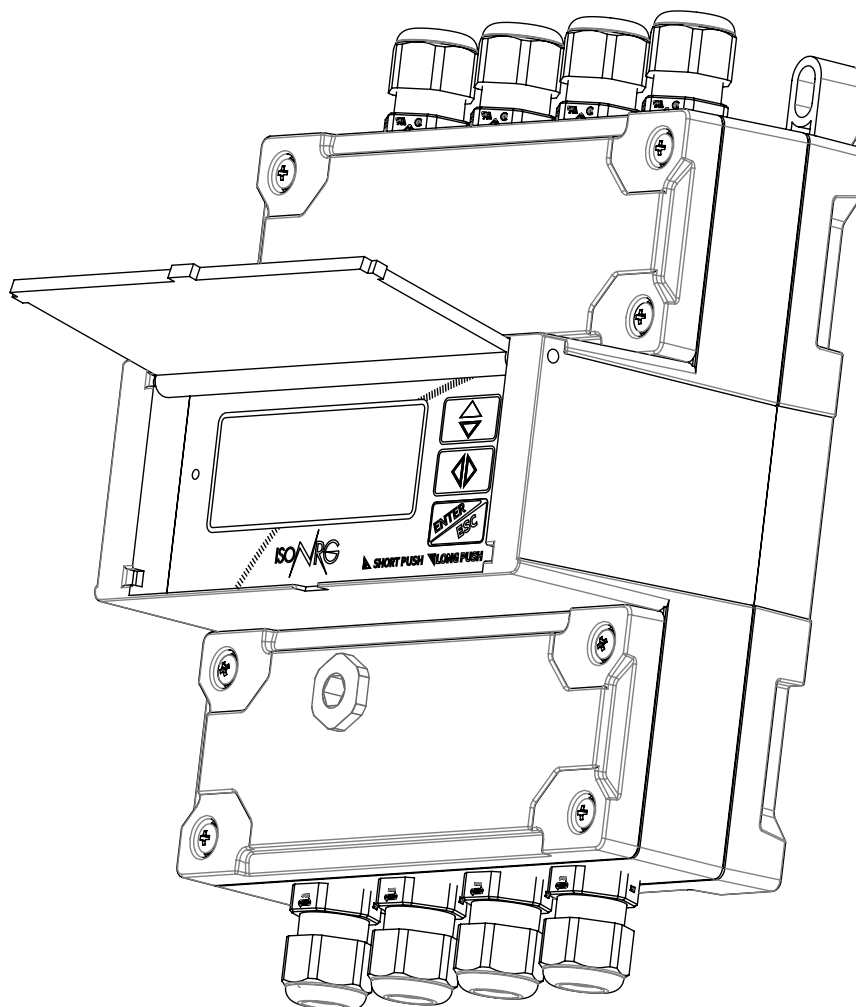




MODbus RTU & TCP PROTOCOL User Manual CONVERTER MV311



MV311

CE



Versione numero: **MV311_MODbus_EN_IS_R2_1.04.0** -

INDICE

MODBUS RTU	1
TECHNICAL DATA	1
ELECTRICAL CONNECTION	1
MODBUS TCP	2
TECHNICAL DATA	2
ELECTRICAL CONNECTION	2
CONFIGURATION	4
STANDARD FUNCTIONS	6
DIAGNOSTIC	6
FUNCTION 03 (READ HOLDING REGISTERS)	7
SYSTEM INFORMATIONS	7
SYSTEM STATUS & ALARMS	8
SYSTEM INFORMATIONS	8
PROCESS DATA IN "DEVICE" TECHNICAL UNITS	10
PROCESS DATA IN "FIXED" STANDARD UNITS	14
COUNTERS RESET & PLANT TYPE SELECTION	15
FUNCTION 05 (WRITE SINGLE COILS)	15
FUNCTION 08 (DIAGNOSTICS)	15
NOTE	16
HISTORY OF MODBUS REVISIONS	17

