Proposal to configure through Modbus

Contents

[Setting Pulse Output 2](#_Toc134086895)

[How to test the pulse output 2](#_Toc134086896)

[To read the slot 02. 2](#_Toc134086897)

[To configure the slot 02 with pulse output 2](#_Toc134086898)

[Table 1 2](#_Toc134086899)

[Setting Alarm 3](#_Toc134086900)

[How to teste the setting alarm 4](#_Toc134086901)

[To configure the alarm 4](#_Toc134086902)

[To read alarm setup 4](#_Toc134086903)

[Reading I/O Setting 5](#_Toc134086904)

[How to test reading I/O setting 5](#_Toc134086905)

[To read the setting 5](#_Toc134086906)

[Table Functionality 5](#_Toc134086907)

[Setting other functionalities 6](#_Toc134086908)

[Table Bitwise physical port 6](#_Toc134086909)

[Examples: 6](#_Toc134086910)

[How to test setting other functionalities 6](#_Toc134086911)

[How to configure 6](#_Toc134086912)

[To read the setting 6](#_Toc134086913)

# Setting Pulse Output

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Function** | **Start Reg** | **Size** | **Definition** | **Description** | **Read / Write** |
| Digital output | 0x8C10 | 1 |  | The physical I/O port on which the pulses are sent out. | R / W |
| Setting pulse output  (size 5 register) | 0x8C11 | 1 | Type of Energy | Quantity according Table 1 | R / W |
| 2 | Set the frequency | The pulse frequency measured in pulses/MWh or Mvarh. |
| 2 | Pulse length | The duration of a pulse measured in milliseconds. |

## How to test the pulse output

### To read the slot 02.

|  |  |
| --- | --- |
| Description | Command |
| Write 2 at address 0x8C60 | 01 10 8C 10 00 01 02 00 02 |
| Read Setting pulse output | 01 03 8C 10 00 06 |

### To configure the slot 02 with pulse output

|  |  |
| --- | --- |
| Description | Command |
| Write 2 at address 0x8C60 | 01 10 8C 10 00 01 02 00 02 |
| Write in the 5 registers together start at 0x8C11 | 01 10 8C 11 00 05 0A 00 02 00 00 00 64 00 00 00 20 |

1. To configure the physical I/O port with pulse output, it must send all registers in the same frame.
2. To read the configuration of the physical I/O port first must write the slot number in the register 0x8C10 then read the other register. If the physical I/O port functionality is not pulse output, all the register will return 0xFF.

## Table 1

|  |  |
| --- | --- |
| Quantity | Code |
| Inactive pulse output | 1 |
| Active energy import total | 2 |
| Active energy export total | 3 |
| Reactive energy import total | 4 |
| Reactive energy export total | 5 |
| Apparent Energy | 6 |
| Active energy import export | 7 |
| Reactive energy import export | 8 |
| Apparent energy import export | 9 |

# Setting Alarm

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function** | **Start Reg** | **Size** | **Description** | **Read / Write** |
| Alarm Number | 0x8C60 | 1 | The number (identifier) for the alarm to configure | R / W |
| Parameter | 0x8C61 | 1 | The parameter to monitor | R / W |
| Threshold ON | 0x8C62 | 4 | Thresholds to use to decide when the alarm is active | R / W |
| Hysteresis | 0x8C66 | 1 | Hysteresis to be applied to the turn off threshold | R / W |
| Delay | 0x8C67 | 1 | Delay, defining the time that the measured value must be above/below the configured thresholds before the alarm triggers | R / W |
| Type | 0x8C68 | 1 | The type of alarm: cross up or down  0 – alarm disable  1 – alarm cross up  2 – alarm cross down | R / W |
| Action | 0x8C69 | 2 | Actions to perform when alarm is triggered | R / W |

1. The FW will update the link of the slot according with the last entrance.

|  |  |  |  |
| --- | --- | --- | --- |
| Register | Bit number | Description | Possible values |
| 0x8C69 | 0 (least significant bit) | Write entry to log | 1 = use this action  0 = don’t use |
| 1 | Set output | 1 = use this action  0 = don’t use |
| 2 | Set bit in alarm status register | 1 = use this action  0 = don’t use |
| 0x8C6A | (Entire register) | Number of the output to turn on. Ignored if Set output bit above is set to 0. |  |

Table 2 alarm parameters

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter monitored by alarm** | **Nr of Parameter** | **Alarm threshold range** | **Scaler** |
| Voltage L1 | 1 | 0-999000 | 0.1 |
| Voltage L2 | 2 | 0-999000 | 0.1 |
| Voltage L3 | 3 | 0-999000 | 0.1 |
| Voltage L1-L2 | 4 | 0-999000 | 0.1 |
| Voltage L2-L3 | 5 | 0-999000 | 0.1 |
| Voltage L1-L3 | 6 | 0-999000 | 0.1 |
| Current L1 | 7 | 0-999000 | 0.01 |
| Current L2 | 8 | 0-999000 | 0.01 |
| Current L3 | 9 | 0-999000 | 0.01 |
| Current N | 10 | 0-999000 | 0.01 |
| Active power total | 11 | 0-999000 | 1 |
| Active power L1 | 12 | 0-999000 | 1 |
| Active power L2 | 13 | 0-999000 | 1 |
| Active power L3 | 14 | 0-999000 | 1 |
| Rective power total | 15 | 0-999000 | 1 |
| Rective power L1 | 16 | 0-999000 | 1 |
| Rective power L2 | 17 | 0-999000 | 1 |
| Rective power L3 | 18 | 0-999000 | 1 |
| Apparent power total | 19 | 0-999000 | 1 |
| Apparent power L1 | 20 | 0-999000 | 1 |
| Apparent power L2 | 21 | 0-999000 | 1 |
| Apparent power L3 | 22 | 0-999000 | 1 |
| Power factor total | 23 | 0-0,99 | 0.001 |
| Power factor L1 | 24 | 0-0,99 | 0.001 |
| Power factor L2 | 25 | 0-0,99 | 0.001 |
| Power factor L3 | 26 | 0-0,99 | 0.001 |
| Frequency | 27 | 0-999000 | 0.01 |

