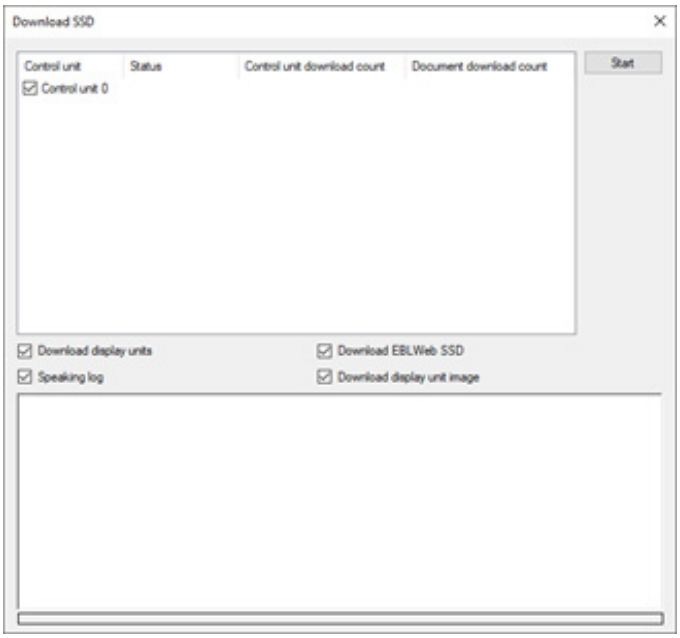
In a networked system all control units will be checked.

a) Connect the PC to the USB port (type "B") in one control unit.
b) Start EBLWin and open the wanted installation.
c) Log on to the control unit via the PC (EBLWin).

An EBLWin key 5094 must be plugged in a USB port on the PC / Laptop. Make sure you have the EBLWin key driver installed on your computer. The latest HASP driver can be downloaded from https://cpl.thalesgroup.com/software-monetization/sentinel-drivers.

d) In EBLWin, go to **Tools** menu / **Download SSD**… Select the control units as well as the Display Units, to which the SSD shall be downloaded.

If an SSD with a new or updated Display unit default image is to be downloaded to a display unit, the check box 'Download display unit image' must be selected.
When 'Download display unit image' is not checked, the SSD download will be faster.



e) Click **Start** to start the download. The progress bar will indicate for each unit.
f) "Control unit download count" / "Document download count" numbers should match.
See 18.1. VERSION CONTROL FOR SSD DOWNLOAD on page 169.

The download is not completed until the following box is shown:

g) Click OK.

After the SSD download the control unit will restart. A number of faults might then be generated, for example due to not connected units. This will cause "heavy traffic" on the network, which might affect, and delay, the SSD download to the other units. See also section 18.2. SINGLE CONTROL UNIT on page 171.

DISCONNECTED AT STARTUP

In the COM loop Properties dialog box it is possible to select the option "Disconnected at startup". The COM loop will then be disabled directly after the download restart and therefore not generate any faults.

A COM loop "Disconnected at startup" can be re-connected via menu H8/S1 but it will then be disconnected again after next SSD download. Finally the SSD for that control unit has to be downloaded again with the option "Disconnected at startup" not selected.

18.2. SINGLE CONTROL UNIT

a) Start the SSD download from EBLWin according to section 18. DOWNLOAD SSD on page 169. A text message will be shown in the control unit display: "Downloading SSD". When the download is completed and the control unit restart, a fault message will be shown in the display:

```
FAULT: Restart control unit nn code 25
YYYY-MM-DD    HH:MM
```

Code 25 indicates a normal restart after the SSD download.

b) Acknowledge the restart fault. If the download was not ok another fault will be generated.

```
FAULT: Site specific data (SSD) CU nn
YYYY-MM-DD    HH:MM
```

This text message means that the SSD have not been downloaded properly. Then a new download must be performed.

18.3. CONTROL UNITS IN A NETWORK

The SSD for all control units can be downloaded via a PC / EBLWin, connected to one control unit. The download will be performed to the control units, one at a time, according to the section 18.2. SINGLE CONTROL UNIT on page 171.
The download is performed in a consecutive order: 0-1-2-3-4-……-29 amongst the selected control units, but the control unit where the PC is connected will automatically be the last one to get the SSD downloaded.
When the SSD download is completed, that control unit will automatically restart and generate a restart fault.

18.4. ALARM TEXTS DOWNLOAD

Each alarm point, zone and zone line input can have a unique user definable alarm text programmed via EBLWin. All alarm texts are included in the SSD, and downloaded with the SSD, via EBLWin.
See also section 13.2. ALARM TEXTS on page 90.

19. DOWNLOAD SOFTWARE (S/W)

The latest software (S/W) version of the EBL512 G3 system program is factory downloaded before the delivery. Due to continual development and improvement, different S/W versions can be found.

The valid S/W version for the main board and the MMI board respectively, can be read in menu H4/U8 (Information) or via EBLWin. On site, new S/W can be downloaded via EBLWin.

Spare part boards are normally delivered without S/W.

EBL512 G3 type 5000 has both a main board and an MMI board. EBL512 G3 type 5001 has only a main board.

New S/W for the Display unit 5054 can be downloaded on site via EBLWin. See the "Technical Description" for Display unit 5054.

19.1. DOWNLOAD S/W TO SINGLE CIE

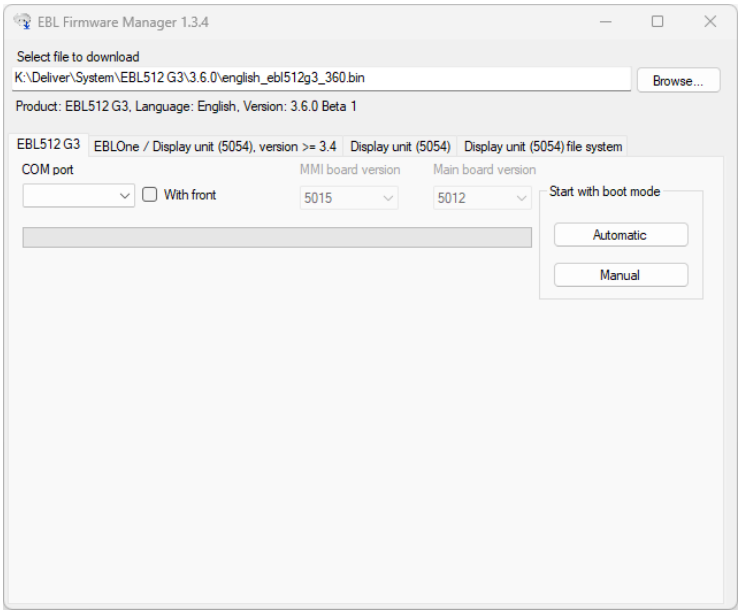
To download a new software (system program) version, a PC, EBLWin, and EBL Firmware Manager are used. The .bin file that shall be downloaded contains software for the main board, software for the MMI board and a text file. That means there is one .bin file for each language / country.

EBL Firmware Manager program is installed separately, and is available in different versions, see Technical description MEW02584. The procedure below describes download with EBL Firmware manager version 1.3.4 or newer.

EBL512 G3 v.3.6.0 or higher, require EBL Firmware Manager version 1.3.4 or newer to download S/W.

In EBL Firmware manager the download can be started with automatic boot mode or manual boot mode. The function to automatic start in boot mode requires main board 5012 with a downloaded S/W. In other cases the main board need to be manually set in boot mode.

a) Connect the PC to the USB connector in the CIE and start EBLWin. Do not logon.
b) Check that the EBLWin key is plugged in.
c) Select Tools menu / Download Software… to open the EBL Firmware Manager.



d) Click Browse and select the path and the Software file name, for example English_EBL512G3_360.bin (360 = version 3.6.0.)

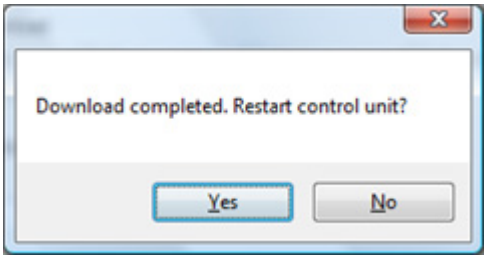
e) Use the checkbox “With front” to select EBL512 G3 type (5000 or 5001), see chapter 4. EBL512 G3 on page 17.
f) Select the COM port to be used on your PC.

Check in Control Panel / Device Manager / Ports (COM & LPT) | EBL512 G3 Serial Port (COMx).

g) Select MMI board.
h) Select main board.
i) If manual boot mode is to be used:
Set the main board in "boot" mode: Hold the "BOOT" button (SW2) down and push the "RESET" button (SW1) momentarily. Release the "BOOT" button. The main board LED "D24" is turned off while the main board is in "boot" mode.

You must never be logged on to the control unit via the PC (EBLWin) at the same time as the control unit is in boot mode. The fusible resistor R6 on the main board might burn.

j) If possible to use automatic boot mode, click **Automatic,** otherwise **Manual,** to start the download.
k) When the download is completed and the following dialog box opens:



l) Click **Yes** and the control unit will restart.

After the restart the following fault messages will be shown. Code 00 / 50 indicates a normal restart of the Main board / MMI board after the S/W download.

FAULT: Restart control unit nn code 00
YYYY-MM-DD HH:MM

FAULT: Restart control unit nn code 50
YYYY-MM-DD HH:MM

m) Acknowledge the restart faults. LED "Operation" on the front shall now be turned on and all other LEDs on the front shall normally be turned off. The download is finished.

19.2. DOWNLOAD S/W TO CIE.s IN A TLON NETWORK

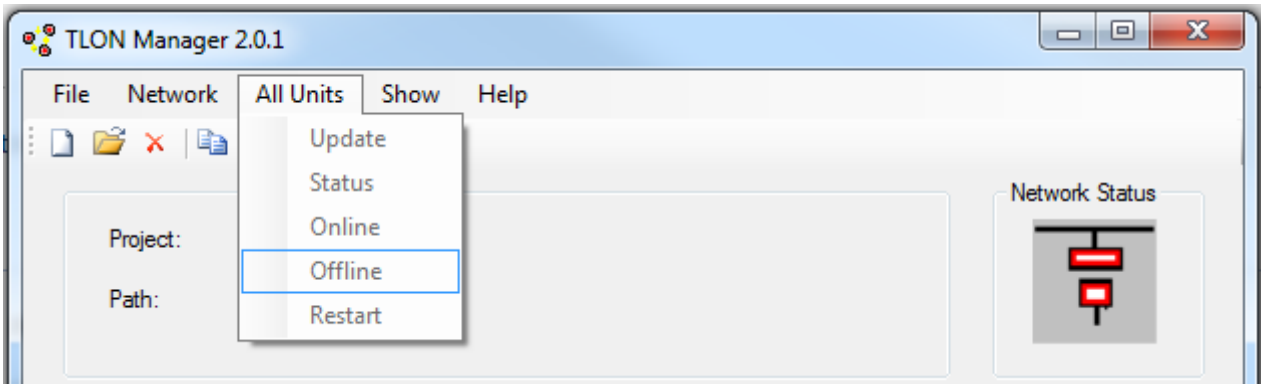
All control units connected to a TLON network must have the same software version.
Also in a network, the software is downloaded separately to each and every CIE.

Before upgrading the software in a TLON network, it is recommended to disconnect the control units from the network. It can be done physically (disconnect the TLON cable from the CIE), or via TLON Manager.

It is highly recommended to disconnect the TLON network during upgrade in large networks. Otherwise it will result in large amount of fault messages.

The TLON PCBs must remain mounted in the control units, or the control units will lose their TLON configuration.

a) Disconnect the gateway, RS232 in the CIE (if any).
b) Open TLON manager in the PC. Connect the EBL System to TLON Manager and set all control units to “Offline”.



c) Follow the procedure a) to m) in section 19.1. DOWNLOAD S/W TO SINGLE CIE on page 172.
d) One by one, as the control units start up after the download, they will automatically get “online” in TLON Manager, and the communication will start run as normal.
e) Download compatible software in the gateway via TCP/IP (if any).
f) Download SSD to the control units. It can be done according to section 18.3. CONTROL UNITS IN A NETWORK on page 171. If it is a large system, it is preferable to download SSD to one control unit at a time. This, to avoid a large amount of traffic on the TLON network.
g) Re-connect the gateway in the CIE (if any).

If the downloaded S/W version is only a small bug-correction, there is no need to follow the procedure above. If so, download S/W to one control unit at a time, and then in the control unit, acknowledge all the ’No contact’ faults.

19.2.1. IF THE S/W DOWNLOAD IS DONE WITH NETWORK CONNECTED

Since some control units do not have contact with some control units during the downloading, there will be “no contact” fault messages.
Since control units with new and old S/W will have different information, there will be “wrong information” fault massages.

In large networks, there might be a large amount of fault messages generated.

FAULT: Control unit nn has no contact with
control unit nn, network x
YYYY-MM-DD HH:MM

FAULT: Restart control unit nn has wrong information
YYYY-MM-DD HH:MM

The faults must be acknowledged.

19.3. DOWNLOAD S/W TO CIE.s IN A EBL RING NETWORK

All control units connected to a network must have the same software version.
Also in a network, the software is downloaded separately to each and every CIE.

a) Disconnect the gateway, RS232 in the CIE (if any).
b) Follow the procedure a) to m) in section 19.1. DOWNLOAD S/W TO SINGLE CIE on page 172.
c) Download compatible software in the gateway via TCP/IP (if any).
d) Download SSD to the control units. It can be done according to section 18.3. CONTROL UNITS IN A NETWORK on page 171.
e) Re-connect the gateway in the CIE (if any).

20. S/W VERSIONS

Due to continual development and improvement, different S/W versions can be found.
Different S/W versions can be found on different markets.
The S/W versions listed below were the valid ones when this document was written (the date of this document or date of revision).

S/W for:	Latest version	Required version
5000S/5001S	3.8.0	3.8.0
4580; 8 zones expansion board, P.C.B. no. 9287-2B	1.0.5	1.0.2
4580; 8 zones expansion board, P.C.B. no. 9287-3A	2.0.10	2.0.4
4581; 8 relays expansion board	1.0.2	1.0.2
4583; Inputs and Outputs expansion board	1.0.2	1.0
4583DE; Inputs and Outputs expansion board	1.0.4DE	1.0.4DE
5090; TLON connection board	1.0.0	1.0.0
5054; Display unit V3	3.8.0	3.8.0
EBLWin	3.8.0	3.8.0
TLON Manager	2.0.1	1.2
5088 Gateway	3.8.0	3.8.0

The EBLWin version, EBL512 G3 version, and Gateway S/W version must be the same, at least the first two digits; 2.8.x -- 2.8.x.

