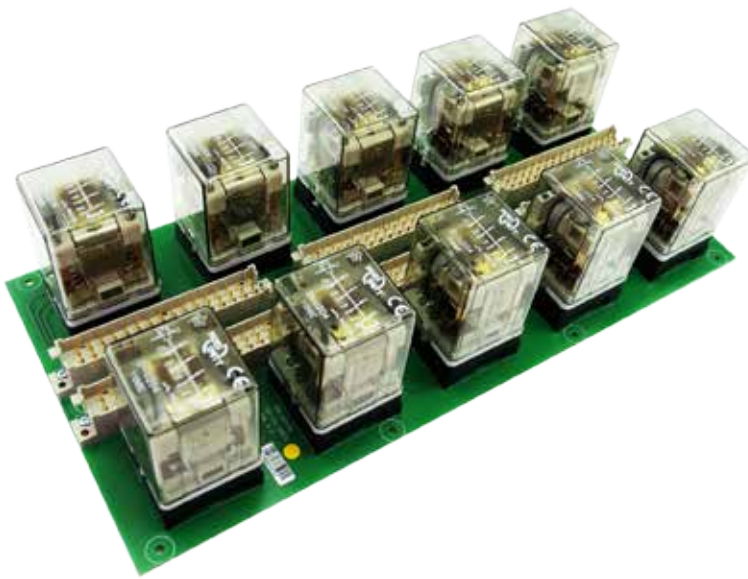


Universal PCB relay module -

Datasheet 40 contacts, easy configurable



Description

Printed Circuit Board relay module with 10 plug-in railway relays for a total of 40 change-over contacts. Full flexibility to assign train functions to relay contacts and coils, last minute changes possible. All relay contacts and coil connections on PCB tracks to terminals. Marshalling (cross wiring) of train wiring directly via PCB module terminals. Relay types can differ according customer requirements. Very compact solution which can be easily mounted, all mounting directions possible.

The construction and choice of materials make the PCB relay module suitable to withstand corrosive atmospheres, low & high temperatures, shock & vibrating and dry to very humid environments, whilst complying to the fire behaviour standard.

Compact design, choice of many options and the possibility to customise the relays, connectors, and specifications makes the PCB relay module an easy and flexible solution to use.

Application

PCB solution with rugged plug-in relays for extreme reliable, long endurance applications in harsh environment. These relay series are designed for demanding rolling stock applications such as door control, traction control, braking systems etc.

Features

- Easy configurable PCB relay module, 40 contacts
- All relay contacts and coil connections on PCB tracks to terminals
- Flexibility to assign train functions to relay contacts and coils
- Customisable internal PCB relay connections via wiring or PCB connection board
- PCB mount sockets for easy (un)plugging of D-relays
- Easy changeable, last minute changes possible
- Many different options for relays, connectors, specifications
- Strong reduction space and weight
- Low cost
- Very short delivery times
- Local manufacturing (and sourcing) in country of choice possible

Benefits

- Proven reliable
- Long term availability
- Low life cycle cost
- No maintenance
- Plug-in relays, transparent cover

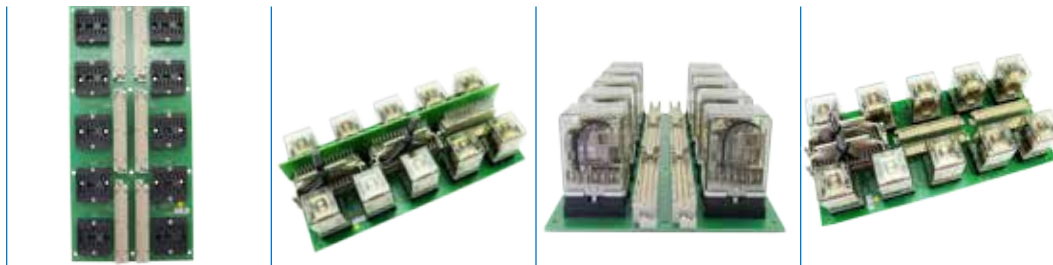
Railway compliancy

- EN 50155 Electronic equipment used on rolling stock
- EN 50264-1 Rolling stock power & control cables
- IEC 60571 Electronic equipment used on railway vehicles
- IEC 60077 Electrical equipment for rolling stock
- IEC 60947 Low voltage switchgear and controlgear
- IEC 61373 Rolling stock equipment - Shock & Vibration
- EN 50121 Electromagnetic compatibility for railway applications
- NF F16-101/102, EN 45545-2 - Fire behaviour - railway rolling stock
- IEC 60529 Protection class standard (IP class)
- IEC 60068-2 Salt/mist, damp/heat



