

PANASONIC FIRE ALARM SOLUTIONS  
**TECHNICAL DESCRIPTION**  
**5000, 5001**



CONTROL AND INDICATING EQUIPMENT  
EBL512 G3



## DOCUMENT INFORMATION

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# 1. INTRODUCTION

This document describes the control and indicating equipment, type number 5000 and 5001.  
The document contains information about the product and instructions on how to mount and connect it.

# 2. ABBREVIATIONS

C.i.e.	Control and indicating equipment
Dwg	Drawing
LED	Light Emitting Diode

### 3. GENERAL DESCRIPTION

The control and indicating equipment is a unit, to which the alarm points are connected via the COM loops or zone line inputs. It indicates fire alarm, fault condition, and so on. Depending on country, convention, and configuration, the look, language, and functions might vary. It can be configured for 128, 256 or 512 alarm points, and the number of alarm points can be upgraded on site. In total, 1020 COM loop units (addresses) can be used; of which 512 can be alarm points.

The unit is intended for indoor use and in dry premises.

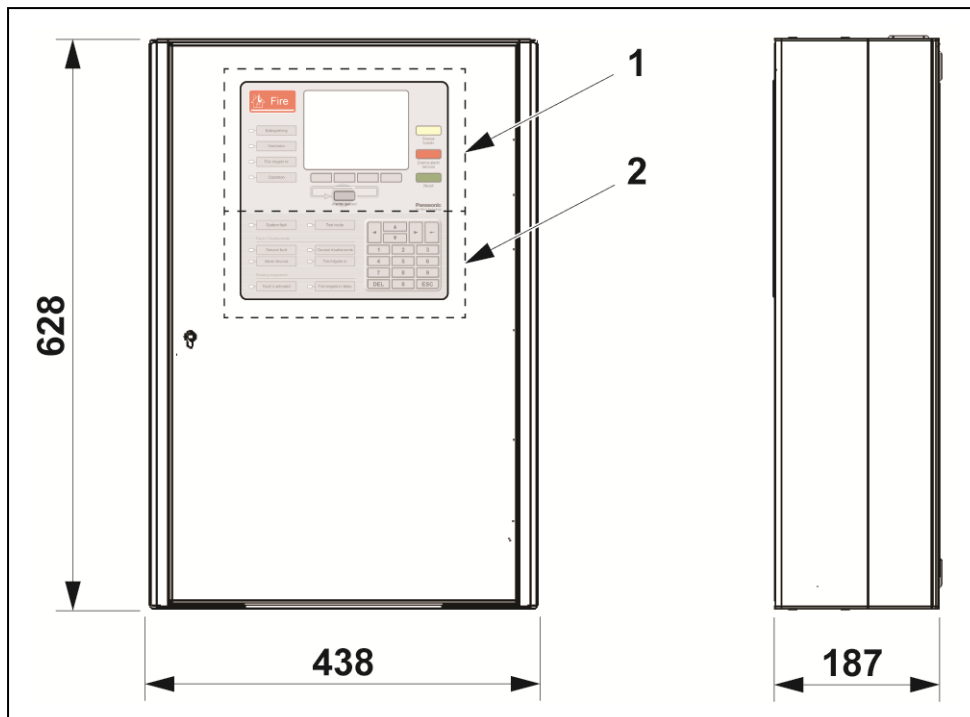
The EBL512 G3 type 5001 is a "grey box" with no front, no display and no door. See front page.

EBL512 G3 conforms to the European standard EN54, part 2 and 4. The Swedish Fire brigade panel conforms to SS3654.

#### 3.1. OPTIONS

EN 54-2 options with requirements	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 fire 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

EBL512 G3 conforms to the European standard EN54, part 2 and 4. The Swedish Fire brigade panel conforms to SS3654.



(Measures in mm)

- 1) Fire brigade panel
- 2) Control panel

### 3.2. FIRE BRIGADE PANEL

The fire brigade panel is used by the fire brigade personnel to see which alarm point(s) / zone(s) having activated fire alarm and to take required operational control of the system.

