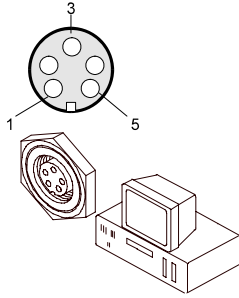


### RS232 communication protocol / R-LAS-LR-series

#### serial data transfer



The personal computer (PC) can be replaced by any system (e.g. PLC unit), which executes a special serial communication protocol.

It is possible to connect a PLC to the serial interface of the R-LAS-LR sensor by using the 5-pole connection at the housing of the sensor:

- Pin 1 GND
- Pin 2 TX0
- Pin 3 RX0
- Pin 4 not connected
- Pin 5 not connected

#### Standard RS232 serial interface without hardware-handshake:

3-wire: GND, TX0, RX0

4800 baud, 8 data bits, no parity bit, 1 stop bit in binary mode

The control device (PC or PLC) has to send a data frame of 14 bytes to the R-LAS-LR hardware. All bytes must be transmitted in binary format. The meaning of the parameters are described in the software manual LR-Scope V2.2.

#### Method:

The R-LAS-LR hardware is permanently reading (polling) the incoming byte at the RS232 connection. If the incoming byte = 0x55 (**synch-byte**), then the 2.byte (**order-byte**) is read in, after this, 12 bytes (parameters) are read in.

After reading in the completely data frame, the R-LAS-LR hardware executes the order which is coded at the 2. byte (**order-byte**).

#### R-LAS-LR format of the RS232 data frame:

Byte No.	Meaning	Comment
1	synch-byte = 0x55	hex-code, binary 01010101
2	<b>order-number</b>	order byte,
3	parameter TOL	toleranz band width (0 .. 127)
4	parameter POLARITY	polarity of digital output (0,1)
5	parameter HOLD [ms]	hold time 0,25,50,100 or 200 ms coded to (0,1,2,3,4)
6	parameter LASMOD	operating mode of the laser power control STAT or DYN (0,1)
7	parameter POWER	laser power: 0 ... 255 – attention inverse operation!!
8	parameter HYSTERESIS	hysteresis band (0 .. 50)
9	parameter AVERAGEING	signal averageing (0,4,8,16,32,64) coded to (0,1,2,3,4,5)
10	parameter MAXMODE	automatic threshold correction ON/OFF (1,0)
11	parameter REF	reference value (0 ... 250)
12	parameter THDMODE	positon of tolerance threshold (LOW,HI or WIN) coded to (0,1,2)
13	parameter DT HI to LO	time constant for auto threshold correction DOWN (0 .. 15)
14	parameter DT LO to HI	time constant for auto threshold correction UP (0 .. 15)

#### R-LAS-LR order number:

No.	Order	Comment
0	nop	no operation
1	save parameter from PC into RAM	volatile - normal operation
2	save parameter from PC into RAM + EEPROM	nonvolatile
3	send parameter from RAM to PC	12 byte binary to PC
4	send parameter from EEPROM to RAM + to PC	12 byte binary to PC
5	send raw data from RAM to PC (RAW,SMOOTH,AKTMAX,PWM1)	4 byte binary to PC
6	nop	no operation
7	send line ok = 0xAA to PC	1 byte binary to PC

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