

# MACX MCR-EX-AP-2SD-25-35-LP - Solenoid driver



1291176

<https://www.phoenixcontact.com/in/products/1291176>

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Ex i-Solenoid driver for intrinsically safe activation of Ex i solenoid valves, alarm transmitters, or displays installed in potentially explosive areas. number of channels: 2, Standard configuration, Loop-powered, 4-way isolation, Safety Integrity Level (SIL, IEC 61508): 3, Screw connection

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1291176       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | CK3           |
| Product key                          | DK121W        |
| GTIN                                 | 4063151523749 |
| Weight per piece (including packing) | 205.6 g       |
| Weight per piece (excluding packing) | 160 g         |
| Customs tariff number                | 85437090      |
| Country of origin                    | DE            |

## Technical data

### Notes

|                    |                                                                                                                                |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Notes on operation | Installation conditions influence the ambient temperature.<br>Please refer to the "Control cabinet installation instructions". |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------|

### Product properties

|                 |                 |
|-----------------|-----------------|
| Product type    | Solenoid driver |
| Product family  | MACX Analog     |
| No. of channels | 2               |

### Electrical properties

|                             |                 |
|-----------------------------|-----------------|
| Electrical isolation        | 4-way isolation |
| Reverse polarity protection | yes             |

#### Electrical isolation Input/output IEC/EN 60079-11

|                          |                     |
|--------------------------|---------------------|
| Standards/regulations    | IEC/EN 60079-11     |
| Rated insulation voltage | 375 V <sub>PP</sub> |

#### Electrical isolation Output 1/output 2

|              |                     |
|--------------|---------------------|
| Test voltage | 500 V (50 Hz, 60 s) |
|--------------|---------------------|

#### Electrical isolation Input 1 / input 2

|              |                     |
|--------------|---------------------|
| Test voltage | 350 V (50 Hz, 60 s) |
|--------------|---------------------|

### Supply

|                      |                                            |
|----------------------|--------------------------------------------|
| Supply voltage range | loop-powered, no external supply necessary |
| Power consumption    | 0.5 W (+ (I <sub>A</sub> × 37 mW/mA))      |

### Input data

#### Signal: Digital

|                            |                 |
|----------------------------|-----------------|
| Switching level "0" signal | 0 V ... 5 V     |
| Switching level "1" signal | 18 V ... 31.2 V |

### Output data

#### Switching: Digital

|                       |                    |
|-----------------------|--------------------|
| Output description    | intrinsically safe |
| Typical response time | ≤ 18 ms            |
| Typical turn-off time | ≤ 50 ms            |
| Switching frequency   | ≤ 10 Hz            |

### Connection data

|                   |                  |
|-------------------|------------------|
| Connection method | Screw connection |
| Stripping length  | 7 mm             |
| Screw thread      | M3               |

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|                                  |                     |
|----------------------------------|---------------------|
| Conductor cross section rigid    | 0.2 mm² ... 2.5 mm² |
| Conductor cross section flexible | 0.2 mm² ... 2.5 mm² |
| Conductor cross section AWG      | 24 ... 14           |

## Ex data

|                       |    |
|-----------------------|----|
| Ex installation (EPL) | Gc |
| Ex i circuits (EPL)   | Ga |
|                       | Da |
|                       | Ma |

Safety data: Highest values per output

|                                                                                         |                       |
|-----------------------------------------------------------------------------------------|-----------------------|
| Max. internal inductance $L_i$                                                          | negligible            |
| Max. internal capacitance $C_i$                                                         | 1.1 nF                |
| Max. output voltage $U_o$                                                               | 27.6 V                |
| Max. output current $I_o$                                                               | 110 mA (Ex ia)        |
|                                                                                         | 50 mA (Ex ib)         |
| Max. output power $P_o$                                                                 | 760 mW                |
| Safety-related maximum voltage $U_m$                                                    | 253 V AC              |
| IIA (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$ | 100 mH / 2.22 $\mu$ F |
| IIB (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$ | 9 mH / 667 nF         |
| IIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$ | 1.2 mH / 85 nF        |
| I (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$   | 100 mH / 3.5 $\mu$ F  |

