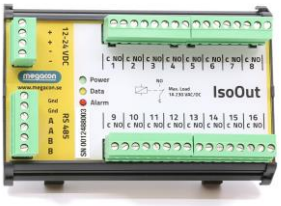
Due to our policy of continual improvement, specifications may change without prior notice

IsoBase, IsoBox, IsoHub, IsoOut

Earth Leakage Monitoring System ModBus Implementation User Manual



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Contents

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1 ModBus Implementation for IsoBase

1.1 Available data

Data content	Address (PDU)	Address decimal	Number of words	Read/ Write	Function codes	Remarks
Date & Time	0000h..0006h	0..6	7	rw	3,4,16	1)
IsoHub state and SN	0100h..010Fh	256..271	8*2	r	3,4	2)
IsoBase battery info	0200h	512	1	r	3,4	3)
Input warning level	0300h..037Fh	768..895	128*1	rw	3,4,6,16	4)
Input alarm level	0380h..03FFh	896..1023	128*1	rw	3,4,6,16	4)
Input delay	0400h..047Fh	1024..1151	128*1	rw	3,4,6,16	4)
Input current	0480h..04FFh	1152..1279	128*1	r	3,4	4)
Input maximum	0500h..057Fh	1280..1407	128*1	rw	3,4,6,16	4), 5)
Input minimum	0580h..05FFh	1408..1535	128*1	rw	3,4,6,16	4), 5)
Input state	0600h..067Fh	1536..1663	128*1	r	3,4	4), 6)
Input memory	0680h..06FFh	1664..1791	128*1	rw	3,4,6,16	4), 7)
Input total event count	0700h..077Fh	1792..1919	128*1	r	3,4	4)
Input new event count	0780h..07FFh	1920..2047	128*1	rw	3,4,6,16	4), 8)
Input labels	0800h..0BFFh	2048..3071	128*8	rw	3,4,6,16	9)
Input TRMS w/o filter (V4.0)	0C00h..0C7Fh	3072..3199	128*1	r	3,4	4)
Input TRMS with filter (V4.0)	0C80h..0CFFh	3200..3327	128*1	r	3,4	4)
Input THD (V4.0)	0D00h..0D7Fh	3328..3455	128*1	r	3,4	4)
Input filter active (V4.0)	0D80h..0DFFh	3456..3583	128*1	rw	3,4,6,16	4), 14)
Event memory				r	100	10)
Power memory				r	105	11)
Diagnostics				r	8	12)
Device Identification				r	43 14	13)

Generally it is not possible to access 2 different logical data blocks with only one message. There is no automatic incrementation of the register address into the next data block.

Example: A trial to read the last 3 registers of the input delay block and the first register of the input current block will lead to an exception response "illegal data address".

Provided communication parameters are:

- 9600, 19200bps
- Modes 8E1, 8O1, 8N2, 8N1(V3.2)

2 Remarks

2.1 Date & Time

This data block is only accessible as a complete data record. For example, it is not possible to write just the year of the time stamp. This will lead to an exception response "illegal data address".

Address	Content
0000h	year 0..99d
0001h	month 1..12d
0002h	day 1..31d
0003h	hour 0..23d
0004h	minute 0..59d
0005h	second 0..59d
0006h	daylight, 1: automatic, 0: manual

2.2 IsoHub state and SN

This data block is only accessible as a complete data record.

Address	Content
0100h	SN IsoHub no.1
0101h	State IsoHub no.1, 0: not installed, 1: ok, 2: error
0102h	SN IsoHub no.2
0103h	State IsoHub no.2...

2.3 IsoBase battery info

Address	Content
0200h	battery state, 0: ok, 1: low

2.4 Input properties

Each word register can be accessed randomly. A maximum number of 125 word registers can be transferred in one message when reading. When writing the maximum number of registers are 123. Calculation of the start address of a specific input: address=start address+(Inputno.-1)

2.5 Input maximum and minimum values

The maximum and minimum values can be written to in order to be reset. The value 0d will reset the maximum values, the value 10000d will reset the minimum values.

2.6 Input states

The input state is represented as value 0 for OK, 1 for warning and 2 for alarm.

2.7 Input memory

The input memory is represented as value 0 for OK and 1 for alarm memory. The alarm memory can be cleared by writing the value 0d.

2.8 Input event counter

The input new event counter can be reset by writing the value 0d.

2.9 Input labels

Each input 1..128 are randomly accessible. The label consists of 8 ASCIIs stored in 8 word registers. Allowed characters are 0..9, A..Z, a..z and <Space>. Calculation of the start address of a specific input: address=800h+(Inputno.-1)*8

2.10 Event memory

The event memory is too big to fit into the Modbus memory model. Therefore a user-defined function code is used.

Furthermore the memory content is too large too fit into one message, so it is divided into 3 parts.

Each part contains max. 21 events. Oldest events are sent first.

Master request

Address	1..247d	1 Byte
Function	100d	1 Byte
Input no.	1..128d	1 Byte
Part no.	1..3d	1 Byte
CRC16	x	2 Byte

Isobase response

Address	1..247d	1 Byte	
Function	100d	1 Byte	
Input no.	1..128d	1 Byte	
Part no.	1..3d	1 Byte	
No. of events	0..21d	1 Byte	
For each event:			
New state	0..2d	1 Byte	0: OK, 1: Warning, 2: Alarm
Year	0..99d	1 Byte	
Month	1..12d	1 Byte	
Day	1..31d	1 Byte	
Hour	0..23d	1 Byte	
Minute	0..59d	1 Byte	
Current	0..9999d	2 Byte	
CRC16	x	2 Byte	

2.11 Power Memory

The power memory is too big to fit into the Modbus memory model. Therefore a user-defined function code is used.

Furthermore the memory content is too large to fit into one message, so it is divided into 2 parts.

Each part contains max. 32 events. Oldest events are sent first.

Master request

Address	1..247d	1 Byte	
Function	105d	1 Byte	
Part no.	1..2d	1 Byte	
CRC16	x	2 Byte	

Isobase response

Address	1..247d	1 Byte	
Function	100d	1 Byte	
Part no.	1..2d	1 Byte	
No. of events	0..32d	1 Byte	
For each event:			
New state	0..1d	1 Byte	0: Power on, 1: Power off
Year	0..99d	1 Byte	
Month	1..12d	1 Byte	
Day	1..31d	1 Byte	
Hour	0..23d	1 Byte	
Minute	0..59d	1 Byte	
CRC16	x	2 Byte	

2.12 Diagnostics

Only the subfunction echo is supported. There are no message counters implemented in the IsoBase.

2.13 Read device identification

The device ID consists of vendor name, product code and revision number (Basic device identification). The conformity level is 01h.

2.14 Input Filter Active

The input filter state is represented as value 0 for off and 1 for active. The filter can only be activated when the particular input is measured by a IsoHub with TRMS function.