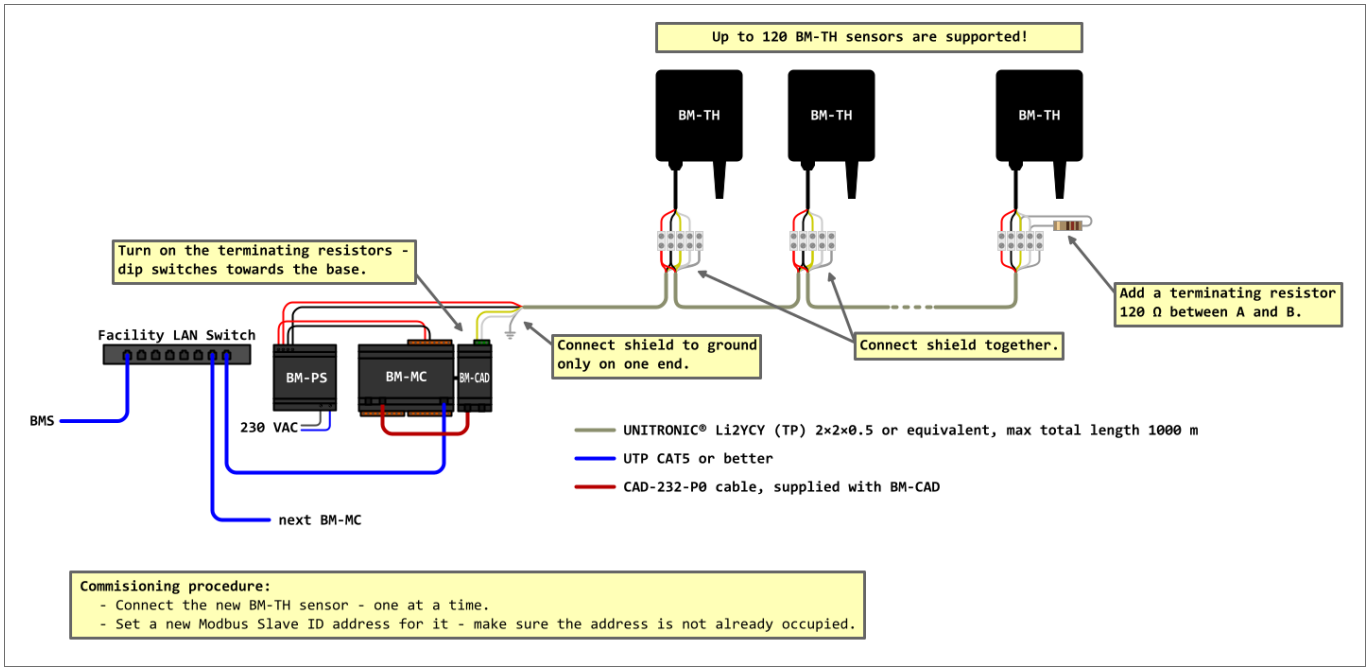
Robotina d.o.o.
OIC Hrpelje 38
SI-6240 Kozina
Slovenia