Universal PCB relay module

Technical specifications



General characteristics - relay

Relays: all D-platform relays are possible ('Solve All' concept), for example instantaneous relays, timer relays, flashing relays, voltage monitoring relays. The number of relays can differ (less / more than 10 also possible upon request).

| | |
|----------------------------|---|
| Example D-U200 relay: | |
| Nominal coil voltage | 12...250 VDC/AC |
| Nominal coil consumption | DC 2.2 W @ U_{nom} AC 3 VA @ U_{nom} |
| Operating voltage | DC 0.7...1.25 U_{nom} AC 0.8...1.1 U_{nom} |
| Contacts | 4 C/O (Silver, optional gold plated) |
| Nominal current | 10 A |
| Peak inrush current | 200 A (withstand > 10 x 200 A @ 10 ms, 1 min) |
| Minimum contact continuity | 10 mA, 12 V / 1 mA, 5 V (with gold plated contacts) |
| Mechanical life | 50 x 10 ⁶ operations |
| Operating temperature | -25 °C...+85 °C (optional: -50 °C) |

For more specifications go to www.morssmitt.com for the datasheets of specific relays.



Universal PCB relay module

Technical specifications

General characteristics - PCB

| | | | |
|---|---|--------------|-----------------|
| Maximum current | 2 A* | | |
| Maximum voltage | 110 VDC nominal, 137.5 VDC maximum* | | |
| IPC class | 2 | | |
| Weight | 1.960 kg (incl. 10 pc. D-U200 relays) | | |
| Dimensions (l x w x h) | 320 x 150 x 21 mm (excl. relays) 320 x 150 x 71 mm (incl. for example D-U200 relays) | | |
| Thickness | 2.4 mm | | |
| PCB base material | FR4 | | |
| Minimum clearance | 10 mil | | |
| Minimum width traces | 10 mil | | |
| Number of layers | 2 | | |
| Copper thickness outer layers | Top layer: 70 µm* Bottom layer: 70 µm* | | |
| Mounting holes | 12 x Ø 3.5 mm | | |
| Mounting screws | M3 | | |
| Height spacer between PCB and mounting plate / wall | 10 mm minimum | | |
| Finish | Solder mask | Top Green | Bottom Green |
| | Silk screen | White | No |
| | Peel off mask | No | No |
| PCB finish | Lead-free HAL | | |
| Operating temperature | Same range as relays | | |
| Fixed connector on PCB | Harting connector according DIN 41612** | | |

* Higher values on request

** Other types on request

If higher current (A) values are required, the PCB tracks can be made bigger resulting in a larger PCB board when using the same amount of relays.

However, most applications have current levels below 1 A. We suggest for the limited higher current applications e.g. 10 A, to use separate, small heavy duty PCB with less relays or a wired small relay module, or just separate mounted relays close to the standard PCB relay module.

