

CPSET-M11, -M12, -M13, -M31, -M32, -M33 CPSET-BB COMPACT*plus* Safety Sensor Sets



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1 General

The COMPACT*plus* device contained in the CPSET-BB is an active optoelectronic protective device (AOPD), type 4 in accordance with EN IEC 61496-1, prEN IEC 61496-2, SIL 3 in accordance with EN IEC 61508 and PL e in accordance with EN ISO 13849-1. The devices used provide a muting function that enables the protective function of the safety light grid to be suppressed in order, for example, to transport material through the protective field.

CPSET-BB is available in the following complete versions:

- CPSET-M11 and CPSET-M31 with muting function and 4 reflection light scanners as muting sensors for use in system separation
- CPSET-M12 and CPSET-M32 with muting function and 2 induction loops as muting sensors for use at transfer stations
- CPSET-M13 and CPSET-M33 without muting function for use as 2- or 3-beam access guarding

The accessory sets CPSET-Mxx-ACC can also be ordered separately and combined with transmitter/receiver systems that are preconfigured with the “m03” configuration (see the order guide in the Appendix). This connecting and operating instructions manual is largely identical for all CPSET-BB versions. Content that is different for the versions is identified accordingly. Details regarding the muting devices may be found in the attached connecting and operating instructions COMPACT*plus*-m.

1.1 Certifications

Company



Leuze electronic GmbH & Co. KG in D-73277 Owen - Teck / Germany, has a certified quality management system in compliance with ISO 9001.

Products



CPSET-BB has been developed and produced in accordance to the current European directives and standards.

EU type examination for the COMPACT*plus* series acc. to EN IEC 61496-1, prEN IEC 61496-2, EN IEC 61508, EN ISO 13849-1

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1.2 Symbols and terms

Table 1.1: Warning symbols and signal words


	Symbol for dangers
NOTICE	Signal word for property damage Indicates dangers that may result in property damage if the measures for danger avoidance are not followed.
CAUTION	Signal word for minor injury Indicates dangers that may result in minor injury if the measures for danger avoidance are not followed.
WARNING	Signal word for severe injury Indicates dangers that may result in severe or fatal injury if the measures for danger avoidance are not followed.
DANGER	Signal word for life-threatening danger Indicates dangers at which severe or fatal injury is imminent if the measures for danger avoidance are not followed.

Table 1.2: Other symbols




	Symbol for tips Text passages with this symbol provide you with further information.
	Symbols for action steps Text passages with this symbol instruct you to perform actions.
	Symbol for CPRT-m muting transceiver

Table 1.3: Terms and abbreviations

Start/Restart Interlock	Prevents automatic switch on or restarting of the OSSD after the supply voltage has been turned on and after the protective field has been penetrated
AOPD	Active Optoelectronic Protective Device Active Optoelectronic Protective Device
AOPD Response Time	Time between penetration/entry into the active protective field of the AOPD and the actual switching off of the OSSDs.
Control Unit	Device with muting indicator, reset button and connections for muting sensors and muting devices.
ESPE	Electro-sensitive protective equipment
CPSET-BB	Umbrella term for CPSET-M11, -M12, -M13, -M31, M32, -M33 as well as light curtains and Multiple Light Beam Devices with configuration "m03"
CPR-m	COMPACT <i>plus</i> Receiver with muting function
CPT	Transmitter for CPR-m
CPRT-m	COMPACT <i>plus</i> transceiver with muting function
CPM500/2V	Passive Deflecting Mirror for transceiver
MS	M uting s ensor, e.g. Light Beam Devices, induction loops or switches
Muting	Proper, purpose-intended, limited in time suppression of the safety function of the protective field.
Muting restart	Muting restart is required after a fault for releasing the protective device (muting indicator flashes).
OSSD	O utput S ignal S witching D evice
Parallel muting	Muting is introduced when two defined muting sensors are activated within a defined time.
Reflex Light Scanner	Transmitter and receiver point in the same direction. If a reflective object is located in the scanning range in front of the reflection light scanner, the light of the transmitter is reflected and falls on the receiver.
RES	Start/ RES tart interlock
FS	Factory setting (value of a parameter with delivery from the factory, which can be changed with switches and/or SafetyLab).

2 Safety

Safety Notices: see the connecting and operating instructions for *COMPACTplus-m*.

3 System design and possible uses

3.1 Overview

All CPSET-BB's consist of a contactless protective device AOPD with a muting transceiver CPRT-m and a passive Deflecting Mirror CPM or a transmitter and a receiver. Depending on the model, a muting function for temporary suppression of the protective field function is activated by reflection light scanners or induction loops.

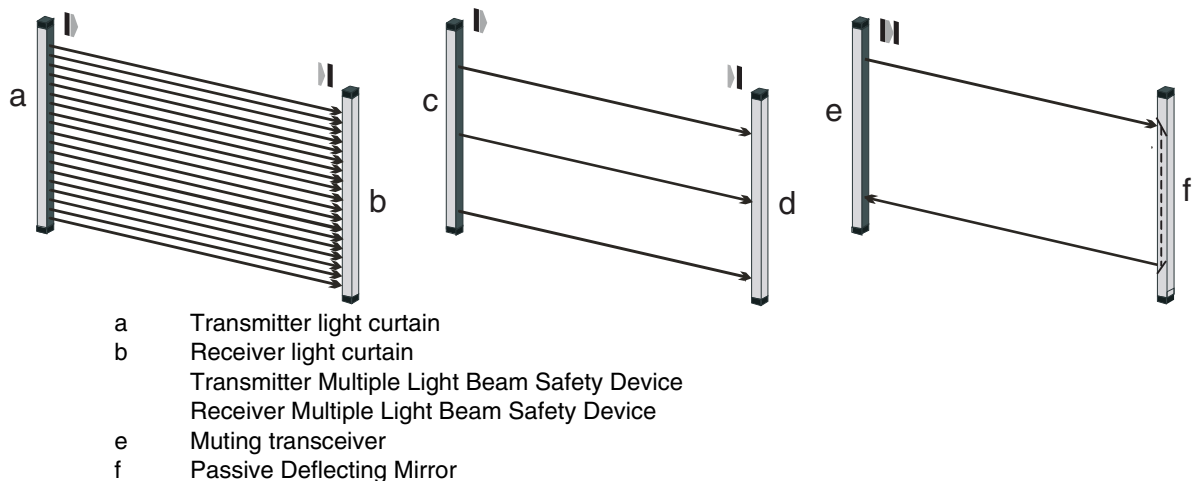


Figure 3.1: Working principle of the optoelectronic protective device; illustration without device columns

CPSET-BB are provided for the following areas of application:

- CPSET-M11 and CPSET-M31 with muting function activated by 4 reflection light scanners for use at system separation
- CPSET-M12 and CPSET-M32 with muting function activated by 2 induction loops for use at transfer stations
- CPSET-M13 and CPSET-M33 without muting function for use as 2- or 3-beam access guarding

The system's components are optimally arranged on one another and parametered so that the system can be easily mounted and put into operation without any further settings.

Cables and connectors required within the sets are part of the delivery. Cables to the cabinet must be ordered separately.

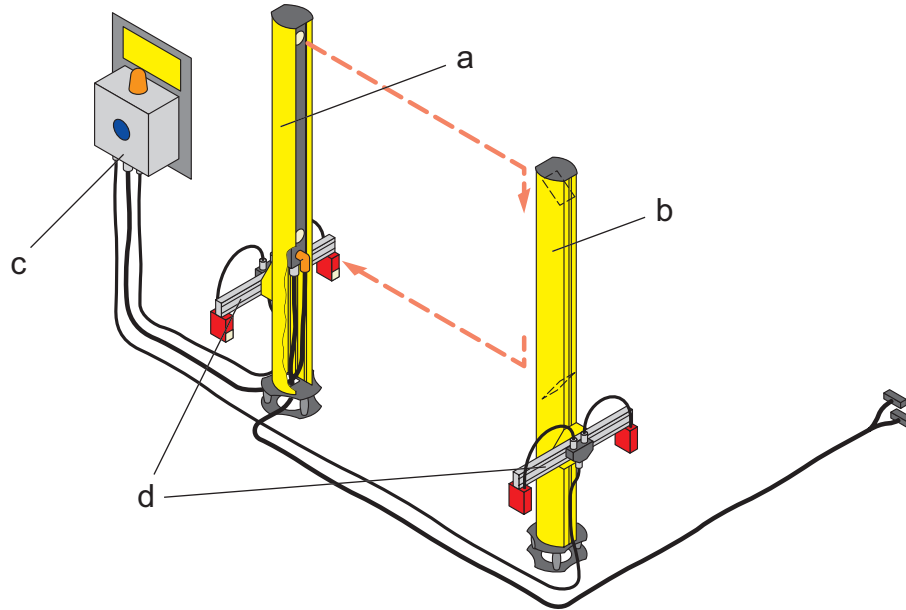
System components

CPSET-BB consisting of the following components:

- 2 device columns for mounting the safety devices
- Muting transceiver or muting receiver, mounted in a device column
- Passive Deflecting Mirror or transmitter, mounted in a device column
- Control unit on mounting plate with muting indicator, reset button and connection sockets for muting sensors for the CPSET-M11, -M12, -M31, -M32 incl. connection cable from the control unit to the muting device (10 m)
- Control unit on mounting plate with reset button for the CPSET-M13 and CPSET-M33, incl. connection cable from the control unit to the muting device (10 m)
- With CPSET-M12 and CPSET-M32: 2 induction loops with connection cable and HARAX M12 convertible plugs.

3.2 CPSET-M11 and CPSET-M31 with muting via reflection light scanners

4-sensor parallel muting enables the space-saving arrangement at system separation points in conveyor lines. With CPSET-M11 and CPSET-M31, reflection light scanners serve as muting sensors. These must be aligned during the setup on the transport material; their scan range must be set accordingly.