Main board 5012 require S/W version 2.6.x or newer.

Network board 5040 require S/W version 3.0.x or newer.

21. NETWORK

An installation (a system) can be one control unit (CIE) or up to 30 control units connected in a network.

In a network each control unit works independent but has nevertheless total access to all information in the system.

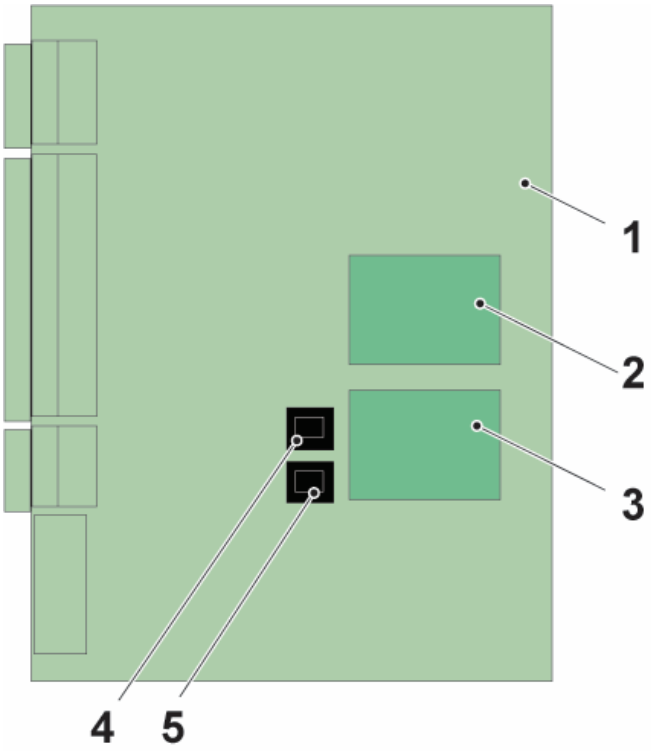
In a system with two or more control units in a network, pay attention to the following:

- A zone must not be distributed over the system, i.e. all alarm points in a zone have to be connected to one CIE.
- When the "Fire door closing" function is used, the alarm points and their "belonging" output must be connected to the same CIE.
- When the interlocking function is used, the input, the output and the Interlocking Combination (area-point) must be in / connected to the same CIE An input and an output can only be used in one Interlocking Combination.
- When the Local Alarm Acknowledgement (LAA) function is used, all devices within the same LAA zone must be connected to the same CIE.

A single CIE shall not have any network board mounted. When a CIE has a network board mounted, it is expected to be in a network and network programming is required.

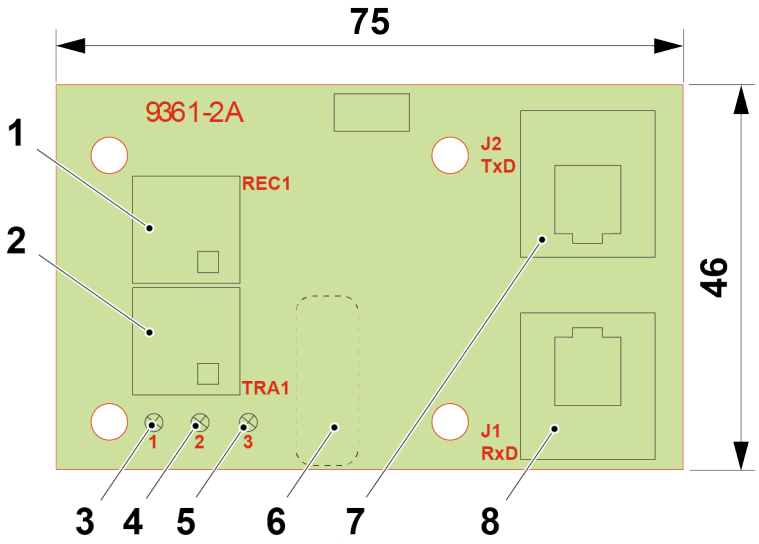
21.1. CONNECTION NETWORK BOARD

On the main board in the control unit, there are spaces and connectors for two network boards type 5040 or 5090. In a single (standalone) control unit there shall be no network board mounted.



1) Main board
2) Network board, position 0 (Primary network)
3) Network board, position 1 (Secondary network)
4) J10 for connection to board in position 0
   (Only used for TLON network programming)
5) J11 for connection to board in position 1
   (Only used for TLON network programming)

21.1.1. NETWORK BOARD 5040



1) REC1, connector (ST) for incoming network cable (fiber)
2) TRA1, connector (ST) for outgoing network cable (fiber)
3) LED 1, Flashing (short pulse) when receiving (Rx)
4) LED 2, Flashing (short pulse) when transmitting (Tx)
5) LED 3, Normally OFF. Turns steady ON when nothing has been received for 30 s (Fault)
6) P.C.B label for identification
7) TxD, connector (RJ45) for outgoing network cable (copper)
8) RxD, connector (RJ45) for incoming network cable (copper)

REDUNDANT NETWORK

EBL Ring network is a redundant Network (both Network no. 0 and no. 1 is required), the network boards (5040) shall be mounted in position no. 0 and position no. 1 on the main board.
The network cables are connected directly to the 5040 board.

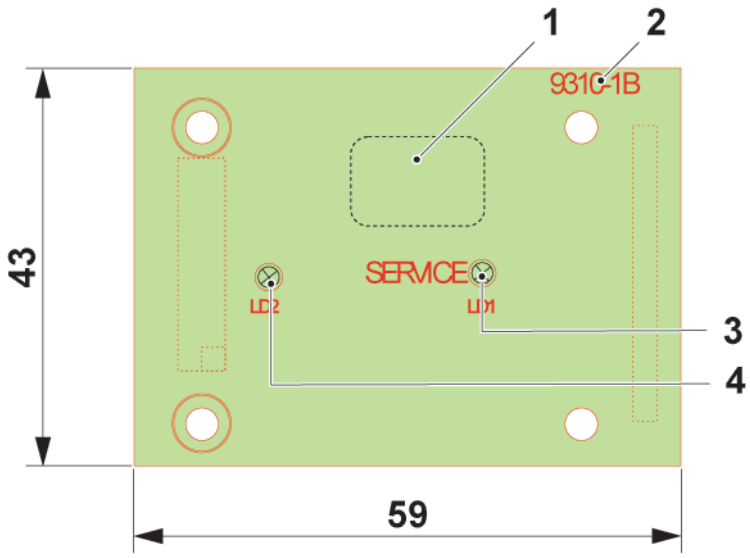
SINGLE NETWORK

If there is no need for redundancy, it is possible to use just one network board. The 5040 board shall be mounted in position no. 0 on the main board.
In this case, all communication takes place on a single network, called network 0. In the event of a network failure (i.e. open circuit or short circuit) the control units in the system can no longer share information. This can adversely affect the function of the system and violates the EN 54-2 standard unless all units in the system are autonomous control units, that is:

- All control units must be type 5000, i.e. including front panel
- The alarm points and their "belonging" outputs must be connected to the same control unit.
- If fire alarm routing equipment ("Fire brigade tx" output) shall be used, each control unit in the system must be able to activate a fire alarm routing equipment independently of the other control units.

Please make sure that your implementation with single network is not in violation with EN54.

21.1.2. TLON CONNECTION BOARD 5090



1) P.C.B label for identification
   Nid: Nuron ID number
2) TLON connection board 5090, position 0
3) LED LD1, Flashing (1s/1s): node not configured
   Flashing a couple of times at start up then continuously off: Normal condition
   Continuously on: HW fault
4) LED LD2, Flashing when transmitting

The old TLON network board 1590 is not compatible with the 5012 main board.

SINGLE TLON NETWORK

In a single TLON Network (Network no. 0), the TLON connection board (5090) shall be mounted in position no. 0 on the main board.
A single TLON Network is a violation to the EN54-13 standard.

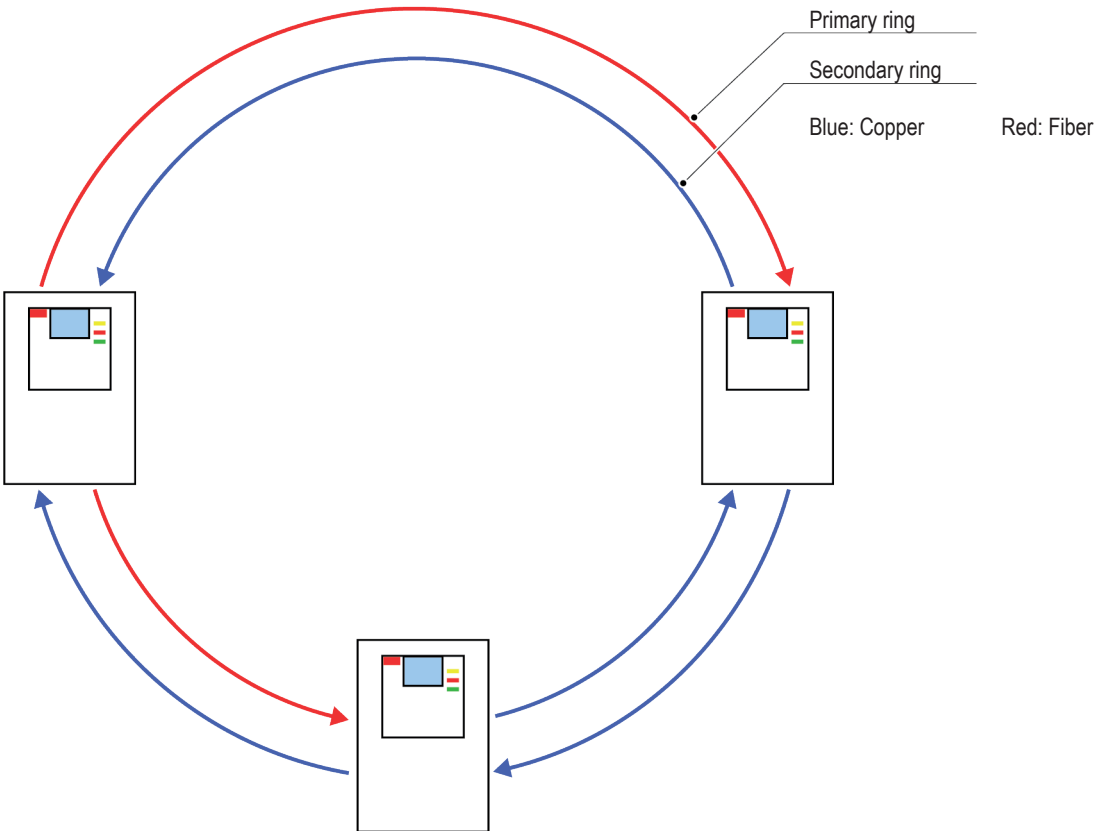
REDUNDANT TLON NETWORK

In a redundant TLON Network (both Network no. 0 and no. 1 is required), the TLON connection boards (5090) shall be mounted in position no. 0 and position no. 1 on the main board.
Each TLON connection board is internally connected to “J4”.

21.2. EBL RING NETWORK

The network is constructed of two rings running in opposite order. The control units in the network don't need to be connected in control unit number order. The cable types in the network can be either copper or fiber. A network ring can use different cable types in different parts or the ring. For more detailed information about the EBL Ring network, see the Technical description MEW02859.

Example:



21.2.1. REDUNDANT NETWORK

In a redundant network, two network boards (5040) have to be plugged in each control unit. The redundant network are two networks, primary network and secondary network (Network no. 0 and Network no. 1). The secondary network is the back-up board (Network no. 1), and is only supervising / monitoring until primary network (Network no. 0) is not working properly.

Normally only primary network will be in use, and in case of a network fault (i.e. open circuit or short circuit), secondary network will be automatically used until there is no fault on primary network. The redundant network supports full functionality in case of a network fault in one of the networks.
A fault in one of the networks generates the following fault:

FAULT: Primary network, CU xx <-> CU xx detected by CU xx
FAULT: Second. network, CU xx <-> CU xx detected by CU xx

21.2.2. NETWORK PROGRAMMING

All network programming (configuration) is made in EBLWin. There are two configurations for the network that needs to be done.

a) Set the control unit number, see section 17.4.8. SET CONTROL UNIT NUMBER on page 162.
The control unit number is stored in the flash memory on the main board.

b) Specify the order of the control units in the primary network ring. This is done when creating the SSD, in the System Properties dialog box, see section 16.3.8. SYSTEM PROPERTIES, NETWORK RING ORDER on page 145.

The order of the control units in the secondary ring must always be the opposite of the order in the primary ring.

21.3. TLON NETWORK

The EBL512 G3 system with TLON network can be build up as a single network or as a redundant network. For more detailed information on TLON network, see the Technical description “TLON Manager kit” MEW01983.

21.3.1. SINGLE TLON NETWORK

In a single TLON Network, there is only one network (Network no. 0), and only one TLON connection board (5090) has to be plugged in each control unit.

In a system where each control unit is independent of the other (i.e. each control unit works like a "standalone" control unit) a single TLON Network may be sufficient. To maintain security, in this case:

- All control units shall be of type 5000, CIE with front panel.
- The alarm points and their "belonging" outputs shall be connected to the same control unit.
- If fire alarm routing equipment ("Fire brigade tx" output) shall be used, each control unit in the system shall be able to activate a fire alarm routing equipment independent of the other control units.

In all other cases and for highest security, a redundant TLON Network shall be used.
(According to EN54-13, 4.3.1.2: A single fault on a transmission path connecting one CIE to another CIE, shall not adversely affect the correct functioning of any part of the networked system.)

21.3.2. REDUNDANT TLON NETWORK

In a redundant TLON Network, two TLON connection boards (5090) have to be plugged in each control unit. The redundant TLON Network are two networks (Network no. 0 and Network no. 1). Network no. 1 is the back-up board, and is only supervising / monitoring until Network no. 0 is not working properly.

Normally only Network no. 0 will be in use, and in case of a network fault (i.e. open circuit or short circuit), Network no. 1 will be automatically used until there is no fault on Network no. 0. The redundant TLON Network supports full functionality in case of a network fault in one of the TLON networks.
A fault in one of the TLON Networks generates the following fault:

FAULT: Control unit xx has no contact with control unit xx, network x
Where network x = Network no. 0 or Network no. 1.

