



# LED-display Profile (CAN and RS-485)

Bulletin 45CSA



**Allen-Bradley**

by ROCKWELL AUTOMATION

User Manual

Original Instructions

## Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

Reproduction of the contents of this manual, in whole or in part, without written permission of Rockwell Automation, Inc., is prohibited.

Throughout this manual, when necessary, we use notes to make you aware of safety considerations.



**WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

---



**ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

---

### IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

---

These labels may also be on or inside the equipment to provide specific precautions.



**SHOCK HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.

---



**BURN HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.

---



**ARC FLASH HAZARD:** Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

---

The following icon may appear in the text of this document.



Identifies information that is useful and can help to make a process easier to do or easier to understand.

|                          |  |    |
|--------------------------|--|----|
|                          | <b>Preface</b>                                     |    |
|                          | About This Publication .....                       | 5  |
|                          | Additional Resources .....                         | 5  |
| <b>Product Overview</b>  | <b>Chapter 1</b>                                   |    |
|                          | Introduction.....                                  | 7  |
|                          | Control Units .....                                | 7  |
|                          | Control Unit Displays .....                        | 7  |
|                          | Labels.....  | 8  |
| <b>Connection</b>        | <b>Chapter 2</b>                                   |    |
|                          | CAN 1 - Standard RJ45 .....                        | 9  |
|                          | CAN 2 - Special RJ45 .....                         | 9  |
|                          | RS-485 .....                                       | 10 |
| <b>Mechanical</b>        | <b>Chapter 3</b>                                   |    |
|                          | Cross Section .....                                | 11 |
|                          | Mounting Kits.....                                 | 11 |
|                          | M12 Connector .....                                | 12 |
| <b>CAN Bus Interface</b> | <b>Chapter 4</b>                                   |    |
|                          | CAN 1 Control Unit.....                            | 13 |
|                          | CAN 1 Addresses .....                              | 14 |
|                          | CAN 1 Communication Rate .....                     | 14 |
|                          | CAN 2 Control Unit.....                            | 15 |
|                          | CAN 2 Addresses .....                              | 16 |
|                          | CAN 2 Communication Rate.....                      | 17 |
| <b>CAN Communication</b> | <b>Chapter 5</b>                                   |    |
|                          | CAN Telegrams .....                                | 19 |
|                          | Structure of CAN Commands.....                     | 19 |
|                          | Structure of CAN Answers .....                     | 19 |
|                          | CAN Commands.....                                  | 20 |
|                          | Pseudo Command (2 [=02Hex]).....                   | 20 |
|                          | All LEDs OFF (4 [=04Hex]).....                     | 20 |
|                          | LED Area That Should Illuminate (6 [=06Hex]) ..... | 20 |
|                          | LED Area That Should Flash (8 [=06Hex]) .....      | 21 |
|                          | Read All LEDs (10 [=0AHex]).....                   | 21 |

|                             |                                    |    |
|-----------------------------|------------------------------------|----|
| <b>RS-485 Interface</b>     | <b>Chapter 6</b>                   |    |
|                             | RS-485 Addresses.....              | 23 |
|                             | RS-485 Communication Rate .....    | 23 |
|                             | RS-485 Communication.....          | 24 |
|                             | RS-485 Protocol Structure.....     | 24 |
|                             | RS-485 Commands and Answers.....   | 24 |
|                             | RS-485 Communication Example ..... | 24 |
|                             | RS-485 Timing.....                 | 25 |
|                             | Primary Programming (RS-485) ..... | 26 |
|                             | RS-485 Specifications .....        | 26 |
| <b>Maintenance</b>          | <b>Chapter 7</b>                   |    |
|                             | Preventative Maintenance.....      | 27 |
|                             | Decommissioning.....               | 27 |
| <b>Specifications</b>       | <b>Appendix A</b>                  |    |
|                             | General.....                       | 29 |
|                             | Inputs.....                        | 29 |
| <b>Ordering Information</b> | <b>Appendix B</b>                  |    |
|                             | LED-display Profile.....           | 31 |
|                             | Accessories.....                   | 33 |
|                             | Discontinued Parts.....            | 33 |

## About This Publication

This publication provides information to assist qualified personnel to connect, configure, and service their 45CDA LED-display profile.

## Additional Resources

These documents contain additional information concerning related products from Rockwell Automation. You can view or download publications at [rok.auto/literature](http://rok.auto/literature).

| Resource   | Description   |
|--|---|
| Safety Guidelines for the Application, Installation, and Maintenance of Solid-state Control, publication <a href="#">SGI-1.1</a> | Designed to harmonize with NEMA Standards Publication No. ICS 1.1-1987 and provides general guidelines for the application, installation, and maintenance of solid-state control in the form of individual devices or packaged assemblies incorporating solid-state components. |
| Industrial Automation Wiring and Grounding Guidelines, publication <a href="#">1770-4.1</a>                                      | Provides general guidelines for installing a Rockwell Automation industrial system.   |
| Product Selection and Configuration tools, <a href="http://rok.auto/systemtools">rok.auto/systemtools</a>                        | Helps configure complete, valid catalog numbers and build complete quotes based on detailed product information.  |
| Rockwell Automation Global SCCR tool, <a href="http://rok.auto/sccr">rok.auto/sccr</a>   | Provides coordinated high-fault branch circuit solutions for motor starters, soft starters, and component drives.   |
| Product Certifications website, <a href="http://rok.auto/certifications">rok.auto/certifications</a>                             | Provides declarations of conformity, certificates, and other certification details.   |

**Notes:**

## Product Overview

### Introduction

The LED (light-emitting diode) display profile can serve to visualize spaces on machine insertion points. Individual LEDs or a row of LEDs can be actuated as required. Actuation takes place according to the control unit via a CAN bus or an RS-485 interface. Illumination of individual LEDs or an LED array is either continuous or flashing according to the command. It is also possible to select the different brightness levels. There are different addresses and communication rates available for operation.

The distance between LEDs is normally 34 mm (1.3 in.). There are currently profile lengths available of up to 4000 mm (157.5 in.).

### Control Units

There are three control units available for actuation of the LED-display profiles:

**Table 1 - Controllers**

| Cat. No.     | Interface | Description  |
|--------------|-----------|--|
| 45CSA-103744 | CAN 1     | CAN standard RJ45, no galvanically separate power supply (CAN) |
| 45CSA-109674 | CAN 2     | CAN special RJ45, a galvanically separate power supply (CAN)   |
| 45CSA-109672 | RS-485    | 2-wire RS-485 connection                                       |

**IMPORTANT** For more options and accessories, see [Ordering Information on page 31](#).

### Control Unit Displays

The control units are fitted with two status indicators:

**Table 2 - Control Unit Status Indicators**

| Status Indicator | Color   | Description  |
|------------------|---|--|
| Power            | Steady green  | The power supply is connected                            |
| Status           | <ul style="list-style-type: none"> <li>• CAN 1: Flashing red</li> <li>• CAN 2/RS485: Flashing yellow</li> </ul> | Interface communication with this control unit is active |

# Labels

The following image shows an example of two labels that are attached to the controller and also to the profile of a system.

**Figure 1 - Labels**



**Table 3 - Label Explanation**

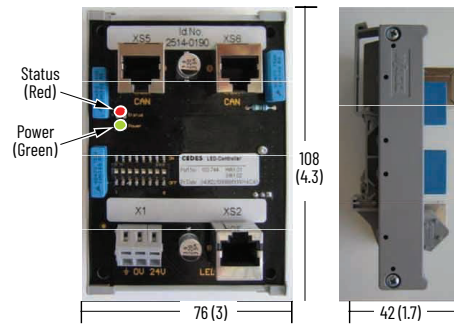
| Item    | Description   |
|---------|---|
| Part no | CEDES Safety & Automation part number   |
| Cat No  | Rockwell Automation catalog number  |
| ID No   | ID number   |
| SAP No  | Rockwell material number  |
| Lot No  | Product date YYMMDD/Order confirmation/Device ident. Number Code for end control                            |
| Ser     | Series number   |
| Rev     | Revision number   |
| HW      | Hardware version  |
| L       | Length in mm  |
| B       | Distance: End of the profile up the first LED, respectively<br>Distance: End of the profile up the last LED |
| LED     | Number of LEDs  |

## Connection

### CAN 1 - Standard RJ45

There are four plug connections on the surface of the control unit:

**Figure 2 - CAN 1 Control Unit [mm (in.)]**



**Table 4 - Plug Connections**

| Number | Designation               | Model    |
|--------|---------------------------|----------|
| 1      | XS5 (CAN)                 | RJ45     |
| 2      | XS6 (CAN)                 | RJ45     |
| 3      | X1 (earth, 0V, 24V)       | Terminal |
| 4      | XS2 (LED-display profile) | RJ45     |

The power supply for the control unit is connected at Terminal X1.