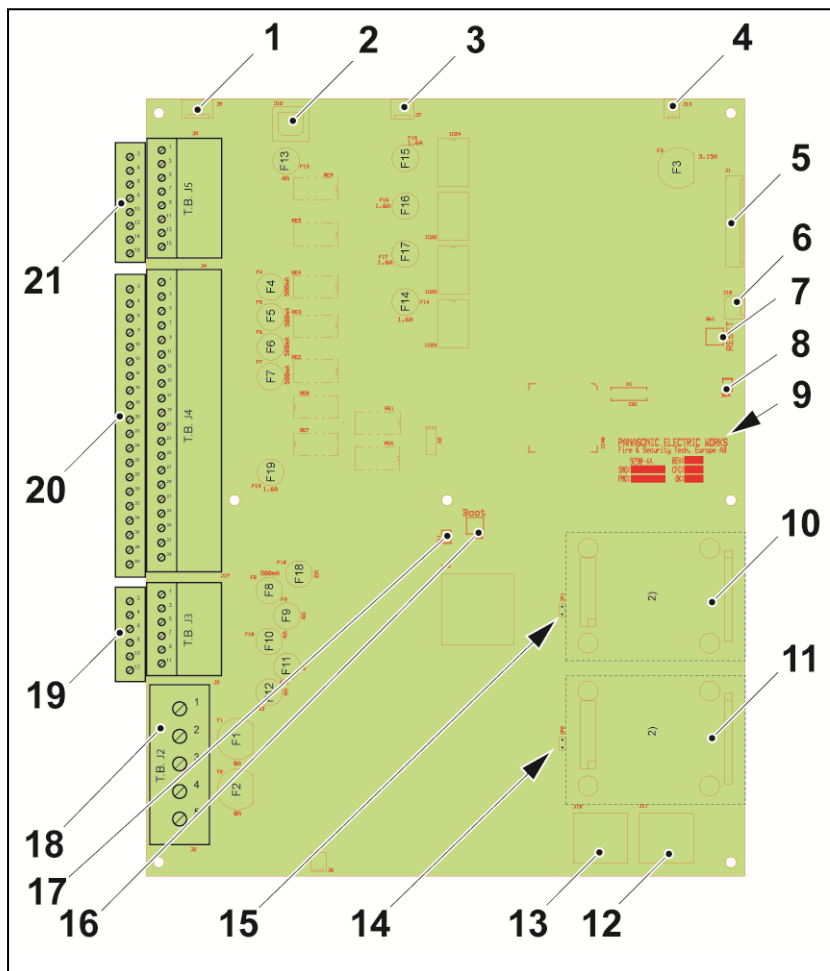
In the graphical display, the information displayed in the upper part is depending on how alarm points / zones having activated fire alarm. In the middle part will the fire alarms be shown, one alarm point or one zone together with user definable alarm text (if programmed).

### 3.3. CONTROL PANEL

The control panel is used to communicate with the system, for commissioning, monthly tests, and maintenance. To get access to the system and for operational control, a user account is required. Up to ten user names can be used for three different user level types. A password (six digits) for each user name is required.

The control panel has several system status LEDs and a keypad. See EBL512 G3 Operating Instructions for more information.

### 3.4. MAIN BOARD



- 1) J9, expansion boards.
- 2) J12, USB type B, PC
- 3) J7, RS232, for Web-server
- 4) J13, for door switch
- 5) J1, for MMI board
- 6) J18, for battery temp. sensor
- 7) SW1, main board restart
- 8) LED D24  
Steady = Normal  
Off = Watchdog fault or  
main board in boot mode
- 9) PCB label for identification
- 10) Optional, TLON board no.0
- 11) Optional, TLON board no.1
- 12) J11, PC connection to TLON  
board 1
- 13) J10, PC connection to TLON  
board 0
- 14) JP2, service pins / jumper for  
TLON board 1
- 15) JP1, service pins / jumper for  
TLON board 0
- 16) SW2, main board boot
- 17) LED D11  
Blinking.= TLON board 0  
communicating  
Steady = TLON board 1  
communicating
- 18) J2
- 19) J3
- 20) J4
- 21) J5

For more information on J2 – J5, see chapter 4 INTRODUCTION.



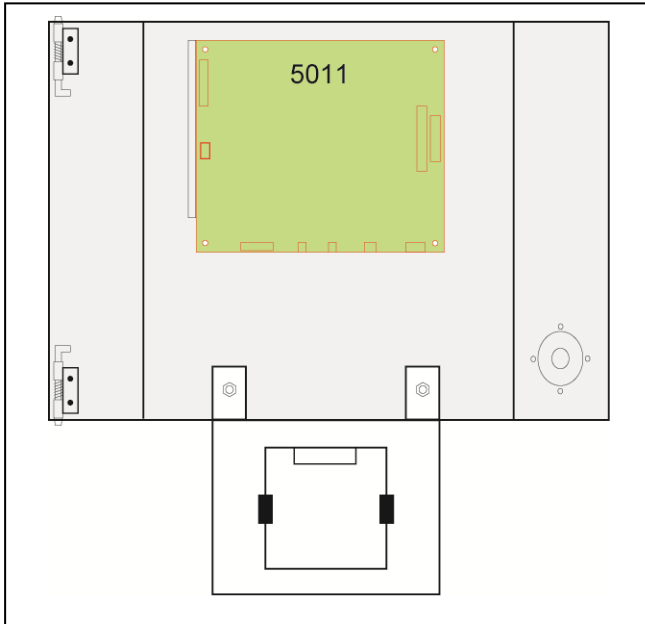
### 3.5. MMI BOARD

The MMI board 5011 is placed on the backside of the front in the c.i.e. 5000.

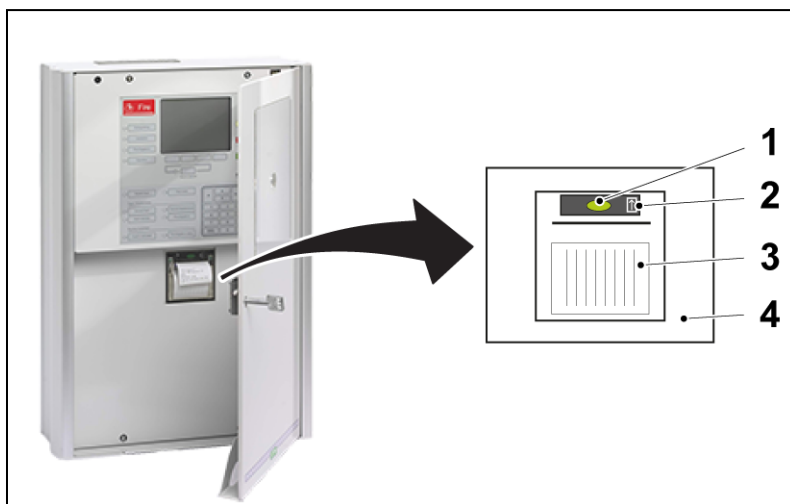
The MMI board has connections to the;

- Mainboard
- Front (LEDs and key board)
- LCD
- Loudspeaker
- Printer

See dwg 512 G3 – 12.



