

# MACX-MR-3V-690-R-PT - Monitoring relay



1487448

<https://www.phoenixcontact.com/gb/products/1487448>

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3-phase voltage monitoring relay with RS-485 interface ( 160...690V AC ) , with overvoltage, undervoltage, window monitoring as well as phase sequence, phase loss failure, asymmetry (adjustable asymmetry) monitoring functions. 24...240VAC/DC wide range power supply, with adjustable threshold values and response delay. Supports failure record storage. Supports NFC communication and Modbus/RTU communication, with two configuration possibilities. 1 PDT dry contact output, plug-in connection.

## Commercial data

|                        |               |
|------------------------|---------------|
| Item number            | 1487448       |
| Packing unit           | 1 pc          |
| Minimum order quantity | 1 pc          |
| Sales key              | DK6611        |
| Product key            | DK6611        |
| GTIN                   | 4063151930950 |
| Customs tariff number  | 85371098      |
| Country of origin      | CN            |

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## Technical data

### Product properties

|                |                              |
|----------------|------------------------------|
| Product type   | Voltage monitoring relay     |
| Operating mode | Closed circuit or wire break |

#### Insulation characteristics: Railway standard

|                      |     |
|----------------------|-----|
| Overvoltage category | III |
| Pollution degree     | 3   |

### Electrical properties

|                                                 |                                                         |
|-------------------------------------------------|---------------------------------------------------------|
| Rated impulse withstand voltage                 | 6 kV                                                    |
| Service life electrical                         | approx. $1 \times 10^5$ cycles, resistive load 2000 V A |
| Maximum power dissipation for nominal condition | 15 W                                                    |
| Mains type                                      | 3-phase                                                 |

#### Railway standard

|                          |       |
|--------------------------|-------|
| Rated insulation voltage | 600 V |
|--------------------------|-------|

#### Electrical isolation

|                      |       |
|----------------------|-------|
| Electrical isolation | 300 V |
|----------------------|-------|

#### Supply

|                           |                                         |
|---------------------------|-----------------------------------------|
| Supply voltage range      | 24 V AC ... 240 V AC -15 % ... +10 %    |
|                           | 24 V DC ... 240 V DC -25 % ... +30 %    |
|                           | 24 V ... 240 V AC (Railway application) |
|                           | 48 V ... 110 V DC (Railway application) |
| Nominal power consumption | 15 VA (1.5 W)                           |

### Input data

|                                                   |                           |
|---------------------------------------------------|---------------------------|
| Input name                                        | Measuring input           |
| Measured value                                    | AC sine (48 Hz ... 63 Hz) |
| Input resistance of voltage input                 | 0.75 MΩ                   |
| Frequency range                                   | 48 Hz ... 400 Hz          |
| Maximum temperature coefficient                   | 0.05 %/K                  |
| Setting range for response delay                  | 0 s ... 99.9 s            |
| Min setting range of the voltage threshold value  | 160 V ... 690 V           |
| Max. setting range of the voltage threshold value | 690 V                     |
| Function                                          | Undervoltage              |
|                                                   | Overvoltage               |
|                                                   | Window                    |
|                                                   | Asymmetry                 |
|                                                   | Phase sequence            |
|                                                   | Phase failure             |
| Basic accuracy                                    | 1 %                       |

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|                 |        |
|-----------------|--------|
| Repeat accuracy | 0.5 %  |
| Recovery time   | 200 ms |

## Output data

### Switching

|                                       |                               |
|---------------------------------------|-------------------------------|
| Contact switching type                | 1 floating changeover contact |
| Contact material                      | AgSnO                         |
| Maximum switching voltage             | 250 V AC                      |
| Interrupting rating (ohmic load) max. | 2000 VA (8 A/250 V AC)        |
| Output fuse                           | 10 A (fast-blow)              |

## Connection data

|                                  |                                             |
|----------------------------------|---------------------------------------------|
| Connection method                | Push-in connection                          |
| Stripping length                 | 10 mm                                       |
| Conductor cross section rigid    | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section flexible | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section AWG      | 24 ... 14                                   |

## Interfaces

### Data: Network interface

|                          |                         |
|--------------------------|-------------------------|
| Communication protocol   | Modbus/RTU              |
| Communication standard   | RS-485                  |
| Connection method        | Plug-in connection      |
| Transmission speed range | 2.4 kbps ... 115.2 kbps |

## Signaling

|                |     |
|----------------|-----|
| Status display | LED |
|----------------|-----|

## Dimensions

|        |         |
|--------|---------|
| Width  | 22.5 mm |
| Height | 109 mm  |
| Depth  | 114 mm  |

## Material specifications

|                                        |     |
|----------------------------------------|-----|
| Flammability rating according to UL 94 | V0  |
| Housing insulation material            | PBT |

## Environmental and real-life conditions

### Ambient conditions

|                                         |                  |
|-----------------------------------------|------------------|
| Degree of protection                    | IP20             |
|                                         | IP20             |
| Ambient temperature (operation)         | -40 °C ... 70 °C |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |

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|                                  |               |
|----------------------------------|---------------|
| Altitude                         | 2000 m        |
| Permissible humidity (operation) | 10 % ... 95 % |

## Approvals

### CE/UKCA

|                |                                                                |
|----------------|----------------------------------------------------------------|
| Identification | EN 62311, EN 300 330, EN 301 489-1, EN 301 489-3, EN/IEC 63000 |
|----------------|----------------------------------------------------------------|

### UL, USA/Canada

|                |                       |
|----------------|-----------------------|
| Identification | UL/C-UL Listed UL 508 |
|----------------|-----------------------|

### CCC

|                |              |
|----------------|--------------|
| Identification | GB/T 14048.5 |
| Identification | EN 60947-5-1 |
|                | EN 60255-27  |

### Electronic devices in rail vehicles

|                                                         |            |
|---------------------------------------------------------|------------|
| Operating temperature class                             | OT4        |
| Class of extended operating temperature upon activation | ST2        |
| Temperature change class                                | H1         |
| Interruption of the power supply/supply changeover      | S2         |
|                                                         | S3/C1      |
|                                                         | C2         |
| Hazard levels                                           | HL1        |
|                                                         | HL2        |
|                                                         | HL3        |
| Protective coating                                      | PC2        |
| Shock (operation)                                       | Category 1 |
| Vibration (operation)                                   | Class B    |

## EMC data

|                               |                                        |
|-------------------------------|----------------------------------------|
| Electromagnetic compatibility | Conformance with EMC directive         |
| Low Voltage Directive         | Conformance with Low Voltage Directive |
| Noise immunity                | EN 61000-6-2                           |

### Noise emission

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-6-4 |
|-----------------------|--------------|

## Standards and regulations

### Railway standard

|                      |                      |
|----------------------|----------------------|
| Standard designation | EN 50155, GB/T 25119 |
|----------------------|----------------------|

## Mounting

|                   |                                                        |
|-------------------|--------------------------------------------------------|
| Assembly note     | on standard DIN rail NS 35 in accordance with EN 60715 |
| Mounting position | any                                                    |

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## Approvals

💡 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/gb/products/1487448>



**CCC**

Approval ID: 2024010303656845

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27371801 |
|-------------|----------|

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC001438 |
|----------|----------|

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## Environmental product compliance

### EU RoHS

|                                         |              |
|-----------------------------------------|--------------|
| Fulfills EU RoHS substance requirements | Yes          |
| Exemption                               | 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                                | ccd01887-fcf1-44ff-aa35-1cb8afde4f10 |

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