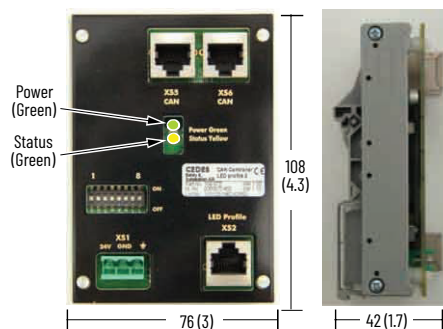
Integration into a CAN bus system occurs at both RJ45 sockets: XS5 and XS6. The pin allocation for both RJ45s is according to the CAN standard.

Connection of the LED-display profile takes place at the green marked RJ45 socket XS2.

### CAN 2 - Special RJ45

There are four plug connections on the surface of the control unit:

**Figure 3 - CAN 2 Control Unit [mm (in.)]**



**Table 5 - Plug Connections**

| Number | Designation               | Model          |
|--------|---------------------------|----------------|
| 1      | XS5 (CAN)                 | RJ45           |
| 2      | XS6 (CAN)                 | RJ45           |
| 3      | X1 (earth, 0V, 24V)       | Plug connector |
| 4      | XS2 (LED-display profile) | RJ45           |

The power supply for the control unit is connected at Terminal XS1. The plug connector is not in the scope of delivery.

Compatible plug connectors (3-pin, RM 5.08):

- Wago 231-303/026-000
- Sauro CIF030M5

Integration into a CAN bus system occurs at both RJ45 sockets: XS5 and XS6. The pin allocation for both RJ45 connections is not according to the CAN standard.

Connection of the LED-display profile takes place at the green marked RJ45 socket (XS2).

## RS-485

There are three plug connections on the surface of the control unit:

Figure 4 - RS-485 Control Unit [mm (in.)]

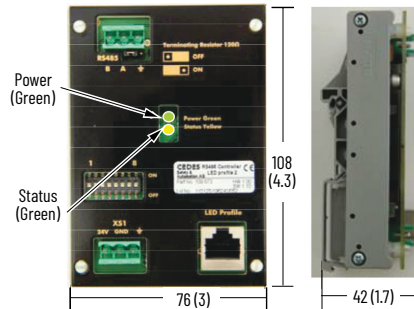


Table 6 - Plug Connections

| Number | Designation               | Model        |
|--------|---------------------------|--------------|
| 1      | RS-485                    | 3-pin RM5.08 |
| 2      | 24V, GND, earth           | 3-pin RM5.08 |
| 3      | XS2 (LED-display profile) | RJ45         |

The power supply for the control unit is connected at Terminal 2.

Connection to the RS-485 interface takes place at Wago terminal no. 1. Use screened shielded twisted pairs for the RS-485 connections.

Compatible plug connectors (3-pin, RM 5.08):

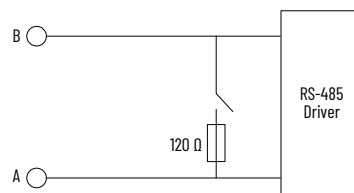
- Wago 231-303/026-000
- Sauro CIF030M5

Table 7 - RS-485 Connection Plug

| Pin | Signal | Description                          |
|-----|--------|--------------------------------------|
| 1   | Earth  | Earth connection for the shield wire |
| 2   | B/+    | Non-inverted line B or +             |
| 3   | A/-    | Inverted line A or -                 |

The terminating resistor can be adjusted using the jumper:

Figure 5 - Input Circuit for RS-485 Terminals



## Mechanical

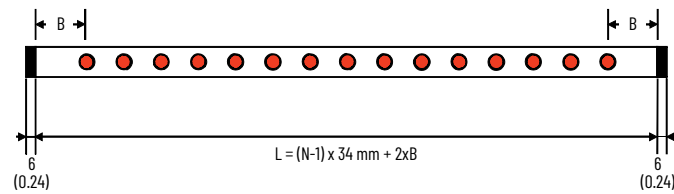
The dimensions of the controllers are shown in:

- [Figure 2 on page 9](#)
- [Figure 3 on page 9](#)
- [Figure 4 on page 10](#)

## Cross Section

The profile cross section of the LED-display profile is 16 x 21 mm (0.6 x 0.8 in.). The length of the profile is calculated based on the number of LEDs (= [N-1] x 34 mm) and the distance of the first and last LED from the end of the profile [B]). The endcaps are 6 mm (0.2 in.) thick.

**Figure 6 - LED-display profile Dimension [L= total length of the profile = (N-1)x34mm + 2xB]**



[Ordering Information on page 31](#) shows the available lengths.

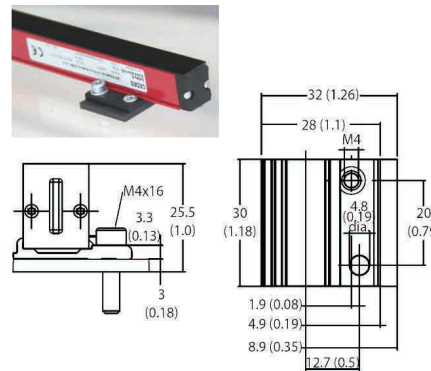
## Mounting Kits

LED-display profiles are shipped with the flat mounting kit (catalog number 445L-AF6145), as shown in the following image.

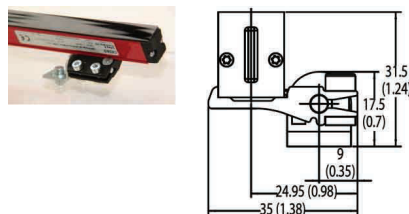
Optionally, one of the adjustable brackets can be used ([Figure 8](#) and [Figure 9 on page 12](#)).

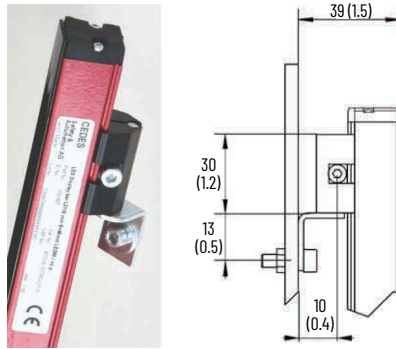
One kit contains two brackets for the mounting of one profile.

**Figure 7 - Flat Mounting Kit (Catalog Number 445L-AF6145) [mm (in.)]**



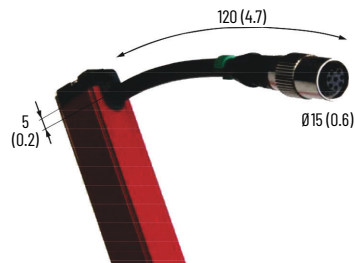
**Figure 8 - Type 2 Adjustable Mounting Kit (Catalog Number 445L-AF6149) [mm (in.)]**



**Figure 9 - 180° Adjustable Mounting Kit (Catalog Number 445L-AF6143) [mm (in.)]**

## M12 Connector

The LED-display profile is connected with an M12 connector that is on the cable pigtail at the rear side. The dimensions of the connecting cable are shown in the following image.

**Figure 10 - LED-display Profile with an M12 Connector [mm (in.)]**

### IMPORTANT

When illuminating many LEDs, the brightness is reduced automatically to prevent overheating in a control unit:

- <97 beams: a brightness of 0, 1, 2 & 3 possible
- <109 beams: a brightness of 1, 2 & 3 is possible
- <123 beams: a brightness of 2 and 3 is possible
- ≥123 beams: just a brightness of 3 is possible

For switch-on commands, see [LED Area That Should Illuminate \(6 \[=06Hex\]\) on page 20](#) and [LED Area That Should Flash \(8 \[=06Hex\]\) on page 21](#).

