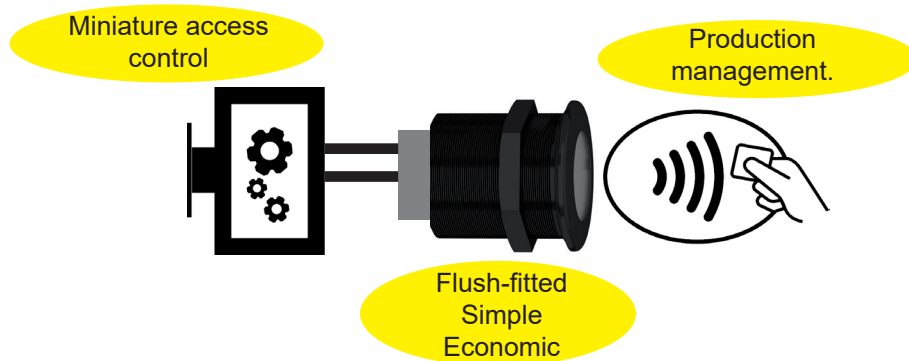


Instruction Manual

XS308 RFID tag reader/recorder on RS485 Modbus RTU 2-wire or RS232 ASCII network



OTHER PRODUCTS: MAINTENANCE AND INTERLOCKING



OTHER PRODUCTS: FORCE 0 AND IP69K TOUCH BUTTON

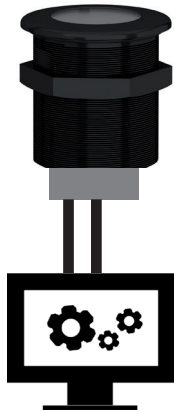


COMITRONIC-BTI THE LEADER IN STAND-ALONE SAFETY SWITCHES



User Manual for RFID XS308 Reader

Compact miniature RFID reader, built-in, connectable on ModBus network



Resistant to
assault

very competitive
price

1. Scope of application

- Selection mode to access zones, settings, modes of operation
- Track pallets, containers, etc.
- Automation of manufacturing
- Sorting of pallets or bins depending on where they were filled and with what material
- Traceability with a time stamp performed by the central unit
- Information written in real time
- Simple 2-wire networking according to RS485 in Modbus RTU format

2. Standards of the Models

XS308-5-232: 5-byte reader/recorder with RS232 output in ASCII format

XS308-5-485: 5-byte reader/recorder with RS485 output in Modbus RTU format

XS308-18-232: 18-byte reader/recorder with RS232 output in ASCII format

XS308-18-485: 18-byte reader/recorder with RS485 output in Modbus RTU format

3. Product Presentation

The XS308-5 is an RFID tag reader/programmer with an identifier of 5 or 18 bytes. The type of connection is RS485 Modbus RTU or RS232 ASCII, depending on the version. Version 485 makes it possible to network 32 products.

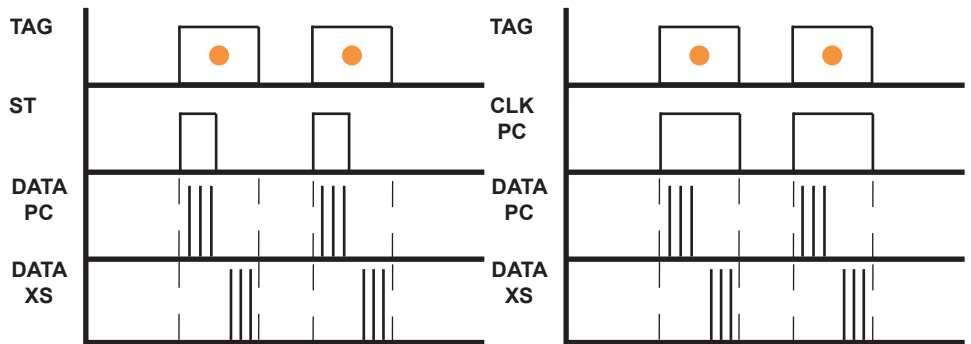
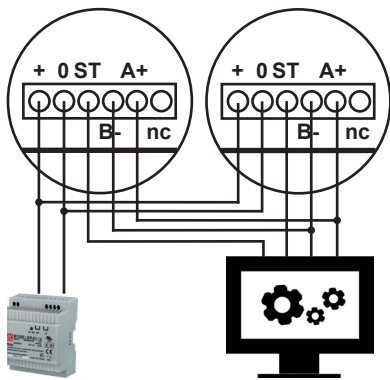
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4. Modbus Version Operation (XS308-5-485 or XS308-18-485)