Safety data: Highest values with two outputs connected in parallel

|                                                                                              |                      |
|----------------------------------------------------------------------------------------------|----------------------|
| Max. internal inductance $L_i$                                                               | negligible           |
| Max. internal capacitance $C_i$                                                              | 2.2 nF               |
| Max. output voltage $U_o$                                                                    | 27.6 V               |
| Max. output current $I_o$                                                                    | 220 mA (Ex ia)       |
|                                                                                              | 100 mA (Ex ib)       |
| Max. output power $P_o$                                                                      | 1520 mW              |
| Safety-related maximum voltage $U_m$                                                         | 253 V AC             |
| IIA (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$      | 25 mH / 2.22 $\mu$ F |
| IIB/IIIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$ | 1.8 mH / 665 nF      |
| I (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$        | 40 mH / 3.5 $\mu$ F  |

## Signaling

|                |                        |
|----------------|------------------------|
| Status display | Yellow LED/per channel |
|----------------|------------------------|

## Dimensions

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|                     |                                                                        |
|---------------------|------------------------------------------------------------------------|
| Dimensional drawing |                                                                        |
|                     |                                                                        |
| Width               | 17.5 mm                                                                |
| Height              | 112.5 mm                                                               |
| Depth               | 113.7 mm                                                               |
| Depth NS 35/7,5     | 114.5 mm (Snapped onto DIN rail NS 35/7,5 in accordance with EN 60715) |

## Material specifications

|                                        |        |
|----------------------------------------|--------|
| Flammability rating according to UL 94 | V0     |
| Housing material                       | PA 6.6 |

## Environmental and real-life conditions

### Ambient conditions

|                                         |                                                                                |
|-----------------------------------------|--------------------------------------------------------------------------------|
| Degree of protection                    | IP20 (Terminal blocks)                                                         |
|                                         | IP30 (Housing)                                                                 |
| Ambient temperature (operation)         | -20 °C ... 70 °C (Stand-alone device: any mounting position)                   |
|                                         | -20 °C ... 50 °C (Group assembly: vertical DIN rail without circulating air)   |
|                                         | -20 °C ... 60 °C (Group assembly: vertical DIN rail with circulating air)      |
|                                         | -20 °C ... 60 °C (Group assembly: horizontal DIN rail without circulating air) |
|                                         | -20 °C ... 65 °C (Group assembly: horizontal DIN rail with circulating air)    |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C                                                               |
| Altitude                                | ≤ 2000 m                                                                       |
| Permissible humidity (operation)        | ≤ 95 % (non-condensing)                                                        |

## Approvals

### ATEX

|                |                                      |
|----------------|--------------------------------------|
| Identification | ⊕ II (1) G [Ex ia Ga] IIC            |
|                | ⊕ II (1) D [Ex ia Da] IIIC           |
|                | ⊕ II 3 (1) G Ex nA [ia Ga] IIC T4 Gc |
|                | ⊕ I (M1) [Ex ia Ma] I                |

### IECEx

|                |                         |
|----------------|-------------------------|
| Identification | [Ex ia Ga] IIC          |
|                | [Ex ia Da] IIIC         |
|                | Ex nA [ia Ga] IIC T4 Gc |

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|                                         |              |
|-----------------------------------------|--------------|
|                                         | [Ex ia Ma] I |
| Safety Integrity Level (SIL, IEC 61508) |              |
| Identification                          | 3            |

## EMC data

|                               |                                                                                                               |
|-------------------------------|---------------------------------------------------------------------------------------------------------------|
| Electromagnetic compatibility | Tested in accordance with the following standards and regulations: EN 61326-1 For industrial use, NAMUR NE 21 |
|-------------------------------|---------------------------------------------------------------------------------------------------------------|

