

How to get the data from E+E transmitters via the E2Bus – RS232 converter

The E2Bus - RS232 converter acts as an interface between, the E2Bus defined with E+E transmitters, and a standard serial RS232 interface. The used settings of the RS232 are:

baud rate 9600
data bits 8
stop bits 1
parity none

To collect data from your RS232 interface the "Read byte" **instruction** must be implemented and submitted several times. With this instruction 4 bytes are sent via the serial interface to the converter. The converter recognizes the **command**, changes this into the E2Bus protocol and continues to send the request to the transmitter. The answer of the Transmitter is changed by the converter into the serial protocol, and sent back as a **response** to the requester (usually PC).

The "Read byte" **instruction** is defined as:

Command (from PC to converter)

[B][L][D][C]

	Value	Type	Remark
[B]	0x51	BYTE	Command
[L]	0x01	BYTE	Data length
[D]		BYTE	Address
[C]		BYTE	Checksum

Checksum: (Command + Data length + Address) MODULO 256

Response (from converter to PC)

[B][L][S][F][D][C]

	Value	Type	Remark
[B]	0x51	BYTE	Command
[L]	0x03	BYTE	Data length
[S]		BYTE	<ACK> or <NAK>
[F]		BYTE	[S] = <ACK>: 0x00 [S] = <NAK>; error code
[D]		BYTE	Data byte
[C]		BYTE	Checksum

ACK: [0x06] Command was received properly

NAK: [0x15] Error occurred

Data byte: read value of the Transmitter

Checksum: (Command+Data length + (ACK or NAK) +error code+Data byte) MODULO 256

Used error codes:

- 0x00 no mistake appeared
- 0xFF Checksum error
- 0x03 error while reading on E2Bus (e.g., no Transmitter connected)

By variation of the address in the "Read byte" instruction the following data can be collected from the transmitters (EE03 and/or EE07):

Address	description
0x11	Sensor Type (Group)
0x21	Sensor Type (Subgroup)
0x31	Available measurement values
0x71	Status Byte
0x81	Relative humidity (low Byte)
0x91	Relative humidity (high Byte)
0xA1	Temperature (low Byte)
0xB1	Temperature (high Byte)

For detailed meaning of these values kindly refer to the E2-Interface specification (www.epluse.at).

Calculation of the measured values:

Relative humidity: indicated in 1/100 %rH

by the reading of the low byte (0x81) and next reading of the high byte (0x91; order must be kept) the relative humidity value is determined.

$$\text{Relative humidity [1 / 100 \%rH]} = (\text{unsigned int}) \text{ low byte} + \text{high byte} * 256$$

Temperature: indicated in 1/100 °K (absolute temperature)

by the reading of the low byte (0xA1) and next reading of the high byte (0xB1; order must be kept) the temperature value is determined.

$$\text{Temperature [1 / 100K]} = (\text{unsigned int}) \text{ low byte} + \text{high byte} * 256$$

The validity of the measuring values must be guaranteed by the evaluation of the status byte.

The following inquiry process is recommended:

1. Interrogate low byte relative humidity (address = 0x81)
2. Interrogate high byte relative humidity (address = 0x91)
3. Interrogate low byte temperature (address = 0xA1)
4. Interrogate high byte temperature (address = 0xB1)
5. Interrogate and evaluate the status byte (address = 0x71)

By reading the status byte a new measurement is triggered in the Transmitter. During measuring time no values can be collected from the transmitter.

References:

1. Specification E2 Interface (www.epluse.at).