MODBUS TCP Register List for DeltaMaster

This document describes register and bit vaiables for DeltaMaster that are accessible via SIOXNET or MODBUS TCP to control and supervise the system.

Please note:
MODBUS Register/Bit numbers assumes that the numbering starts at 1.
Temperatures are read/written as signed 16-bit integers with 0,1°C resolution.
For example: write 235 for 23,5°C.
Fan output control values are read/written as unsigned 16-bit integers in the range 0-4096 corresponding to 0-100%.
Time values are read/written in seconds or minutes as unsigned 16-bit integers.

Important: the controller uses an EEPROM device for nonvolatile storage of setup data and setpoint values. These devices are not guaranteed for more than 1 million **write** cycles for any single register. Therefore, continuously writing to any register should be prevented which otherwise will lead to premature malfunction of the device. Only perform writes when there is a need to change the settings. The register numbers that are mapped to the EEPROM device are high-numbered ones (32xxx).

Outdoor/ Indoor Temperatures

Accessible via MODBUS Function code 3 or 4.

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
56	57	Outdoor Temp	Read	Indoor Temperature (°C)
57	58	Indoor Temp	Read	Outdoor Temperature (°C)

Heater Setpoint Values

Accessible via MODBUS Function code 3 or 4 for reading and 6 for writing.

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
52	32821	Indoor Limit	Read/write	Heater Indoor Limit (°C)
50	32819	Hysteresis	Read/write	Heater Indoor Limit Hysteresis (°C)

Heater Status

Accessible via MODBUS Function code 1 or 2.

SIOX Parameter:bit	MODBUS Bit nr.	Variable name	Access type	Function
8:1	129	Heater-Status	Read	Bit set=Heater active

Fan Setpoint Values

Accessible via MODBUS Function code 3 or 4 for reading and 6 for writing.

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
35	32804	Fan Setpoint	Read/write	Temperature Setpoint for Free Cooling (°C)
26	27	Calculated Setpoint	Read	Calculated Indoor Temperature Setpoint (°C) (Delta T handling included and this is what the regulator tries to regulate towards)
27	32796	Delta T	Read/write	Delta T Setpoint (°C)
30	32799	Delta T Min Output	Read/write	Delta T Minimum Fan Output for temperatures above 20 °C 0-4096 (0-100%)
46	32815	Max Fan Output	Read/write	Maximum Fan Output 0-4096 (0-100%)
91	32860	Min Fan Output	Read/write	Minimum Fan Output 0-4096 (0-100%). Output will shut off if fan speed is less UNLESS see below…
101	32870	Set Min Fan Output	Read/write	(0-100%) If a non-zero value is set here the fan will NEVER go at a slower speed
36	32805	I-Time	Read/write	I-Time (seconds)
37	32806	P-Band	Read/write	P-Band (°C)

Fan Output

Accessible via MODBUS Function code 3 or 4.

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
12	13	Fan Output	Read	Fan Output Control Value 0-4096 (0-100%)

Fan Speed

DI1 is an optional Tacho Input that reflects the speed of the fan.

Accessible via MODBUS Function code 3 or 4.

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
6	7	Fan Speed	Read	Fan Speed (Hz)

Fan Start (Emergency Cooling)

Accessible via MODBUS Function code 3 or 4 for reading and 6 for writing.

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
102	32871	Temp Limit	Read/Write	Emergency Cooling Temperature Limit (°C)
94	32863	Activation Delay Time	Read/write	Delay Time (minutes) after AC start until Emergency Cooling State can be entered

Emergency Cooling Status

Accessible via MODBUS Function code 1 or 2.

SIOX Parameter:bit	MODBUS Bit nr.	Variable name	Access type	Function
100:14	1614	Emergency Cooling Status	Read	Bit set=Emergency Cooling Active

Damper Select

Accessible via MODBUS Function code 1 or 2 for reading and 5 for writing.

Only set one of the bits or none if there is no damper to control.

SIOX Parameter:bit	MODBUS Bit nr.	Variable name	Access type	Function
47:3	755	Motorized	Read/write	Bit set = Motorized
47:4	756	RBS	Read/write	Bit set = RBS
47:5	757	MIX	Read/write	Bit set = MIX

Damper Control

Accessible via MODBUS Function code 3 or 4 for reading and 6 for writing.

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
109	32878	RBS/MIX Temp Limit	Read/write	Temperature Limit for RBS/MIX Damper (°C)
25	32794	Motorized Temp Limit	Read/write	Damper will open at higher indoor temperature (°C)
111	32880	Exercise Interval	Read/write	Damper Exercise Interval (minutes)
92	32861	Damper Opening Time	Read/write	Damper Opening Time (seconds)

Damper Status

Accessible via MODBUS Function code 1 or 2.