## CAN Bus Interface

The cabling must fulfill the following requirements in order for the CAN bus to function reliably:

- Bus topology with terminating resistors (120  $\Omega$ ) at the beginning and the end
- Avoidance of stubs
- Use screened shielded twisted-pair cable
- Cable with an impedance of 120  $\Omega$
- Cable with a resistance of 70 m $\Omega$ /m

The two RJ45 interfaces for integration into a CAN bus system are called XS5 and XS6.

The pins on both RJ45 CAN interfaces are assigned according to the general CAN definition:

**Table 8 - Pin Assignment**

| Pin for RJ45 | Connection |
|--------------|------------|
| 1            | CAN High   |
| 2            | CAN Low    |
| 3            | CAN Ground |
| 4            | —          |
| 5            | —          |
| 6            | CAN Shield |
| 7            | CAN Ground |
| 8            | CAN +24V   |

The CAN bus interface is not fitted with an integral galvanic power supply for the CAN bus part. You must assign not only CAN-High and CAN-Low, but also pins 3, 6, 7, and 8 when you connect it to a CAN bus system.

The DIP switches can be used to set the address (DIP1...DIP4, 0) and the communication rate (DIP5 and DIP6, 0).

---

**IMPORTANT** Before first starting the equipment, you must check the address setting and the communication rate for the controller. Any address can only be used once per network and the communication rate must be the same everywhere.

---

An LED-display profile control unit is CAN-compatible and can, with some limitations, also be integrated into a CanOpen System.

## CAN 1 Control Unit

## CAN 1 Addresses

The LED-display profile supports the CAN Standard 2.0A (standard frame). Unused data bytes must be set to 00Hex.

The 16 different node addresses are configurable using 4 DIP switches (DIP1...DIP4).

Receiver address for the controller: 0x228 + node address (=0x228, 0x229...0x237)

Transmitter address for the controller: 0x1A8 + node address (=0x1A8, 0x1A1...0x1B7)

**Table 9 - CAN 1 Address Offset**

| Offset to Address | Switch 1 | Switch 2 | Switch 3 | Switch 4 |
|-------------------|----------|----------|----------|----------|
| 0                 | OFF      | OFF      | OFF      | OFF      |
| 1                 | OFF      | OFF      | OFF      | ON       |
| 2                 | OFF      | OFF      | ON       | OFF      |
| 3                 | OFF      | OFF      | ON       | ON       |
| 4                 | OFF      | ON       | OFF      | OFF      |
| 5                 | OFF      | ON       | OFF      | ON       |
| 6                 | OFF      | ON       | ON       | OFF      |
| 7                 | OFF      | ON       | ON       | ON       |
| 8                 | ON       | OFF      | OFF      | OFF      |
| 9                 | ON       | OFF      | OFF      | ON       |
| 10                | ON       | OF       | ON       | OFF      |
| 11                | ON       | OFF      | ON       | ON       |
| 12                | ON       | ON       | OFF      | OFF      |
| 13                | ON       | ON       | OFF      | ON       |
| 14                | ON       | ON       | ON       | OFF      |
| 15                | ON       | ON       | ON       | ON       |

## CAN 1 Communication Rate

The bit rate can be adjusted using two DIP switches (DIP5 and DIP6) (125/250/500/1000 kBit/s)

**Table 10 - CAN Communication Rate**

| Communication Rate | Switch 5 | Switch 6 |
|--------------------|----------|----------|
| 125 k              | OFF      | OFF      |
| 250 k              | OFF      | ON       |
| 500 k              | ON       | OFF      |
| 1 M                | ON       | ON       |

## CAN 2 Control Unit

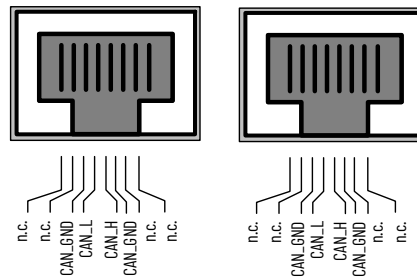
The pins on both RJ45 CAN interfaces are special and not assigned according to the general CAN definition:

**Table 11 - Pin Assignment**

| RJ45 Pin | Connection |
|----------|------------|
| 1        | —          |
| 2        | —          |
| 3        | CAN Ground |
| 4        | CAN Low    |
| 5        | CAN High   |
| 6        | CAN Ground |
| 7        | —          |
| 8        | —          |

Pins 1 or 2 are not daisy chained on pin 7 or 8.

**Figure 11 - RJ45 Pin Assignment (CAN 2) (n.c. = no connection)**



The CAN bus interface is not fitted with an integral galvanic power supply for the CAN bus part. You must assign CAN-High, CAN-Low, and CAN Ground when you connect it to a CAN bus system.

The DIP switches can be used to set the address (0) and the communication rate (0).

### IMPORTANT

Before first starting the equipment, you must check the address setting (DIP1...DIP5) and the communication rate (DIP6...DIP7) of the controller. Any address can only be used once per network and the communication rate must be the same everywhere.

A CAN 2 Control unit is CAN-compatible and can, with some limitations, also be integrated into a CanOpen System.

## CAN 2 Addresses

The LED-display profile supports the CAN Standard 2.0A (standard frame). Unused data bytes must be set to 00Hex.

The 32 different node addresses are configurable using 5 DIP switches.

Receiver address for the CAN 2 Control unit: 0x600 + node address (=0x600, 0x601...0x61F)

Transmitter address for the Controller: 0x580 + node address (=0x580, 0x581...0x59F)

**Table 12 - CAN Address Offset**

| Offset to Address      | Switch 1 | Switch 2 | Switch 3 | Switch 4 | Switch 5 |
|------------------------|----------|----------|----------|----------|----------|
| 0 (00h) <sup>(1)</sup> | OFF      | OFF      | OFF      | OFF      | OFF      |
| 1 (01h)                | ON       | OFF      | OFF      | OFF      | OFF      |
| 2 (02h)                | OFF      | ON       | OFF      | OFF      | OFF      |
| 3 (03h)                | ON       | ON       | OFF      | OFF      | OFF      |
| 4 (04h)                | OFF      | OFF      | ON       | OFF      | OFF      |
| 5 (05h)                | ON       | OFF      | ON       | OFF      | OFF      |
| 6 (06h)                | OFF      | ON       | ON       | OFF      | OFF      |
| 7 (07h)                | ON       | ON       | ON       | OFF      | OFF      |
| 8 (08h)                | OFF      | OFF      | OFF      | ON       | OFF      |
| 9 (09h)                | ON       | OFF      | OFF      | ON       | OFF      |
| 10 (0Ah)               | OFF      | ON       | OFF      | ON       | OFF      |
| 11 (0Bh)               | ON       | ON       | OFF      | ON       | OFF      |
| 12 (0Ch)               | OFF      | OFF      | ON       | ON       | OFF      |
| 13 (0Dh)               | ON       | OFF      | ON       | ON       | OFF      |
| 14 (0Eh)               | OFF      | ON       | ON       | ON       | OFF      |
| 15 (0Fh)               | ON       | ON       | ON       | ON       | OFF      |
| 16 (10h)               | OFF      | OFF      | OFF      | OFF      | ON       |
| 17 (11h)               | ON       | OFF      | OFF      | OFF      | ON       |
| 18 (12h)               | OFF      | ON       | OFF      | OFF      | ON       |
| 19 (13h)               | ON       | ON       | OFF      | OFF      | ON       |
| 20 (14h)               | OFF      | OFF      | ON       | OFF      | ON       |
| 21 (15h)               | ON       | OFF      | ON       | OFF      | ON       |
| 22 (16h)               | OFF      | ON       | ON       | OFF      | ON       |
| 23 (17h)               | ON       | ON       | ON       | OFF      | ON       |
| 24 (18h)               | OFF      | OFF      | OFF      | ON       | ON       |
| 25 (19h)               | ON       | OFF      | OFF      | ON       | ON       |
| 26 (1Ah)               | OFF      | ON       | OFF      | ON       | ON       |
| 27 (1Bh)               | ON       | ON       | OFF      | ON       | ON       |
| 28 (1Ch)               | OFF      | OFF      | ON       | ON       | ON       |
| 29 (1Dh)               | ON       | OFF      | ON       | ON       | ON       |
| 30 (1Eh)               | OFF      | ON       | ON       | ON       | ON       |
| 31 (1Fh)               | ON       | ON       | ON       | ON       | ON       |

(1) Default

## CAN 2 Communication Rate

The bit rate can be adjusted using two DIP switches (125/250/500/1000 kBit/s).