Temperature and humidity monitoring

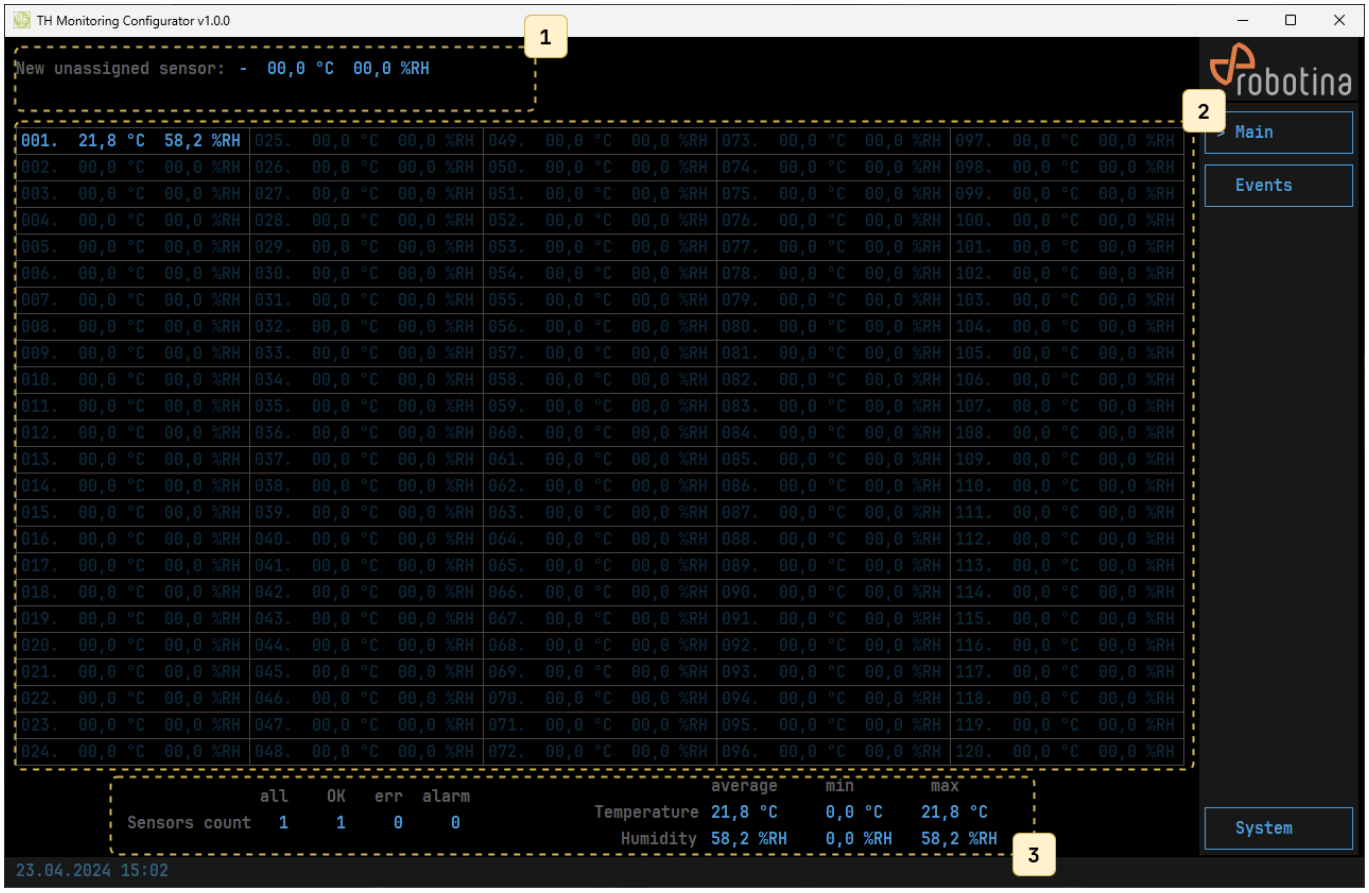
The system is intended for monitoring temperatures and relative humidity in rack cabinets of data centers. Allows connection of up to 120 sensors to one controller. The number of controllers per system is practically unlimited.