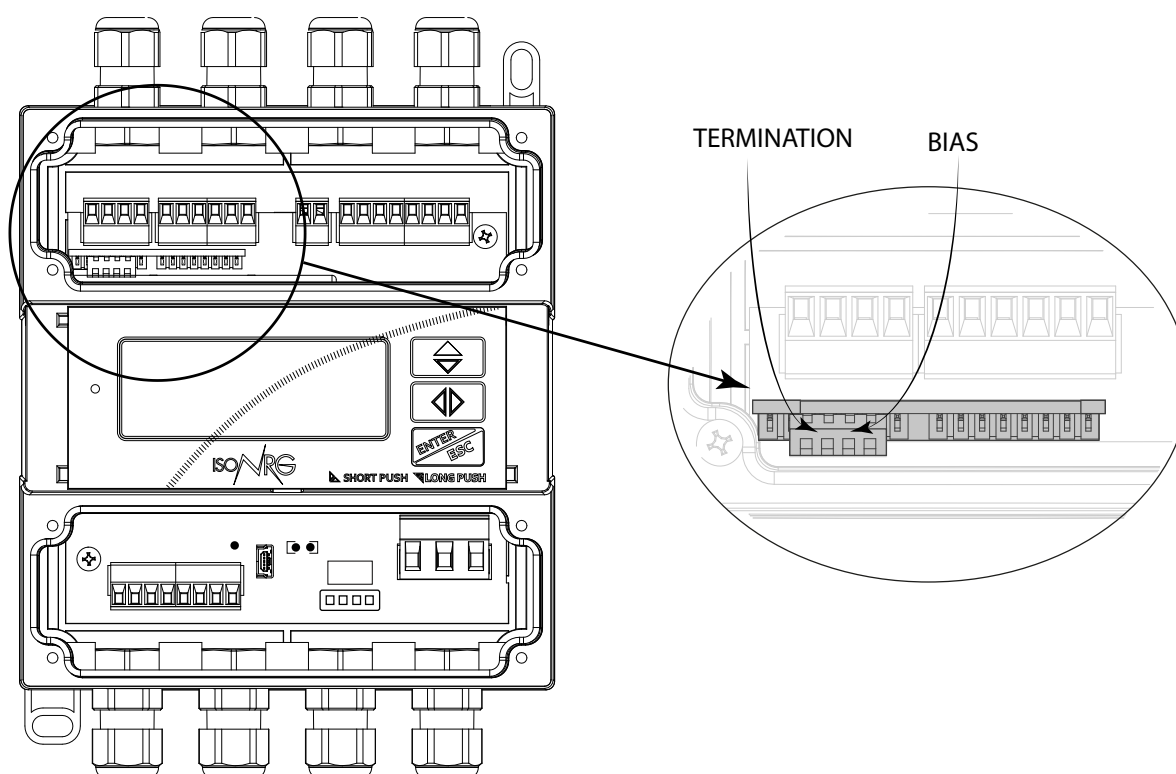
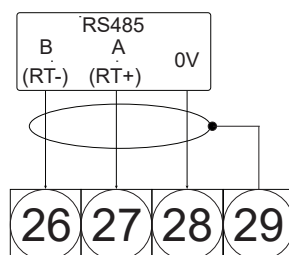
MODBUS RTU

TECHNICAL DATA

Device Object Name	MV 311
Bus termination	Dip switch
Bus bias (optional)	Dip switch
Communication speed	300 bit/sec
	600 bit/sec
	1200 bit/sec
	2400 bit/sec
	4800 bit/sec
	9600 bit/sec
	19200 bit/sec
	38400 bit/sec
	57600 bit/sec
	76800 bit/sec
	115200 bit/sec

