

Configuration

The modbus device address, baud rate and parity must be configured on the device via the configuration menu (Alternatively via the PC configuration tool).

Default configuration is: Device address = 1, baudrate = 19200, Parity = Even. Number of start bits is fixed to 8. Number of stop bits depends on parity; Even + Odd -> 1 stop bit, None ->2 stop bits).

Register addressing

This document defines register addresses in accordance with the Modbus Addressing model: "In a MODBUS PDU each data is addressed from 0" (Please refer to section 4.4 in ref [2]).

Example

To read LEDs 1-5 / registers address 101 - 105 from the device on address 1, the following modbus frame can be sent:

0x01 0x03 0x00 0x65 0x00 0x05 0x95 0xD6

Which can be broken down to :

Slave address: 0x01

Function code: 0x03 (Read holding registers)

Start register: 0x0065 / 101

Number of registers: 0x0005

CRC: 0x95 0xD6

Depending on the state of the LEDs, the following frame could be received in response:

0x01 0x03 0x0A 0x00 0x00 0x00 0x01 0x00 0x00 0x00 0x00 0x00 0x00 0x19 0x76

Which can be broken down to:

Slave address: 0x01

Function code: 0x03 (Read holding registers)

Number of bytes: 0x0A

Status of LED1-LED 5: 0x0000 0x0000 0x0001 0x0000 0x0000

CRC: 0x19 0x76

Network termination

Make sure your 485 network is properly terminated by 120 ohm resistors at either end of the network. It is possible to enable a termination resistor on M2500, via the Switch DIP1 on the back of the device, if necessary.

Bias resistors

In some installations it may be necessary to add a bias-resistor-network *once* along the length of the 485 network, depending on the equipment used on the 485 network. Some equipment has the possibility to enable such a network either via SW configuration or physical switches. Please refer to ref. [1] section 3.4.6 for further details.

* The Selco M2500 does not require a bias resistor network (Other devices on the bus MAY require it, though) .

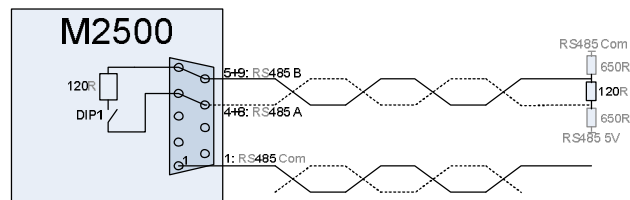
* The Selco M2500 implements a MODBUS slave, As such, it does not provide means for establishing a bias resistor network (No isolated 5V supply is made available).

Pin connections (DB9, female connector.)

Pin 1: RS485 Com

Pin 4+8: RS485 A (Pins internally shorted)

Pin 5+9: RS485 B (Pins internally shorted)



References

[1] "MODBUS over serial line specification and implementation guide V1.02" - http://www.modbus.org/docs/Modbus_over_serial_line_V1_02.pdf

[2] "MODBUS Application protocol Specification V1.1b" - http://www.modbus.org/docs/Modbus_Application_Protocol_V1_1b.pdf

Function	Function code			Comments
	Dec	Hex		
<i>Read coils</i>	1	1h	<i>Not supported</i>	
<i>Read discrete inputs</i>	2	2h	<i>Not supported</i>	
Read holding registers	3	3h	Supported	Read one or more words
Read input registers	4	4h	Supported	Read one or more words
<i>Write single coil</i>	5	5h	<i>Not supported</i>	
Write single register	6	6h	Supported	Write single holding register
<i>Read exception status</i>	7	7h	<i>Not supported</i>	
<i>Diagnostics</i>	8	8h	<i>Not supported</i>	
<i>Get comm event counter</i>	11	Bh	<i>Not supported</i>	
<i>Get comm event log</i>	12	Ch	<i>Not supported</i>	
<i>Write multiple coils</i>	15	Fh	<i>Not supported</i>	
<i>Write multiple registers</i>	16	10h	<i>Not supported</i>	
Report slave ID	17	11h	Supported	Returns an identification string for the device; "Selco M2500\0" (\0 is a terminating character of value 0x00)
<i>Read file record</i>	20	14h	<i>Not supported</i>	
<i>Write file record</i>	21	15h	<i>Not supported</i>	
<i>Mask write register</i>	22	16h	<i>Not supported</i>	
<i>Read/write multiple registers</i>	23	17h	<i>Not supported</i>	
<i>Read FIFO queue</i>	24	18h	<i>Not supported</i>	
<i>Encapsulated interface transport</i>	43	2Bh	<i>Not supported</i>	