HW and wiring

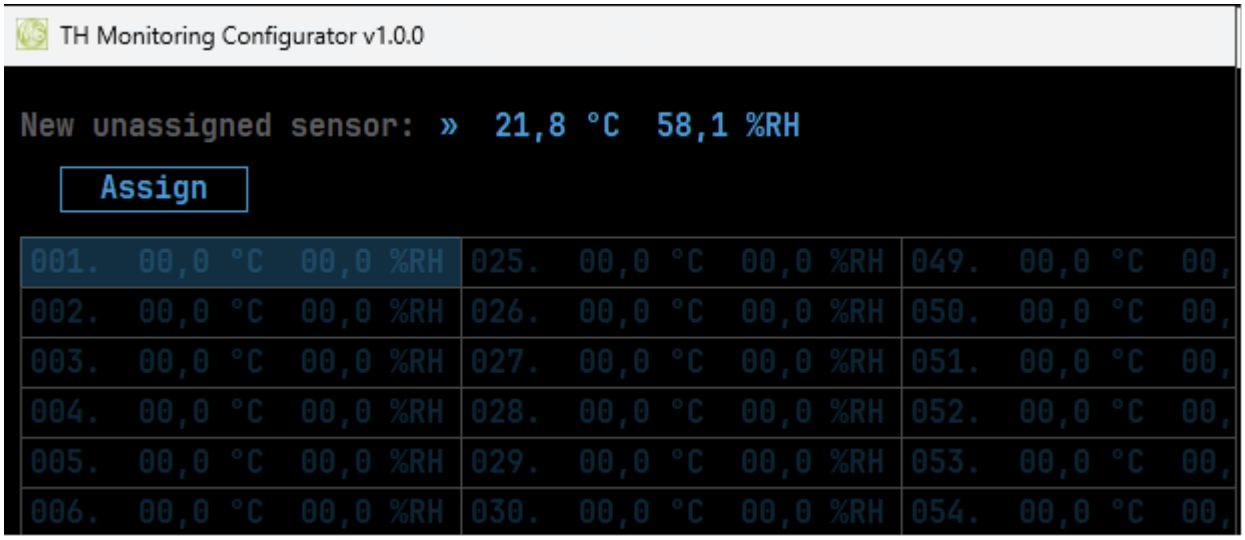


SW (TH-MC & Configurator)

Main page

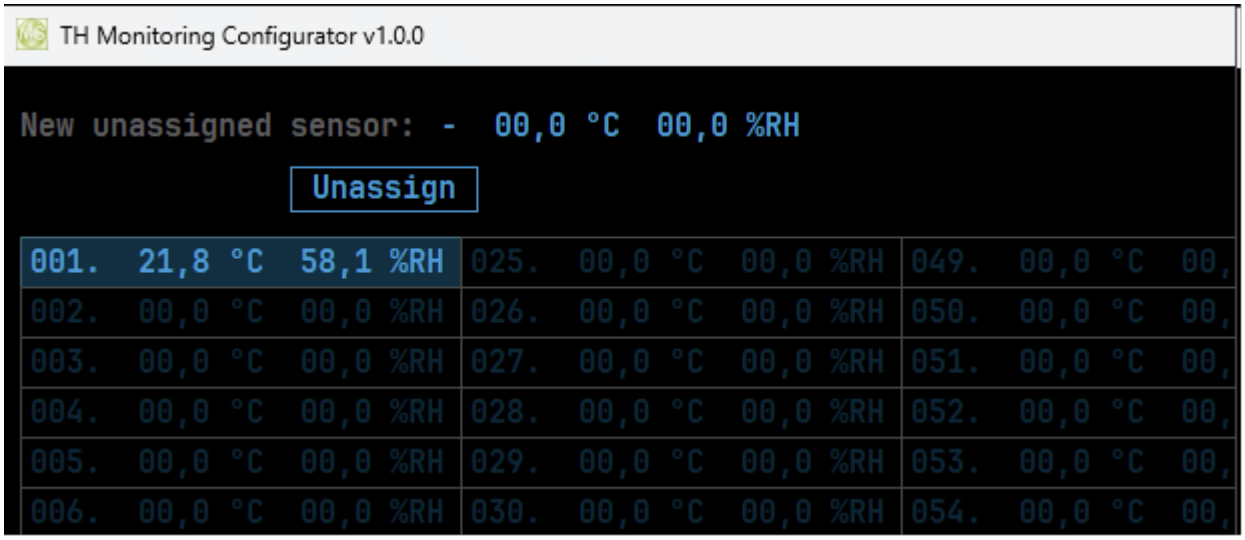


1	New sensor
2	Sensor table - Select empty single cell to Assign new sensor to cell or select assigned cer to un-assign (only if new sensor is empty)
3	Statistics of all sensors.

