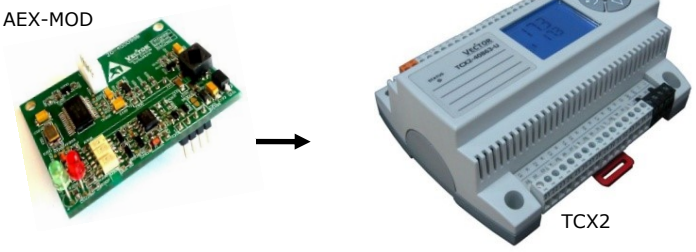
Modbus communication module for TCX2: AEX-MOD

AEX-MOD



TCX2

AEX-MOD is factory installed in TCX2 series controllers with -MOD suffix, and is also available separately upon request for customer installation in standard TCX2 series controllers.

Features

- RS485 2-wire MODBUS standard in accordance with EIA/TIA 485.
- Slave type of communication
- Supports up to 127 nodes on one network
- Galvanic isolated bus connection
- LED indicators
- Selectable transmission types:
  - **RTU** with CRC16 checksum
  - ASCII with LRC checksum
  - Baud rates: 4800, 9600, **19200**, 38400
  - Parity: No parity, odd or **even parity**.
  - Default: RTU with 8 data bits, 1 even parity bit, 1 stop bit. Baud rate 19200.

Communication Specification

Communication standard	Modbus (www.modbus.org)
Default setting	19200 Baud rate, RTU 8 data bits, 1 even parity bit, 1 stop bit
Communication speed	4800, 9600, 19200, 38400
Protocol	RTU with CRC16 checksum ASCII with LRC checksum
Parity – stop bit	no parity – 2 stop, even parity or odd parity – 1 stop

RTU or ASCII, data and stop bits

By **default**, **RTU** uses 8 data bits, 1 parity bit with even parity and 1 stop bit; ASCII mode uses 7 data bits, 1 parity bit with even parity, and 1 stop bit.

Both modes support "No Parity" mode, in these cases a 2nd stop bit is used to keep the byte length (11bit for RTU and 10 bit for ASCII, including the Start and Stop bits) unchanged in accordance with the Modbus specification. Other possible serial port modes like Odd Parity or baud rates other than listed ones are not supported.

Supported Modbus commands:

- 03 (0x03): Read multiple registers
- 06 (0x06): Write single register
- 16 (0x10): Write multiple registers

In commands 03 and 16 the allowed number of registers ranges from 1 to 32. Although Modbus specification would allow more registers to be read and written, a maximum of 32 Modbus registers are supported in one packet. One Modbus register is 16 bits wide. The Modbus slave transmits the values as signed 16 bit integers. The least significant digit of the transmitted number is always the first digit below the decimal point, and this results in the following range of numbers that the slave module is able to transmit: from -9999.9 to 9999.9

In an event of an out-of-range command addressing or an unsupported command, the Modbus slave responds with an exception message according to the Modbus specification.

LED indicators

The Modbus slave features a green LED and a red LED for indication of traffic on the RS-485 bus. The green LED is lit when an incoming packet is received, and the red LED is lit when an outgoing packet is transmitted to the bus. At power-up, both LED blink twice simultaneously as a sign of the boot process being completed. A constantly lit LED serves as an indication of a fault condition in the reception or sending process.

Ordering

AEX-MOD is pre-installed in TCX2-40863-MOD and TCX2-40863-OP-MOD as well as any other –MOD TCX2 configuration.

