

# ***XS308-485***

## ***Modbus RTU***

## 1 Application

- Industrial environment (supplementary selection mode to access areas, settings, operation modes)
- Followed by a container pallet, box, sled, bins
- Monitoring of manufacturing orders
- Monitoring of manufacturing options
- Monitor the flow inside and outside the company
- Monitoring of time stamping, production number, serial numbwe
- Monitoring weight, size, product type
- The tag can be stored (with its container) for significant periods and the information is retrievable much later
- Next level of access authorization
- Authorization according to the time slot
- Monitoring formulations, production procedures
- Monitor the cooking based on the tracking tag
- Cooking time, temperature, cooking phase
- Sorting of pallets or bins depending on where they were filled and with what
- Monitoring options

## 2 Product Overview

The XS308-485 is a reader / programmer RFID tag with an ID of 5 bytes or 18 bytes. The connection type is RS485 Modbus RTU. The maximum number of card readers per network is limited to 32. 18 byte version is not recommended in automated management because of slow reading. 5 byte version is suitable for all applications.

## 3 Operation

The badge reader is a slave and therefore will be solicited by a controller (PLC / PC). When a card is presented to the reader, the strobe output changes from logic level 0 to 1 (the LED lights up) to a read request. The master (PLC / PC) receives the identifier of the latest passage of the badge in hexadecimal format at each read request and the output strobe goes from logical level 1 to 0 (LED switches off).

### POWER UP

- The LED lights up then goes off.

### COM port configuration of the PLC / PC

- Select the port COM RS485
- Baud: 9600
- Data: 8
- Parity: Even
- Stop bit: 1

**Configuration of the ID of the reader**

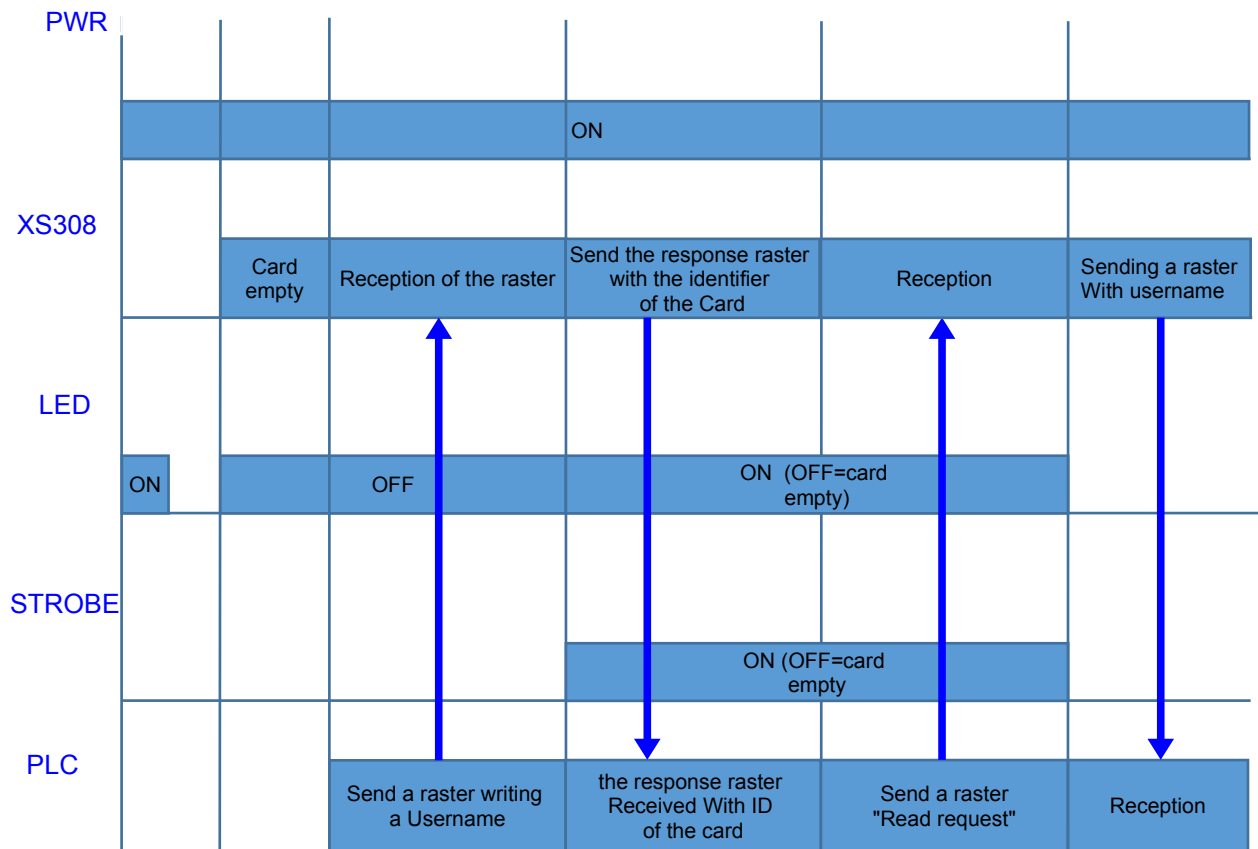
- The ID Modbus reader at first use is "01".
- Each reader must be configured one by one (see chapter 4.1 change control the ID of the reader)