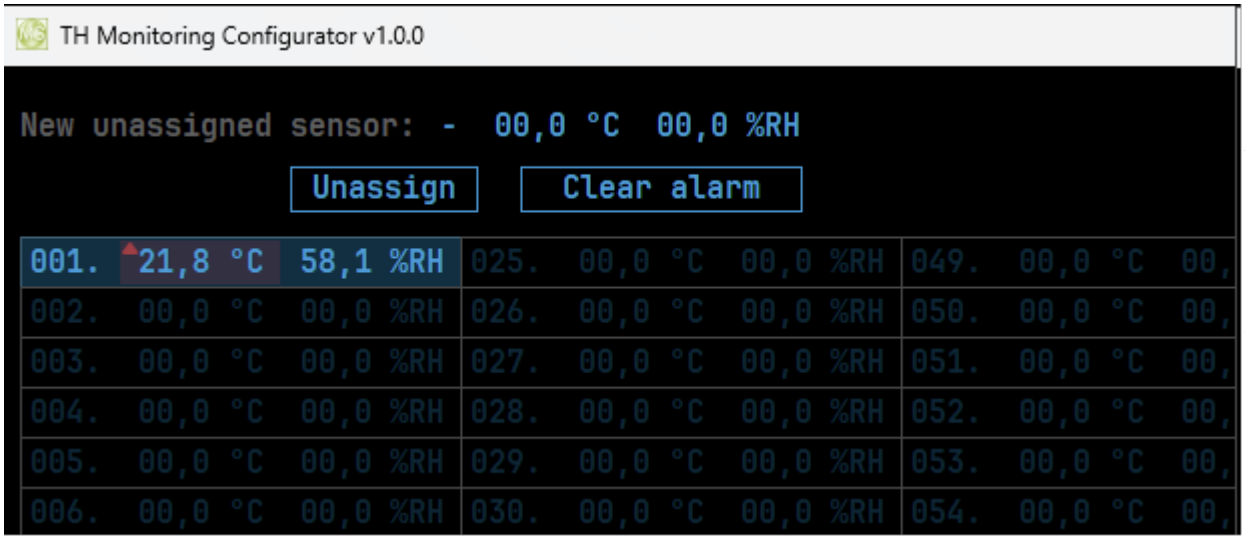


Press [Assign] to assign new sensor to selected cell 001.

Press [Unassign] to move selected

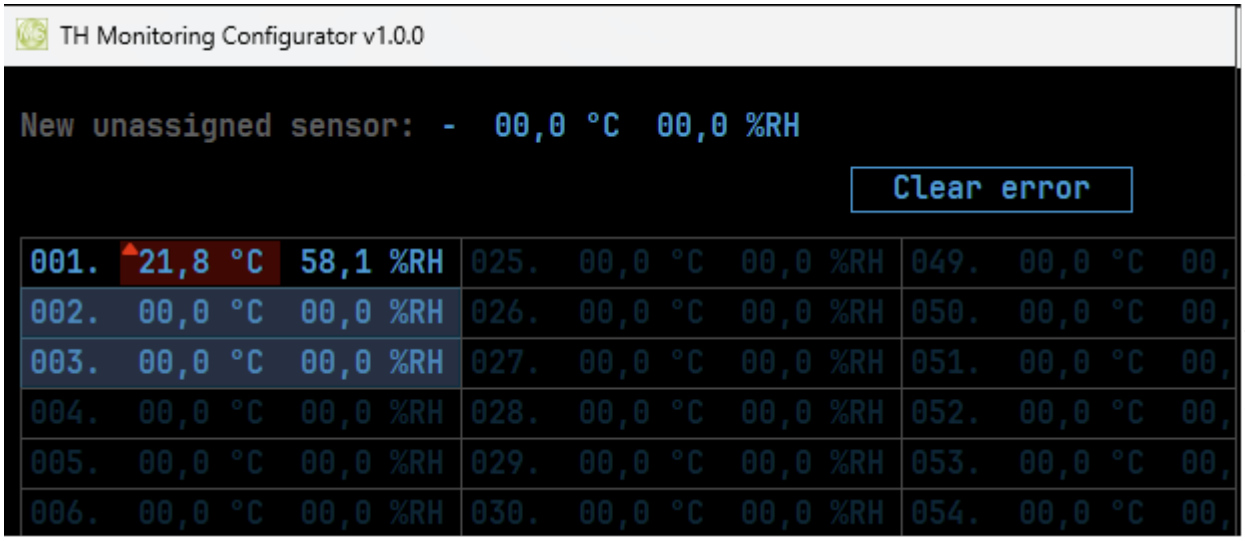


senso r 001 to New senso r.



Press [Clea r Alarm s] to clear alarm s from selec ted cell.

Multi ple cells can be selec ted.



