

# 16 Specific protocols

- Aurora (ABB PV inverters protocol) - PowerOne (ABB PV inverters protocol) - SMA Net (SMA PV inverters protocol) - Kaco (Kaco PV inverters protocol) - Ginlong (Ginlong PV inverters protocol) - Solplus (Solutronic AG PV inverters protocol) - ComLynx (Danfoss PV inverters protocol) - Delta (Delta PV inverters protocol) - Windlog (Wind sensors from RainWise Inc.) - Vestas ( Wind turbines protocol) - VBus.

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# 16.1 At command

## Overview

At command protocol is used for communications with AT Commands.

## Configuration

### At command parameters for *Device* tab

| Parameter          | Type    | Description   | Required | Default value<br>(when not specified) | Range   |       |
|--------------------|---------|---|----------|---------------------------------------|---|-------|
|                    |         |   |          |                                       | Min   | Max   |
| name               | string  | User-friendly device name                               | Yes      |                                       |   |       |
| description        | string  | Description of a device                                 | No       |                                       |   |       |
| device_alias       | string  | Alphanumeric string to identify a device                | Yes      |                                       |   |       |
| enable             | boolean | Enabling/disabling of a device                          | No       | 1                                     | 0   | 1     |
| protocol           | string  | Protocol to be used.                                    | Yes      |                                       | at command  |       |
| device             | string  | Communication port                                      | Yes      |                                       | PORT1   | PORT2 |
| baudrate           | integer | Communication speed (bauds/s)                           | No       | 9600                                  | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 |       |
| databits           | integer | Data bit count for communication                        | No       | 8                                     | 6   | 9     |
| stopbits           | integer | Stop bit count for communication                        | No       | 1                                     | 1   | 2     |
| parity             | string  | Communication parity option                             | No       | none                                  | none, even, odd   |       |
| flowcontrol        | string  | Communication device flow control option.               | No       | none                                  | none  |       |
| timeout_ms         | integer | Timeout of waiting for incoming request in milliseconds | Yes      |                                       | 0   | 60000 |
| serial_close_delay | integer | Delay before closing serial port                        | No       | 400                                   |   |       |

### At command parameters for *Signals* tab

| Parameter | Type | Description | Required | Default value<br>(when not specified) | Range |     |
|-----------|------|-------------|----------|---------------------------------------|-------|-----|
|           |      |             |          |                                       | Min   | Max |

|              |         |  |     |   |   |   |
|--------------|---------|--|-----|---|---|---|
| signal_name  | string  | User-friendly signal name                                | Yes |   |   |   |
| device_alias | string  | Device alias from a Devices tab                          | Yes |   |   |   |
| signal_alias | string  | Unique alphanumeric name of the signal to be used        | Yes |   |   |   |
| enable       | boolean | Enabling/disabling of an individual signal               | No  | 1 | 0 | 1 |
| log          | integer | Enable logging in event log                              | No  | 0 |   |   |
| number_type  | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)          | Yes |   |   |   |
| job_todo     | string  | Tag job as single or multiple comma separated OBIS codes | Yes |   |   |   |
| tag_job_todo | string  | Tag sub job  | Yes |   |   |   |

# 16.2 Aurora

## Overview

The Aurora Protocol is a link layer communications protocol for use on point-to-point serial links. It is intended for use in highspeed (gigabits/second and more) connections internally in a computer or in an embedded system. It uses either 8b/10b encoding or 64b/66b encoding

Aurora parameters for Device tab:

| Parameter     | Type    | Description  | Required | Default value<br>(when not specified) | Range   |       |
|---------------|---------|--|----------|---------------------------------------|---|-------|
|               |         |  |          |                                       | Min   | Max   |
| name          | string  | User-friendly device name  | Yes      |                                       |   |       |
| description   | string  | Description of the device  | No       |                                       |   |       |
| device_alias  | string  | Device alias to be used in configuration   | Yes      |                                       |   |       |
| enable        | boolean | Enabling/disabling of a device   | No       | 1                                     | 0   | 1     |
| protocol      | string  | Selection of protocol  | Yes      |                                       | Aurora  |       |
| baudrate      | integer | Communication speed, bauds/s (See values 33.1.2)   | No       | 9600                                  | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 |       |
| databits      | integer | Data bit count for communication   | No       | 8                                     | 6   | 9     |
| stopbits      | integer | Stop bit count for communication   | No       | 1                                     | 1   | 2     |
| parity        | string  | Communication parity option ("none"/"even"/"odd")  | No       | none                                  | None, Even, Odd   |       |
| flowcontrol   | string  | Communication device flow control option.  | No       | none                                  |   |       |
| scan_rate_ms  | integer | If provided and positive all reads and writes will be executed within the timeframe in milliseconds. | No       | 10000                                 |   |       |
| poll_delay_ms | integer | Minimum time delay in milliseconds to wait before sending any data on port.                          | No       | 200                                   |   |       |
| timeout_ms    | integer | Timeout in milliseconds  | No       | 2500                                  |   |       |
| id            | integer | Inverter ID  | No       | 0                                     |   |       |
| device        | string  | Communication port   | Yes      |                                       | PORT1   | PORT2 |

