



## SLO24TRA

### Plug-in relay for AC-loads

1 N/O contact (solid state, triac)

#### Main data

|                       |              |
|-----------------------|--------------|
| Nominal load voltage  | 240/415 V AC |
| Nominal input voltage | 24 V DC      |
| Rated load current    | 2,5 A        |
| MTTF (MIL-HDBK-217F)  | 422 years    |
| Warranty              | 10 years     |

#### Control circuit

|                    |         |
|--------------------|---------|
| Input voltage max. | 32 V DC |
| Switch-on voltage  | 16 V DC |
| Switch-off voltage | 14 V DC |
| Power consumption  | 370 mW  |
| Input impedance    | 1,4 kΩ  |

#### Load circuit

|                          |                                        |
|--------------------------|----------------------------------------|
| Load current range       | 0 - 2,5 A, no minimum load required    |
| Load voltage range       | 0 - 460 V AC, no minimum load required |
| Inrush current           | 65 A, 20 ms                            |
| Leakage current          | 50 μA                                  |
| Voltage drop             | 1 V                                    |
| dV/dt of the triac       | 4000 V/μs                              |
| Switch-on time           | 0,5 ms                                 |
| Switch-off time          | 11 ms                                  |
| Load power factor, cos φ | 0...1                                  |

#### Insulation

|                           |                                                                         |
|---------------------------|-------------------------------------------------------------------------|
| Insulation method         | Pulse transformer (an unique feature for Delcon relay compared to opto) |
| Test voltage input/output | 4600 V AC <sub>rms</sub> / 1 s                                          |
| Overvoltage category      | III                                                                     |
| Pollution degree          | 2                                                                       |
| Air/creepage distance I/O | 8 mm                                                                    |

#### General data

|                                 |                            |
|---------------------------------|----------------------------|
| Conductor size, screw terminal  | 2,5 mm <sup>2</sup>        |
| Conductor size, spring terminal | 0,75 - 2,5 mm <sup>2</sup> |
| Operating temperature           | -25 °C to +70 °C           |
| Weight                          | 40 g                       |
| Housing material flammability   | UL 94 V-0                  |
| Package size                    | 10, 50 and 100             |

#### Additional features

#### Standard accessories

|                                |                     |
|--------------------------------|---------------------|
| DIN-rail base, screw terminals | <b>MOS1GN</b>       |
| DIN-rail base, tension clamp   | <b>MOS1CCN</b>      |
| Bus bar for bridging, 4-pole   | <b>Jumper 4-13</b>  |
| Bus bar for bridging, 8-pole   | <b>Jumper 8-13</b>  |
| Bus bar for bridging, 16-pole  | <b>Jumper 16-13</b> |

#### Dimensions

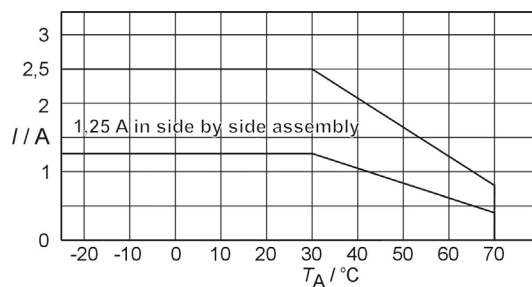


#### Approvals, conformities



Fulfills main requirements of the EMC-directive **2014/30/EU** and low voltage directive (LVD) **2014/35/EU**. The relay has been designed to operate correctly with difficult loads in disturbed environments. Thus, it does not meet the conducted emission for 150 kHz...2 MHz.

#### Derating



Allowed load is derated to 1/3 linearly from +30 °C to +70 °C ambient temperature. When relays are mounted together as a bank the maximum load current for long period of time should be restricted in total to 50 % of the current from the curve. I.e. all relays at 50 % load continuously or 50 % of the relays at 100 % load continuously or all relays at 100 % load 50 % of the time. This restriction does not apply if there is at least 12,5 mm gap between relays. These deratings apply when assembled to the horizontal rail. If assembled to the vertical rail, must be taken care that the relays do not heat up too much.