Register address			Parameter type	Access[R/W]	Description	Terminal	Values
Dec	Hex	Hex*					
LEDs (100 - 114)							
100	64h						
100	64h		word	R	Number of LEDs on system	na	14
101	65h		word	R	Status of LED "Engine Running"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing
102	66h		word	R	Status of LED "Remote"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing
103	67h		word	R	Status of LED "Local"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing
104	68h		word	R	Status of LED "Cool down"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing
105	69h		word	R	Status of LED "Stopping"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing
106	6Ah		word	R	Status of LED "Override"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing
107	6Bh		word	R	Status of LED "Not ready"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing
108	6Ch		word	R	Status of LED "Alarm"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing
109	6Dh		word	R	Status of LED "Shut down"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing
110	6Eh		word	R	Status of LED "Power supply 1"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing
111	6Fh		word	R	Status of LED "Power supply 2"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing
112	70h		word	R	Status of LED "Main system error"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing
113	71h		word	R	Status of LED "Communication error"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing
114	72h		word	R	Status of LED "Cable error"	na	0=Off; 1=Steady on; 2=Asymetric flashing; 3=Quick flashing; 4=Slow flashing

Mode/Control inputs (1000 - 1008)							
1000	3E8h						
1000	3E8h		word	R	Number of Binary inputs on system	na	8
1001	3E9h	43h	word	R/W	Status of input 'Reset'	12	Reading: 0=Open; 1=Closed Writing: Bit 1=1; Acknowledge active alarms and reset siren.
1002	3EAh		word	R	Status of input "Remote"	05	0=Open; 1=Closed
1003	3EBh		word	R	Status of input "Local"	06	0=Open; 1=Closed
1004	3ECh		word	R	Status of input "OFF"	07	0=Open; 1=Closed
1005	3EDh	44h	word	R/W	Status of input "Auto start"	08	Reading: 0=Open; 1=Closed Writing: Bit 1=1; Start engine (Remote mode only).
1006	3EEh	45h	word	R/W	Status of input "Auto stop"	09	Reading: 0=Open; 1=Closed Writing: Bit 1=1; Stop engine (Remote mode only).
1007	3EFh		word	R	Status of input "Override"	10	0=Open; 1=Closed
1008	3F0h		word	R	Status of input "Crank Disconnect"	11	0=Open; 1=Closed

Pick-up input (RPM) (1100 - 1101)							
1100	44Ch						
1100	44Ch		word	R	Number of pick-up inputs on system	na	1
1101	44Dh		word	R	Engine RPM "Pick-up input"	15	Engine RPM

Digital inputs (1200 - 1209)							
1200	4B0h					Inputs with (optional) cable monitoring	
1200	4B0h		word	R	Number of digital inputs on system	na	9
1201	4B1h		word	R	Status on Digital input "Input 1"	17	0: Open; 1=Closed; 2=Cable broken; 3=Cable short circuited
1202	4B2h		word	R	Status on Digital input "Input 2"	18	0: Open; 1=Closed; 2=Cable broken; 3=Cable short circuited
1203	4B3h		word	R	Status on Digital input "Input 3"	19	0: Open; 1=Closed; 2=Cable broken; 3=Cable short circuited
1204	4B4h		word	R	Status on Digital input "Input 4"	20	0: Open; 1=Closed; 2=Cable broken; 3=Cable short circuited
1205	4B5h		word	R	Status on Digital input "Input 5"	21	0: Open; 1=Closed; 2=Cable broken; 3=Cable short circuited
1206	4B6h		word	R	Status on Digital input "Input 6"	22	0: Open; 1=Closed; 2=Cable broken; 3=Cable short circuited
1207	4B7h		word	R	Status on Digital input "Input 7"	23	0: Open; 1=Closed; 2=Cable broken; 3=Cable short circuited
1208	4B8h		word	R	Status on Digital input "Input 8"	24	0: Open; 1=Closed; 2=Cable broken; 3=Cable short circuited
1209	4B9h		word	R	Status on Digital input "Input 9"	25	0: Open; 1=Closed; 2=Cable broken; 3=Cable short circuited