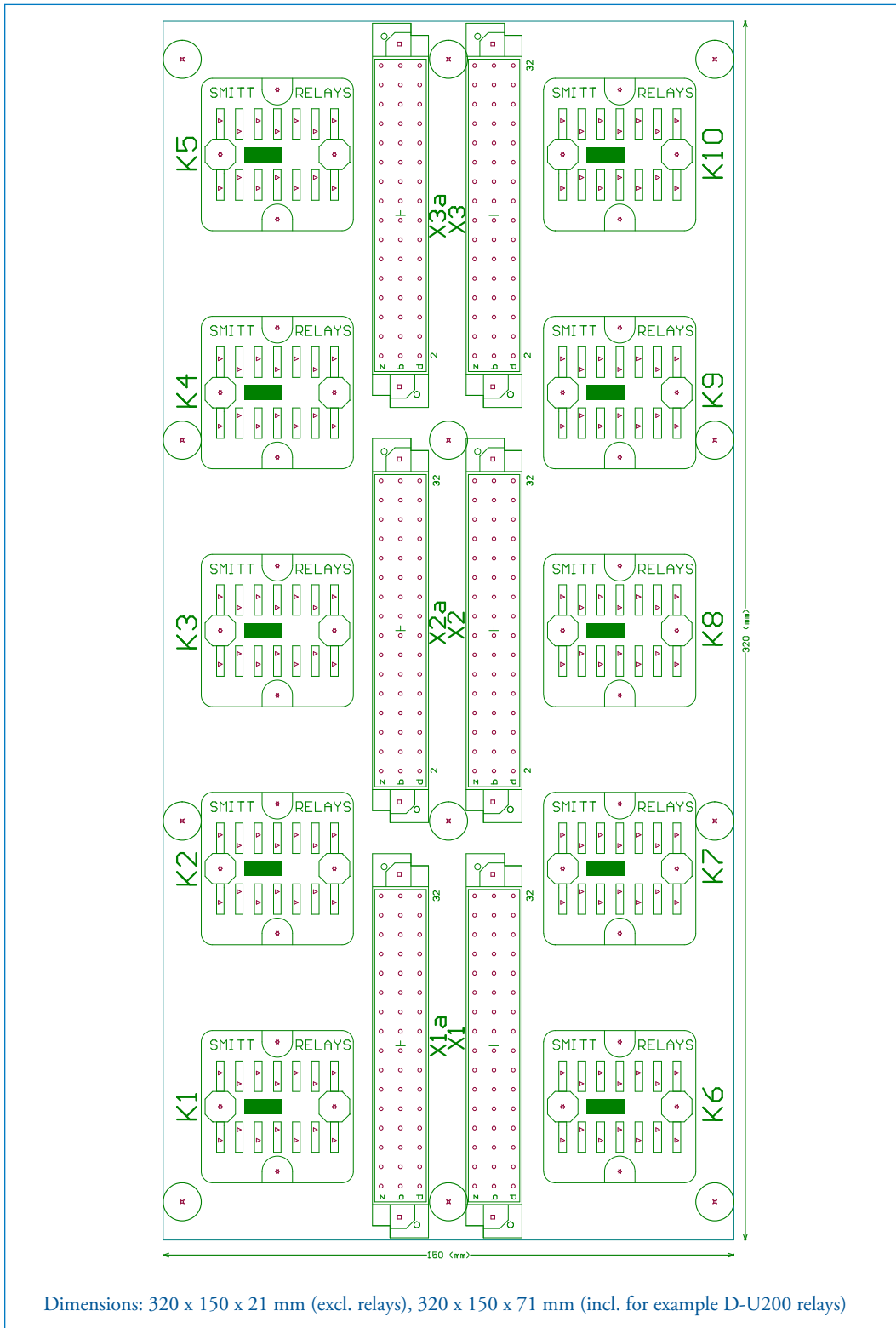
Upon request the PCB can also be supplied in a housing for extended ruggedness.



Universal PCB relay module

Technical specifications

Dimensions (mm)



Universal PCB relay module

Technical specifications

Cross wiring (marshalling) train functions to relay contacts and coils

During design, installation and commissioning on trains one can easily cross wire (and change) on the connector.

