

ARM-TL-1 | ANALOGUE TO RELAY CONVERTER

Modbus register map



MODBUS REGISTER MAP

INPUT REGISTERS						
Input register	Data Type	Description	Raw Data Range	Resolution / Unit	Values	
↓ General ↓						
1	Device status – errors	R	Indicates the critical faults of the specific device part.	Bitwise b0 – b15		b0 = Undefined b1 = Internal Voltage Fault b2 – b15 = Undefined
2	Device status – warnings	R	Indicates non-critical warnings related to the specific device part.	Bitwise b0 – b15		b0 = Undefined b1 = Internal Voltage Warning b2 – b15 = Undefined
3	Application state	R	Displays the current application status (using the State Machine values)	0–15		2 = Initialisation 11 = Input is Low 12 = Input is High 8 = Hysteresis 13 = Run-on 6 = Override 106 = Error Status
↓ Analogue Input 1 ↓						
11	Analogue input value	R	Reads the value on Analogue Input 1	0–1.000	1/10 %	0 = 0 % Input 1.000 = 100 % Input
12	Analogue input frequency	R	Indicates the PWM frequency measured on Analogue Input 1 (when Analogue Input Type equals PWM in HR21).	1.000–8.000	Hz	1.000 = 1 kHz 8.000 = 8 kHz
↓ Relay Output 1 ↓						
21	Relay state	R	Indicates the state of relay output 1 based on the settings in HR31 through HR36 . <div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 10px;">Relay output state</div> <div style="text-align: center;"> <div style="background-color: #4CAF50; padding: 2px 5px; margin-bottom: 2px;">Energised</div> <div style="border: 1px solid gray; padding: 2px 5px; margin-bottom: 2px;">Hold previous state</div> <div style="background-color: #F44336; padding: 2px 5px;">De-energised</div> </div> </div> <div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 10px;">Activation threshold</div> <div style="border: 1px solid gray; width: 20px; height: 10px; margin-right: 5px;"></div> </div> <div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 10px;">Hysteresis</div> <div style="border: 1px solid gray; width: 20px; height: 10px; margin-right: 5px;"></div> </div>	0–1		0 = Relay OFF 1 = Relay ON
<p>Note: The input registers can be read via the Modbus command: "Read input registers".</p>						

HOLDING REGISTERS							
Holding register	Data Type	Description	Raw Data Range	Resolution / Units	Values	Factory Default Values	
↓ General ↓							
1	Device slave address	R/W	Modbus device address.	1-247		1	
2	Modbus baud rate	R/W	Modbus communication baud rate.	0-6	0 = 4.800 1 = 9.600 2 = 19.200 3 = 38.400 4 = 57.600 5 = 115.200 6 = 230.400	2	
3	Modbus parity	R/W	Parity check mode.	0-2	0 = 8N1 1 = 8E1 2 = 8O1	1	
4	Device type	R	Device type.	XXXX	Device specific	2410 = ARM-TL-1	
5	HW version	R	Hardware version of the device.	XXXX	Hardware version specific 0x0100 = HW version 1.00	Depends on hardware release	
6	FW version	R	Firmware version of the device.	XXXX	Firmware version specific 0x0100 = FW version 1.00	Depends on firmware release	
9	Modbus Termination Resistor (NBT)	R/W	To avoid communication losses and reflections on the Modbus line, the NBT in two devices (at both ends of the line) must be activated.	0-1	0 = NBT disconnected 1 = NBT connected	0	
10	Reset modbus holding registers		Resets the Modbus Holding registers to the default values. When finished this register is automatically reset to '0'.	0-1	0 = Idle 1 = Reset Modbus Registers	0	
↓ Analogue Input 1 ↓							
21	Analogue input mode	R/W	Select analogue / modulating type for analogue input 1.	0-2	0 = 0-10 VDC 1 = 0-20 mA 2 = PWM 12 VDC	0	
↓ Relay Output 1 ↓							
31	Relay output control	R/W	Indicates the actual source of signal used for relay output 1.	Bitwise b0 is LSB	b0 = Overwrite (highest priority) b1 = Analogue Input 1 b2 - b15 = Reserved	2	
32	Relay overwrite value	R/W	Override value for relay output 1.	0-1	0 = Relay OFF 1 = Relay ON	0	

HOLDING REGISTERS							
Holding register	Data Type	Description	Raw Data Range	Resolution / Units	Values	Factory Default Values	
33	Relay state inversion	R/W	Select whether to invert the output state for relay output 1. (Normal Open versus Normal Closed)	0-1		0 = Normal 1 = Inverted	0
34	Relay activation threshold	R/W	Defines the input value at which the relay will be activated.	0-1000	1/10 %	Example: 500 = 50 %	500
35	Hysteresis	R/W	Defines the offset applied below the activation threshold (HR34) for relay deactivation, preventing rapid switching near the threshold.	0-50	1/10 %	Example: 10 = 1 % 50 = 5 %	20

Note: The holding registers can be managed via the following Modbus commands: "Read Holding Registers", "Write Single Register" or "Write Multiple Registers".

The free Sentera configuration and monitoring software 3SModbus can be downloaded via: <https://www.sentera.eu/en/3SMCenter>