Analogue inputs (1300 - 1308)							
1300	514h						
1300	514h		word	R	Number of analogue inputs on system	na	8
1301	515h		word	R	Status on analogue input "Sensor 1"	27	Value on analogue input - Scaled according to device configuration
1302	516h		word	R	Status on analogue input "Sensor 2"	28	Value on analogue input - Scaled according to device configuration
1303	517h		word	R	Status on analogue input "Sensor 3"	29	Value on analogue input - Scaled according to device configuration
1304	518h		word	R	Status on analogue input "Sensor 4"	30	Value on analogue input - Scaled according to device configuration
1305	519h		word	R	Status on analogue input "Sensor 5"	31	Value on analogue input - Scaled according to device configuration
1306	51Ah		word	R	Status on analogue input "Sensor 6"	32	Value on analogue input - Scaled according to device configuration
1307	51Bh		word	R	Status on analogue input "Sensor 7"	33	Value on analogue input - Scaled according to device configuration
1308	51Ch		word	R	Status on analogue input "Sensor 8"	34	Value on analogue input - Scaled according to device configuration

Relay outputs (1400 - 1427)							
1400	578h						
1400	578h		word	R	Number of relay outputs on system	na	27
1401	579h		word	R	Status of Relay "Ready"	36	0=Open; 1=Closed (To REF1, terminal 40)
1402	57Ah		word	R	Status of Relay "Start Warn"	37	0=Open; 1=Closed (To REF1, terminal 40)
1403	57Bh		word	R	Status of Relay "Run"	38	0=Open; 1=Closed (To REF1, terminal 40)
1404	57Ch		word	R	Status of Relay "Cool Down"	39	0=Open; 1=Closed (To REF1, terminal 40)
1405	57Dh		word	R	Status of Relay "Lube pump"	41	0=Open; 1=Closed (To REF2, terminal 45)
1406	57Eh		word	R	Status of Relay "Crank"	42	0=Open; 1=Closed (To REF2, terminal 45)
1407	57Fh		word	R	Status of Relay "C/B Trip"	43	0=Open; 1=Closed (To REF2, terminal 45)
1408	580h		word	R	Status of Relay "Air intake"	44	0=Open; 1=Closed (To REF2, terminal 45)
1409	581h	41h	word	R	Status of Relay "Common"	46	0=Open; 1=Closed (To REF3, terminal 50)
1410	582h		word	R	Status of Relay "Shut down"	47	0=Open; 1=Closed (To REF3, terminal 50)
1411	583h		word	R	Status of Relay "Cable"	48	0=Open; 1=Closed (To REF3, terminal 50)
1412	584h		word	R	Status of Relay "Can"	49	0=Open; 1=Closed (To REF3, terminal 50)
1413	585h		word	R	Status of relay "Output 1"	51	0=Open; 1=Closed (To REF4, terminal 63)
1414	586h		word	R	Status of relay "Output 2"	52	0=Open; 1=Closed (To REF4, terminal 63)
1415	587h		word	R	Status of relay "Output 3"	53	0=Open; 1=Closed (To REF4, terminal 63)
1416	588h		word	R	Status of relay "Output 4"	54	0=Open; 1=Closed (To REF4, terminal 63)
1417	589h		word	R	Status of relay "Output 5"	55	0=Open; 1=Closed (To REF4, terminal 63)
1418	58Ah		word	R	Status of relay "Output 6"	56	0=Open; 1=Closed (To REF4, terminal 63)
1419	58Bh		word	R	Status of relay "Output 7"	57	0=Open; 1=Closed (To REF4, terminal 63)
1420	58Ch		word	R	Status of relay "Output 8"	58	0=Open; 1=Closed (To REF4, terminal 63)
1421	58Dh		word	R	Status of relay "Output 9"	59	0=Open; 1=Closed (To REF4, terminal 63)
1422	58Eh		word	R	Status of relay "Output 10"	60	0=Open; 1=Closed (To REF4, terminal 63)
1423	58Fh		word	R	Status of relay "Output 11"	61	0=Open; 1=Closed (To REF4, terminal 63)
1424	590h		word	R	Status of relay "Output 12"	62	0=Open; 1=Closed (To REF4, terminal 63)
1425	591h		word	R	Status of Relay "Engine Stop"	64/65	0=Open; 1=Closed
1426	592h		word	R	Status of Relay "Stop/Run Solenoid"	66/67	0=Open; 1=Closed
1427	593h	40h	word	R	Status of relay "Siren"	68/69/70	0=Contact 68/69; 1=Contact 69/70