## How to teste the setting alarm

### To configure the alarm

|  |  |
| --- | --- |
| Description | Command |
| Alarm instance | 01 10 8C 60 00 01 02 00 01 |
| Disable alarm | 01 10 8C 68 00 01 02 00 00 |
| Setup alarm | 01 10 8C 60 00 08 10 00 01 00 02 00 00 00 00 00 00 01 00 00 00 00 00 |
| Alarm action | 01 10 8C 69 00 02 04 00 03 00 02 |
| Alarm type | 01 10 8C 68 00 01 02 00 01 |
| Read alarm | 01 03 8C 60 00 0B |

### To read alarm setup

|  |  |
| --- | --- |
| Description | Command |
| Alarm instance | 01 10 8C 60 00 01 02 00 01 |
| Read alarm | 01 03 8C 60 00 0B |
|  |  |

# Reading I/O Setting

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Function | Start Reg | Size | Description | Read / Write |
| I/O port 1 | 0x8C0C | 1 | Function of the I/O port 1 | R |
| I/O port 2 | 0x8C0D | 1 | Function of the I/O port 2 | R |
| I/O port 3 | 0x8C0E | 1 | Function of the I/O port 3 | R |
| I/O port 4 | 0x8C0F | 1 | Function of the I/O port 4 | R |

## How to test reading I/O setting

### To read the setting

|  |  |
| --- | --- |
| Description | Command |
| Read function of port 1 | 01 03 8C 0C 00 01 |
| Read function of port 2 | 01 03 8C 0D 00 01 |

## Table Functionality

|  |  |  |
| --- | --- | --- |
| Item | Functionality | Observation |
| 0 | Disabled |  |
| 1 | Pulse input |  |
| 2 | Alarm | The I/O will be defined during alarm setting. |
| 3 | Complex alarm |  |
| 4 | Tariff |  |
| 5 | Pulse | The I/O will be defined during pulse setting. |
| 6 | Always on |  |
| 7 | Always off |  |
| 8 | Communication |  |

# Setting other functionalities

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function** | **Start Reg** | **Size** | **Description** | **Read / Write** |
| Pulse input | 0x8C16 | 1 | The physical I/O port. Table Bitwise physical port | R / W |
| Always on | 0x8C17 | 1 | The physical I/O port. Table Bitwise physical port | R / W |
| Always off | 0x8C18 | 1 | The physical I/O port. Table Bitwise physical port | R / W |
| Communication | 0x8C19 | 1 | The physical I/O port. Table Bitwise physical port | R / W |

## Table Bitwise physical port

|  |  |  |  |
| --- | --- | --- | --- |
| **Register Nr** | **Bit Nr** | **Description** | **Definition** |
| 0x8C16  0x8C17  0x8C18  0x8C19 | 0 | The physical I/O port 1. | 1 = link to the port.  0 = not linked |
| 1 | The physical I/O port 2. | 1 = link to the port.  0 = not linked |
| 2 | The physical I/O port 3. | 1 = link to the port.  0 = not linked |
| 3 | The physical I/O port 4. | 1 = link to the port.  0 = not linked |
| 4 - 7 | Not used | 0 |

### Examples:

|  |  |  |
| --- | --- | --- |
| **Start Reg** | Value | Meaning |
| 0x8C16 | 0x0000 | Doesn’t have IO function enable. |
| 0x8C16 | 0x0001 | The physical I/O port 1 is defined as IO. |
| 0x8C16 | 0x0003 | The physical I/O port 1 and 2 are defined as IO. |
| 0x8C19 | 0x000F | The physical I/O port 1, 2, 3 and 4 are defined as communication (remote control). |

## How to test setting other functionalities

### How to configure

|  |  |
| --- | --- |
| Description | Command |
| Setup function of port 1 Pulse input | 01 10 8C 16 00 01 02 00 01 |
| Setup function of port 2 Always on | 01 10 8C 17 00 01 02 00 02 |
| Setup function of port 2 Always off | 01 10 8C 18 00 01 02 00 02 |
| Setup function of port 2 Communication | 01 10 8C 19 00 01 02 00 02 |
|  |  |

### To read the setting

|  |  |
| --- | --- |
| Description | Command |
| Read register 0x8C16 | 01 03 8C 16 00 01 |
| Read register 0x8C17 | 01 03 8C 17 00 01 |
| Read register 0x8C18 | 01 03 8C 18 00 01 |
| Read register 0x8C19 | 01 03 8C 19 00 01 |