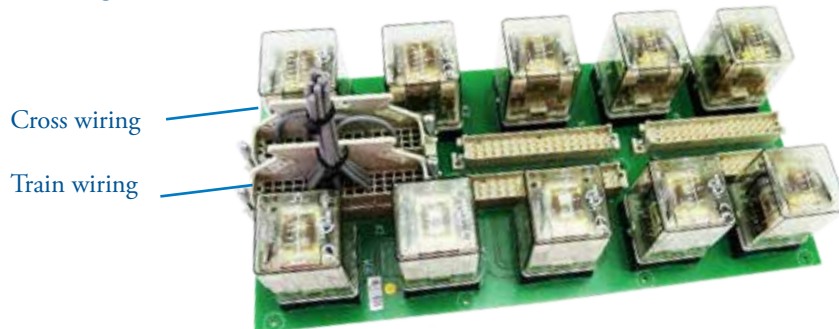


Example Harting connector for cross wiring

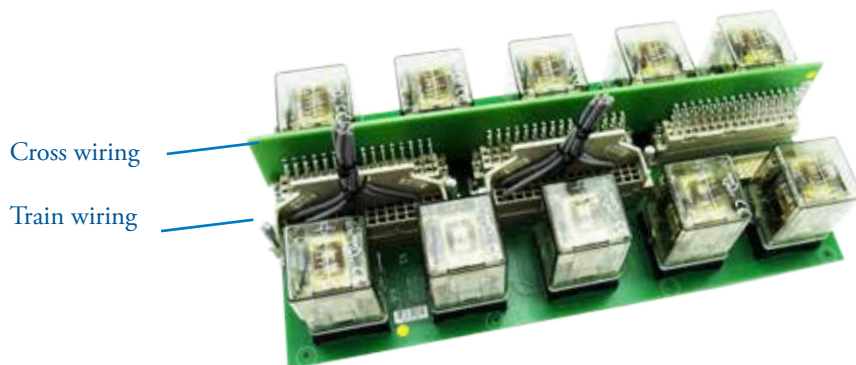


Once finalised and after design-freeze, the wiring can be transferred via a 'click-on' PCB connector board

Connections via wiring



Connections via customised PCB connector board



Flexibility in number of contacts: when coils of 2 relays with 