

# Modbus holding registers

## A.1 Modbus addressing model

The device allows read/write access to the following standard Modbus RTU data holding register blocks:

- Holding registers (ref. 4x address range)

The minimum value of a writable **holding register** can be read by adding 10000 to the Modbus address of the register.

The maximum value of a writable **holding register** can be read by adding 20000 to the Modbus address of the register.

The default value of a writable **holding register** can be read by adding 30000 to the Modbus address of the register.

## A.2 Modbus function codes

This device supports following function codes: 3, 8 and 16.

Function codes 3 and 16 are used for accessing registers, max. 16 registers per read/write request is accepted.

Function code 8 is used for reading Modbus communication diagnostic information.

Below the various function code are described.

### Function code 3 (Read holding registers)

General exceptions:

- Requesting less than 1 or more than 16 registers => Exception 3 (Illegal data value)
- Requesting invalid start address or start address with invalid quantity => Exception 2 (Illegal data address)

**Application exceptions:**

- Application errors; min/max limit of parameter exceeded; or parameter write-protected => Exception 4 (Slave device error)

**Holes/register alignment:**

- The read command always returns data if no exception is given.
- Holes in the holding register map return value zero in all bytes. E.g. reading 2 registers starting at 4:0004 above will result in 2 bytes of "float B" followed by 2 zeroes.

### A.3.1 Process values

Table A- 1 Process values

Modbus address	Data type / Size [bytes]	Parameter	Description	Default value [unit]	Value range	Access level
3000	float / 4	Massflow	Measured massflow	- [kg/s]	-	Read Only
3002	float / 4	Volumeflow	Measured volumeflow	- [m <sup>3</sup> /s]	-	Read Only
3004	float / 4	Density	Measured density	- [kg/m <sup>3</sup> ]	-	Read Only
3010	float / 4	Temperature	Measured temperature of the process media	- [°C]	-	Read Only
3023	float / 4	Frame Temperature	Measured temperature of the sensor frame	- [°C]	-	Read Only

### A.3.2 Identification

Table A- 2 FC410

Modbus address	Data type / Size (bytes)	Parameter	Description	Default value (unit)	Value range	Access level
4000	String / 20	Manufacturer	Device manufacturer	Siemens	-	Read Only
4020	String / 10	Sensor Firmware Revision	Sensor firmware version	-	-	Read Only
4025	String / 16	SensorType	Sensor type. Also shown on the device nameplate	SITRANS FC410	-	Read Only
4033	String / 20	Sensor Serial Number	Unique sensor serial number. Also shown on the device nameplate	-	-	Read Only
4095	String / 10	Sensor Hardware Revision	Sensor hardware version	-	-	Read Only
4100	String / 10	Sensor Frontend Type	Sensor hardware variant	-	-	Read Only
4121	String / 20	Sensor Order Number	Sensor order number part 1 (MLFB). Also shown on the device nameplate	-	-	Read Only
4131	String / 32	Sensor Order Number	Sensor order number part 2 (MLFB). Also shown on the device nameplate	-	-	Read Only
4147	String / 32	Sensor Order Number	Sensor order number part 3 (MLFB). Also shown on the device nameplate	-	-	Read Only