### 3.6. PRINTER



The c.i.e.5000 can be delivered with or without a printer depending on if "PRT" is added in the article number or not. The printer is mounted on the front panel door and is connected to the MMI board. See dwg 512 G3 – 01, sheet 2.

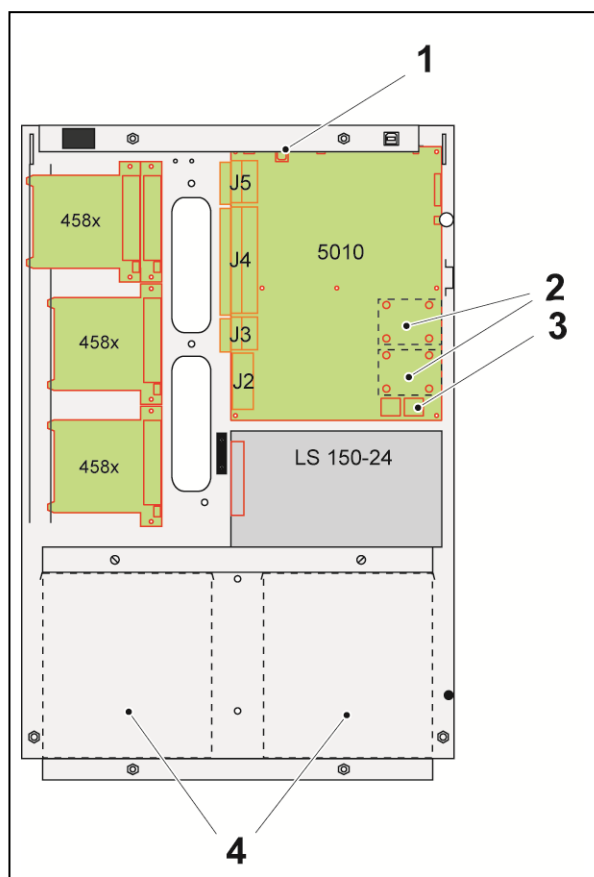
When the printer is mounted, the checkbox "Printer" has to be marked in the EBLWin "Control unit properties" dialog box.

Alarms (fire alarms – including test mode alarms and heavy smoke/heat alarms) will always be printed. The following can also be printed:

- Faults via menu
- Disablements via menus
- Detectors activating service signal via menu
- The event logs via menu
- The control unit information/configuration via menu
- Activated interlocking inputs via menu

The printer only, not the mounting frame and connection cable, is available as spare part, type number 5085.

## 4. CONNECTIONS IN THE C.I.E.



- 1) Connection for expansion boards
- 2) Position for TLON connection boards
- 3) 2 x PC-connection for TLON connection boards
- 4) Position for backup batteries

### J5

-COM loops 0-3

### J4

-Supervised voltage output S0-S3

-Relay output R0, R1

-Input I0-I3

-Fire brigade TX

-Faults TX

-TLON Network

-Display units power supply

-Display units RS485

### J3

-Power supply for web-server

-Power supply for routing equipment (0)

-Power supply (1-4)

### J2

-Main board connection to batteries and rectifier

### 5010

-Mainboard

### LS 150-24

-Power supply unit, rectifier  
(spare part number 5047)

### 458X

-Position for expansion boards

## 4.1. COM LOOPS

Each c.i.e has four COM loops (0-3) which are connected to terminal block J5. Connections according to dwg 512 G3 – 25, -31, -36, -37, and -38.

On each COM loop up to 253 COM loop units can be connected (address 001-253). Regarding type and number of COM loop units in relation to the cable length / type, see dwg 512 G3 – 41 and chapter “Com loop cable length” and “Current consumption” in EBL512 G3 Planning instructions.

Each COM loop unit has a COM loop address (for example 123) and depending on the control unit number (for example 04) and the loop number (for example 0) each COM loop unit will get a technical number (040123).

Each alarm point and zone line input has a fire alarm presentation number (Zone-address), for example 001-01. See EBL512 G3 Operating Instructions for more information.

The c.i.e. sends data by changing the polarity on the loop.

Voltage on the loop terminals:  $24.0\text{ V} \pm 1.5\text{ V}$ .

Maximum loop current: 350mA.

### SUB-LOOPS

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

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

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

### SHORT CIRCUIT ISOLATORS

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

In case of a short circuit on a COM loop, only the affected segment will be disabled.