□ Table 1

ELECTRICAL CONNECTION

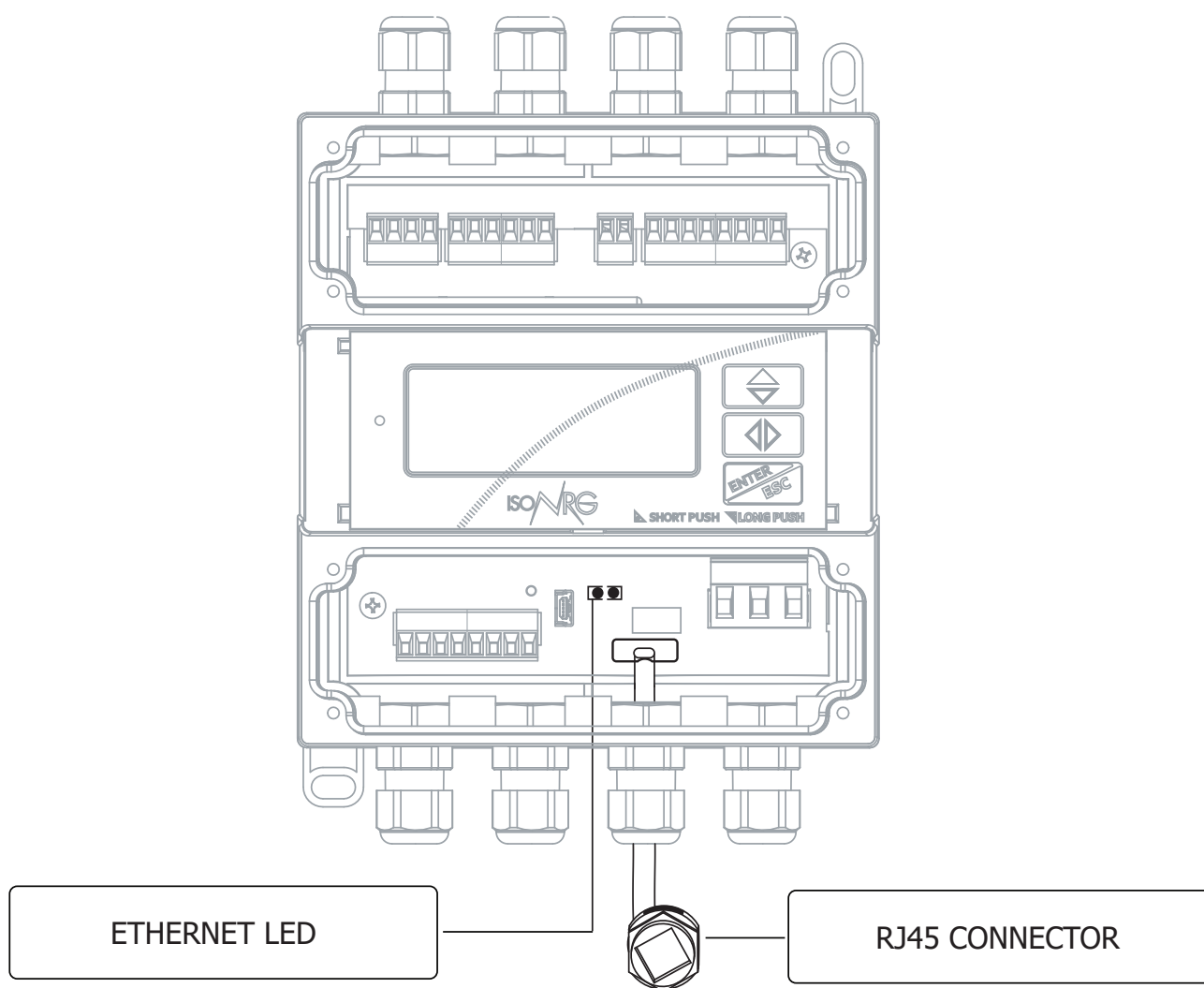


MODBUS TCP

TECHNICAL DATA

Device Object Name	MV311
Port	502
Connector	RJ45
Communication Speed	10M
	100M

ELECTRICAL CONNECTION



LED ETHERNET

COLOR	STATE	MEANING
GREEN	OFF	Disconnected
	ON	Connected
	BLINK	Activity
YELLOW	OFF	10M (speed)
	ON	100M (speed)

Application

MODbus is a widespread and established field bus protocol used within automation.

Functionality

The MV311 communicates as a slave with MODbus-RTU via RS-485 module and with MODbus-TCP via Ethernet.

The MODbus Protocols transfers a number of both actual data as well as accumulated data.

Reliability

Both RS-485 port module and Ethernet are galvanically separated from the meter's voltage potential thereby improving the security for smooth operations.

At the same time, the risk of influencing the meter due to influences of the RS-485 or Ethernet ports is reduced to a minimum.

MODbus RTU Addressing

The module is slave and can be addressed in a range 1-247.

MODbus TCP Addressing

The module is slave and can be addressed with standard Ethernet addresses; Unit Identifier should be 00h or FFh for compatibility, anyway MV311 replay to every Unit Identifiers.

Status

A MODbus RTU and TCP icons with multiple states indicate the health of RTU, Ethernet and TCP communications:

	MODbus-RTU traffic detected.
	MODbus-RTU; MV311 has been accessed via MODbus (White LED Blink if enabled).
	FIELDbus (MODbus-RTU) communication error detected, please check communication settings.
	Ethernet connected at 10M.
	Ethernet connected at 100M.
 +Mod	alternate MODbus-TCP connected (at least 1 socket open).
 + 	alternate MODbus-TCP; MV311 has been accessed via MODbus.
 +Md!!	alternate MODbus-TCP; Protocol Error.

CONFIGURATION

NOTE: Restart the device after changing Ethernet Settings.



COMMUNICATION	
BACnet	IP
Modbus	TCP
M-Bus	ON
Dev. Address	1
Com.Speed	9600
Parity	NO 1SB
Ans. Delay	(ms)
ETH DHCP en.	ON
ETH dev IP addr.	010.138.09.
ETH network mask	255.255.25.
ETH gateway addr.	010.138.09.
ETH DNS address	010.138.09.
NTP time server	
Network password	
Net S.En.	ON+OFF
Bnet max mst	127
Bnet ONr	4194302
Bnet ObjName	MV311_Name
Bnet ObjDescr	MV311_desc.
Bnet ObjLoc	MV311_locat.
Bnet pw	Pa55w0rd
Bnet W.E.	OFF
Bnet Port	47808
MODB_32	AAAA-BBBB
Mbus ID	00985000
Mbus Dev.T.	AUTO