Aurora parameters for Signals tab:

| Parameter           | Type    | Description   | Required | Default value<br>(when not specified) | Range |     |
|---------------------|---------|---|----------|---------------------------------------|-------|-----|
|                     |         |   |          |                                       | Min   | Max |
| signal_name         | string  | User-friendly device name                           | Yes      |                                       |       |     |
| device_alias        | string  | Device alias from a Devices tab                     | Yes      |                                       |       |     |
| enable              | boolean | Enabling/disabling of an individual signal          | No       | 1                                     | 0     | 1   |
| log                 | integer | Enable logging in event log (Default: 0)            | No       | 0                                     | 0     |     |
| signal_alias        | string  | Unique alphanumeric name of the signal to be used   | Yes      |                                       |       |     |
| job_todo            | boolean | Define tag-function                                 | Yes      |                                       |       |     |
| tag_job_todo        | string  | Define tag action that depends on tag function      | Yes      |                                       |       |     |
| number_type         | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)     | Yes      |                                       |       |     |
| pulse_short_time_ms | integer | Time interval for short output pulse to stay active | No       | 0                                     |       |     |
| pulse_long_time_ms  | integer | Time interval for long output pulse to stay active  | No       | 0                                     |       |     |

# 16.3 COMLYNX

## Overview

Comlynx protocol is used to communicate with Comlynx inverters over serial communication.

Comlynx parameters for *Device* tab:

| Parameter     | Type    | Description  | Required | Default value<br>(when not specified) | Range   |       |
|---------------|---------|--|----------|---------------------------------------|---|-------|
|               |         |  |          |                                       | Min   | Max   |
| name          | string  | User-friendly device name  | Yes      |                                       |   |       |
| description   | string  | Description of the device  | No       |                                       |   |       |
| device_alias  | string  | Device alias to be used in configuration   | Yes      |                                       |   |       |
| enable        | boolean | Enabling/disabling of a device   | No       | 1                                     | 0   | 1     |
| protocol      | string  | Selection of protocol  | Yes      |                                       | Comlynx   |       |
| address       | integer | Device address   | No       | 1                                     |   |       |
| subnet        | integer | Subnet address   | No       | 0                                     |   |       |
| network       | integer | Network address  | No       | 0                                     |   |       |
| device        | string  | Communication port   | Yes      |                                       | PORT1   | PORT2 |
| baudrate      | integer | Communication speed (bauds/s)  | No       | 19200                                 | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 |       |
| databits      | integer | Data bit count for communication   | No       | 8                                     | 6   | 9     |
| stopbits      | integer | Stop bit count for communication   | No       | 1                                     | 1   | 2     |
| parity        | string  | Communication parity option ("none"/"even"/"odd")  | No       | none                                  |   |       |
| flowcontrol   | string  | Communication device flow control option. (Default: (case-sensitive): "none")                        | No       | none                                  |   |       |
| scan_rate_ms  | integer | If provided and positive all reads and writes will be executed within the timeframe in milliseconds. | No       | 10000                                 |   |       |
| poll_delay_ms | integer | Minimum time delay in milliseconds to wait before sending any data on port.                          | No       | 200                                   |   |       |
| timeout_ms    | integer | Timeout in milliseconds  | Yes      |                                       | 0   | 60000 |

Comlynx parameters for *Signals* tab:

| Parameter           | Type    | Description   | Required | Default value<br>(when not specified) | Range |     |
|---------------------|---------|---|----------|---------------------------------------|-------|-----|
|                     |         |   |          |                                       | Min   | Max |
| signal_name         | string  | User-friendly device name                           | Yes      |                                       |       |     |
| device_alias        | string  | Device alias from a Devices tab                     | Yes      |                                       |       |     |
| signal_alias        | string  | Unique alphanumeric name of the signal to be used   | Yes      |                                       |       |     |
| enable              | boolean | Enabling/disabling of an individual signal          | No       | 1                                     | 0     | 1   |
| log                 | integer | Allow signal to be logged.                          | No       | 0                                     |       |     |
| job_todo            | boolean | Define tag-function                                 | Yes      |                                       |       |     |
| tag_job_todo        | string  | Define tag action that depends on tag function      | Yes      |                                       |       |     |
| number_type         | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)     | Yes      |                                       |       |     |
| pulse_short_time_ms | integer | Time interval for short output pulse to stay active | No       | 0                                     |       |     |
| pulse_long_time_ms  | integer | Time interval for long output pulse to stay active  | No       | 0                                     |       |     |

# 16.4 Delta

## Overview

Delta protocol is used to communicate with Delta inverters over serial communication.

## Configuration

Delta parameters for *Device* tab

| Parameter     | Type    | Description  | Required | Default value<br>(when not specified) | Range   |       |
|---------------|---------|--|----------|---------------------------------------|---|-------|
|               |         |  |          |                                       | Min   | Max   |
| name          | string  | User-friendly device name  | Yes      |                                       |   |       |
| description   | string  | Description of the device  | No       |                                       |   |       |
| device_alias  | string  | Device alias to be used in configuration   | Yes      |                                       |   |       |
| enable        | boolean | Enabling/disabling of a device   | No       | 1                                     | 0   | 1     |
| protocol      | string  | Selection of protocol  | Yes      |                                       | Delta   |       |
| baudrate      | integer | Communication speed (bauds/s)  | No       | 9600                                  | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 |       |
| databits      | integer | Data bit count for communication   | No       | 8                                     | 6   | 9     |
| stopbits      | integer | Stop bit count for communication   | No       | 1                                     | 1   | 2     |
| parity        | string  | Communication parity option ("none"/"even"/"odd")  | No       | none                                  | None, Even, Odd   |       |
| flowcontrol   | string  | Communication device flow control option. (Default: (case-sensitive): "none")                        | No       | none                                  |   |       |
| scan_rate_ms  | integer | If provided and positive all reads and writes will be executed within the timeframe in milliseconds. | No       | 10000                                 |   |       |
| poll_delay_ms | integer | Minimum time delay in milliseconds to wait before sending any data on port.                          | No       | 200                                   |   |       |
| timeout_ms    | integer | Timeout in milliseconds  | Yes      |                                       | 0   | 60000 |
| id            | integer | Inverter ID  | Yes      | 0                                     |   |       |
| device        | string  | Communication port   | Yes      |                                       | PORT1   | PORT2 |

