The **Modbus 2 Driver** is designed to run on PCD systems of SAIA-Burgess Controls.

It supports RSxxx lines as well as TCP/IP over Ethernet. Modbus RTU, ASCII, TCP and UDP are supported. The Master and Slave functions are included in the same package. The programming is made by mean of function boxes for the PG5 development package.

### Supported functions

<table>
<thead>
<tr>
<th>Function code</th>
<th>Function name</th>
<th>Address range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function 1</td>
<td>Read Coil Status</td>
<td>0..8191</td>
</tr>
<tr>
<td>Function 2</td>
<td>Read Inputs Status</td>
<td>0..8191</td>
</tr>
<tr>
<td>Function 3</td>
<td>Read Holding Registers</td>
<td>0..4095</td>
</tr>
<tr>
<td>Function 4</td>
<td>Read Input Registers (mapped on Timers/Counters)</td>
<td>0..1599</td>
</tr>
<tr>
<td>Function 5</td>
<td>Force Single Coil</td>
<td>0..8191</td>
</tr>
<tr>
<td>Function 6</td>
<td>Preset Single Register</td>
<td>0..4095</td>
</tr>
<tr>
<td>Function 7</td>
<td>Read Exception Status</td>
<td></td>
</tr>
<tr>
<td>Function 15</td>
<td>Force Multiple Coils</td>
<td>0..8191</td>
</tr>
<tr>
<td>Function 16</td>
<td>Force Multiple Registers</td>
<td>0..4095</td>
</tr>
<tr>
<td>Function 20</td>
<td>Read General Reference (mapped on data blocs)</td>
<td>0..7999</td>
</tr>
<tr>
<td>Function 21</td>
<td>Write General Reference (mapped on data blocs)</td>
<td>0..7999</td>
</tr>
</tbody>
</table>

### Function mapping in Slave driver

Each Modbus function can be remapped to other media and/or addresses or even locked for the Master. This allows for instance a direct write access to binary outputs.

### Adjustable Parameters

Using an optional function, the Baudrate and the bits settings can be changed in runtime. These parameters can be set for instance over a terminal unit or by mean of binary switches on inputs. The Slave address is adjustable in runtime as well.

### Auto connect/disconnect

For the Master driver, each slave is controlled by an Auto connect/disconnect mechanism. In case of communication error (usually no response), the slave is first disconnected for a short time. After this time, a reconnect attempt is started. If the slave reconnection still fails, a long disconnect delay is started. This avoid repetitive timeout on the network and improve the scanning time even with missing slaves. Both, short and long reconnect times are adjustable.
Virtual Slave
In addition to the standard Slave application, one or several virtual slaves can be defined to give access to the large memory supported by a PCD. Each virtual slave can support up to 16384 additional registers.

32 bits Integer and Floating point
Modbus is based on 16 bits registers. However, means is provided to read and write 32 bits integers as well as floating point in IEEE format. Note that in PCD systems, all registers are 32 bits variables.

Gateway to S-Bus
A Gateway Function is available to build a direct gateway to a S-Bus network. It can be a Serial-S-Bus as well as a Ether-S-Bus (S-Bus/TCP over Ethernet). Modbus/RTU to Modbus/TCP as well as Modbus/TCP to Modbus/RTU can also be realized.

Redundancy
Redundancy is also available on request: It may be a free combination of several RTU buses, several TCP channels (Master and/or Slave) or a mix of RTU and TCP. Physical redundancy with 2 Ethernet modules is also available.

Modem
Modbus RTU and ASCII can run over Modem. Master and Slave functions are supported over Modem. Analogue, ISDN as well as GSM modem can be used. The Modem can also be used to send SMS or Pager messages.

Further protocols
Other protocols can be loaded in the same system to build a data concentrator or a gateway.

- Profibus DP
- Profibus FMS
- LON
- EIB
- Siemens 3964(R) / RK 512
- Johnson N2
- M-Bus
- ESPA 4.4.4
- IEC 870-5-101
- IEC 870-5-103
- IEC 60870-5-104
- other on request

Data acquisition
The PCD systems, with Modbus driver are often used as data concentrators or gateway. Common tasks are the data acquisition on local or remote PC. Engiby offers several Data acquisition solutions depending on the required autonomy and performances.

1. **NG-Dump** is a simple tool to regularly collect data in a CSV or Excel file. Up to 100 tasks may be defined and run simultaneously with different data lists, output files and reading intervals. The PC is permanently connected to the PCD systems (no autonomy).

2. **NG-Trace** is rather a debugging tool supporting a circular buffer in the PCD (with autonomy). The buffer can be read at anytime with a local connection, over Ethernet or even via Modem.

3. **NG-Data** is a powerful acquisition concept for Trend data and Alarms. Data packages are spontaneously sent to a server and stored in a Access database. Alarms can be forwarded as SMS or E-Mail messages.