## Standards and regulations

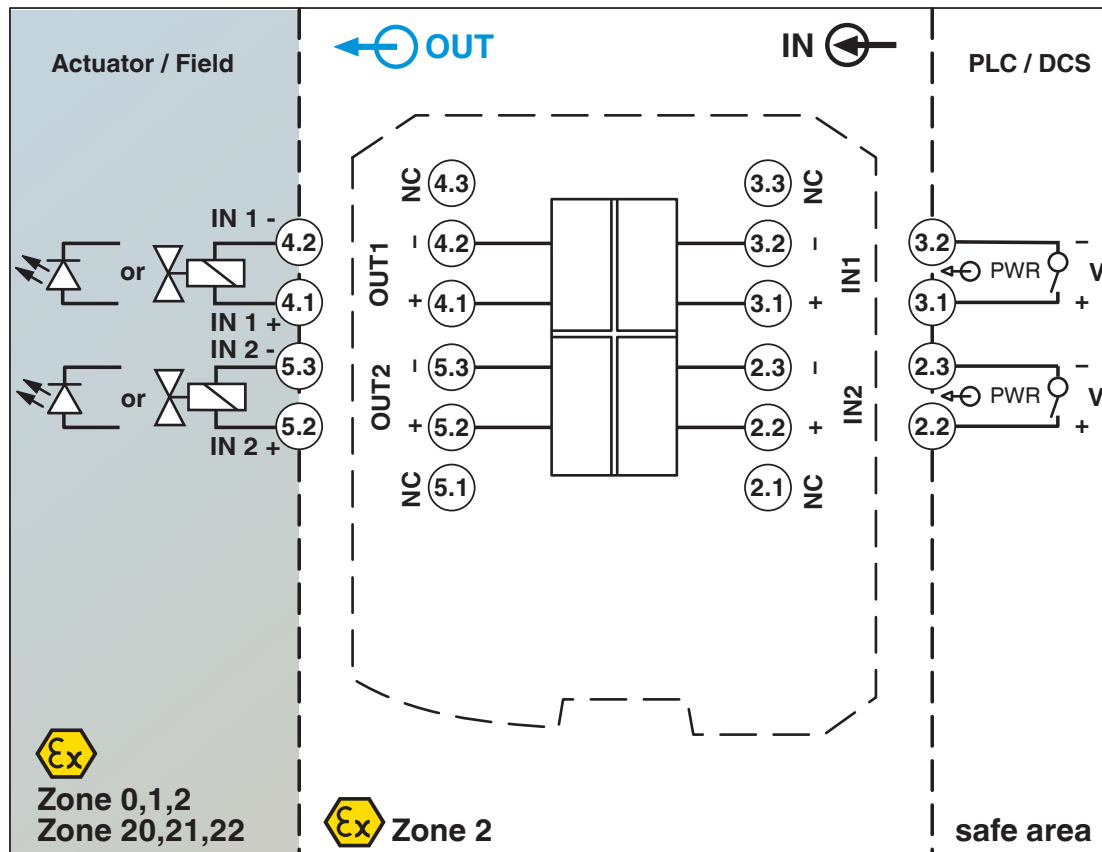
|                      |                 |
|----------------------|-----------------|
| Electrical isolation | 4-way isolation |
|----------------------|-----------------|

## Mounting

|                   |                      |
|-------------------|----------------------|
| Mounting type     | NS 35/15, NS 35/7,5  |
| Mounting position | vertical, horizontal |

## Drawings

Block diagram



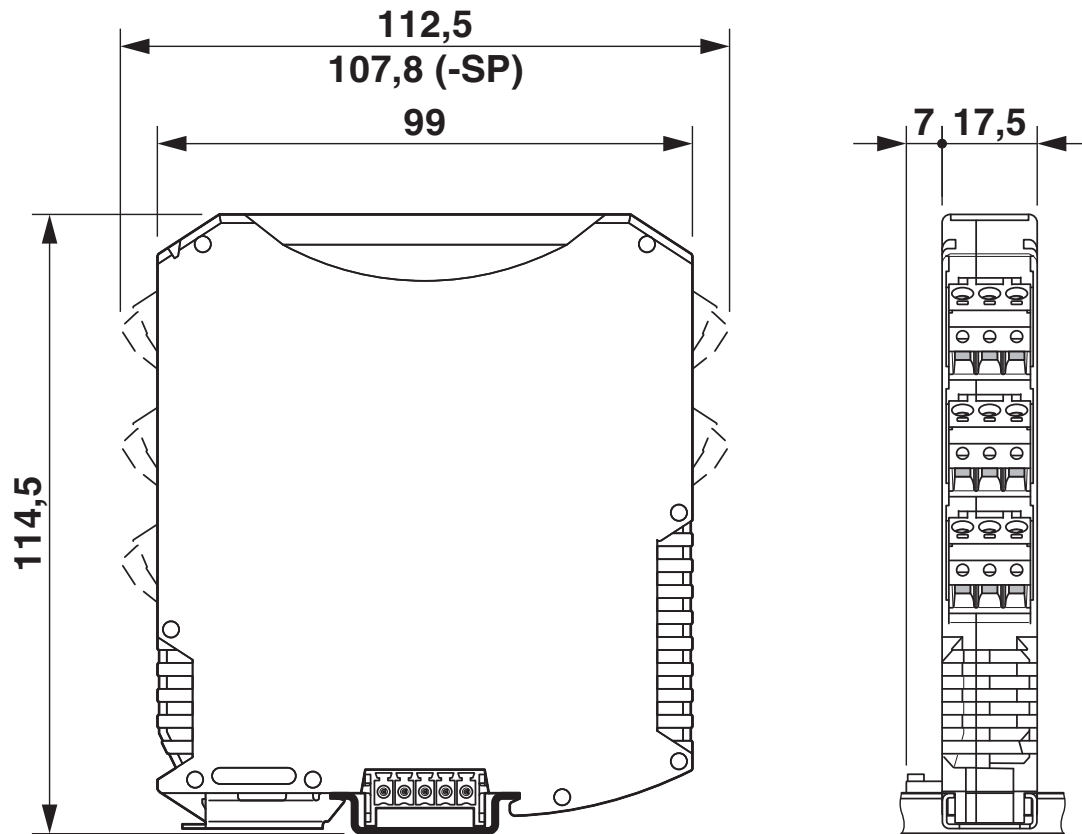
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Dimensional drawing



