

TS 30x mod / GS 30x mod / GS 40x mod

## Short interface explanation / Quick guide

### Available Modbus protocols

- Modbus RTU (default)
- Modbus ASCII

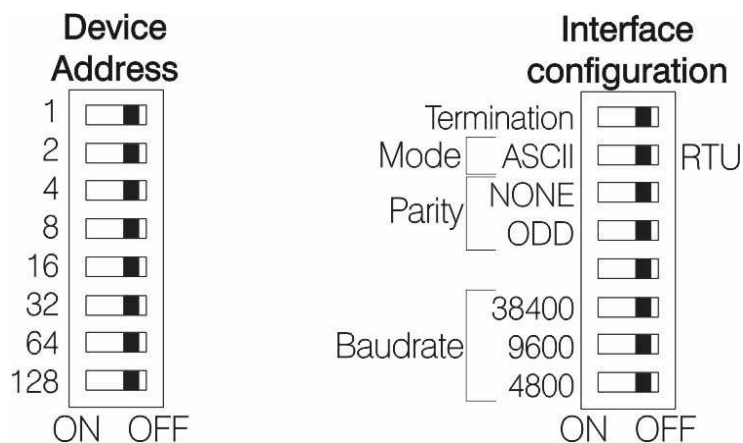
### Serial protocol via RS485

- Baud-Rates:
  - 4800
  - 9600
  - 19200 (default)
  - 38400
- Parity Modes:
  - Even (default)
  - Odd
  - None

### Available Modbus device addresses

- Configurable addresses:
  - 1 (default address, also applicable while no address [0] is configured)
  - ...
  - 247

DIP-switches for configuration (see device hardware)



## Input-Registers (data registers)

- Format of all registers: 16 Bit signed integer
- Readable via Modbus function code 0x04 (read input register)

Available registers and descriptions:

Offset	Register	Decimal value / range	Description	At version
<b>0</b>	<b>temperature</b> [1/10°C]	-32768	Sensor error / Sensor not yet read or measurement value not yet available	TS 30x mod GS 30x mod GS 40x mod
		-32767 ... 32767	Room temperature in 1/10 °C e.g.: dec. 250 $\triangleq$ 25.0 °C Value range: 0.0°C – 50°C Resolution: 0.1°C	
<b>1</b>	<b>relative humidity</b> [1/10 %]	-32768	Sensor error / Sensor not yet read or measurement value not yet available	GS 30x mod GS 40x mod
		-32767 ... 32767	Relative humidity in 1/10 % e.g.: dec. 350 $\triangleq$ 35.0 % Value range: 0.0% - 100.0% Resolution: 0.1 %	
<b>2</b>	<b>Dew point</b> [1/10 °C]	-32768	Sensor error / Sensor not yet read or measurement value not yet available	GS 30x mod GS 40x mod
		-32767 ... 32767	Dew point temperature in 1/10 °C e.g.: dec. 50 $\triangleq$ 5.0 °C Value range: -40°C – 125°C Resolution: 0.1°C	
<b>3</b>	<b>CO<sub>2</sub></b> [ppm]	-32768	Sensor error / Sensor not yet read or measurement value not yet available	GS 40x mod
		-32767 ... 32767	CO <sub>2</sub> concentration in ppm e.g.: dec. 650 $\triangleq$ 650 ppm Value range: 390 ppm – 10000 ppm Resolution: 1 ppm	
<b>4</b>	<b>Absolute atmospheric air pressure</b> [1/10 hPa]	-32768	Sensor error / Sensor not yet read or measurement value not yet available	GS 30x mod GS 40x mod
		-32767 ... 32767	Absolute air pressure in 1/10 hPa e.g.: dec. 10133 $\triangleq$ 1013.3 hPa Value range: 400.0 hPa – 1100.0 hPa Resolution: 0.1 hPa	
<b>5</b>	<b>Temperature offset</b>	-32767 ... 32767	Room temperature in 1/10 °C e.g.: dec. 50 $\triangleq$ 5.0 °C / -75 $\triangleq$ -7.5°C Resolution: 0.1°C	TS 30x mod GS 30x mod GS 40x mod

## Writing Register (Write Single Register)

- Write offset value via Modbus Function Code 0x06 (Write Single Register)  
0: Write temperature offset

Offset	Register	Dezimalwert / Bereich	Beschreibung	Bei Version
0	Temperature offset	-32767 ... 32767	Room temperature in 1/10 °C e.g.: dec. 50 $\triangleq$ 5.0 °C / -75 $\triangleq$ -7.5°C Resolution: 0.1°C	TS 30x mod GS 30x mod GS 40x mod

## Device encapsulation interface transport (0x2B)

- Retrievable via Modbus function code 0x2b

## Read device identification (0x0E)

- Retrievable via encapsulation subfunction code 0x0E
- Only basic device identification available (read device ID code 0x01)

Object ID	Name / Description	Type	Value	At Version
0x00	Manufacturer name	ASCII string	"Hugo Mueller GmbH & Co KG"	TS 30x mod GS 30x mod GS 40x mod
0x01	Product name	ASCII String	"TS 30.00 Modbus"	TS 30x mod
0x01	Product name	ASCII String	"GS 30.00 Modbus"	GS 30x mod
0x01	Product name	ASCII String	"GS 40.00 Modbus"	GS 40x mod
0x02	Software version	ASCII string	"R 0001.0000.010B"	TS 30x mod GS 30x mod GS 40x mod

## Examples on how to retrieve data (RTU):

### Read Input Registers

Request from Master (central unit): **01:04:00:00:00:05:30:09**

Description: Request all five input registers from device with address 0x01

Slave Response: **01:04:0A:00:F4:01:56:00:4C:02:42:24:83:FA:B3**

### Read Device Identification

Request from Master (central unit): **01:2B:0E:01:00:00:76:E4**

Description: Request basic device identification from device with address 0x01

Slave Response:

**01:2B:0E:01:01:00:00:03:00:19:48:75:67:6F:20:4D:75:65:6C:6C:65:72:20:47:6D:62:48:20:26:20:43:6F:20:4B:47:01:0F:47:53:20:34:30:2E:30:30:20:4D:6F:64:62:75:73:02:10:52:20:30:30:30:31:2E:30:30:30:30:2E:30:31:30:42:D2:20**

Slave response (partially decoded):

TS 30x:

01:2B:0E:01:01:20:20:03:20:19 Hugo Mueller GmbH & Co KG 01:0F TS 30.00 Modbus 02:10 R 0001.0000.010B D2:20

GS 30x:

01:2B:0E:01:01:20:20:03:20:19 Hugo Mueller GmbH & Co KG 01:0F GS 30.00 Modbus 02:10 R 0001.0000.010B D2:20

GS 40x:

01:2B:0E:01:01:20:20:03:20:19 Hugo Mueller GmbH & Co KG 01:0F GS 40.00 Modbus 02:10 R 0001.0000.010B D2:20