**To program a card**

- Put the card to the reader (at the antenna side).
- Send the response raster (see Chapter 4.2 Programming Command card 55xx format)
- Send Verification raster to confirm that the card is correctly programmed

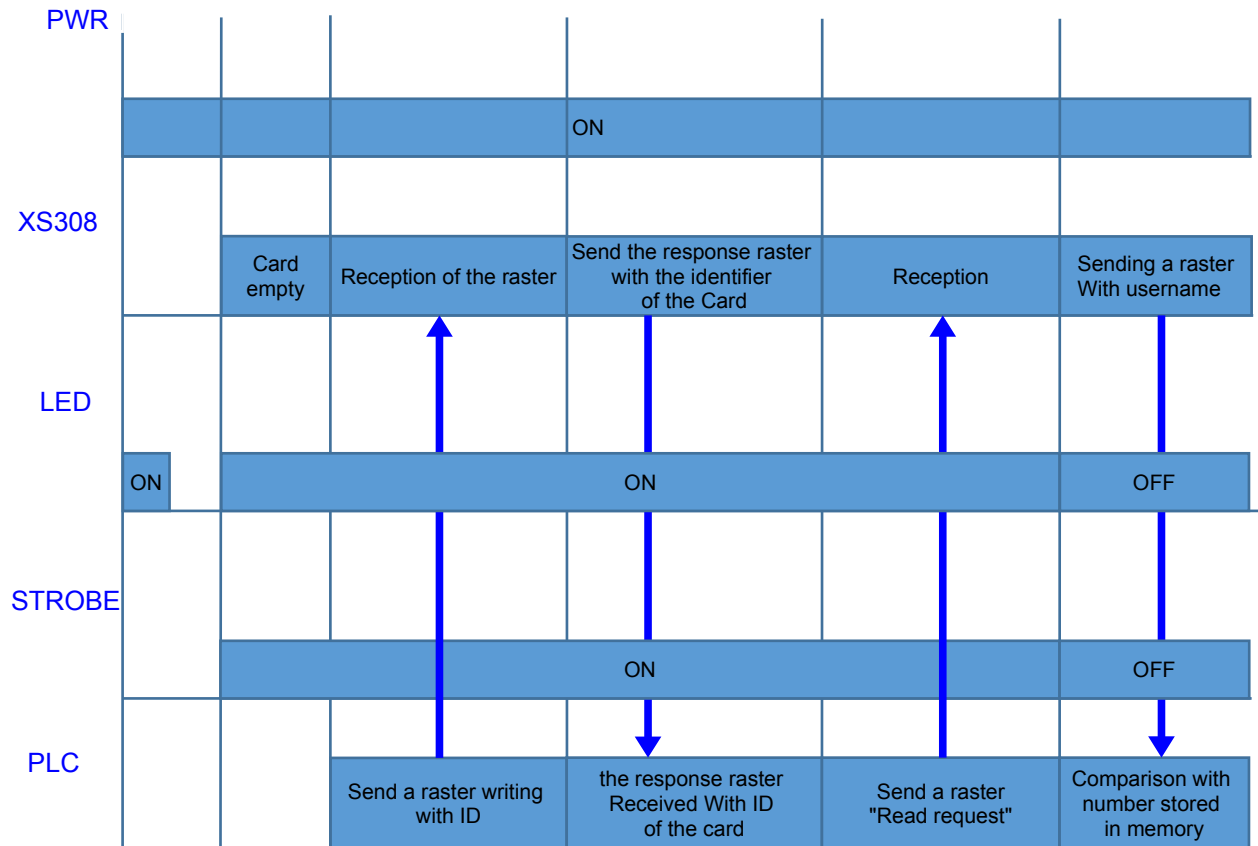
(see chapter 4.3 card programming verification control)

