

Operating Manual TR640IP / TR660IP


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 from Firmware: 0-00

- Modbus communication protocol

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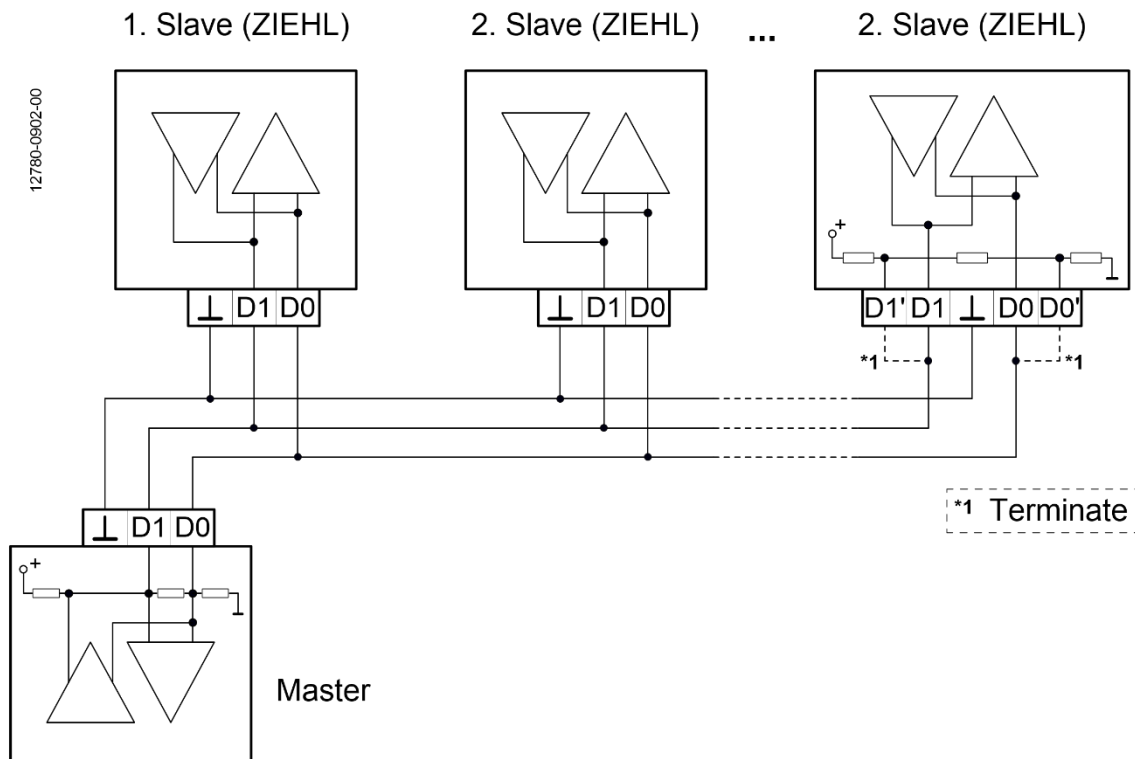
1 Important information



Please read the general operating manual for the TR640IP / TR660IP carefully and observe the safety instructions.

2 Connection diagram RS485-BUS

→ only TR660IP RS485



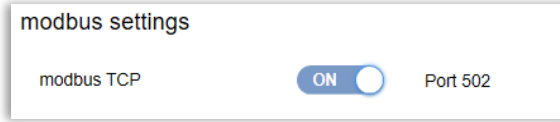
3 TCP Interface parameter

TCP Port: 502

Max. TCP connections: 1

The Modbus TCP protocol must be activated via the integrated web server:

- Enter the device's IP address in the web browser (on a computer in the same network)
- Select the „network“ menu tab
- Activate Modbus TCP



4 RS485-BUS Interface parameter

→ only TR660IP RS485

BUS-Address	Baud rate	Data bits	Parity	Stop bit
1 ... 247	4800, 9600, 19200, 57600	8	even, odd, none	1, 2

The interface parameters are factory set to address 1, 9600 Baud, 8 Bits, even parity, 1 stop bit.

