Solenvis SL195 Pulse to Modbus interface

MOD-PULSE12 Modbus Pulse Counter Modules

MOD-PULSE12 modules are designed to count pulses from meters such as energy, gas, water and heat meters. The meter readings are stored in the built-in memory of the device and are available via RS-485 Modbus interface for management devices.

MOD-PULSE12 modules have 12 pulse counting registers/inputs. The registers can be reset. The inputs can be configured in 3 different configurations, 12 passive inputs, 6 passive/6 active inputs and 6 passive inputs /1 S0 inputs.

Features

- Converts Meter Pulses to Modbus Messages
- Up to 12 Meters Supported in 3 different configurations
- Ideal for Integrating Pulse Energy, Electricity and Water Meters to Communicating Systems
- Unit and Pulse Scaling Programmable to Each Input
- RS485 Modbus Communication
- DIN-rail mounting

Model Type

Model	Description
MOD-PULSE12	MOD-PULSE12 Pulse / Modbus Counter Module, 12 Pulse Inputs

Technical Data

Power Supply	230Vac, 47..63Hz < 5VA
PASSIVE CONFIGURATION	
No of Inputs:	12 passive volt-free SPST-NO contact inputs Unit and pulse scaling programmable to each input, resettable
Input Pulse Waveform	ON State: >= 20ms OFF State: Programmable; 5 - 10 - 20 - 40 - 50 - 100 - 200 - 300ms
Input Frequency	Max. 25Hz
Connection	12 Inputs with Common Point
ACTIVE CONFIGURATION	
No of Inputs:	6 passive volt-free SPST-NO inputs and 6 active inputs, max 27V Unit and pulse scaling programmable to each input, resettable
Input Pulse Waveform	ON State: >= 20ms OFF State: Programmable; 5 - 10 - 20 - 40 - 50 - 100 - 200 - 300ms
Input Frequency	Max. 25Hz
Connection	Passive Inputs: 6 Inputs with Common Point Active Inputs: 6 Inputs with Common Point
S0 CONFIGURATION	
No of Inputs:	1S0 Input: Count registers for active and reactive, positive and negative energy subdivided on 4 tariffs. 6 Passive Volt-Free SPST-NO Inputs: Unit and pulse scaling programmable to each input, resettable
S0 Input Type:	GME ENEL Energy Meter according to EN62053-31 (class B devices)
Input Pulse Waveform	ON State: >= 20ms OFF State: Programmable; 5 - 10 - 20 - 40 - 50 - 100 - 200 - 300ms
Input Frequency	Max. 25Hz

Connection	S0 Input: As per wiring diagram Active Inputs: 6 Inputs with Common Point
RS485 MODBUS COMMUNICATION	
General	Galvanically insulated from power supply and inputs
Interface	RS485 - 3 Wire
Protocol	Modbus / Jbus
Address	1..255
Modbus	8 Data Bits, Parity None-Odd-Even, 1 Stop Bit
Baud Rate	9600 .. 19200 bits /s
Max. No. of Counters	32 (maximum number of Modbus devices)
Max. Distance	1200m (depending on the baud rate and installation conditions)
DISPLAY	
Type of Display	LCD
Display Contrast	Programmable on 5 levels
Count Display	One value on each page
Page Scroll	Manual or automatic (programmable)
Counts	Max. 9-integer digits
Rx/Tx Signalling LED	RS485 Communication
PROGRAMMING	
Programming	Via front keyboard, 2 keys
Protection	Protected via password
Data Storage	Non-volatile memory (no battery)
INSULATION	
Insulation	Installation Gategory: III Pollution Degree: 2 AC Voltage Test 2.5kV r.m.s. 50Hz/1min; Considered circuits: inputs, RS485 communication AC Voltage Test 4kV r.m.s. 50Hz/1min; Considered circuits: inputs and RS485 communication towards aux input AC Voltage Test 4kV r.m.s. 50Hz/1min; Considered circuits: all ciruits and earth
ENVIRONMENTAL CONDITIONS	
Ambient Temperature	0..45°C
Storage Temperature	-25..70°C
Humidity	Yearly average humidity <75%rH non-condension Suitable for tropical climates
Agency Listings	Emission EN 61326-1 Immunity EN 61326-1
Connections	Screw Terminals for Wire Up To 4mm^2
Mounting	Snap-On 35mm DIN-rail, Top Hat
Housing	Self-extinguishable Policarbonate
Protection Class	IP50 (front frame), IP20 (terminals)
Dimensions	4 Module DIN 43880

Programmable Parameters

The table below lists the programmable parameters through the screen and programming buttons.

Parameter	Programming Options
Password	Configurable for Programming Access
Count Page Scroll	Manual or Automatic
Display Contrast	5 Levels
INPUT CONFIGURATION	
Input Type Configuration	Active - Passive - S0
Input Units	pulse - kWh - kvarh - kVAh - cubic meter - Normal cubic meter * 1)
Input Pulse Weight	1 pulse = 0.001 0 0.01 - 0.1 - 1- 10 - 100 - 100 of select units (e.g. kWh)
OFF Time	5 - 10 - 20 - 40 - 50 - 100 - 200 - 300ms

Parameter	Programming Options
CT Ratio	1..9999 *2)
VT Ratio	1..3000,0 *2)
RS485 COMMUNICATION	
Address	1..255
Bau rate	9600 - 19200 bit/s
Parity bit	none - odd - even

Note 1. If unit is selected as pulse, then for each pulse received by the counter the value is increased by the amount set in the pulse weight. E.g. if Unit is kWh and pulse weight is 10, then for each pulse the count is increased by 10kWh.