7.1	BACnet Communication Protocol
7.2	Modbus Communication Protocol
7.3	MeterBus Communication Protocol
7.4	Device Communication Address
7.5	Communication Speed
7.6	Communication Parity Bits
7.7	Communication Answer Delay
7.8	Ethernet DHCP enable
7.9	Ethernet device IP address
7.10	Ethernet network mask
7.11	Ethernet gateway address
7.12	Ethernet DNS address
7.13	NTP time server name / address
7.14	Network access password
7.15	Network security (SSL-TLS) enable
7.16	BACnet max master
7.17	BACnet Object Instance Number
7.18	BACnet Device Object Name
7.19	BACnet Device Object Description
7.20	BACnet Device Object Location
7.21	BACnet Device Managem. Password
7.22	BACnet Device Object Write Enable
7.23	BACnet Device Ethernet Port number (47808)
7.24	Modbus 32 bits registers order
7.25	MeterBus Identif. number (Secondary add.)
7.26	MeterBus Device Type (media)

7.2 Modbus Communication Protocol:

OFF MODbus disabled

RTU MODbus-RTU* (over RS485) active.

TCP MODbus-TCP (over Ethernet) active.

R+T MODbus-RTU* and MODbus-TCP active.

*Enabling RTU will disable other "uart based" protocols (like BACnet-MSTP, M-Bus, ...).

7.4 Device Communication Address: (MODbus-RTU ONLY)

Is the MODbus-RTU Slave Address Unique Identifier on RTU network; 1-247.

7.5 Communication Speed: (MODbus-RTU ONLY)

Is the MODbus-RTU communication speed.

7.6 Communication Parity Bits: (MODbus-RTU ONLY)

EVEN Even Parity, 1 Stop Bit ; default on MODbus.

ODD Odd Parity, 1 Stop Bit ; allowed on MODbus.

NO 2SP No Parity, 2 Stop Bit ; allowed on MODbus.

NO 1SP No Parity, 1 Stop Bit ; deprecated on MODbus.

7.7 Communication Answer Delay: (MODbus-RTU ONLY)

Is the MV311 minimum answer delay time; for compatibility with slower devices, a milliseconds minimum replay delay can be specified.

Anyway, the MV311 effective replay time can be higher due to:

- The respect of "t3.5" silent time required from RTU standard, which is calculated on Communication Speed.
- The Function processing time.

7.8 Ethernet DHCP enable: (MODbus-TCP ONLY)

Enable automatic ethernet addresses configuration from external DHCP.

Attention: Enabling DHCP make the ethernet address "not fixed" then the MV311 MODbus-TCP Server can be difficult to find from MODbus-TCP clients on the network.

7.9 Ethernet device IP address: (MODbus-TCP ONLY)

Is the MV311 Ethernet unique address used when DHCP is disabled.

7.10 Ethernet network mask: (MODbus-TCP ONLY)

Is the MV311 Ethernet network mask used when DHCP is disabled.

7.11 Ethernet gateway address: (not used by MODbus)

Is the MV311 Ethernet Gateway Address used when DHCP is disabled.

7.12 Ethernet DNS address: (not used by MODbus)

Is the MV311 Ethernet DNS Address used when DHCP is disabled.

7.24 Modbus 32 bits registers order:

Used to set the order of 32 bytes data (float and long) over MODbus registers:

AAAA-BBBB	MSW (higher part) sent first (over lower register number), LSW (lower part) sent second (over higher register number).
BBBB-AAAA	LSW (lower part) sent first (over lower register number), MSW (higher part) sent second (over higher register number).
R=BA T=AB	Means that orders for RTU and TCP protocols are different: RTU = BBBB-AAAA, TCP = AAAA-BBBB.
R=AB T=BA	Means that orders for RTU and TCP protocols are different: RTU = AAAA-BBBB, TCP = BBBB-AAAA.

NOTE: Restart the device after changing Ethernet Settings.

DIAGNOSTIC

MODbus –RTU:

List of Diagnostic Counters (FBCDV function on Diagnostic Menu):

```
FB_PER: 0000000000
FB_FER: 0000000000
FB_OER: 0000000000
MDB_TOTAL: 0
MDB_E_CRC: 0
MDB_E_EXC: 0
MDB_RECUD: 0
MDB_BROAD: 0
MDB_E_OUR: 0
```

MODbus –TCP:

List of Diagnostic Counters (ETHID function on Diagnostic Menu):

```
LINK: UP 100 MB
DHCP: ENABLED
ADDRESS: 192.168.100. 72
MASK: 255.255.255. 0
GATEWAY: 192.168.100. 10
DNS: 192.168. 40. 4
MAC Address: 0022C7.FFFFFF
MDB_CONN: 0
MDB_E_PKT: 0
MDB_E_EXC: 0
MDB_RECUD: 0
MDB_E_OUR: 0
```

STANDARD FUNCTIONS

For the MODBUS protocol, the converter has the function of SLAVE device. The MASTER of the MODBUS network see the Converter as a register set of 1 bit or 16 bit.