- a Column with muting device
- b Column with Deflecting Mirror or transmitter
- c Control unit on mounting plate
- d Reflection light scanners on mounting set MMS
- e WeiCos connection terminals for machine control, cables to be ordered separately

Figure 3.2: CPSET-M11 overview

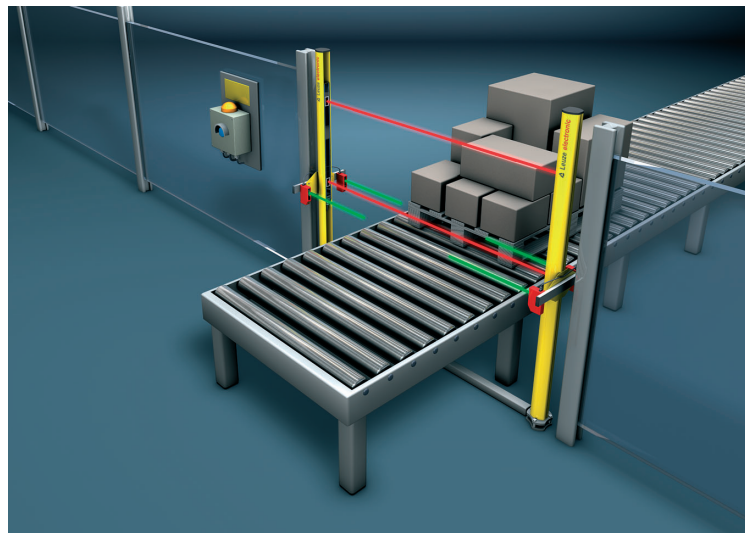
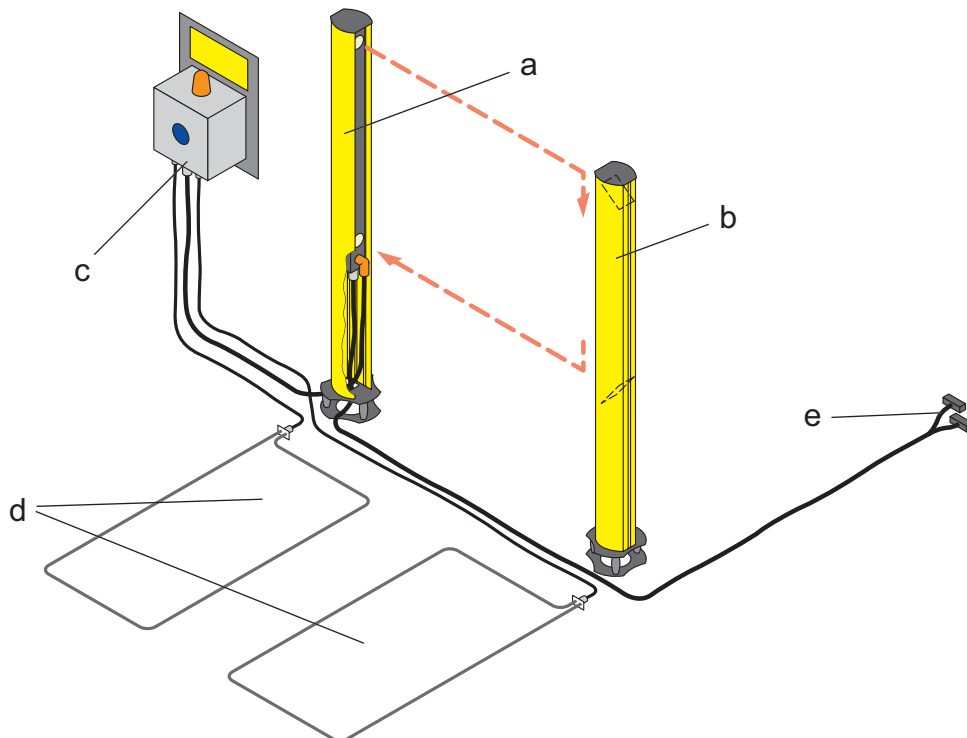


Figure 3.3: System separation application example

3.3 CPSET-M12 and CPSET-M32 with muting via induction loops

CPSET-M12 and CPSET-M32 with 2-sensor parallel muting by induction loops enables activation of the muting function by forklifts. These must be put into the ground with the setup in accordance with the cabling specifications listed herein so that the muting function is not activated by people with simple metallic objects.



- a Column with muting device
- b Column with Deflecting Mirror or transmitter
- c Control unit on mounting plate
- d 2 induction loops
- e WeiCos connection terminals for machine control, cables to be ordered separately

Figure 3.4: CPSET-M12 overview

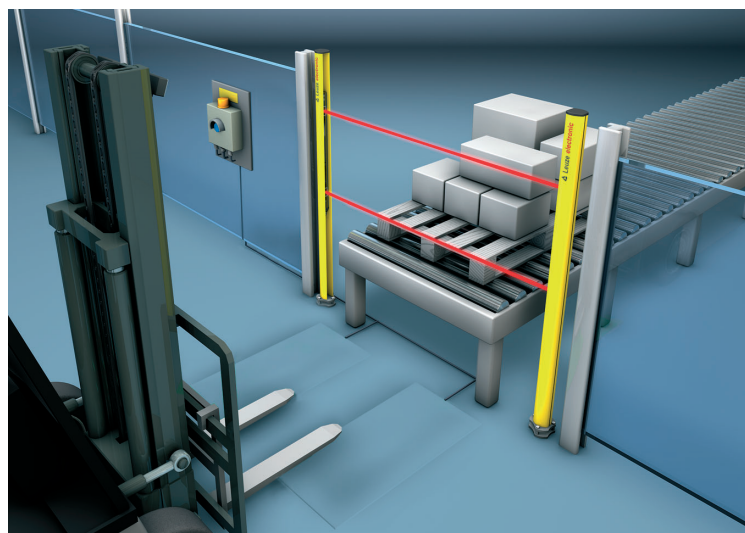
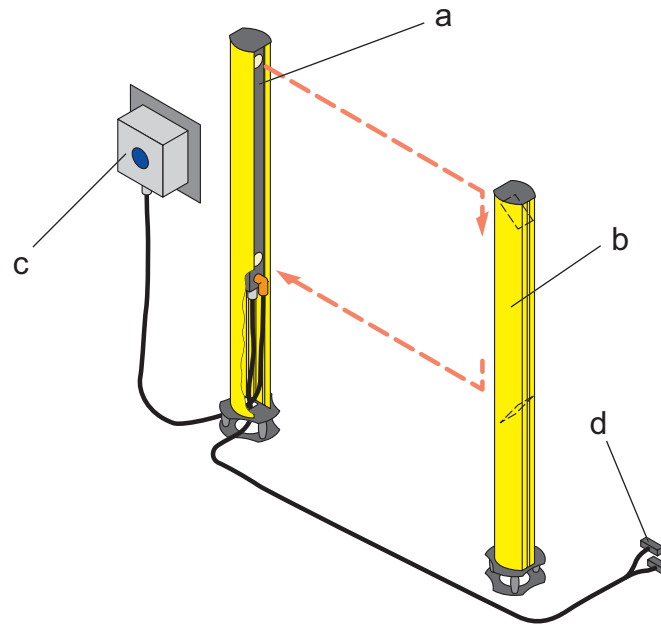


Figure 3.5: Transfer station application example

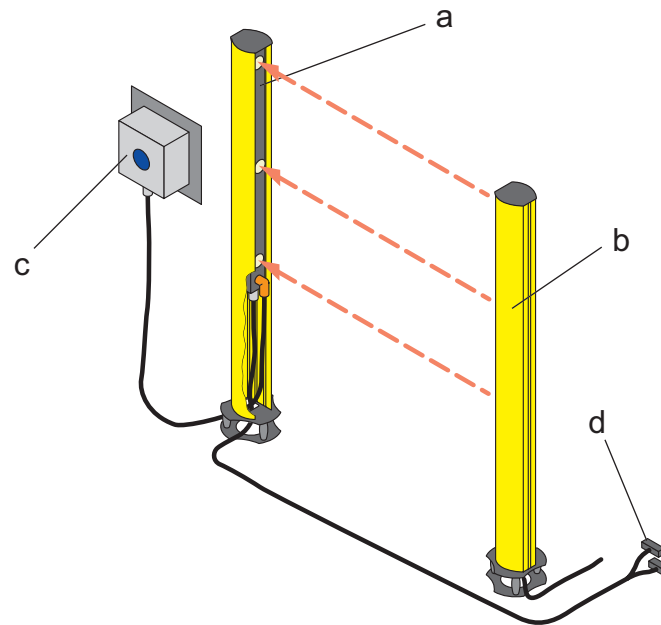
3.4 CPSET-M13 and CPSET-M33 for access guarding

CPSET-M13 and CPSET-M33 are used as electro-sensitive protective equipment without muting function for access guarding.



- a Column with muting transceiver
- b Column with Deflecting Mirror
- c Control unit on mounting plate
- d WeiCos connection terminals for machine control, cables to be ordered separately

Figure 3.6: CPSET-M13 overview



- a Column with muting receiver
- b Column with transmitter
- c Control unit on mounting plate
- d WeiCos connection terminals for machine control, cables to be ordered separately

Figure 3.7: CPSET-M33 overview

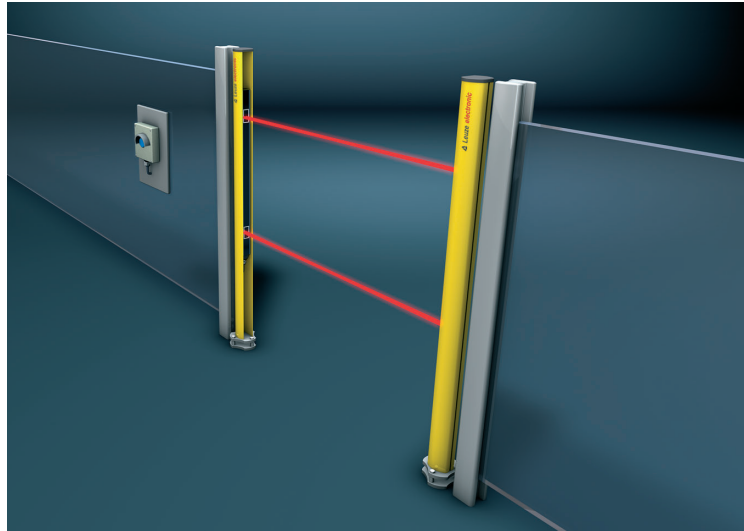


Figure 3.8: Application example: access guard CPSET-M13

4 Function

4.1 Basic function

The muting transceiver CPRT-m with Deflecting Mirror or muting receiver and transmitter create a protective field. An access through the protective field activates a switching-off command, which is evaluated by the machine control and stops the system. The muting function evaluates the signals from reflection light scanners or induction loops and suppresses the activation of the switching command, during a material transport, for example. Detailed information regarding the devices may be found in the enclosed connecting and operating instructions COMPACT*plus*-m.

4.2 Restart interlock

The start/restart interlock function prevents the safety circuits from being released automatically when the machine is turned on or the power supply is restored after a power outage. Only the pressing and release of the blue reset button in the control unit within a time window of 0.1 to 4 seconds causes the device to switch the OSSD to ON state.