**Table 13 - CAN 2 Communication Rate**

| <b>Communication Rate</b> | <b>Switch 6</b> | <b>Switch 7</b> |
|---------------------------|-----------------|-----------------|
| 125 k                     | OFF             | OFF             |
| 250 k                     | ON              | OFF             |
| 500 k                     | OFF             | ON              |
| 1 M                       | ON              | ON              |

DIP switches are only read for power-up.

**Notes:**

## CAN Communication

The CAN communication for both CAN Control units, CAN 1 and CAN 2, are identical.

### CAN Telegrams

#### Structure of CAN Commands

A CAN telegram consists of a chain of bytes. The telegram begins with an address, followed by a DLC byte (number of following data bytes) and the data bytes. Eight data bytes are typically used for the LED-display profile, which consists of two command bytes and six parameter bytes.

Commands that must be sent via the CAN bus on the controller are structured as follows (message length: 8 bytes each):

**Table 14 - Command Structure**

|      | Command to Controller | Data  |
|------|-----------------------|-------|
| Byte | 1 - 2                 | 3 - 8 |

The following commands are possible:

|                        |             | Commands  |       |                               |
|------------------------|-------------|---|-------|-------------------------------|
| Command                | Bytes 1 + 2 | 2   | 02Hex | Pseudo command for PLC        |
|                        |             | 4   | 04Hex | All LEDs off                  |
|                        |             | 6   | 06Hex | LED area that must illuminate |
|                        |             | 8   | 08Hex | LED area that must flash      |
|                        |             | 10  | 0AHex | Read number of LEDs           |
| Data                   | Bytes 3 + 8 | Data that must be sent along with a command (see <a href="#">CAN Commands on page 20</a> ). |       |                               |
| Length of the telegram | 8 bytes     |   |       |                               |

Example of command 4 [=04Hex]:

| Byte  | Byte 1 |   |   |   |   |   |   |   | Byte 2 |   |   |   |   |   |   |   | Bytes 3...8 |   |   |   |   |   |    |   |
|-------|--------|---|---|---|---|---|---|---|--------|---|---|---|---|---|---|---|-------------|---|---|---|---|---|----|---|
| Bits  | 7      | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7      | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7           | 6 | 5 | 4 | 3 | 2 | 10 |   |
| Value | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0           | 0 | 0 | 0 | 0 | 0 | 0  | 0 |

#### Structure of CAN Answers

The answers from the LED-display profile control unit are structured as follows:

**Table 15 - Command Structure**

|      | Answer to Command | Data  |
|------|-------------------|-------|
| Byte | 1 - 2             | 3 - 8 |

An offset of +1 (compared to the command) is added to every answer in the answer telegram of the control unit.

|  |           | Answers  |       |                      |
|--|-----------|--|-------|----------------------|
|  |           | Answer n+1 to command n:   |       |                      |
| Answer to command<br>(Command no. + 1) | Bytes 1+2 | 3  | 03Hex | Send a pseudo-answer |
|  |           | 5  | 05Hex | Send a confirmation  |
|  |           | 7  | 07Hex | Send a confirmation  |
|  |           | 9  | 09Hex | Send a confirmation  |
|  |           | 11   | 0BHex | Send number of LEDs  |
| Data                                   | Bytes 3-8 | Data that must be sent along with an answer (see <a href="#">CAN Commands</a> ). |       |                      |
| Length of the telegram                 | 8 bytes   |  |       |                      |

## CAN Commands

The basic rule is that the numbers for all commands are even and the numbers for all answers are odd. If a command is sent that is not within the commands range of the LED-display profile controller, then the controller answers with the command 0x00 FF.

### Pseudo Command (2 [=02Hex])

The pseudo command simply serves to allow the controller to report to the PLC via the first transmitter identifier. The software number is finally sent in byte 8. A table that is provided by the manufacturer allows you to determine the exact software condition that is based on this number.

| Command (2 [=02Hex]) |                              | Answer (3 [=03Hex]) |                                  |
|----------------------|------------------------------|---------------------|----------------------------------|
| Bytes 3 - 8          | Bits 0...7: 0 (not assigned) | Bytes 3 - 7         | Bit 0...7: 0 (not assigned)      |
|                      |                              | Byte 8              | Bit 0...7: 08 (software version) |

### All LEDs OFF (4 [=04Hex])

This command can be used to turn off all LEDs.

| Command (4 [=04Hex]) |                               | Answer (5 [=05Hex]) |                             |
|----------------------|-------------------------------|---------------------|-----------------------------|
| Bytes 3 - 8          | Bits: 0 - 7: 0 (not assigned) | Bytes 3 - 8         | Bit 0 - 7: 0 (not assigned) |

### LED Area That Should Illuminate (6 [=06Hex])

For long profiles, the intensity of each LED is reduced automatically if the number of desired LEDs exceeds certain limits:

- < 97 beams: a brightness of 0, 1, 2 & 3 is possible
- < 109 beams: a brightness of 1, 2 & 3 is possible
- < 123 beams: a brightness of 2 and 3 is possible
- ≥ 123 beams: just a brightness of 3 is possible.

Check whether the first LED is darker than the last one. If not, the LEDs do not illuminate and 0xFF is reported as the number of LEDs that illuminate.

If just a 0 is entered instead of an LED, then the first LED illuminates.

| Command (6 [=06Hex]) |  | Answer (7 [=07Hex]) |   |
|----------------------|--|---------------------|---|
| Byte 3               | Bits 0...7: First LED illuminates (1...255)              | Byte 3              | Bit 0...7: Number of illuminated LEDs<br>0xFF = a fault |
| Byte 4               | Bits 0...7: Last LED illuminates (1...255)               | Byte 4              | Bit 0...7: Effectively actuated brightness              |
| Byte 5               | Bits 0...7: Brightness (0 = maximum, 1, 2, ≥3 = minimum) | Bytes 5...8         | Bit 0...7: 0 (not assigned)                             |
| Bytes 6...8          | Bits 0...7: 0 (not assigned)                             |                     |   |

## LED Area That Should Flash (8 [=06Hex])

The flashing frequency is about 1 Hz.

For long profiles the intensity of each LED is reduced automatically if the number of desired LEDs exceeds certain limits:

- < 97 beams: a brightness of 0, 1, 2 & 3 is possible
- < 109 beams: a brightness of 1, 2 & 3 is possible
- < 123 beams: a brightness of 2 and 3 is possible
- ≥ 123 beams: just a brightness of 3 is possible.

Check whether the first LED is darker than the last one. If not, the LEDs do not illuminate and 0xFF is reported as the number of LEDs that illuminate.

If just a 0 is entered instead of an LED, then the first LED illuminates.

| Command (8 [=08Hex]) |  | Answer 9 [=09Hex] |   |
|----------------------|--|-------------------|---|
| Byte 3               | Bits 0...7:<br>First flashing LED (1...255)                  | Byte 3            | Bit 0...7:<br>Number of lit up LEDs<br>0xFF = a fault |
| Byte 4               | Bits 0...7:<br>Last flashing LED (1...255)                   | Byte 4            | Bit 0...7:<br>Effectively actuated brightness         |
| Byte 5               | Bits 0...7:<br>Brightness (0 = maximum, 1,<br>2, 3= minimum) | Bytes 5...8       | Bit 0...7:<br>0 (not assigned)                        |
| Bytes 6...8          | Bits 0...7:<br>0 (not assigned)                              |                   |   |

## Read All LEDs (10 [=0AHex])

This command allows one to read out the number of LEDs in the connected LED-display profile.

| Command (10 [=0AHex]) |                                | Answer 11 [=0BHex] |  |
|-----------------------|--------------------------------|--------------------|--|
| Bytes 3...8           | Bit 0...7:<br>0 (not assigned) | Byte 3             | Bits 0...7:<br>Number of LEDs (0...255)<br>0 = without any LED-display profile |
|                       |                                | Bytes 4...8        | Bits 0...7:<br>0 (not assigned)  |

**Notes:**

## RS-485 Interface

### RS-485 Addresses

The 16 different node addresses are configurable with four DIP switches (DIP1...DIP4).