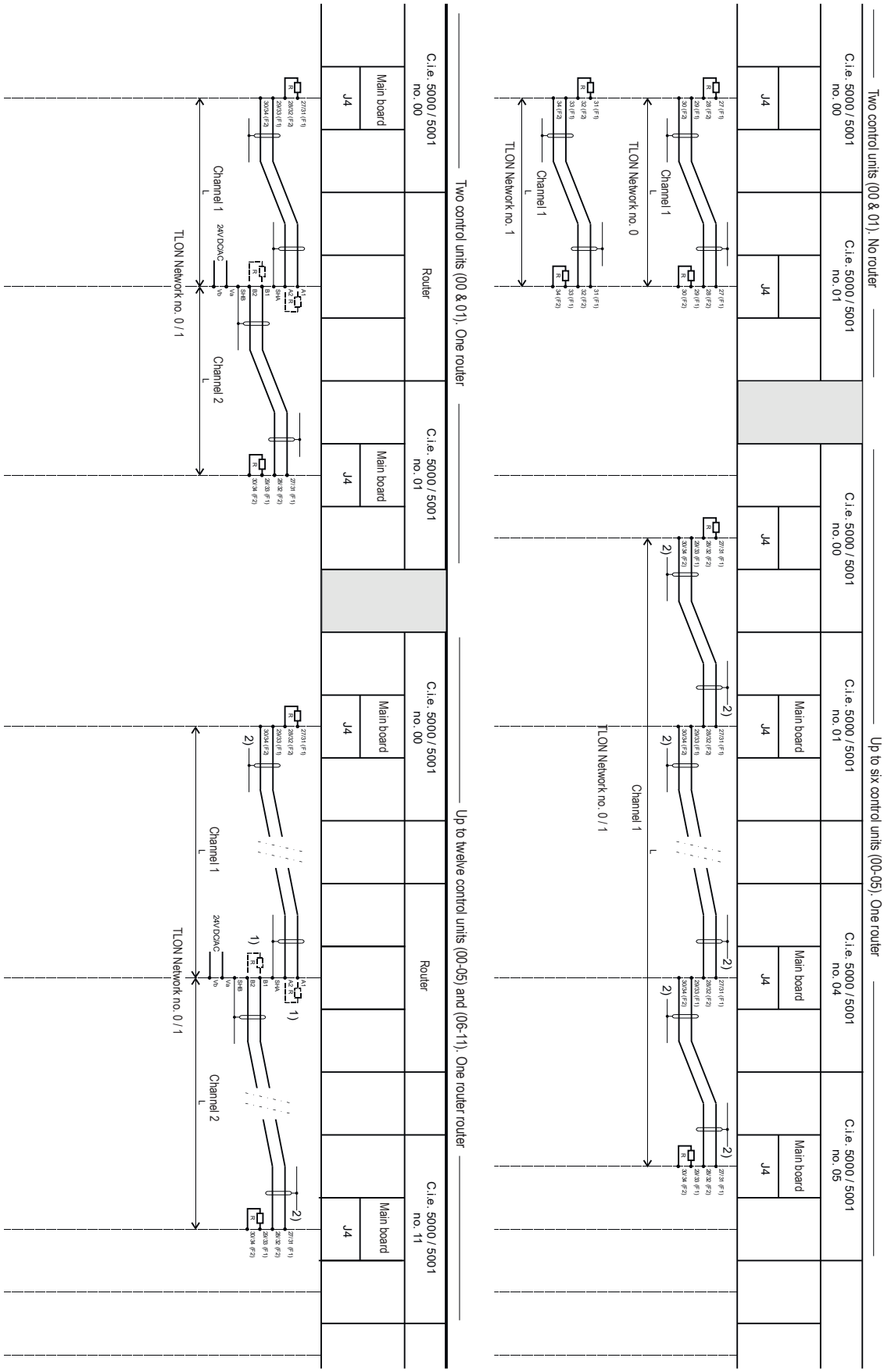
21.3.3. NETWORK PROGRAMMING

The PC program TLON Manager is used for the TLON Network programming. In a redundant network two projects have to be created and installed. The projects have to be identical but with different project names. One has to be installed for Network no. 0 and one installed for Network no. 1.

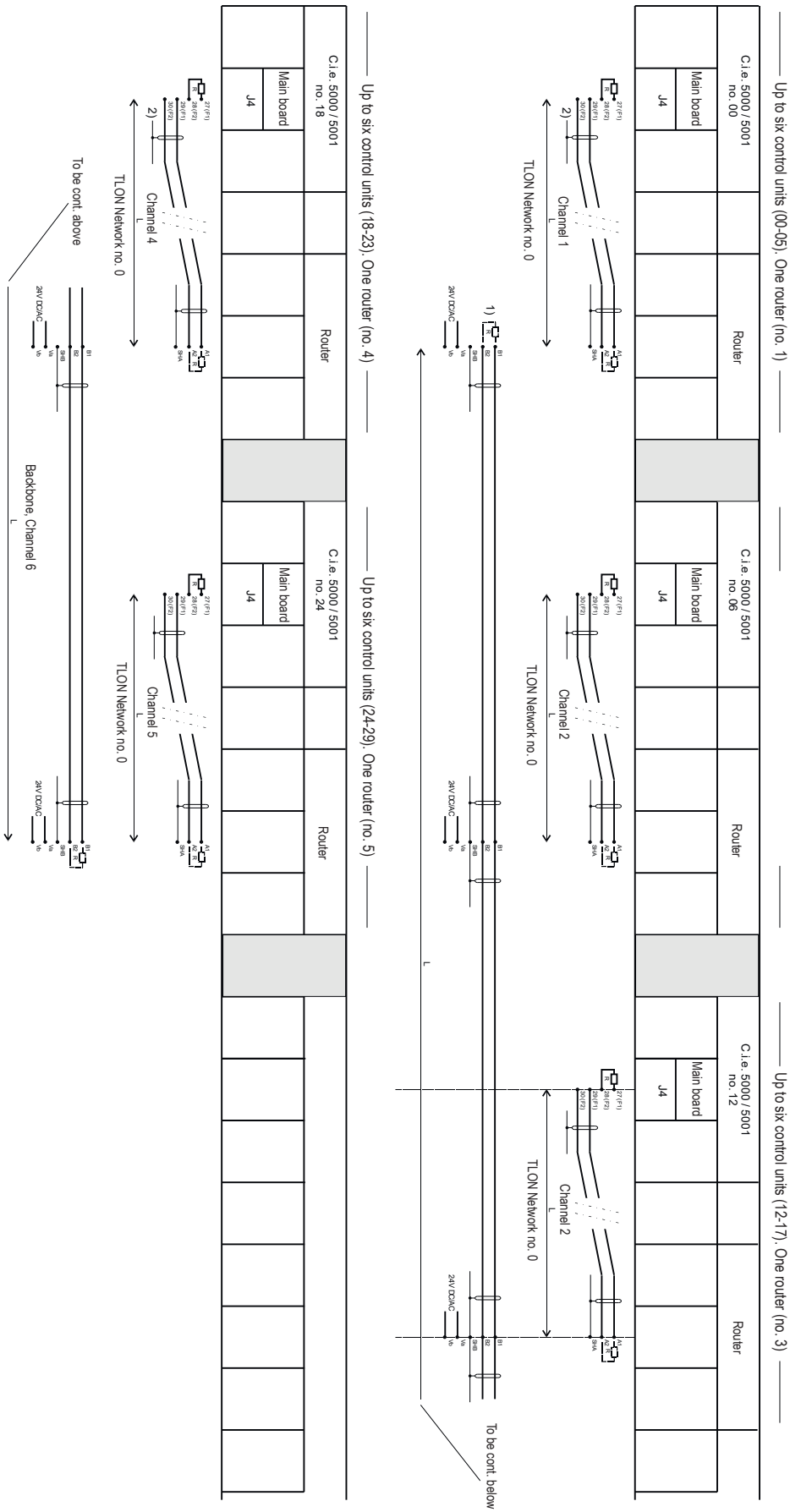
By the TLON Network programming (installation), some data will be stored in a TLON connection board (5090) memory and some data will be stored in a main board memory.
After replacing a TLON connection board to another (or replacing both a TLON connection board and a main board), do "Replace" and "Update" in TLON Manager 2.0. (In TLON Manager 1.2 also "Save".)
After replacing a main board, do "Update" in TLON Manager 2.0. (In TLON Manager 1.2 also "Save".)

During TLON Network programming the control unit must be power supplied via mains.

21.3.4. TLON NETWORK, 2-12 CONTROL UNITS



21.3.5. TLON NETWORK, 30 CONTROL UNITS + 5 ROUTERS



R = Termination resistor. 105R ±1%, 1/8 W. One termination resistor is required at the end point of each channel
L = Cable length ≤ 900 m. The cable has to be shielded, e.g. Belden 7703 NH 1 pair 22 AWG or equivalent

22. CABLE TYPES

A fire alarm installation is a safety installation and it is important that the cables used are of correct types and according to national regulations, e.g. regarding cable colour, method of mounting, etc. Fire alarm cables should, when possible, be installed as far away from other cables as possible, in order to avoid disturbances from these.
The maximum cable length is depending on the cable type (area, twisted / not twisted pairs, screen / no screen), the units' current consumption, etc.

22.1. EBL RING NETWORK CABLES

Ethernet cable FTP Cat 5e or better. Max 1000m in each segment.
Opto fiber multimode 62.5/125um with ST-connector. Max 1500m in each segment.

Existing TLON-cable Belden 7703NH can also be used.

22.2. TLON NETWORK CABLES

It is recommended to use a shielded Belden cable with twisted pair, e.g. JY (St) Y 2 x 2 x 0.8 or 7703 NH 1 pair 22 AWG. For longest possible cable length Echelon recommends an unshielded cable type but the EBL512 G3 VdS approval require shielded cable.

See also TLON Operating instructions MEW01983.

22.3. COM LOOP CABLES

Loop topology is used for highest safety, i.e. the cable, connected in the control unit, returns back to the control unit. In case of a break on the loop, communication in two directions starts.
See section 23.3. DIAGRAM OF CABLE LENGTH on page 190 and the Technical description for the CIE.

Cable length is depending on the type and number of loop units, and so on. See chapter 23. COM LOOP CABLE LENGTH on page 187.

Recommended halogen-free & flame-proof cable type:
COM loop: EQQYB Easy 2x1 mm
Feeder line: EQQYB Easy 10x2x1mm (twisted pair)

The cable type have the pair capacitance 70nF/km AT 800Hz, conductor resistance 24.5 ohm/km and the attenuation 0.6dB/km AT 800Hz.

If screened cable is used, the screen shall be connected together in each loop unit. The screened cable shall also be terminated in both ends to the CIE earth point.
In each loop unit, connect the screen so that the unscreened wires are as short as possible and twisted > six turns.

22.4. DISPLAY UNIT CABLES

RS485. Max. cable length < 1200 m to the D.U. furthest away.
Cable type:
- Belden 5120UL, 14#
- Belden 5220UL, 16#
- Draka ELQYB, 2x1

The cable screen shall be connected to a cable fixing clamp screw in each display unit.

22.5. CONVENTIONAL ZONE LINE CABLES

Inputs to 8 zones expansion board 4580 and Multipurpose I/O unit 4461.
ELQRB 2 x 0.6 mm (0.3 mm2) or equivalent. Max. 50 ohm cable resistance (= 400 m cable length).
Max 50 nF conductor capacitance, max 1.0 mA detector current consumption.

22.6. ALARM DEVICE CABLES

Alarm devices (sounders, etc.)
ELQRB 2 x 0.6 mm (0.3 mm2) or equivalent.
ELQRB 10 x 2 x 1 mm (0.75 mm2) or equivalent, when feeder line is required.

22.7. OTHER CABLES

External indicator (LED), door release magnets, etc. E.g: ELQRB 2 x 0.6 mm (0.3 mm2) or equivalent.

23. COM LOOP CABLE LENGTH

Depending on the type of units and the number of units, the total current consumption will vary and this will affect the cable length. The units should be distributed as even as possible on each COM loop and between the COM loops (0, 1, 2 & 3).

23.1. CALCULATION OF CABLE LENGTH IN EBLWin

In EBLWin it is possible to get an approximate calculation of the cable length. EBLWin will notify if the current consumption is too high.

Right click on the com loop in EBLWin. Select Properties…The dialog window `Properties for COM-loop` will open.
In the Cable length tab, it is possible to:

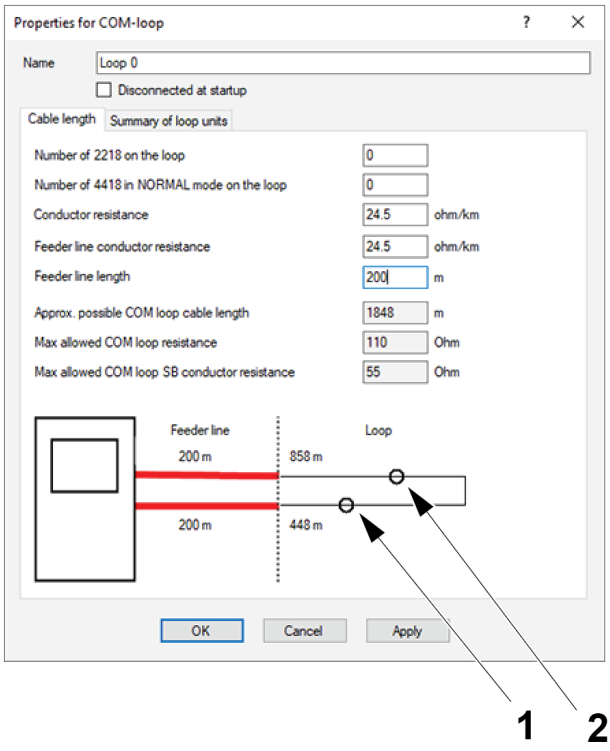
- Add the number of external LED´s on the loop.

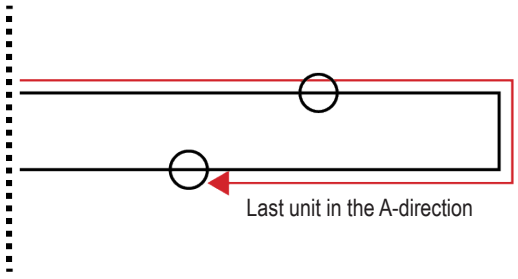
Maximum 5 external LEDs per loop will be lit at the same time.

- Add input for conductor resistance
- Add input for feeder line conductor resistance
- Add input for feeder line length
- Move the position of the last unit (1) in A-direction and the last unit (2) in B-direction on the loop by dragging the circles. The distance is altered.