SIOX Parameter:bit	MODBUS Bit nr.	Variable name	Access type	Function
8:4	132	Damper-Status	Read	Bit set=Damper active
100:9	1609	Damper Exercise Status	Read	Bit set=Exercising

AC Control

Accessible via MODBUS Function code 3 or 4 for reading and 6 for writing.

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
106	32875	Dead Zone	Read/write	Temperature Dead Zone Setpoint (°C)
107	32876	Activation Time	Read/write	AC-activation Time (minutes)
108	32877	AC Hysteresis	Read/write	Hysteresis for AC without built-in temperature controller (°C) (0=No on/off control)
95	32864	Limit AC Mode	Read/write	Limit for AC Mode (°C) (AC Outdoor Temperature Mode) 0=No outdoor temperature control

AC Status

Accessible via MODBUS Function code 1 or 2.

SIOX Parameter:bit	MODBUS Bit nr.	Variable name	Access type	Function
8:2	130	AC-Status	Read	Bit set=AC active

AC Start Temperature

Accessible via MODBUS Function code 3 or 4

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
90	91	AC-Start Temp.	Read	AC-Start Temperature (calculated) (°C)

DI2 Function Select

Accessible via MODBUS Function code 3 or 4 for reading and 6 for writing.

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
84	32853	DI2 Function	Read/write	0 = no function 1 = Fire Alarm Input 2 = Mains Alarm Input

Service Stop

Accessible via MODBUS Function code 3 or 4 for reading and 6 for writing.

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
24	32793	Service Stop Temp.	Read/write	Service Stop Temperature (°C)
42	32811	Service Stop Time	Read/write	Service Stop Time (minutes)

Service Stop Status

Accessible via MODBUS Function code 1 or 2.

SIOX Parameter:bit	MODBUS Bit nr.	Variable name	Access type	Function
47:1	753	Service Stop Status	Read	Bit set = Service Stop Active

Energy Pulse Count

Accessible via MODBUS Function code 3 or 4 for reading.

This is the pulse count via DI3. Because it is a 32-bit value stored in two 16-bit parameters, start with reading MSW and thereafter LSW and combine the two values.

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
4	5	Energy MSW	Read	Energy Register (MSW)
5	6	Energy LSW	Read	Energy Register (LSW)

Clock Time Registers

Accessible via MODBUS Function code 3 or 4 for reading and 6 for writing.

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
176	177	Year	Read/write	Year
177	178	Month	Read/write	Month
178	179	Day	Read/write	Day
179	180	Hour	Read/write	Hour
180	181	Minute	Read/write	Minute
181	182	Second	Read/write	Second
182	183	Day of Week	Read/write	Day of Week (1 = Monday)

Clock Run Control

Accessible via MODBUS Function code 3 or 4 for reading and 6 for writing.

SIOX Parameter:bit	MODBUS Register	Variable name	Access type	Function
183	184	Clock Stop	Read/write	1 = Stop Clock
183	184	Clock Run	Read/write	3 = Start Clock

To set clock: write Clock Stop (1). Wait one second. Write new time data. Write Clock Start (3).

Alarm Levels

Accessible via MODBUS Function code 3 or 4 for reading and 6 for writing.

SIOX Parameter	MODBUS Register	Variable name	Access type	Function
53	32822	High Temp.	Read/write	High Temperature Alarm Level (°C)
54	32823	Low Temp.	Read/write	Low Temperature Alarm Level (°C)
28	32797	Delta T Alarm	Read/write	Limit for Delta T Filter Alarm (°C)
29	32798	Delta T Hyst.	Read/write	Hysteresis for Delta T Filter Alarm (°C)
78	32847	Mains Fail Offset	Read/write	Mains Fail Setpoint Offset (°C)
88	32857	Mains Fail Max Speed	Read/write	Mains Fail Max Speed (0-100%)

Alarm Status

All alarms are self-resetting, i.e. when the cause for the alarm is gone the alarm will reset itself.
Accessible via MODBUS Function code 1 or 2.

Alternatively, the status bits can be read as **one** register via function code 3 or 4 at MODBUS register-address 26. Bit number 769 is the Least Significant Bit in the register.

SIOX Parameter:bit	MODBUS Bit nr.	Variable name	Access type	Function
48:1	769	Fire	Read	Fire Alarm via DI2 (if selected as Fire Alarm Input)
48:2	770	High Temp	Read	Indoor Temperature above High Temperature Alarm Level
48:3	771	Mains Alarm	Read	Mains Alarm via DI2 (if selected as Mains Alarm Input)
48:4	772	Indoor Sensor	Read	Indoor Sensor Failure
48:5	773	Outdoor Sensor	Read	Outdoor Sensor Failure
48:6	774	Filter Alarm	Read	Filter Alarm (Delta T Filter Alarm)
48:7	775	Low Temp	Read	Low Temperature Alarm. Indoor Temperature below Low Temperature Alarm Level
48:9	776	AC Alarm	Read	AC Alarm (via DI4)
48:10	777	Fan Alarm	Read	Fan Alarm (via DI5)