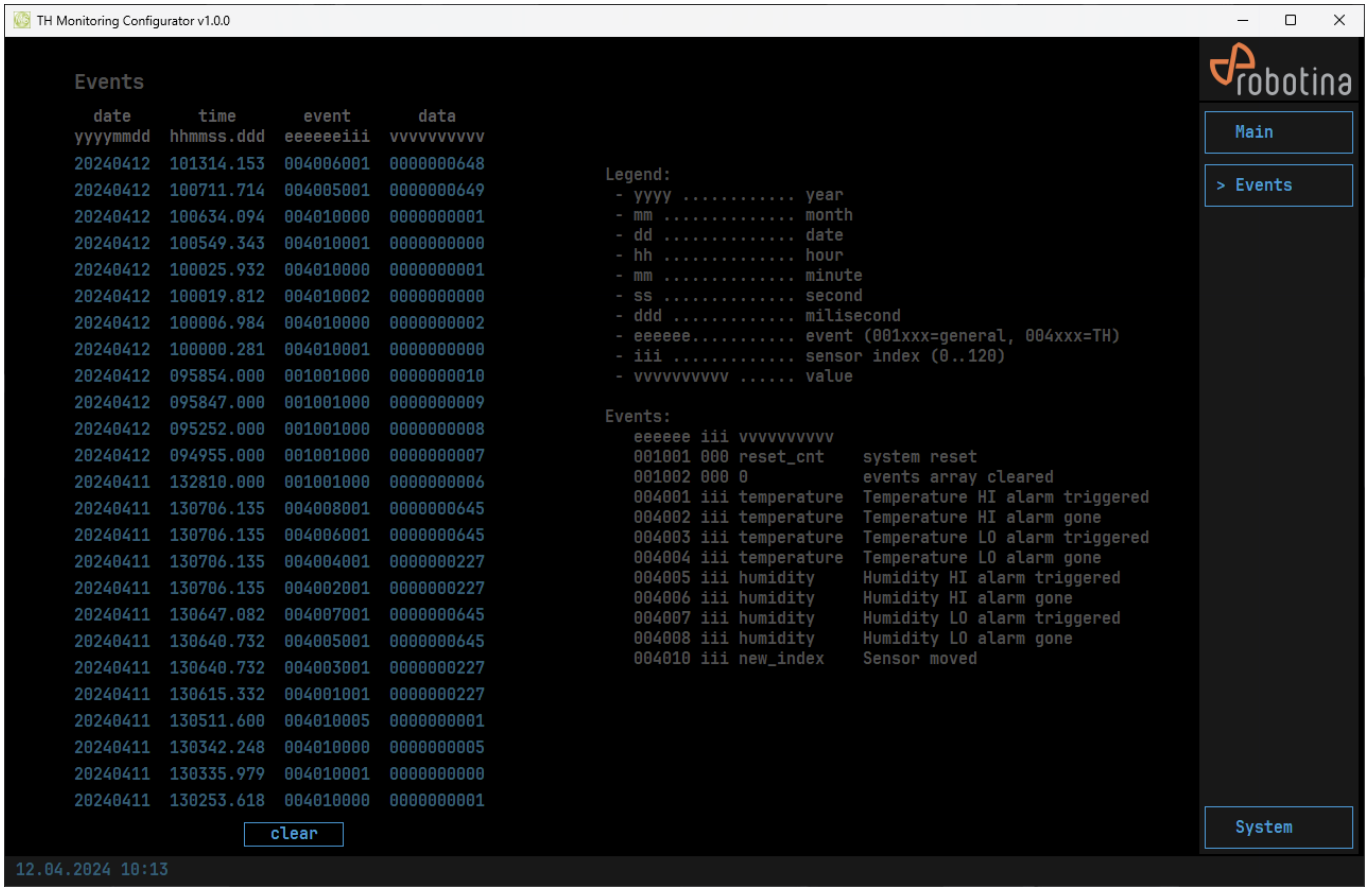
Press [Clea r error] to clear error s from selec ted cell.

Multi

ple cells can be selec ted.

