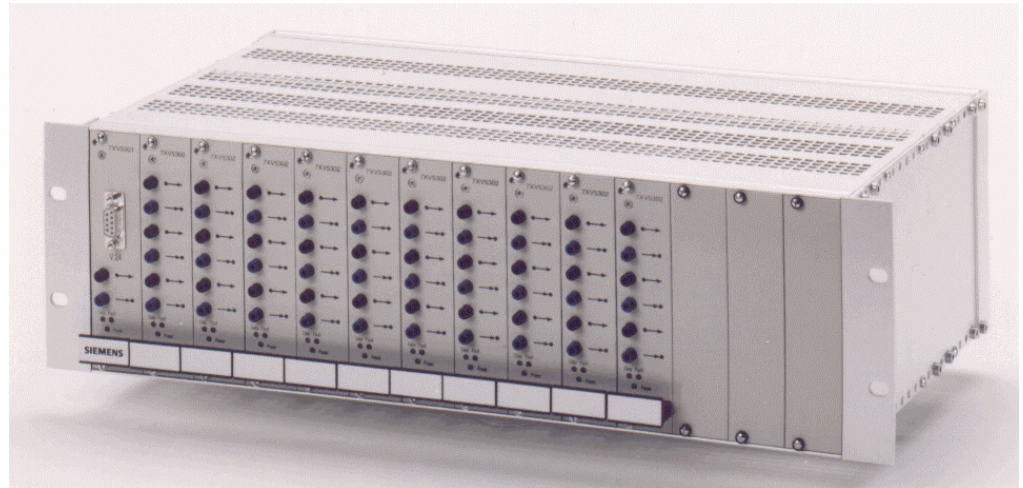


Modular Starcoupler 7XV5300

Technical Data

With the help of the fibre optic starcoupler, the messages of the relay operating software DIGSI are distributed to all SIPROTEC relays via a maximum of 30 fibre optic interfaces. The transmitting port of the starcoupler's expansion unit is connected to the relay's receiving port. Every message contains an address so that only the corresponding relay will answer. This relay now sends the answer back to the operator PC via the expansion module's receiving port and the main module's transmitting port.

- The starcoupler is housed, together with a power supply, in a 19" sub-rack.
- Up to 30 SIPROTEC relays can be remotely operated via fibre optics.
- The smallest assembly unit consists of a main module incl. a PSU and an expansion module with 3 ports.
- Up to 9 more expansion modules can be installed later, making communication via 30 ports possible.
- The starcoupler is cascable.
- All fibre optic ports (full duplex) have FSMA connector plugs and the steady-light indication can be set to ON or OFF individually (manufacturer's setting: „OFF“).
- An RS232 interface with a 9pin. D-Subminiature plug also allows local operation of the relays.
- The fibre optic interface is inactive when the RS232 interface is being used.
- Data is transmitted transparent, i.e. independent of



Modular Starcoupler

- any protocol.
- The wavelength of all ports is 850nm.
- The normal distance between starcoupler and relay is approx. 1,5km.
- A power supply is possible with the following voltage spreads without switching: DC 48-250V and AC 110-220V. The power supply has been designed for the maximum configuration.
- Every module has 3 LED's: One for the operational voltage (green), one for the flow of data (yellow) and one in case of maloperation (red).

Main Module

The main module has an electric and a fibre optic interface, which can not be active at the same time.

The fibre optic interfaces are always active unless the electric interface is selected. This happens automatically through

connection of a plug (eg. 7XV5100-4), with a jumper between terminals 7 and 8.

Incoming data (from PC) is directed to the output-modules via the bus. Data coming from one of the output-modules is transmitted by the chosen interface (RS232 or fibre optic).

A switch inside the chassis can be used in order to assign DTE and DCE transmitting and receiving signals to the electric interface. The manufacturer's setting is DTE. Handshake lines are not supported by the interface.

The fibre optic interface works with positive logic (steadylight OFF), i.e. incoming light stands for active = high / 1. For adaptation to systems working with negative logic, DIP-Switches inside the module allow the selection of positive or negative logic. All ports of the interface are inverted at the same time.