When accessing the protective field, the start/restart interlock ensures that the optical protective device remains in the OFF state even after the protective field has been cleared. The device only switches back to the ON state by pressing and releasing the blue reset button within the above-mentioned time window. In the case of access guarding applications, the start/restart interlock is obligatory due to the fact that only access to the danger zone, but not the area between the protective field and the danger points is monitored.

**WARNING**

Before unlocking the start/restart interlock of an access protection, the operator must be absolutely certain that nobody is inside the danger zone.

4.3 Muting

Muting is the intended, regulated and time-limited suppression of the protective field safety function. During the muting process the OSSDs remain in the ON state with interruption of the protective field. Special precautions must therefore be taken here to ensure safety. See specific safety notices in the connecting and operating instructions COMPACT*plus*-m.

The muting operation is initiated by the muting sensor signals.

Factory setting: "2 sensor parallel muting" (L3, L4).

Muting is activated when the two (opposing) muting sensors are activated at the same time within 2.5 s. The muting sensors must be arranged in such a way that a person cannot be in a position to activate the muting function by an easy manipulation.

4.3.1 Muting time limit

**WARNING**

The safety-relevant muting time limit is set to 10 minutes. After this time is elapsed, muting will be terminated; a muting restart to release the muting zone is possibly necessary.

4.3.2 Muting restart

A valid muting sequence can be interrupted during operation, e.g. with failure of the supply voltage, while a permissible object is just passing the muting line. With the recovery of the supply voltage, the muting process does not continue automatically, because the expected sequence is not supplied from the already activated muting sensors. The muting indicator flashes to indicate this state. In order to prevent a manual removal of the object from the muting line, CPSET-BB provide an integrated override mode via the reset button. The OSSDs are switched on here, provided at least one muting sensor is activated, and within 4 seconds (FS) the

- reset button is pressed,
- released and
- pressed again.

 **WARNING**

On the second pressing of the reset button, the safety circuit is released immediately (override function)! The blue LED4 of the muting device lights up during the muting restart process to indicate that its protective function has been bridged.

 **WARNING**

The operator must also be absolutely certain before activating the muting restart that nobody is inside the danger zone.

With the second releasing of the reset button, CPSET-BB checks the muting sensors for a valid assignment. If a valid muting combination is determined, the OSSDs remain in the ON state; the system returns to its normal operation. If, on the other hand, an invalid muting combination is determined, the release is maintained only for as long as the button is pressed. If it is released, the system stops again. This happens, for example, with dealignment, dirty or damaged muting sensors.

In this case as well, the override in tip mode is therefore possible with the condition that a responsible person observes the procedure and can interrupt the dangerous movement at any time by releasing the reset button. The error must be checked by a qualified specialist.

The override time is limited to 60 s. Thereafter the above-mentioned sequence must be pressed on the reset button again in order to continue the process.

 **WARNING**

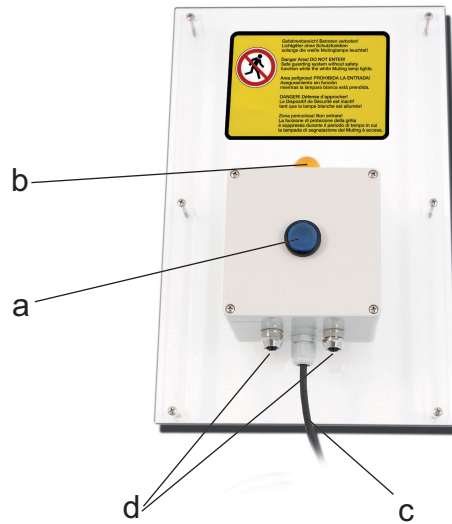
It must be ensured that the entire danger zone is fully visible from the installation point of the reset button.

5 Display and Control Elements

5.1 Control Unit

Depending on the CPSET-BB version, three different control units are supplied on a mounting plate. The cable (c) for the connection on the muting devices is premounted with all versions and has to be connected to the 8-pin M12 socket in the cap.

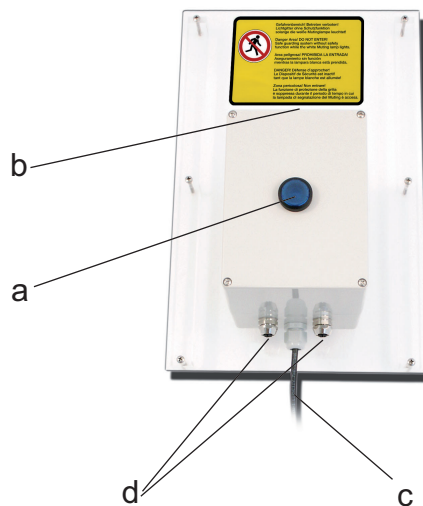
- CPSET-M11 and CPSET-M31: Control unit with reset button (a), muting indicator (b) and connections for reflection light scanners (d).



- a Reset button
- b Muting indicator (LED)
- c Muting device connection cable
- d Connections for light scanners as muting sensors

Figure 5.1: Control unit AC-BB-OPT

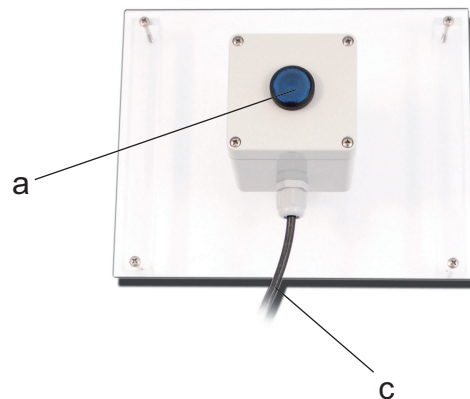
- CPSET-M12 and CPSET-M32: Control unit with reset button (a), muting indicator (b) and connections for induction loops (d)



- a Reset button
- b Muting indicator (LED)
- c Muting device connection cable
- d Connections for induction loops as muting sensors

Figure 5.2: Control unit AC-BB-IND

- CPSET-M13 and CPSET-M33: Control unit with reset button (a)



- a Reset button
- b Muting device connection cable

Figure 5.3: Control unit AC-BB-RES

Reset button

The blue lighted reset button (a) shows the switching state of the safety switching outputs (OSSDs) of the protective device. After the system has been powered-up the reset button does not light up. After pressing and releasing the reset button with free protective field, the OSSDs turn on and the reset button lights up blue. The reset button also enables a restart when a muting sequence has been interrupted and the system is turned off. The override of the system is consequently also possible after a muting fault (see chapter 4.3.2 „Muting restart“).



WARNING

Before unlocking the start/restart interlock of an access protection, the operator must be absolutely certain that nobody is inside the danger zone.

Muting indicator (CPSET-M11, -M12, -M31, -M32)

The muting indicator (b) on the control unit signals to the operating staff by constant lighting that muting has been correctly initiated and the protective function of the muting device has been bridged.

If the muting indicator flashes, there is a muting fault. A muting restart is required (see chapter 4.3.2 „Muting restart“).

5.2 Muting device

You will find an exact description of the displays on the muting device in the accompanying COMPACT-plus-m connecting and operating instructions.

6 Mounting

The following steps are required for installing CPSET-BB

- ↪ Installation of the UDC-1900-S1 device columns, see chapter 6.1 „Installation of the UDC-1900-S1 device columns“
- ↪ Electrical connection, see chapter 7 „Electrical connection“
- ↪ Alignment of the muting device, see chapter 6.1 „Installation of the UDC-1900-S1 device columns“
- ↪ Either mounting of the reflection light scanners for the CPSET-M11 and CPSET-M31, see chapter 6.2 „Mounting of the reflection light scanners for the CPSET-M11, CPSET-M31“
- ↪ Or cabling the induction loops with CPSET-M12 and CPSET-M32, see chapter 6.3 „Cabling of the induction loops with CPSET-M12, CPSET-M32“
- ↪ Control unit installation, see chapter 6.4 „Control unit installation“

6.1 Installation of the UDC-1900-S1 device columns

Required parts and tools:

- 4 mm Allen wrench
- 6 mm Allen wrench
- 16 mm hexagon wrench
- 17 mm hexagon wrench
- Spirit level
- Drill with 10 mm concrete bit

Work steps:

1. Determine the fixing center points of the two device columns and mark them on the floor.
2. Mark a connection line on the floor between the fixing center points of the columns. A marking length of approx. 90 mm from each column center point is sufficient.
3. Set the drilling template on the center point and align it in accordance with the connection lines. Mark the drill holes.
4. Drill the fixing holes 80 mm deep and insert the floor anchor.

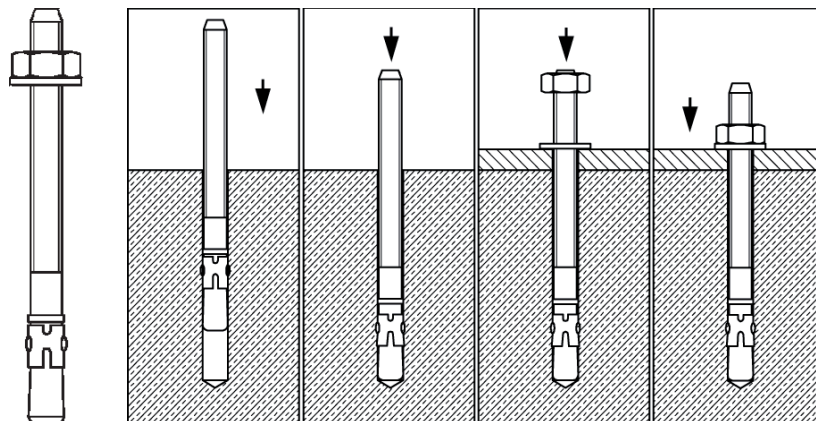
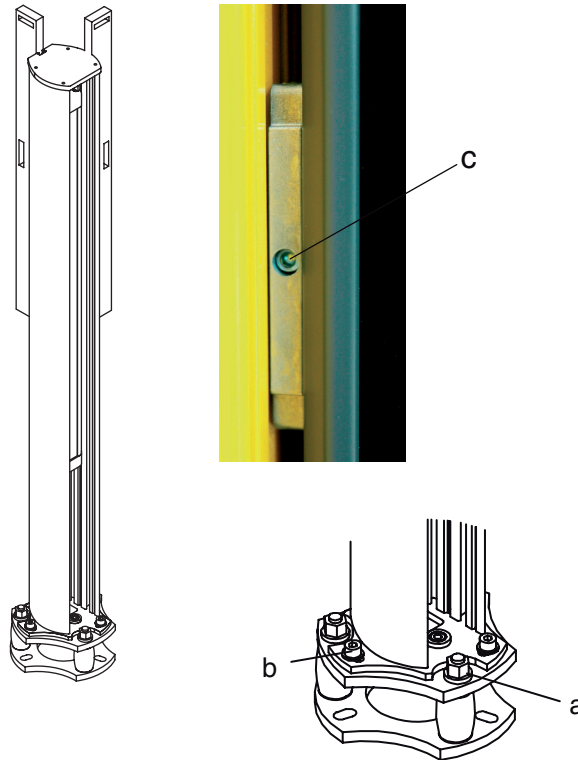