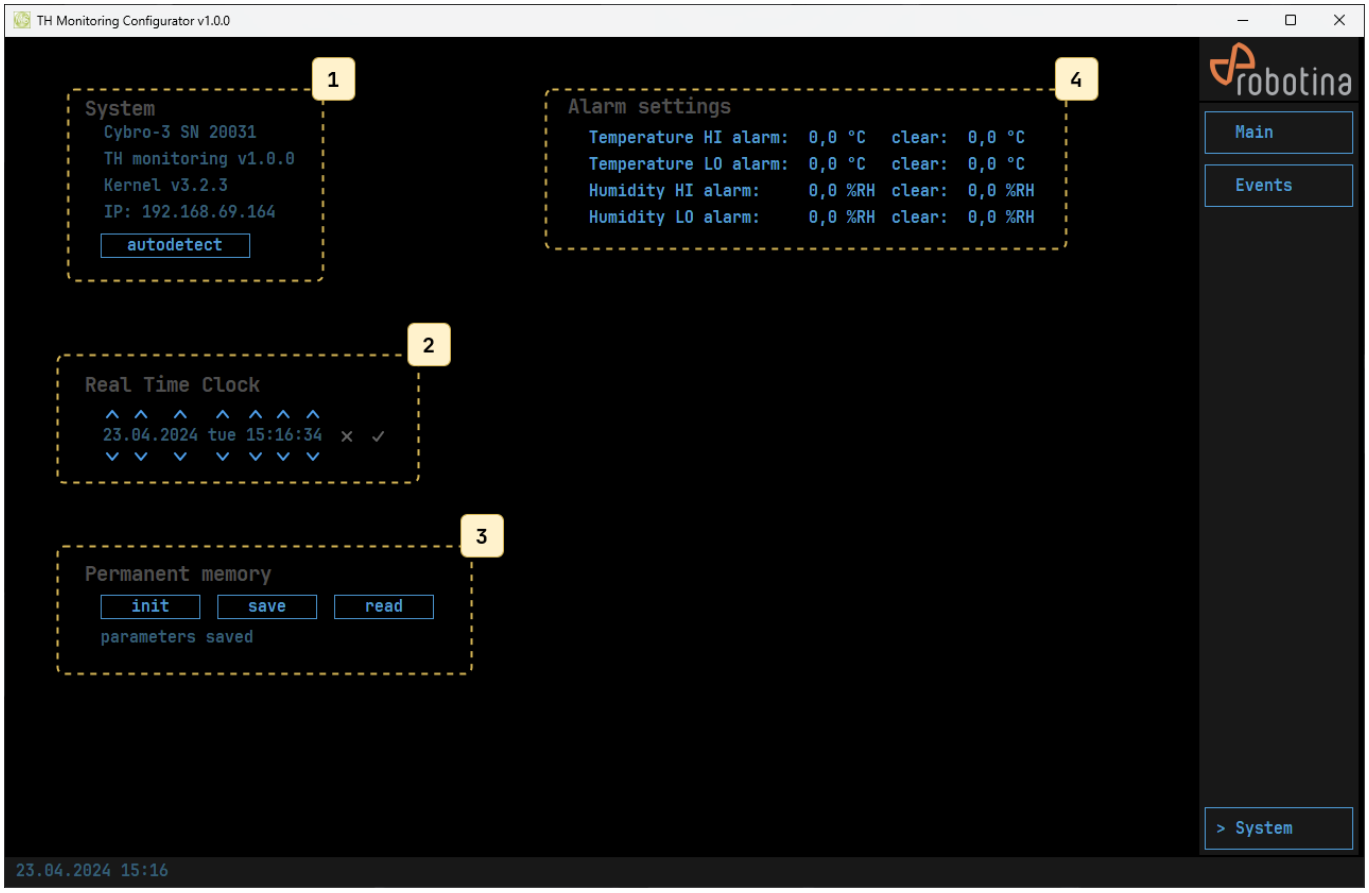
Events list

MC put all events (sensors move and alarms) in FIFO list (100 events in total). On Configurator page Events last 25 events are shown.



System

System overview and settings.



1	System settings: - MC serial number - SW version - MC Kernel version - MC IP
2	MC RTC Important for event logger
3	Permanent memory management: Alarm settings are stored to permanent (EEPROM) memory
4	Alarm settings Set to 0 to disable alarm or alarm clear functionality.

Modbus TCP/IP

Unit ID: 1

Supported Modbus TCP/IP function codes:

- Read Holding Registers (0x03)
- Write Single Register (0x06)
- Write Multiple Registres (0x10)