The manufacturer's setting is positive logic (steadylight OFF).

To avoid a blocking of the starcoupler when using negative logic, assure that the receiver has incoming light when in idle state.

See fig. 3 for position of switches for selection between

positive/negative logic and DTE/DCE

Expansion Module

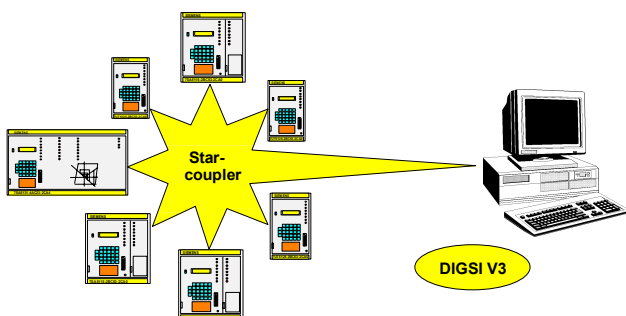
The output-module has 3 fibre optic in- and outputs which are equally used. Data coming in via the bus is transmitted by all 3 transmitters and data coming from a fibre optic receiver is sent to the bus. Incoming data received at the same time by more than one expansion module is considered as a malfunction (collision) and is indicated by a red blinking LED.

The module works with positive logic, i.e. in optic terms: light = 1 = high. For adaptation to systems with negative logic switches can be found on-board, with which each channel can be switched to inverse operating mode independently. Consider that light is needed on the receiving-side of an idle inverse working port for faultless operation. Otherwise the port will believe that data is being transmitted which will lead to a malfunction.

Positioning of DIP-Switches for selection of positive or negative logic: See page 2.

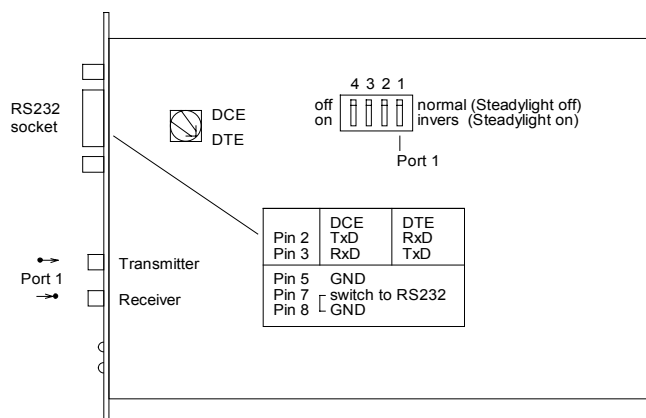
Applications

Please see at the Mini-Starcoupler 7XV5450.