Figure 6.1: Floor anchor fixing holes

5. Set the columns up and screw them tight with the 17 mm hexagon wrench.

6. Align the device columns to the alignment screws (a) using the spirit level vertically.



- a Alignment screws
- b Column Allen screws
- c BT-P40 clamp bracket

Figure 6.2: Align device columns

Alignment of the muting device and passive Deflecting Mirror or transmitter:

7. Set up the electrical connection (see chapter 7 „Electrical connection“) and switch the system on in order to be able to align the muting devices.
8. Align the top edges of the muting devices at the same height and so that the lower beam is 300 mm or 400 mm above the respective reference level (conveyor path or floor). To do this, unscrew the Allen screws in the clamp brackets (c) and shift the muting devices until they have reached the same height. Tighten the Allen screws (c) again.
9. Loosen the Allen screws (b). Turn the columns until the beams of the muting devices meet each other in the middle. Tighten the Allen screws (b) again.
10. Check for correct alignment. The optimum alignment has been achieved when the orange LED lights up in the muting device (see also, COMPACTplus-m connecting and operating instructions).

6.2 Mounting of the reflection light scanners for the CPSET-M11, CPSET-M31

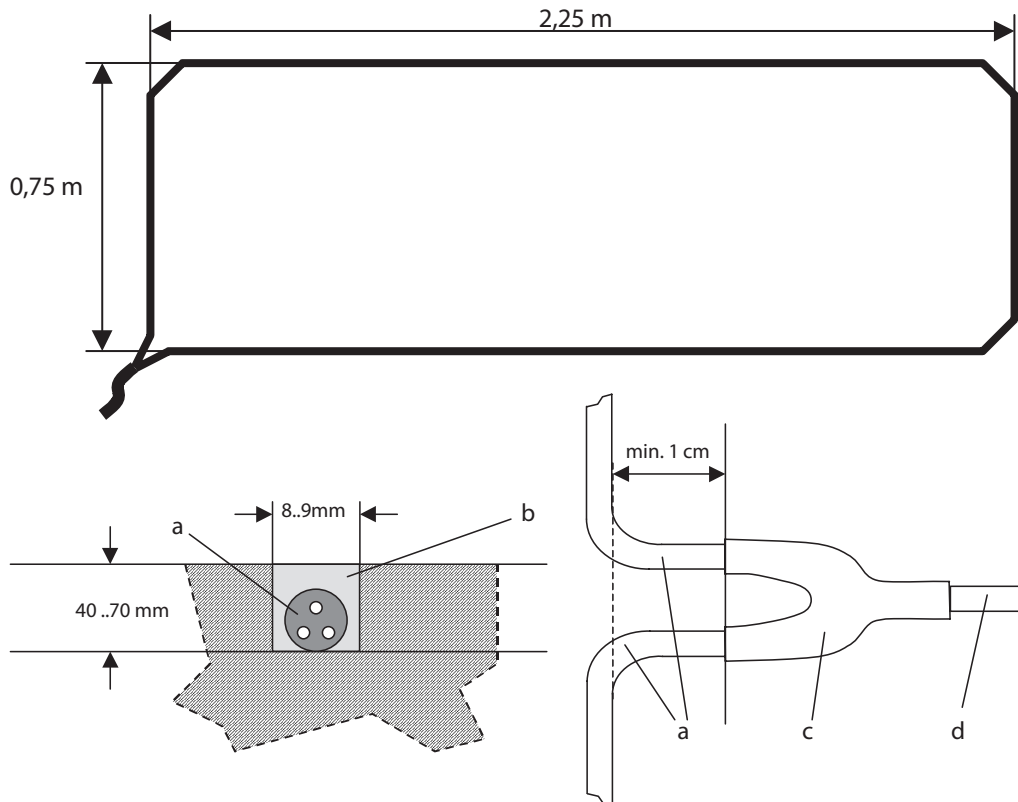
The 4 reflection light scanners with Y connectors are already mounted and cabled on 2 MMS mounting sets.

11. Screw the mounting sets with the reflection light scanners onto the rear-side slot of the device columns and align the reflection light scanner at the same height.
12. Set up the electrical connection, see chapter 7.4.1 „Connection of the reflection light scanners for the CPSET-M11, CPSET-M31“.
13. Set the correct scanning range with the adjusting screw on the rear-side of the reflection light scanner.

6.3 Cabling of the induction loops with CPSET-M12, CPSET-M32

11. Cable the induction loops and observe the following hint:

The induction loops are mostly laid in rectangular form with an aspect ratio of 1:3. The loop length of the KAS_1 used is 6 m. This results in a rectangle with the dimensions 0.75 m x 2.25 m and with corners cut off by 45° for cabling the induction loops. This is made in asphalt or concrete in a milled slot with the following geometric dimensions: depth, approx. (40 – 70) mm; width, approx. (8 – 9) mm. The induction loops must be laid with a distance of at least >1m between one another. Their feed cables must be laid in different slots with at least 10 cm distance so that they do not influence one another.



- a Loop wire
- b Sealing material
- c Union
- d Loop feed

Figure 6.3: Induction loop cabling

12. Seal the slot and observe the following:

- ☞ The loop cut must be dry and free of dust.
- ☞ The loop wire must lie entirely in the loop slot; it may need to be fixed with wooden wedges or silicon.
- ☞ Seal the loop slot cleanly.
- ☞ Only use enough sealing material to fill the loop slot.
- ☞ Allow the sealing material to harden well.

! WARNING

Metal armor in the floor reduces the sensitivity of the induction loop. The smaller the distance of the loop to the metal armor, the lower the sensitivity will be. Rails, supports, floor grids or steel constructions are to be considered as metal armors. If possible in the planning phase, omit the metal armor or lay it deeper in the loops area.

- Shorten the loop feed to the required length and connect the induction loops to the supplied convertible HARAX plug; the connection of the loop feed is made on pin 1 and 3, see chapter 7.4.2 „Connection of the induction loops with CPSET-M12, CPSET-M32“.

6.4 Control unit installation

! WARNING

The control unit must be arranged so that the entire danger area can be seen from the installation point.

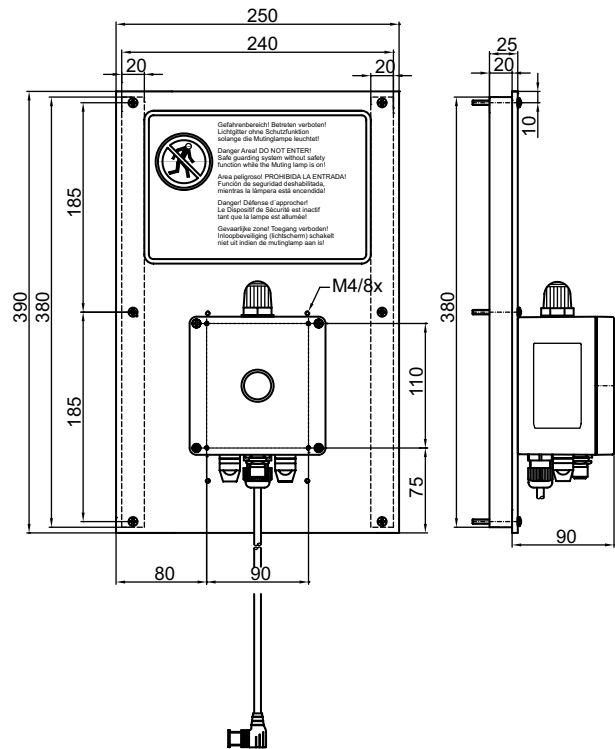


Figure 6.4: Measures of the AC-BB-OPT control unit

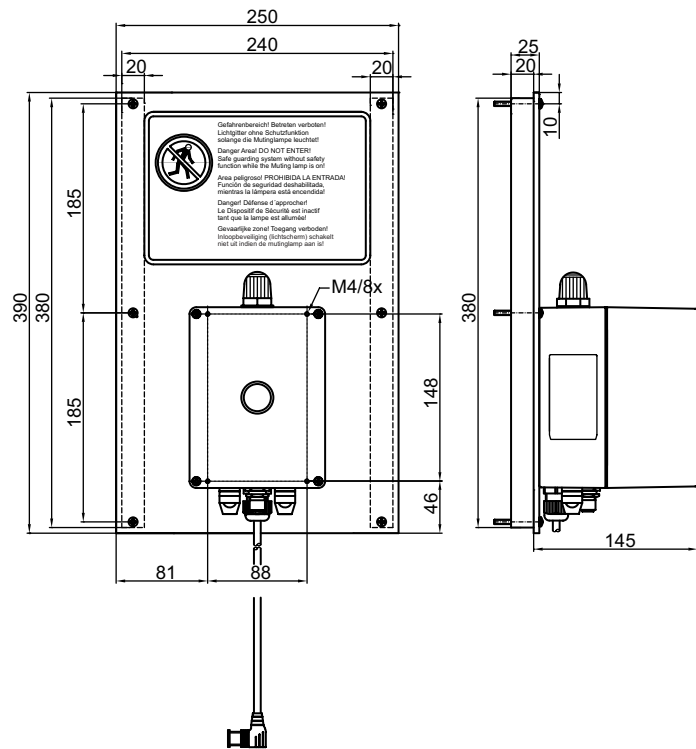


Figure 6.5: Measures of the AC-BB-IND control unit

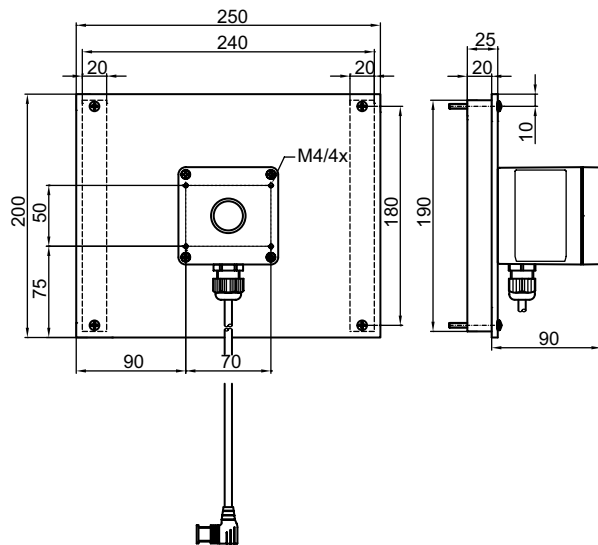


Figure 6.6: Measures of the AC-BB-RES control unit

14. Mount the control unit with the mounting plate on the safety fence. Use the mounting rails supplied for fixing.
15. Set up the electrical connection, see chapter 7.3 „Connect the control unit with the muting device“.