**Programming a blank card: Mandatory stage card by card**



Note: The rasters are standard MODBUS RTU rasters.

**Programming cycle of non-empty cards: the number is known by the PLC / PC**



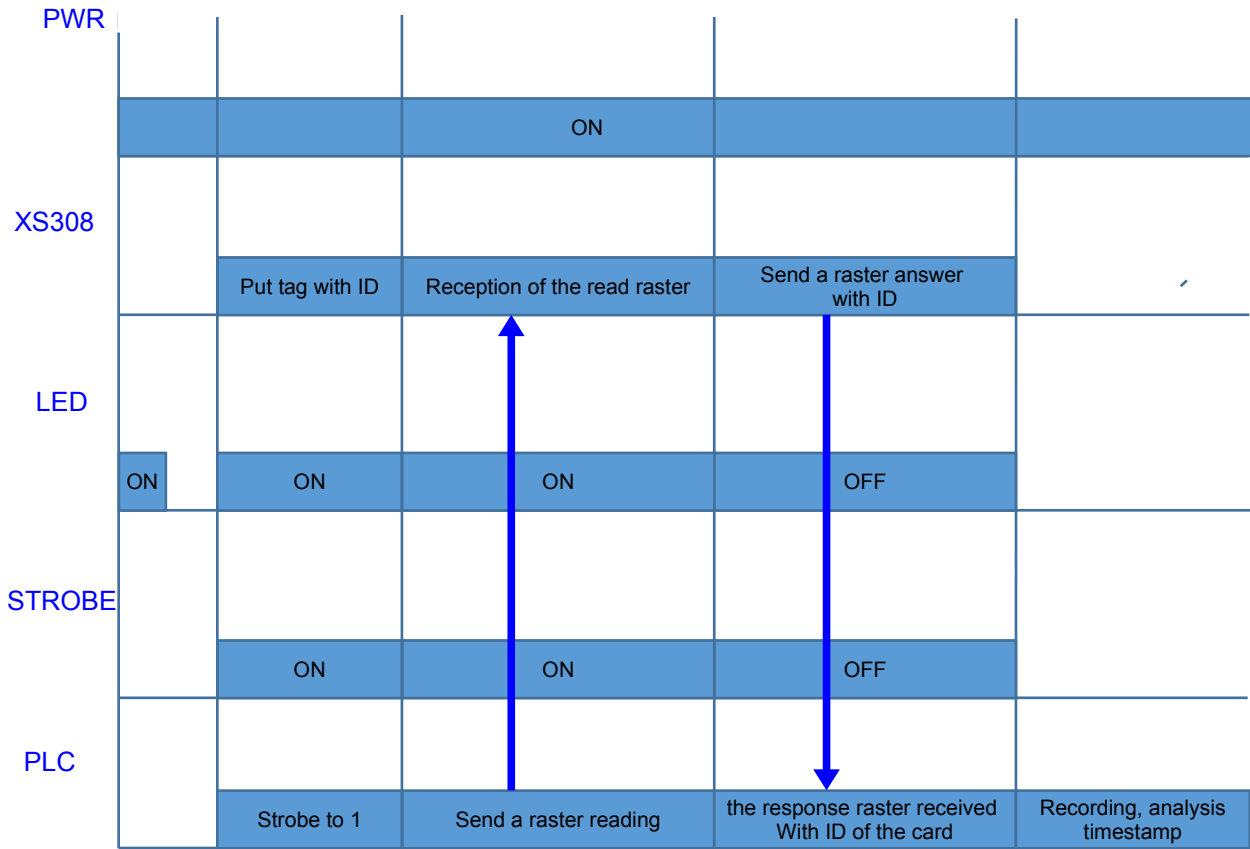
**To read a card**

- Send reading raster (See chapter 4.4 reading command)

**When a card is presented to the reader**

- The PLC / PC waits until the strobe goes to 1 logic.
- The LED lights up.
- The LED will stay lit and the strobe on the logic level 1 as long as the PLC or PC is not asked to read the identifier of card. When the read request is made by the PLC / PC, the LED turns itself off and the strobe goes from logical level 1 to 0.