Delta parameters for *Signals* tab



| Parameter           | Type    | Description  | Required | Default value<br>(when not specified) | Range |     |
|---------------------|---------|--|----------|---------------------------------------|-------|-----|
|                     |         |  |          |                                       | Min   | Max |
| signal_name         | string  | User-friendly signal name                                | Yes      |                                       |       |     |
| device_alias        | string  | Device alias from a Devices tab                          | Yes      |                                       |       |     |
| signal_alias        | string  | Unique alphanumeric name of the signal to be used        | Yes      |                                       |       |     |
| enable              | boolean | Enabling/disabling of an individual signal               | No       | 1                                     | 0     | 1   |
| log                 | integer | Enable logging in event log                              | No       | 0                                     |       |     |
| number_type         | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)          | Yes      |                                       |       |     |
| job_todo            | string  | Tag job as single or multiple comma separated OBIS codes | Yes      |                                       |       |     |
| tag_job_todo        | string  | Tag sub job  | Yes      |                                       |       |     |
| pulse_short_time_ms | integer | Time interval for short output pulse to stay active      | No       | 0                                     |       |     |
| pulse_long_time_ms  | integer | Time interval for long output pulse to stay active       | No       | 0                                     |       |     |

# 16.5 GINLONG

## Overview

Ginlong protocol is used to communicate with Ginlong inverters over serial communication.

### GINLONG parameters for *Device* tab:

| Parameter     | Type    | Description  | Required | Default value<br>(when not specified) | Range   |     |
|---------------|---------|--|----------|---------------------------------------|---|-----|
|               |         |  |          |                                       | Min   | Max |
| name          | string  | User-friendly device name  | Yes      |                                       |   |     |
| description   | string  | Description of the device  | No       |                                       |   |     |
| device_alias  | string  | Device alias to be used in configuration   | Yes      |                                       |   |     |
| enable        | boolean | Enabling/disabling of a device   | No       | 1                                     | 0   | 1   |
| protocol      | string  | Selection of protocol  | Yes      |                                       | Ginlong   |     |
| baudrate      | integer | Communication speed (bauds/s)<br>(See values 33.1.2)   | No       | 9600                                  | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 |     |
| databits      | integer | Data bit count for communication   | No       | 8                                     | 6   | 9   |
| stopbits      | integer | Stop bit count for communication   | No       | 1                                     | 1   | 2   |
| parity        | string  | Communication parity option ("none"/"even"/"odd")  | No       | none                                  | None, Even, Odd   |     |
| flowcontrol   | string  | Communication device flow control option.<br>(Default: (case-sensitive): "none")                     | No       | none                                  |   |     |
| scan_rate_ms  | integer | If provided and positive all reads and writes will be executed within the timeframe in milliseconds. | No       | 10000                                 |   |     |
| poll_delay_ms | integer | Minimum time delay in milliseconds to wait before sending any data on port.                          | No       | 200                                   |   |     |
| timeout_ms    | integer | Timeout in milliseconds  | No       | 2500                                  |   |     |
| id            | integer | Inverter ID  | Yes      | 0                                     |   |     |

|        |        |                    |     |  |       |       |
|--------|--------|--------------------|-----|--|-------|-------|
| device | string | Communication port | Yes |  | PORT1 | PORT2 |
|--------|--------|--------------------|-----|--|-------|-------|

## GINLONG parameters for Signals tab:

| Parameter           | Type    | Description   | Required | Default value<br>(when not specified) | Range |     |
|---------------------|---------|---|----------|---------------------------------------|-------|-----|
|                     |         |   |          |                                       | Min   | Max |
| signal_name         | string  | User-friendly device name                           | Yes      |                                       |       |     |
| device_alias        | string  | Device alias from a Devices tab                     | Yes      |                                       |       |     |
| signal_alias        | string  | Unique alphanumeric name of the signal to be used   | Yes      |                                       |       |     |
| enable              | boolean | Enabling/disabling of an individual signal          | No       | 1                                     | 0     | 1   |
| log                 | integer | Allow signal to be logged.                          | No       | 0                                     |       |     |
| job_todo            | string  | Define tag-function                                 | Yes      |                                       |       |     |
| tag_job_todo        | string  | Define tag action that depends on tag function      | Yes      |                                       |       |     |
| number_type         | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)     | Yes      |                                       |       |     |
| pulse_short_time_ms | integer | Time interval for short output pulse to stay active | No       | 0                                     |       |     |
| pulse_long_time_ms  | integer | Time interval for long output pulse to stay active  | No       | 0                                     |       |     |

# 16.6 Kaco

## Overview

This protocol is meant to be used by inverters that convert the DC power generated by the photovoltaic (PV) modules into AC power and feed this into the power grid.

 This protocol handles serial communication parameters (baudrate, databits, stopbits, etc.) automatically.