J1939/SPN inputs (3000 - 3044)							
3000	BB8h						
3000	BB8h		word	R	Number of SPN inputs on system	na	44
3001	BB9h		word	R	J1939: Oil Pressure	na	SPN 100: Oil pressure (1/10 bar)
3002	BBAh		word	R	J1939: Engine Coolant Water Temperature	na	SPN 110: Engine coolant water temperature (°C)
3003	BBBh		word	R	J1939: Engine Speed	na	SPN 190: Engine speed (rpm)
3004	BBCh		word	R	J1939: Secondary Throttle Position.	na	SPN 029: Secondary Throttle position (%)
3005	BBDh		word	R	J1939: Primary Throttle Position	na	SPN 091: Primary Throttle position (%)
3006	BBEh		word	R	J1939: Engine Load	na	SPN 092: Engine Load (%)
3007	BBFh		word	R	J1939: Battery Voltage	na	SPN 168: Battery voltage (V)
3008	BC0h		word	R	J1939: Intake Manifold #1 Pressure	na	SPN 102: Intake manifold#1 pressure (bar 1/10)
3009	BC1h		word	R	J1939: Intake Manifold #1 Temperature	na	SPN 105: Intake manifold#1 temperature (°C)
3010	BC2h		word	R	J1939: Air inlet Pressure	na	SPN 106: Air inlet pressure (1/10 bar)
3011	BC3h		word	R	J1939: Exhaust Gas Temperature	na	SPN 173: Exhaust Gas temperature (°C)
3012	BC4h		word	R	J1939: Fuel Pressure	na	SPN 094: Fuel pressure (1/10 bar)
3013	BC5h		word	R	J1939: Crankcase Pressure	na	SPN 101: Crankcase pressure (1/10 bar)
3014	BC6h		word	R	J1939: Coolant Water Pressure	na	SPN 109: Coolant Water pressure (1/10 bar)
3015	BC7h		word	R	J1939: Coolant Water Level	na	SPN 111: Coolant Water level (%)
3016	BC8h		word	R	J1939: Aftercooler Coolant Water Level	na	SPN 3676: Aftercooler Coolant Water Level (%)
3017	BC9h		word	R	J1939: Fuel Temperature	na	SPN 174: Fuel temperature (°C)
3018	BCAh		word	R	J1939: Aftercooler Coolant Water Pressure	na	SPN 1203: Aftercooler Coolant Water Pressure (1/10 bar)
3019	BCBh		word	R	J1939: Left Manifold Exhaust Gas Temperature	na	SPN 2433: Left Manifold Exhaust Gas Temperature (°C)
3020	BCCh		word	R	J1939: Right Manifold Exhaust Gas Temperature	na	SPN 2434: Right Manifold Exhaust Gas Temperature (°C)
3021	BCDh		word	R	J1939: Fuel Filter differential Pressure	na	SPN 95: Fuel Filter differential Pressure (1/10 bar)