**read cycle**



**4 The Modbus RTU commands**

**4.1 Command the reader to modify the identifier**

E.g. changing the ID of the reader 01 by 02

Identifier of the reader	Write command 1 word	Word address	New ID	To have the complete word	CRC16
0 1	0 6	0 0 0 0	0 2	0 0	88AA

**Note:**

By default the ID of the drive : 01

**4.2 Programming command card 55xx size**

**4.2.1 Version 5 bytes**

Id of the reader	write command for nwords	Adr word	Number of words	Number of characters in hexa	Identifier of the reader	CRC16
0 1	1 0	0 0 5 F	0 0 0 3	0 5	XX XX XX XX XX	crc16

**Example**

raster: 01 10 005F 0003 05 **1D181902EF** CRC16

**Version 4.2.2 18 bytes:**

Id of the reader	write command for nwords	Adr word	Number of words	Number of characters in hexa	Identifier of the reader	CRC16
0 1	1 0	0 0 5 F	0 0 0 9	12	<b>K</b>	CRC 16

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<b>K=</b>	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

**Example**

frame: 01 10 005F 0009 12 **010204050607080910111314151617FA** CRC16

**4.2.3 Note**

X in hexadecimal: [0,1,2,3,4,5,6,7,8,9, A, B, C, D, E, F]

CRC16: calculated by the Modbus

**4.3 card programming verification control**

**Send the raster: 01 03 0001 0001 CRC16**

Identifier of the reader	read command n words	System	System	CRC16
0 1	0 3	0 0 0 1	0 0 0 1	D 5 CA

**Response**

01 03 02 00 03 F8 45

0 0 0 0	Tag this writing in process
0 0 0 1	Tag-only system
0 0 0 2	Tag Absent
0 0 0 3	Writing Ok

**4.4 Reader Control**

**5.4.1 Version 5 bytes**

Identifier of the reader	read command n words	Address of the words	Word Count	CRC16
0 1	0 3	0 0 0 0	0 0 0 3	05 CB

**5.4.2 18 bytes Version**

Identifier of the reader	read command n words	Address of the words	Word Count	CRC16
0 1	0 3	0 0 0 0	0 0 0 9	85 CC

**4.4.3 Choice of the number of bytes for the reader**

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

Number of bytes = 2 \* Number of words

In cases of power failure, the memorisation of the latest passage of the identifier card through the reader is lost

**5 Important**

- To avoid crashes or writing problems, send card programming confirmation raster after each programming.

- Depending on the position of the card, the distance between the reader, the programming time varies,

the controller can query the reader for the write status, the four possible cases:

- Card shows the writing in process
- Badge-only system
- Badge missing
- Validated script

## 6 Specifications

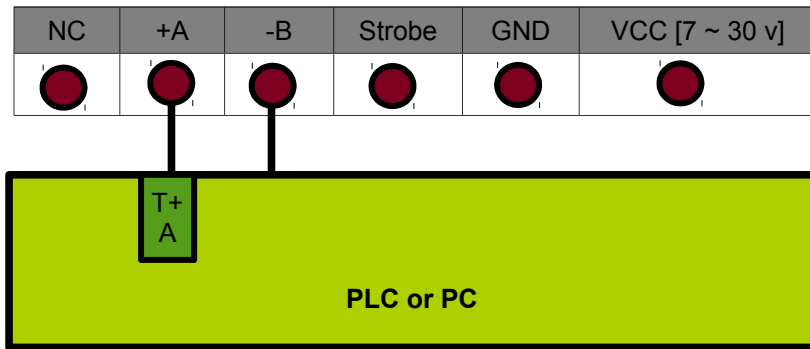
Power supply	7 ~ 30 VDC
Current Min	12.3 mA
Max. current	40.2 mA
Temperature	-20 ° C to + 60 ° C
Side protection rating class	IP 67 (IK 08 = B30CV
Rear Protection class	IP 40 (terminal) / IP 67 (cable)
Weight	24 g
Communication Speed:	9600 bits / second
Time between two rasters	500 ms
Material	TR90UV