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

**NOTE!** EBL512 G3 has one built-in isolator in the-A direction (no. "A") and one in the B-direction (no. "B").

## 4.2. PROGRAMMABLE VOLTAGE OUTPUTS (S0-S3)

The 24 V DC outputs S0-S3 are normally supervised. The outputs are in EBLWin default set as supervised but via EBLWin it is possible to set each output (S0-S3) individually to be not supervised.

<b>Voltage</b>	
Active:	20.1 – 27.0 V DC (nom. 23.1 V DC)
Supervised:	~ - 5.0 V DC
<b>Current</b>	
Active:	≤ 0.5 A
Supervised:	~ - 3 mA
<b>Line resistance R<sub>L</sub>:</b>	16 – 80 Ohm depending on current outtake. (Voltage drop in the wiring must not exceed 8.0 V DC)

Outputs S0 - S3 are protected by resettable PTC Fuses.

Connections according to dwg 512 G3 – 23, sheet 1-3.

See also chapter Programmable outputs in EBL512 G3 Planning instructions.

**NOTE!** 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).

**NOTE!** For EN54-13 compliance, connections have to be according to dwg 512 G3 – 23, sheet 2. Only one alarm device can be used (< 15 mA) and one 1kΩ end-of-line resistor. Programmed as normally low and supervised.

## 4.3. PROGRAMMABLE RELAY OUTPUTS (R0-R1)

Each control unit has two programmable relay outputs.

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 according to dwg 512 G3 – 23.

## 4.4. PROGRAMMABLE INPUTS (I0-I3)

In each c.i.e. are four programmable, not supervised inputs (I0-I3) available.

Normally open (R > 20K) or Normally closed (R < 500 Ω)

Activation time: > 1 sec.

Connections according to dwg 512 G3 – 23.

See also chapter Programmable inputs in EBL512 G3 Planning instructions.

## 4.5. RELAY OUTPUTS FOR ROUTING EQUIPMENT (TX)

Not programmable outputs. Connections according to dwg 512 G3 – 24.

### 4.5.1. FIRE ALARM OUTPUT

This output is normally used for fire brigade tx. It is a change-over relay contact that will be activated when a fire alarm is generated in the system.

### 4.5.2. FAULT CONDITION OUTPUT

This output is normally used for fault warning routing equipment (fault tx). It is a change-over relay contact that is normally activated and will be de-activated in case of a fault in the c.i.e. Also when the c.i.e. is out of power or watch-dog fault.

The output can be disabled via “door open” or via menu.

De-activated output is indicated by the LED Routing equipment “Fault tx activated”.

## 4.6. TLON NETWORK

The EBL512 G3 system can be built up as a single TLON Network or as a redundant TLON Network, via the TLON connection boards (5090). The TLON connection boards must be ordered and plugged in each control unit.

See also EBL512 G3 Planning instructions and the Technical Description TLON Manager kit MEW 01983.

## 4.7. POWER SUPPLY 24 V FOR DISPLAY UNITS

Voltage: 20.1 – 27.0 V DC (nom. 23.1 V DC), Current: min 0 / max. 1.6 A (Fuse F19). See dwg 512 G3-24.

## 4.8. DISPLAY UNITS – RS485

See dwg 512 G3-24 and Planning instructions section “display units - RS485 interface”.

## 4.9. POWER SUPPLY 24 V FOR WEB-SERVER

Voltage: 20.1 – 27.0 V DC (nom. 23.1 V DC), Current: min 0 / max. 1.6 A (Fuse F18). See dwgs 512 G3-22 and 512 G3-32.

## 4.10. POWER SUPPLY 24 V FOR ROUTING EQUIPMENT

Voltage: 20.1 – 27.0 V DC (nom. 23.1 V DC), Current: min 0 / max. 0.5 A (Fuse F8). See dwg 512 G3-22.

## 4.11. POWER SUPPLY 1

Voltage: 20.1 – 27.0 V DC (nom. 23.1 V DC), Current: min 0 / max. 1.6 A (Fuse F9).

See dwg 512 G3-22.

## 4.12. POWER SUPPLY 2-4

Voltage: 20.1 – 27.0 V DC (nom. 23.1 V DC), Current: min 0 / max. 1.6 A (Fuse F10)

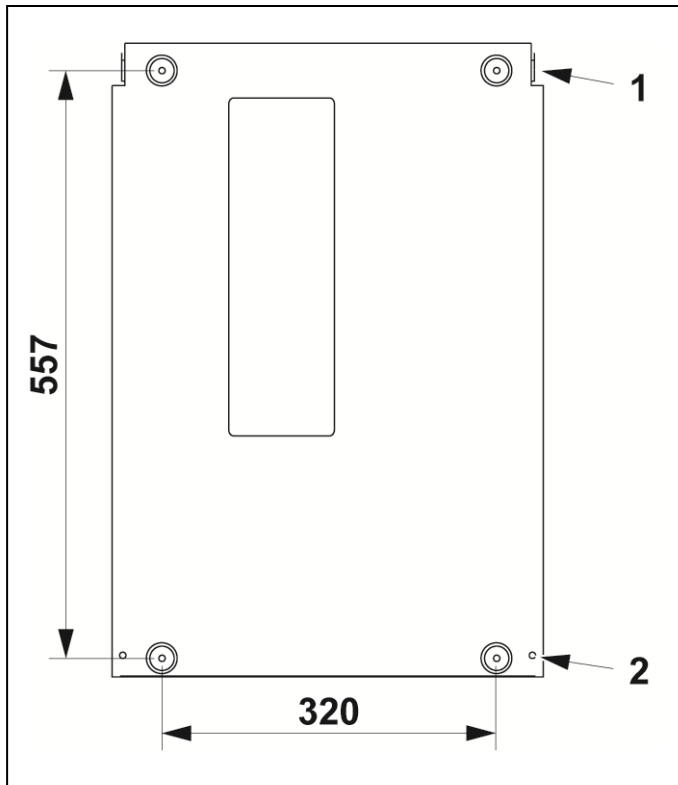
Note, Fuse F10 is common for power supply outputs 2-4.