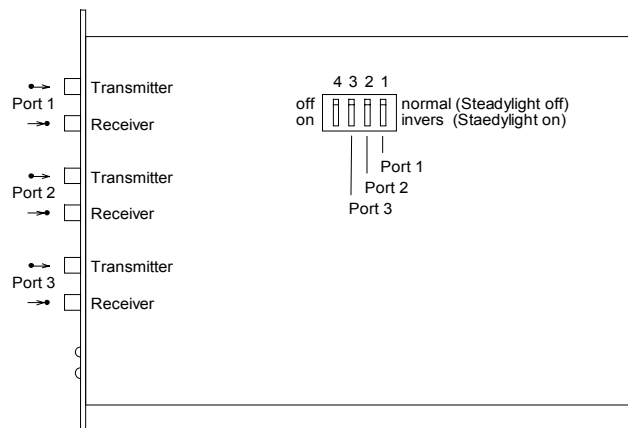


Settings and Dimension drawings

Position of switches

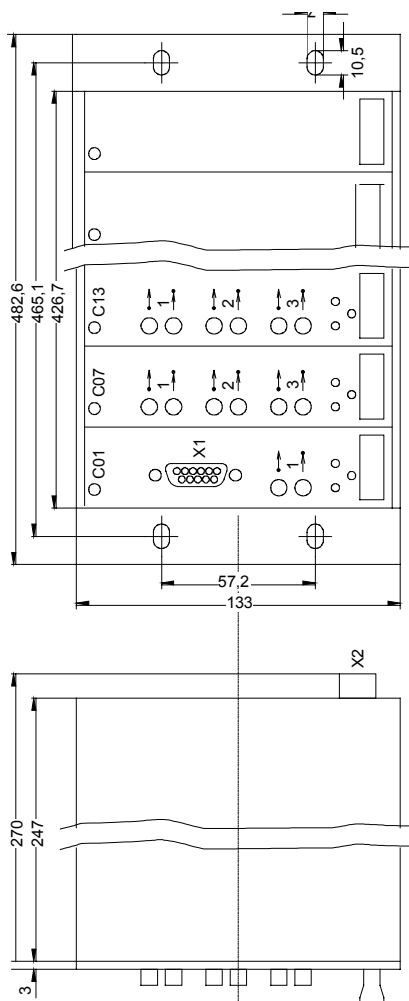


Position of switches on main-module
7XV5301-0AA00

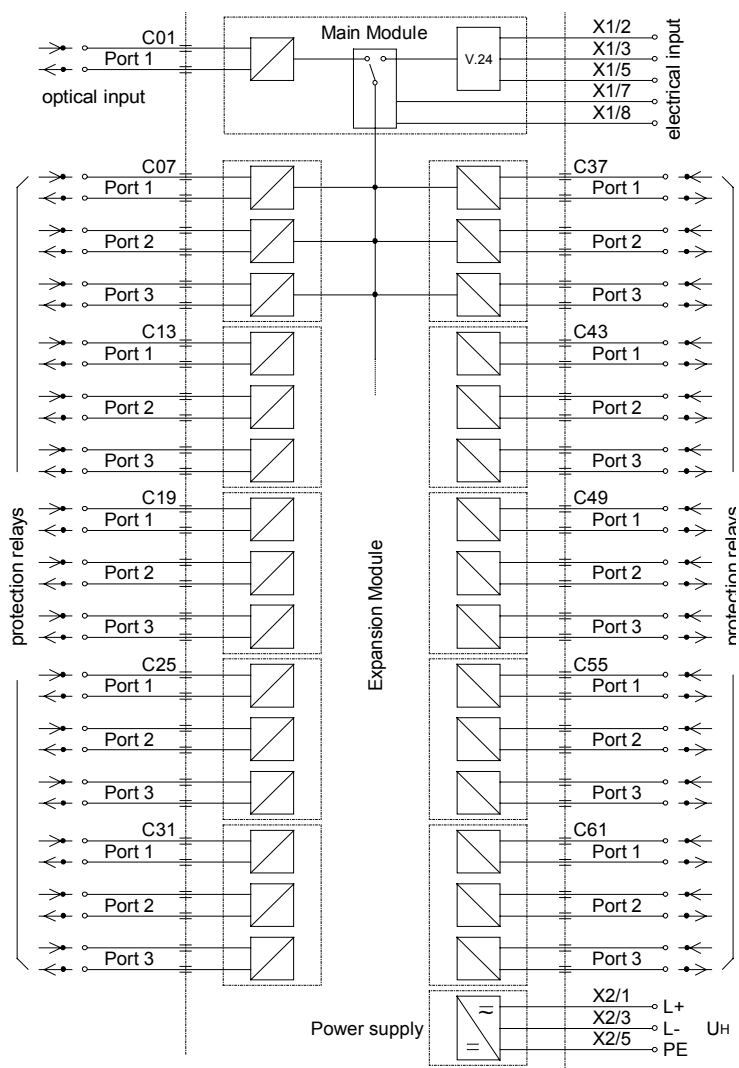


Position of switches on expansion Module
7XV5302-0AA00

Dimension sketch and general diagram



Dimension of housing in mm



Technical data

Technical data

| | | |
|--|---|--|
| Design | Housing Dimensions Degree of protection acc. to EN 60529 | 19" subrack see dimension drawings IP20 |
| Auxiliary voltage | Rated auxiliary voltage Internal Fuse Terminal assignment X2 | 48 - 300 V DC / 82 - 264 V AC 2A slow blow 1 = L, 3 = N, 5 = PE |
| Fibre Optic data | Fibre Optic input / output optical fibre connection Ready display Data display Optical wave length Optical power sensitivity Optical budget transmission distance typ. | 31 Transmitter, 31 Receiver FSMA Plastic-Receptacles: TxD black, RxD blue LED green LED yellow (blinks during data flow) 850 nm 10 µW (-20 dBm) in 50/125 µm graded index-fibre glass 27 µW (-15,7 dBm) in 62,5/125 µm graded index-fibre glass 1 µW (-30 dBm) * 7 dB (+ 3 dB backup) * 1500 m |
| Serial interface | Standards Pinning | RS 232 (non isolated) see settings |
| Climatic stress | Permissible ambient temperature - during service - during storage - during transport Permissible humidity | - 5 to +55 °C -25 to +55 °C -25 to +70 °C mean value per year ≤ 75% relative humidity ; on 30 days per year 95 % relative humidity; Condensation not permissible! |
| Insulation tests IEC 255-5 and IEC 255-6 | d.c. voltage supply input (routine test) Impulse voltage test (type test) | DC 2,8 kV dc, 30s per polarity 5 kV (peak); 1,2/50 µs, 0,5 J; 3 positive and 3 negative shots at intervals of 5 s |
| Disturbance tests | High frequency test (type) IEC255-22-1, class III Electrostatic discharge test (type) IEC 255-22-2, class III Radiated elektromagnetic fields test (type) IEC255-22-3 (report), class III Fast transients (type test) IEC 255-22-4, class III | 2,5 kV (peak), 1 MHz, τ = 15 µs, 400 shots / s, duration 2 s 8 kV (peak) ; 5/30 ns ; 10 positive discharges 68 MHz, 165 MHz, 460 MHz 2kV (peak) ; 5/50 ns; 5 kHz ; 4mJ per shot |