The data are supplied with list of fixed address grouped in tables with different length.

Date: 15/01/2020
Vendor Name: ISOIL Industria spa
Product Name: MV311-ISONRG
Firmware Revision¹: 1.1.3

Product Description:

The converter MV311-ISONRG is a highly accurate thermal energy measurement in water and water/glycol heating and cooling systems.

FUNCTION 03 (READ HOLDING REGISTERS)

Return information, process data, accumulators, alarms, .. .

This command return 16 bits registers (Word) used alone or linked to form floating-point (float) or 32 bit long-integer (long) variables type as follow:

Address = 0000	Single Register -> 16 bit (Word)	
Address = 0000 (lower)	16 bit Most Significant Word (MSW)	Double Register->32 bit (long)
Address = 0001 (higher)	16 bit Least Significant Word (LSW)	
Address = 0000 (lower)	16 bit Most Significant Word (MSW)	Floating Point Register ->32 bit (float)
Address = 0001 (higher)	16 bit Least Significant Word (LSW)	

Reading 32bit data must be done in a single operation; trying to read the single MSW register (16bit) of a 32bit data return the error **03 "ILLEGAL DATA VALUE"**; trying to access the single LSW register (16bit) of a 32bit data return the error **02 "ILLEGAL DATA ADDRESS"**.

ATTENTION:

All following tables refers to "Modbus protocol addresses"; ADDRESS "0", depending on master application used, can be also expressed as Register Offset "1", Register "40001" (also if named address, but can start only from "1", is a register !).

SYSTEM INFORMATION

ADDRESS		ITEM		DESCRIPTION	UNIT
DEC	HEX				
0	00	WORD	SERIEs (5 -> MV)	Device Model	
1	01	WORD	MODEL (311)		
2	02	MSW	Value (long)	Serial Number	
3	03	LSW			
4	04	BYTE	Mayor	MODbus Firmware Revision	
5	05	BYTE	Minor		
6	06	WORD	Build		
7	07	BYTE	Mayor	Application Software Version	
8	08	BYTE	Minor		
9	09	WORD	Build		
10	0A	MSW	Value (long)	Hardware Configuration	
11	0B	LSW			
12-27	0C-1B	-	"0"	reserved	
28	1C	Year	Date/Time (4 registers)	YYYY (i.e 2019)	
29	1D	Month, Day		MMDD (i.e. 1016 means 16th of October)	
30	1E	Dist, Hour, Minute		DHHMM (i.e. 12336 means DLST=ON, 23:36)	
31	1F	Seconds, TZ		SSTZM (i.e 47114 means 47", TimeZone=114*)	

* TimeZone: Is 3 digit; first digit is the TZ sign (0='+', 1='-'); other two digits are TZ time in 15' resolution (i.e. 114 means TZ= -210min = -3h30').

SYSTEM STATUS & ALARMS

ADDRESS		ITEM		DESCRIPTION	UNIT
DEC	HEX				
32	20	Bits 0-15	Flags	Global Alarm & Supply Errors	
33	21	Bits 0-15	Flags	Faults (Analog In., Temp. Sens., Pulse)	
34	22	-	"0"	Reserved	
35	23	Bits 0-15		Measure Errors	
36	24	-	"0"	Reserved	
37	25	Bits 0-15	Flags	Alarms Limits (T.P., V.F.F.R., T1, T2, Delta)	
38	26	-	"0"	Reserved	
39	27	LSB, Bits 8-15	Value, Flags	Battery status	%
40	28	signed WORD	Value x 10	Board Temperature	0.1 °C
41-47	29-2F	-	"0"	Reserved	
48	30	LSB, Bits 8-15	Value, Flags	Plant Type (Control, Status, Fault)	
49-63	31-3F	-		Reserved	

SYSTEM INFORMATIONS

Global Alarm & Supply Errors		
BITS	DESCRIPTION	GROUP
0	Internal Power Error	Power Supply
1	Pulse In Power Error	
2-13	Reserved	
14	Secondary Alarm	Global Alarm
15	Main Alarm	

Faults (Analog In., Temp. Sens., Pulse)		
BITS	DESCRIPTION	GROUP
0	No Current (disconnected)	Analog Input
1	Current Over Range	
2	Reserved	Temperature Sensor
3	Disconnected	
4	RTD1 Limit	
5	RTD2 Limit	
6	Shunt Error	
7	Ref Error	
8-9	Reserved	
10	Pulse In 1 Overflow	Pulse Input
11	Pulse In 2 Overflow	
12	Pulse In 3 Overflow	
13	Pulse In 4 Overflow	
14	Pulse Out 1 Overflow	Pulse Output
15	Pulse Out 2 Overflow	