Note 2. Only if selected pulse measuring = kWh - kvarh - kVAh. By programming correctly the CT and VT ratios, the PULSE8 moduel show an energy count display with the same resolution as the energy meter from which the pulses are coming.

E.g. Energy meter with voltage direct connection (400V) and current input from CT 800/5A.

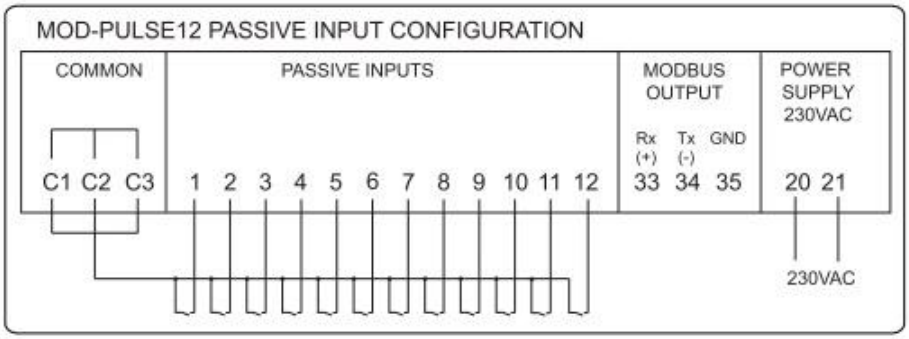
VT Ratio = 1 (direct connection)

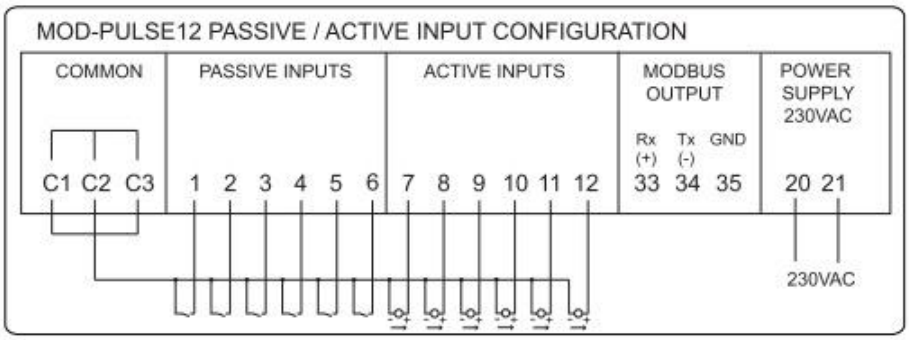
CT Ratio: 800 : 5 = 160

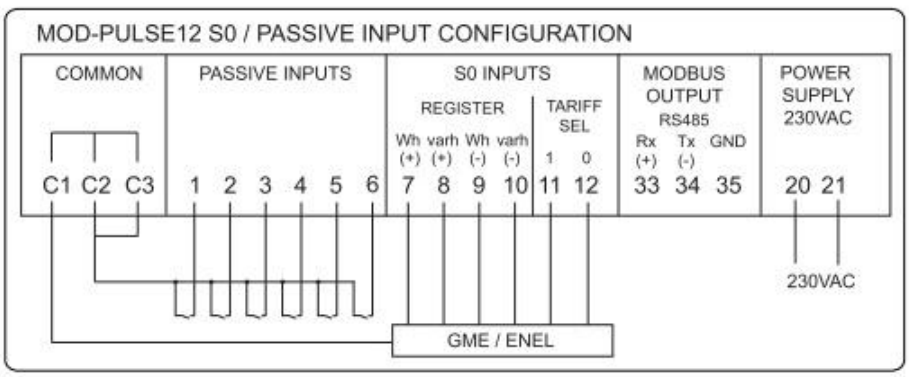
Loading VT Ratio = 1 and CT ration = 160 you will get a display in kWh expressed on 8 integers without decimals, with resolution 1kWh.

Wiring Diagrams

For wiring details please look at the diagram below.







LOGIN PASSWORD

Entry to the programming menu is protected by an access digital password (**default password 1000**). During programming it is possible to modify the programming access password with a customized value (configured value must be between 0001 and 8999).

In order to access in the future to programming menu, it is essential to record and to keep in a safe way theloaded password.

To enter the programming mode, you have to simultaneously press and release **Page** + **Prog** keys. Access to the next programming parameter is enabled by the simultaneous release of both of the keys.

CONFIGURING INPUT TYPES = Prg Input

Pot Free (wiring diagram PASSIVE INPUT CONFIGURATION)

12 inputs from potential-free contact, singularly programmable

PotAFree (wiring diagram PASSIVE INPUT CONFIGURATION)

12 inputs from potential-free contact, each individually programmable. Loaded parameters for the first input are automatically proposed for the other inputs. You have to confirmor modify the values.

Pot Live (wiring diagram PASSIVE/ACTIVE INPUT CONFIGURATION)

6 inputs from potential-free contact (1...6)6 active inputs, singularly programmable (7...12), according to EN62053-31 (class A devices)

GME SØ (wiring diagram S0 INPUT CONFIGURATION)

6 inputs from potential-free contact (1…6), singularly programmable6 inputs from GME ENEL (7...12) to manage the active and reactive, positive and negative energy registers,subdivided into 4 tariffs

CONFIGURING INPUT PULSES

Unit: Pulses – kWh – Kvarh – kVAh – mc (cubic meter) – Nmc (Normal cubic meter)

Pulse weight: 1 pulse = 0.001 – 0.01 – 0.1 – 1 – 10 – 100 – 1000 referred to the selected unit (ex.: kWh)

Loading unit = Pulses you get a simple count of the number of pulses received by the concentrator.