Approx. possible COM loop cable length and max allowed COM loop resistance and max allowed COM loop SB conductor resistance is calculated automatically based on above input parameters.
The COM loop SB conductor resistance is calculated with respect to the fact that all isolator resistance is located on the SA line.

By adding a SUB-loop to the COM loop, the cable length can be extended by up to 1100 m.





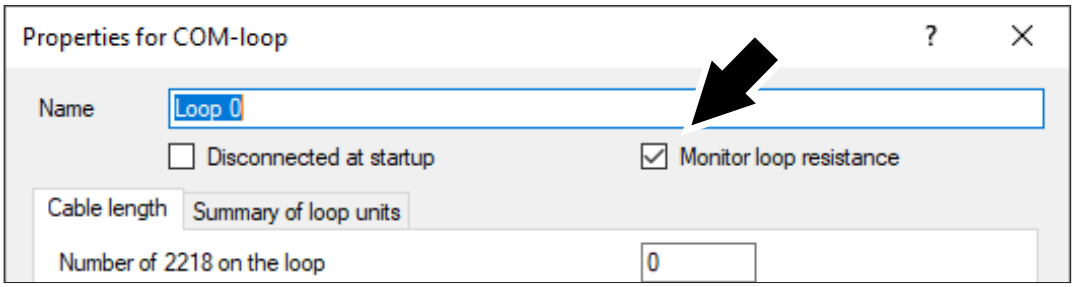
The distance for the last units must be set to get correct values in the control unit. Press Apply to calculate new value input.

If main board 5012 is installed, as a replacement to main board 5010, there might be a high resistance fault in the system.
If there is a high resistance fault in the system after the replacement, it is recommended to switch the loop resistance monitoring off via a checkbox, when level 1 is activated.

To disable the function 'Monitor loop resistance':

a) Go to EBLWin menu Tools / Advanced functions / Level 1.
b) Activate Level 1. The checkbox 'Monitor loop resistance' will appear in the properties for COM loops.

Checkbox not marked = This function is disabled, which means the loop resistance will not be monitored



23.2. CALCULATION OF CABLE LENGTH WITH GRAPHS

See the graphs in 23.2.1. GRAPHS - MAXIMUM CONDUCTOR RESISTANCE on page 189.

The information in this chapter is for reference only. The values calculated by EBLWin shall be followed.

One of the graphs in the figure has to be used depending on which type of units that are connected to the COM loop. Start checking the terms below for the Graphs.
Maximum loop current: 350 mA
Voltage on the loop terminals: 25.0V ± 1.5V

YELLOW GRAPH

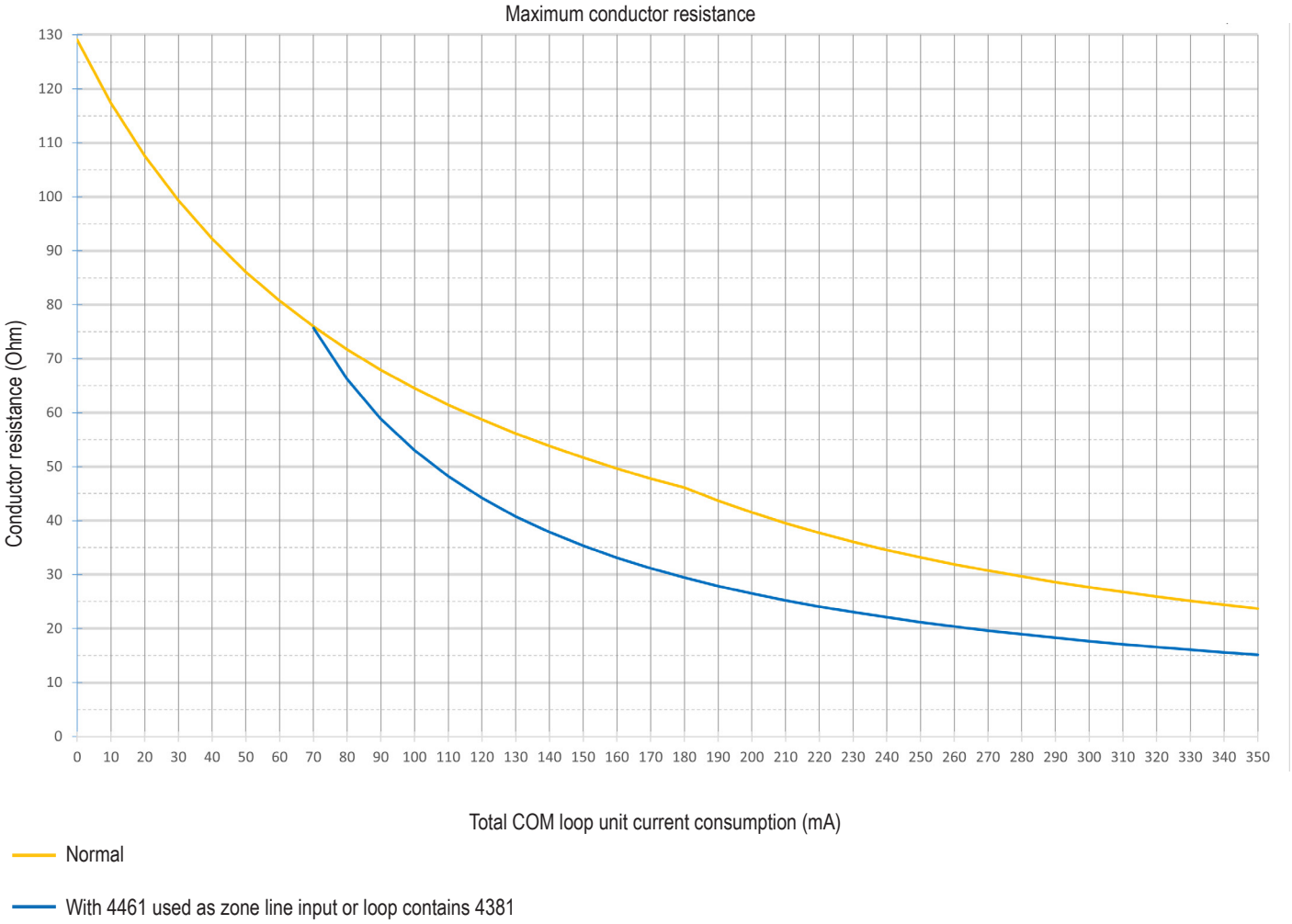
This graph shall normally be used.

BLUE GRAPH

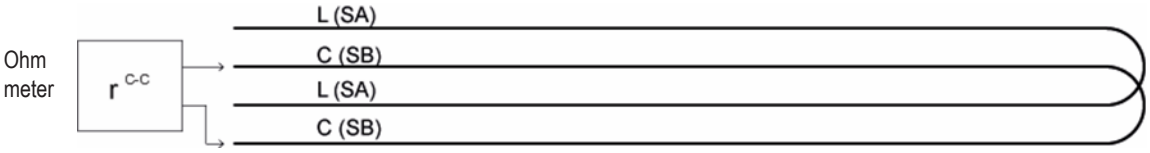
Must be used when the loop contains at least one 4461 unit where the monitored input is used as zone line input. Must also be used when the loop contains at least one 4381.

23.2.1. GRAPHS - MAXIMUM CONDUCTOR RESISTANCE

Graphs showing the total conductor resistance in relation to the COM loop units' total current consumption.



The loop resistance and the cable length must not exceed the values in the graph.
The loop resistance will be:
R = two times r c-c (=2 x r c-c + 0.08 ohm for each short circuit isolator)

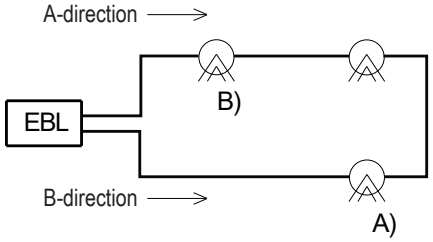


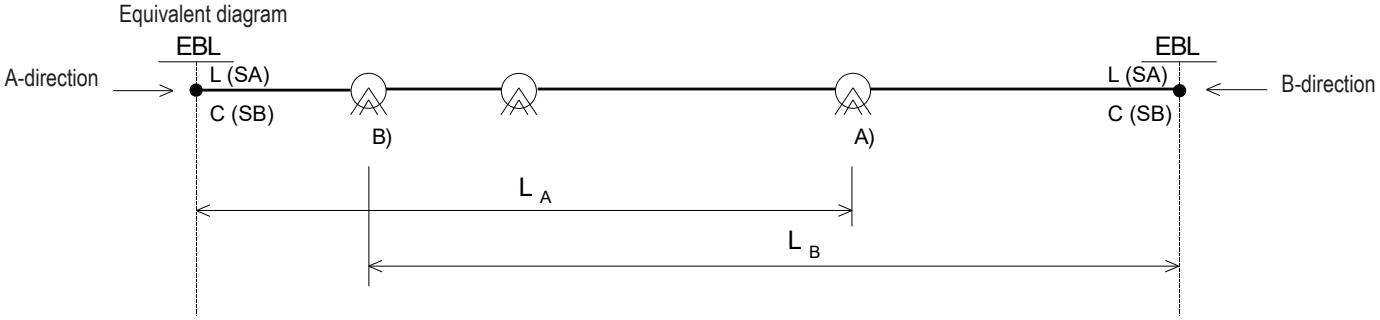
23.3. DIAGRAM OF CABLE LENGTH

The number and type of units, cable installation, external disturbances, might affect the cable resistance and capacitance and also the communication.
All calculated values are consequently approximate values.

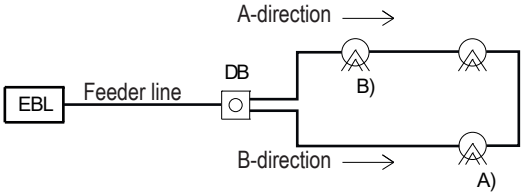
A) Last unit when communication in A-direction
B) Last unit when communication in B-direction
LA Cable length when communication in A-direction
LB Cable length when communication in B-direction
EBL EBL512 G3
DB Distribution box
Detector / alarm point

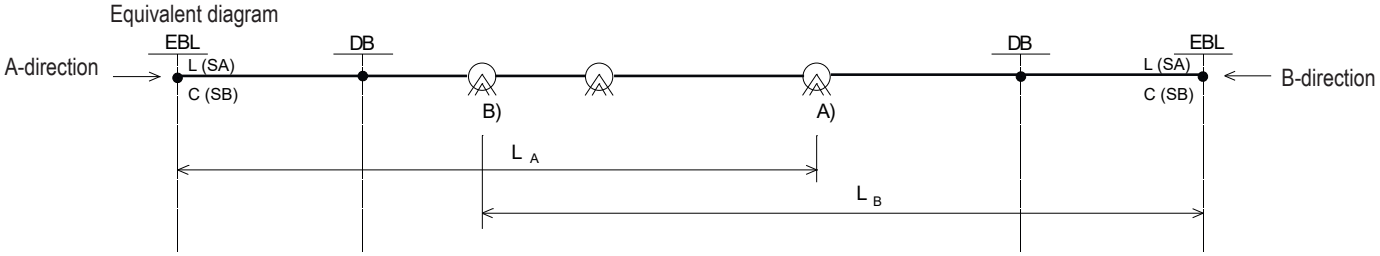
NO FEEDER LINE





WITH FEEDER LINE





24. CURRENT CONSUMPTION

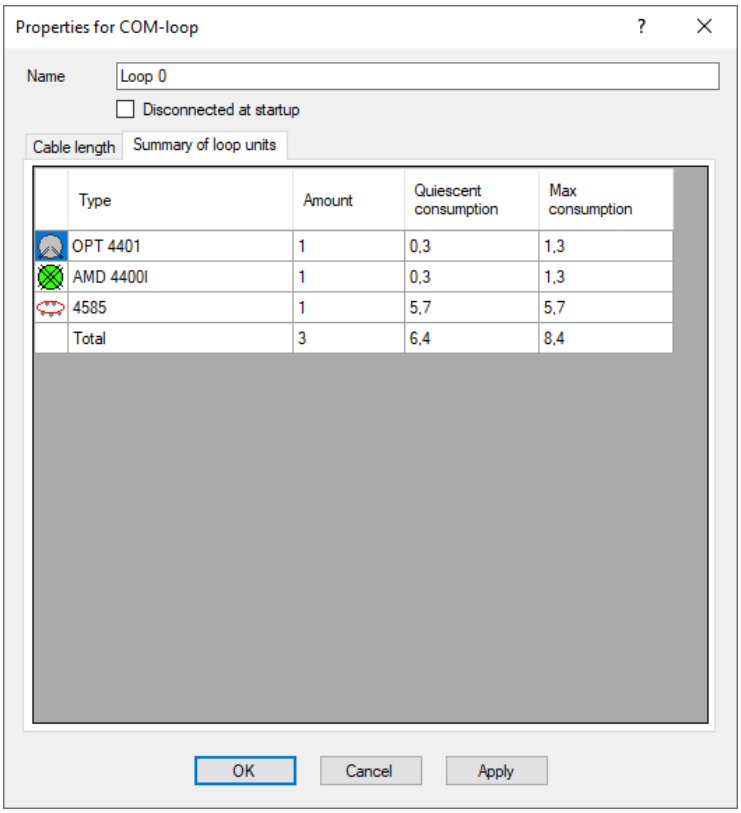
In EBLWin it is possible to get a calculation of the current consumption for the loops, control units, and External power supply. EBLWin will notify if the current consumption is too high.
The current consumption for each unit is found in the Technical Description respectively.

24.1. TOTAL CURRENT CONSUMPTION FOR LOOPS

Right click on the com loop in EBLWin. Select Properties…The dialog window 'Properties for COM-loop' will open. The window will show the quiescent and maximum current consumption for the COM loop units connected on that COM loop.

In the Summary of loop units tab, it is possible to:

- View the amount of each type of loop unit.
- View the quiescent current consumption of each type of loop unit.
- View the maximum current consumption of each type of loop unit.
- View the total of each of these categories on the main loop.



The current consumption for the main loop will not include the current consumption for the SUB-loop. To see the current consumption for the SUB-loop, select Properties for the COM-loop repeater 4585.