## 5. MOUNTING

The c.i.e. must be mounted on the wall. Screws are not supplied.

### 5.1. WALL MOUNTING PLATE

The 5000 and 5001 units are delivered with a mounting plate approved for mounting on an incombustible wall, for example concrete.



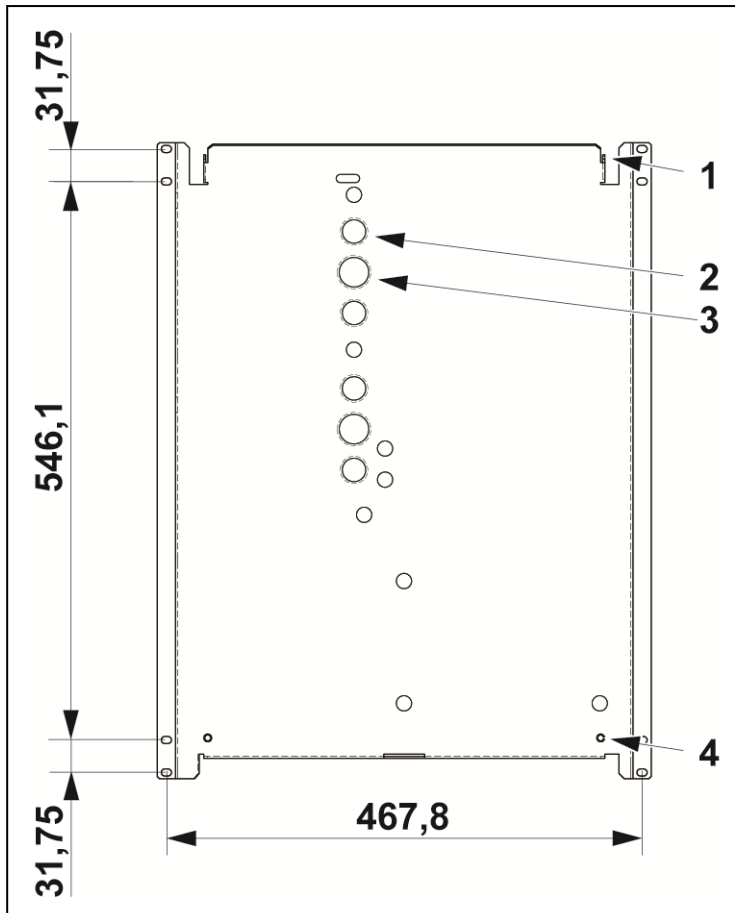
- 1) 2 x hooks for c.i.e. metal housing
- 2) 2 x M6 bolt for c.i.e. metal housing fixing

(Measures in mm)

- a) Mount the wall mounting plate on the wall.
- b) Hook the c.i.e. metal housing on the wall mounting plate and fixate the housing.
- c) Cable connections
- d) Commissioning
- e) Put on the c.i.e. skin on the metal housing and fix.

## 5.2. MOUNTING PLATE FOR 19" MOUNTING RACK, 5020

When the c.i.e. shall be mounted in a 19" mounting rack, the standard mounting plate can be replaced with a Mounting plate for 19" mounting rack 5020.

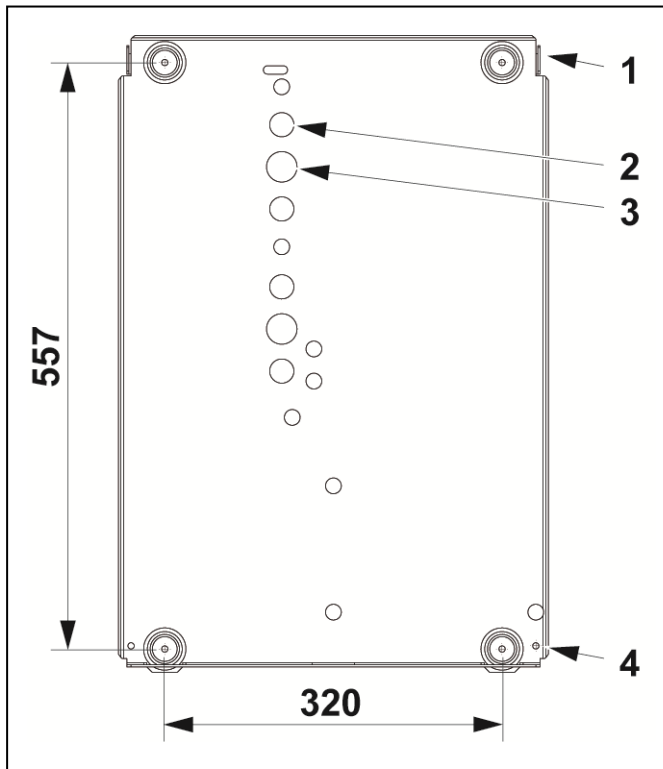


- 1) 2 x hooks for c.i.e. metal housing
- 2) 4 x knockout Ø 23
- 3) 2 x knockout Ø 29
- 4) 2 x M6 bolt for c.i.e. metal housing fixing



