This document describes the M&T 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 number. 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:

<table>
<thead>
<tr>
<th>Master</th>
<th>Sensor</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>#aa0&lt;CR&gt;</td>
<td>&lt;LF&gt;*aa7&lt;CR&gt;</td>
<td>Command for recognition a sensor</td>
</tr>
<tr>
<td>#aav&lt;CR&gt;</td>
<td>&lt;LF&gt;*aavhhhss&lt;CR&gt;</td>
<td>Command for requesting hardware and software version</td>
</tr>
<tr>
<td>#aa7&lt;CR&gt;</td>
<td>&lt;LF&gt;*aa7 &lt;data1&gt; &lt;data 2&gt; &lt;data 3&gt; &lt;data 4&gt; &lt;CRC&gt;&lt;CR&gt;</td>
<td>Command for data request</td>
</tr>
</tbody>
</table>

**aa:** Address of the sensor, defined by the last to signs of the serial number, 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/m²], 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:  
Slaves:

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