## Configuration

### Kaco parameters for *Device* tab

| Parameter     | Type    | Description   | Required | Default value<br>(when not specified) | Range |       |
|---------------|---------|---|----------|---------------------------------------|-------|-------|
|               |         |   |          |                                       | Min   | Max   |
| name          | string  | User-friendly device name   | Yes      |                                       |       |       |
| description   | string  | Description of a device   | No       |                                       |       |       |
| device_alias  | string  | Alphanumeric string to identify a device  | Yes      |                                       |       |       |
| enable        | boolean | Enabling/disabling of a device  | No       | 1                                     | 0     | 1     |
| protocol      | string  | Protocol to be used.  | Yes      |                                       | Kaco  |       |
| scan_rate_ms  | integer | All reads and writes will be executed within the timeframe in milliseconds.         | No       | 10000                                 |       |       |
| poll_delay_ms | integer | Minimum time delay in milliseconds to wait before sending any data on port.         | No       | 200                                   |       |       |
| timeout_ms    | integer | Timeout of waiting for incoming request in milliseconds                             | Yes      | 2500                                  | 0     | 60000 |
| subid         | integer | Inverter serial number display  | Yes      | 0                                     |       |       |
| ext_device    | boolean | 0 - Inverter is connected directly<br>1 - Inverter is connected via remote terminal | Yes      | 0                                     | 0     | 1     |
| id            | integer | Inverter serial number  | Yes      |                                       |       |       |
| device        | string  | Communication port  | Yes      |                                       | PORT1 | PORT2 |

### Kaco parameters for *Signals* tab

| Parameter | Type | Description | Required | Default value<br>(when not specified) | Range |  |
|-----------|------|-------------|----------|---------------------------------------|-------|--|
|           |      |             |          |                                       |       |  |

|                     |         |  |     | Specimen | Min | Max |
|---------------------|---------|--|-----|----------|-----|-----|
| signal_name         | string  | User-friendly signal name                                | Yes |          |     |     |
| device_alias        | string  | Device alias from a Devices tab                          | Yes |          |     |     |
| signal_alias        | string  | Unique alphanumeric name of the signal to be used        | Yes |          |     |     |
| enable              | boolean | Enabling/disabling of an individual signal               | No  | 1        | 0   | 1   |
| log                 | integer | Enable logging in event log                              | No  | 0        |     |     |
| number_type         | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)          | Yes |          |     |     |
| job_todo            | string  | Tag job as single or multiple comma separated OBIS codes | Yes |          |     |     |
| tag_job_todo        | string  | Tag sub job  | Yes |          |     |     |
| pulse_short_time_ms | integer | Time interval for short output pulse to stay active      | No  | 0        |     |     |
| pulse_long_time_ms  | integer | Time interval for long output pulse to stay active       | No  | 0        |     |     |

# 16.7 POWERONE

## Overview

PowerOne protocol is used to communicate with Aurora inverters over serial communication. Serial communication parameters (baudrate, parity, etc.) are handled automatically by the protocol.

## Configuration

PowerOne parameters for *Device* tab

| Parameter     | Type    | Description  | Required | Default value<br>(when not specified) | Range   |       |
|---------------|---------|--|----------|---------------------------------------|---|-------|
|               |         |  |          |                                       | Min   | Max   |
| Min           | Max     |  |          |                                       |   |       |
| name          | string  | User-friendly device name  | Yes      |                                       |   |       |
| description   | string  | Description of a device  | No       |                                       |   |       |
| device_alias  | string  | Alphanumeric string to identify a device   | Yes      |                                       |   |       |
| enable        | boolean | Enabling/disabling of a device   | No       | 1                                     | 0   | 1     |
| protocol      | string  | Protocol to be used.   | Yes      |                                       | powerone  |       |
| serialnumber  | integer | Inverter serial number   | Yes      |                                       |   |       |
| type          | string  | Inverter type : <ul style="list-style-type: none"><li>• CU - Collecting unit</li><li>• CB - Normal CB</li><li>• HID - HID with integrated CB</li></ul> | No       | CU                                    | CU, CB, HID   |       |
| device        |         | Communication port   | Yes      |                                       | PORT1   | PORT2 |
| baudrate      | integer | Communication speed (bauds/s)  | No       | 9600                                  | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 |       |
| scan_rate_ms  | integer | Delay before closing serial port in milliseconds   | No       | 10000                                 |   |       |
| poll_delay_ms | integer | Minimum time delay in milliseconds to wait before sending any data on port.  | No       | 200                                   |   |       |

|            |         |   |     |      |   |       |
|------------|---------|---|-----|------|---|-------|
| timeout_ms | integer | Timeout of waiting for incoming request in milliseconds | Yes | 1000 | 0 | 60000 |
|------------|---------|---|-----|------|---|-------|

## PowerOne parameters for *Signals* tab

| Parameter           | Type    | Description  | Required | Default value<br>(when not specified) | Range |     |
|---------------------|---------|--|----------|---------------------------------------|-------|-----|
|                     |         |  |          |                                       | Min   | Max |
| signal_name         | string  | User-friendly signal name                                | Yes      |                                       |       |     |
| device_alias        | string  | Device alias from a Devices tab                          | Yes      |                                       |       |     |
| signal_alias        | string  | Unique alphanumeric name of the signal to be used        | Yes      |                                       |       |     |
| enable              | boolean | Enabling/disabling of an individual signal               | No       | 1                                     | 0     | 1   |
| log                 | integer | Enable logging in event log                              | No       | 0                                     |       |     |
| number_type         | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)          | Yes      |                                       |       |     |
| job_todo            | string  | Tag job as single or multiple comma separated OBIS codes | Yes      |                                       |       |     |
| tag_job_todo        | string  | Tag sub job  | Yes      |                                       |       |     |
| pulse_short_time_ms | integer | Time interval for short output pulse to stay active      | No       | 0                                     |       |     |
| pulse_long_time_ms  | integer | Time interval for long output pulse to stay active       | No       | 0                                     |       |     |

# 16.8 SMA NET

## Overview

SMA Net can transfer SMA Data, TCP/IP and many more telegrams due to its multiprotocol capability. Thus, it is the preferred telegram frame in case of new developments.