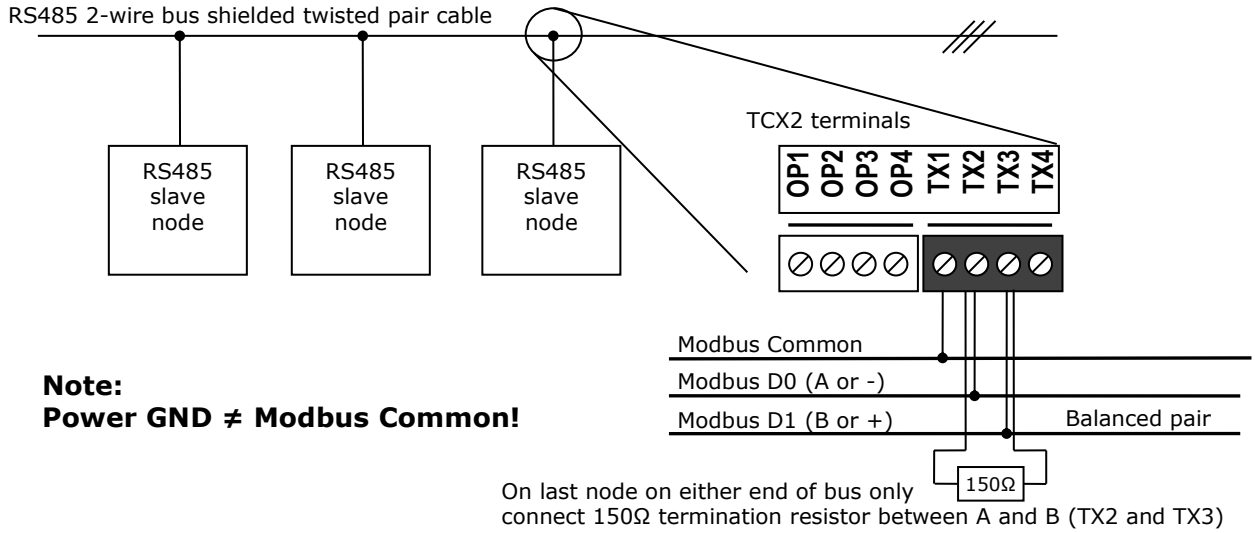
Model	Item#	Display	Loop	UI/RT	DO	AO	Description
TCX2-40863	40-11 0032	No	4	8 UI	6 Relays	3	Universal controller stand-alone
TCX2-40863-OP	40-11 0036	Yes	4	8 UI	6 Relays	3	Controller with display stand-alone
TCX2-40863-MOD	40-11 0077	No	4	8 UI	6 Relays	3	Universal controller with Modbus
TCX2-40863-OP-MOD	40-11 0078	Yes	4	8 UI	6 Relays	3	Controller with display and Modbus
TCX2-14050-MOD	40-11 0081	No	1	4 RT	5 Relays	0	Zone controller with Modbus for fan coil
TCX2-13343-MOD	40-11 0069	No	1	3 RT, 3VDC	4 Relays	3	Zone controller with Modbus for fan coil and VAV
TCX2-14273-24-MOD	40-11 0090	No	1	4RT, 2VDC	5R, 2T	3	Zone controller with Modbus for fan coil and VAV
TCX2-14273-230-MOD	40-11 0090	No	1	4RT, 2VDC	5R, 2T	3	Zone controller with Modbus for fan coil and VAV
AEX-MOD	40-50 0013	-	-	-	-	-	Modbus communication module

Technical specifications

Notice! Failure to follow specifications and local regulations may cause equipment damage. Misapplication will void warranty.

Power Supply	Power Requirements	5 VDC ±5%, 10 mA max.
Connection to remote terminal	Hardware interface Conductors Galvanic isolation	RS485 in accordance with EIA/TIA 485 Twisted pair cable as specific below The communication circuitry is not isolated.
Network	Hardware interface Max nodes per network Max nodes per segment	RS485 in accordance with EIA/TIA 485 128 64 (Vector devices only)
	Conductors Impedance Nominal capacitance	Shielded Twisted Pair (STP) cable 100 - 130 ohm 100 pF/m 16 pF/ft. or lower
	Galvanic isolation	The communication circuitry is isolated
	Line termination Network topology	A line termination resistance (120 ohm) shall be connected between the terminals (+) and (-) of the furthermost node of the network Daisy chain according EIA/TIA 485 specifications
	Recommended maximum length per chain	1200 m (4000 ft.)
Modbus	Communication standard	Modbus (www.modbus.org)
	Default setting	19200 Baud rate, RTU 8 data bits, 1 even parity bit, 1 stop bit
	Communication speed	4800, 9600, 19200, 38400
	Protocol	RTU with CRC16 checksum, ASCII with LRC checksum
	Protocol: Data bits Parity – stop bit	RTU - 8 data bits, ASCII – 7 data bits no parity – 2 stop, even or odd parity – 1 stop
Environment	Operation Climatic Conditions Temperature Humidity	To IEC 721-3-3 class 3 K5 0…50 °C (32…122 °F) <95 % r.H. non-condensing
	Transport & Storage Climatic Conditions Temperature Humidity Mechanical Conditions	To IEC 721-3-2 and IEC 721-3-1 class 3 K3 and class 1 K3 -25…70 °C (-13…158 °F) <95 % r.H. non-condensing class 2M2
Standards	CE conformity EMC Directive Low Voltage Directive	 2004/108/EC 2006/95/EC
	Product standards Automatic electrical controls for household and similar use Special requirement on temperature dependent controls	 EN 60 730 –1 EN 60 730 – 2 – 9
	Electromagnetic compatibility for industrial and domestic sector	Emissions: EN 60 730-1 Immunity: EN 60 730-1

