

7XV5662-0AA00 / 7XV5662-0AA01 Communication Converter for X.21/RS422 and G.703.1



Fig. 13/40
Communication converter for X.21/RS422 and G.703.1

Description

The communication converter for coupling to a communication network is a peripheral device linked to the protection device via fiber-optic cables, which enables serial data exchange between two protection relays. A digital communication network is used. The electrical interfaces in the CC-XG for the access to the communication device are selectable as X.21 (64 kbit/s, 128 kbit/s, 256 kbit/s or 512 kbit/s) or G.703.1 (64 kbit/s). At the opposite side, the data are converted by second communication converter so that they can be read by the second device. The communication converters thus allow two protection devices to communicate synchronously and to exchange large data volumes over large distances. Typical applications are the serial protection interfaces of differential protection and distance protection of the devices 7SD5, 7SD6, 7SA52 and 7SA6, where 7XV5662-0AA00 must be used.

Should asynchronous serial data of differential protection 7SD51 or of the binary signal transducer 7XV5653 be transmitted, the device 7XV5662-0AA01 must be used (asynchronous from 300 bit/s to 115.2 kbit/s dependent on the baudrate set for X.21 or G.703.1 interface). Interference-free connection to the protection device is achieved by means of a multi-mode fiber-optic cable, with ST connectors at the CC-XG. The maximum optical transmission distance is 1.5 km (0.93 mile).

The data transfer between the protection devices is realized as a point-to-point connection that is bit-transparent. Data must be exchanged via dedicated communication channels, not via switching points.

Function overview

- Optical interface with ST connector for connection to the protection unit
- Distance: 1.5 km with 62.5/125 μm multi-mode FO cable between CC-XG and the protection unit / serial device
- Electrical interface to the communication device via SUB-D connector (X.21, 15 pins, settable to 64, 128, 256 or 512 kbit/s) or with 5-pin screw-type terminals (G.703.1, 64 kbit/s).
- Synchronous data exchange for 7SD52, 7SD6, 7SA6 and 7SA52 protection relays (communications converter version – 0AA00)
- Asynchronous data exchange for 7SD51 protection relay, 7XV5653 or other devices with asynchronous interface (communication converter version – 0AA01)
- Max. cable length between communication device and communication converter: 100 m for X.21 /RS422
- Max. cable length between communication device and communication converter: 300 m for G.703.1
- Monitoring of:
 - auxiliary supply voltage,
 - clock signal of communication network
 - and internal logic
- Loop test function selectable by jumpers in the CC-XG
- Wide-range power supply unit (PSU) for 24 to 250 V DC and 115 to 250 V AC

Application

The CC-XG can be used for two applications. One application is the synchronous serial data exchange (converter version – 0AA00) between SIPROTEC 4 differential relays (7SD52, 7SD6) and/or the serial teleprotection between distance relays (7SA6 and 7SA52). The relays have to be equipped with an optical 820 nm plug-in module “FO5”.

Another application is the transmission of asynchronous serial data to the line differential protection relay 7SD51 or the binary signal transmitter 7XV5653.

Functions

The protection unit is optically linked to the CC-XG, which makes interference-free data transfer between the CC-XG and the protection unit possible. The communication converter is located close to the communication device. It adapts the FO active interface of the protection relay to the electrical specifications of the communication network interface. The interface types – optionally X.21/RS422 or G.703.1 – and the required transmission rate can be set by means of jumpers.

Data transfer between the protection units is effected on the basis of a point-to-point connection, furthermore it is a synchronous, bit-transparent transmission via the communication network.