## 7 List of compatible cards

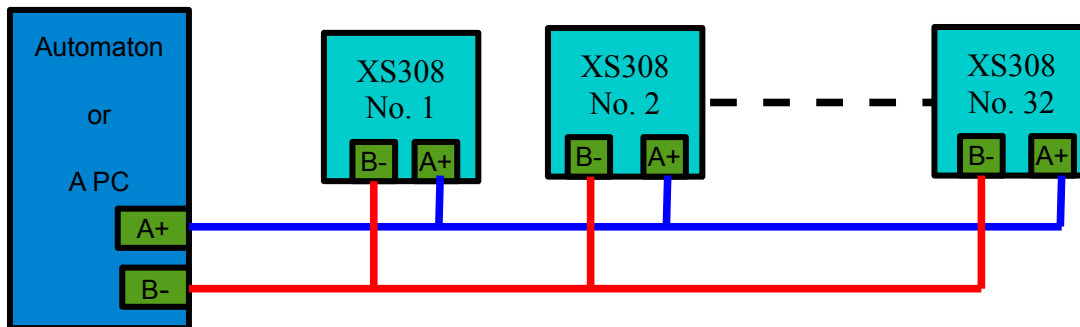
Type of card	Lecture	Script	Scope
CC07BJ (RFID Keychain round leather)	x	x	20 mm
CC08BJ (RFID Keychain square leather)	x	x	25 mm
CB01 (RFID credit card)	x	x	35mm.
CB02 (RFID credit card with hole)	x	x	35mm.
WRC06 (Bracelet)	x		30 mm
KEA03 (sturdy keychain)	x		30 mm



**8 Wiring**

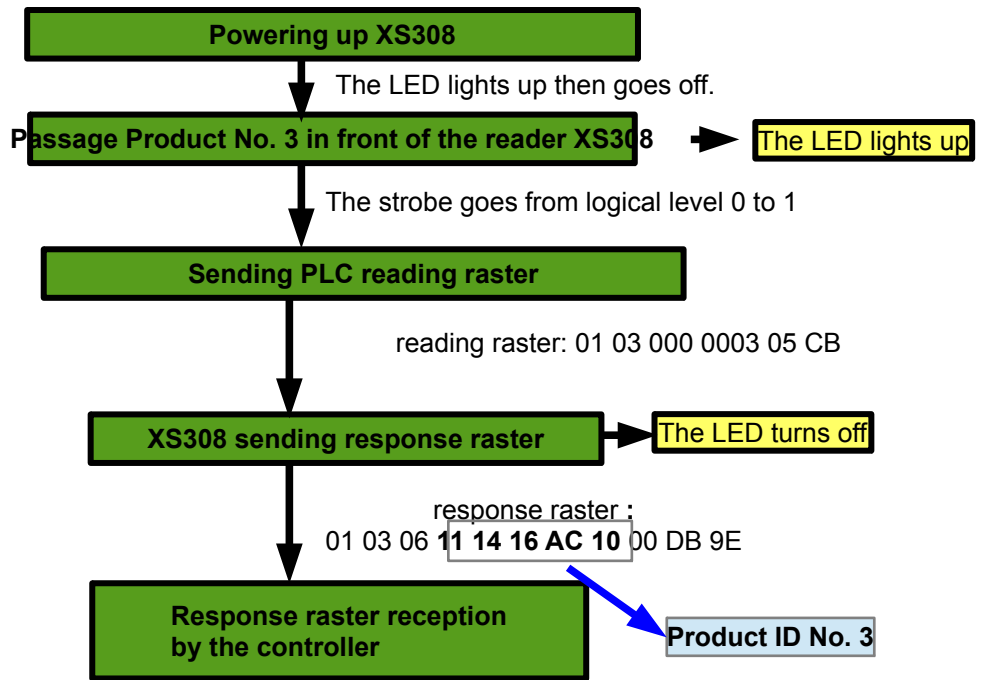


**9 serial mode (Multipoint connection)**



**10 Example**

Product ID No. 1: 14 11 11 14 1A  
 Product ID No. 2: 14 11 12 14 1B  
 Product ID No. 3: 11 14 16 AC 10  
 ID XS308 - 485: 01



