

WIZ1-434-RS WIZ1-434-D

Single channel, 9600 b/s, half-duplex data transceiver module

Available models:

- WIZ1-434-RS: Data input by RS232 ($\pm 12V$) logic, 9-15V supply (positive to central pin)
- WIZ1-434-D: Data input by TTL (0-5V) logic and RS232 timing system, 5V supply

Box and holder are optional (WIZ1-434-RSB, WIZ1-434-DB). The power supply is not shipped with the unit. It is customer responsibility to supply voltage to the WIZ1 unit according to pertinent safety normatives.



The WIZ1-434-x modules are half-duplex, smart transceivers that support a digital data packet transfer of 1-120 bytes length at 9600 b/s speed. The data transferred to the remote unit are error-free since at the arrival are verified and confirmed.

Technical features

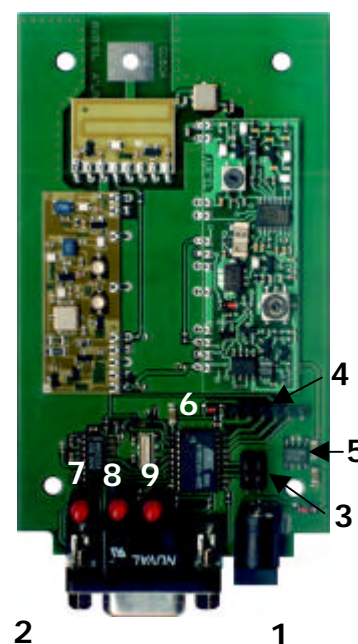
Operating frequency	433.92 MHz
Voltage supply	9-18 V
Power consumption TX – RX	20-30 mA
RF output power	10 mW
Data transmission speed	9600 bit/sec.
Operating temperature	-20/+80 °C
Operating range	40 m indoor – 150 m outdoor
Data packet length	1 – 120 Byte

Layout

The WIZ1-434-RS model are powered by a voltage supply range from 9 to 15V provided at the DC connector (1) and RS232 logic signals, on the female 9 pins connector D (2). The WIZ1-434-D model are powered by a 5V power supply directly on the RS232 connector's pin9 (originally RI signal, Ring Indicator), and the signals, at the input, with 0-5V logic; they fully maintain the characteristics of an RS232 signal (Start bit, data, parity, 1 Stop bit) and differentiate from them exclusively for the electrical levels.

The serial port receives data on pin3, transmits data on pin2 and has on pin7 (RTS) and pin8 (CTS) the programming signals.

1	9-15V DC supply connector (*)	6	Microcontroller
2	RS232, D type, female, 9 pins connector	7	POWER supply indication LED
3	Programming jumper. From connector RS232 toward the antenna there are JP1, JP2, JP3	8	TX/TESTING indication LED
		9	RX indication LED
4	Jumper ICP (In Circuit Programming)		
5	Voltage stabilizer 5V (*)		



(*) for WIZ1-434-RS model only

To reach the 3 programming jumpers, remove, with care, the box front cover using a flat tip screwdriver inserted in the slots provided at the 4 corners. The default jumpers are supplied opened.

Programming Jumpers	JP1	JP2	JP3
TX TEST	X	O	O
RX TEST	O	X	O
REMOTE PROGRAMMING	O	O	X

X= close jumper O= open jumper

Module operation test

The WIZ1 modules are equipped with a radio connection test procedure that does not need their connections to a personal computer or to a remote unit. It can be implemented by using two WIZ1 modules and by closing JP1 in the first module and JP2 in the second, before supplying power. According to the data transfer that took place between the two modules, the TX LED shall remain on, while the RX LED shall blink. A further test can be carried out by connecting a module to a PC and by setting a second module in REMOTE PROGRAMMING (JP3 closed): by interrogating the remote module and by verifying the answer it can be seen whether the radio link is operating or not.

