Line N321R

Register Table for Serial Communication V1.8x A

1. SERIAL COMMUNICATION

RS485 Interface

- Compatible line signals with RS485 standard.
- 2 wire connection from master to up to 31 slaves indicators in a multidrop bus. It is possible address 247 nodes with multiple outputs converters.
- Maximum communication distance: 1000 meters
- The RS485 signals are:

D1	D	D+	B	Bidirectional data line.
D0	$\overline{D}$	D-	A	Inverted bidirectional data line.
C				Communication common. Interconnect between all network devices for protection.
GND				

General Characteristics

- Serial interface not isolated from input circuitry.
- Serial interface isolated from input circuitry, except in 24 V powered model.
- Baud rate: 9600
- Data Bits: 8
- Parity: None
- Stop Bits: 1

Communication Protocol

The MOSBUS RTU slave is implemented, available in more SCADA software's in the market.

The available Modbus commands are:

03 - *Read Holding Register*

06 - *Preset Single Register*

The Command 03 (Read Holding Register) accepts the block reading up to 4 registers.

1.1 CONFIGURATION ON CONTROLLER

The controllers that have built-in RS485 serial communication interface have the **Adr** parameter at their programming level. In this parameter the user defines a **communication address** for each element of the network. The address you set must be between 1 and 247.

Adr	Device communication address. Each device must have an exclusive address.

1.2 REGISTERS TABLE

The Modbus registers hold the internal controller parameters. Each parameter is a 16-bit word, with negative values represented as 2's complement.

Holding Registers	Parameter	Register Description
0000	SP	Read: OUTPUT1 Setpoint . Write: OUTPUT1 Setpoint. Range: from **SPL** to the value specified in **SPH**.
0001	PV1	Read: Temperature value measure. Write: not allowed. Range: It is equal to the sensor range used by the device.
0002	IHM Status	Read: IHM Status. Write: not allowed. Value format: Bit 0 – OUT1 flag Bit 1 – OUT2 flag Bit 10 – Decimal point Bit 12 – Signal
0003	Control Status	Read: OUTPUT1 Status. Write: not allowed. Value format: Bit 0 – measured *Underflow* Bit 1 - measured *Overflow* Bit 8 – OUTPUT1 status Bit13 – defrost controller
0004	Displayed Value	Read: Parameter value displayed. Write: not allowed. Maximum range: -199 to 999. The actual range depends on the parameter being displayed.
0005	Display version	Read: Version of the software implemented in the controller and screen number. Write: not allowed. Screen number formation: XXYYh, where: XX→ Version and YY→ screen number.
0006	Serial number High	Read: First 3 digits of the controller serial number. Write: not allowed. Value format: XXXXh.
0007	Serial number Low	Read: Last 3 digits of the controller serial number. Write: not allowed. Value format: XXXXh.
0008	Hysteresis	Read: OUTPUT1 hysteresis. Write: OUTPUT1 hysteresis. Range: 0.1 to 50.0.
0012	Offset	Read: Offset value Write: Offset value Range: -10.0 a 10.0

Table 1 – Registers table

Note: The SP, PV, Hysteresis and Offset values are always multiplied by 10 to account for the decimal point.

1.3 EXCEPTION RESPONSES – ERROR CONDITIONS

The MODBUS RTU protocol checks the CRC in the data blocks received. If there is a CRC error at reception, no response will be sent to the master. For commands received without error a consistency of command and requested registers is made. If invalid, an exception response is sent with the corresponding error code. In exception responses, the field corresponding to the Modbus command in the response is summed as 80H.

If a value write command in a parameter has a value outside the allowed range, no value will be written to that parameter, returning error code 03 in response.

Broadcast read commands are ignored by the controller and there is no response. It is only possible to write in broadcast mode. If a value write command in a parameter has a value outside the allowed range, no value will be written to that parameter, returning error code 03 in response.

Broadcast read commands are ignored by the controller and there is no response. It is only possible to write in broadcast mode.

Error Code	Error Description
01	Invalid Command or non-existent.
02	Invalid Register Number or out of range.
03	Invalid Register Quantity or out of range.

Table 2 – Error codes in exception response

1.4 ELECTRICAL CONNECTIONS

Use twisted pair, shielded, 3x 24 AWG and grounded wire at both ends.

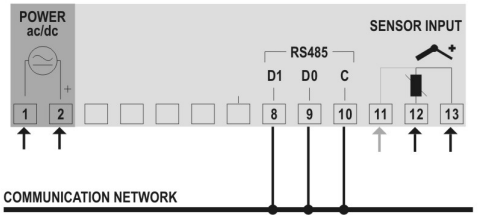

Fig. 01 – Communication electrical