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/in/products/1291176>

### Functional Safety

Approval ID: 22/05-248 R033 V1R0



### IECEx

Approval ID: IECEx BVS 21.0036X



### ATEX

Approval ID: BVS 21 ATEX E 034X

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27210120 |
| ECLASS-12.0 | 27210120 |
| ECLASS-13.0 | 27210120 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC002653 |
|----------|----------|

## Environmental product compliance

### EU RoHS

|                                         |                    |
|-----------------------------------------|--------------------|
| Fulfills EU RoHS substance requirements | Yes                |
| Exemption                               | 6(c), 7(a), 7(c)-I |

### China RoHS

|                                        |                                                                                                                                                                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environment friendly use period (EFUP) | EFUP-50                                                                                                                                                                                                                           |
|                                        | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

### EU REACH SVHC

|                                     |                                      |
|-------------------------------------|--------------------------------------|
| REACH candidate substance (CAS No.) | Lead(CAS: 7439-92-1)                 |
| SCIP                                | f437eca2-4944-40ba-be66-0d9c5bb13f4e |

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## Accessories

### MCR-DP - Separating plate

1430594

<https://www.phoenixcontact.com/in/products/1430594>



The partition plate is used to maintain Ex i isolating distances when Ex i and non-Ex i devices are mounted side by side on a DIN rail.

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### ME-TBUS-A MC 1,5-2 - DIN rail bus connectors

1351974

<https://www.phoenixcontact.com/in/products/1351974>



DIN rail connector adapter (2-pos.) for connection of MACX MCR-EX-AP ... devices on the right side to the MACX MCR-PTB(-SP) power module with DIN rail connector ME 17,5 TBUS 1,5/5-ST-3,81 GY for bridging the supply voltage.

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## ME-TBUS-A IMC1,5-2 - DIN rail bus connectors

1351982

<https://www.phoenixcontact.com/in/products/1351982>



DIN rail connector adapter (2-pos.) for connection of MACX MCR-EX-AP... devices on the left side to the MACX MCR-PTB(-SP) power module with DIN rail connector ME 17,5 TBUS 1,5/5-ST-3,81 GY for bridging the supply voltage.

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## MPS-IH WH - Insulating sleeve

0201663

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Insulating sleeve, color: white



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## MPS-IH RD - Insulating sleeve

0201676

<https://www.phoenixcontact.com/in/products/0201676>

Insulating sleeve, color: red



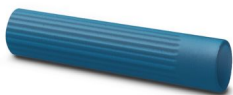
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## MPS-IH BU - Insulating sleeve

0201689

<https://www.phoenixcontact.com/in/products/0201689>

Insulating sleeve, color: blue



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## MPS-IH YE - Insulating sleeve

0201692

<https://www.phoenixcontact.com/in/products/0201692>

Insulating sleeve, color: yellow



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## MPS-IH GN - Insulating sleeve