**Table 16 - RS-485 Address Offset**

| Offset to Address | Offset to Address (hex) | Switch 1 | Switch 2 | Switch 3 | Switch 4 |
|-------------------|-------------------------|----------|----------|----------|----------|
| 0 <sup>(1)</sup>  | 00h                     | OFF      | OFF      | OFF      | OFF      |
| 1                 | 01h                     | ON       | OFF      | OFF      | OFF      |
| 2                 | 02h                     | OFF      | ON       | OFF      | OFF      |
| 3                 | 03h                     | ON       | ON       | OFF      | OFF      |
| 4                 | 04h                     | OFF      | OFF      | ON       | OFF      |
| 5                 | 05h                     | ON       | OFF      | ON       | OFF      |
| 6                 | 06h                     | OFF      | ON       | ON       | OFF      |
| 7                 | 07h                     | ON       | ON       | ON       | OFF      |
| 8                 | 08h                     | OFF      | OFF      | OFF      | ON       |
| 9                 | 09h                     | ON       | OFF      | OFF      | ON       |
| 10                | 0Ah                     | OFF      | ON       | OFF      | ON       |
| 11                | 0Bh                     | ON       | ON       | OFF      | ON       |
| 12                | 0Ch                     | OFF      | OFF      | ON       | ON       |
| 13                | 0Dh                     | ON       | OFF      | ON       | ON       |
| 14                | 0Eh                     | OFF      | ON       | ON       | ON       |
| 15                | 0Fh                     | ON       | ON       | ON       | ON       |

(1) Default

### RS-485 Communication Rate

The communication rate can be set with two DIP switches (DIP5 and DIP6). The DIP switches are only read in during powerup.

**Table 17 - RS-485 Communication Rate**

| Communication Rate  | Switch 5 | Switch 6 |
|---------------------|----------|----------|
| 9600 <sup>(1)</sup> | OFF      | OFF      |
| 19,200              | ON       | OFF      |
| 38,400              | OFF      | ON       |
| 57,600              | ON       | ON       |

(1) Default

## RS-485 Communication

Communication operates according to the primary-secondary principle whereby each control unit (secondary) is addressed and receives a command from a primary (a PC or a PLC). The addressed control unit processes the command and answers with the required data.

### RS-485 Protocol Structure

Table 18 - RS-485 Protocol Architecture (Hex)

| Direction                     |          |                      | Byte1             | Byte2            | Byte3 | Byte4 | Byte5 | Byte6 | Byte7 | Byte8 |          |
|-------------------------------|----------|----------------------|-------------------|------------------|-------|-------|-------|-------|-------|-------|----------|
| Primary (PLC) to control unit | STX (02) | Address (DIP switch) | High-byte command | Low-byte command | Data  | Data  | Data  | Data  | Data  | Data  | ETX (03) |
| Control unit to primary (PLC) | ACK (06) | Inverted (address)   | High-byte command | Low-byte command | Data  | Data  | Data  | Data  | Data  | Data  | ETX (03) |

Table 19 - Example RS-485 Commands (Hex)

| Direction                     |    |    | Byte1 | Byte2 | Byte3 | Byte4 | Byte5 | Byte6 | Byte7 | Byte8 |    |
|-------------------------------|----|----|-------|-------|-------|-------|-------|-------|-------|-------|----|
| Primary (PLC) to control unit | 02 | 00 | 00    | 06    | 03    | 1F    | 00    | 00    | 00    | 00    | 03 |
| Control unit to primary (PLC) | 06 | FF | 00    | 07    | 1F    | 00    | 0F    | 0F    | 00    | 00    | 03 |

Activation of the LEDs (command 06) in the area from LED no. 3 to LED no. 31. All values must be interpreted as Hex data.

### RS-485 Commands and Answers

The RS-485 commands are in accordance with the list of CAN commands (see [Structure of CAN Commands on page 19](#)).

### RS-485 Communication Example

The LED area: Command for LED 3...LED 31 to illuminate (address is control unit 1): the PLC sends Command 06:

Table 20 - RS-485 Commands Example

| Byte   | Description          | Value  | Byte structure |
|--------|----------------------|--------|----------------|
|        | STX                  | 02 Hex | 0000 0010      |
|        | Address (DIP switch) | 01     | 0000 0001      |
| Byte 1 | Command              | 00     | 0000 0000      |
| Byte 2 | Command              | 06 Hex | 0000 0110      |
| Byte 3 | Data                 | 03     | 0000 0000      |
| Byte 4 | Data                 | 1F Hex | 0001 1111      |
| Byte 5 | Data                 | 00     | 0000 0000      |
| Byte 6 | Data                 | 00     | 0000 0000      |
| Byte 7 | Data                 | 00     | 0000 0000      |
| Byte 8 | Data                 | 00     | 0000 0000      |
|        | ETX                  | 03 Hex | 0000 0011      |

The control unit expects the following answer:

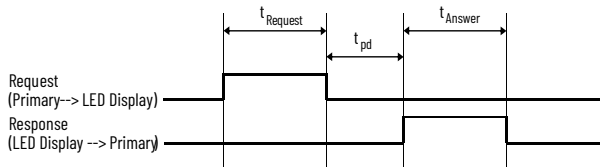
**Table 21 - RS-485 Answer Example**

| Byte   | Description                   | Value                  | Byte structure |
|--------|-------------------------------|------------------------|----------------|
|        | ACK                           | 06 Hex                 | 0000 0110      |
|        | Inverted address (DIP switch) | = 255-1 = 254 (FE Hex) | 1111 1110      |
| Byte 1 | Command                       | 00                     | 0000 0000      |
| Byte 2 | Command                       | 07 Hex                 | 0000 0111      |
| Byte 3 | Data                          | 1F Hex                 | 0001 1111      |
| Byte 4 | Data                          | 00                     | 0001 0000      |
| Byte 5 | Data                          | 00                     | 0000 0000      |
| Byte 6 | Data                          | 00                     | 0000 0000      |
| Byte 7 | Data                          | 00                     | 0000 0000      |
| Byte 8 | Data                          | 00                     | 0000 0000      |
|        | ETX                           | 03 Hex                 | 0000 0011      |

**RS-485 Timing**

Example of a communication rate of 15,200 with one stop bit:

**Figure 12 - RS-485 Communication Timing**



- Communication rate 15,200
- 1 bit = 52.08  $\mu$ s

1 byte = 1 start bit + 8 data bits + 1 parity bit + 1 stop bit = 11 bits = 572.92  $\mu$ s

$t_{request}$ : 11 bytes = 4.583 ms

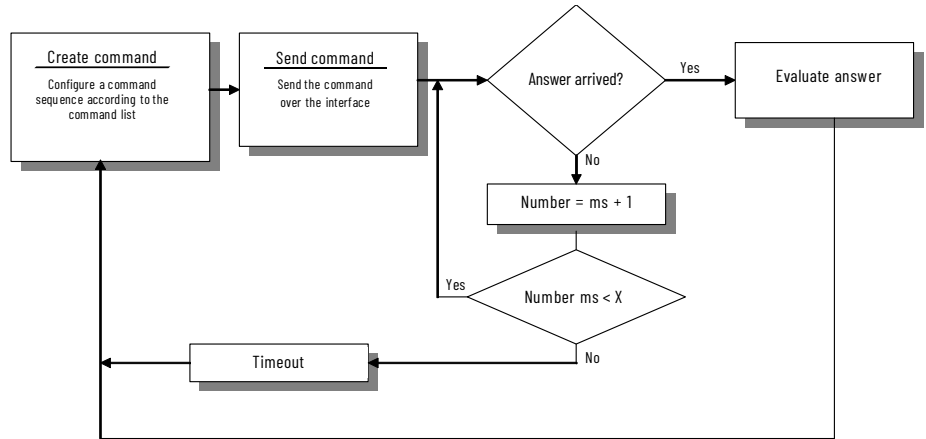
$t_{pd}$ : This time window is dependent on the command number. The minimum period is about 0.25 ms. If the light curtain consists of 254 beams and the trigger command for a standard scan is used, then the time increases to about 55 ms.

