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Serial - Hub for Substations 7XV5655-0BA00

By means of the serial - hub and the associated configuration software it is possible to establish serial communication via an Ethernet network between a PC or Notebook running DIGSI 4 and SIPROTEC protection devices. The configuration software installs virtual serial interfaces (Com ports) on the PC. Each COM port is allocated to a serial hub within the network by means of its IP address. This must be set in the serial hub. The connection of the PC to the network is done via Ethernet interface. The protection devices are connected via aRS232/RS485 or FO interface to the serial hub. The connection with DIGSI is done via the virtual COM port on the PC and the IP address of the serial hub in the substation. The serial data is packed as user data into a secure TCP/IP protocol in the PC and transferred via the Ethernet connection to the serial hub. The requirements regarding standard compliant gap-free transmission of serial DIGSI or IEC 60870-5-103/101 telegrams via the network is complied with by the communication driver on the PC and the serial hub which monitor the serial telegram communication. The serial IEC telegrams are transferred across the Ethernet in blocks. The data communication is full duplex. The control signals of the serial interfaces are not used.

Features:

- DIGSI 4 supports the administration and the building of connections via the Ethernet network.
- Configuration software for Windows NT/2000/XP to configure virtual COM ports on the PC and for configuration of the serial hub.
- Isolated RS232/RS485 – interfaces for data transfer and configuration of the serial hub
- FO interface for data transfer
- Serial baud rate and data format (RS232) for the terminal devices is selectable from 2400 Bd up to 57,6 kBd with data format 8N1, 8E1.
- An electrical RJ45 Ethernet-interface (LAN) to the 10/100 MBit network.
- Supports a password for the access to the device via the serial hub

Figure 1: Serial – Hub for substations

Technical specification:

Connections:

RS232-interface 9-pol. Sub-D socket or
RS485-interface 9-pol. Sub-D socket selectable via DIL switch (both 500 V_{eff} isolated).
FO interface 820nm with ST-plugs for connection to multimode – fibre.
Ethernet 10BaseT, 10/100 Mbit, RJ45 – connection to Ethernet.
Auxiliary voltage/alarm relay (5 terminals)
Housing: Rail mounting plastic anthracite 90X90X107 mm (BXHXD)

Wide range power supply:

Auxiliary voltage 24 V DC – 250 V DC and 115 / 230 V AC connected with screw terminals
Alarm relay for monitoring of the device

Indication (8 x LED)

Power	Operating voltage ok	*System*	RS232-connection established
RS232 TXD	Transmitting data to RS232	*RS232 RXD*	Receiving data from RS232
LAN TX	Transmitting data to LAN	*LAN RX*	Receiving data from LAN
Error	Error on RS232	*Link LAN*	LAN connection established

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Application example for the remote control of different SIPROTEC devices