3022	BCEh		word	R	J1939: Fuel Level	na	SPN 96: Fuel Level (%)
3023	BCFh		word	R	J1939: Oil filter differential Pressure	na	SPN 99: Oil filter differential Pressure (1/10 bar)
3024	BD0h		word	R	J1939: Pre Filter Fuel Pressure	na	SPN 1382: Pre Filter Fuel Pressure (1/10 bar)
3025	BD1h		word	R	J1939: Pre Filter Oil Pressure	na	SPN 1208: Pre Filter Oil Pressure (1/10 bar)
3026	BD2h		word	R	J1939: Transmission Oil Pressure	na	SPN 127: Transmission Oil Pressure (1/10 bar)
3027	BD3h		word	R	J1939: Transmission Oil Temperature	na	SPN 177: Transmission Oil Temperature (°C)
3028	BD4h		word	R	J1939: Engine Fuel Rate	na	SPN 183: Engine Fuel Rate (L/h)
3029	BD5h		word	R	J1939: Engine Hours Hours of operation	na	SPN 247: Engine Hours Hours of operation (h)
3030	BD6h		word	R	J1939: Desired Engine Speed	na	SPN 515: Desired Engine speed (rpm)
3031	BD7h		word	R	J1939: Engine Throttle Sync. mode status	na	SPN 2615: Engine Throttle Sync. mode status
3032	BD8h		word	R	J1939: Engine Throttle mode status	na	SPN 2616: Engine Throttle mode status
3033	BD9h		word	R	J1939: Engine Slow Vessel mode status	na	SPN 2617: Engine Slow Vessel mode status
3034	BDAh		word	R	J1939: Engine Overspeed Test	na	SPN 2812: Engine Overspeed Test
3035	BDBh		word	R	J1939: Engine Air shut off command status	na	SPN 2813: Engine Air shut off command status
3036	BDCh		word	R	J1939: Engine Alarm output command status	na	SPN 2814: Engine Alarm output command status
3037	BDDh		word	R	J1939: Engine output command status	na	SPN 2815: Engine output command status
3038	BDEh		word	R	J1939: Engine operating status	na	SPN 3543: Engine operating status
3039	BDFh		word	R	J1939: Engine Time remaining in operating state	na	SPN 3544: Engine Time remaining in operating state
3040	BE0h		word	R	J1939: Engine Speed pt1	na	SPN 188: Engine Speed pt1
3041	BE1h		word	R	J1939: Engine Speed pt2	na	SPN 528: Engine Speed pt2
3042	BE2h		word	R	J1939: Engine Speed pt6	na	SPN 532: Engine Speed pt6