Measure Errors		
BITS	DESCRIPTION	GROUP
0	Power Measure Overflow	Power Measurement
1	Vector Fluid Overflow	Flow Measurement
2	Temperature T1 Overflow	Temperature Measurement
3	Temperature T2 Overflow	
4	Temperature Delta Overflow	
5-15	Reserved	

Alarms Limits (T.P., V.F.F.R., T1, T2, Delta)		
BITS	DESCRIPTION	GROUP
0	Min Value Alarm	Thermal Power
1	Max Value Alarm	
2-3	Reserved	
4	Min Value Alarm	V.F. Flow Rate
5	Max Value Alarm	
6-7	Reserved	
8	Min Value Alarm	Temperature T1
9	Max Value Alarm	
10	Min Value Alarm	Temperature T2
11	Max Value Alarm	
12	Min Value Alarm	Temperature Delta
13	Max Value Alarm	
14-15	Reserved	

Battery status		
BITS	DESCRIPTION	GROUP
0-7	Battery Charge	0-100% Value
8	Battery Low	
9	Battery Empty	
10	Battery Fault	
11-15	Reserved	

Battery status (Control, Status, Fault)		
BITS	DESCRIPTION	GROUP
0-7	Control (setting)	0: Auto (by Power Sign) 1: Local (by IN4) 2: Remote (by Com. Protocol)
8	Detected (by Power Sign)	0: Heating 1: Cooling
9	Selected (by Control) ²	
10	Incoherence (Det./Sel.) Fault	
11-15	reserved	

PROCESS DATA IN "DEVICE" TECHNICAL UNITS

ADDRESS		ITEM		DESCRIPTION	UNIT
DEC	HEX				
64	40	MSW	Totalizer (long)	Total Heating Thermal Energy	By Device (see [1])
65	41	LSW			
66	42	MSW	Totalizer (long)	Partial Heating Thermal Energy	By Device (see [1])
67	43	LSW			
68	44	MSW	Totalizer (long)	Total Cooling Thermal Energy	By Device (see [1])
69	45	LSW			
70	46	MSW	Totalizer (long)	Partial Cooling Thermal Energy	By Device (see [1])
71	47	LSW			
72	48	BYTE / bits	Unit / Decimals [1]	Thermal Energy Unit and Decimals	
73	49	-	“0”	Reserved	
74	4A	MSW	Totalizer (long)	Total Volume Conveying Liquid	By Device (see [2])
75	4B	LSW			
76	4C	MSW	Totalizer (long)	Partial Volume Conveying Liquid	By Device (see [2])
77	4D	LSW			
78	4E	MSW	Totalizer (long)	Total Volume Hot Water	By Device (see [2])
79	4F	LSW			
80	50	MSW	Totalizer (long)	Partial Volume Hot Water	By Device (see [2])
81	51	LSW			
82	52	MSW	Totalizer (long)	Total Volume Cold Water	By Device (see [2])
83	53	LSW			
84	54	MSW	Totalizer (long)	Partial Volume Cold Water	By Device (see [2])
85	55	LSW			
86	56	MSW	Totalizer (long)	Total Aux Input Volume	By Device (see [2])
87	57	LSW		Total Aux Input Gas volume	
				Total Aux Input Electrical energy	
88	58	MSW	Totalizer (long)	Partial Aux Input Volume	By Device (see [2])
89	59	LSW		Partial Aux Input Gas volume	
				Partial Aux Input Electrical energy	
90	5A	BYTE / bits	Unit / Decimals [2]	Volume Conveying Liquid Unit and Decimals	
91	5B	BYTE / bits	Unit / Decimals [2]	Volume Hot Water Unit and Decimals	
92	5C	BYTE / bits	Unit / Decimals [2]	Volume Cold Water Unit and Decimals	
93	5D	BYTE / bits	Unit / Decimals [2]	Aux Input Unit and Decimals	
94-103	5E-67	-	“0”	reserved	
104	68	MSW	Value (float)	Thermal Power	By Device (see [3])
105	69	LSW			
106	6A	MSW	Value (float)	Vector Fluid Flow Rate	By Device (see [4])
107	6B				

ADDRESS		ITEM		DESCRIPTION	UNIT
DEC	HEX				
108	6C	BYTE / bits	Unit [3]	Thermal Power Unit of Measure	
109	6D	BYTE / bits	Unit [4]	Vector Fluid Flow Rate Unit of Measure	
110	6E	MSW	Value (float)	T1 Flow Temperature	By Device (see [5])
111	6F	LSW			
112	70	MSW	Value (float)	T2 Return Temperature	By Device (see [5])
113	71	LSW			
114	72	MSW	Value (float)	Delta Temperature	By Device (see [5])
115	73	LSW			
116	74	BYTE / bits	Unit [5]	Temperatures Unit of Measure	
117-127	75-7F	-	"0"	reserved	
128	80	MSW	CountTime (long)	Totalizers Unlocked Counting Time	ms
129	41	LSW			