$T_{answer}$ : 11 bytes = 4.583 ms

## Primary Programming (RS-485)

The following process must be followed to avoid data conflicts.

Figure 13 - Recommended Process for RS-485 Communication



## RS-485 Specifications

| Attribute  | Value  |
|--|--|
| Maximum cable length (shielded twisted pairs with screening) | 100 m (328.1 ft)   |
| Short-circuit protected                                      | Yes  |
| Number of addresses  | 0...15   |
| Parity   | None   |
| Protocol   | None   |
| Stop bits  | 1 (standard)   |
| Communication rate   | <ul style="list-style-type: none"> <li>• 2400 baud</li> <li>• 9600 baud</li> <li>• 19,200 baud</li> <li>• 57,600 baud</li> </ul> |

**IMPORTANT** Before first starting the equipment, it is essential to check the address setting and the communication rate for the connected control units.

## Maintenance

### **Preventative Maintenance**

The controller and the profiles are built electronically and do not require any preventative maintenance.

### **Decommissioning**

If an LED-display profile system must be disposed of then it can simply be disassembled and split up according to the valuable materials in it, according to the technology, and reused according to the valid national regulations for the work site.

**Notes:**

## Specifications

### General

| Attribute                                 | Value   |
|---|---|
| Rated mode                                | Continuous operation  |
| Grid                                      | 34 mm (1.3 in.)   |
| Temperature ranges                        | <ul style="list-style-type: none"> <li>Ambient: 0...55 °C (32...131 °F)</li> <li>Storage: -25...+70 °C (-13...+158 °F)</li> </ul>   |
| Protection Class according to (EN 60529)  | <ul style="list-style-type: none"> <li>CAN2 control unit: IP20</li> <li>CAN1 and RS-485 control unit: IP00</li> <li>Terminal LED-display profile: IP20</li> <li>LED-display profile: IP54</li> </ul>  |
| Conductor connection 3-pin terminal strip | Wire diameter, max: 1.7 mm (0.07 in.) (2.27 mm <sup>2</sup> )   |
| Quick-fastening                           | DIN rail 35 mm (1.4 in.) (EN 50022)   |
| Weight                                    | <ul style="list-style-type: none"> <li>Controller: 110 g (0.2 lb)</li> <li>LED-display profile: 12 x number of LED + 16 g (0.04 lb)</li> </ul>  |
| Device dimensions                         | <ul style="list-style-type: none"> <li>Controller: 106 x 75.2 x 45 mm (4.2 x 3 x 1.8 in.)</li> <li>LED-display profile: 16 x 21 mm x length according to specification (see <a href="#">Mechanical on page 11</a>)</li> <li>Maximum &lt; 3894 mm (153.3 in.)</li> </ul> |

### Inputs

| Attribute                | Value                            |
|--------------------------|----------------------------------|
| Nominal voltage UN       | 24V DC                           |
| For a 5% residual ripple | 0.85...1.15 UN                   |
| Nominal consumption      | 14 mA + (number of LEDs * 19 mA) |
| Device fusing (external) | 2 A                              |

**Notes:**

## Ordering Information

### LED-display Profile

Table 22 - LED-display Profile Catalog Numbers

| Cat. No.           | CEDES Safety and Automation Part No | Number of LED | B [mm] | Position of the last LED [mm] | L [mm] | Application Note |
|--------------------|-------------------------------------|---------------|--------|-------------------------------|--------|------------------|
| 45CSA-103743-L1318 | 103 743 L1318                       | 37            | 47     | 1271                          | 1318   | Preferred part   |
| 45CSA-103743-L1343 | 103 743 L1343                       | 38            | 42.5   | 1300.5                        | 1343   | –                |
| 45CSA-103743-L1368 | 103 743 L1368                       | 38            | 55     | 1313                          | 1368   | –                |
| 45CSA-103743-L1393 | 103 743 L1393                       | 39            | 50.5   | 1342.5                        | 1393   | –                |
| 45CSA-103743-L1418 | 103 743 L1418                       | 40            | 46     | 1372                          | 1418   | –                |
| 45CSA-103743-L1443 | 103 743 L1443                       | 41            | 41.5   | 1401.5                        | 1443   | –                |
| 45CSA-103743-L1468 | 103 743 L1468                       | 41            | 54     | 1414                          | 1468   | –                |
| 45CSA-103743-L1493 | 103 743 L1493                       | 42            | 49.5   | 1443.5                        | 1493   | –                |
| 45CSA-103743-L1518 | 103 743 L1518                       | 43            | 45     | 1473                          | 1518   | Preferred part   |
| 45CSA-103743-L1543 | 103 743 L1543                       | 44            | 40.5   | 1502.5                        | 1543   | –                |
| 45CSA-103743-L1568 | 103 743 L1568                       | 44            | 53     | 1515                          | 1568   | –                |
| 45CSA-103743-L1593 | 103 743 L1593                       | 45            | 48.5   | 1544.5                        | 1593   | –                |
| 45CSA-103743-L1618 | 103 743 L1618                       | 46            | 44     | 1574                          | 1618   | –                |
| 45CSA-103743-L1643 | 103 743 L1643                       | 47            | 39.5   | 1603.5                        | 1643   | –                |
| 45CSA-103743-L1668 | 103 743 L1668                       | 47            | 52     | 1616                          | 1668   | –                |
| 45CSA-103743-L1693 | 103 743 L1693                       | 48            | 47.5   | 1645.5                        | 1693   | –                |
| 45CSA-103743-L1718 | 103 743 L1718                       | 49            | 43     | 1675                          | 1718   | Preferred part   |
| 45CSA-103743-L1743 | 103 743 L1743                       | 49            | 55.5   | 1687.5                        | 1743   | –                |
| 45CSA-103743-L1768 | 103 743 L1768                       | 50            | 51     | 1717                          | 1768   | –                |
| 45CSA-103743-L1793 | 103 743 L1793                       | 51            | 46.5   | 1746.5                        | 1793   | –                |
| 45CSA-103743-L1818 | 103 743 L1818                       | 52            | 42     | 1776                          | 1818   | –                |
| 45CSA-103743-L1843 | 103 743 L1843                       | 52            | 54.5   | 1788.5                        | 1843   | –                |
| 45CSA-103743-L1868 | 103 743 L1868                       | 53            | 50     | 1818                          | 1868   | –                |
| 45CSA-103743-L1893 | 103 743 L1893                       | 54            | 45.5   | 1847.5                        | 1893   | –                |
| 45CSA-103743-L1918 | 103 743 L1918                       | 55            | 41     | 1877                          | 1918   | Preferred part   |
| 45CSA-103743-L1943 | 103 743 L1943                       | 55            | 53.5   | 1889.5                        | 1943   | –                |
| 45CSA-103743-L1968 | 103 743 L1968                       | 56            | 49     | 1919                          | 1968   | –                |
| 45CSA-103743-L1993 | 103 743 L1993                       | 57            | 44.5   | 1948.5                        | 1993   | –                |
| 45CSA-103743-L2018 | 103 743 L2018                       | 58            | 40     | 1978                          | 2018   | –                |
| 45CSA-103743-L2043 | 103 743 L2043                       | 58            | 52.5   | 1990.5                        | 2043   | –                |
| 45CSA-103743-L2068 | 103 743 L2068                       | 59            | 48     | 2020                          | 2068   | –                |
| 45CSA-103743-L2093 | 103 743 L2093                       | 60            | 43.5   | 2049.5                        | 2093   | –                |
| 45CSA-103743-L2118 | 103 743 L2118                       | 61            | 39     | 2079                          | 2118   | Preferred part   |
| 45CSA-103743-L2143 | 103 743 L2143                       | 61            | 51.5   | 2091.5                        | 2143   | –                |
| 45CSA-103743-L2168 | 103 743 L2168                       | 62            | 47     | 2121                          | 2168   | –                |
| 45CSA-103743-L2193 | 103 743 L2193                       | 63            | 42.5   | 2150.5                        | 2193   | –                |
| 45CSA-103743-L2218 | 103 743 L2218                       | 63            | 55     | 2163                          | 2218   | –                |
| 45CSA-103743-L2243 | 103 743 L2243                       | 64            | 50.5   | 2192.5                        | 2243   | –                |
| 45CSA-103743-L2268 | 103 743 L2268                       | 65            | 46     | 2222                          | 2268   | –                |
| 45CSA-103743-L2293 | 103 743 L2293                       | 66            | 41.5   | 2251.5                        | 2293   | –                |
| 45CSA-103743-L2318 | 103 743 L2318                       | 66            | 54     | 2264                          | 2318   | Preferred part   |
| 45CSA-103743-L2343 | 103 743 L2343                       | 67            | 49.5   | 2293.5                        | 2343   | –                |
| 45CSA-103743-L2368 | 103 743 L2368                       | 68            | 45     | 2323                          | 2368   | –                |
| 45CSA-103743-L2393 | 103 743 L2393                       | 69            | 40.5   | 2352.5                        | 2393   | –                |
| 45CSA-103743-L2418 | 103 743 L2418                       | 69            | 53     | 2365                          | 2418   | –                |