Loading unit = kWh – Kvarh – kVAh – mc (cubic meter) – Nmc (Normal cubic meter) and the relevant pulseweight, you get a count which takes into consideration the loaded parameters.

Eg. unit = kWh, pulse weight = 10For each pulse received by the concentrator, count will increase by 10kWh

CT ratio:1…9999

VT ratio:1…3000.0

VT ratio must always take into consideration one decimal and therefore be loaded x10.

Eg. for direct connection (ratio 1.0) load 00010.

TV 600/100V = ratio 6.0 load 00060

OFF time: 5 – 10 – 20 – 40 – 50 – 100 – 200 – 300ms

Present just if selected pulse unit = kWh – kvarh – kVAh

Properly programming CT and VT ratios, the concentrator will display the energy count with the same resolution of the energy meter from which the pulses are coming.

Eg.. direct connection voltage energy meter (400V) and current input from CT 800/5AVT ratio = 1 (direct connection) - CT ratio = 800 : 5 = 160

Loading VT ratio = 1 and CT ratio = 160 you get a kWh display expressed on 8 integers without decimals,with resolution 1 kWh.

COMMUNICATION AND PASSWORD SETTINGS

The following parameters are proposed in succession to the input programming, accessible with password = 1000. It is possible to directly access to these pages (avoiding to enter the input programming) by loading password = 2001.

Page scrolling: manual or automatic.

Manual: press **Prog** / **Page** to display the different pages.