7 Electrical connection

7.1 Installation requirements

The following requirements must be observed:

- ↪ The electrical connection must be performed by experienced personnel. Knowledge of all safety notes contained in these operating instructions is part of this competence.
- ↪ Basically both safety related switching outputs OSSD1 and OSSD2 must be looped into the work circuit of the machine. The relay contacts must be protected externally by fuses in order to prevent the contacts from welding together.
- ↪ Signal outputs must not be used for switching downstream safety circuits.
- ↪ The reset button for unlocking the restart interlock must be mounted in such a way that it cannot be reached from the danger zone and the entire danger zone is fully visible from its installation position.
- ↪ It is vital during the electrical installation that the power of the machine or system to be secured is switched off locked, so that the dangerous movements cannot be started up again unintentionally.
- ↪ It must be ensured that the voltage feed to the relay contacts is also interrupted and secured against restarting. If this is not observed, the danger of electric shock from adjacent voltages arises when opening devices!

The electrical connection of the individual components is made via ready prepared cable with plug connectors and terminal strips.

The following connections must be made and are described below:

- Control unit with muting device, see chapter 7.3 „Connect the control unit with the muting device“.
- Muting sensors with control unit, see chapter 7.4 „Connect muting sensors with the control unit“.
- Muting device with machine control, see chapter 7.5 „Connect muting device to the machine control“.

7.2 Power supply requirements

The 24 V DC \pm 20 % external power supply must guarantee safe isolation from the mains. The selected power supply must provide at least 1 A current reserve. The muting device must be secured against over-current.

7.3 Connect the control unit with the muting device

- ↪ Connect the control unit with the preassembled cable (a) via M12 plug connectors with the local socket of the muting device (b).
- ↪ Secure the plug connection with the union nut:



- a Control unit cable entry
- b Local socket, M12 8-pin

Figure 7.1: Control unit connection on device

7.4 Connect muting sensors with the control unit

Depending on the CPSET-BB version, 4 reflection light scanners or 2 induction loops are used.

7.4.1 Connection of the reflection light scanners for the CPSET-M11, CPSET-M31

Connection of the reflection light scanner is made via cable with plug connections.

- ↪ Connect the output of the Y connector (c) via the supplied cable with the input socket of the control unit (d) and (e).
- ↪ Secure the plug connection with the union nut.

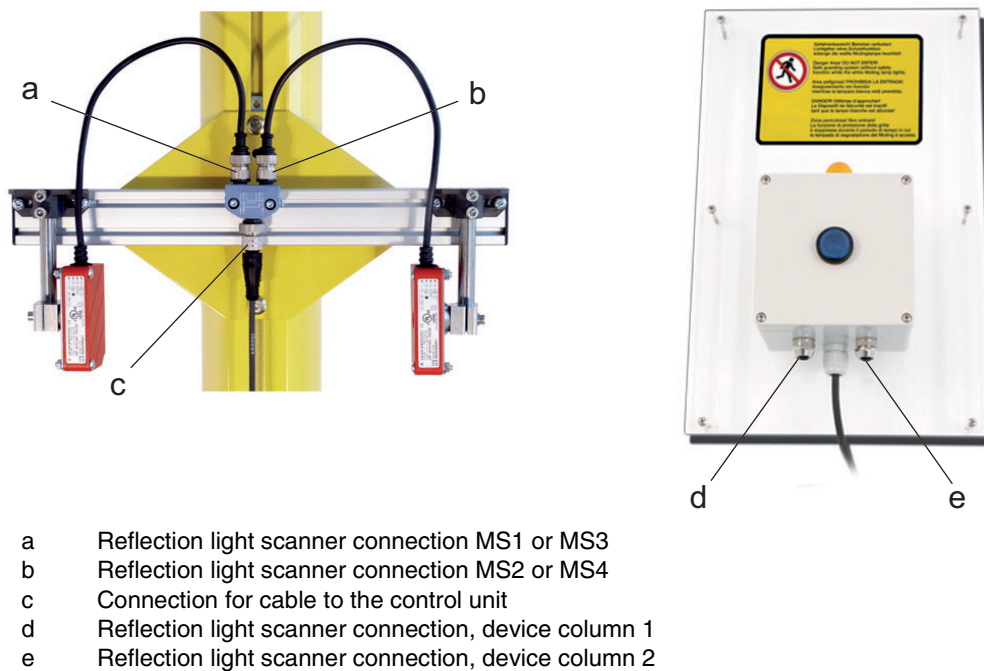


Figure 7.2: Reflection light scanner connection

7.4.2 Connection of the induction loops with CPSET-M12, CPSET-M32

- ↪ Shorten the connection cables of the induction loops to the required length.
- ↪ Connect the M12 plugs supplied and connect the cable to pin 1 and pin 3.
- ↪ Connect the connection cable of the two induction loops via the plug connections to the two input sockets (a) and (b) of the control unit.
- ↪ Secure the plug connection with the union nut.

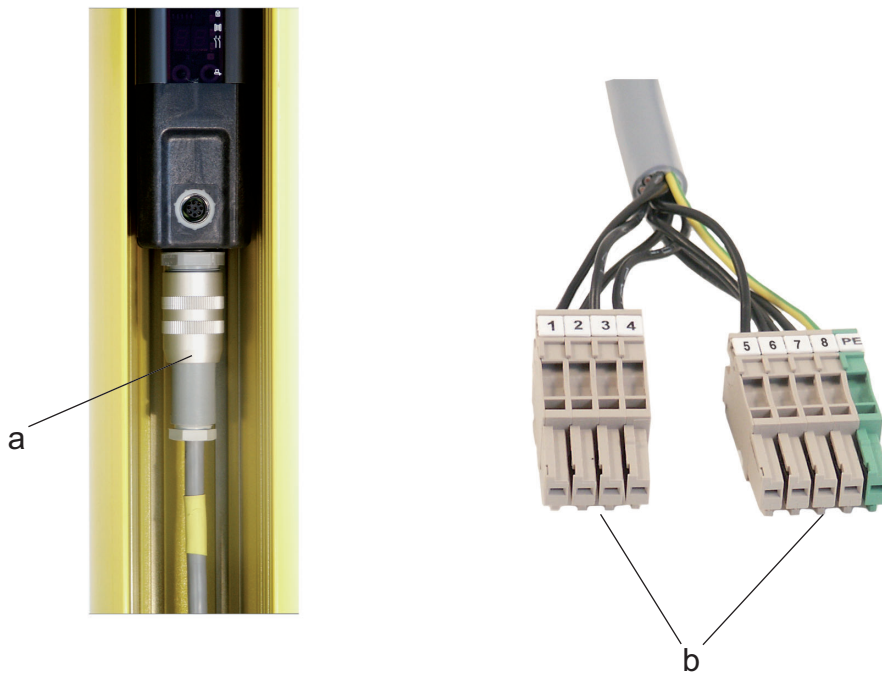


- a Induction loop 1 connection socket
- b Induction loop 2 connection socket

Figure 7.3: Induction loop connection

7.5 Connect muting device to the machine control

- ↪ Connect the connecting cable (to be ordered separately) for the machine control to the input connector at the muting device using the cable socket.
- ↪ Secure the plug connection with the union nut.
- ↪ Connect the other end of the connection cable via the terminal strip with the machine control. The exact assignment of the plug strip can be found in the following table.



- a Machine interface / R2 of the muting device
- b WeiCos connection terminals machine control

Figure 7.4: Machine control connection


WeiCos plug machine control connection assignment

Table 7.1: Pin assignment Connector interface machine control with cable CB-LDH/W-x500-12GF/GM

Terminal WeiCosStecker	Signal	Wire No.	Pin Device plug
Plug X1 (4-pin)			
1	OSSD1A	3	3
2	OSSD1B	9	9
3	OSSD2A	4	4
4	OSSD2B	10	10
Plug X2 (5-pin)			
5	Supply Voltage 24 V DC	1	1
6	Supply Voltage 0 V	2	2
7	Indication Output M3: muting active	7	7
8	Indication output M4: static 0 V or 24 V DC: OSSD-state flashing: Error, Failure device or muting indicator	8	8
PE	Functional earth, screen	ye/gn	FE

Table 7.2: Pin assignment Connector interface machine control with cable CB-LDH-xx000-12GF

Pin	Wire color CB-LDH-xx000-12GF	Assignment	In-/outputs M1...M5 (factory setting), configurable via SafetyLab
1	brown	⇐ supply voltage	+24 V DC
2	pink	⇐ supply voltage	0 V
3	blue	⇐ relay 1, terminal A Max. switching voltage 42 V potential-free normally open contact	OSSD1A
4	gray	⇐ relay 2, terminal A Max. switching voltage 42 V potential-free normally open contact	OSSD2A
5	black	⇐ M1 input	
6	orange	⇐ M2 input	
7	red	⇔ M3 input/output	Indication Output M3: muting active
8	violet	⇔ M4 input/output	Indication output M4: static 0 V or 24 V DC: OSSD-state flashing: Error, Failure device or muting indicator

Pin	Wire color CB-LDH-xx000-12GF	Assignment	In-/outputs M1...M5 (factory setting), configurable via SafetyLab
9	white	⇒ relay 1, terminal B	OSSD1B
10	beige	⇒ relay 2, terminal B	OSSD2B
11	clear	⇔ M5 input/output	Free
	green/yellow	⇐ FE Functional earth, screen	

7.6 Wiring plans and internal circuit diagrams

Although all components are supplied with plugs ready, it can be helpful for an error search or with the initial startup to be familiar with the wiring plans and the internal circuit diagram of the control unit.