## Configuration

SMA NET parameters for *Device* tab

| Parameter          | Type    | Description   | Required | Default value<br>(when not specified) | Range   |       |
|--------------------|---------|---|----------|---------------------------------------|---|-------|
|                    |         |   |          |                                       | Min   | Max   |
| name               | string  | User-friendly device name                               | Yes      |                                       |   |       |
| description        | string  | Description of a device                                 | No       |                                       |   |       |
| device_alias       | string  | Alphanumeric string to identify a device                | Yes      |                                       |   |       |
| enable             | boolean | Enabling/disabling of a device                          | No       | 1                                     | 0   | 1     |
| protocol           | string  | Protocol to be used.                                    | Yes      |                                       | sma net   |       |
| baudrate           | integer | Communication speed (bauds/s)                           | No       | 9600                                  | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 |       |
| databits           | integer | Data bit count for communication                        | No       | 8                                     | 6   | 9     |
| stopbits           | integer | Stop bit count for communication                        | No       | 1                                     | 1   | 2     |
| parity             | string  | Communication parity option                             | No       | none                                  | none, even, odd   |       |
| flowcontrol        | string  | Communication device flow control option.               | No       | none                                  | none  |       |
| scan_rate_ms       | integer | Delay before closing serial port in milliseconds        | No       | 10000                                 |   |       |
| poll_delay_ms      | integer |   | No       | 200                                   |   |       |
| timeout_ms         | integer | Timeout of waiting for incoming request in milliseconds | No       | 2500                                  |   |       |
| serial_number      | string  | Inverter serial number                                  | Yes      |                                       |   |       |
| device             |         | Communication port                                      | Yes      |                                       | PORT1   | PORT2 |
| serial_close_delay | integer | Delay before closing serial port                        | No       | 400                                   |   |       |



## SMA NET parameters for *Signals* tab

| Parameter           | Type    | Description  | Required | Default value<br>(when not specified) | Range |     |
|---------------------|---------|--|----------|---------------------------------------|-------|-----|
|                     |         |  |          |                                       | Min   | Max |
| signal_name         | string  | User-friendly signal name                                | Yes      |                                       |       |     |
| device_alias        | string  | Device alias from a Devices tab                          | Yes      |                                       |       |     |
| signal_alias        | string  | Unique alphanumeric name of the signal to be used        | Yes      |                                       |       |     |
| enable              | boolean | Enabling/disabling of an individual signal               | No       | 1                                     | 0     | 1   |
| log                 | integer | Enable logging in event log                              | No       | 0                                     |       |     |
| number_type         | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)          | Yes      |                                       |       |     |
| job_todo            | string  | Tag job as single or multiple comma separated OBIS codes | Yes      |                                       |       |     |
| tag_job_todo        | string  | Tag sub job  | Yes      |                                       |       |     |
| pulse_short_time_ms | integer | Time interval for short output pulse to stay active      | No       | 0                                     |       |     |
| pulse_long_time_ms  | integer | Time interval for long output pulse to stay active       | No       | 0                                     |       |     |

# 16.9 SOLPLUS

## Overview

Solplus protocol is used to download inverter data from Solplus inverters using a HTTP client.

## Configuration

Solplus parameters for *Device* tab

| Parameter     | Type    | Description   | Required | Default value<br>(when not specified) | Range   |       |
|---------------|---------|---|----------|---------------------------------------|---------|-------|
|               |         |   |          |                                       | Min     | Max   |
| name          | string  | User-friendly device name   | Yes      |                                       |         |       |
| description   | string  | Description of a device   | No       |                                       |         |       |
| device_alias  | string  | Alphanumeric string to identify a device                                    | Yes      |                                       |         |       |
| enable        | boolean | Enabling/disabling of a device  | No       | 1                                     | 0       | 1     |
| protocol      | string  | Protocol to be used.  | Yes      |                                       | Solplus |       |
| scan_rate_ms  | integer | All reads and writes will be executed within the timeframe in milliseconds  | No       | 10000                                 |         |       |
| poll_delay_ms | integer | Minimum time delay in milliseconds to wait before sending any data on port. | No       | 200                                   |         |       |
| timeout_ms    | integer | Timeout of waiting for incoming request in milliseconds                     | No       | 2500                                  | 0       | 60000 |
| url           | string  | HTTP server location URL  | Yes      |                                       |         |       |

Solplus parameters for *Signals* tab

| Parameter    | Type   | Description                                       | Required | Default value<br>(when not specified) | Range |     |
|--------------|--------|---|----------|---------------------------------------|-------|-----|
|              |        |   |          |                                       | Min   | Max |
| signal_name  | string | User-friendly signal name                         | Yes      |                                       |       |     |
| device_alias | string | Device alias from a Devices tab                   | Yes      |                                       |       |     |
| signal_alias | string | Unique alphanumeric name of the signal to be used | Yes      |                                       |       |     |

|                     |         |  |     |   |   |   |
|---------------------|---------|--|-----|---|---|---|
| enable              | boolean | Enabling/disabling of an individual signal               | No  | 1 | 0 | 1 |
| log                 | integer | Enable logging in event log                              | No  | 0 |   |   |
| number_type         | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)          | Yes |   |   |   |
| job_todo            | string  | Tag job as single or multiple comma separated OBIS codes | Yes |   |   |   |
| tag_job_todo        | string  | Tag sub job  | Yes |   |   |   |
| pulse_short_time_ms | integer | Time interval for short output pulse to stay active      | No  | 0 |   |   |
| pulse_long_time_ms  | integer | Time interval for long output pulse to stay active       | No  | 0 |   |   |

# 16.10 VBUS

## Overview

Vbus is a protocol used for communication with solar station automation via serial link.