WIZ1 modules addresses

WIZ1 modules are designed to be used in a master-slave system (max number of slaves 255). The distinction between master unit and slave is related to the software type, according to the address introduced in the ADDRESS register:

- ADDRESS = 0: system MASTER module;
- ADDRESS = 1 – 255: SLAVE module.

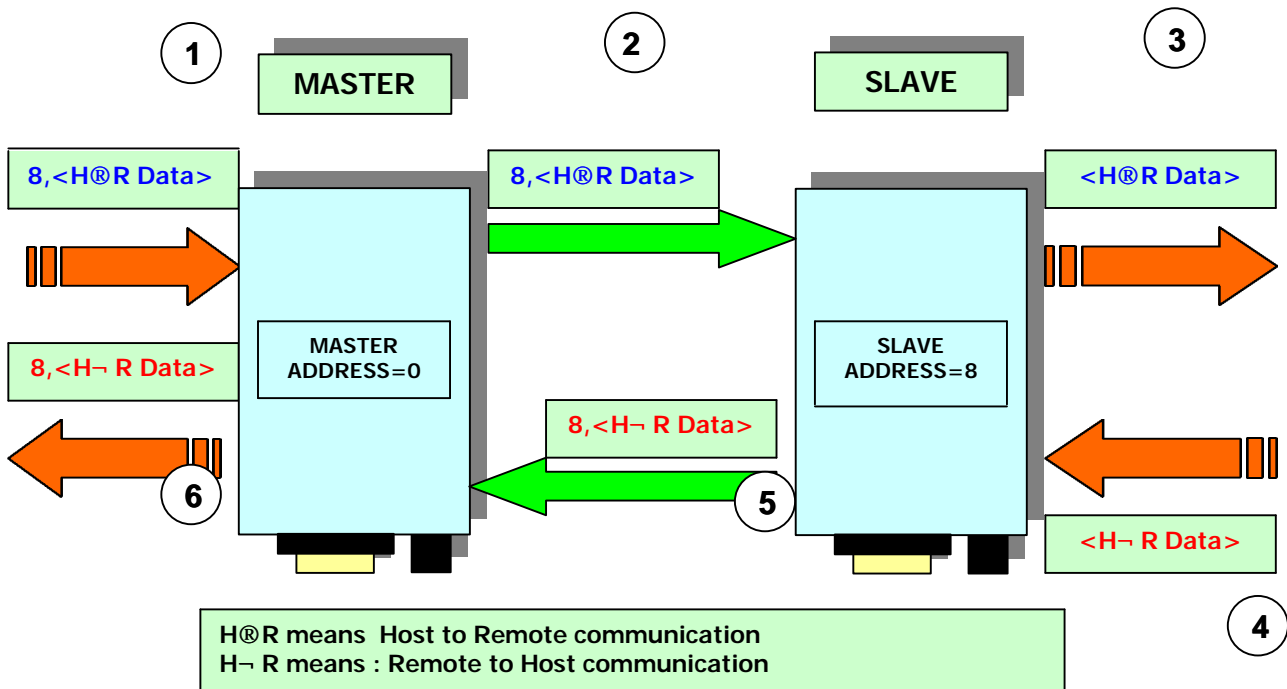
The system must always have a master module programmed with the address '0'.

The microcontroller embedded inside the WIZ1 modules administrates the data packet coming through the RS232 gate; the addressing of the data packet to be transmitted, is carried out by the external system that requires the connection with a remote unit. The address byte must be placed before the data bytes.

In case of a data packet addressed to another module, or in case of a checksum test failure, the packet shall be considered void and, therefore, not forwarded to the remote unit.

Data interchange between units

Data interchange between WIZ1 units follows the procedure illustrated here below:



1. Data addressing is managed by the system placed upstream of the WIZ1 master module: the address byte of the remote WIZ1 module, is placed before the data packet byte.