4 poles each are connected in series via cross wiring, this results in an 8-pole relay, or even a 12-pole relay when 3 relays with 4 poles each are connected.

For example:

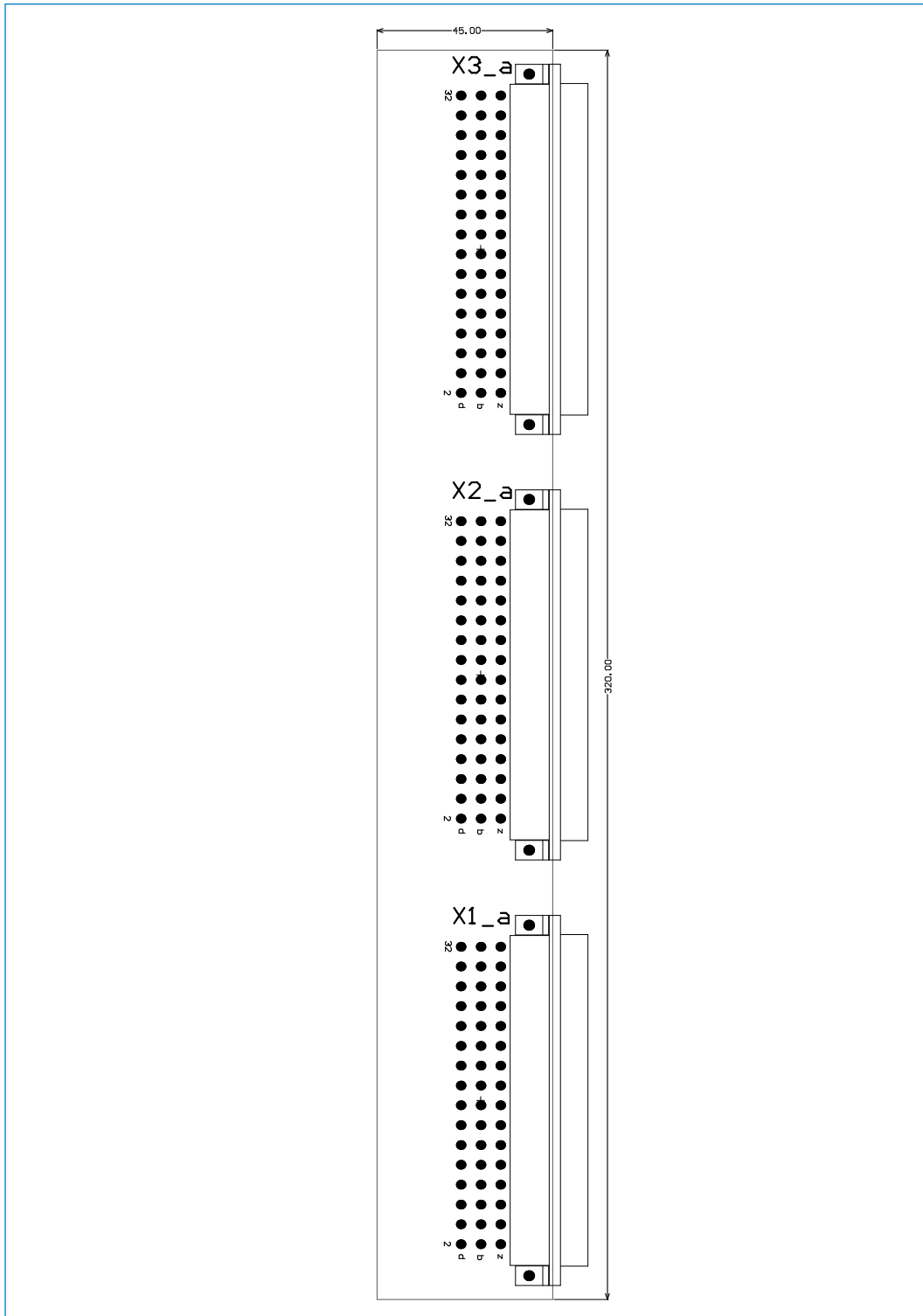
- 1 x D-U204 → 4-pole → 110 VDC
- 2 x D-U208 → 8-pole → 55 + 55 VDC = 110 VDC coil voltage
- 3 x D-U207 → 12-pole → 36 + 36 + 36 VDC = 108 VDC coil voltage