## Configuration

VBUS parameters for *Device* tab

| Parameter      | Type    | Description  | Required | Default value<br>(when not specified) | Range   |       |
|----------------|---------|--|----------|---------------------------------------|---|-------|
|                |         |  |          |                                       | Min   | Max   |
| name           | string  | User-friendly device name  | Yes      |                                       |   |       |
| description    | string  | Description of the device  | No       |                                       |   |       |
| device_alias   | string  | Device alias to be used in configuration   | Yes      |                                       |   |       |
| enable         | boolean | Enabling/disabling of a device   | No       | 1                                     | 0   | 1     |
| protocol       | string  | Selection of protocol  | Yes      |                                       | Vbus  |       |
| slave_address  | integer | Slave device address   | Yes      |                                       | 0   | 255   |
| master_address | integer | Master device address  | Yes      |                                       | 0   | 255   |
| device         | string  | Communication port   | Yes      |                                       | PORT1   | PORT2 |
| baudrate       | integer | Communication speed (bauds/s)  | No       | 9600                                  | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 |       |
| databits       | integer | Data bit count for communication   | No       | 8                                     | 6   | 9     |
| stopbits       | integer | Stop bit count for communication   | No       | 1                                     | 1   | 2     |
| parity         | string  | Communication parity option  | No       | none                                  | none, even, odd   |       |
| flowcontrol    | string  | Communication device flow control option.  | No       | none                                  | none  |       |
| scan_rate_ms   | integer | If provided and positive all reads and writes will be executed within the timeframe in milliseconds. | No       | 10000                                 |   |       |
| poll_delay_ms  | integer | Minimum time delay in milliseconds to wait before sending any data on port.                          | No       | 200                                   |   |       |
| timeout_ms     | integer | Timeout in milliseconds  | No       | 2500                                  | 0   | 60000 |

VBUS parameters for *Signals* tab:

| Parameter | Type | Description | Required | Default value<br>(when not specified) | Range |  |
|-----------|------|-------------|----------|---------------------------------------|-------|--|
|           |      |             |          |                                       |       |  |

|                     |         |   |     | specified) | Min | Max |
|---------------------|---------|---|-----|------------|-----|-----|
| signal_name         | string  | User-friendly device name                           | Yes |            |     |     |
| device_alias        | string  | Device alias from a Devices tab                     | Yes |            |     |     |
| signal_alias        | string  | Unique alphanumeric name of the signal to be used   | Yes |            |     |     |
| enable              | boolean | Enabling/disabling of an individual signal          | No  | 1          | 0   | 1   |
| log                 | integer | Allow signal to be logged.                          | No  | 0          | 0   |     |
| job_todo            | string  | Define tag-function                                 | Yes |            |     |     |
| tag_job_todo        | string  | Define tag action that depends on tag function      | Yes |            |     |     |
| number_type         | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)     | Yes |            |     |     |
| pulse_short_time_ms | integer | Time interval for short output pulse to stay active | No  | 0          |     |     |
| pulse_long_time_ms  | integer | Time interval for long output pulse to stay active  | No  | 0          |     |     |

# 16.11 VESTAS

## Overview

Vestas is a protocol used for communication with solar station automation via serial link.

## Configuration

Vestas parameters for *Device* tab

| Parameter      | Type    | Description  | Required | Default value<br>(when not specified) | Range   |       |
|----------------|---------|--|----------|---------------------------------------|---|-------|
|                |         |  |          |                                       | Min   | Max   |
| name           | string  | User-friendly device name  | Yes      |                                       |   |       |
| description    | string  | Description of the device  | No       |                                       |   |       |
| device_alias   | string  | Device alias to be used in configuration   | Yes      |                                       |   |       |
| enable         | boolean | Enabling/disabling of a device   | No       | 1                                     | 0   | 1     |
| protocol       | string  | Selection of protocol  | Yes      |                                       | Vestas  |       |
| slave_address  | integer | Slave device address   | Yes      |                                       | 0   | 255   |
| master_address | integer | Master device address  | No       | 0                                     | 0   | 255   |
| device         | string  | Communication port   | Yes      |                                       | PORT1   | PORT2 |
| baudrate       | integer | Communication speed (bauds/s)  | No       | 9600                                  | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 |       |
| databits       | integer | Data bit count for communication   | No       | 8                                     | 6   | 9     |
| stopbits       | integer | Stop bit count for communication   | No       | 1                                     | 1   | 2     |
| parity         | string  | Communication parity option ("none"/"even"/"odd")  | No       | none                                  | none, even, odd   |       |
| flowcontrol    | string  | Communication device flow control option. (Default: (case-sensitive): "none")                        | No       | none                                  |   |       |
| scan_rate_ms   | integer | If provided and positive all reads and writes will be executed within the timeframe in milliseconds. | No       | 10000                                 |   |       |
| poll_delay_ms  | integer | Minimum time delay in milliseconds to wait before sending any data on port.                          | No       | 200                                   |   |       |
| timeout_ms     | integer | Timeout in milliseconds  | No       | 500                                   | 0   | 60000 |