Table 22 - LED-display Profile Catalog Numbers (Continued)

| Cat. No.           | CEDES Safety and Automation Part No | Number of LED | B [mm] | Position of the last LED [mm] | L [mm] | Application Note |
|--------------------|-------------------------------------|---------------|--------|-------------------------------|--------|------------------|
| 45CSA-103743-L2443 | 103 743 L2443                       | 70            | 48.5   | 2394.5                        | 2443   | —                |
| 45CSA-103743-L2468 | 103 743 L2468                       | 71            | 44     | 2424                          | 2468   | —                |
| 45CSA-103743-L2493 | 103 743 L2493                       | 72            | 39.5   | 2453.5                        | 2493   | —                |
| 45CSA-103743-L2518 | 103 743 L2518                       | 72            | 52     | 2466                          | 2518   | Preferred part   |
| 45CSA-103743-L2543 | 103 743 L2543                       | 73            | 47.5   | 2495.5                        | 2543   | —                |
| 45CSA-103743-L2568 | 103 743 L2568                       | 74            | 43     | 2525                          | 2568   | —                |
| 45CSA-103743-L2593 | 103 743 L2593                       | 74            | 55.5   | 2537.5                        | 2593   | —                |
| 45CSA-103743-L2618 | 103 743 L2618                       | 75            | 51     | 2567                          | 2618   | —                |
| 45CSA-103743-L2643 | 103 743 L2643                       | 76            | 46.5   | 2596.5                        | 2643   | —                |
| 45CSA-103743-L2668 | 103 743 L2668                       | 77            | 42     | 2626                          | 2668   | —                |
| 45CSA-103743-L2693 | 103 743 L2693                       | 77            | 54.5   | 2638.5                        | 2693   | —                |
| 45CSA-103743-L2718 | 103 743 L2718                       | 78            | 50     | 2668                          | 2718   | Preferred part   |
| 45CSA-103743-L2743 | 103 743 L2743                       | 79            | 45.5   | 2697.5                        | 2743   | —                |
| 45CSA-103743-L2768 | 103 743 L2768                       | 80            | 41     | 2727                          | 2768   | —                |
| 45CSA-103743-L2793 | 103 743 L2793                       | 80            | 53.5   | 2739.5                        | 2793   | —                |
| 45CSA-103743-L2818 | 103 743 L2818                       | 81            | 49     | 2769                          | 2818   | —                |
| 45CSA-103743-L2843 | 103 743 L2843                       | 82            | 44.5   | 2798.5                        | 2843   | —                |
| 45CSA-103743-L2868 | 103 743 L2868                       | 83            | 40     | 2828                          | 2868   | —                |
| 45CSA-103743-L2893 | 103 743 L2893                       | 83            | 52.5   | 2840.5                        | 2893   | —                |
| 45CSA-103743-L2918 | 103 743 L2918                       | 84            | 48     | 2870                          | 2918   | Preferred part   |
| 45CSA-103743-L2943 | 103 743 L2943                       | 85            | 43.5   | 2899.5                        | 2943   | —                |
| 45CSA-103743-L2968 | 103 743 L2968                       | 86            | 39     | 2929                          | 2968   | —                |
| 45CSA-103743-L2993 | 103 743 L2993                       | 86            | 51.5   | 2941.5                        | 2993   | —                |
| 45CSA-103743-L3018 | 103 743 L3018                       | 87            | 47     | 2971                          | 3018   | Preferred part   |
| 45CSA-103743-L3043 | 103 743 L3043                       | 88            | 42.5   | 3000.5                        | 3043   | —                |
| 45CSA-103743-L3068 | 103 743 L3068                       | 88            | 55     | 3013                          | 3068   | —                |
| 45CSA-103743-L3093 | 103 743 L3093                       | 89            | 50.5   | 3042.5                        | 3093   | —                |
| 45CSA-103743-L3118 | 103 743 L3118                       | 90            | 46     | 3072                          | 3118   | Preferred part   |
| 45CSA-103743-L3143 | 103 743 L3143                       | 91            | 41.5   | 3101.5                        | 3143   | —                |
| 45CSA-103743-L3168 | 103 743 L3168                       | 91            | 54     | 3114                          | 3168   | —                |
| 45CSA-103743-L3193 | 103 743 L3193                       | 92            | 49.5   | 3143.5                        | 3193   | —                |
| 45CSA-103743-L3218 | 103 743 L3218                       | 93            | 45     | 3173                          | 3218   | —                |
| 45CSA-103743-L3243 | 103 743 L3243                       | 94            | 40.5   | 3202.5                        | 3243   | —                |
| 45CSA-103743-L3268 | 103 743 L3268                       | 94            | 53     | 3215                          | 3268   | —                |
| 45CSA-103743-L3293 | 103 743 L3293                       | 95            | 48.5   | 3244.5                        | 3293   | —                |
| 45CSA-103743-L3318 | 103 743 L3318                       | 96            | 44     | 3274                          | 3318   | Preferred part   |
| 45CSA-103743-L3343 | 103 743 L3343                       | 97            | 39.5   | 3303.5                        | 3343   | —                |
| 45CSA-103743-L3368 | 103 743 L3368                       | 97            | 52     | 3316                          | 3368   | —                |
| 45CSA-103743-L3393 | 103 743 L3393                       | 98            | 47.5   | 3345.5                        | 3393   | —                |
| 45CSA-103743-L3418 | 103 743 L3418                       | 99            | 43     | 3375                          | 3418   | —                |
| 45CSA-103743-L3443 | 103 743 L3443                       | 99            | 55.5   | 3387.5                        | 3443   | —                |
| 45CSA-103743-L3468 | 103 743 L3468                       | 100           | 51     | 3417                          | 3468   | —                |
| 45CSA-103743-L3493 | 103 743 L3493                       | 101           | 46.5   | 3446.5                        | 3493   | —                |
| 45CSA-103743-L3518 | 103 743 L3518                       | 102           | 42     | 3476                          | 3518   | —                |
| 45CSA-103743-L3543 | 103 743 L3543                       | 102           | 54.5   | 3488.5                        | 3543   | —                |
| 45CSA-103743-L3568 | 103 743 L3568                       | 103           | 50     | 3518                          | 3568   | —                |
| 45CSA-103743-L3587 | 103 743 L3587                       | 90            | 374.5  | 3400.5                        | 3587   | Preferred part   |
| 45CSA-103743-L3593 | 103 743 L3593                       | 104           | 45.5   | 3547.5                        | 3593   | —                |
| 45CSA-103743-L3618 | 103 743 L3618                       | 105           | 41     | 3577                          | 3618   | —                |
| 45CSA-103743-L3643 | 103 743 L3643                       | 105           | 53.5   | 3589.5                        | 3643   | —                |
| 45CSA-103743-L3668 | 103 743 L3668                       | 106           | 49     | 3619                          | 3668   | —                |
| 45CSA-103743-L3693 | 103 743 L3693                       | 107           | 44.5   | 3648.5                        | 3693   | —                |
| 45CSA-103743-L3718 | 103 743 L3718                       | 108           | 40     | 3678                          | 3718   | —                |