| Mechanical stress tests IEC 255-21-1, IEC 68-2 | - during service - during transport | 10 to 60 Hz, 0,035 mm amplitude 60 to 500 Hz, 0,5 g acceleration 5 bis 8 Hz, 7,5 mm amplitude 8 bis 500 Hz, 2 g acceleration |
| CE-Conformity | This product is in conformity with the directive of the Council of the European Communities on the approximation of the laws of the Member States relating to the electromagnetic compatibility (EMC-Council Directive 89/336/EEC). The device is designed in accordance with the international standards of IEC255 and the German standards DIN 57 435 part 303 (corresponding to VDE 0435 part 303). | Conformity was proved by tests that had been performed according to article 10 of the Council Directive in accordance with the generic standards EN 50081-1 and EN 50082-2 by Siemens AG. |

Power Transmission and Distribution Power Automation

Selection and ordering data - Conditions of Sale and Delivery

Selection and ordering data

| | | |
|--|--|--------------------------|
| | | Order Nr.: |
| Modular Starcoupler | | 7XV5300 - 0 A 0 0 |
| <u>Number of relays to be operated</u> | | |
| No Expansion-module | | A |
| With 1 Expansion-module for 3 relays | | B |
| 2 Expansion-module for 6 relays | | C |
| 3 Expansion-module for 9 relays | | D |
| 4 Expansion-module for 12 relays | | E |
| 5 Expansion-module for 15 relays | | F |
| 6 Expansion-module for 18 relays | | G |
| 7 Expansion-module for 21 relays | | H |
| 8 Expansion-module for 24 relays | | J |
| 9 Expansion-module for 27 relays | | K |
| 10 Expansion-module for 30 relays | | L |

| | | |
|-------------------------|--|---------------------|
| | | Order Nr.: |
| Main-module | | 7XV5301 - 0 A A 0 0 |
| Expansion-module | | 7XV5302 - 0 A A 0 0 |

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Dimensions

All dimensions in this catalog are given in mm

Responsible for

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