### 5.3. MOUNTING PLATE FOR INFLAMMABLE WALL, 5021

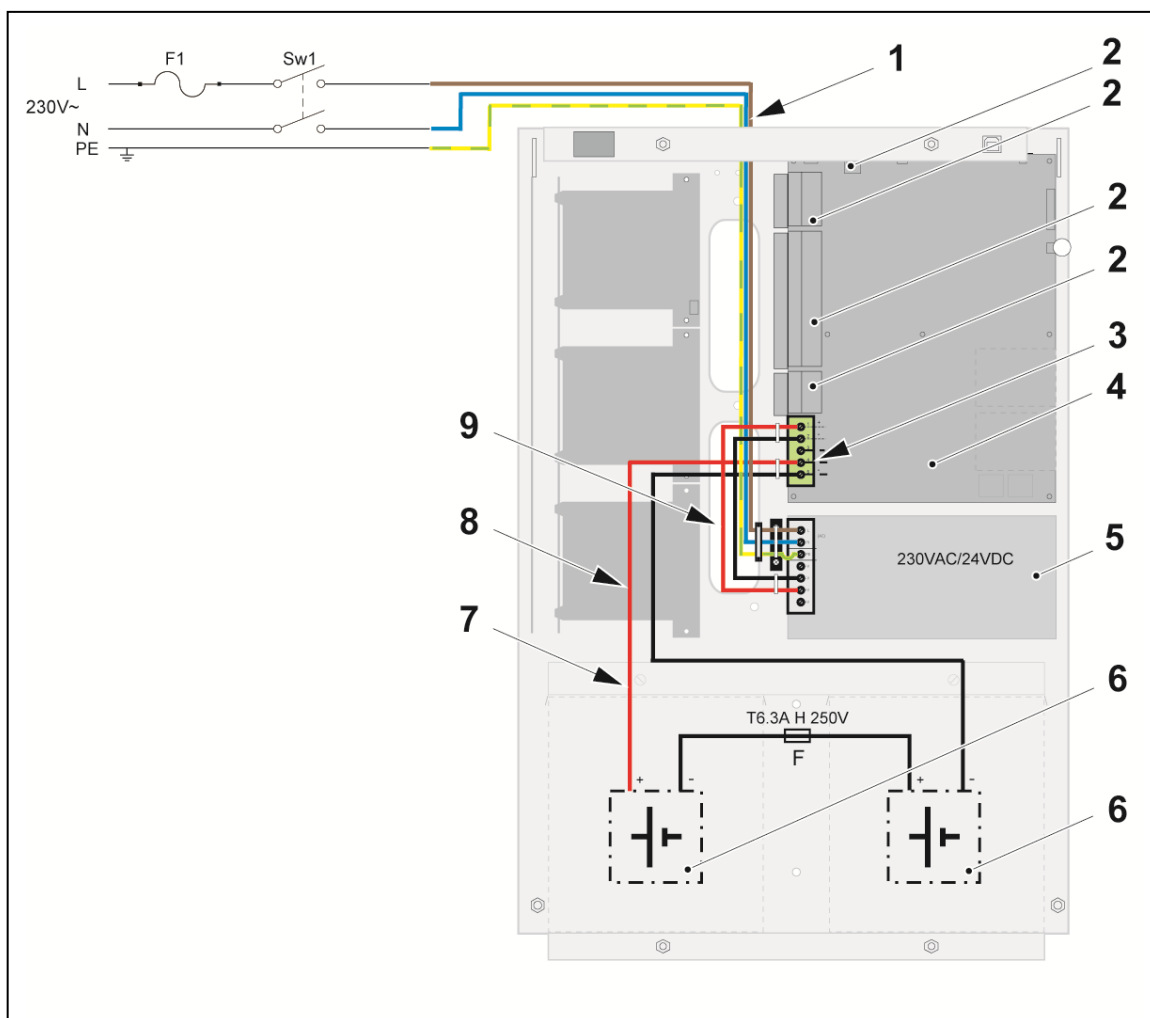
When the c.i.e. unit shall be mounted on an inflammable wall, the standard mounting plate should be replaced with a Mounting plate for inflammable wall 5021, which can be provided with cable glands.



- 1) 2 x hooks for c.i.e. metal housing
- 2) 4 x knockout  $\varnothing$  23
- 3) 2 x knockout  $\varnothing$  29
- 4) 2 x M6 bolt for c.i.e. metal housing fixing

## 6. POWER SUPPLY

The main power source is a built-in switched power supply (rectifier) LS150-24, 230 V AC, 2.0 A / 24 V DC, 6.5 A.