Automatic: display in automatic sequence of all the pages

RS485 COMMUNICATION

Address:1…255

Communication speed:9600 – 19200 bit/second

Parity bit:even – odd – none

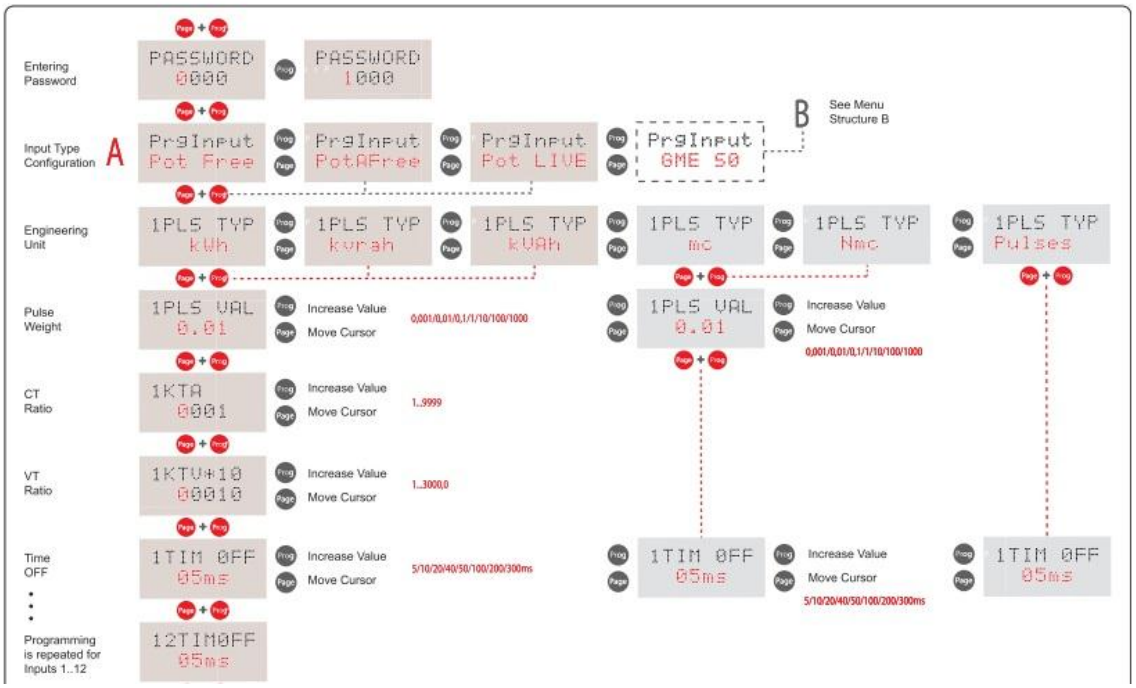
PASSWORD

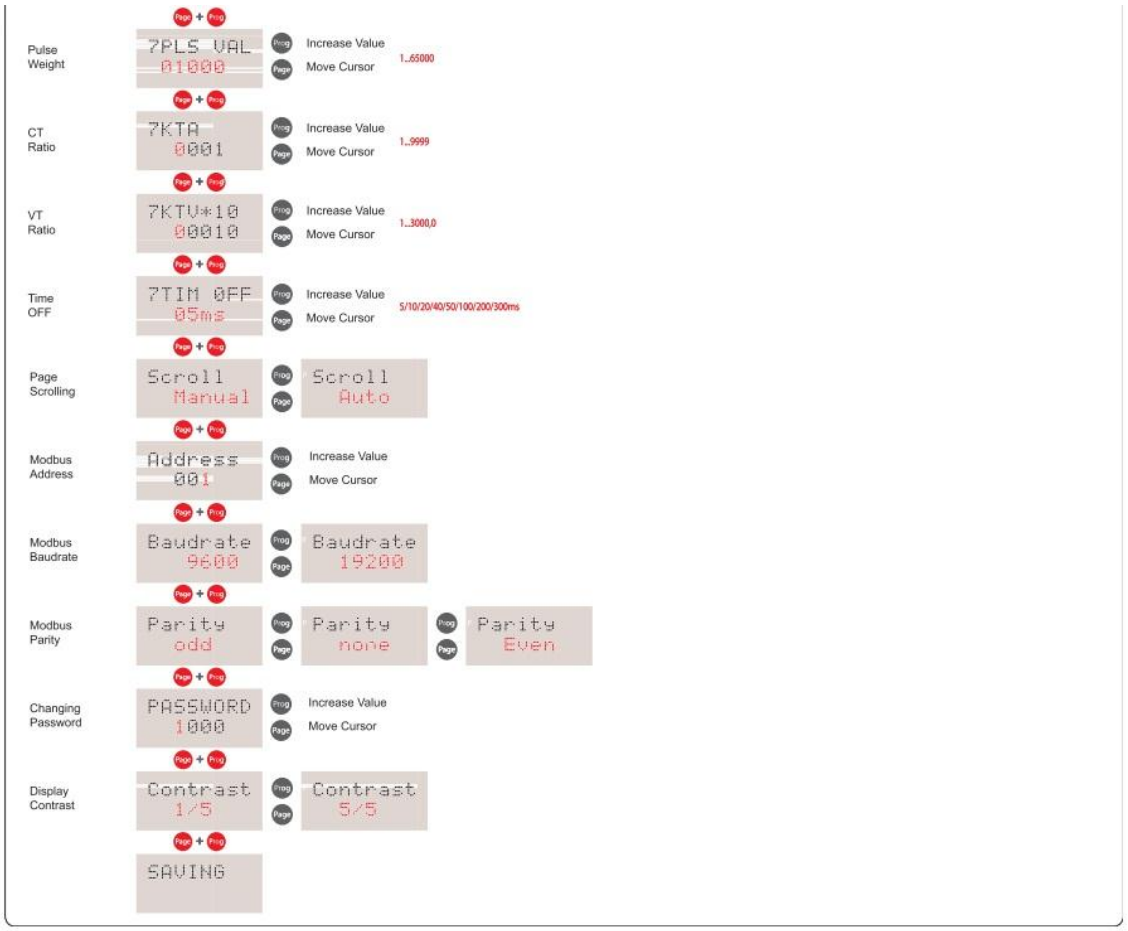
Programmable values:0001…8999

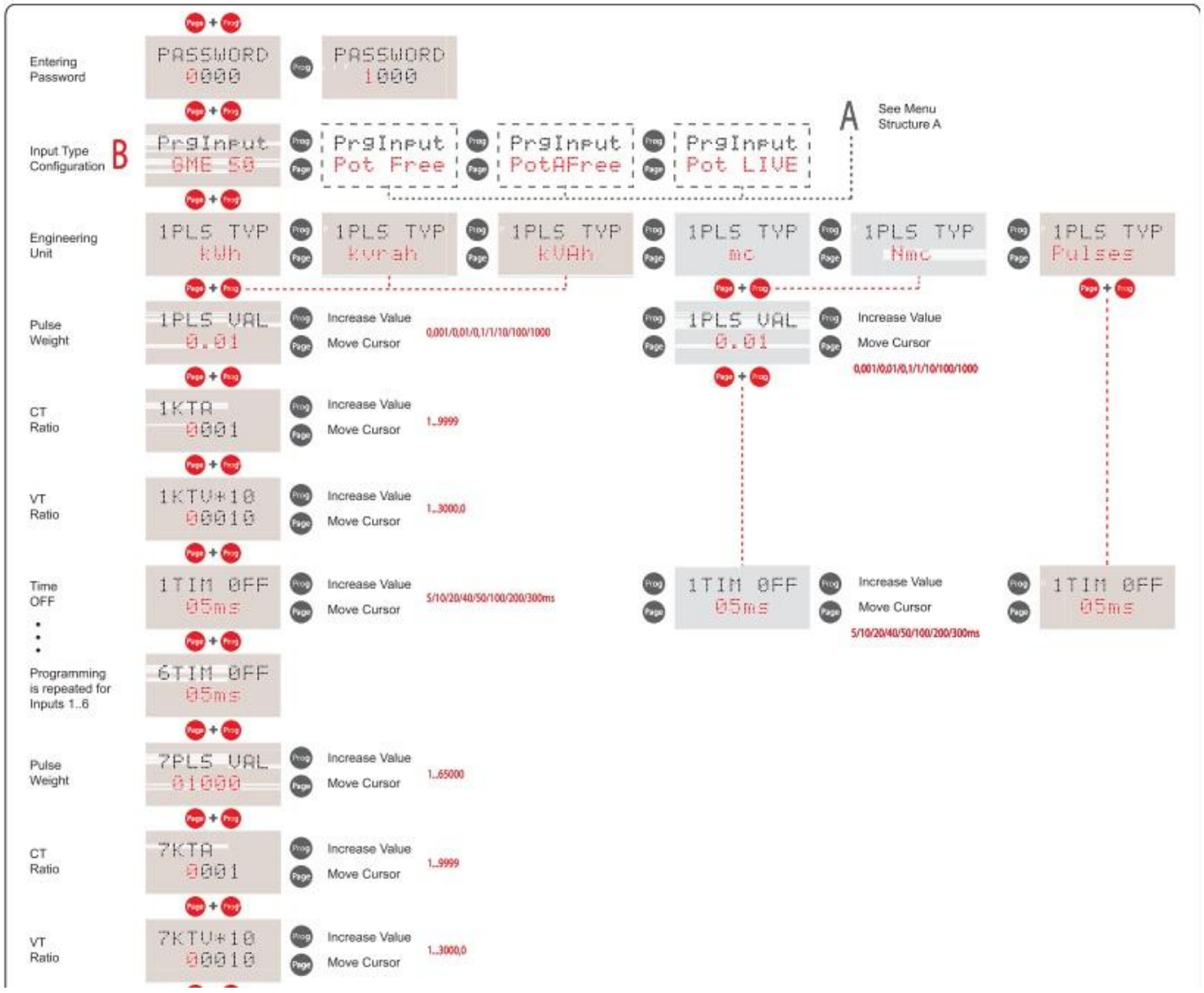
If the password is modified, it is essential to record and to keep in a safe way the loaded password in orderto access in the future to programming menu.If you don't want to modify the password value, you have to confirm the starting setting (1000).