Vestas parameters for *Signals* tab:

| Parameter           | Type    | Description   | Required | Default value<br>(when not specified) | Range |     |
|---------------------|---------|---|----------|---------------------------------------|-------|-----|
|                     |         |   |          |                                       | Min   | Max |
| signal_name         | string  | User-friendly device name                           | Yes      |                                       |       |     |
| device_alias        | string  | Device alias from a Devices tab                     | Yes      |                                       |       |     |
| signal_alias        | string  | Unique alphanumeric name of the signal to be used   | Yes      |                                       |       |     |
| enable              | boolean | Enabling/disabling of an individual signal          | No       | 1                                     | 0     | 1   |
| log                 | integer | Allow signal to be logged.                          | No       | 0                                     |       |     |
| job_todo            | string  | Define tag-function                                 | Yes      |                                       |       |     |
| tag_job_todo        | string  | Define tag action that depends on tag function      | Yes      |                                       |       |     |
| number_type         | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)     | Yes      |                                       |       |     |
| pulse_short_time_ms | integer | Time interval for short output pulse to stay active | No       | 0                                     |       |     |
| pulse_long_time_ms  | integer | Time interval for long output pulse to stay active  | No       | 0                                     |       |     |

# 16.12 Windlog

## Overview

Windlog protocol is used for communications with the *Windlog data logger*.

## Configuration

### Windlog parameters for *Device* tab

| Parameter          | Type    | Description   | Required | Default value<br>(when not specified) | Range   |       |
|--------------------|---------|---|----------|---------------------------------------|---|-------|
|                    |         |   |          |                                       | Min   | Max   |
| name               | string  | User-friendly device name                               | Yes      |                                       |   |       |
| description        | string  | Description of a device                                 | No       |                                       |   |       |
| device_alias       | string  | Alphanumeric string to identify a device                | Yes      |                                       |   |       |
| enable             | boolean | Enabling/disabling of a device                          | No       | 1                                     | 0   | 1     |
| protocol           | string  | Protocol to be used.                                    | Yes      |                                       | Windlog   |       |
| device             | string  | Communication port                                      | Yes      |                                       | PORT1   | PORT2 |
| baudrate           | integer | Communication speed (bauds/s)                           | No       | 115200                                | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 |       |
| databits           | integer | Data bit count for communication                        | No       | 8                                     | 6   | 9     |
| stopbits           | integer | Stop bit count for communication                        | No       | 1                                     | 1   | 2     |
| parity             | string  | Communication parity option                             | No       | none                                  | none, even, odd   |       |
| flowcontrol        | string  | Communication device flow control option.               | No       | none                                  | none  |       |
| timeout_ms         | integer | Timeout of waiting for incoming request in milliseconds | Yes      |                                       | 0   | 60000 |
| serial_close_delay | integer | Delay before closing serial port                        | No       | 400                                   |   |       |

### Windlog parameters for the *Signals* tab

| Parameter    | Type   | Description                                       | Required | Default value<br>(when not specified) | Range |     |
|--------------|--------|---|----------|---------------------------------------|-------|-----|
|              |        |   |          |                                       | Min   | Max |
| signal_name  | string | User-friendly signal name                         | Yes      |                                       |       |     |
| device_alias | string | Device alias from a Devices tab                   | Yes      |                                       |       |     |
| signal_alias | string | Unique alphanumeric name of the signal to be used | Yes      |                                       |       |     |



|              |         |  |     |   |   |   |
|--------------|---------|--|-----|---|---|---|
| enable       | boolean | Enabling/disabling an individual signal                  | No  | 1 | 0 | 1 |
| log          | integer | Enable logging in the event log                          | No  | 0 |   |   |
| number_type  | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)          | Yes |   |   |   |
| job_todo     | string  | Tag job as single or multiple comma-separated OBIS codes | Yes |   |   |   |
| tag_job_todo | string  | Tag sub job  | Yes |   |   |   |

# 16.13 M-Bus

## Overview

M-Bus or Meter-Bus is a protocol for the remote reading of water, gas, or electricity meters. M-Bus is also usable for other types of consumption meters, such as heating systems or water meters. The M-Bus interface is made for communication on two wires, making it cost-effective. M-bus over TCP is also supported. When configured, meters will deliver the data they have collected to a WCC Lite RTU that is connected at periodic intervals (scan\_rate\_ms) to read all utility meters.