Delcon uses a pulse transformer instead of optocoupler for transmission of the signal from the primary to the secondary side and to provide 4600 VAC galvanic isolation between the field and controller side of the relay.

This design is radically different from optocoupler relays and modules in which the energy for the switching circuit is taken from the load circuit, which leads to many drawbacks such as minimum load requirement, leakage current and sensitivity to load line spikes.



Suppression circuits and both voltage and current hysteresis on a signal sides to ensure that they work correctly in industrial areas with high interference levels originated by cable capacitance



Built-in protection (varistor, diode, RC-circuit etc. depended on the relay type) for the switching component to extend reliability and life time even more





## Wiring diagram



## Derating when switching inductive loads

There is no need to derate solid state output relay using a triac switch. The relay is indifferent to the power factor of the load. However, calculation should be made that the surge current does not exceed the specification. For reasons of heat dissipation, when the load will be switched frequently, the average current over a reasonable time should not exceed the specification for continuous operation.

## Guarantee

This solid state I/O relay type made by Delcon Oy is guaranteed free from design and manufacturing defects for a period of 10 years from the manufacturing date. The guarantee liability is limited to replacement of defective material and related shipping charges. Defective products must be returned to the manufacturer for evaluation. This guarantee does not cover damage due to incorrect use or electrical overload.

## Assembly

Long lifetime and our 10 year guarantee requires that proper cooling of the relays is ensured. Therefore, all relays with MOS 1\*\*\* DIN-rail sockets and all MBS 8/16\*\*\* mounting bases are strongly recommended to be installed to the horizontal rail.

## Fusing

To protect relay against short circuit and overload a fast fuse with the correct rating for the load and the capacity of the relay should be chosen. Note that when overload current is not large it is possible that the fuse will not protect the relay because of the tolerance on the fuse rating.

## Din-rail sockets



**MOS1GN** for SLO\*\*\* relays, screw terminals



**MOS1CCN** for SLO\*\*\* relays, spring terminals



**MIS1GN** for SLI\*\*\* relays, screw terminals



**MIS1CCN** for SLI\*\*\* relays, spring terminals



**MOS1CO** for SLO24COA change-over relay, screw terminals

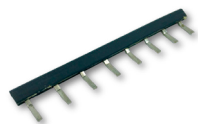
## Bus bars



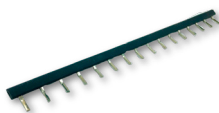
**Jumper 2-13** Bus bar for bridging, 2-pole



**Jumper 4-13** Bus bar for bridging, 4-pole



**Jumper 8-13** Bus bar for bridging, 8-pole



**Jumper 16-13** Bus bar for bridging, 16-pole

## PCB sockets



**PC01N** PCB socket for SLO\*\*\*-relays  
**PC11N** PCB socket for SLI\*\*\*-relays  
**PCU1N** PCB socket for SL\*\*\*\*-relays