Holding Registers

Variable	PLC variable	Address	Access	Data type	Description
Sensors (si=sensor index 0..120; 0=unassigned (new) sensor)					
Index	si	10 * si + 0	RW	I16	Sensor index (si); when changed sensor will be moved to new index, but only if new space is empty
Status	th_status[si]	10 * si + 1	RO	I16	Temperature sensor status 0 = no sensor, 1 = OK, 2 = Error, no response
Temperature	th_temperature[si]	10 * si + 2	RO	I16	Measured temperature in 0.1 °C (234 = 23,4 °C)
Humidity	th_humidity[si]	10 * si + 3	RW	I16	Measured relative humidity in 0.1 %RH (654 = 65,4 %RH)
Alarm Temperature HI	th_temperature_alarm_hi[si]	10 * si + 4	RW	I16	Measured temperature over set high limit 0 = idle 1 = alarm
Alarm Temperature LO	th_temperature_alarm_lo[si]	10 * si + 5	RW	I16	Measured temperature below set low limit 0 = idle 1 = alarm
Alarm Humidity HI	th_humidity_alarm_hi[si]	10 * si + 6	RW	I16	Measured humidity over set high limit 0 = idle 1 = alarm
Alarm Humidity LO	th_humidity_alarm_lo[si]	10 * si + 7	RO	I16	Measured humidity below set low limit 0 = idle 1 = alarm
Spare	0	10 * si + 8	RO	I16	0
Spare	0	10 * si + 9	RO	I16	0
Statistics					
Sensors count	th_count_all	1210	RO	I16	The number of all sensors that are configured
Sensors OK	th_count_ok	1211	RO	I16	The number of all sensors communicating correctly

Variable	PLC variable	Address	Access	Data type	Description
Sensors Error	th_count_err	1212	RO	I16	Number of all sensors not responding (not communicating)
Sensors Alarm	th_count_alarm	1213	RO	I16	The number of all sensors that are in alarm (temperature or humidity outside the set limits; if the limits are set)
Average temperature	th_temperature_avg	1214	RO	I16	Average temperature of all sensors communicating properly
Minimal temperature	th_temperature_min	1215	RO	I16	The minimum temperature of all sensors communicating properly
Maximal temperature	th_temperature_max	1216	RO	I16	The maximum temperature of all sensors that communicate correctly
Average humidity	th_humidity_avg	1217	RO	I16	Average relative humidity of all sensors communicating correctly
Minimal humidity	th_humidity_min	1218	RO	I16	Minimum relative humidity of all sensors communicating properly
Maximal humidity	th_humidity_max	1219	RO	I16	Maximum relative humidity of all sensors communicating correctly
Spare	0	1220-1229	RO	i16	0
General settings					
Temperature HI Limit	th_temperature_alarm_hi_limit	1230	RW	I16	Limit for temperature HI alarm in 0.1 °C (500 = 50,0 °C); 0 = No temperature HI alarm

Variable	PLC variable	Address	Access	Data type	Description
Temperature HI Clear	th_temperature_alarm_hi_clear	1231	RW	I16	Limit for clear of temperature HI alarm in 0.1 °C (450 = 45,0 °C), must be lower than Temperature HI Limit; 0 = No auto clear of temperature HI alarm
Temperature LO Limit	th_temperature_alarm_lo_limit	1232	RW	I16	Limit for temperature LO alarm in 0.1 °C (50 = 5,0 °C); 0 = No temperature LO alarm
Temperature LO Clear	th_temperature_alarm_lo_clear	1233	RW	I16	Limit for clear of temperature LO alarm in 0.1 °C (100 = 10,0 °C), must be higher than Temperature LO Limit; 0 = No auto clear of temperature LO alarm
Humidity HI Limit	th_humidity_alarm_hi_limit	1234	RW	I16	Limit for humidity HI alarm in 0.1 %RH (500 = 50,0 %RH); 0 = No humidity HI alarm
Humidity HI Clear	th_humidity_alarm_hi_clear	1235	RW	I16	Limit for clear of humidity HI alarm in 0.1 %RH (450 = 45,0 %RH), must be lower than Humidity HI Limit; 0 = No auto clear of humidity HI alarm
Humidity LO Limit	th_humidity_alarm_lo_limit	1236	RW	I16	Limit for humidity LO alarm in 0.1 %RH (50 = 5,0 %RH); 0 = No humidity LO alarm

Variable	PLC variable	Address	Access	Data type	Description
Humidity LO Clear	th_humidity_alarm_lo_clear	1237	RW	I16	Limit for clear of humidity LO alarm in 0.1 %RH (100 = 10,0 %RH), must be higher than humidity LO Limit; 0 = No auto clear of humidity LO alarm
Spare	0	1238	RO	I16	0
Spare	0	1239	RO	I16	0