Wiring



Note:
Power GND ≠ Modbus Common!

Line polarization:
The device needs line polarization. One pair of resistors may be connected on the RS-485 balanced pair:
- A Pull-Up Resistor to a 5V Voltage on D1 circuit,
- A Pull-Down Resistor to the common circuit on D0 circuit. This should be done only once at the master only. The value of those resistors must be between 450 Ohms and 650 Ohms. 650 Ohms resistors value may allow a higher number of devices on the serial line bus.

Configuration of AEX-MOD

The communication parameters may be set via TCX2-OP controllers or OPA2 terminals once the device is plugged in the TCX2 base. Login to the controller as follows:

1. Press UP/DOWN buttons simultaneously for three seconds. The display will show firmware version and revision number. Press the OPTION button to start login.
2. CODE is shown in small display.
3. Select 241 using UP/DOWN buttons.
4. Press OPTION after selecting the correct code.
5. Once logged in with 241 control modules are displayed (Lp1, Lp2, 1u, 2u, etc.) – select with UP/DOWN the communication parameters **CO** and open with OPTION. As soon as the module is open its parameters are displayed.
6. Select the parameters with the UP/DOWN buttons. Change a parameter by pressing the OPTION button. Three arrows are displayed to indicate that the parameter may be modified. Use UP/DOWN buttons to adjust the value.
7. After you are done, press OPTION to save the new value and return to the selection level (arrows disappear when selection is saved). Pressing left hand POWER button without pressing OPTION will discard the value and return without saving. For control parameters press POWER again to leave parameter selection and return to control module selection.

Press the POWER to leave the menu. The unit will return to normal operation if no button is pressed for more than 5 minutes.

COM parameters

Parameter	Address	Description	Range	Default
CO 00	13000	Bus plug-in id (read only)	0…255	1
CO 01	13001	Bus plug-in software version (read only)	0…255	-
CO 02	13002	Bus plug-in software revision (read only)	0…255	-
CO 03	13003	Communication address (must be unique in network)	1…127	1
CO 04	13004	Baud rate: 0 = **19200** 1 = 4800 2 = 9600 3 = 19200 4 = 38400	0…255	0
CO 05	13005	Parity mode 0 = NO Parity, 2 stop bits 1 = **EVEN Parity, 1 stop bit** 2 = ODD Parity, 1 stop bit	0…255	1
CO 06	13006	Mode of communication 0 = **RTU, 8 data bits** 1 = ASCII, 7 data bits	0…255	0
CO 07	13007	Allow changing of static settings through communication 0 = Not allowed 1 = **Allowed**	0…255	1
CO 08	13008	Modbus address base mode **0 = Modbus addresses are "Base 0"** 1 = Modbus addresses are "Base 1" (PLC style)	0…255	0
CO 09	13009	User definable data storage address 00	0…255	255
CO 10	13010	User definable data storage address 01	0…255	255
CO 11	13011	User definable data storage address 02	0…255	255
CO 12	13012	User definable data storage address 03	0…255	255
CO 13	13013	Not used	0…255	255
CO 14	13014	Not used	0…255	255
CO 15	13015	Automatic address increase. If enabled the address will automatically increase when parameters are automatically loaded at power up using AEC-PM1 in auto load mode. This is useful when setting up controllers for a large network. This way the installer will not have to login manually and set the network address for each controller. 0 = Auto increment function disabled 1 = Auto increment function is enabled	0…1	0

➔ **Automatic address increase function:**
When this function is enabled and an automatic AEC-PM1 parameter load is executed at power up of the controller, the communication address on CO03 is incremented and written back to the AEC-PM1 unit.
It is incremented only if the value is not already 127.