7.6.1 CPSET-M11 wiring plan

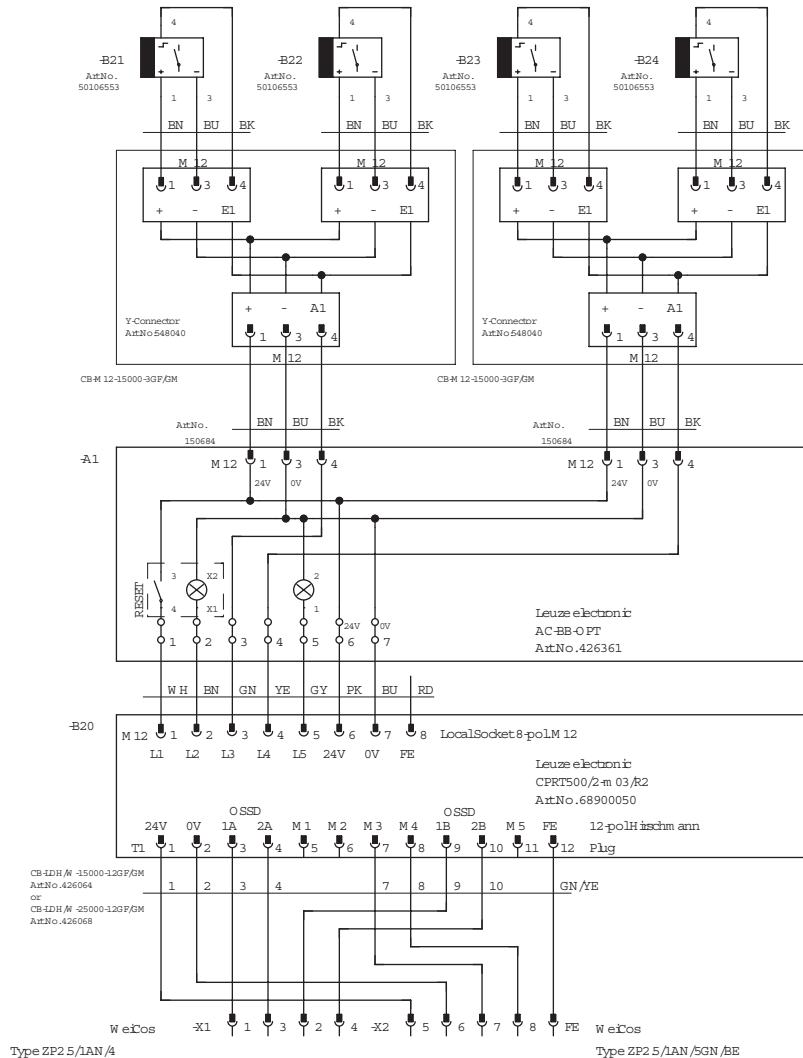


Figure 7.5: Connection diagram CPSET-M11 with muting via reflection light scanners

7.6.2 CPSET-M12 wiring plan

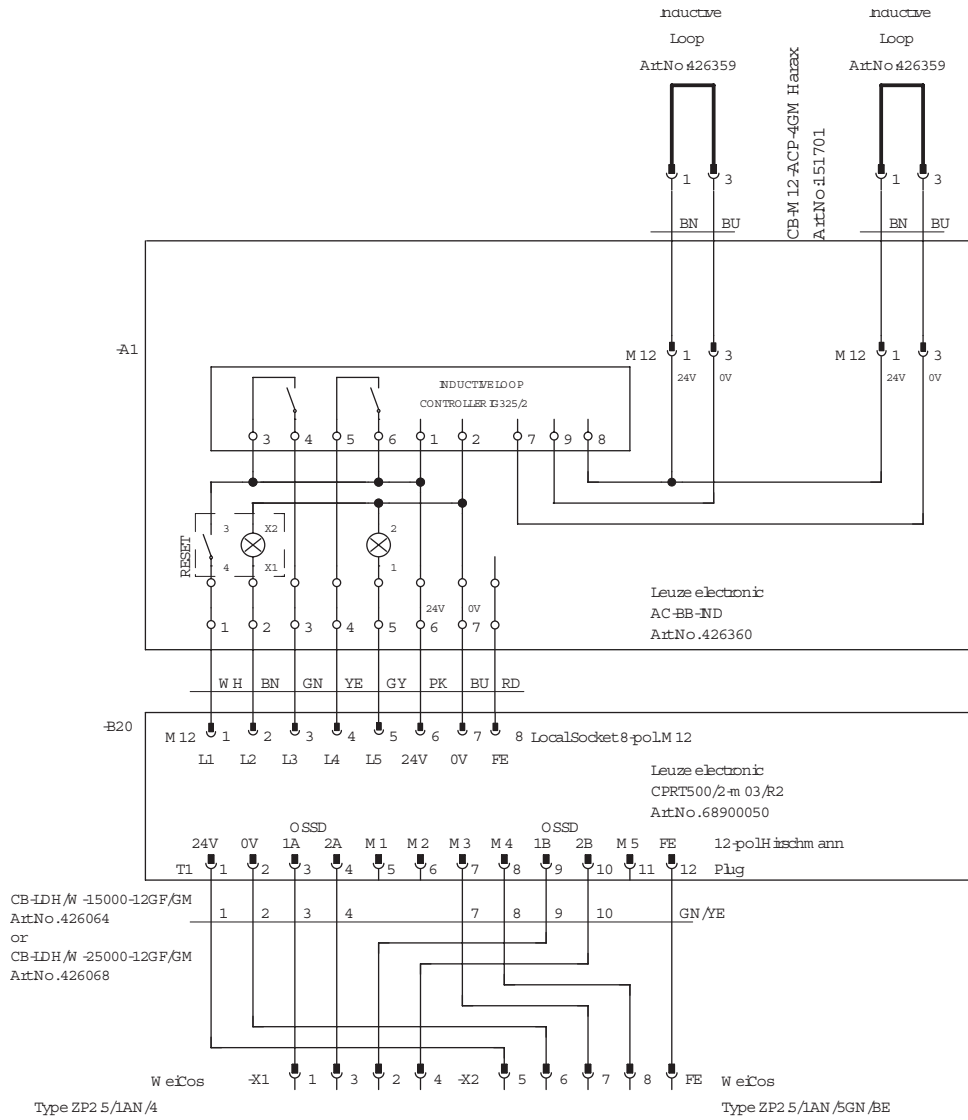


Figure 7.6: Connection diagram CPSET-M12 with muting via induction loops

7.6.3 CPSET-M13 wiring plan

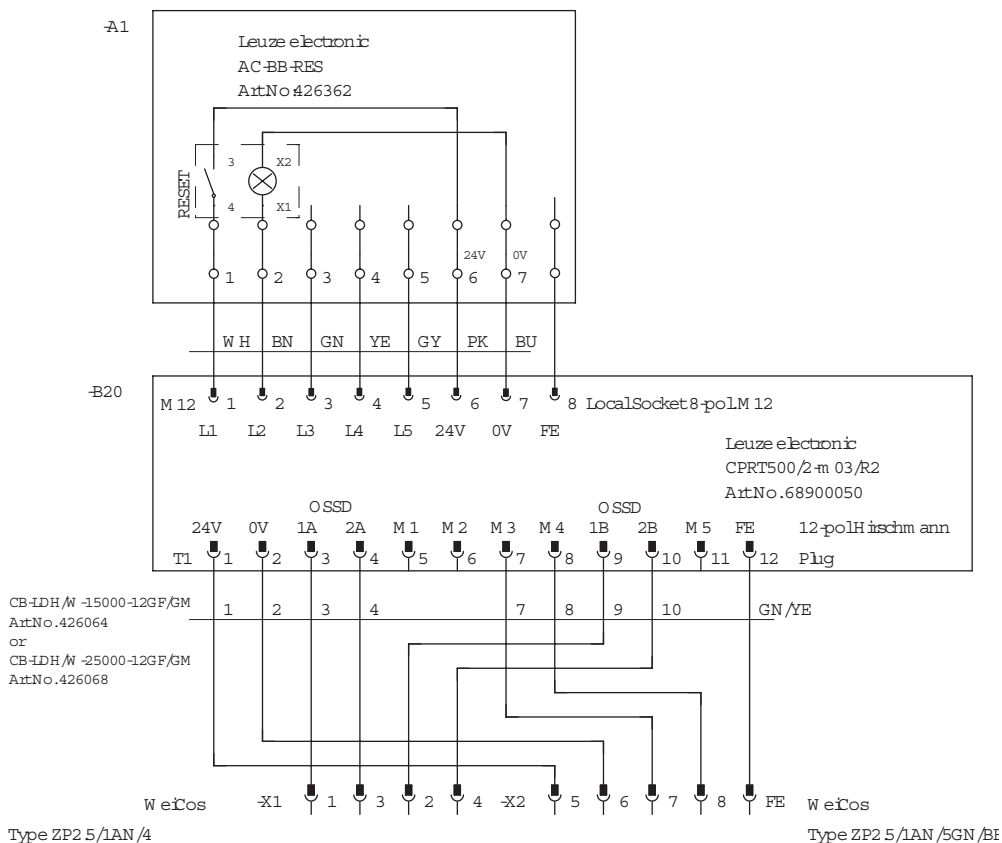


Figure 7.7: Connection diagram CPSET-M13 (access guard without muting)