0201702

<https://www.phoenixcontact.com/in/products/0201702>

Insulating sleeve, color: green



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## MPS-IH GY - Insulating sleeve

0201728

<https://www.phoenixcontact.com/in/products/0201728>

Insulating sleeve, color: gray



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## MPS-IH BK - Insulating sleeve

0201731

<https://www.phoenixcontact.com/in/products/0201731>

Insulating sleeve, color: black



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## MPS-MT - Test plug

0201744

<https://www.phoenixcontact.com/in/products/0201744>



Test plug, with solder connection up to 1 mm<sup>2</sup> conductor cross section, number of positions: 1, color: gray

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## UC-EMLP (11X9) - Plastic label

0819291

<https://www.phoenixcontact.com/in/products/0819291>



Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, Number of individual labels: 10, text field height: 9 mm, text field width: 11 mm

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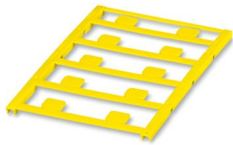
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## UC-EMLP (11X9) YE - Plastic label

0822602

<https://www.phoenixcontact.com/in/products/0822602>



Plastic label, Sheet, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, Number of individual labels: 10, text field height: 9 mm, text field width: 11 mm

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## UC-EMLP (11X9) CUS - Plastic label

0824547

<https://www.phoenixcontact.com/in/products/0824547>



Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, text field height: 9 mm, text field width: 11 mm

# MACX MCR-EX-AP-2SD-25-35-LP - Solenoid driver



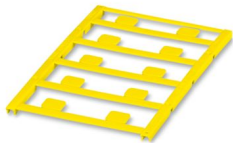
1291176

<https://www.phoenixcontact.com/in/products/1291176>

## UC-EMLP (11X9) YE CUS - Plastic label

0824548

<https://www.phoenixcontact.com/in/products/0824548>



Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, text field height: 9 mm, text field width: 11 mm

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## UC-EMLP (11X9) SR - Plastic label

0828094

<https://www.phoenixcontact.com/in/products/0828094>



Plastic label, Sheet, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, Number of individual labels: 10, text field height: 9 mm, text field width: 11 mm

# MACX MCR-EX-AP-2SD-25-35-LP - Solenoid driver



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## UC-EMLP (11X9) SR CUS - Plastic label

0828098

<https://www.phoenixcontact.com/in/products/0828098>



Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, mounting type: adhesive, Number of individual labels: 10, text field height: 9 mm, text field width: 11 mm

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## US-EMLP (11X9) - Plastic label

0828789

<https://www.phoenixcontact.com/in/products/0828789>



Plastic label, Card, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, Number of individual labels: 135, text field height: 9 mm, text field width: 11 mm

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## US-EMLP (11X9) YE - Plastic label

0828871

<https://www.phoenixcontact.com/in/products/0828871>



Plastic label, Card, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, Number of individual labels: 135, text field height: 9 mm, text field width: 11 mm

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## US-EMLP (11X9) SR - Plastic label

0828872

<https://www.phoenixcontact.com/in/products/0828872>



Plastic label, Card, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, Number of individual labels: 135, text field height: 9 mm, text field width: 11 mm

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## LS-EMLP (11X9) WH - Device marker

0831678

<https://www.phoenixcontact.com/in/products/0831678>

Device marker, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, Number of individual labels: 255, text field height: 9 mm, text field width: 11 mm



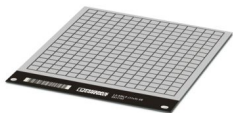
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## LS-EMLP (11X9) SR - Device marker

0831705

<https://www.phoenixcontact.com/in/products/0831705>

Device marker, Sheet, silver, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, Number of individual labels: 255, text field height: 9 mm, text field width: 11 mm



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## LS-EMLP (11X9) YE - Device marker

0831732

<https://www.phoenixcontact.com/in/products/0831732>

Device marker, Sheet, yellow, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, Number of individual labels: 255, text field height: 9 mm, text field width: 11 mm



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## SZS 0,6X3,5 - Screwdriver

1205053

<https://www.phoenixcontact.com/in/products/1205053>

Actuation tool, for ST terminal blocks, insulated, also suitable for use as a bladed screwdriver, size: 0.6 x 3.5 x 100 mm, 2-component grip, with non-slip grip



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