The drives are connected to the Modbus network. The PLC/PC cyclically queries each sensor on the network. When a badge passes in front of a reader, this becomes saved in its memory. When the PLC queries this reader, the latter transmits the information in the memory. When a card is presented to the reader, the strobe output changes from logic level 0 to 1 (the LED lights up) until the next query. When the tag is absent, the "strobe" output remains at 1 if the read request is not performed. There are two ways to query a reader:

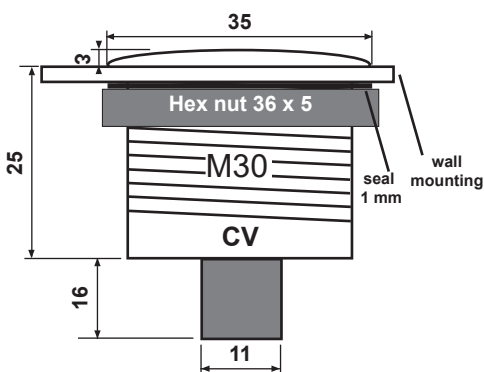
- Use the "strobe" output to reduce the scan time to a minimum
- Scan the network at a certain frequency using the PLC/PC. This frequency depends on the tag's technology. We recommend performing tests to optimize the scan rate.

4.1. Wiring of the Product 4.2. Timeline



We offer a SC51-485 key for a USB connection, please contact us for more information.

4.3. Product Dimensions



4.4. Configuration

Each time the power is turned on, the LED turns on and off.

COM port configuration of the PLC/PC:

Select the COM port

Baud: 9600

Data: 8

Parity: none

Bit stop: 1

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4.5. Configuring the reader ID

During the first initial use, the modbus address of the reader is "01". It is necessary to rename it 02. Then, if you add a second reader, it will be renamed 03 and so on. In the case of a network of 32 readers, the last reader can remain 01. In this case, 32 addresses are obtained from 02 ~ 32 + 01 = 32 readers. It is necessary to keep careful note of the progress of the addresses. The memory of the identifier of the reader is permanent and re-writable.

Change the reader ID from 01 to 02

Reader ID	Control	Address word	New ID	Complete word	CRC16
01	06	0000	02	00	value

Data frame sent: 01 06 0000 02 00 + (CRC16)

Received data frame: 01 06 0000 02 00 + (CRC16)

Action taken: the reader's ID has been changed from 01 to 02

4.6. Programming command of a 125 KHz tag

4.6.1. Version 5 bytes: write the ID 1234567890 in the reader with address 01

Reader ID	Control	Address word	N word	N char hex	hex ID tag	CRC16
01	10	005F	0003	05	1234567890	value

Data frame sent: 01 10 005F 0003 05 1234567890 + (CRC16)

Received data frame: 01 10 005F 0003 + (CRC16)

Action taken: reader 01 has written the value **1234567890** in the tag

4.6.2. Version 18 bytes: write the identifier 010203040506070809101112131415161718 in the reader with address 01

Reader ID	Code	Ad word	N word	N char	hex ID tag	CRC16
01	10	005F	0009	12	010203040506070809101112131415161718	value

Data frame sent: 01 10 005F 0009 12 010203040506070809101112131415161718 + (CRC16)

Received data frame: 01 10 005F 0009 + (CRC16)

Action taken: reader 01 has written the value **010203040506070809101112131415161718** in the tag

4.7 Badge programming verification control

We want to know the status of something written in reader 01

Reader ID	Control	System	System	CRC16
01	03	0001	0001	value

Sent data frame: 01 03 0001 0001 + (CRC16)

Received data frame: 01 03 02 **STATUS** + (CRC16)

STATUS	
0000	Tag current writing in process
0001	Tag-only system
0002	Tag Absent
0003	Writing OK

Color Key

editable value

Non-editable value

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4.8. Command to read a tag

4.8.1. Version 5 bytes: we put the tag 1234567890 in front of reader 01

Reader ID	Control	System	no. of words	CRC16
01	03	0000	0003	value

Sent data frame: 01 03 0000 0003 + (CRC16)