➔ **Changing address register through broadcast message:**
It is not possible to change network address register through broadcast message.

Changing parameters of the controller through bus communication

It is possible to remotely changing parameters through an indirect read/write mode. Find details on the procedure required and how to interpret values in the application note: Access to control parameters through AEX-MOD

Dynamic Address list

Controller information

Address	Description	Range	R/W
1000	Product series information	8bit	R
1001	Product type information	8bit	R
1002	Controller Firmware Version	8bit	R
1003	Controller Firmware Revision	8bit	R
1004	Type of controller	16bit	R
1005	Number of control loops	16bit	R
1006	Number of binary inputs	16bit	R
1007	Number of universal inputs	16bit	R
1008	Number of virtual inputs	16bit	R
1009	Number of binary outputs	16bit	R
1010	Number of analog outputs	16bit	R
1011	Number of fan outputs	16bit	R
1012	Number of floating outputs	16bit	R
1013	Number of alarms	16bit	R
1014	Number of auxiliary functions	16bit	R
1015	Number of time schedules	16bit	R
1016	Number of switching times / time schedule	16bit	R

Controller state

1050	Operation State ON 0 = OFF, 1 = ON	1bit	R/W
1051	Operation state Standby – Comfort 0 = **Comfort**, 1 = Standby	1bit	R/W
1052	Operation State Heat – Cool 1 = **Heat**, 0 = Cool	1bit	R/W
1053	Operation state Celsius – Fahrenheit 0 = **Celsius**, 1 = Fahrenheit	1bit	R/W
1054	Operation state Fan Only 0 = **Fan Only disabled** 1 = Fan Only enabled	1bit	R/W
1055	Operation state Enable Time Schedules 0 = **Time Schedules disabled** 1 = Time Schedules enabled	1bit	R/W

Clock setting

1080	Century (0…99)	BCD format	R/W
1081	Year (0…99)	BCD format	R/W
1082	Month (1…12)	BCD format	R/W
1083	Day (1…31)	BCD format	R/W
1084	Weekday (1…7)	BCD format	R/W
1085	Hour (00…23)	BCD format	R/W
1086	Minute (00…59)	BCD format	R/W
1087	Second (00…59)	BCD format	R/W

Special controller flags

2022	No-reply-mode: No-reply-mode allows connecting one operation terminal to multiple controllers. One controller must be in normal operation mode and all the others must be set to no-reply-mode. These controllers will follow each command issued by the operation terminal. They will not send responses and their alarm conditions are not monitored by the operation terminal. 0 = **normal operation**, 1 = no-reply-mode	1bit	R/W
2023	Wink function: activates LED on top of controller 0 = **LED has normal operation**, 1 = LED is constantly on	1bit	R/W
2024	Operation state Summer – Winter (used to switch set point limits for 4-pipe systems) 0 = **Summer mode** 1 = Winter mode	1bit	R/W