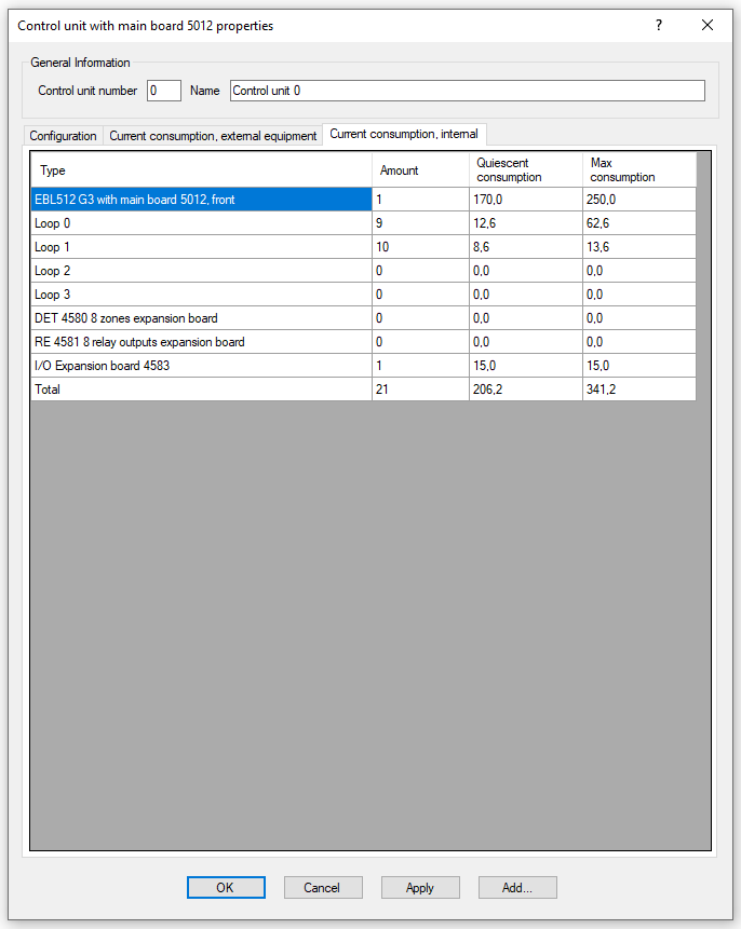
Maximum 5 activated zone interfaces per COM loop, in order to save current consumption on the COM loop. When the sixth zone interface goes into alarm state the control unit will automatically disable it after latching the alarm. This applies to units 4461, 2226/2335/2821 and 2330.

Maximum 5 external LEDs per loop will be lit at the same time. The current consumption for the external LEDs will be included in the 'Total' current consumption.

24.2. INTERNAL CURRENT CONSUMPTION FOR CONTROL UNITS

Right click on the control unit in EBLWin. Select Properties…The dialog window `Control unit properties` will open.
In the Current consumption, internal tab, it is possible to:

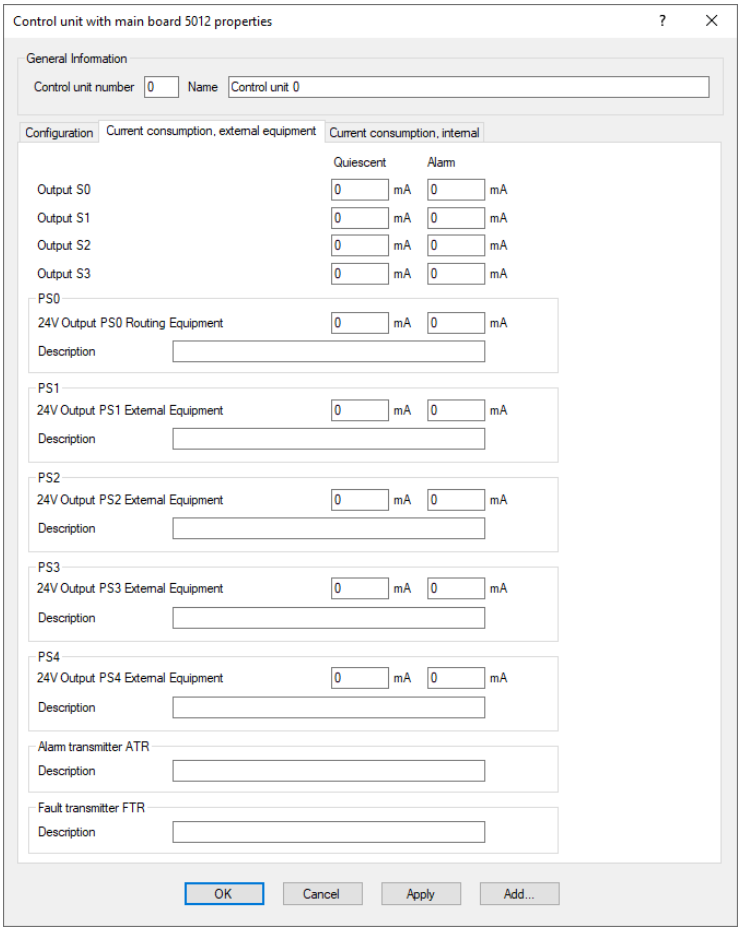
- View the calculated internal current consumption based on what is configured in the site-data; loop-units, TLON boards, printer, MMI, Gateway, Expansion boards, Display units and so on.



24.3. EXTERNAL CURRENT CONSUMPTION FOR CONTROL UNITS

Right click on the control unit in EBLWin. Select Properties…The dialog window `Control unit properties` will open.
In the Current consumption, external equipment tab, it is possible to:

- Add input for external consumption values for output S0-S3. Either directly on respective output or in Control Unit properties.
- Add input for external equipment consumption values for 24V output for routing/external equipment.
- Add description text for routing/external equipment and ATR/FTR outputs. The description text will be shown in the installation report.

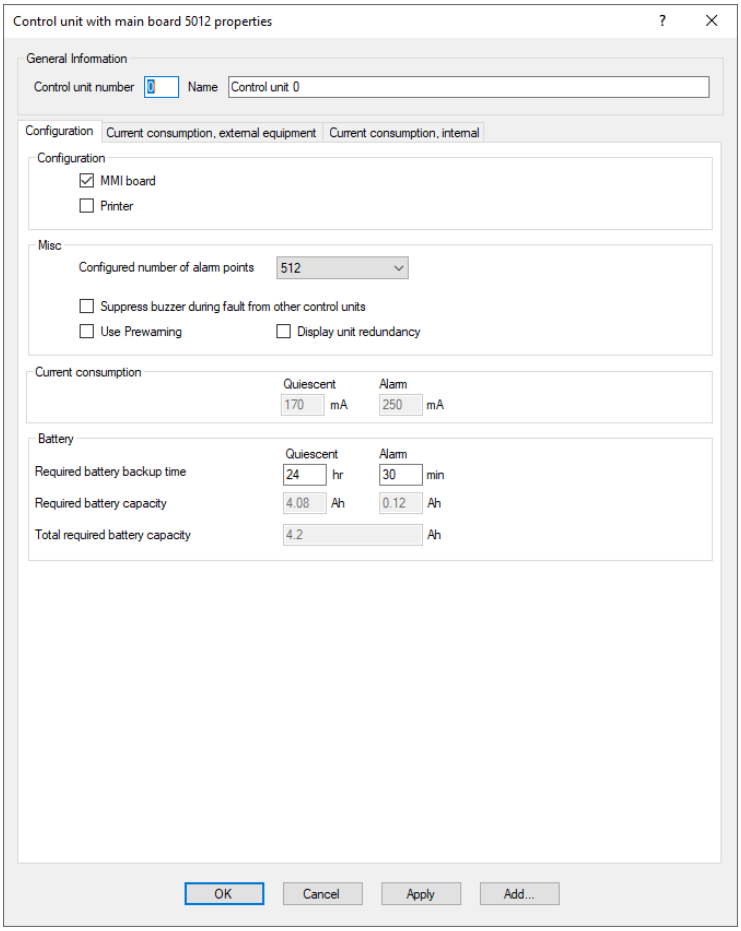


Press Apply to calculate new value input.

24.4. CURRENT CONSUMPTION FOR CONTROL UNITS

Right click on the control unit in EBLWin. Select Properties…The dialog window `Control unit properties` will open.
In the Configuration tab, it is possible to:

- View the Calculated total current consumption for the control unit. It is a sum of the configuration, the internal and external consumption.
- Calculate required battery capacity by input of required backup time.

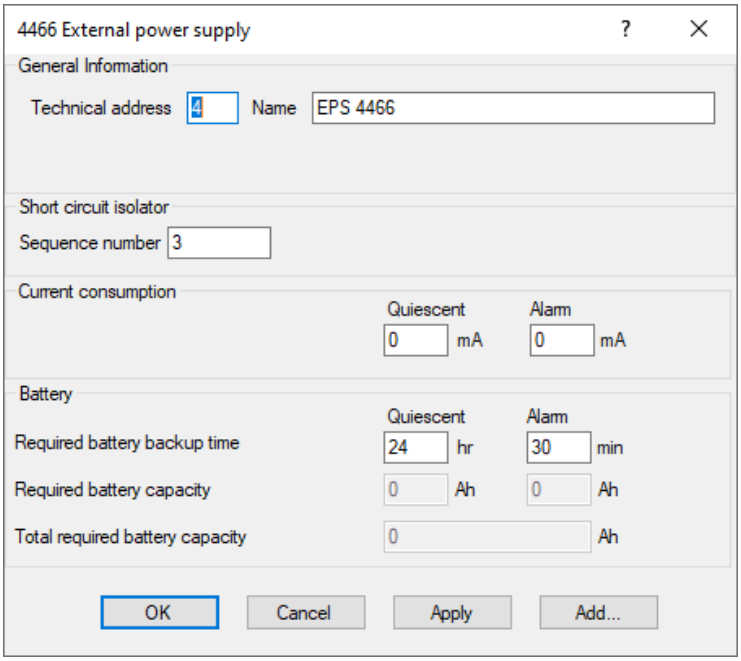


Press Apply to calculate new value input.

24.5. CURRENT CONSUMPTION FOR EXTERNAL POWER SUPPLY

Right click on the External power supply in EBLWin. Select Properties…The dialog window `4466 External power supply` will open. In the dialog window it is possible to:

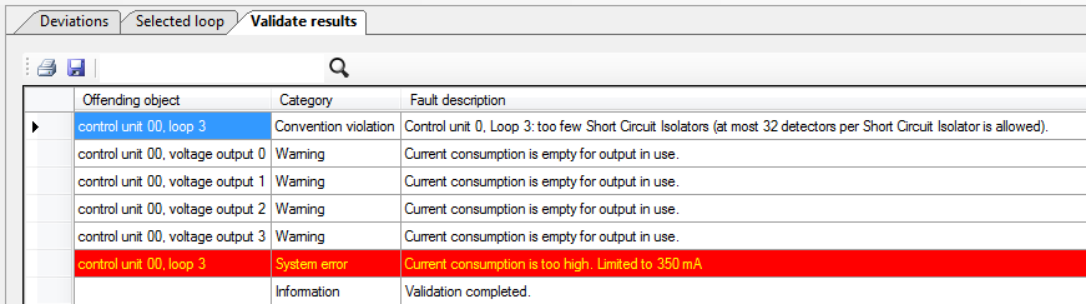
- Add input for external current consumption values
- Add input for required battery backup time
- View the calculated required battery capacity
- View the calculated total required battery capacity



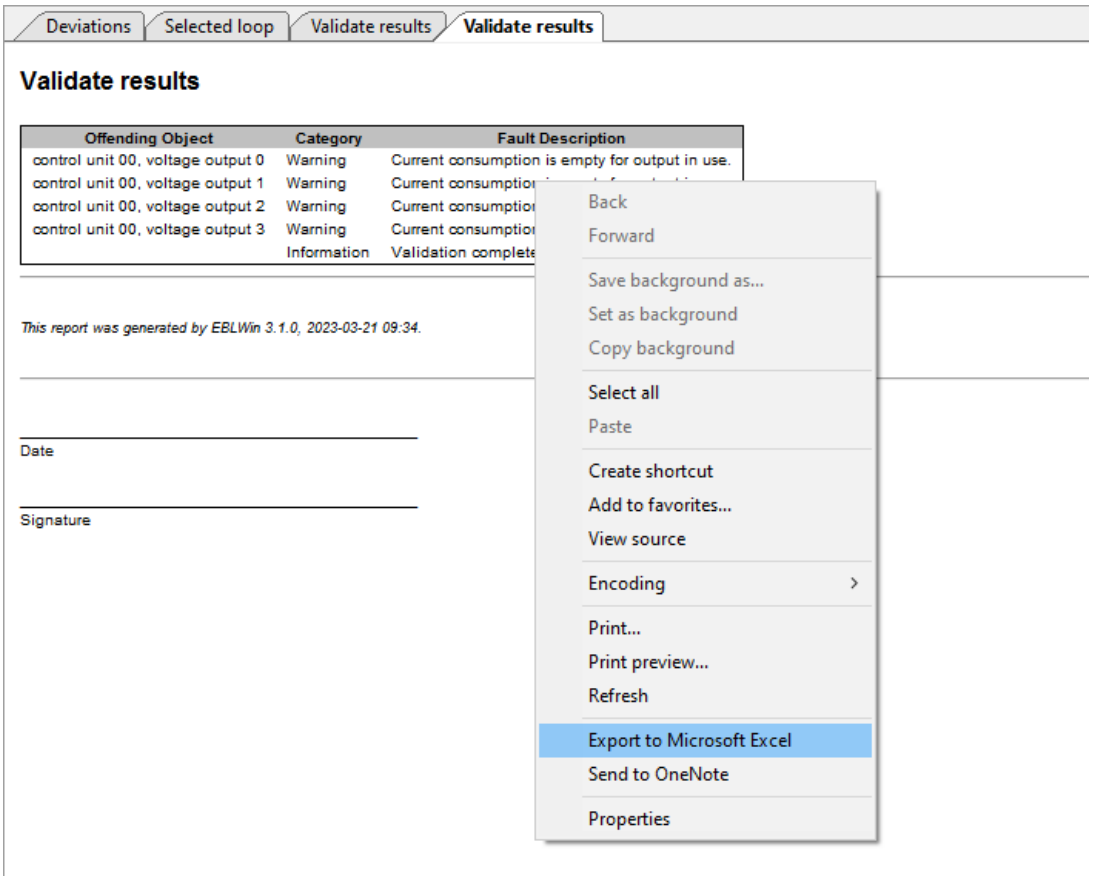
Press Apply to calculate new value input.

24.6. VALIDATE RESULTS

Go to Tools menu / Validate to open the tab ´Validate results`.
In this tab it is possible to view for example if the current consumption is too high. Some warnings can be edited via EBLWin, just double-click on a warning in the list to open its properties window.