3043	BE3h		word	R	J1939: Max crank attempts per start attempt	na	SPN 3670:Max crank attempts per start attempt
3044	BE4h		word	R	J1939: Crank attempt count current start	na	SPN 3671: Crank attempt count current start

User/Programmable alarms (2000 - 2030)							
2000	7D0h						
2000	7D0h		word	R	Number of user alarms on system	na	30
2001	7D1h		word	R	Status of user alarm 1	na	0: Alarm inactive; 1: Alarm active
2002	7D2h		word	R	Status of user alarm 2	na	0: Alarm inactive; 1: Alarm active
2003	7D3h		word	R	Status of user alarm 3	na	0: Alarm inactive; 1: Alarm active
2004	7D4h		word	R	Status of user alarm 4	na	0: Alarm inactive; 1: Alarm active
2005	7D5h		word	R	Status of user alarm 5	na	0: Alarm inactive; 1: Alarm active
2006	7D6h		word	R	Status of user alarm 6	na	0: Alarm inactive; 1: Alarm active
2007	7D7h		word	R	Status of user alarm 7	na	0: Alarm inactive; 1: Alarm active
2008	7D8h		word	R	Status of user alarm 8	na	0: Alarm inactive; 1: Alarm active
2009	7D9h		word	R	Status of user alarm 9	na	0: Alarm inactive; 1: Alarm active
2010	7DAh		word	R	Status of user alarm 10	na	0: Alarm inactive; 1: Alarm active
2011	7DBh		word	R	Status of user alarm 11	na	0: Alarm inactive; 1: Alarm active
2012	7DCh		word	R	Status of user alarm 12	na	0: Alarm inactive; 1: Alarm active
2013	7DDh		word	R	Status of user alarm 13	na	0: Alarm inactive; 1: Alarm active
2014	7DEh		word	R	Status of user alarm 14	na	0: Alarm inactive; 1: Alarm active
2015	7DFh		word	R	Status of user alarm 15	na	0: Alarm inactive; 1: Alarm active
2016	7E0h		word	R	Status of user alarm 16	na	0: Alarm inactive; 1: Alarm active
2017	7E1h		word	R	Status of user alarm 17	na	0: Alarm inactive; 1: Alarm active
2018	7E2h		word	R	Status of user alarm 18	na	0: Alarm inactive; 1: Alarm active
2019	7E3h		word	R	Status of user alarm 19	na	0: Alarm inactive; 1: Alarm active
2020	7E4h		word	R	Status of user alarm 20	na	0: Alarm inactive; 1: Alarm active
2021	7E5h		word	R	Status of user alarm 21	na	0: Alarm inactive; 1: Alarm active
2022	7E6h		word	R	Status of user alarm 22	na	0: Alarm inactive; 1: Alarm active
2023	7E7h		word	R	Status of user alarm 23	na	0: Alarm inactive; 1: Alarm active
2024	7E8h		word	R	Status of user alarm 24	na	0: Alarm inactive; 1: Alarm active
2025	7E9h		word	R	Status of user alarm 25	na	0: Alarm inactive; 1: Alarm active
2026	7EAh		word	R	Status of user alarm 26	na	0: Alarm inactive; 1: Alarm active
2027	7EBh		word	R	Status of user alarm 27	na	0: Alarm inactive; 1: Alarm active
2028	7ECh		word	R	Status of user alarm 28	na	0: Alarm inactive; 1: Alarm active
2029	7EDh		word	R	Status of user alarm 29	na	0: Alarm inactive; 1: Alarm active
2030	7EEh		word	R	Status of user alarm 30	na	0: Alarm inactive; 1: Alarm active