DISPLAY CONTRAST CONTROL: 5 levels

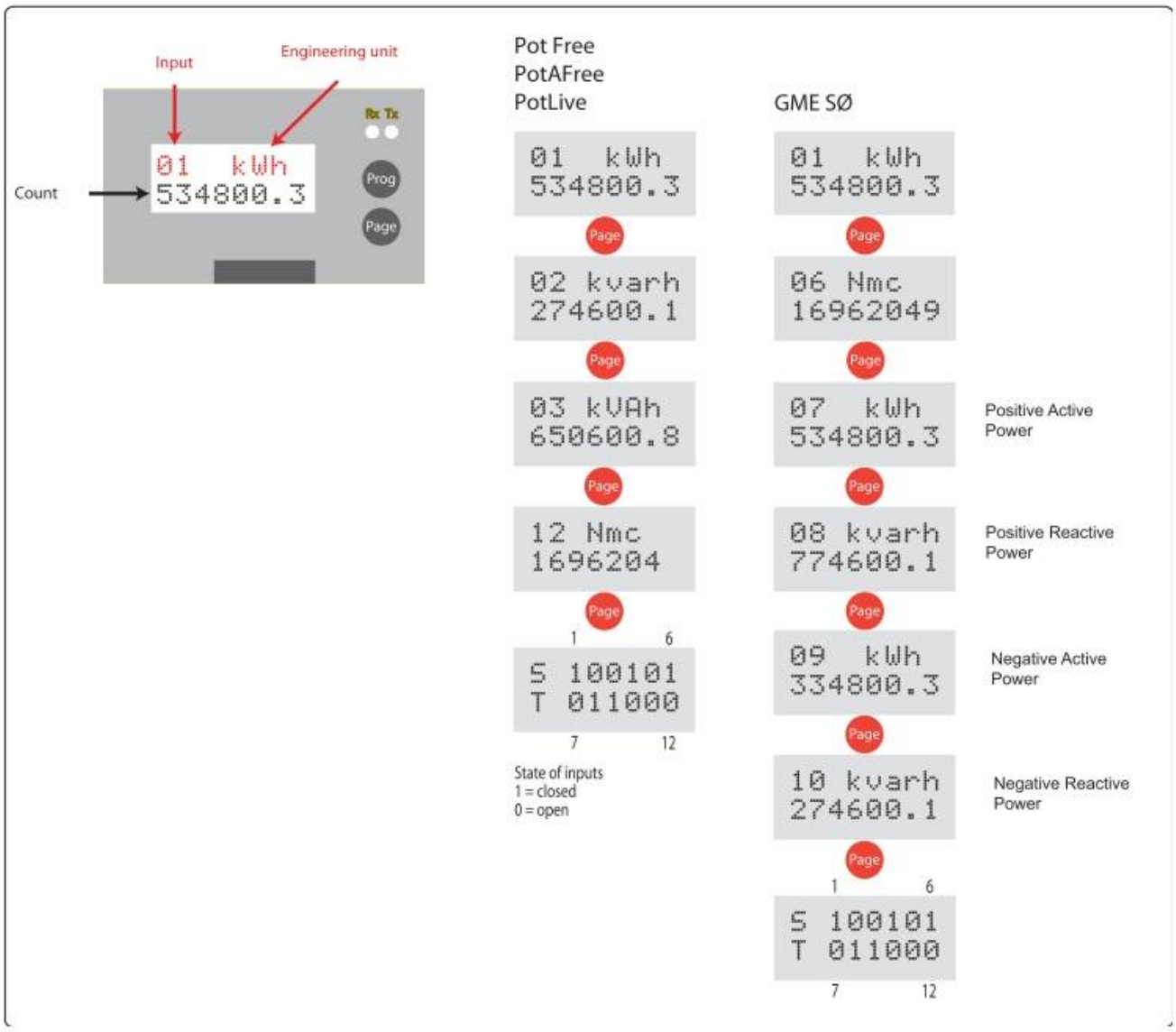
Configuration Menus






Entering Password
PASSWORD 0000
PASSWORD 1000
Input Type Configuration
B
PrgInput OME 50
PrgInput Pot Free
PrgInput PotAFree
PrgInput Pot LIVE
A
See Menu Structure A
Engineering Unit
1PLS TYP kWh
1PLS TYP kvrah
1PLS TYP kVAh
1PLS TYP mc
1PLS TYP Nmc
1PLS TYP Pulses
Pulse Weight
1PLS VAL 0.01
Increase Value
Move Cursor
0,001/0,01/0,1/1/10/100/1000
CT Ratio
1KTA 0001
1..9999
VT Ratio
1KTV*10 00010
1..3000,0
Time OFF
1TIM 0FF 05ms
5/10/20/40/50/100/200/300ms
Programming is repeated for Inputs 1..6
6TIM 0FF 05ms
Pulse Weight
7PLS VAL 01000
1..65000
CT Ratio
7KTA 0001
1..9999
VT Ratio
7KTV*10 00010
1..3000,0
Time OFF
7TIM 0FF 05ms
5/10/20/40/50/100/200/300ms
Page Scrolling
Scroll Manual
Scroll Auto
Modbus Address
Address 001
Modbus Baudrate
Baudrate 9600
Baudrate 19200
Modbus Parity
Parity odd
Parity none
Parity Even
Changing Password
PASSWORD 1000
Display Contrast
Contrast 1/5
Contrast 5/5
SAVING

Display Parameters



Modbus Registers

The pulse input module supports the following Modbus registers and function codes. The baud rate and the Modbus slave is set via bit switches. The parity setting should be set to None with 1 stop bit..

