

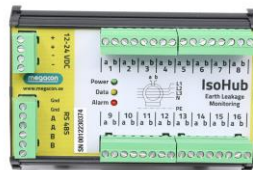
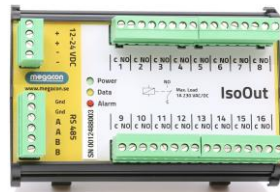
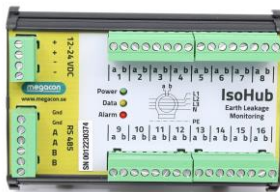
**Due to our policy of continual improvement, specifications may change without prior notice**

# Earth Leakage Monitoring System

## IsoBase, IsoBox, ISO-DIN

## IsoHub, IsoHub-DC, IsoOut

### ModBus Implementation User Manual





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## 1 ModBus Implementation for IsoBase

### 1.1 Available data

IsoBase/IsoBox/IsoBox-DIN All version						
Data content system	Address (PDU)	Address decimal	Number of words	Read/Write	Function codes	Remarks
Date & Time	0000h..0006h	0..6	7	R/W	3,4,16	2.1
IsoBase battery info	0200h	512	1	R	3,4	2.3

IsoHub Type A, input 1-128 All version						
Data content for input 1-128	Address (PDU)	Address decimal	Number of words	Read/Write	Function codes	Remarks
IsoHub state and SN (Type A)	0100h..010Fh	256..271	8*2	R	3,4	2.2
Input warning level	0300h..037Fh	768..895	128*1	R/W	3,4,6,16	2.4
Input alarm level	0380h..03FFh	896..1023	128*1	R/W	3,4,6,16	2.4
Input delay	0400h..047Fh	1024..1151	128*1	R/W	3,4,6,16	2.4
Input current	0480h..04FFh	1152..1279	128*1	R	3,4	2.4
Input maximum	0500h..057Fh	1280..1407	128*1	R/W	3,4,6,16	2.4, 2.5
Input minimum	0580h..05FFh	1408..1535	128*1	R/W	3,4,6,16	2.4, 2.5
Input state	0600h..067Fh	1536..1663	128*1	R	3,4	2.4, 2.6
Input memory	0680h..06FFh	1664..1791	128*1	R/W	3,4,6,16	2.4, 2.7
Input total event count	0700h..077Fh	1792..1919	128*1	R	3,4	2.4
Input new event count	0780h..07FFh	1920..2047	128*1	R/W	3,4,6,16	2.4, 2.8
Input labels 8 character	0800h..0BFFh	2048..3071	128*8	R/W	3,4,6,16	2.9

Additional register for IsoHub Type A, input 1-128, only available on IsoBase/IsoBox from 2009 V4.0 and above						
Input TRMS w/o filter	0C00h..0C7Fh	3072..3199	128*1	R	3,4	2.4
Input TRMS with filter	0C80h..0CFFh	3200..3327	128*1	R	3,4	2.4
Input THD	0D00h..0D7Fh	3328..3455	128*1	R	3,4	2.4
Input filter active	0D80h..0DFFh	3456..3583	128*1	R/W	3,4,6,16	2.4, 2.10

Additional register for IsoHub Type A, input 1-128, only available on IsoBase/IsoBox from 2019 and above						
Data content for input 1-128	Address (PDU)	Address decimal	Number of words	Read/Write	Function codes	Remarks
Input labels 24 character	0FA0h..1B9Fh	4000..7071	128*24	R/W	3,4,6,16	2.9
Input 1 – Relay setting	1C00h..1C27h	7168..7207	20*2	R/W	3,4	2.11
Input 2 – Relay setting	1C30h..1C57h	7216..7255	20*2	R/W	3,4	2.11
Input x – Relay setting	+ 30h	+ 48	20*2	R/W	3,4	2.11
Input 128 – Relay setting	33D0h..33F7h	13264..13303	20*2	R/W	3,4,6,16	2.11

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<b>Additional register for IsoHub-DC Type B, input 129-136, only available for IsoBase/IsoBox V5.0 (2024) and above</b>						
<b>Data content for input 129-136</b>	<b>Address (PDU)</b>	<b>Address decimal</b>	<b>Number of words</b>	<b>Read/Write</b>	<b>Function codes</b>	<b>Remarks</b>
IsoHub-DC state and SN (Type B)	D100..D10F	53504..53519	8*2	R	3,4	2.2
IsoOut state and SN	D110..D120	53520..53536	8*2	R	3,4	2.2
Input warning level	D300..D307	54016..54023	8*1	R/W	3,4,6,16	2.4
Input alarm level	D380..D387	54144..54151	8*1	R/W	3,4,6,16	2.4
Input delay	D400..D407	54272..54279	8*1	R/W	3,4,6,16	2.4
Input current	D480..D487	54400..54407	8*1	R	3,4	2.4
Input maximum	D500..D507	54528..54535	8*1	R/W	3,4,6,16	2.4, 2.5
Input minimum	D580..D587	54656..54663	8*1	R/W	3,4,6,16	2.4, 2.5
Input state	D600..D607	54784..54791	8*1	R	3,4	2.4, 2.6
Input memory	D680..D687	54912..54919	8*1	R/W	3,4,6,16	2.4, 2.7
Input total event count	D700..D707	55040..55047	8*1	R	3,4	2.4
Input new event count	D780..D787	55168..55175	8*1	R/W	3,4,6,16	2.4, 2.8
Input labels 8 character	D800..D83F	55296..55359	8*8	R/W	3,4,6,16	2.9
Input labels 24 character	DFA0..E05F	57248..57439	8*24	R/W	3,4,6,16	2.9
Input TRMS w/o filter	DC00..DC07	56320..56327	8*1	R	3,4	2.4
Input TRMS with filter	DC80..DC87	56448..56455	8*1	R	3,4	2.4
Input THD	DD00..DD07	56576..56583	8*1	R	3,4	2.4
Input filter active	DD80..DD87	56704..56711	8*1	R/W	3,4,6,16	2.4, 2.10
Input 129 – Relay setting	EC00..EC27	60416..60455	20*2	R/W	3,4	2.11
Input 130 – Relay setting	EC30..EC57	60464..60503	20*2	R/W	3,4	2.11
Input x – Relay setting	..	..	20*2	R/W	3,4	2.11
Input 136 – Relay setting	33D0..33F7	13264..13303	20*2	R/W	3,4,6,16	2.11

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)

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## 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.

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## **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 ASCII's 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 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.

## **2.11 Relay output setting**

Each input can control up to 10 individual outputs. The input relay setting is represented by:

- First word, relay output option 1, relay output number 1...128
- Second word, value 0 for NO(normal open) and 1 for NC(normal close)
- Third word, relay output option 1, relay output number 1...128
- Fourth word, value 0 for NO(normal open) and 1 for NC(normal close)
- etc.