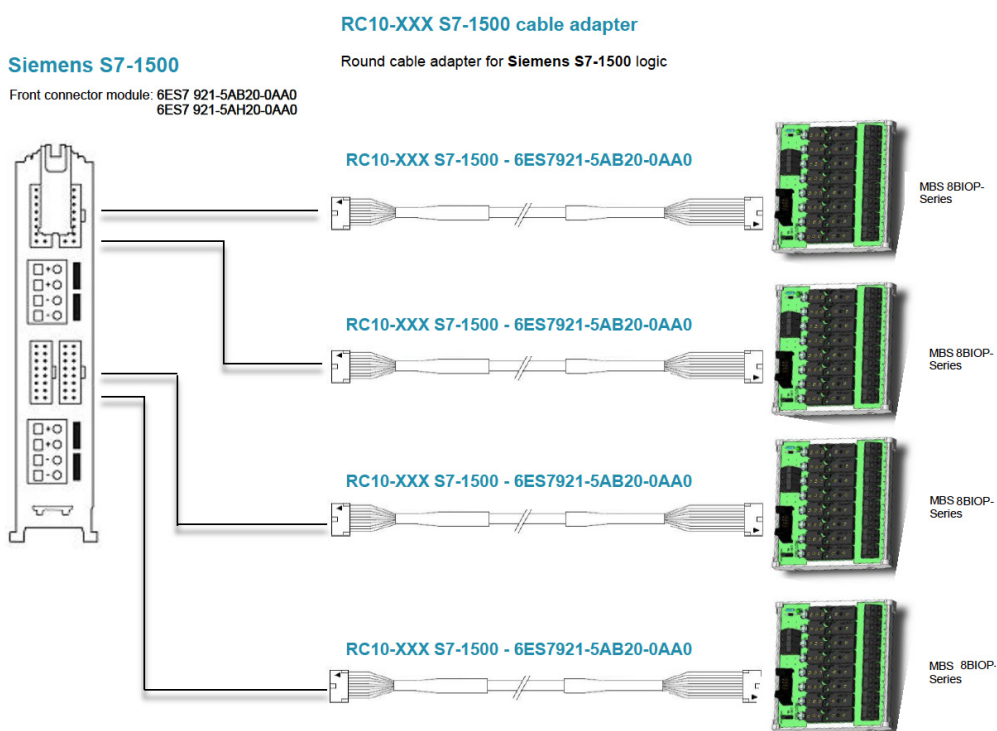
## PLC Fast Connect™

**PLC Fast Connect™** is an easy and fast way to connect 8 or 16 relays at the time to the PLC together with adequate **MBS**-mounting base and connecting cable. There are 3 ways to make a fast and reliable connection:

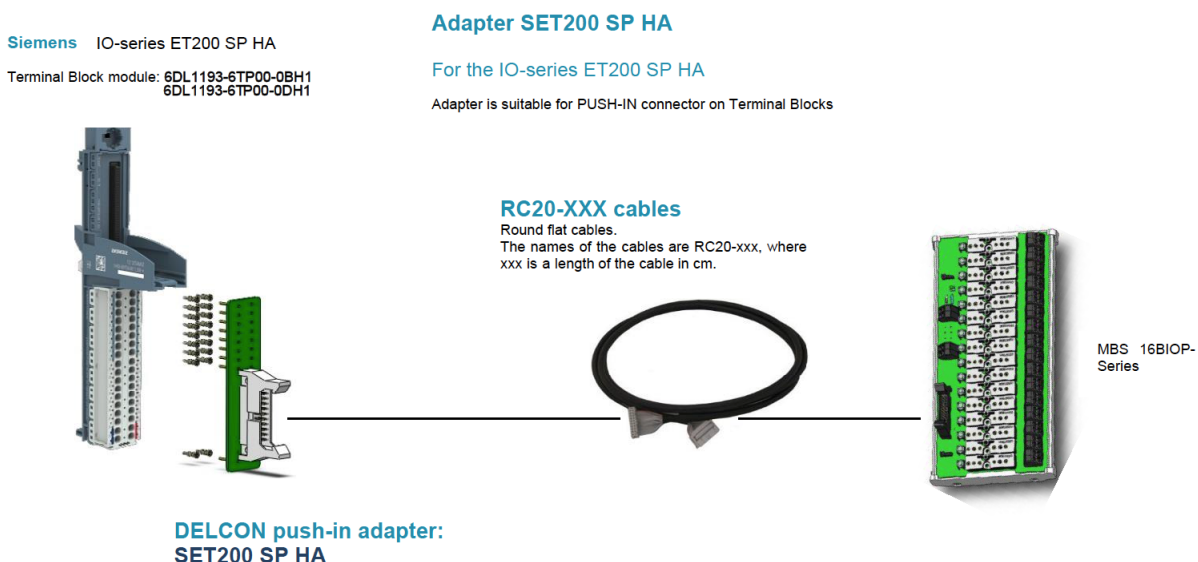
1. Assemble 8 or 16 relays on the adequate **MBS**-mounting base. Then connect other end of either **RC10X-xxx** or **RC20X-xxx** cable to the base with matching connectors and the other end wire-by-wire to the PLC.
2. Select an adapter suited for your PLC's I/O-card and assemble it. Then assemble 8 or 16 relays on the adequate **MBS**-mounting base and connect other end of either **RC10-xxx** or **RC20-xxx** cable to the base with matching connectors and the other end to the adapter likewise matching connector.
3. Assemble 8 relays on the adequate **MBS**-mounting base and connect other end of **RC10-xxx S7-1500** cable to the base with matching connector and the other end to the front connector's likewise matching connector (Siemens S7-1500).