**Read raster:** 01 03 0000 0003 05 CB

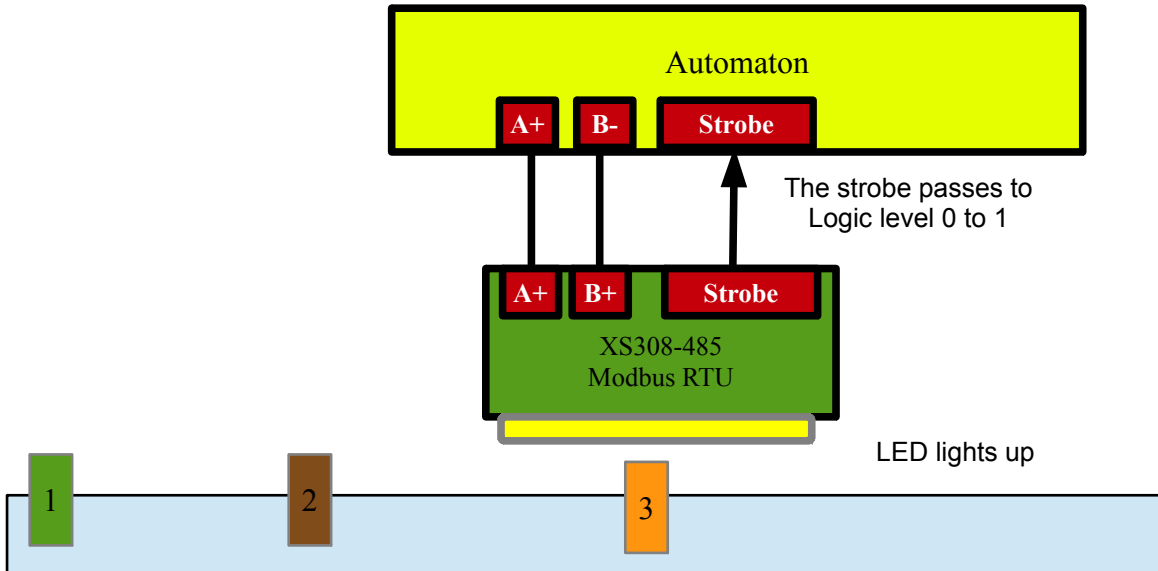
01: Id of the XS308 reader  
 03:read command n words  
 0000: Address of the words  
 Word Count:  
 05 CB: CRC16

**Response raster:** 01 03 06 11 14 16 AC 10 00 DB 9E

01: Id of the XS308 reader  
 03:read command n words  
 Word Count:  
 11 14 16 AC10 00: 3 words (6 bytes)  
 DB 9E: CRC16