[1] Thermal Energy Unit and Decimals

BITS	DESCRIPTION	LIST	
0-7	Unit of Measure	METRIC UNITS:	
		0	Joule J
		1	KiloJoule kJ
		2	WattHour Wh
		3	MegaJoule MJ
		4	KiloWattHour kWh
		5	GigaJoule GJ
		6	MegaWattHour MWh
		7	GigaWattHour GWh
		NON METRIC UNITS:	
		32	BritishThermalUnit BTU
		33	KiloBritishThermalUnit kBT
		34	MegaBritishThermalUnit MBT
8-11	Number of Decimal	0...8	
12-15	Reserved		

[2] Volumes/Gas/Electrical Energy Units and Decimals

BITS	DESCRIPTION	LIST	
0-7	Unit of Measure	METRIC VOLUMES UNITS:	
		0	MilliLiter ml
		1	Cubic Centimeter cm ³
		2	Liter l
		3	Cubic Decimeter dm ³
		4	DecaLitre dal
		5	HectoLitre hl
		6	Cubic Meter m ³
		7	MegaLitre MI
		NON METRIC VOLUMES UNITS:	
		32	Cubic Inch in ³
		33	US Gallon Gal

BITS	DESCRIPTION	LIST		
0-7	Unit of Measure	34	UK Gallon	IGL
		35	Cubic Foot	ft ³
		36	Standard Barrel	bbl
		37	Oil Barrel	BBL
		38	Hundred Cubic Feet	hf ³
		39	Kilo US Gallon	KGL
		40	Kilo UK Gallon	IKG
		41	Kilo Cubic Feet	kf ³
		42	Ten Thousand Gallon	ttG
		43	Acre Foot	Aft
		44	Mega US Gallon	MGL
		45	Mega UK Gallon	IMG
		GAS VOLUME UNITS:		
		64	Standard Cubic Meter	Sm ³
		65	Normal Cubic Meter	Nm ³
		ELECTRICAL ENERGY UNITS:		
		96	WattHour	Wh
		97	KiloWattHour	kWh
		98	MegaWattHour	MWh
		99	GigaWattHour	GWh
8-11	Number of Decimals	0...8		
12-15	reserved			

[3] Thermal Power Unit of Measure

BITS	DESCRIPTION	LIST		
0-7	Unit of Measure	0	Watt	W
		1	KiloWatt	kW
		2	MegaWatt	MW
		3	GigaWatt	GW
8-15	reserved			

[4] Vector Fluid Flow Rate Unit of Measure

BITS	DESCRIPTION	LIST		
		METRIC UNITS:		
0-7	Unit of Measure	0	MilliLiter	ml
		1	Cubic Centimeter	cm ³
		2	Liter	l
		3	Cubic Decimeter	dm ³
		4	DecaLitre	dal
		5	HectoLitre	hl
		6	Cubic Meter	m ³
		7	MegaLitre	MI
		NON METRIC UNITS:		
		32	Cubic Inch	in ³
		33	US Gallon	Gal
		34	UK Gallon	IGL
		35	Cubic Foot	ft ³
		36	Standard Barrel	bbl
		37	Oil Barrel	BBL
		38	Hundred Cubic Feet	hf ³
		39	Kilo US Gallon	KGL
		40	Kilo UK Gallon	IKG
		41	Kilo Cubic Feet	kf ³
		42	Ten Thousand Gallon	ttG
		43	Acre Foot	Aft
		44	Mega US Gallon	MGL
		45	Mega UK Gallon	IMG
8-13	reserved			
14-15	Time Unit of Measure	0	/Day	/d
		1	/Hour	/h
		2	/Minute	/m
		3	/Second	/s

[5] Temperatures Unit of Measure

BITS	DESCRIPTION	LIST		
0-7	Unit of Measure	0	Celsius	°C
		1	Fahrenheit	°F
8-15	reserved			