## Accessories

| Cat. No.           | CEDES Safety and Automation Part No | Description   |
|--------------------|-------------------------------------|---|
| 45CSA-103744       | 103 744                             | Control unit (CAN 1)  |
| 45CSA-109674       | 109 674                             | Control unit (CAN 2)  |
| 45CSA-109672       | 109 672                             | Control unit (RS-485)   |
| 45CSA-103743-Lxxxx | 103 743 Lxxxx                       | LED-display profile with length L xxxx                                  |
| 445L-AF6145        | 106 495                             | Flat mounting kit   |
| 445L-AF6143        | 106 496                             | 180° adjustable mounting kit  |
| 445L-AF6149        | 108 105                             | 180° Type 2 adjustable mounting kit                                     |
| 445L-AC8PC1        | 107 144                             | Cable, 1 m (3.3 ft), M12-M12, 8pol, M-F                                 |
| 445L-AC8PC3        | 107 145                             | Cable, 3 m (9.8 ft), M12-M12, 8pol, M-F                                 |
| 445L-AC8PC5        | 109 295                             | Cable, 5 m (16.4 ft), M12-M12, 8pol, M-F                                |
| 445L-AC8RJ1        | 110 469                             | Cable, Rx/Tx, 1 m (3.3 ft), RJ45-M12, 8pol, M-M                         |
| 445L-AC8RJ2        | 109 293                             | Cable, Rx/Tx, 2 m (6.6 ft), RJ45-M12, 8pol, M-M                         |
| 445L-AC8RJ3        | 107 141                             | Cable, Rx/Tx, 3 m (9.8 ft), RJ45-M12, 8pol, M-M                         |
| 445L-AC8RJ5        | 107 142                             | Cable, Rx/Tx, 5 m (16.4 ft), RJ45-M12, 8pol, M-M                        |
| 445L-AC8RJ8        | 107 143                             | Cable, Rx/Tx, 8 m (26.2 ft), RJ45-M12, 8pol, M-M                        |
| 445L-109296        | 109 296                             | Adapter, 8-pin, DIN9/m to M12/f (For profile with MiniDin to Cable M12) |
| 445L-ACDN9M12      | 107 656                             | Adapter, 8-pin, DIN9/f to M12/m (For profile with M12 to Cable MiniDin) |

## Discontinued Parts

**IMPORTANT** The following items are running out and must not be used for new applications. They are provided solely for spare parts purposes.

**Table 23 - Discontinued Parts**

| Cat. No.           | CEDES Safety and Automation Part No | Number of LED | B [mm] | Position of the last LED [mm] | L [mm] |
|--------------------|-------------------------------------|---------------|--------|-------------------------------|--------|
| 45CSA-103743-L0346 | 103 743 L0346                       | 8             | 54     | 292                           | 346    |
| 45CSA-103743-L1094 | 103 743 L1094                       | 30            | 54     | 1040                          | 1094   |
| 45CSA-103743-L1298 | 103 743 L1298                       | 36            | 54     | 1244                          | 1298   |
| 45CSA-103743-L1451 | 103 743 L1451                       | 40            | 62.5   | 1388.5                        | 1451   |
| 45CSA-103743-L1502 | 103 743 L1502                       | 42            | 54     | 1448                          | 1502   |
| 45CSA-103743-L1706 | 103 743 L1706                       | 48            | 54     | 1652                          | 1706   |
| 45CSA-103743-L1707 | 103 743 L1707                       | 48            | 54.5   | 1652.5                        | 1707   |
| 45CSA-103743-L1910 | 103 743 L1910                       | 54            | 54     | 1856                          | 1910   |
| 45CSA-103743-L2046 | 103 743 L2046                       | 58            | 54     | 1992                          | 2046   |
| 45CSA-103743-L2114 | 103 743 L2114                       | 60            | 54     | 2060                          | 2114   |
| 45CSA-103743-L2182 | 103 743 L2182                       | 62            | 54     | 2128                          | 2182   |
| 45CSA-103743-L2352 | 103 743 L2352                       | 67            | 54     | 2298                          | 2352   |
| 45CSA-103743-L2454 | 103 743 L2454                       | 70            | 54     | 2400                          | 2454   |
| 45CSA-103743-L2488 | 103 743 L2488                       | 71            | 54     | 2434                          | 2488   |
| 45CSA-103743-L2522 | 103 743 L2522                       | 72            | 54     | 2468                          | 2522   |
| 45CSA-103743-L2658 | 103 743 L2658                       | 76            | 54     | 2604                          | 2658   |
| 45CSA-103743-L2726 | 103 743 L2726                       | 78            | 54     | 2672                          | 2726   |
| 45CSA-103743-L2862 | 103 743 L2862                       | 82            | 54     | 2808                          | 2862   |
| 45CSA-103743-L2930 | 103 743 L2930                       | 84            | 54     | 2876                          | 2930   |
| 45CSA-103743-L3066 | 103 743 L3066                       | 88            | 54     | 3012                          | 3066   |
| 45CSA-103743-L3110 | 103 743 L3110                       | 90            | 42     | 3068                          | 3110   |
| 45CSA-103743-L3134 | 103 743 L3134                       | 90            | 54     | 3080                          | 3134   |
| 45CSA-103743-L3270 | 103 743 L3270                       | 94            | 54     | 3216                          | 3270   |
| 45CSA-103743-L3338 | 103 743 L3338                       | 96            | 54     | 3284                          | 3338   |
| 45CSA-103743-L3474 | 103 743 L3474                       | 100           | 54     | 3420                          | 3474   |
| 45CSA-103743-L3746 | 103 743 L3746                       | 108           | 54     | 3692                          | 3746   |

**Notes:**

## Notes:

# Rockwell Automation Support

Use these resources to access support information.

|   |   |  |
|---|---|--|
| <b>Technical Support Center</b>                         | Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, and product notification updates. | <a href="http://rok.auto/support">rok.auto/support</a>           |
| <b>Local Technical Support Phone Numbers</b>            | Locate the telephone number for your country.   | <a href="http://rok.auto/phonesupport">rok.auto/phonesupport</a> |
| <b>Technical Documentation Center</b>                   | Quickly access and download technical specifications, installation instructions, and user manuals.      | <a href="http://rok.auto/techdocs">rok.auto/techdocs</a>         |
| <b>Literature Library</b>                               | Find installation instructions, manuals, brochures, and technical data publications.                    | <a href="http://rok.auto/literature">rok.auto/literature</a>     |
| <b>Product Compatibility and Download Center (PCDC)</b> | Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.      | <a href="http://rok.auto/pcdc">rok.auto/pcdc</a>                 |

## Documentation Feedback

Your comments help us serve your documentation needs better. If you have any suggestions on how to improve our content, complete the form at [rok.auto/docfeedback](http://rok.auto/docfeedback).

## Waste Electrical and Electronic Equipment (WEEE)







At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at [rok.auto/pec](http://rok.auto/pec).

Allen-Bradley, expanding human possibility, and Rockwell Automation are trademarks of Rockwell Automation, Inc.  
Trademarks not belonging to Rockwell Automation are property of their respective companies.

Rockwell Otomasyon Ticaret A.Ş. Kar Plaza İş Merkezi E Blok Kat:6 34752, İçerenköy, İstanbul, Tel: +90 (216) 5698400 EEE Yönetmeliğine Uygundur

Connect with us.    

**rockwellautomation.com** ————— expanding **human possibility**<sup>®</sup>

AMERICAS: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000

EUROPE/MIDDLE EAST/AFRICA: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2663 0600

ASIA PACIFIC: Rockwell Automation SEA Pte Ltd, 2 Corporation Road, #04-05, Main Lobby, Corporation Place, Singapore 618494, Tel: (65) 6510 6608

UNITED KINGDOM: Rockwell Automation Ltd., Pitfield, Kiln Farm, Milton Keynes, MK11 3DR, United Kingdom, Tel: (44)(1908) 838-800



PN-95302468