Universal PCB relay module

Technical specifications

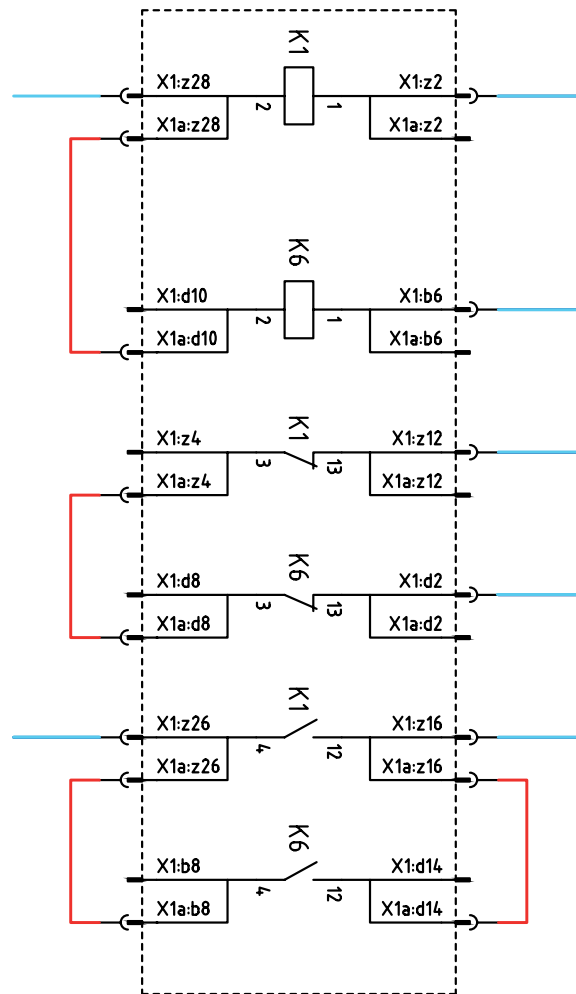
Dimensions (mm) PCB connector board



Universal PCB relay module

Technical specifications

Example train wiring and internal PCB connection



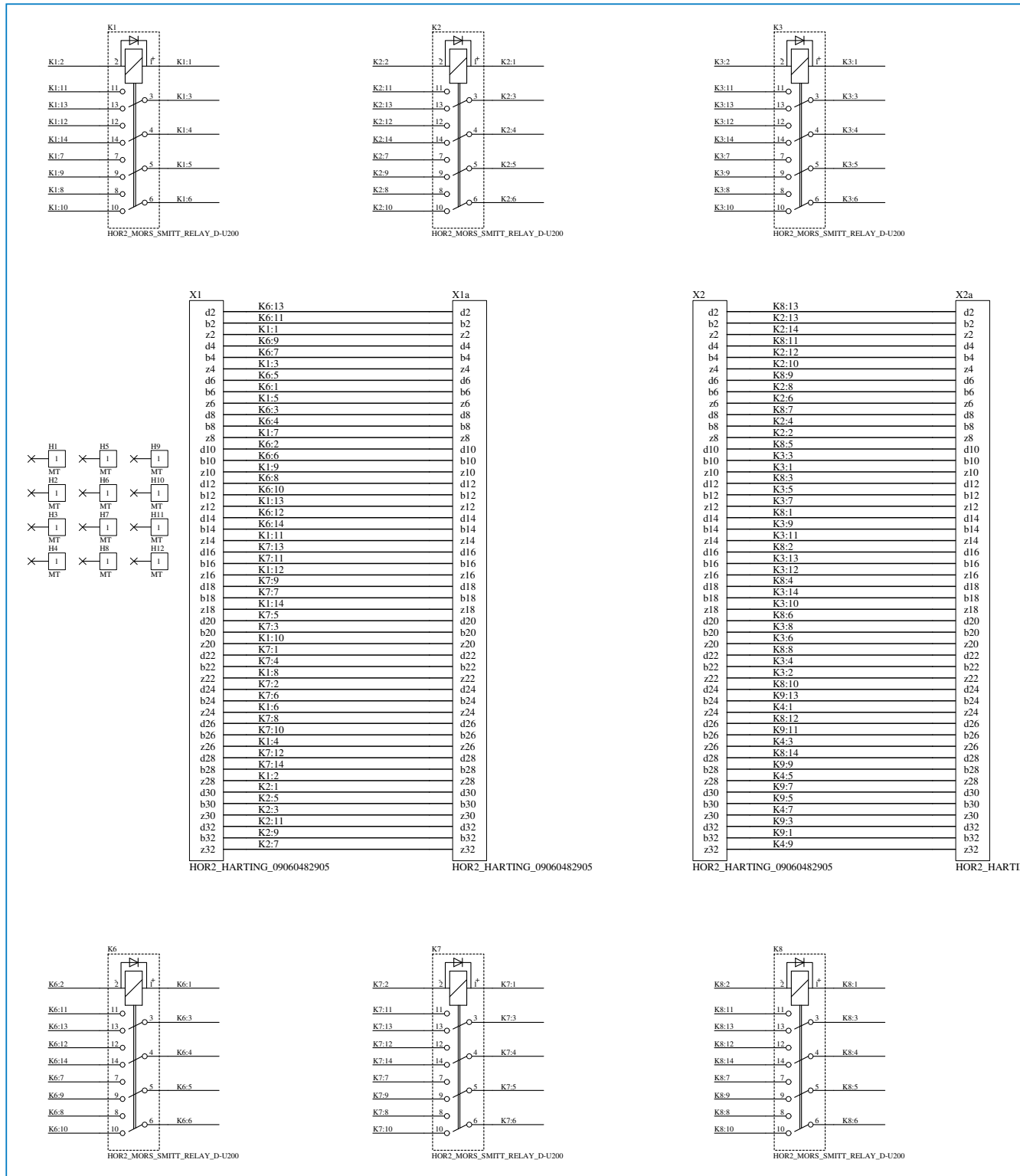
| | |
|---------------|---|
| X1, X2, X3 | Can be used for train wiring |
| X1a, X2a, X3a | Can be used for internal connections (cross wiring) |
| Black lines | PCB tracks |
| Red lines | Internal connection (cross wiring) |
| Blue lines | Train wiring |