The TR660IP RS485 acts in BUS system as slave.

The RTU mode is used.

The parameters can be set directly on the internal website or on the device (see operating manual TR660IP RS485).

5 Telegram structure

According to Modbus specification.

For details, please refer to the Modbus original documentation, which can be found

<http://www.modbus.org>

6 Supported function codes

Function code	Name	Utilization
3 (03H)	Read Holding Registers	Read data from registers

7 Modbus register tables

7.1 Read measuring values and status values

- Modbus function code 0x03 (Read Holding Registers)

Adr. hex	Data type		Register	Value range	
				Min.	Max.
0000	signed int 16		Device type	1=TR640IP, 2=TR660IP-Analog, 3=TR660IP-RS485	
0001	signed int 16		Measuring value sensor 1T	-1999...	8000 [0,1 °C]
0002	signed int 16		Measuring value sensor 2T	0...	3200 [0,01 kΩ]
0003	signed int 16		Measuring value sensor 3T	32748 = sensor off,	
0004	signed int 16		Measuring value sensor 4T	32749 = measured value too low,	
0005	signed int 16		Measuring value sensor 5T	32750 = measured value too high,	
0006	signed int 16		Measuring value sensor 6T	32764 = differential temp. error,	
0007	unsigned int 16		Error	32766 = sensor interruption, 32767 = sensor short circuit	
0008	unsigned int 16		Measuring value- counter	0 ...	65535
0009	unsigned int 16	Low High	Status Alarm K1 – Sensor 1 Status Alarm K1 – Sensor 2	0 = alarm off, 1 = delay alarm on, 2 = alarm on, 3 = delay alarm off, 4 = locked alarm, 5 = alarm 2 off X on, 6 = no function parameterized	
000A	unsigned int 16	Low High	Status Alarm K1 – Sensor 3 Status Alarm K1 – Sensor 4		
000B	unsigned int 16	Low High	Status Alarm K1 – Sensor 5 Status Alarm K1 – Sensor 6		
000C	unsigned int 16	Low High	Status Alarm K2 – Sensor 1 Status Alarm K2 – Sensor 2		
000D	unsigned int 16	Low High	Status Alarm K2 – Sensor 3 Status Alarm K2 – Sensor 4		
000E	unsigned int 16	Low High	Status Alarm K2 – Sensor 5 Status Alarm K2 – Sensor 6		
000F	unsigned int 16	Low High	Status Alarm K3 – Sensor 1 Status Alarm K3 – Sensor 2		
0010	unsigned int 16	Low High	Status Alarm K3 – Sensor 3 Status Alarm K3 – Sensor 4		
0011	unsigned int 16	Low High	Status Alarm K3 – Sensor 5 Status Alarm K3 – Sensor 6		
0012	unsigned int 16	Low High	Status Alarm K4 – Sensor 1 Status Alarm K4 – Sensor 2		
0013	unsigned int 16	Low High	Status Alarm K4 – Sensor 3 Status Alarm K4 – Sensor 4		
0014	unsigned int 16	Low High	Status Alarm K4 – Sensor 5 Status Alarm K4 – Sensor 6		
0015	unsigned int 16	Low High	Status Alarm K5 – Sensor 1 *1) Status Alarm K5 – Sensor 2 *1)		
0016	unsigned int 16	Low High	Status Alarm K5 – Sensor 3 *1) Status Alarm K5 – Sensor 4 *1)		
0017	unsigned int 16	Low High	Status Alarm K5 – Sensor 5 *1) Status Alarm K5 – Sensor 6 *1)		