From the office PC running DIGSI 4 it is possible to select one of the serial hubs 1 and 2 via one of the virtual COM ports. In DIGSI 4, when the COM port is selected, a TCP/IP point to point data connection via the network is established and maintained between the office and the relevant substation modem until the interface is released. The serial data exchange occurs via this data link, whereby the data conversion from serial to Ethernet is full duplex. The office PC towards the network is always operating with high baud rate, as the data is fed to the network via the network driver on the PC. The serial baud rate of the serial hub in the substation is adapted to the baud rate set in the protection device, e.g. serial hub 1 with 57,6 kB/s for SIPROTEC 4 and serial hub 2 with 9,6 kB/s for SIPROTEC 3 devices. These parameters must be pre-set on the serial hub. With DIGSI 4 the serial hubs are integrated by means of further serial COM ports (max. 254). The connection to the IP address of the serial hub in the network is achieved by opening the corresponding COM port. If an Ethernet network to the substation or in the substation is available, serial data can then be transferred via this network. The existing serial star or bus structure with cabling in the substation can still be used. SIPROTEC 4 devices from version 4.6 on with integrated Ethernet interface may be connected directly to the router or switch by means of a patch cable.
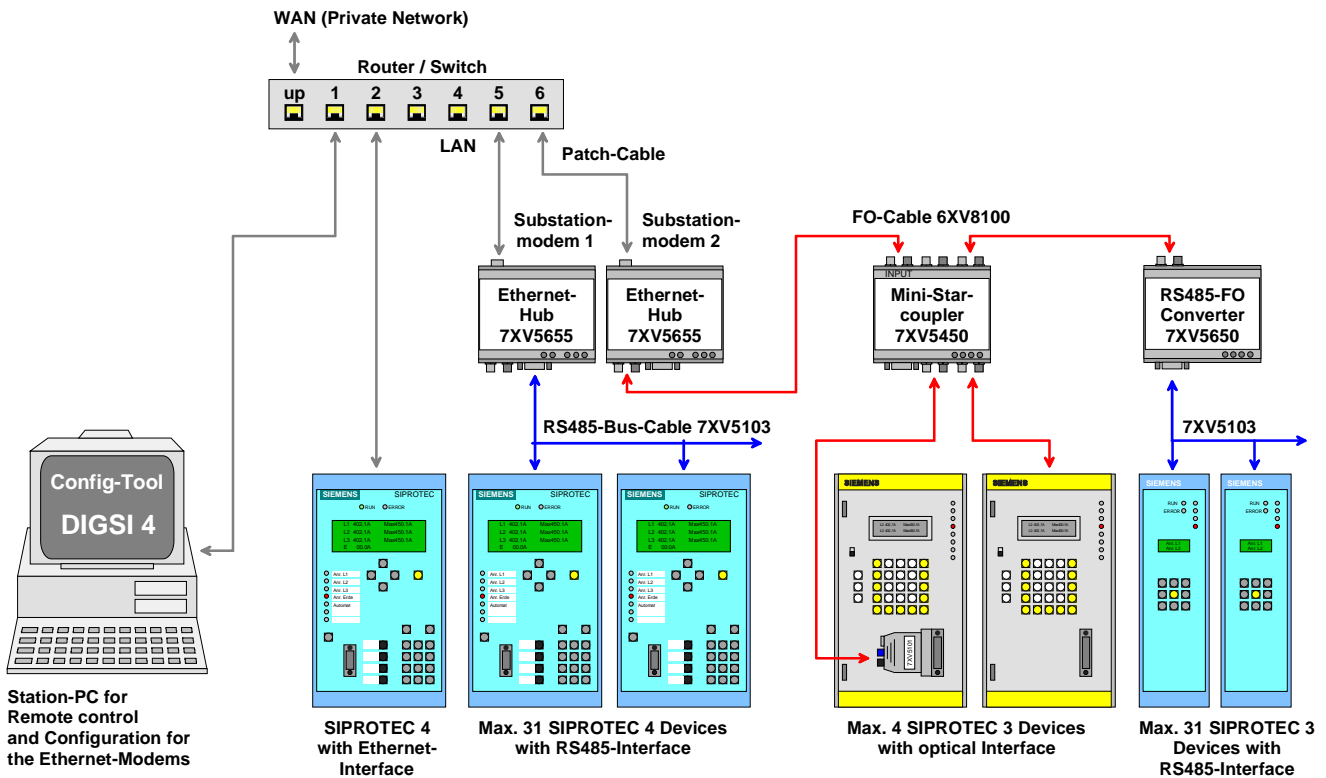

Figure 2: Operation of different SIPROTEC-devices via serial – hub

Selection and ordering data

Description	Bestell Nr.:
Serial – Hub for substations Serial - Hub for serial, asynchronous transfer of data up to 57,6 kbit/s via a 10/100 Mbit Ethernet including configuration software. Connection to the Ethernet via RJ45 – plug. Serial connection with. RS232 / RS485 interface via Sub-D 9-pol. socket or optical with 820 nm ST – plug and multimode fibre. Wide –range auxiliary supply for 24-250V DC and 115/230 V AC. With Gender - Changer (pin-pin) for adaption to DIGSI cable 7XV5100-4 (cable not in scope of supply).	**7 X V 5 6 5 5 - 0 B A 0 0**

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