Universal Inputs

Address	Input	Description	Range	Datatype	R/W
1100	UI1	universal input 1 state, 0 = not active / error, 1 = ok	1bit	16 bit signed	R
1101	UI1	Unit of universal input 0 = no unit 1 = % 2 = °C /°F 3 = Pa	8bit	16 bit signed	R
1102	UI1	Value Multiplier: "**1**" means a multiplication factor of **0.1** "10" means a multiplication factor of 1 "100" means a multiplication factor of 10	8bit	16 bit signed	R
1103	UI1	Short value (word)	16bit	16 bit signed	R
1700	UI1	Long value low word	16bit	32 bit signed	R
1701	UI1	Long value high word	16bit	(long inverse)	R
1104	UI2	universal input 2 state, 0 = not active / error, 1 = ok	1bit	16 bit signed	R
1105	UI2	Unit of universal input (explanation as in 1101)	8bit	16 bit signed	R
1106	UI2	Value Multiplier (explanation as in 1102)	8bit	16 bit signed	R
1107	UI2	Value	16bit	16 bit signed	R
1702	UI2	Long value low word	16bit	32 bit signed	R
1703	UI2	Long value high word	16bit	(long inverse)	R
1108	UI3	universal input 3 state, 0 = not active / error, 1 = ok	1bit	16 bit signed	R
1109	UI3	Unit of universal input (explanation as in 1101)	8bit	16 bit signed	R
1110	UI3	Value Multiplier (explanation as in 1102)	8bit	16 bit signed	R
1111	UI3	Value	16bit	16 bit signed	R
1704	UI3	Long value low word	16bit	32 bit signed	R
1705	UI3	Long value high word	16bit	(long inverse)	R
1112	UI4	universal input 4 state, 0 = not active / error, 1 = ok	1bit	16 bit signed	R
1113	UI4	Unit of universal input (explanation as in 1101)	8bit	16 bit signed	R
1114	UI4	Value Multiplier (explanation as in 1102)	8bit	16 bit signed	R
1115	UI4	Value	16bit	16 bit signed	R
1706	UI4	Long value low word	16bit	32 bit signed	R
1707	UI4	Long value high word	16bit	(long inverse)	R
1116	UI5	universal input 5 state, 0 = not active / error, 1 = ok	1bit	16 bit signed	R
1117	UI5	Unit of universal input (explanation as in 1101)	8bit	16 bit signed	R
1118	UI5	Value Multiplier (explanation as in 1102)	8bit	16 bit signed	R
1119	UI5	Value	16bit	16 bit signed	R
1708	UI5	Long value low word	16bit	32 bit signed	R
1709	UI5	Long value high word	16bit	(long inverse)	R
1120	UI6	universal input 6 state, 0 = not active / error, 1 = ok	1bit	16 bit signed	R
1121	UI6	Unit of universal input (explanation as in 1101)	8bit	16 bit signed	R
1122	UI6	Value Multiplier (explanation as in 1102)	8bit	16 bit signed	R
1123	UI6	Value	16bit	16 bit signed	R
1710	UI6	Long value low word	16bit	32 bit signed	R
1711	UI6	Long value high word	16bit	(long inverse)	R
1124	UI7	universal input 7 state, 0 = not active / error, 1 = ok	1bit	16 bit signed	R
1125	UI7	Unit of universal input (explanation as in 1101)	8bit	16 bit signed	R
1126	UI7	Value Multiplier (explanation as in 1102)	8bit	16 bit signed	R
1127	UI7	Value	16bit	16 bit signed	R
1712	UI7	Long value low word	16bit	32 bit signed	R
1713	UI7	Long value high word	16bit	(long inverse)	R
1128	UI8	universal input 8 state, 0 = not active / error, 1 = ok	1bit	16 bit signed	R
1129	UI8	Unit of universal input (explanation as in 1101)	8bit	16 bit signed	R
1130	UI8	Value Multiplier (explanation as in 1102)	8bit	16 bit signed	R
1131	UI8	Value	16bit	16 bit signed	R
1714	UI8	Long value low word	16bit	32 bit signed	R
1715	UI8	Long value high word	16bit	(long inverse)	R