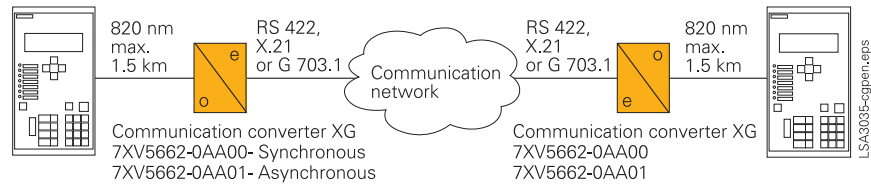


Fig. 13/41 Connection of two protection devices via a communication network linked with 7XV5662-0AA0x

Technical data

Rated auxiliary voltage	
24 to 250 V DC	± 20 %
115/230 V AC	± 20 % without switchover
Power consumption	Approx. 3.5 W
LEDs	
4 LEDs	
LED 1	Red: Error
LED 2	Yellow: Receiving from X.21/RS422/G.703 interface
LED 3	Yellow: Transmitting to X.21/RS422/G.703 interface
LED 5	Green: Operating voltage o.k.
Connectors	
Power supply	2-pole screw-type terminal
Alarm/ready contact	3-pole make/break contact
Serial G.703.1 interface	5-pole receive and transmit line
SUB-D connector	15-pin SUB-D connector for electrical X.21/RS422 interface
FO cable	820 nm, 2 ST connectors for TxD and RxD for 62.5/125 µm multi-mode FO (max. distance to protection unit 1.5 km)
Housing	
Aluminium die-cast housing	Dimensions 188 x 56 x 120 mm (WxHxD)
Weight	Approx. 0.8 kg
Degree of protection	According to EN 60529: IP41
For snap-on mounting onto 35 mm	EN 50022 rail

Technical data

Operating mode

Synchronous operation with	7XV5662-0AA00 for 7SD52, 7SD6, 7SA52 and 7SA6
	<i>G.703.1: Interface selectable by jumper X30 in position 2 - 3</i>
Setting in the protection unit	Setting in CC-XG by jumper
64 kbit/s per parameter	64 kbit/s by jumper X20 = 1
	<i>X.21/RS422: Interface selectable by jumper X30 in position 1 - 2</i>
Setting in the protection unit	Setting in CC-XG by jumper:
64 kbit/s per parameter	64 kbit/s by jumper X20 = 1
128 kbit/s per parameter	128 kbit/s by jumper X22 = 1
256 kbit/s per parameter	256 kbit/s by jumper X24 = 1
512 kbit/s per parameter	256 kbit/s by jumper X26 = 1
Asynchronous operation with	7XV5662-0AA01 for 7SD51, 7XV5653 and units with asynchronous serial interface (no handshake supported, only serial TxD and RxD signals are supported)
	<i>G.703.1: Interface selectable by jumper X30 in position 2 - 3</i>
Setting in protection unit	Setting in CC-XG by jumper
max. 19.2 kbit/s	64 kbit/s by jumper X20 = 1
	<i>X.21/RS422: Interface settable by jumper X30 in position 1 - 2</i>
Setting in protection unit	Setting in CC-XG by jumper
max. 19.2 kbit/s async.	64 kbit/s by jumper X20 = 1
max. 38.4 kbit/s async.	128 kbit/s by jumper X22 = 1
max. 57.6 kbit/s async.	256 kbit/s by jumper X24 = 1
max. 115.2 kbit/s async.	512 kbit/s by jumper X26 = 1

Selection and ordering data

Description	Order No.
Communication converter for X.21/RS422/G.703.1 interface	7XV5662 - 0AA0□
Converter to synchronous or asynchronous serial coupling of protection units with optical inputs/outputs with ST connector to communication devices with electrical X.21/RS422 or G.703.1 interface. Connection to protection unit via FO cable for 62.5/125 μm and 820 nm wavelength, max. distance 1.5 km, ST connectors	
Electrical with X.21/RS422 (15-pin SUB-D connector) or G.703.1 (screw-type terminal)	
Baud rate and interface type selectable by jumpers	
For synchronous operation with 7SD52, 7SD6, 7SA6, 7SA52	0
For asynchronous operation with 7SD51, 7XV5653 or serial devices	1