System/NON-Programmable alarms (2500 - 2541)							
2500	9C4h						
2500	9C4h		word	R	Number of system alarms on system	na	41
2501	9C5h		word	R	Primary power supply failure	01/02	0: Alarm inactive; 1: Alarm active
2502	9C6h		word	R	Secondary power supply failure	03/04	0: Alarm inactive; 1: Alarm active
2503	9C7h		word	R	Eng. Ctrl. Start failure; Retry count exceeded	na	0: Alarm inactive; 1: Alarm active
2504	9C8h		word	R	Eng. Ctrl. Failure; RPM low	na	0: Alarm inactive; 1: Alarm active
2505	9C9h		word	R	Eng. Ctrl. Stop failure; Engine failed to stop	na	0: Alarm inactive; 1: Alarm active
2506	9CAh		word	R	Eng. Ctrl. Start failure; Engine running	na	0: Alarm inactive; 1: Alarm active
2507	9CBh		word	R	Eng. Ctrl. Start failure; Oil pressure high	na	0: Alarm inactive; 1: Alarm active
2508	9CCh		word	R	Eng. Ctrl. Stop failure; Engine failed to stop whilst OFF	na	0: Alarm inactive; 1: Alarm active
2509	9CDh		word	R	Eng. Ctrl. Service due	na	0: Alarm inactive; 1: Alarm active
2510	9CEh		word	R	J1939; Overspeed (Shutdown)	na	0: Alarm inactive; 1: Alarm active
2511	9CFh		word	R	J1939; No communication on bus	na	0: Alarm inactive; 1: Alarm active
2512	9D0h		word	R	J1939; No ECU found	na	0: Alarm inactive; 1: Alarm active
2513	9D1h		word	R	J1939; Malfunction indicator lamp	na	0: Alarm inactive; 1: Alarm active
2514	9D2h		word	R	Pick-up; Overspeed (Shutdown)	15/16	0: Alarm inactive; 1: Alarm active
2515	9D3h		word	R	Input 1 cable monitoring; short circuited	17/26	0: Alarm inactive; 1: Alarm active
2516	9D4h		word	R	Input 2 cable monitoring; short circuited	18/26	0: Alarm inactive; 1: Alarm active
2517	9D5h		word	R	Input 3 cable monitoring; short circuited	19/26	0: Alarm inactive; 1: Alarm active
2518	9D6h		word	R	Input 4 cable monitoring; short circuited	20/26	0: Alarm inactive; 1: Alarm active
2519	9D7h		word	R	Input 5 cable monitoring; short circuited	21/26	0: Alarm inactive; 1: Alarm active
2520	9D8h		word	R	Input 6 cable monitoring; short circuited	22/26	0: Alarm inactive; 1: Alarm active
2521	9D9h		word	R	Input 7 cable monitoring; short circuited	23/26	0: Alarm inactive; 1: Alarm active
2522	9DAh		word	R	Input 8 cable monitoring; short circuited	24/26	0: Alarm inactive; 1: Alarm active
2523	9DBh		word	R	Input 9 cable monitoring; short circuited	25/26	0: Alarm inactive; 1: Alarm active
2524	9DCh		word	R	Input 1 cable monitoring; Broken	17/26	0: Alarm inactive; 1: Alarm active
2525	9DDh		word	R	Input 2 cable monitoring; Broken	18/26	0: Alarm inactive; 1: Alarm active
2526	9DEh		word	R	Input 3 cable monitoring; Broken	19/26	0: Alarm inactive; 1: Alarm active
2527	9DFh		word	R	Input 4 cable monitoring; Broken	20/26	0: Alarm inactive; 1: Alarm active
2528	9E0h		word	R	Input 5 cable monitoring; Broken	21/26	0: Alarm inactive; 1: Alarm active
2529	9E1h		word	R	Input 6 cable monitoring; Broken	22/26	0: Alarm inactive; 1: Alarm active
2530	9E2h		word	R	Input 7 cable monitoring; Broken	23/26	0: Alarm inactive; 1: Alarm active
2531	9E3h		word	R	Input 8 cable monitoring; Broken	24/26	0: Alarm inactive; 1: Alarm active
2532	9E4h		word	R	Input 9 cable monitoring; Broken	25/26	0: Alarm inactive; 1: Alarm active
2533	9E5h		word	R	Sensor 1 cable monitoring; Broken	27/35	0: Alarm inactive; 1: Alarm active
2534	9E6h		word	R	Sensor 2 cable monitoring; Broken	28/35	0: Alarm inactive; 1: Alarm active
2535	9E7h		word	R	Sensor 3 cable monitoring; Broken	29/35	0: Alarm inactive; 1: Alarm active
2536	9E8h		word	R	Sensor 4 cable monitoring; Broken	30/35	0: Alarm inactive; 1: Alarm active
2537	9E9h		word	R	Sensor 5 cable monitoring; Broken	31/35	0: Alarm inactive; 1: Alarm active
2538	9EAh		word	R	Sensor 6 cable monitoring; Broken	32/35	0: Alarm inactive; 1: Alarm active
2539	9EBh		word	R	Sensor 7 cable monitoring; Broken	33/35	0: Alarm inactive; 1: Alarm active
2540	9ECh		word	R	Sensor 8 cable monitoring; Broken	34/35	0: Alarm inactive; 1: Alarm active
2541	9EDh		word	R	STOP/RUN output cable monitoring; Broken	66/67	0: Alarm inactive; 1: Alarm active