7.6.4 CPSET-M31 wiring plan

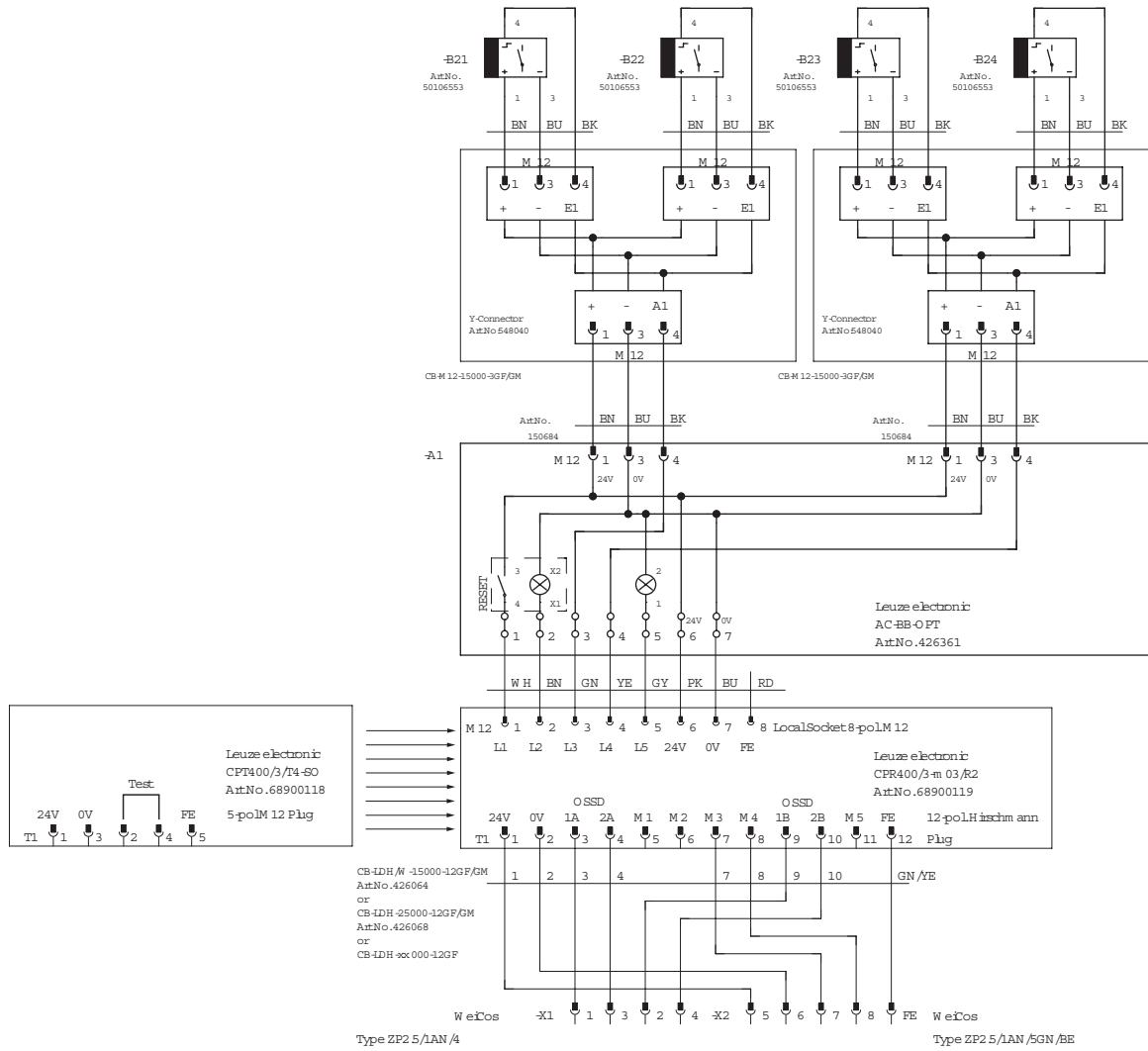


Figure 7.8: Connection diagram CPSET-M31 with muting via reflection light scanners

7.6.5 CPSET-M32 wiring plan

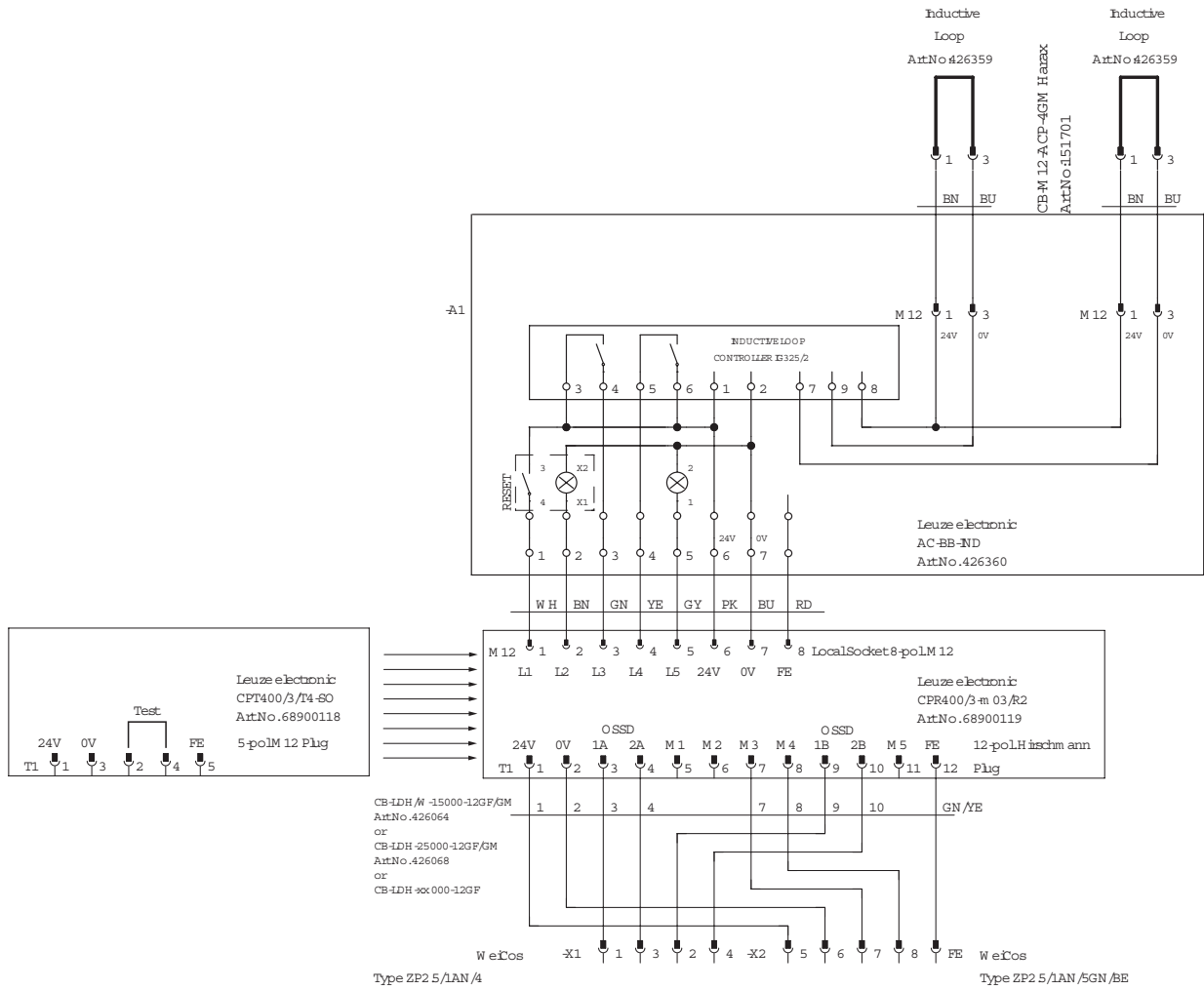


Figure 7.9: Connection diagram CPSET-M32 with muting via induction loops

7.6.6 CPSET-M33 wiring plan

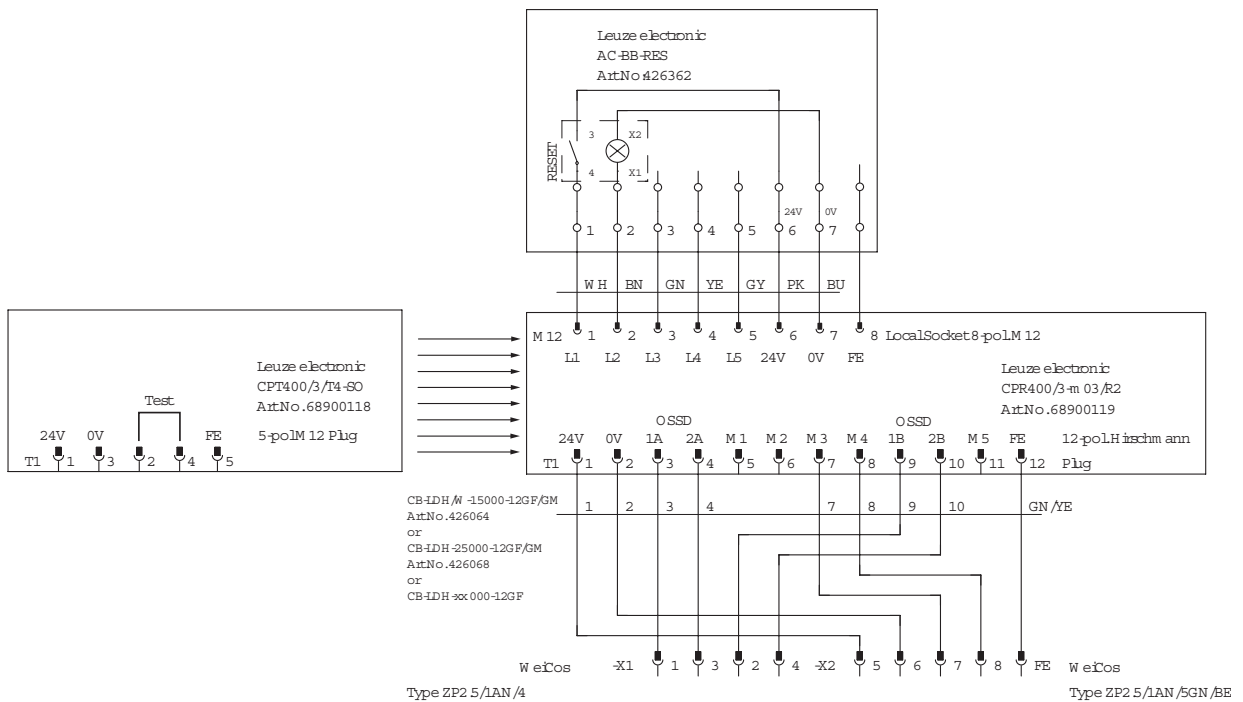


Figure 7.10: Connection diagram CPSET-M33 (access guard without muting)

8 Parametering

The parametering of the muting devices is identical in all versions of CPRT-BB and preset ex-factory with the following deviations in comparison with the factory setting of the "muting" function package.

- Basic I/O Configuration:
2-Sensor parallel muting (L3, L4)
- Control and indication signals:
L2 – In = Output
- Start/restart:
(Re-)start = manually via reset button
- Scan mode:
MultiScan factor: Manually
For MultiScan factor: 21 x (500/2), 32 x (400/3), 32 x (300/4), 8 x (30-900), 6 x (30-1050),
5 x (30-1350), 4 x (30-1800)
- Muting restart:
Input combination: OR
1. Input: L1 - In
2. Input: <not used>
- Indication signal output:
Function A = Direct input
Input A = OSSD state
Output A = L2 – Out
Function B = Direct input
Input B = Muting activated
Output B = M3 – Out
- Indication signal combination:
Logic combination = OR
Output = M4 - Out
Blink frequency (ON) = 100 ms
Blink frequency (OFF) = 100 ms
ON delay = 800 ms
OFF delay = 500 ms

Selected Signals:

- | | |
|--|------------------|
| • Front window dirty: | direct, blinking |
| • Fault/Error: | direct, blinking |
| • Undercurrent through muting indicator: | direct, blinking |
| • OSSD state: | direct, static |

9 Technical data

9.1 Protective field data

Muting device	Transceiver		Beam distance/ Resolution	Number of beams/ Protective field height	Response time
	min.	max.			
CPRT500/2-m03/R2	0 m	6.5 m	500 mm	2	64 ms
CPR400/3-m03/R2	0 m	18 m	400 mm	3	95 ms
CPR300/4-m03/R2	0 m	18 m	300 mm	4	95 ms
CPR30-900-m03/R2	0 m	18 m	30 mm	900 mm	95 ms
CPR30-1050-m03/R2	0 m	18 m	30 mm	1050 mm	85 ms
CPR30-1350-m03/R2	0 m	18 m	30 mm	1350 mm	90 ms
CPR30-1800-m03/R2	0 m	18 m	30 mm	1800 mm	95 ms

9.2 Safety-relevant technical data

See the connecting and operating instructions for COMPACT*plus-m*.