Power supply function in c.i.e.	Min / max voltage	Min / max current
1) Mains, 230 V AC	195 V / 253 V AC	
2) Output current for continuous use. ( $I_{max}^a$ )		2.5 A
Output current for continuous use, no battery charging. ( $I_{max}^b$ )		6 A
Output voltage	20.1 V / 27.0 V DC	
3) Battery charging current from main board to the battery.	Max 29 V DC	Max 2.4 A
4) Main board	-	-
5) Power supply (rectifier), 230V AC to 24V DC	-	-
6) Internal batteries 2 x 12V, 17 - 28 Ah	12 V DC	
External batteries 2 x 12 V, 17 - 65 Ah	12 V DC	
7) Battery charging current.. $27.3 \pm 0.1V@20^\circ C$ but $27.3 \pm 0.7 V$ depending on the battery temperature.	-	Max 2.4 A
8) Battery power supply / current, by loss of 230V AC.	21.6 V / 28V DC	Max 6.3 A
$I_{min}$ , type 5000 current consumption:	-	0.23 A
$I_{min}$ , type 5001 current consumption:	-	0.18 A
$R_{max}$ : 0.5 $\Omega$	-	-
9) Power supply from rectifier to main board	23.8 V / 24.2 V DC	Max 6.3 A

## 6.1. BATTERIES

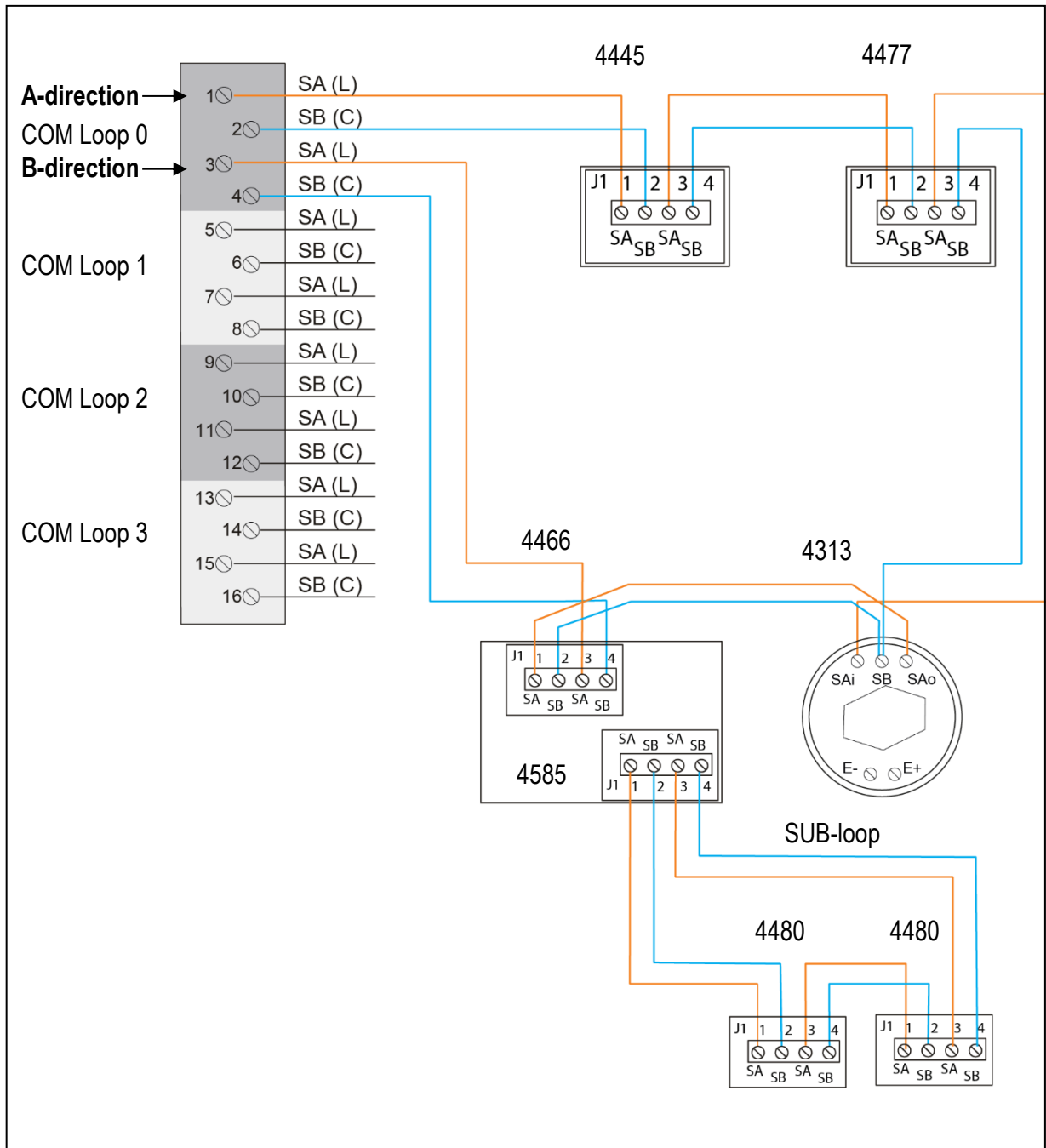
The second power source is a backup battery (2 x 12 V). In the c.i.e. is space for two 28 Ah batteries. Larger batteries (up to 65 Ah) have to be placed outside the c.i.e, with maximum 3 meters of cable in between.

The batteries and power supply are connected to the main board, which handles the charging of the batteries.