Register	Parameter Description	Data Type	WebBiter Data Type	Range
	FUNCTION CODE 03 - READ HOLDING REGISTERS FUNCTION CODE 16 - WRITE MULTIPLE REGISTERS			
42049	Input Counter 1 Value	4 Bytes (32 bits)	32-Bit Signed	Note 1
42053	Input Counter 2 Value	4 Bytes (32 bits)	32-Bit Signed	Note 1
42057	Input Counter 3 Value	4 Bytes (32 bits)	32-Bit Signed	Note 1
42061	Input Counter 4 Value	4 Bytes (32 bits)	32-Bit Signed	Note 1
42065	Input Counter 5 Value	4 Bytes (32 bits)	32-Bit Signed	Note 1
42069	Input Counter 6 Value	4 Bytes (32 bits)	32-Bit Signed	Note 1
42073	Input Counter 7 Value	4 Bytes (32 bits)	32-Bit Signed	Note 1 Note 10
42077	Input Counter 8 Value	4 Bytes (32 bits)	32-Bit Signed	Note 1 Note 10
42081	Input Counter 9 Value	4 Bytes (32 bits)	32-Bit Signed	Note 1
42085	Input Counter 10 Value	4 Bytes (32 bits)	32-Bit Signed	Note 1
42089	Input Counter 11 Value	4 Bytes (32 bits)	32-Bit Signed	Note 1

Register	Parameter Description	Data Type	WebBiter Data Type	Range
42093	Input Counter 12 Value	4 Bytes (32 bits)	32-Bit Signed	Note 1
42097	State of the Inputs	4 Bytes (32 bits)	32-Bit Signed	Note 2
44121	Input Counter 1 Unit	2 Bytes (16 bits)	16-Bit Signed	Note 3
44123	Input Counter 2 Unit	2 Bytes (16 bits)	16-Bit Signed	Note 3
44125	Input Counter 3 Unit	2 Bytes (16 bits)	16-Bit Signed	Note 3
44127	Input Counter 4 Unit	2 Bytes (16 bits)	16-Bit Signed	Note 3
44129	Input Counter 5 Unit	2 Bytes (16 bits)	16-Bit Signed	Note 3
44131	Input Counter 6 Unit	2 Bytes (16 bits)	16-Bit Signed	Note 3
44133	Input Counter 7 Unit	2 Bytes (16 bits)	16-Bit Signed	Note 3
44135	Input Counter 8 Unit	2 Bytes (16 bits)	16-Bit Signed	Note 3
44137	Input Counter 9 Unit	2 Bytes (16 bits)	16-Bit Signed	Note 3
44139	Input Counter 10 Unit	2 Bytes (16 bits)	16-Bit Signed	Note 3
44141	Input Counter 11 Unit	2 Bytes (16 bits)	16-Bit Signed	Note 3
44143	Input Counter 12 Unit	2 Bytes (16 bits)	16-Bit Signed	Note 3
44145	Input Counter 1 Weight	2 Bytes (16 bits)	16-Bit Signed	Note 4
44147	Input Counter 2 Weight	2 Bytes (16 bits)	16-Bit Signed	Note 4
44149	Input Counter 3 Weight	2 Bytes (16 bits)	16-Bit Signed	Note 4
44151	Input Counter 4 Weight	2 Bytes (16 bits)	16-Bit Signed	Note 4
44153	Input Counter 5 Weight	2 Bytes (16 bits)	16-Bit Signed	Note 4
44155	Input Counter 6 Weight	2 Bytes (16 bits)	16-Bit Signed	Note 4
44157	Input Counter 7 Weight	2 Bytes (16 bits)	16-Bit Signed	Note 4
44159	Input Counter 8 Weight	2 Bytes (16 bits)	16-Bit Signed	Note 4
44161	Input Counter 9 Weight	2 Bytes (16 bits)	16-Bit Signed	Note 4
44163	Input Counter 10 Weight	2 Bytes (16 bits)	16-Bit Signed	Note 4
44165	Input Counter 11 Weight	2 Bytes (16 bits)	16-Bit Signed	Note 4
44167	Input Counter 12 Weight	2 Bytes (16 bits)	16-Bit Signed	Note 4
44169	CT 1	2 Bytes (16 bits)	16-Bit Signed	Note 5
44171	CT 2	2 Bytes (16 bits)	16-Bit Signed	Note 5
44173	CT 3	2 Bytes (16 bits)	16-Bit Signed	Note 5
44175	CT 4	2 Bytes (16 bits)	16-Bit Signed	Note 5
44177	CT 5	2 Bytes (16 bits)	16-Bit Signed	Note 5
44179	CT 6	2 Bytes (16 bits)	16-Bit Signed	Note 5
44181	CT 7	2 Bytes (16 bits)	16-Bit Signed	Note 5
44183	CT 8	2 Bytes (16 bits)	16-Bit Signed	Note 5
44185	CT 9	2 Bytes (16 bits)	16-Bit Signed	Note 5
44187	CT 10	2 Bytes (16 bits)	16-Bit Signed	Note 5
44189	CT 11	2 Bytes (16 bits)	16-Bit Signed	Note 5
44191	CT 12	2 Bytes (16 bits)	16-Bit Signed	Note 5
44193	VT 1	2 Bytes (16 bits)	16-Bit Signed	Note 6
44195	VT 2	2 Bytes (16 bits)	16-Bit Signed	Note 6
44197	VT 3	2 Bytes (16 bits)	16-Bit Signed	Note 6
44199	VT 4	2 Bytes (16 bits)	16-Bit Signed	Note 6
44201	VT 5	2 Bytes (16 bits)	16-Bit Signed	Note 6
44203	VT 6	2 Bytes (16 bits)	16-Bit Signed	Note 6
44205	VT 7	2 Bytes (16 bits)	16-Bit Signed	Note 6
44207	VT 8	2 Bytes (16 bits)	16-Bit Signed	Note 6
44209	VT 9	2 Bytes (16 bits)	16-Bit Signed	Note 6
44211	VT 10	2 Bytes (16 bits)	16-Bit Signed	Note 6
44213	VT 11	2 Bytes (16 bits)	16-Bit Signed	Note 6