Adr. hex	Datentyp		Register	Wertebereich	
				Min.	Max.
0018	unsigned int 16	Low High	Status Alarm K6 – Sensor 1 *1) Status Alarm K6 – Sensor 2 *1)	0 = alarm off,	
0019	unsigned int 16	Low High	Status Alarm K6 – Sensor 3 *1) Status Alarm K6 – Sensor 4 *1)	1 = delay alarm on,	
001A	unsigned int 16	Low High	Status Alarm K6 – Sensor 5 *1) Status Alarm K6 – Sensor 6 *1)	2 = alarm on,	
001B	unsigned int 16	Low High	Status Alarm K7 – Sensor 1 *1) Status Alarm K7 – Sensor 2 *1)	3 = delay alarm off,	
001C	unsigned int 16	Low High	Status Alarm K7 – Sensor 3 *1) Status Alarm K7 – Sensor 4 *1)	4 = locked alarm,	
001D	unsigned int 16	Low High	Status Alarm K7 – Sensor 5 *1) Status Alarm K7 – Sensor 6 *1)	5 = alarm 2 off X on,	
001E	unsigned int 16	Low High	Status relay K1 Status relay K2	6 = no function parameterized	
001F	unsigned int 16	Low High	Status relay K3 Status relay K4	0 = off, 1 = on, 2 = off, 3 = off (manually), 4 = off, 5 = off (relay test) 6 = off, 7 = off (simulation)	
0020	unsigned int 16	Low High	Status relay K5 *1) Status relay K6 *1)	0 = off, 1 = on, 2 = on, 3 = off (manually), 4 = on, 5 = off (relay test) 6 = on, 7 = off (simulation)	
0021	unsigned int 16	Low High	Status relay K7 *1) -		
0022	unsigned int 16		Analog output U1 [0,01 V] *2)	0 ...	1100
0023	unsigned int 16		Analog output I1 [0,01 mA] *2)	0 ...	2200
0024	unsigned int 16		Analog output U2 [0,01 V] *2)	0 ...	1100
0025	unsigned int 16		Analog output I2 [0,01 mA] *2)	0 ...	2200
0026	signed int 16		RS485 – protocol *3)	-2 = Modbus,	
0027	unsigned int 16		RS485 – address *3)	1 ... 247	
0028	signed int 16		RS485 – baud rate *3)	-1 = 4800 Bd, -2 = 9600 Bd, -3 = 19200 Bd, -4 = 57600 Bd	
0029	signed int 16		RS485 – parity *3)	-1 = no, -2 = odd, -3 = even	
002A	signed int 16		RS485 – stop bits *3)	1 ...	2
002B	signed int 16		Smallest measured value from sensor 1T	0 ... 32000 [0,01 kΩ] -1999 ... 9999 [0.01 °C]	
002C	signed int 16		Smallest measured value from sensor 2T		
002D	signed int 16		Smallest measured value from sensor 3T		
002E	signed int 16		Smallest measured value from sensor 4T		
002F	signed int 16		Smallest measured value from sensor 5T		
0030	signed int 16		Smallest measured value from sensor 6T		
0031	signed int 16		Largest measured value from sensor 1T		
0032	signed int 16		Largest measured value from sensor 2T		
0033	signed int 16		Largest measured value from sensor 3T		
0034	signed int 16		Largest measured value from sensor 4T		
0035	signed int 16		Largest measured value from sensor 5T		
0036	signed int 16		Largest measured value from sensor 6T		
0037 0038	unsigned int 32	Low High	Counter operating hour	[h]	
0039 003A	unsigned int 32	Low High	Serial number		
003B			Hardware-Version	0 ...	
003C			Firmware-Version, Application	z. B. 0x0B01(hex)	
003D			Firmware-Version, Bootloader	-> 12720-1411-01 (dez)	

*1) only TR660IP

*2) only TR660IP analogous

*3) only TR660IP RS485

8 Note for SIEMENS SIMATIC S7-1500

The following values must be set on the communication block:

MODE = 0

DATA_ADDR with number range 40001-49999 List Hold-Register with function code 3

Example: read the hold register in the ZIEHL device:

Temperature 1: DATA_ADDR = 40002 == Ziehl Holdregister 1

Temperature 2: DATA_ADDR = 40003 == Ziehl Holdregister 2

to

Temperature 6: DATA_ADDR = 40007 == Ziehl Holdregister 6

The data length (DATA_LEN) must be set to 1 word,
Otherwise you get an error message.