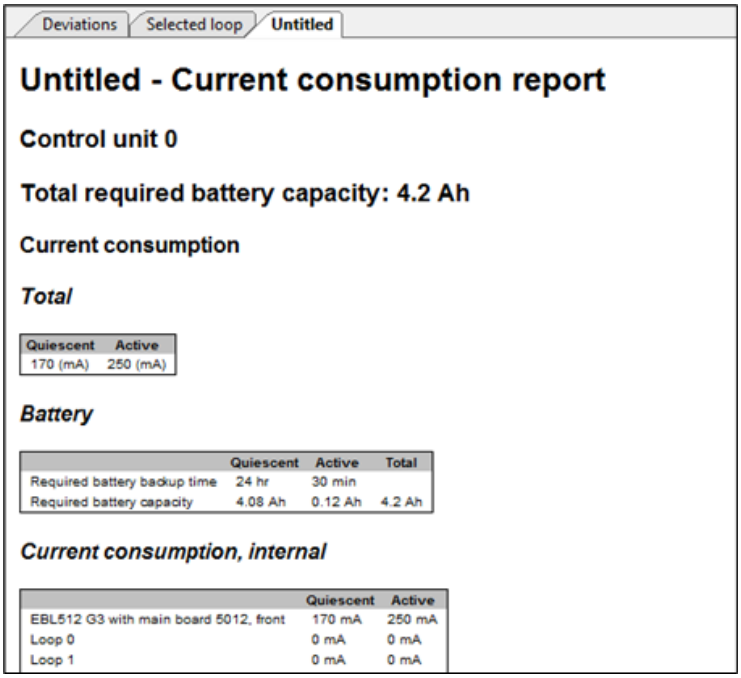
It is possible to save the Validate result as an HTML file. When the Validate result is saved as HTML, a new tab will be opened.
If Microsoft Excel is installed on the computer, it is also possible to export the Validate result to Microsoft Excel, where the list can be sorted.



24.7. CURRENT CONSUMPTION REPORT

It is possible to create a current consumption and battery report that can be printed.

a) Go to File menu / Report / Current consumption.
b) Add a file name and press Save. The report will appear as a tab in EBLWin.



Deviations | Selected loop | Untitled

Untitled - Current consumption report

Control unit 0

Total required battery capacity: 4.2 Ah

Current consumption

Total

Quiescent	Active
170 (mA)	250 (mA)

Battery

	Quiescent	Active	Total
Required battery backup time	24 hr	30 min	
Required battery capacity	4.08 Ah	0.12 Ah	4.2 Ah

Current consumption, internal

	Quiescent	Active
EBL512 G3 with main board 5012, front	170 mA	250 mA
Loop 0	0 mA	0 mA
Loop 1	0 mA	0 mA

The Current consumption report will present:

- Total
- Battery
- Internal
- External equipment
- Loop 0, 1,2, 3
- External power supply 4466 / 3366 units

To print a report, right click on the report page and select print…

Some national regulations require reports regarding current consumption, with the measured value, not the calculated. In such a case an ampere meter shall be used to read a true value.

Turn off the main power source (230 V AC) and use a "clamp current meter" on one of the wires between one of the batteries and the main board, to read the true total control unit current consumption.

24.8. CURRENT CONSUMPTION FOR UNITS – OVERVIEW

The different loop units have different current consumption, and some units have much higher current consumption in "active state".

To check the current consumption on the COM loops, cable lengths, etc. the tables below can be used. See also chapter 23. COM LOOP CABLE LENGTH on page 187.

To get a total current consumption overview and to check if the battery capacity is enough, the tables below can be used. The current consumption is normally shown at nominal voltage (24 V DC), in Normal state (quiescent) and in Alarm state (active). By battery back-up (no mains) the voltage can be 27 – 21 V DC. See also chapter 25. POWER SUPPLY on page 204.

A grey row in the tables = obsolete unit, can be found in old installations.

CIE units	Normal state (mA)	Alarm state (mA)
Control unit 5000 (without printer) [1]	170	250
Control unit 5000 (with printer) [1]	195	275 [2]
Control unit 5001 ("grey box without front, printer, etc.) [1]	130	150
8 zones expansion board 4580 (p.c.b. 9287-3A)	15 [3]	15 [4]
8 relays expansion board 4581	15	15
In & outputs expansion board 4583, no units connected	15	15
TLON connection board 5090	5	5
Network board 5040	5	5
Gateway 5088	75	75

The control unit values above are measured during battery back-up.

1) Backup battery powered. COM loops and ext. equipment not included.
2) When the printer is active the current consumption is 667 mA momentarily.
3) Add 0.5 mA per input (zone) for end-of-line capacitor (470 nF) and 3 mA per input for end-of-line resistor (10K).
4) Add 30 mA per input (zone) activated. (Each input has a 30 mA current limitation, i.e. also for short-circuit on the line.) **NOTE!** For p.c.b. 9287-2B: 22.2 / 22.2

COM-loop units	Normal state (mA)	Alarm state (mA)
Analog smoke detector 2300 / 2304 + analog base 2312 [5]	1.7 / 1.8	3.7 / 3.8
Analog smoke detector 3304 + analog base 3312 [6]	0.3	2.3
Analog heat detector 3308 + analog base 3312xx [6]	0.3	2.3
Analog heat detector, enclosed 3309	0.2	1.7
Analog multi detector 4300 + analog base 3312xx [6]	0.3	2.3
Analog smoke detector 4301 + analog base 3312xx [6]	0.3	2.3
Analog multi detector 4400 + analog base 3312xx	0.3 [7]	1.3 [8]
Analog multi detector 4400I + analog base 4412xx	0.3 [7]	1.3
Analog smoke detector 4401 + analog base 3312xx	0.3 [7]	1.3 [8]
Analog smoke detector 4401I + analog base 4412xx	0.3 [7]	1.3
Analog multi detector with CO 4402 + analog base 3312xx	0.3 [7]	1.3 [8]
Analog heat detector 4408 + analog base 3312xx [6]	0.3	2.3
Analog heat detector, enclosed 4409	0.2	1.7
Addressable heat detector 2340 / 2341 [5]	2	5
Addressable zone interface, isolated 2226 [9]	3	6
Addressable IS zone interface 2821 [9]	3	6
Isolated zone interface 2822	3	6
Addressable zone interface 2335	5	20
Addressable manual call point 2333	2	5
Addressable manual call point 3333 / 3339	2	5
Addressable manual call point with isolator 4433 / 4439	1.6	2.7
Addressable manual call point type B with isolator 4443 / 4444	1.6	2.7
Local Alarm Acknowledgement Unit 4445	2	5
Alarm Acknowledge Facility Control (AAFC) [10]	2	5
Addressable detector base 2330 + detector Incl. external line	1.7 3.5	3.9 [11] 13.2
Addressable base station for wireless units 4620	6	6

5) External indicator (LED) current consumption. 2216: add 2 mA. 2217 / 2218: add 1 mA.
6) External indicator (LED) current consumption. 2216: add 2 mA. 2217 / 2218: add 1 mA.
Analog base with isolator 4313 can be used instead of Analog base 3312.
7) Plus 0.025 mA if green polling LED is used.
8) Plus 0.5 mA if External indicator (LED) is used (e.g. 2218).
9) 2226 / 2821 also require external power supply, 24V DC, 30 mA.
10) This unit is available on the Australian market only.
11) Ext. LED current consumption max. 1 mA. Alarm state on detector and external line: 15.4 mA.
NOTE! The external line can be used for an ext. indicator (LED) or for conventional detector(s) that will get the same presentation number (zone-address) as the detector plugged in the base.

COM-loop units	Normal state (mA)	Alarm state (mA)
Aspirating smoke detector Aspect NITRO AE2010 N-P	2.1	2.1
Aspirating smoke detector Aspect GRIZZLE AE2010 G-P	2.1	2.1
Aspirating smoke detector Aspect LAZEER AE2010 L-P	2.1	2.1
Addressable short circuit isolator 4370	2.2	2.2
Analog base with isolator 4313 [12]	≤ 1.3	≤ 1.3
Addressable multipurpose I/O unit 3361	2.2	max. 12 [13]
230 VAC relay output unit 4460	1.7	1.7
Addressable multipurpose I/O unit with isolator 4461	4.3 5.8 [16]	4.3 15 [16]
Addressable 2 inputs unit with isolator 4462	≤ 3.0	≤ 3.0
Addressable 2 voltage outputs unit 3364 [14]	≤ 6	≤ 6
Two voltage output board 4464	5.3	5.3
(Addressable) External power supply 3366	≤ 15	≤ 15
External power supply 4466	6.0	6.0
Addressable siren 3377	1	max. 13
Addressable siren with isolator 4477	1.8	≤ 10
Addressable siren with isolator 4487	2.5	10
Addressable sounder base 3378 (low/high)	2	max. 6 / 12
Addressable sounder base 3379	0.75	max. 2.5 [15]
Addressable sounder base 4479	≤ 0.75	max. 3.5 / 1.5 LOW POWER
Addressable beacon 4380	1.7	4 - 5
Addressable VAD with isolator 4381	1.6	8
Addressable wall VAD with isolator 4480	2.5	max. 65
Addressable ceiling VAD with isolator 4481	2.5	max. 65
Addressable wall VAD with siren 4482	2.5	max. 68

Max 5 activated zone interfaces per COM loop, in order to save current consumption on the COM loop. This applies to units 4461, 3361, 2226/2335/2821 and 2330.

12) Detector not included.
13) Only if the input In 0 is used as a zone line input, else approx. 2.2 mA.
14) External 24 V DC power supply also required, e.g. the 4466 / 3366 unit.
15) High sound output: 4.5 mA.
16) Only if the input In 0 is used as a zone line input

COM-loop units	Normal state (mA)	Alarm state (mA)
External indicator 4418	1.6	5.0
Light indicator 4383	1.5	3.5 ± 0.5
I/O matrix board 4582	max. 6	max. 6
Fan control application board 4594 [17]	4 - 6	4 - 6
COM-loop repeater 4585	< 6	< 6
Exit light MX 25	2.3	2.3
Exit light MX 40	2.3	2.3
Emergency light MX Light	2.3	2.3

Other units	Normal state (mA)	Alarm state (mA)
Routing equipment (Fire brigade tx / Fault tx) Acc. to the producer	Acc. to the producer	Acc. to the producer
External Presentation unit 1728	26@24 V / 48@12 V	49@24 V / 88@12 V
Alert Annunciation unit 1735 / 1736	26@24 V / 48@12 V	42@24 V / 79@12 V
External FBP 1826 / 1828	26@24 V / 48@12 V	49@24 V / 88@12 V
Display unit 5054	45@24 V / 80@12 V	180@24 V / 350@12 V
Printer 1835 (for ext. FBP 1826) [18]	4@24 V / 7@12 V	4@24 V / 7@12 V
Alarm devices (sounders, etc.)	0	Acc. to the producer
Door release magnets	Acc. to the producer	0
Alert annunciation controller 1740	10	40

17) Two 4594 boards are mounted on a Fan control panel 4594. 24 V DC power supply also required.
18) When the printer is active the current consumption is 161 / 345 mA momentarily.

DISPLAY UNITS

The following table is a help when calculating the cable length and/or the number of units. The table is based on the current consumption at the lowest power supply voltage allowed i.e. 21 V DC by battery back-up (no mains).
Recommended cable types are:

- Belden 5120UL
- Belden 5220UL
- Draka ELQYB

Up to 30 units can be connected but it is depending on the type of units and the cable (type and length).

Number of 5054 units	Allowed cable resistance (ohm) / length (m)		
	Belden 5120UL	Belden 5220UL	Draka ELQYB
4	6 / 400	6 / 250	6 / 130
3	8 / 530	8 / 330	8 / 170
2	13 / 800	13 / 500	13 / 250
1	25 / 1600*	25 / 1000	25 / 500

* Max 1200 m communication cable

Explanation: 12 (ohm) ÷ 25 (ohm wire resistance per 1000 m) = 480 m but the wire goes from the CIE to the last unit and back to the CIE again, i.e. the cable length = 480 (m) ÷ 2 = 240 m.

The table is based on the recommended cable type. If a cable with greater area is used the wire resistance (ohm per 1000 m) will be lower and the possible cable length will be longer.
It is also possible to use an external power supply, for example 4466 or 3366, when a greater number of units are required or if a longer cable length is required.

24.9. CURRENT CONSUMPTION – THEORY

The total current consumption for each control unit, excluding battery charging current, has to be calculated. This is in order to get a current consumption overview so that the rectifier will not be overloaded and to check / calculate the required battery capacity.

There is no battery charging during fire alarm.

The current consumption values in each Technical description respectively can be used to calculate the following current consumptions:

- I^{CN} = current consumption for the control unit in normal state. Including the COM loop units. Not including the battery charging current.
- I^{RN} = current consumption for all external equipment in normal state. For example display units, door release magnets, relays, routing equipment and so on.
- I^{CA} = current consumption for the control unit in alarm state. Including the COM loop units. Not including the battery charging current.
- I^{RA} = current consumption for all external equipment in alarm state. For example display units, door release magnets, relays, routing equipment and so on.

24.9.1. COMMENTS REGARDING (I^{TN})

The total EBL512 G3 current consumption in Normal (quiescent) state: I^{TN} = ICN + IRN

ITN shall be < 0.93 A if the built-in battery is a 28 Ah battery, because this results in 30 hours battery backup time (theoretically) ITN is max. 2.8 A, but if the required battery backup time is 30 hours, ITN can be max. 0.93 A.