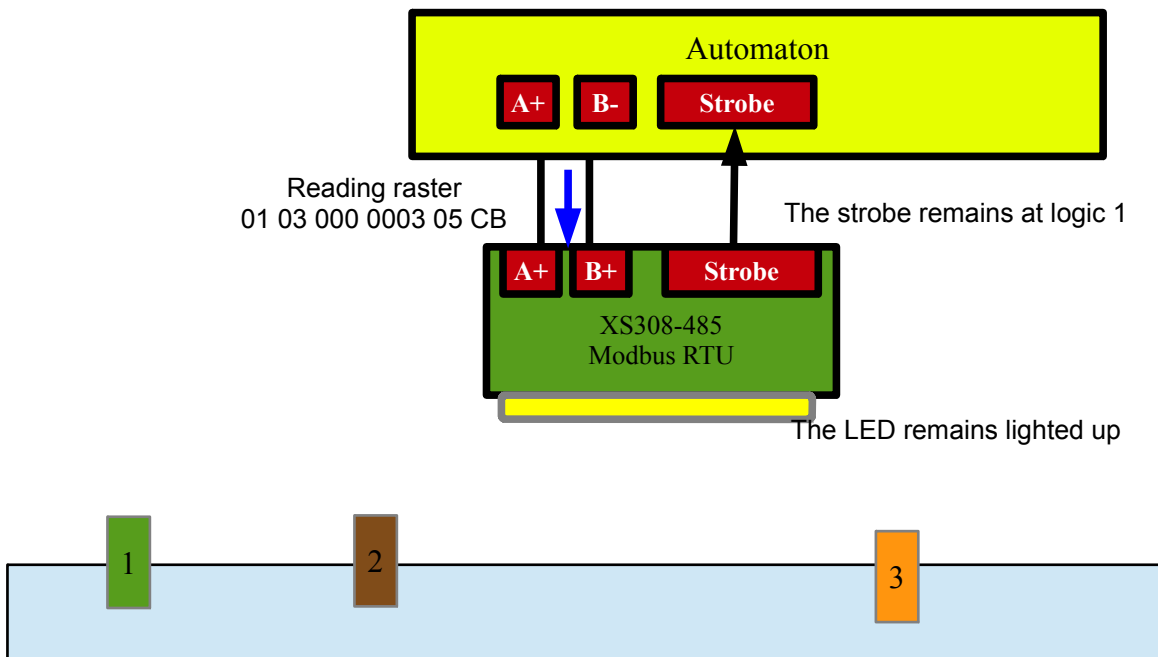
**Passage Product No. 3 in front of the reader XS308**

When the product No. 3 appears before the XS308, the LED lights up and the strobe passes to Logic level 0 to 1



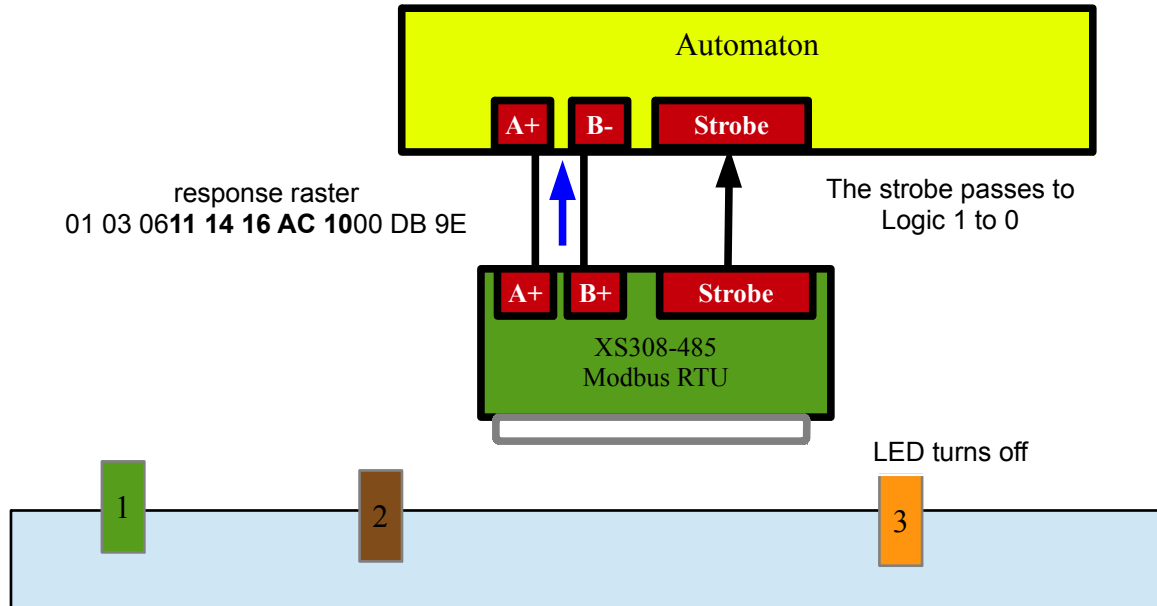
**The PLC transmits reading raster**

When the automaton strobe passes from logical level 0 to 1, the automaton transmits the read raster.



**XS308 sending response raster**

The XS308 sending the response raster to the controller, after receiving the reading raster. After receiving the read field by the XS308, the LED turns off, and the strobe passes to logic level 1 to 0.



**Receiving the response frame by the controller**