Virtual Inputs

Address	Input	Description	Range	Datatype	R/W
1132	VI1	universal input 9 state, 0 = not active / error, 1 = ok	1bit	16 bit signed	R
1133	VI1	Unit of universal input (explanation as in 1101)	8 bit	16 bit signed	R
1134	VI1	Value Multiplier (explanation as in 1102)	8 bit	16 bit signed	R
1135	VI1	Value	16 bit	16 bit signed	R/W
1716	VI1	Long value low word	16 bit	32 bit signed	R
1717	VI1	Long value high word	16 bit	(long inverse)	R
1136	VI2	universal input 10 state, 0 = not active / error, 1 = ok	1bit	16 bit signed	R
1137	VI2	Unit of universal input (explanation as in 1101)	8bit	16 bit signed	R
1138	VI2	Value Multiplier (explanation as in 1102)	8bit	16 bit signed	R
1139	VI2	Value	16bit	16 bit signed	R/W
1718	VI2	Long value low word	16bit	32 bit signed	R
1719	VI2	Long value high word	16bit	(long inverse)	R
1140	VI3	universal input 11 state, 0 = not active / error, 1 = ok	1bit	16 bit signed	R
1141	VI3	Unit of universal input (explanation as in 1101)	8bit	16 bit signed	R
1142	VI3	Value Multiplier (explanation as in 1102)	8bit	16 bit signed	R
1143	VI3	Value	16bit	16 bit signed	R/W
1720	VI3	Long value low word	16bit	32 bit signed	R
1721	VI3	Long value high word	16bit	(long inverse)	R
1144	VI4	universal input 12 state, 0 = not active / error, 1 = ok	1bit	16 bit signed	R
1145	VI4	Unit of universal input (explanation as in 1101)	8bit	16 bit signed	R
1146	VI4	Value Multiplier (explanation as in 1102)	8bit	16 bit signed	R
1147	VI4	Value	16bit	16 bit signed	R/W
1722	VI4	Long value low word	16bit	32 bit signed	R
1723	VI4	Long value high word	16bit	(long inverse)	R

➔ The TCX2 can operate with external inputs. To activate, program the virtual input to use it as external input of the communication module: for example 9u00 = 2 (Address 3800 = 2) or 10u00 = 2 (Address 3900 = 2), see static address list on page 8).

➔ Then program the master to write to the input address the value to the corresponding input. For example Address 1135 for virtual input 1 and 1139 for virtual input 2. Observe the specified time out limitations in the virtual input settings of the TCX2. If the input is not re-written within the time out limits, the TCX2 will disable the corresponding virtual input and with it all associated control functions.

Control loop

Address	Loop	Description	Range	R/W
1200	Loop 1	Control input state	8bit	R
1201	Loop 1	Control loop sequence 1 = heating, 0 = cooling	1bit	R
1202	Loop 1	Control input unit	8 bit	R
1203	Loop 1	Control input value	16bit	R
1204	Loop 1	Saved Set point	8bit	R/W
1205	Loop 1	Calculated Set point	8bit	R
1206	Loop 1	Proportional output	8bit	R
1207	Loop 1	Binary output	8bit	R
1208	Loop 2	Control input state	8bit	R
1209	Loop 2	Control loop sequence 1 = heating, 0 = cooling	1bit	R
1210	Loop 2	Control input unit	8 bit	R
1211	Loop 2	Control input value	16bit	R
1212	Loop 2	Saved Set point	8bit	R/W
1213	Loop 2	Calculated Set point	8bit	R
1214	Loop 2	Proportional output	16bit	R
1215	Loop 2	Binary output	8bit	R
1216	Loop 3	Control input state	8bit	R
1217	Loop 3	Control loop sequence 1 = heating, 0 = cooling	1bit	R
1218	Loop 3	Control input unit	8 bit	R
1219	Loop 3	Control input value	16bit	R
1220	Loop 3	Saved Set point	8bit	R/W
1221	Loop 3	Calculated Set point	8bit	R
1222	Loop 3	Proportional output	16bit	R
1223	Loop 3	Binary output	8bit	R
1224	Loop 4	Control input state	8bit	R
1225	Loop 4	Control loop sequence 1 = heating, 0 = cooling	1bit	R
1226	Loop 4	Control input unit	8 bit	R
1227	Loop 4	Control input value	16bit	R
1228	Loop 4	Saved Set point	8bit	R/W
1229	Loop 4	Calculated Set point	8bit	R
1230	Loop 4	Proportional output	16bit	R
1231	Loop 4	Binary output	8bit	R

Analog Outputs

1300	AO1	State bit 0: 0 = not active / error, 1 = ok bit 1: 0 = automatic mode, 1 = manual mode	8bit	R
1301	AO1	Current value	16bit	R
1302	AO1	Override value (Only applies if output set to manual)	16bit	R/W
1303	AO2	State, 0 = not active / error, 1 = ok	8bit	R
1304	AO2	Current value	16bit	R
1305	AO2	Override value (Only applies if output set to manual)	16bit	R/W
1306	AO3	State, 0 = not active / error, 1 = ok	8bit	R
1307	AO3	Current value	16bit	R
1308	AO3	Override value (Only applies if output set to manual)	16bit	R/W