24.9.2. COMMENTS REGARDING (I^{TA})

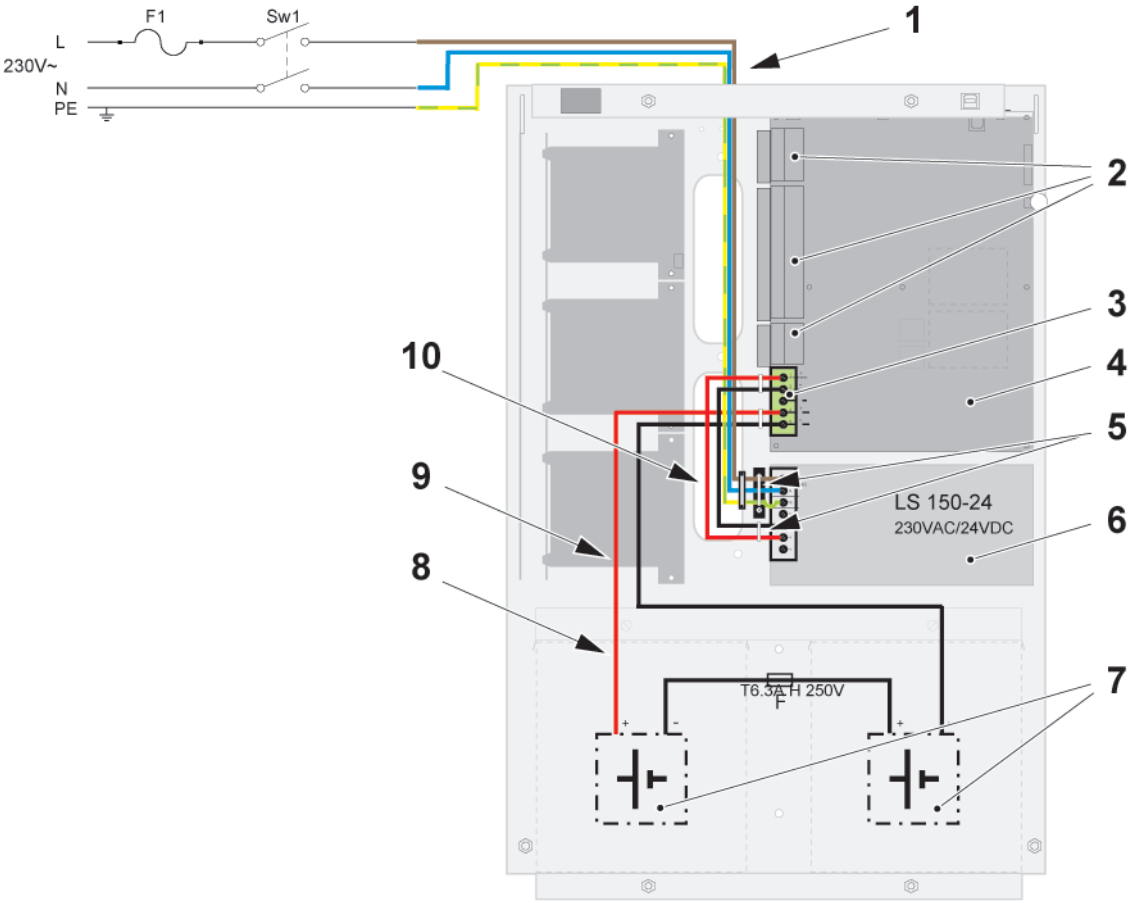
The total EBL512 G3 current consumption in Alarm (activated) state: I^{TA} = ICA + IRA

ITA has to be < 6.3 A.

For the total EBL512 G3 current consumption in relation to backup time, see tables in section
25.3. SECOND POWER SOURCE – BATTERIES on page 205.

25. POWER SUPPLY

25.1. POWER SUPPLY OVERVIEW



Power supply function in CIE		Min / max voltage	Min / max current
1)	Mains, 230 V AC	195 V / 253 V AC	
2)	Output current for continuous use. (I_{max} [a]) Output current for continuous use, no battery charging. (I_{max} [b]) Output voltage	 19.0 V / 28.7V DC	2.5 A 6 A
3)	Battery charging current from main board to the battery.	Max 29V DC	Max 2.4 A
4)	Main board	-	-
5)	Cable tie to keep the 24 V DC conductors well separated from the mains conductors	-	-
6)	Power supply (rectifier), 230V AC to 24V DC	-	-
7)	Internal batteries 2 x 12V, 17 - 28 Ah External batteries 2 x 12 V, 17 - 65 Ah	12 V DC 12 V DC	-
8)	Battery charging current.. 27.3 ± 0.1V@20°C but 27.3 ±0.7 V depending on the battery temperature.	-	Max 2.4 A
9)	Battery power supply / current, by loss of 230V AC. I_{min}, type 5000 current consumption: I_{min}, type 5001 current consumption: R_{Imax}: 0.5 Ω	21.0 V / 28V DC - - -	Max 6.3 A 0.17 A 0.13 A -
10)	Power supply from rectifier to main board	23.8 V / 24.2V DC	Max 6.3 A

25.2. MAIN POWER SOURCE - RECTIFIER

Normally the EBL512 G3 control unit is powered by the built-in power supply, a rectifier, 230 V AC / 24 V DC ±1%, 6.5 A.
The power supply unit (LS150-24) technical data is 230 V AC / 24 V DC, 6.5 A, but is limited with the main board fuse F1 to 6.3 A.
That results in that the total current consumption including maximum battery charging current must not at any time exceed 6.3 A.
Allowed input voltage is 176-264 V AC. The output voltage is 24 V with a tolerance of ±1%.

The output voltage is factory set to 24 V. On the rectifier is a potentiometer for output voltage adjustment (±10%) available. Do not use this potentiometer unless the output voltage is not 24 V.

25.2.1. POWER UP / POWER DOWN

The following is the correct procedure for power up/down.

Power down

1) Remove fuse F2 (battery)
2) Remove 230 VAC

Power up

1) Connect 230 VAC
2) Replace fuse F2 (battery)

25.3. SECOND POWER SOURCE – BATTERIES

The batteries are not included in the CIE.

By loss of 230 V AC the control unit is powered by backup batteries, two sealed lead-acid batteries, VRLA cells,12 V, 17 – 65 Ah, see section 25.3.2. TABLES – BATTERY BACKUP TIME on page 207.
There is space in the EBL512 G3 control unit for two sealed lead-acid batteries, 12 V, 28 Ah,

- MAX physical size 180 x 168 x 130 mm (H x L x W) inside CIE.
- Internal batteries shall fulfil UL94-V1 or better, including a relevant VRLA battery safety standard (IEC, EN, UL).
- Only batteries with a specified "Final voltage" of 10.5 V must be used.
- Fuse between batteries: T6.3 AH 250 V (5x20mm ceramic).
- Max operating temperature during charging: 50°C
- The batteries shall be marked with their type designation and code or number identifying the production period.

Batteries larger than the 12 V, 28 Ah have to be placed outside the control unit, with maximum 2 meters of cable in between.
The batteries and the rectifier are connected to the main board, which also handles the charging of the batteries.

Battery wiring must fulfill IEC 60332, 60695-11-21, or UL2556 (Flammability test).
The European Standard EN 62368-1 and national regulations must be followed.

Battery charging will be turned off during fire alarm condition.

If 28 Ah batteries are used and 30 hours battery back-up time is required, max 0.93 A can be used in quiescent condition (since 0.93A x 30h = 28Ah).

25.3.1. BATTERY CAPACITY - THEORY

Find out the required battery backup time, according to national regulations / customer demands, in normal state and in alarm state. Calculate the battery capacity required in normal state (QN) and the battery capacity required in alarm state (QA) respectively.

- QN (Ah) = ITN (A) x battery backup time in normal state (h)
- QA (Ah) = ITA (A) x battery backup time in alarm state (h)

The total battery capacity Q = QN + QA (Ah)

The electrical capacity of the batteries varies with ambient temperature and discharge current. Furthermore the battery voltage at the end of a discharging period is not the same as at the start. For this reason it is wise to round up the calculated capacity and add 10%, as safety margin.

If the ambient temperature is below 20 °C the safety margin has to be even larger since the electrical capacity of the batteries decreases. At 0 °C add 30% and at 10 °C add 20% to the calculated capacity.

25.3.2. TABLES – BATTERY BACKUP TIME

The following tables show the relation between the total current consumption in normal state (ITN) and the backup time.

The values are calculated and will only give you a rough idea of the backup time.

BUILT-IN 28 AH BATTERIES:

I^{TN} (A)	Backup time (hours)
2.8	10
2.55	11
2	14
1.55	18
1	28
0.93	30
0.8	35
0.6	46
0.4	70

EXTERNAL 65 AH BATTERIES:

I^{TN} (A)	Backup time (hours)
2.7	24
2.2	30
1.6	40
1.0	65
0.9	72
0.65	100
0.4	162

For external batteries the following is valid: Maximum 2 m cable length (10 mm2). National regulations have to be followed, regarding external fuses and so on. Also, the voltage drop has to be as low as possible, not to affect the battery checking function.

25.3.3. BATTERY CHARGING

According to EN54-4, section 5.3.1 b): The charger shall be designed and rated so that a battery discharged to its final voltage can be recharged to at least 80% of its rated capacity within 24 hours and to its rated capacity within another 48 hours.

If the EN54-4 section is to be fulfilled, the battery capacity of the backup batteries is limited to 65 Ah.
However, batteries of larger capacity are possible to use, but will not be recharged within the prescribed time interval. This results in an EN54 violation.

Batteries of smaller capacity, with less than 17 Ah , are not recommended since the charging current in step 1 (see 25.3.4. BATTERY CHARGING FUNCTION on page 208) is 2.4 A, which normally is higher than the recommended maximum charging current for these batteries.

Too high charging current can cause abnormal internal heating which may damage the batteries.

25.3.4. BATTERY CHARGING FUNCTION

Battery charging is performed in two steps:

1) **Constant current**. The charging current is constant 2.4 A until the charging voltage reaches 28-29 V (depending on the temperature).
2) **Constant voltage**. The charging voltage is reduced from 29 to something between 26.6 and 28.2 V, depending on the temperature, and will be constant at this level until the batteries are fully charged.

When the battery is fully charged the stand-by "charging current" is 0-0.5 A (typical 0.1 A) and the "charging voltage" will stay constant (fixed) at the "step 2" level, until the batteries have been discharged and have to be charged again. A new charging cycle will then start. The duration of "step 1" and "step 2" respectively is depending on the condition of the battery when the charging starts.

25.3.5. SECURITY FUNCTIONS

The battery charging will be turned off if the current from the rectifier to the Main board exceeds 6.3 A. The battery charging will remain turned off as long as the EBL512 G3 current consumption
exceeds 2.8 A. The following fault message will be shown:
FAULT: Control unit xx high current consumption

In case of charger out of work the following fault message will be shown:
FAULT: Charger control unit xx

In order to not damage the batteries, the voltage output will be switched off at approximately 20.7 V. This only happens in case of no main power source (230 V AC). That means the backup batteries are used as power source.

If the battery voltage is below 10 V (5 V per battery), the battery charging will be turned off. The batteries are then damaged and have to be changed.

In case of no mains and after a time delay of 1-300 minutes (programmable in EBLWin but max. 30 min. according to the EN54-2 standard), the following fault message will be shown:
FAULT: Mains, control unit xx

In order to reduce the current consumption, the LCD backlight will never be turned on during loss of the main power source.

25.4. FUSES

There are power supply fuses on the main board as follows:

F1 = F6.3AH Ceramic. +24 V DC from the rectifier (LS150-24).
F2 = F6.3AH Ceramic. + to/from batteries
F8 = T500mAH Ceramic. P.S. output 0
F9 = T1.6AH Ceramic. P.S. output 1
F10 = F3.15AH Ceramic. P.S. output 2, 3, 4
F18 = T1.6AH Ceramic. 2:nd RS485
F19 = T1.6AH Ceramic. RS485
F = T6.3 AH Ceramic between the batteries

26. SYSTEM LIMITATIONS

26.1. USER DEFINABLE TEXTS

All alarm points can have its own "alarm text" in EBL512 G3.
617 unique user definable texts can be programmed in the memory per display unit 5054. If a word or a whole sentence is reused in another “alarm text”, more than 617 user definable texts can be added to the memory.

The texts must be with "English characters" but for some languages might some already defined language dependent characters be used.
Maximum 100 user definable texts can be displayed "at the same time".

Technical warnings, external faults, time channels (external and internal), control groups, and zone groups must have unique names.

26.2. CIE / SYSTEM

Maximum number of "items" for the system is the same as per CIE if nothing else is specified:

Item	Loop	CIE	System
General fire alarm via progr. input		100	30 x 100
External fault via progr. input		100	30 x 100
Programmable inputs		512	30 x 512
Programmable outputs (= control expressions)		512	30 x 512
Technical warnings		200	30 x 200
Addressable 2 voltage outputs unit 3364		40	30 x 40
Interlocking Combinations.		400	4000
Presentation numbers / alarm points that can be presented in the display(s) in case of fire alarm	255	512	512
Presentation numbers that can be programmed		512	30 x 512 = 15 360
Zones that can be programmed	255	512	999
Faults			300
Disabled zones			512
Disabled alarm points (zone/address) + Disabled COM loops (Zone/address disabled via time channel not included.)			200
Disabled outputs (Control outputs disabled via menu H2/B3 and Alarm devices disabled via menu H2/B4 not included.)			200
Disabled interlocking outputs (Interlocking outputs disabled via menu H2/B3 not included.)			200
Sensors activating SERVICE signal			200
Max. number of LAA zones (Max. 5 detectors per LAA zone.)		100	30 x 100
Control groups			100

26.3. RESERVED ADDRESSES

The addresses 254 and 255 will be reserved for auto addressing purpose and cannot be used. If these addresses are used there will be a fault in the “Validity check”.

27. COMMISSIONING THE SYSTEM

This chapter describes the correct sequence to install, set and check your system.

Make sure to read the complete Technical description for each unit included in the system before commissioning the system.

PREPARATIONS AND MOUNTING

a) Draw the wiring for the system.
b) Mount and connect the CIE according to Technical description for the CIE.

SET THE COM LOOP ADDRESS and SET THE MODE

c) Set the address and mode to all units according to the Technical description for each unit.
d) Set the address on display units and expansion boards.

INSTALLATION AND WIRING

e) Connect the units to the loop according to the Technical description for each unit.

CONNECTIONS

f) Connect the system to the mains.
Power up
1) Connect 230 VAC
2) Connect fuse F2 (battery)
See section 25.2.1. POWER UP / POWER DOWN on page 195.

NETWORK

g) If it is a network with several control units, make sure there is the exact same version X.Y.Z in all control units.

TLON NETWORK

h) Make the TLON Network configuration in TLON Manager. See operating instructions for TLON Manager kit MEW01983
i) Download the TLON Network. See chapter 21. NETWORK on page 177.

PROGRAMMING IN EBLWIN

j) Program the system in EBLWin version 3.8.X.

SOFTWARE

k) Download software to the Control Unit. See chapter 19. DOWNLOAD SOFTWARE (S/W) on page 172.

The CIE is always delivered with the latest software version.

GATEWAY

l) Download software to the gateway. Make sure the software version matches the control unit software, at least two first digits X.Y.Z. See chapter 9. GATEWAY – RS232 INTERFACE on page 45.

CHECK

m) See chapter 13.23. CHECK LOOP on page 113.

Before downloading the SSD to the system, use the function check loop and handle if any faults.

DOWNLOADING SSD

n) Download configuration to the gateway.
o) Download software to the display units. Choose the latest version available.
p) Download SSD to the system. EBLWin version matches the control unit software, at least two first digits X.Y.Z. See chapter 18. DOWNLOAD SSD on page 169.

TEST

When the system is commissioned and running, all alarm points, inputs, outputs, and so on shall be tested. System tests, connected external systems included, shall be tested.