Universal PCB relay module

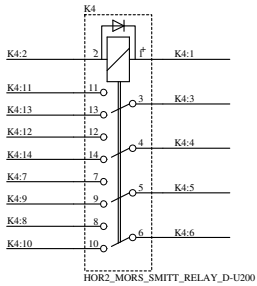
Technical specifications

Connection scheme

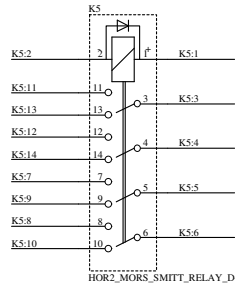


Universal PCB relay module

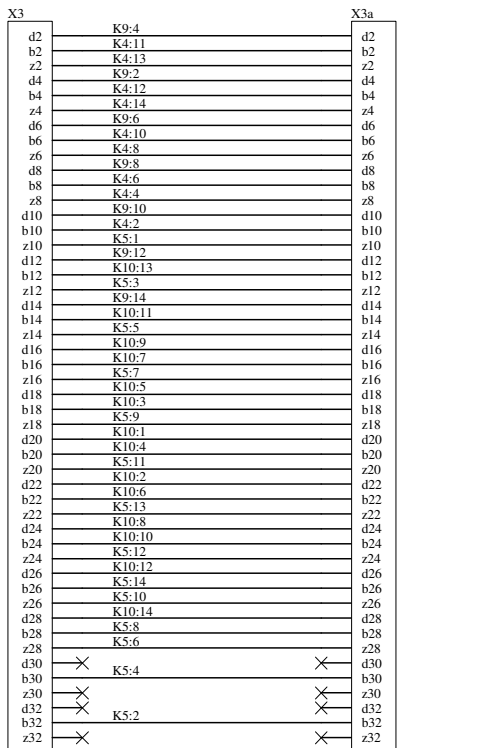
Technical specifications



HOR2_MORS_SMITT_RELAY_D-U200

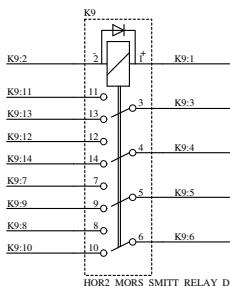


HOR2_MORS_SMITT_RELAY_D-U200

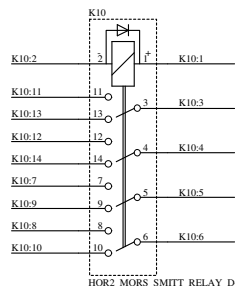


HOR2_HARTING_09060482905

HOR2_HARTING_090



HOR2_MORS_SMITT_RELAY_D-U200



HOR2_MORS_SMITT_RELAY_D-U200





www.morssmitt.com



Mors Smitt France SAS

Tour Rosny 2, Avenue du Général de Gaulle,
F - 93118 Rosny-sous-Bois Cedex, FRANCE
T +33 (0)1 4812 1440, F +33 (0)1 4855 9001
E sales.msf@wabtec.com

Mors Smitt Asia Ltd.

29/F, Fun Tower, 35 Hung To Road
Kwun Tong, Kowloon, HONG KONG SAR
T +852 2343 5555, F +852 2343 6555
E sales.msa@wabtec.com

Mors Smitt B.V.

Vrieslantlaan 6, 3526 AA Utrecht,
NETHERLANDS
T +31 (0)30 288 1311, F +31 (0)30 289 8816
E sales.msbv@wabtec.com

Mors Smitt Technologies Inc.

1010 Johnson Drive,
Buffalo Grove, IL 60089-6918, USA
T +1 847 777 6497, F +1 847 520 2222
E salesmst@wabtec.com

Mors Smitt UK Ltd.

Graycar Business Park, Barton under Needwood,
Burton on Trent, Staffordshire, DE13 8EN, UK
T +44 (0)1283 722650 F +44 (0)1283 722651
E sales.msuk@wabtec.com