**Example 13. Start and frequency reference via Modbus RTU with one RD configured as Slave and the other as Master**

**Purpose:**

This configuration is intended for organizing control of a slave frequency inverter from a master via the Modbus RTU protocol over the RS-485 interface. The master RD sends commands (START, STOP, frequency reference) to the slave devices on the network. This scheme is used in systems where several drives must operate synchronously without a PLC.

**Wiring diagram:**

Both frequency inverters are connected to a single RS-485 bus via terminals A+ and B− or the RJ-45 connector.

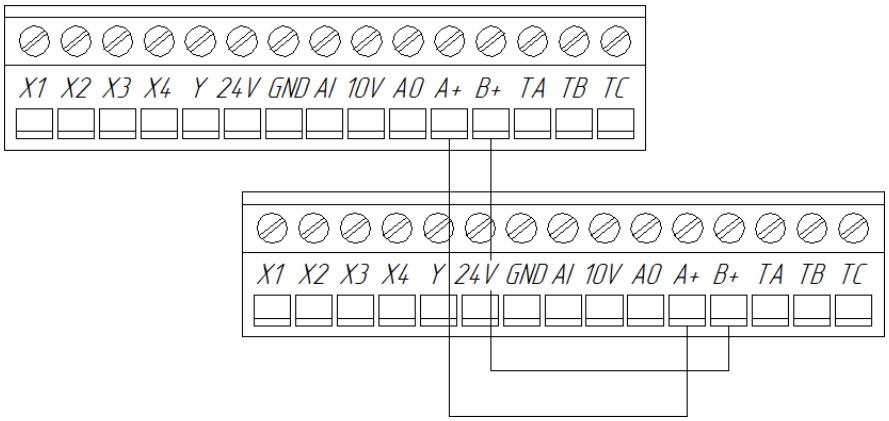



*Figure 1. Wiring diagram via terminals A+ and B−.*

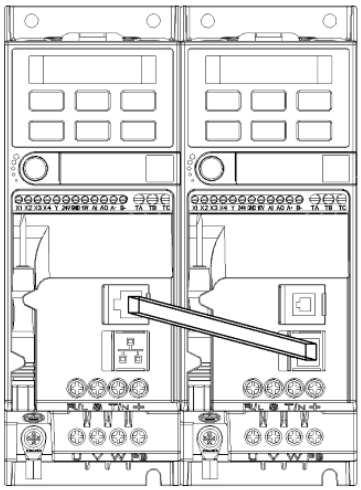


*Figure 2. Wiring diagram via the RJ-45 connector.*

## Parameter list:

*Table 1. Master parameter list.*

| № | Code | Name | Value | Note |
|---|---|---|---|---|
| 1 | F01.01 | Start signal source | 1 | Start and stop mode via digital input |
| 2 | F01.02 | Frequency reference source | 1 | Frequency reference from the potentiometer on the control panel |
| 3 | F01.10 | Maximum output frequency | 50 | Rated nameplate speed, Hz |
| 4 | F01.13 | Lower frequency limit setting | 0 | Lower limit of motor speed |
| 5 | F01.22 | Acceleration time | 5 | Motor acceleration time |
| 6 | F01.23 | Deceleration time | 5 | Motor deceleration time |
| 7 | F02.00–F02.06 | Rated motor parameters | | According to the motor nameplate |
| 8 | F05.00 | Terminal X1 function selection | 1 | Forward start |
| 9 | F05.20 | Control mode selection | 0 | Two-wire system 1 |
| 10 | F05.22 | Operating signal selection for terminals X1–X4 | 0000 | Activation on contact closure |
| 11 | F12.00 | Modbus Master/Slave selection | 1 | “Master” mode |
| 12 | F12.02 | Data transfer rate (baud rate) | 3 | 9600 bit/s |
| 13 | F12.10 | Cyclic transmission parameters | 0021 | Transmission of the start command and frequency reference |
| 14 | F12.11 | Frequency reference register address | 2000 | Frequency reference register on the slave |
| 15 | F12.12 | Command register address | 2001 | Control command register on the slave |

*Table 2. Slave parameter list.*

| № | Code | Name | Value | Note |
|---|---|---|---|---|
| 1 | F01.01 | Start signal source | 2 | Start and stop mode via RS-485 channel |
| 2 | F01.02 | Frequency reference source | 6 | Frequency reference via RS-485 channel |
| 3 | F01.10 | Maximum output frequency | 50 | Rated nameplate speed, Hz |
| 4 | F01.13 | Lower frequency limit setting | 0 | Lower limit of motor speed |
| 5 | F01.22 | Acceleration time | 5 | Motor acceleration time |
| 6 | F01.23 | Deceleration time | 5 | Motor deceleration time |
| 7 | F02.00–F02.06 | Rated motor parameters | | According to the motor nameplate |
| 8 | F12.00 | Modbus Master/Slave selection | 0 | “Slave” mode |
| 9 | F12.02 | Data transfer rate (baud rate) | 3 | 9600 bit/s |
| 10 | F12.00 | Modbus Master/Slave selection | 1 | “Master” mode |
| 11 | F12.02 | Data transfer rate (baud rate) | 3 | 9600 bit/s |
| 12 | F12.06 | Communication loss detection time | 2 | Time after which a Modbus communication (feedback) error will occur |
| 13 | F12.07 | Action on communication loss | 1 | Coast stop on bus break |

Notes:

1. Simultaneous use of an external control panel and Modbus communication is not possible at the hardware level. Parameter F11.30 defines the purpose of the RJ45 port: if Modbus is used, the external panel must be disconnected;
2. After changing the Master-Slave settings, the RD must be power-cycled for the parameters to take effect.