## Configuration

M-Bus parameters for *Device* tab

| Parameter     | Type    | Description   | Required |     | Default Value<br>(when not specified) | Range   |       |
|---------------|---------|---|----------|-----|---------------------------------------|---|-------|
|               |         |   | TCP      | RTU |                                       | Min   | Max   |
| name          | string  | User-friendly device name   | Yes      | Yes |                                       |   |       |
| description   | string  | Description of a device   | No       | No  |                                       |   |       |
| device_alias  | string  | Alphanumeric string to identify a device                                    | Yes      | Yes |                                       |   |       |
| enable        | boolean | Enabling/disabling a device   | No       | No  | 1                                     | 0   | 1     |
| protocol      | string  | Protocol to be used.  | Yes      | Yes |                                       | mbus serial, mbus tcp   |       |
| scan_rate_ms  | integer | All reads and writes will be executed within the timeframe in milliseconds. | No       | No  | 10000                                 |   |       |
| poll_delay_ms | integer | Minimum time delay in milliseconds to wait before sending any data on port. | No       | No  | 200                                   |   |       |
| timeout_ms    | integer | Timeout of waiting for an incoming response in milliseconds                 | Yes      | Yes |                                       | 0   | 60000 |
| address       | string  | Device address  | Yes      | Yes |                                       |   |       |
| device        | string  | Communication port  | -        | Yes |                                       | PORT1   | PORT2 |
| baudrate      | integer | Communication speed (baud/s)  | -        | No  | 9600                                  | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 |       |
| databits      | integer | Data bit count for communication  | -        | No  | 8                                     | 6   | 9     |
| stopbits      | integer | Stop bit count for communication  | -        | No  | 1                                     | 1   | 2     |

|                    |         |   |     |    |      |                 |       |
|--------------------|---------|---|-----|----|------|-----------------|-------|
| parity             | string  | Communication parity option                 | -   | No | none | none, even, odd |       |
| serial_close_delay | integer | Delay before closing the serial connection. | -   | No | 400  |                 |       |
| ip                 | string  | The IP address of the TCP slave device      | Yes | -  |      |                 |       |
| port               | integer | TCP communication port                      | Yes | -  |      | 0               | 65535 |

### M-Bus parameters for the *Signals* tab

| Parameter    | Type    | Description  | Required |     | Default Value<br>(when not specified) | Range |     |
|--------------|---------|--|----------|-----|---------------------------------------|-------|-----|
|              |         |  | TCP      | RTU |                                       | Min   | Max |
| signal_name  | string  | User-friendly signal name                                | Yes      | Yes |                                       |       |     |
| device_alias | string  | Device alias from a Devices tab                          | Yes      | Yes |                                       |       |     |
| signal_alias | string  | Unique alphanumeric name of the signal to be used        | Yes      | Yes |                                       |       |     |
| enable       | boolean | Enabling/disabling of an individual signal               | No       | No  | 1                                     | 0     | 1   |
| log          | integer | Enable logging in the event log                          | No       | No  | 0                                     |       |     |
| number_type  | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)          | Yes      | Yes |                                       |       |     |
| job_todo     | string  | Tag job as single or multiple comma-separated OBIS codes | Yes      | Yes |                                       |       |     |
| tag_job_todo | string  | Tag sub job  | Yes      | Yes |                                       |       |     |

# 16.14 KOSTAL

## Overview

Kostal protocol is used to communicate with Kostal devices over serial communication.

## Configuration

Kostal parameters for *Device* tab

| Parameter     | Type    | Description   | Required | Default value<br>(when not specified) | Range  |       |
|---------------|---------|---|----------|---------------------------------------|--|-------|
|               |         |   |          |                                       | Min  | Max   |
| name          | string  | User-friendly device name   | Yes      |                                       |  |       |
| description   | string  | Description of a device   | No       |                                       |  |       |
| device_alias  | string  | Alphanumeric string to identify a device                                    | Yes      |                                       |  |       |
| enable        | boolean | Enabling/disabling of a device  | No       | 1                                     | 0  | 1     |
| protocol      | string  | Protocol to be used.  | Yes      |                                       | kostal   |       |
| id            | integer | Kostal device id  | Yes      |                                       |  |       |
| device        |         | Communication port  | Yes      |                                       | PORT1  | PORT2 |
| baudrate      | integer | Communication speed (bauds/s)   | No       | 9600                                  | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600,115200 |       |
| databits      | integer | Data bit count for communication  | No       | 8                                     | 6  | 9     |
| stopbits      | integer | Stop bit count for communication  | No       | 1                                     | 1  | 2     |
| parity        | string  | Communication parity option   | No       | none                                  | none, even, odd  |       |
| scan_rate_ms  | integer | Delay before closing serial port in milliseconds                            | No       | 10000                                 |  |       |
| poll_delay_ms | integer | Minimum time delay in milliseconds to wait before sending any data on port. | No       | 200                                   |  |       |
| timeout_ms    | integer | Timeout of waiting for incoming request in milliseconds                     | Yes      |                                       | 0  | 60000 |

Kostal parameters for *Signals* tab

| Parameter | Type | Description | Required | Default value<br>(when not specified) | Range |  |
|-----------|------|-------------|----------|---------------------------------------|-------|--|
|           |      |             |          |                                       |       |  |

|                     |         |  |     |   | Min | Max |
|---------------------|---------|--|-----|---|-----|-----|
| signal_name         | string  | User-friendly signal name                                | Yes |   |     |     |
| device_alias        | string  | Device alias from a Devices tab                          | Yes |   |     |     |
| signal_alias        | string  | Unique alphanumeric name of the signal to be used        | Yes |   |     |     |
| enable              | boolean | Enabling/disabling of an individual signal               | No  | 1 | 0   | 1   |
| log                 | integer | Enable logging in event log                              | No  | 0 |     |     |
| number_type         | string  | Type of a number (FLOAT, DOUBLE, DIGITAL, etc.)          | Yes |   |     |     |
| job_todo            | string  | Tag job as single or multiple comma separated OBIS codes | Yes |   |     |     |
| tag_job_todo        | string  | Tag sub job  | Yes |   |     |     |
| pulse_short_time_ms | integer | Time interval for short output pulse to stay active      | No  | 0 |     |     |
| pulse_long_time_ms  | integer | Time interval for long output pulse to stay active       | No  | 0 |     |     |