See also EBL512 G3 Planning instructions and dwg 512 G3-21.

## 7. INSTALLATION AND WIRING – COM LOOPS

**NOTE!** Screen wire termination is not provided.



### DATA

Wire size (Min)	Ø 0.6 mm (0.3 mm <sup>2</sup> )
Wire size (Max)	Ø 1.6 mm (2 mm <sup>2</sup> )

## 8. MAINTENANCE

### 8.1. PCB REPLACEMENT

If the control unit is a part of a TLON Network, note that some TLON information is saved in the TLON connection board memory and some in the main board memory.

#### 8.1.1. REPLACEMENT OF THE MMI BOARD

S/W version of the MMI board must be same as on main board. Must match exactly for X.Y.Z

#### 8.1.2. REPLACEMENT OF THE MAIN BOARD

Perform the following steps:

- a) Download S/W if necessary
- b) Update 'No of alarm points' if necessary (with special password).
- c) If the control unit is part of a network, perform 'Update' in TLONManager (in TLONManager 1.2 also 'Save').
- d) Download SSD
- e) Perform calibration of outputs
- f) Change access codes (if necessary - only valid for software version < 2.0.0)
- g) Perform a safe shut down and restart the control unit

#### 8.1.3. TLON CONNECTION BOARD

If the TLON connection board is replaced: Perform a Replace in TLON manager for the correct control unit. Then restart the control unit where the TLON board was replaced.

## 9. TROUBLESHOOTING

### 9.1. EARTH FAULT

The earth voltage can be measured in two ways; either between earth and the rectifier or between earth and the batteries. If mains is connected the measurement should be done against the rectifier otherwise it should be done against the batteries.

The following tables show the nominal earth voltage:

#### EBL512 G3

Earth-to-0V	-12.9V DC	(Control unit powered by mains)
Earth-to-24V	11.1V DC	(Control unit powered by mains)
Earth-to-B-	-14.2V DC	(Control unit powered by batteries)
Earth-to-B+	12.1V DC	(Control unit powered by batteries)

The AC voltage is dependent on the rectifier. Best way is to turn off mains and let the control unit run on batteries. Then the AC voltage should be less than 0.5V.

**NOTE!** Don't connect a PC to a control unit that has earth fault. Because of the earth fault introduced by the PC, there will be a short circuit between 0V (connected to earth by the PC) and the other point that is connected to earth. This short circuit is likely to damage the pcb in the control unit.

To avoid getting an earth fault when the PC is connected to an EBL512 G3 control unit we recommend using an USB Isolator.

## 10. TECHNICAL DATA 5000

**NOTE!** All current consumptions are valid by nominal voltage and by 25 °C.

Voltage: Primary System	230 V AC (195 – 253) 2.0 A 24V DC
Rated output voltage	20.1 – 27.0 V DC (Max ripple 120 mVp-p)
Current consumption: Quiescent / Active	Depending on type (5000 or 5001), type and number of expansion boards, connected external equipment and so on. See chapter "Current consumption" in the Planning instructions
Number of addresses	Maximum 1020
Number of alarm points	Maximum 512
Short circuit isolator	Yes, for loops 0-3
Internal battery	Not included
Material	Metal cabinet: Aluminum-zinc – AZ150
Ambient temperature: Operating Storage	-5 to +40 °C -30 to +60 °C
Ambient humidity	Maximum 95, % RH (Non condensing)
Ingress protection rating	IP 30
Size: H x W x D	628 x 438 x 187 mm
Weight	23.1 kg (no printer, no internal batteries) 23.6 kg (with printer, no batteries) 46 kg (with printer, with 2 x batteries Panasonic LC-P1228P)
Colour	Light grey (NCS S 1500-N / PMS Cool Gray 2) and Aluminum.

## 11. TECHNICAL DATA 5001

**NOTE!** All current consumptions are valid by nominal voltage and by 25 °C.

Voltage: Primary System	230 V AC (176 – 264) 2.0 A 24V DC
Rated output voltage	20.1 – 27.0 V DC (Max ripple 120 mVp-p)
Current consumption: Quiescent / Active	Depending on type (5000 or 5001), type and number of expansion boards, connected external equipment and so on. See chapter "Current consumption" in the Planning instructions
Number of addresses	Maximum 1020
Number of alarm points	Maximum 512
Short circuit isolator	Yes, for loops 0-3
Internal battery	Not included
Material	Metal cabinet: Aluminum-zinc – AZ150
Ambient temperature: Operating Storage	-5 to +40 °C -30 to +60 °C
Ambient humidity	Maximum 95, % RH (Non condensing)
Ingress protection rating	IP 30
Size: H x W x D	625 x 418 x 177 mm
Weight	19 kg (no internal batteries) 41 kg (with 2 x batteries Panasonic LC-P1228P)
Colour	Light grey (NCS S 1500-N / PMS Cool Gray 2)



## 12. APPROVALS

Applicable directive / Approvals	Applicable standards	Notified body
CPR	EN 54-2 EN 54-4	VdS No. 0786-CPR-20982
EMC	EN 61000-6-3 (Emission) EN 50130-4 (Immunity)	SP VdS
LVD	EN 60950-1	Self declaration
RoHS	EN50581	Self declaration