Register	Parameter Description	Data Type	WebBiter Data Type	Range
44215	VT 12	2 Bytes (16 bits)	16-Bit Signed	Note 6
44217	TOFF 1	2 Bytes (16 bits)	16-Bit Signed	Note 7
44219	TOFF 2	2 Bytes (16 bits)	16-Bit Signed	Note 7
44221	TOFF 3	2 Bytes (16 bits)	16-Bit Signed	Note 7
44223	TOFF 4	2 Bytes (16 bits)	16-Bit Signed	Note 7
44225	TOFF 5	2 Bytes (16 bits)	16-Bit Signed	Note 7
44227	TOFF 6	2 Bytes (16 bits)	16-Bit Signed	Note 7
44229	TOFF 7	2 Bytes (16 bits)	16-Bit Signed	Note 7
44231	TOFF 8	2 Bytes (16 bits)	16-Bit Signed	Note 7
44233	TOFF 9	2 Bytes (16 bits)	16-Bit Signed	Note 7
44235	TOFF 10	2 Bytes (16 bits)	16-Bit Signed	Note 7
44237	TOFF 11	2 Bytes (16 bits)	16-Bit Signed	Note 7
44239	TOFF 12	2 Bytes (16 bits)	16-Bit Signed	Note 7
44243	Counter Type	2 Bytes (16 bits)	16-Bit Signed	Note 8
44245	Tariff 1: counting for Positive Active Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44247	Tariff 1: counting for Positive Reactive Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44249	Tariff 1: counting for Negative Active Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44251	Tariff 1: counting for Negative Reactive Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44253	Tariff 2: counting for Positive Active Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44255	Tariff 2: counting for Positive Reactive Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44257	Tariff 2: counting for Negative Active Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44259	Tariff 2: counting for Negative Reactive Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44261	Tariff 3: counting for Positive Active Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44263	Tariff 3: counting for Positive Reactive Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44265	Tariff 3: counting for Negative Active Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44267	Tariff 3: counting for Negative Reactive Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44269	Tariff 4: counting for Positive Active Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44271	Tariff 4: counting for Positive Reactive Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44273	Tariff 4: counting for Negative Active Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44275	Tariff 4: counting for Negative Reactive Energy	2 Bytes (16 bits)	16-Bit Signed	Note 9
44277	counting for Positive Active Energy multitariff	2 Bytes (16 bits)	16-Bit Signed	Note 9
44279	counting for Positive Reactive Energy multitariff	2 Bytes (16 bits)	16-Bit Signed	Note 9
44281	counting for Negative Active Energy multitariff	2 Bytes (16 bits)	16-Bit Signed	Note 9
44283	counting for Negative Reactive Energy multitariff	2 Bytes (16 bits)	16-Bit Signed	Note 9
44353	Input Counter 1 Value Counting	2 Bytes (16 bits)	16-Bit Signed	Note 1
43555	Input Counter 2 Value Counting	2 Bytes (16 bits)	16-Bit Signed	Note 1
44357	Input Counter 3 Value Counting	2 Bytes (16 bits)	16-Bit Signed	Note 1
43559	Input Counter 4 Value Counting	2 Bytes (16 bits)	16-Bit Signed	Note 1
44361	Input Counter 5 Value Counting	2 Bytes (16 bits)	16-Bit Signed	Note 1
43563	Input Counter 6 Value Counting	2 Bytes (16 bits)	16-Bit Signed	Note 1
44365	Input Counter 7 Value Counting	2 Bytes (16 bits)	16-Bit Signed	Note 10
43567	Input Counter 8 Value Counting	2 Bytes (16 bits)	16-Bit Signed	Note 10
44369	Input Counter 9 Value Counting	2 Bytes (16 bits)	16-Bit Signed	Note 1
43571	Input Counter 10 Value Counting	2 Bytes (16 bits)	16-Bit Signed	Note 1
44373	Input Counter 11 Value Counting	2 Bytes (16 bits)	16-Bit Signed	Note 1

Register	Parameter Description	Data Type	WebBiter Data Type	Range
43575	Input Counter 12 Value Counting	2 Bytes (16 bits)	16-Bit Signed	Note 1
44609	Input Counter 1 Value As Displayed	2 Bytes (16 bits)	16-Bit Signed	Note12
44611	Input Counter 2 Value As Displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44613	Input Counter 3 Value As Displayed	2 Bytes (16 bits)	16-Bit Signed	Note12
44615	Input Counter 4 Value As Displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44617	Input Counter 5 Value As Displayed	2 Bytes (16 bits)	16-Bit Signed	Note12
44619	Input Counter 6 Value As Displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44621	Input Counter 7 Value As Displayed	2 Bytes (16 bits)	16-Bit Signed	Note12
44623	Input Counter 8 Value As Displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44625	Input Counter 9 Value As Displayed	2 Bytes (16 bits)	16-Bit Signed	Note12
44627	Input Counter 10 Value As Displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44629	Input Counter 11 Value As Displayed	2 Bytes (16 bits)	16-Bit Signed	Note12
44631	Input Counter 12 Value As Displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44633	T1 Positive Active Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44635	T1 Positive Reactive Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44637	T1 Negative Active Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44639	T1 Negative Reactive Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44641	T2 Positive Active Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44643	T2 Positive Reactive Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44645	T2 Negative Active Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44647	T2 Negative Reactive Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44649	T3 Positive Active Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44651	T3 Positive Reactive Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44653	T3 Negative Active Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44655	T3 Negative Reactive Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44657	T4 Positive Active Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44659	T4 Positive Reactive Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44661	T4 Negative Active Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12
44663	T4 Negative Reactive Energy as displayed	2 Bytes (16 bits)	16-Bit Signed	Note 12

