

Fig. 13/118 RS485 bus system

### Description

The evaluation of fault records, operational alarms and fault signals calls for millisecond-accurate determination of the absolute time. The SIPROTEC 4 units have an internal clock on a quartz basis, which deviates from the normal time after a while. Radio clocks are therefore used for precise synchronization; they set the clocks in the devices via time signals or protocols such as DCF77 or IRIG-B. All the devices are connected in parallel with an electrical bus, so that all of them receive the time information at the same time at Port A. By means of the prefabricated bus cables and adapters 7XV5104 the SIPROTEC 4 units can be connected via their IRIG-B interface directly to the sync.-transceiver 7XV5654. The maximum length of the electrical bus when prefabricated cables are used is 20 m. Relevant applications are described in the manual for the sync.-transceiver 7XV5654.

### Function overview

- Opto-electrical solution for SIPROTEC 4 devices with IRIG-B interface (Port A)
- Direct connection of SIPROTEC 4 devices with IRIG-B interface to sync.-transceiver 7XV5654
- Adapter/cable for cascading and matching to other converters
- 4 orderable cable lengths from 1 m to 10 m
- 2-core, twisted and shielded cable with 9-pin SUB-D connectors
- Metal plug connector casings with fixing screws and strain relief for cable connections
- Compact dimensions of the plugs
- Max. extent of electrical bus 20 m within building

# Accessories/7XV5104

## Application, selection and ordering data

### Application

#### Notes on the IRIG-B bus

In this system solution only the DC 24 V time synchronization inputs of the SIPROTEC 4 units are used (see below). 7XV5105 cables are available for synchronizing the differential protection relays with an additional seconds pulse.

The housings of all bus users must be properly mutually grounded, as otherwise dangerous ground potential currents can flow via the bus cable shield.

#### Typical applications

The 9-pin male connector of the Y-bus cable S1 always comes from the direction of the radio clock or sync.-transceiver and provides via the 1, 3, 5 or 10 m cable and the 9-pin male connector the connection to the first and subsequent bus devices. At connector S2 a 9-pin female connector B3 is provided (on a 20 m long cable) to extend the bus. If more than six SIPROTEC 4 units are to be connected to the sync.-transceiver 7XV5654, the adapter 7XV5104-3AA00 splits the connection X1 of the sync.-transceiver into two buses for a maximum of 6 units each. (For typical applications see 7XV5654 manual).

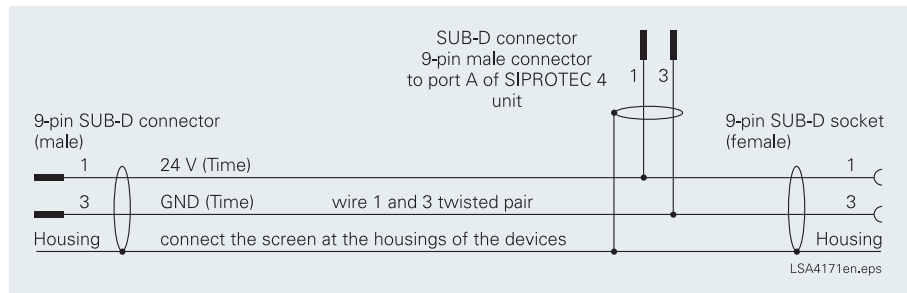


Fig. 13/119

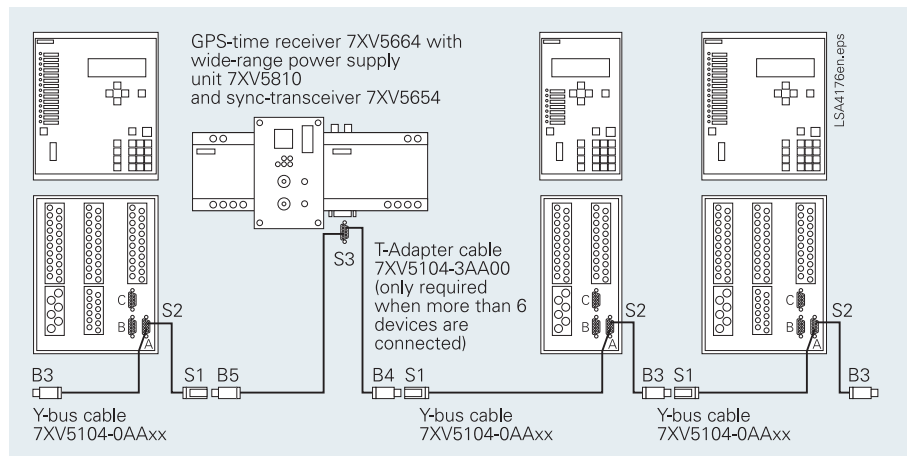


Fig. 13/120 Connection of max. twelve SIPROTEC 4 units to the IRIG-B bus via prefabricated Y-bus cable

### Selection and ordering data

| Description  | Order No.     |
|--|---------------|
| <b>Y-connection cable IRIG-B/DCF77</b>   | 7XV5104-0AA□□ |
| Y-connection cable for SIPROTEC 4 unit with IRIG-B/DCF77 connection and bus extension. Copper cable 2-wire, shielded, with 9-pin SUB-D connectors<br>Length 1 m  | 0 1           |
| Length 3 m   | 0 3           |
| Length 5 m   | 0 5           |
| Length 10 m  | 1 0           |
| <b>Extension cable (copper)</b>  |               |
| Cable for the bus length extension. Copper cable 2-wire, shielded, with 9-pin SUB-D connector<br>Length 10m  | 7XV5104-1AA10 |
| <b>Adapter/accessories</b>   | 7XV5104-□AA00 |
| Adapter cable to sync.-transceiver 7KE6000-8Ax, length 0.3m, shielded, 2 wires with end sleeves to 9-pin SUB-D connector (female)  | 2             |
| T-adapter cable to sync.-transceiver 7XV5654-0BA00<br>Splits connector X1 into 2 buses formax. six SIPROTEC 4 units per bus<br>9-pin SUB-D connector (male) to 2 x 9-pin SUB-D connector (female)<br>Copper cable 2-wire, shielded (length 0.3m) | 3             |