**NOTE!** If you can't find matching adapter or cable, please contact [sales@delcon.fi](mailto:sales@delcon.fi). We have additional adapters on the way and new ones can be made in relatively short notice.

### Example 1



### Example 2





## PLC Fast Connect™ mounting bases for relays



**MBS8BIOP** for 8 relays, screw terminals



**MBS8BIOPCC** for 8 relays, spring terminals



**MBS16BIOP** for 16 relays, screw terminals



**MBS16BIOPCC** for 16 relays, spring terminals

## PLC Fast Connect™ cables



**RC10X-xxx**

10-pole round cable (xxx = length / cm, in 50 cm steps)  
Connection to PLC with colour coded single wires with ferrules



**RC20X-xxx**

20-pole round cable (xxx = length / cm, in 50 cm steps)  
Connection to PLC with colour coded single wires with ferrules



**RC10-xxx**

10-pole round cable (xxx = length / cm, in 50 cm steps)  
Connection to the PLC with applicable PLC Fast Connect™ adapter



**RC20-xxx**

20-pole round cable (xxx = length / cm, in 50 cm steps)  
Connection to the PLC with applicable PLC Fast Connect™ adapter

## PLC Fast Connect™ adapters and converters



**S7I032L**

PLC adapter for Siemens Simatic S7-300 -logic, 16-channels, **LEFT**

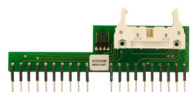
Front connector: 6ES7 392-1AM00-0AA0  
Input unit: 6ES7 321-1BL00-0AA0  
Output unit: 6ES7 322-1BL00-0AA0



**RC10-xxx S7-1500**

Round cable adapter for Siemens S7-1500-logic

Front connectors: 6ES7 492-1AL00-0AA0, 6ES7 492-1AH00-0AA0



**S7I032R**

PLC adapter for Siemens Simatic S7-300 -logic, 16-channels, **RIGHT**

Front connector: 6ES7 392-1AM00-0AA0  
Input unit: 6ES7 321-1BH01-0AA0  
Output unit: 6ES7 322-1BL00-0AA0



**SET200 SP HA**

Adapter for Siemens IO series ET200 SP HA, mounts in push-in connector on the terminal block

Terminal Block modules: 6DL1193-6TP00-0BH1, 6DL1193-6TP00-0DH1



**S300IO16**

PLC adapter for Siemens Simatic S7-300 -logic, 16-channels

Front connector: 6ES7 392-1AJ00-0AA0  
Input units: 6ES7 321-1BH01-0AA0, 6ES7 321-1BH01-0AA0  
Output unit: 6ES7 322-1BL00-0AA0



**M82IO/M82IO2.5**

PLC adapter for Mitsubishi Melsec-logic. M82IO with 3 mm screws. M82IO2.5 with 2,5 mm screws

Input unit: QX81  
Output unit: QY81P



**S400IO32**

PLC adapter for Siemens Simatic S7-400 -logic, 32-channels

Front connector: 6ES7 492-1AL00-0AA0



**TU810IO16**

PLC adapter for ABB PLC S800 / unit TU810

Input unit: DI810  
Output unit: DO810



**FCA16N/P**  
**FCA16N/P-2**  
**FCA16P/N**

NPN to PNP Converter 16 Channels  
NPN to PNP Converter 16 Channels 2 wire  
PNP to NPN Converter 16 Channels



**RCTU812-xxx**

Cable adapter with 25-pole D-subconnector for ABB PLC S800 / unit TU812

Input unit: DI810  
Output unit: DO810P