DOCUMENTATION

Installation documents and test reports shall be prepared after the tests.
The documentation shall be saved and printed for the inspection and handover of the system.

All other actions / requirements according to national regulations shall be fulfilled.

28. APPENDIX

The following chapter is describing obsolete units and compatibility. For more information, see the Technical description / Product leaflet for each product, or previous Planning instructions.

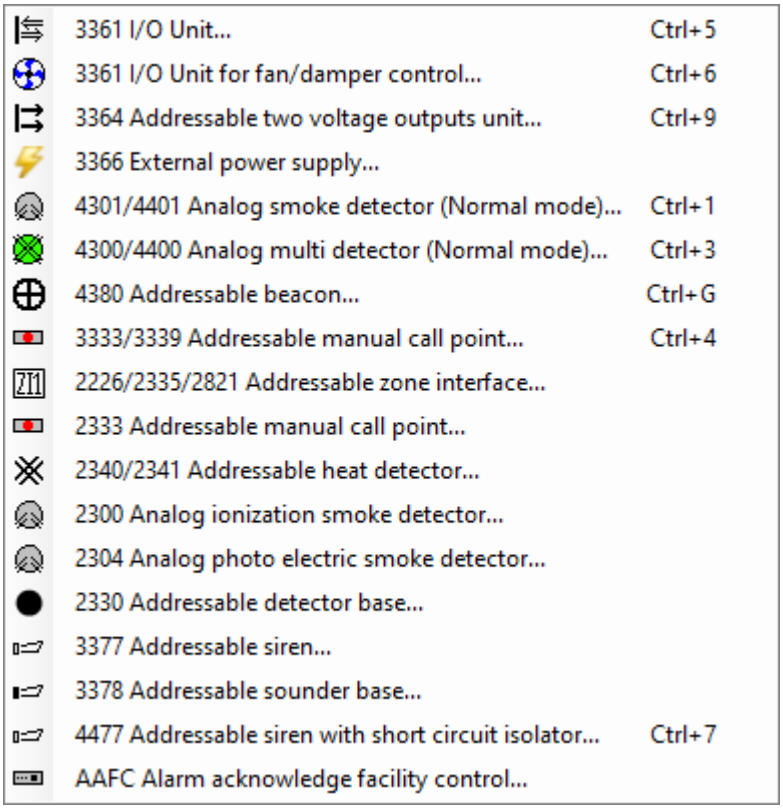
29. OBSOLETE UNITS

Obsolete loop units (listed below) can be found in old installations and can be used in EBL512 G3 installations as well. Obsolete units that can be used with EBL512 G3, V3.6.x:
See section 29.1. COMPATIBILITY on page 216.

Only technical address 1-127 can be used for any unit set in 23xx mode. When one or more of the shaded units below are used on a COM loop, the maximum number of loop units is 127.

When 'old' units (e.g. 22xx & 23xx units) are used the following is valid:

- ***The functions 'Auto address', 'Replace detectors', and 'Extend loop' cannot be used. (Via EBLWin)***
- ***The "Check loop" and "Scan loop" function cannot be used. (Via EBLWin)***



AAFC, the Alarm Acknowledge Facility Control is used on the Australian market only.

29.1. COMPATIBILITY

Regarding backwards compatibility:
When an older system is upgraded to EBL512 G3, see the table below for information on how to use obsolete units in the system.

29.1.1. COMPATIBILITY TABLE FOR EBL512 G3 INSTALLATIONS

Unit	Advanced mode	NORMAL mode	2330 mode	2312 mode	Programmed as, in EBLWin
2226	Not applicable*	Not applicable*	Not applicable*	Not applicable*	2226 / 2335 / 2821
2300 + 2312	Not applicable*	Not applicable*	Not applicable*	Not applicable*	2300
2304 + 2312	Not applicable*	Not applicable*	Not applicable*	Not applicable*	2304
2333	Not applicable*	Not applicable*	Not applicable*	Not applicable*	2333
2335	Not applicable*	Not applicable*	Not applicable*	Not applicable*	2226 / 2335 / 2821
2340	Not applicable*	Not applicable*	Not applicable*	Not applicable*	2340 / 2341
2341	Not applicable*	Not applicable*	Not applicable*	Not applicable*	2340 / 2341
2821	Not applicable*	Not applicable*	Not applicable*	Not applicable*	2226 / 2335 / 2821
3304	Not used	Used	Not used	Not used	4301 / 4401 Normal mode
3316	Not used	Used	Not used	Not used	4300 / 4400 Normal mode
3333	Not used	Used	Not used	Not used	3333 / 3339
3361	Not used	Used	Not used	Not used	3361
3366	Not used	Used	Not used	Not used	3366
3364	Not used	Used	Not used	Not used	3364
3377	Not used	Used	Not used	Not used	3377
3378	Not used	Used	Not used	Not used	3378
3339	Not used	Used	Not used	Not used	3333 / 3339
4300	Not used	Used	Not used	Not used	4300 / 4400 Normal mode
4301	Not used	Used	Not used	Not used	4301 / 4401 Normal mode
4370	Not used	Used	Not used	Not used	4313
4380	Not used	Used	Not used	Not used	4380

If the Analog smoke detector 3304 has to be used in an EBL512 G3 system, the detectors with serial no. 7000001 – 7004527 cannot be used in NORMAL mode.

* The addressable unit have no mode setting. The COM loop address is set with DIP switches.

29.2. CALCULATION OF CABLE LENGTH WITH GRAPHS

See the graphs 29.2.1. GRAPHS - MAXIMUM CONDUCTOR RESISTANCE and 29.2.2. GRAPHS - MAXIMUM CABLE LENGTH.
These graphs must be used when the following obsolete units are connected to the COM loop, listed below.
Maximum loop current: 350mA.
Voltage on the loop terminals: 25V ± 1.5V.

GRAPH WITH SQUARE DOTS

Must be used when at least one of the following units are used:

- 2335 / 3361 + (2316, 2317, 2318 or 2321 plugged in a 2324)
- 2330 + (2316, 2317, 2318 or 2321 plugged in 2330 or plugged in a 2324 connected on the external line)

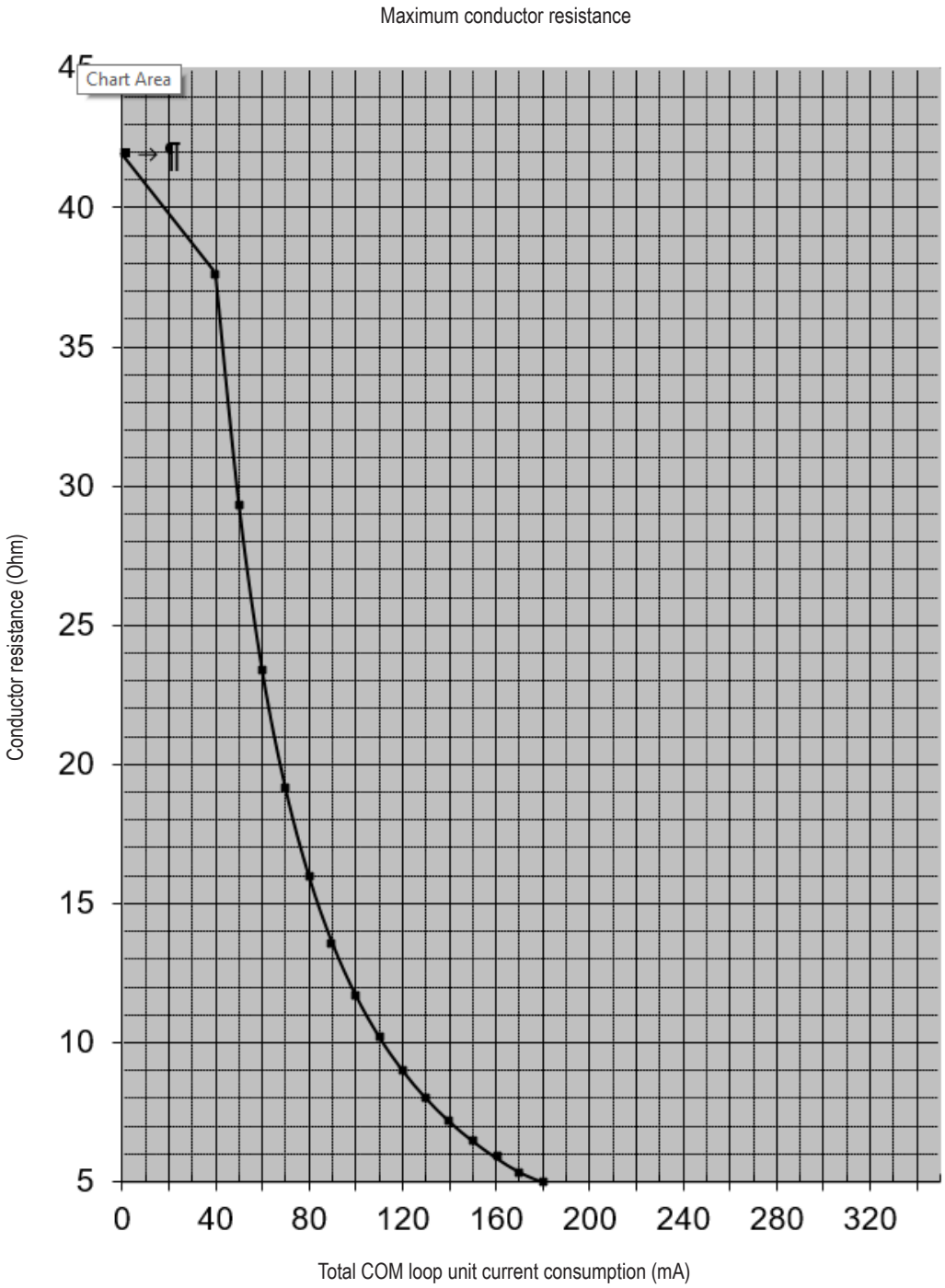
The graphs illustrating maximum conductor (wire) resistance and maximum cable length respectively.

The graphs start at "0 mA" but graph 1 ends at "320 mA" and graph 2 ends at "350 mA". End of graph = max. allowed loop current. (42.3 ohm = 863 m cable length.)

The loop resistance and length calculations made by EBLWin are not correct when units that require the 'Graph with square dots' are used. Instead resistance and length must be checked manually using the two following graphs.

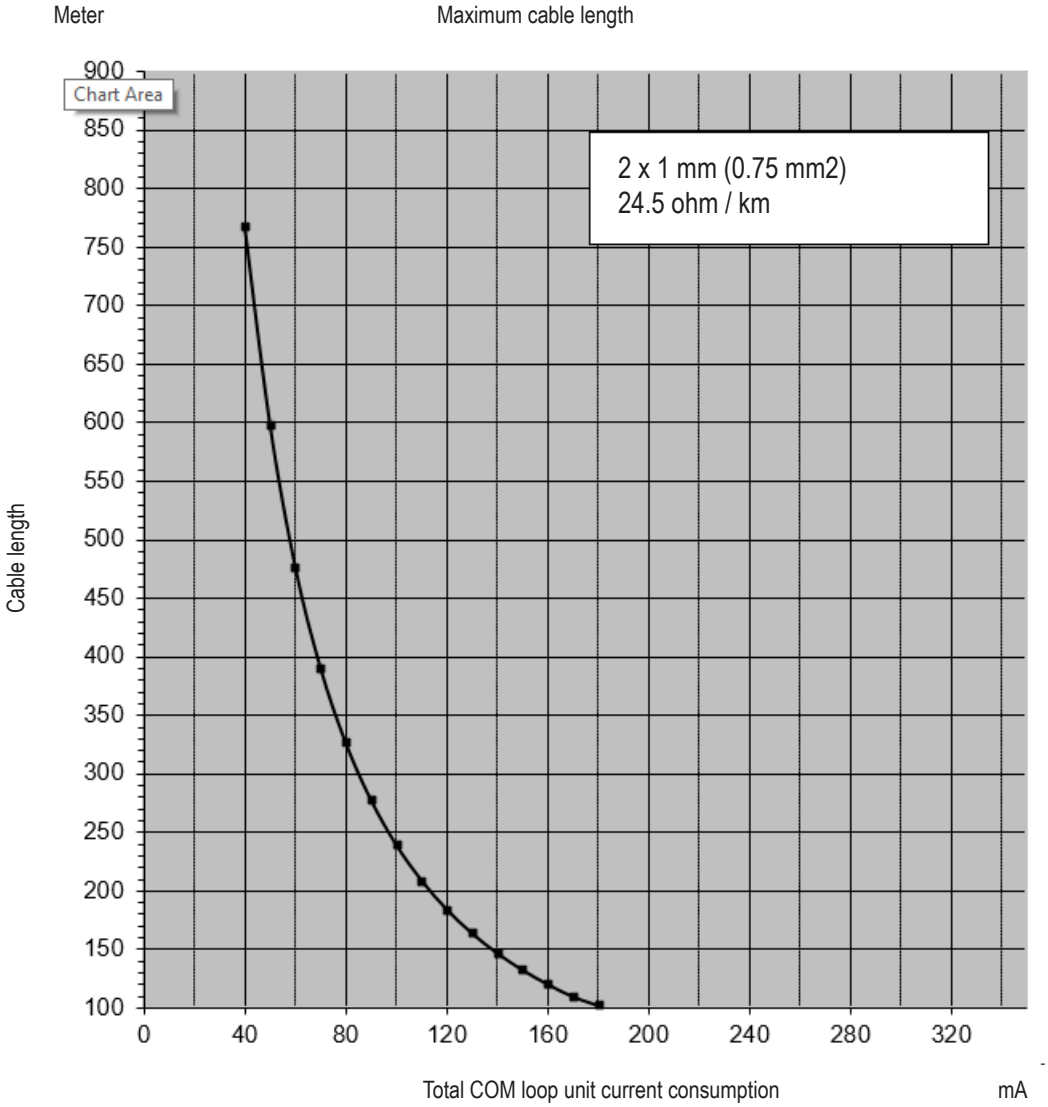
29.2.1. GRAPHS - MAXIMUM CONDUCTOR RESISTANCE

Graph showing the total conductor resistance in relation to the COM loop units' total current consumption.



29.2.2. GRAPHS - MAXIMUM CABLE LENGTH

Graph showing the cable length in relation to the COM loop units' total current consumption.



The graph is valid for the cable type EQQYB 2 x 1 mm (0.75 mm2) with the conductor resistance 24.5 ohm / km. The total conductor resistance (ohm) R = L conductor (ohm) + C conductor (ohm).

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