2. The packet is transmitted via radio channel by the WIZ1 master module.

3. The packet is received by the WIZ1 remote module: if it is accepted, the useful data are forwarded to the connected unit.
4. In case the packet is a command that foresees a reply from the remote unit, then the return data packet shall be forwarded to the WIZ1 master module.
5. This unit (for example an industrial PLC or a sensor) IS NOT REQUIRED to put first in the data packet's head, the address of the unit from which the interrogation came (i.e.: the master): the slave module shall care to place its own address before the data packet's head (*).
6. The master module, at the reception via radio, of the data packets, DOES NOT CANCEL the byte of the remote module address, by sending downstream all the data bytes received: this function appears to be particularly useful in polling systems, where an answer data packet can reach the questioning unit with not well defined delays.

This procedure is good for WIZ1 modules use in the industry, where PLCs can be directed to operate on machines or questioned to monitor telemetry data. Being not equipped with the adequate logic, in order to handle the data string that composes the answer to a possible interrogation, the WIZ1 remote module places, therefore, in front of the data from the PLC its own address in order to avoid that the originated packet is understood, from the other slave modules present in the system, as a command coming from the master module (to all other users of the system the head address shall cause the rejection of the answer, taking into consideration the unique of the addressing).

The minimum time between two consecutive packet transmissions should be 300ms.

(*) this device will avoid that an answer packet, coming from a slave module, is understood, as its own, by another slave module that has the address equal to the 1st byte of the data packet.

Programming of the internal registers

- Programming via cable: The WIZ1 module takes up a data interchanging protocol RS232, without the use of the handshaking controls. The signals, employed to exchange the data, in regard of the 9 pins connector D, present on the board, are TX (pin3), RX (pin2) and GND (pin5). The module programming via cable, takes place by switching the lines RTS (pin 7) and CTS (pin 8). The RTS line shall be taken to a low logic level by the personal computer that has to programme the module before sending the selected command. The microcontroller shall switch the CTS line, by lowering it within the end of the packet reception, and raising it up again once the programming operation is over. In both cases the programming operation of the microcontroller internal parameters can take place or can be read from the EEPROM on which they are recorded. The programming procedure foresees the sending of a command of the type WRITE or READ (WRITE: #,<address byte>,<value byte>; READ: \$,<address>).
- Programming via radio: the WIZ1 modules, specially the WIZ1-434-D model, can be programmed without the physical connection to a personal computer, by sending the registers writing commands via radio, to the remote module, with JP3 closed. The programming procedure via radio must involve one WIZ1 module only at a time. In case there is a need to programme more modules, repeat the above mentioned sequence for each of them.

The programming via radio differs from the one via cable for the jp3 jumper closing in the remote module and for the non administration of the RTS and CTS lines from the personal computer that has to conduct the operation.

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Here below the registers list, their address and their functions.

REGISTER NAME	ADDRESS	FUNCTION	DEFAULT	WRITE / READ
ADDRESS	\$00	WIZ1 module address	\$00	W/R
DELAY	\$01	Carrier turn on delay (number of bytes to be transmitted as a synchronism's preamble)	\$03 (=3 Tbyte)	W/R
SYNCHAR	\$02	Character transmitted as synchronism preamble	\$FF	W/R
RS232	\$03	RS232 protocol options: 00: no parity 01: odd parity 02: not in use 03: even parity	\$01 (odd parity)	R/W
RELEASE	\$1f	Microcontroller firmware version	\$01	R

Registers \$04→\$1d content is not applied for WIZ1-434-x modules.

Please pay attention to RS232 register programming because change of its value could prevent execution of software applications where parity cannot be changed.

Reference to CE Approvals

To meet CEPT Recommendation 70-03, device must be used in transmission mode for a maximum timing duty cycle less than 10% (max 6 minutes in transmission in an hour). Device usage is subject to laws and rules of the Country (e.g.: in Italy – Codice Postale e delle Telecomunicazioni – art. 334 – and subsequent laws).

Test and technical reports performed at testing lab: **PRIMA RICERCA & SVILUPPO** – via Campagna, 58 – 22020 Gaggino Faloppio (CO) - Italy