Digital Outputs

Address	DO	Description	Range	R/W
1400	DO1	State Bit 0: 0= Floating mode is OFF, 1 = Floating mode is ON Bit 1: 0= not active / error, 1 = active and ok Bit 2: 0 = automatic mode, 1 = manual mode Bit 3: 0 = PWM not active, 1 = PWM active Bit 6: 0 = Run time totalizer disabled, 1 = Run time totalizer ON Bit 7: 0 = Run time limit not reached, 1 = Run time limit reached Bit 3 to 7 only apply if bit 0 = 0 (non floating output)	8bit	R
1401	DO1	Current value	8bit	R
1402	DO1	Override value (Only applies if output set to manual)	8bit	R/W
1403	DO2	State, as on 1400	8bit	R
1404	DO2	Current value	8bit	R
1405	DO2	Override value (Only applies if output set to manual)	8bit	R/W
1406	DO3	State, as on 1400	8bit	R
1407	DO3	Current value	8bit	R
1408	DO3	Override value (Only applies if output set to manual)	8bit	R/W
1409	DO4	State, as on 1400	8bit	R
1410	DO4	Current value	8bit	R
1411	DO4	Override value (Only applies if output set to manual)	8bit	R/W
1412	DO5	State, as on 1400	8bit	R
1413	DO5	Current value	8bit	R
1414	DO5	Override value (Only applies if output set to manual)	8bit	R/W
1415	DO6	State, as on 1400	8bit	R
1416	DO6	Current value	8bit	R
1417	DO6	Override value (Only applies if output set to manual)	8bit	R/W
1418	DO7	State, as on 1400	8bit	R
1419	DO7	Current value	8bit	R
1420	DO7	Override value (Only applies if output set to manual)	8bit	R/W

Fans

1500	FAN1	State Bit 0/1:= Current fan output Bit 2: 0= not active / error, 1 = active and ok Bit 3: automatic mode, 1 = manual mode Bit 4/5: = Total number of fan speeds Bit 6: 0 = Fan mode active, 1 = rotation mode is active Bit 7: 0 = Manual fan off disabled, 1 = Manual fan off enabled	8bit	R
1501	FAN1	Current value	1bit	R
1502	FAN1	Override value	16bit	R/W
1503	FAN2	State, 0 = not active / error, 1 = ok	8bit	R
1504	FAN2	Current value	1bit	R
1505	FAN2	Override value	16bit	R/W

Alarms

1600	ALA1	Alarm active 0 = not active, 1 = active	1bit	R
1601	ALA1	Alarm confirmed, 0 = confirmed, 1 = not confirmed	1bit	R/W*
1602	ALA2	Alarm active 0 = not active, 1 = active	1bit	R
1603	ALA2	Alarm confirmed, 0 = confirmed, 1 = not confirmed	1bit	R/W*
1604	ALA3	Alarm active 0 = not active, 1 = active	1bit	R
1605	ALA3	Alarm confirmed, 0 = confirmed, 1 = not confirmed	1bit	R/W*
1606	ALA4	Alarm active 0 = not active, 1 = active	1bit	R
1607	ALA4	Alarm confirmed, 0 = confirmed, 1 = not confirmed	1bit	R/W*
1608	ALA5	Alarm active 0 = not active, 1 = active	1bit	R
1609	ALA5	Alarm confirmed, 0 = confirmed, 1 = not confirmed	1bit	R/W*
1610	ALA6	Alarm active 0 = not active, 1 = active	1bit	R
1611	ALA6	Alarm confirmed, 0 = confirmed, 1 = not confirmed	1bit	R/W*
1612	ALA7	Alarm active 0 = not active, 1 = active	1bit	R
1613	ALA7	Alarm confirmed, 0 = confirmed, 1 = not confirmed	1bit	R/W*
1614	ALA8	Alarm active 0 = not active, 1 = active	1bit	R
1615	ALA8	Alarm confirmed, 0 = confirmed, 1 = not confirmed	1bit	R/W*

*) Writable to 0 = confirmed only if state is 1 = not confirmed