

## Silicon Irradiance Sensor with RS485 Port

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### Protocol Specification Si-RS485-TC-T, Si-RS485-TC-2T, Si-RS485-TC-2T-v

This document describes the protocol of the RS485 port of the Sensor Si-RS485-TC-x, called „sensor“.

The data logger or a control system has the function of the master, the sensor has the function of the slave.  
The sensor address has a range of 00 to 99. The sensor address is specified by the last two signs of the serial no.  
Each sensor has a fixed, for the user not changeable address.  
Data format: 9600 baud, 8 data bits, no parity, one stop bit.

Command structure:

Master	Sensor	Comment
#aa0<CR>	<LF>*aa7<CR>	Command for recognition a sensor
#aav<CR>	<LF>*aavhhsss<CR>	Command for requesting hardware and software version
#aa7<CR>	<LF>*aa7 <data1> <data 2> <data3> <data 4> <CRC><CR>	Command for data request

aa: Address of the sensor, defined by the last to signs of the serial no., setting by the manufacturer  
0: Command for recognition a sensor  
7: Command for data request  
v: Command for requesting hardware and software version  
hhh: Hardware Version  
sss: Software Version  
data 1: Measurement value for irradiance in [W/m<sup>2</sup>], field length: 6  
data 2: Measurement value for cell temperature in [°C], field length: 5  
data 3: Measurement value for external temperature (ambient, pv module) in [°C], field length: 5, optional  
data 4: Measurement value for wind speed in [m/s], field length: 4, optional  
CRC: Addition of all characters before CRC without <LF> as integer U8. Attention: The CRC could contain non-printable-characters.

All measurement values contain a decimal separator (0x2e) and one decimal place. The field length includes the decimal separator. At measurement values with a smaller field length space characters are added. Each measurement value has at minimum one space character before and behind. So, each command and each request contains a fixed number of characters.

Example (sensor with Bus address 01):

Master: #010<CR>  
Slave: <LF>\*017 <CR>  
Master: #01v<CR>  
Slave: <LF>\*01v131108<CR>  
Slave: <LF>\*017\_\_923.4\_\_46.3\_\_18.1\_\_11.3\_\_<CRC><CR> (space characters are displayed as \_)

To prevent collisions all sensors at the same bus must have different addresses.