Received data frame: 01 03 06 **123456789000** + (CRC16)

Action taken: the tag **123456789** is read by reader 01

4.2 Version 18 bytes

Reader ID	Control	System	no. of words	CRC16
01	03	0000	0009	value

Sent data frame: 01 03 0000 0009 + (CRC16)

Reader's response: 01 03 06 **010203040506070809101112131415161718** + (CRC16)

Action taken: the tag **010203040506070809101112131415161718** is read by reader 01

4.9. Choice of the number of words for reading

In a reading frame, you can choose to read certain bytes of the tag's identifier. The table below shows how to convert the number of bytes to the number of words.

Number of Words	Number of Bytes
1	2
2	4
3	6
4	8
5	10
...	...
9	18

Number of words = 2 x Number of bytes

5. Information



A power failure will erase the reader's memory.

To avoid crashes or writing problems, send badge programming confirmation data frame after each programming.

The position of the badge and the distance to the reader affect the programming time.

It is advisable to query the XS308 to know its status in writing and to interpret the four cases of possible answers defined in §4.7

Color Key

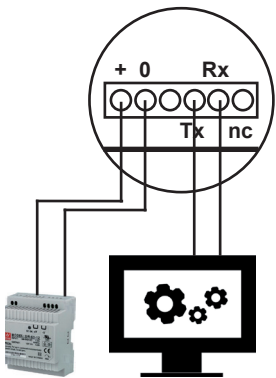
-  editable value
-  Non-editable value

User Manual for RFID XS308 Reader

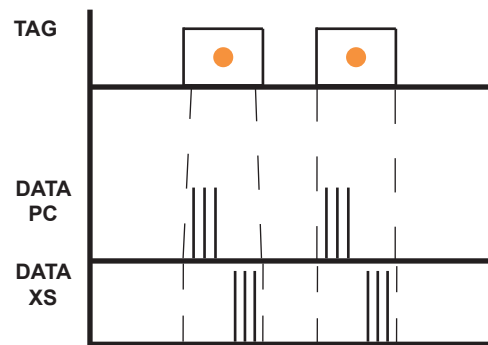
6. Operation of RS232 version (XS308-5-232 or XS308-18-232)

When a badge is presented in front of the reader, the LED turns on and off and the PLC/PC receives the identifier of the badge in the format of "characters of the ASCII table". As long as a read request has not been performed, the memory retains the last identifier read, otherwise it will be replaced by the next tag that is presented.

6.1. Wiring of product



6.2. Timeline



6.3. Configuration

Each time the power is turned on, the LED turns on and off.
Configuring the PLC/PC COM Port: Select the RS232 COM Port
Baud: 9600
Data: 8
Parity: Even
Bit stop: 1

6.4. 125 KHz tag writing command

6.4.1. Version 5 bytes: we want to write PAUL1 in the tag

Automated transmission data frame

Start	Control	N byte	End
#	1	PAUL1	*

Response frame to be compared by the PLC (PAUL1 requested = PAUL1 received?)

Start	N byte	End
#	PAUL1	*

Color Key

- editable value
- Non-editable value

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6.4.2. Version 18 bytes: we want to write Comitronic-bti//93 in the tag

Automated transmission data frame

Start	Control	N byte	End
#	1	Comitronic-bti//93	*

Response frame

Start	N byte	End
#	Comitronic-bti//93	*

6.5. Reading command

Request a reading without passing the tag and after the power is on

Start	Control	Useful char	End
#	0	00000	*

Response frame

Start	N byte	End
#	empty	*

The # EMPTY * response is a confirmation frame that the XS308's memory after power-up is empty, i.e. no badges have been presented in the meantime. This should be done consistently after each power up and before starting the machine system.

7. General specifications

Supply voltage	7 ~ 30 VDC
Min. Current	12.3 mA
Max. Current	40.2 mA
Temperature	-20°C to +60°C (-4° to +140° F)
Side protection class rating	IP 69K
Rear protection class rating	IP 40 (terminal) / IP 67 (cable)
Weight	24 g
Communication Speed	9600 bits / second
Time between two data frames	500 ms
Material	TR90UV



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