Note 1. Reading range 0..999 999 999 pulses.

E.g. 1234 = 1234 pulses

To give meaning to the pulses it is necessary to take into account the pulse weight. E.g. if in the above example pulse weight = 0.01 kWh then

Energy value = 1234 * 0.01 = 12.34 kWh

Note 2. Each bit shows the current status of the corresponding input.

Bit 11 = Counter 12 Status; 0=Off, 1=On

Bit 10 = Counter 11 Status; 0=Off; 1 =On

...

Bit 0 = Counter 1 Status; 0=Off; 1 =On

Note 3. Unit of each counter.

Value	Description
0	Pulses

Value	Description
1	kWh
2	kvarh
3	kVAh
4	mc
5	Nmc

Note 4. Pulse weight each counter.

Value	Description
0	0.001 kWh/kvarh/kVAh/mc/Nmc
1	0.01 kWh/kvarh/kVAh/mc/Nmc
2	0.1 kWh/kvarh/kVAh/mc/Nmc
3	1 kWh/kvarh/kVAh/mc/Nmc
4	10 kWh/kvarh/kVAh/mc/Nmc
5	100 kWh/kvarh/kVAh/mc/Nmc
6	1000 kWh/kvarh/kVAh/mc/Nmc

In case of option S0, it is possible to the pulse weight for counters 7,8,9 and 10 as a free number from 0 to 60000 as number of pulses / kWh. For example a typical electricity meter setting is 10000 pulses /kWh.

Note 5. CT is from 1..9999.

Note 6. VT is expressed in 1/10, from 10 to 30000 (1.0 to 3000.0).

Note 7. Time OFF is the minimum time to wait before pulse may be considered complete.

Value	Description
0	5 ms
1	10 ms
2	20 ms
3	40 ms
4	50 ms
5	100 ms
6	200 ms
7	300 ms

Note 8. Counter type. The selected counter type..

Value	Description
0	Potential Live
1	Potential Free and all counters can be different type
2	Potential Free and all counters same type
3	S0

Note 9. Only iif S0 counter has been selected.

To give a meaning to pulses it is necessary to take into account the pulse weight. For example:

All energies have the following meaning:

Current Counting = 12345678

Pulses per kWh = 10000

Energy Value = 12345678 / 10000 = 1234.5678 kWh

Note 10. If S0 input mode has been selected, the counters 7 and 8 contain the Total Positive Active Energy (7) and Total Positive Reactive Energy (8) as pulses. E..g. reading 12345 = 12345 pulses.

Note 11. Internal number form 0 to 999 999 999 for instance:-

1234 = 1234 pulses

To give meaning to pulses it is necessary to take inot account the pulse weight. For example:

Pulseweight = 0.01 kWh

Energy value = 1234 * 0.01 kWh = 12.34 kWh

This set of registers is to provide backward compatability with MOD-PULSE8 module.

Note 12. The communicated value is the displayed value and the internal counting value.

Example 1:

8000 Pulses per 1kWh

Internal count : 2000

Value on display 00000.25 kWh

Communicated value 25

Example 2:

1 pulse for any 0.1 kWh

Internal count : 5000

Value on display 0000500 kWh

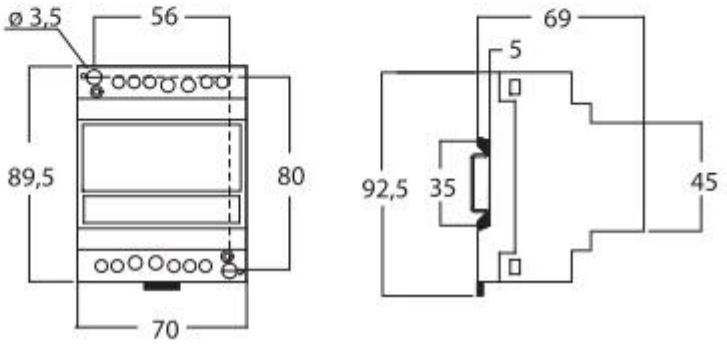
Communicated value 500

4 Byte Format

4-Byte

MSB	LSB	MSB	LSB

E.g reading value 562387 (decimal) / 0x0894D3 (Hex) from Slave Address 2 and from the pulse input 1.

Request		**Response**	
Field Name	*(Hex)*	*Field Name*	*(Hex)*
Modbus Address	**02**	Modbus Address	**02**
Function	**03**	Function	**03**
Starting Address MSB	**08**	Byte Count	**04**
Starting Address LSB	**00**	Register value MSB	**00**
No. of Registers MSB	**00**	Register value LSB	**08**
No. of Registers LSB	**02**	Register value MSB	**94**
Error Check MSB	**D3**	Register value LSB	**D3**
Error Check LSB	**B5**	Error Check MSB	**4B**
		Error Check LSB	**63**

Dimensions