9.3 System data

Supply voltage U_v	24 V DC, $\pm 20\%$, external power supply with secure mains supply isolation and at least 1 A current reserve
Residual ripple of supply voltage	$\pm 5\%$ within the limits of U_v
Current consumption	CPSET-M11, CPSET-M31: 370 mA CPSET-M12, CPSET-M32: 320 mA CPSET-M13, CPSET-M33: 200 mA
Transmitter Class Wavelengths Pulse duration Pulse pause Power	Light emitting diodes in accordance with EN 60825-1:1994 + A1:2002 + A2:2001: 1 880 nm 7 μ s 3.12 ms 8.73 μ W
Safety class	III
Protection rating	IP65*
Temperature range, operation	-10 ... 50 °C
Temperature range, storage	-25 ... 70 °C
Relative humidity	15 ... 95 %
Vibration fatigue limit	5 g, 10 - 55 Hz in acc. with EN IEC 60068-2-6
Resistance to shocks	10 g, 16 ms in acc. with EN IEC 60068-2-29
Weight per device column	Approx. 12 kg
*) Without additional measures the devices are not suited for outdoor use.	

10 Appendix

10.1 CPSET-M11 delivery contents

Units	Description		Part No.
1	CPSET-M11 Set for system separation consisting of:		909992
1	CPRT500/2-m03/R2-UDC consisting of:		905021
1	UDC-1900-S1	Device column	549829
1	CPRT500/2-m03/R2	Muting transceiver with BB parametering	68900050
1	CPM500/2VSO-UDC consisting of:		905022
1	UDC-1900-S1	Device column	549829
1	CPM500/2V-SO	Deflecting mirror for passive side	909607
1	CPSET-M11-ACC consisting of:		426385
1	AC-BB-OPT	Control unit for the connection of 4 reflection light scanners	426361
2	MMS-A-350	Mounting system for 2 muting sensors, 350 mm long for UDC mounting	548804
4	IHRT46B/4, 200-S12	Light scanner with background suppression with cable tail, 20 cm	50106553
4	BT46.1.5	Mounting part for Light Beam Devices of the 46 series, stainless steel version	50082104
2	CB-M12-ACY3/1	M12 Y connector, 3-pin	548040
2	CB-M12-15000-3GF/GM	Cable, 15 m for HRT muting sensor	150684
1	CPSET-BB-DOC	Connecting and operating instructions manual	607055
1		COMPACT <i>plus</i> -m connecting and operating instructions, German/English	607014

10.2 CPSET-M12 delivery contents

Units	Description		Part No.
1	CPSET-M12 Set for transfer station consisting of:		909991
1	CPRT500/2-m03/R2-UDC consisting of:		905021
1	UDC-1900-S1	Device column	549829
1	CPRT500/2-m03/R2	Muting transceiver with BB parametering	68900050
1	CPM500/2VSO-UDC consisting of:		905022
1	UDC-1900-S1	Device column	549829
1	CPM500/2V-SO	Deflecting mirror for passive side	909607
1	CPSET-ACC-M12 consisting of:		426384
1	AC-BB-IND	Control unit for induction loops with evaluating device, IG 325/2, plug connection	426360
2	KAS_1	Induction loop, 6 m with connection cable	426359
2	CB-M12-ACP-4GM	HARAX M12 plug, 3-pin, convertible with insulation displacement connections	151701
1	CPSET-BB-DOC	Connecting and operating instructions manual	607055
1		COMPACT <i>plus</i> -m connecting and operating instructions, German/English	607014

10.3 CPSET-M13 delivery contents

Units	Description		Part No.
1	CPSET-M13 Set without muting consisting of:		909993
1	CPRT500/2-m03/R2-UDC consisting of:		905021
1	UDC-1900-S1	Device column	549829
1	CPRT500/2-m03/R2	Muting transceiver with BB parametering	68900050
1	CPM500/2VSO-UDC consisting of:		905022
1	UDC-1900-S1	Device column	549829
1	CPM500/2V-SO	Deflecting mirror for passive side	909607
1	CPSET-M13-ACC consisting of:		426384
1	AC-BB-RES	Control unit with lit buttons and plug connection	426360
1	CPSET-BB-DOC	Connecting and operating instructions manual	607055
1		COMPACT <i>plus</i> -m connecting and operating instructions, German/English	607014

10.4 CPSET-M31 delivery contents

Units	Description		Part No.
1	CPSET-M31 Set for system separation consisting of:		909992
1	CPR400/3-m03/R2-UDC consisting of:		905045
1	UDC-1900-S1	Device column	549829
1	CPR400/3-m03/R2	Muting receiver with BB parametering	68900119
1	CPT400/3/T4-UDC consisting of:		905044
1	UDC-1900-S1	Device column	549829
1	CPT400/3/T4-SO	Transmitter	68900118
1	CPSET-M11-ACC consisting of:		426385
1	AC-BB-OPT	Control unit for the connection of 4 reflection light scanners	426361
2	MMS-A-350	Mounting system for 2 muting sensors, 350 mm long for UDC mounting	548804
4	IHRT46B/4, 200-S12	Light scanner with background suppression with cable tail, 20 cm	50106553
4	BT46.1.5	Mounting part for Light Beam Devices of the 46 series, stainless steel version	50082104
2	CB-M12-ACY3/1	M12 Y connector, 3-pin	548040
2	CB-M12-15000-3GF/GM	Cable, 15 m for HRT muting sensor	150684
1	CPSET-BB-DOC	Connecting and operating instructions manual	607055
1		COMPACT <i>plus</i> -m connecting and operating instructions, German/English	607014

10.5 CPSET-M32 delivery contents

Units	Description		Part No.
1	CPSET-M32 Set for transfer station consisting of:		909991
1	CPR400/3-m03/R2-UDC consisting of:		905045
1	UDC-1900-S1	Device column	549829
1	CPR400/3-m03/R2	Muting receiver with BB parametering	68900119
1	CPT400/3/T4-UDC consisting of:		905044
1	UDC-1900-S1	Device column	549829
1	CPT400/3/T4-SO	Transmitter	68900118
1	CPSET-ACC-M12 consisting of:		426384
1	AC-BB-IND	Control unit for induction loops with evaluating device, IG 325/2, plug connection	426360
2	KAS_1	Induction loop, 6 m with connection cable	426359
2	CB-M12-ACP-4GM	HARAX M12 plug, 3-pin, convertible with insulation displacement connections	151701
1	CPSET-BB-DOC	Connecting and operating instructions manual	607055
1		COMPACT <i>plus</i> -m connecting and operating instructions, German/English	607014

10.6 CPSET-M33 delivery contents

Units	Description		Part No.
1	CPSET-M33 Set without muting consisting of:		909923
1	CPR400/3-m03/R2-UDC consisting of:		905045
1	UDC-1900-S1	Device column	549829
1	CPR400/3-m03/R2	Muting receiver with BB parametering	68900119
1	CPT400/3/T4-UDC consisting of:		905044
1	UDC-1900-S1	Device column	549829
1	CPT400/3/T4-SO	Transmitter	68900118
1	CPSET-M13-ACC consisting of:		426386
1	AC-BB-RES	Control unit with lit buttons and plug connection	426362
1	CPSET-BB-DOC	Connecting and operating instructions manual	607055
1		COMPACT <i>plus</i> -m connecting and operating instructions, German/English	607014

10.7 Muting devices to be ordered separately

Article	Description	Part. No.
CPR300/4-m03/R2	Muting receiver 4-beam with configuration BB	68900062
CPT300/4/T4	Transmitter 4-beam with M12 connection, 5-pin	68804003
CPR30-900-m03/R2	Muting receiver, 30 mm resolution, 900 mm protective field height, configuration BB	68900113
CPT30-900/T4	Light curtain transmitter, 30 mm resolution, 900 mm protective field height, M12 connection, 5-pin	68309003
CPR30-1050-m03/R2	Muting receiver, 30 mm resolution, 1050 mm protective field height, configuration BB	68900111
CPT30-1050/T4	Light curtain transmitter, 30 mm resolution, 1050 mm protective field height, M12 connection, 5-pin	68310003
CPR30-1350-m03/R2	Muting receiver, 30 mm resolution, 1350 mm protective field height, configuration BB	68900112
CPT30-1350/T4	Light curtain transmitter, 30 mm resolution, 1350 mm protective field height, M12 connection, 5-pin	68313003
CPR30-1800-m03/R2	Muting receiver, 30 mm resolution, 1800 mm protective field height, configuration BB	68900117
CPT30-1800/T4	Light curtain transmitter, 30 mm resolution, 1800 mm protective field height, M12 connection, 5-pin	68318003

10.8 Accessory sets to be ordered separately

Article	Description	Part. No.
CPSET-M11-ACC	Accessory set for muting with reflection light scanners	426385
CPSET-M12-ACC	Accessory set for muting with induction loops	426384
CPSET-M13-ACC	Accessory set for access guarding without muting	426386

10.9 Accessories

The connection cables for the machine interface are not part of the delivery of the CPSET. The following cables can be used:

Article	Side 1	Cable	Side 2	Part. No.
CB-LDH-10000-12GF	Hirschmann-socket, 12-pin for machine interface/ T2 and /R2	10 m, 12 wires	open	426042
CB-LDH-25000-12GF		25 m, 12 wires	open	426044
CB-LDH-50000-12GF		50 m, 12 wires	open	426043
CB-LDH/W-15000-12GF/GM		15 m, 9 wires	2 WeiCos terminals, 4- and 5-pin	426064
CB-LDH/W-25000-12GF/GM		25 m, 9 wires		426068
CB-M12-15000S-5GF	M12, 5-pin for transmitter / T4	15 m, 4 wires	open	429075