PROCESS DATA IN "FIXED" STANDARD UNITS

ADDRESS		ITEM		DESCRIPTION	UNIT
DEC	HEX				
200	C8	MSW	Totalizer (float)	Total Heating Thermal Energy	Joule
201	C9	LSW			
202	CA	MSW	Totalizer (float)	Partial Heating Thermal Energy	Joule
203	CB	LSW			
204	CC	MSW	Totalizer (float)	Total Cooling Thermal Energy	Joule
205	CD	LSW			
206	CE	MSW	Totalizer (float)	Partial Cooling Thermal Energy	Joule
207	CF	LSW			
208	D0	MSW	Totalizer (float)	Total Volume Conveying Liquid	dm ³
209	D1	LSW			
210	D2	MSW	Totalizer (float)	Partial Volume Conveying Liquid	dm ³
211	D3	LSW			
212	D4	MSW	Totalizer (float)	Total Volume Hot Water	dm ³
213	D5	LSW			
214	D6	MSW	Totalizer (float)	Partial Volume Hot Water	dm ³
215	D7	LSW			
216	D8	MSW	Totalizer (float)	Total Volume Cold Water	dm ³
217	D9	LSW			
218	DA	MSW	Totalizer (float)	Partial Volume Cold Water	dm ³
219	DB	LSW			
220	DC	MSW	Totalizer (float)	Total Aux Input Volume	dm ³
221	DD	LSW		Total Aux Input Gas volume	Sm ³
				Total Aux Input Electrical energy	Wh
222	DE	MSW	Totalizer (float)	Partial Aux Input Volume	dm ³
223	DF	LSW		Partial Aux Input Gas volume	Sm ³
				Partial Aux Input Electrical energy	Wh
224-233	E0-E9	-	“0”	reserved	
234	EA	MSW	Value (float)	Thermal Power	Watt
235	EB	LSW			(J / s)
236	EC	MSW	Value (float)	Vector Fluid Flow Rate	dm ³ / s
237	ED	LSW			
238	EE	MSW	Value (float)	T1 Flow Temperature	°C
239	EF	LSW			
240	F0	MSW	Value (float)	T2 Return Temperature	°C
241	F1	LSW			
242	F2	MSW	Value (float)	Delta Temperature	°C
243	F3	LSW			

FUNCTION 05 (WRITE SINGLE COILS)

This command set/reset a bit or execute a function; bit set are accessible also via Holding Register Words. Send **"FF00"** to set (ON) the bit coil or execute the function; send **"0000"** to reset (**OFF**) the bit coil.

ATTENTION:

All following tables refers to "Modbus protocol addresses"; ADDRESS "0", depending on master application used, can be also expressed as Register Offset "1", Register "00001" (also if named address, but can start only from "1", is a register !).

COUNTERS RESET & PLANT TYPE SELECTION

ADDRESS		TYPE	DESCRIPTION	NOTE	Holding Register
DEC	HEX				
0	00	FUNCTION	Reset Selected Counters ³	0: do nothing 1: Reset	-
1	01	BIT	Plant Type Selected (by Control) ⁴	0: Heating 1: Cooling	Plant Type (Control, Status, Fault)

FUNCTION 08 (DIAGNOSTICS)

This command is for Diagnostic functionality; Sub-function parameter and Data allow different test/query execution. See MODbus specification for details.

SUB-FUNCTION		DATA SENT (hex)	DATA RETURNED (hex)	DESCRIPTION
DEC	HEX			
0	00	Any	Echo	Return Query Data
1	01	0000 or FF00	0000 or FF00	Restart Communications Option
4	04	0000	No response !	Force Listen Only Mode
10	0A	0000	0000	Clear Counters and Diagnostic Register
11	0B	0000	Counter	Return Bus Message Count
12	0C	0000	Counter	Return Bus Communication Error Count
13	0D	0000	Counter	Return Bus Exception Error Count
14	0E	0000	Counter	Return Server Message Count
15	0F	0000	Counter	Return Server No Response Count
16	10	0000	Counter	Return Server NAK Count
17	11	0000	Counter	Return Server Busy Count
18	12	0000	Counter	Return Bus Character Overrun Count

NOTE

- ¹ Referred to **MODbus** implementation ONLY (will not change for modifies that do not involve MODbus).
- ² Can be writable as a Coil, depends on local Device settings.
- ³ Writing "ON" (0xFF00) cause counters reset; the function is "strobing", then there is no needs to write the Coil "OFF" (0x0000), this operation do nothing.
- ⁴ Can be writable as a Coil when Control is set to "Remote".

HISTORY OF MODBUS REVISIONS

Firmware Revision	Date	Summary of Changes
1.0.0	22/03/2018	-
1.1.0	13/12/2018	Added ContTime ITEM Implemented MODbus-TCP Protocol
1.1.1	11/11/2019	Added Date/Time ITEM. Added selection of 32bit registers order
1.1.2	17/12/2019	Modified "non metric" Thermal Energy Unit codes
1.1.3	15/01/2020	Added "Gas Volume" and Electrical Energy Units for IN4 (Aux).

ISOIL INDUSTRIA S.p.A.

UFFICI	ASSISTENZA
Via Fratelli Gracchi, 27 20092 Cinisello Balsamo (MI) Tel +39 02 66027.1 Fax +39 02 6123202 vendite@isoil.it	assistentzaindustria@isoil.it

Per incontrare il distributore più vicino accedi al seguente link:

<http://www.isoil.com/italia.asp?ID=ITALY>



In riferimento al continuo sviluppo tecnologico e migliorie apportate ai propri prodotti, il costruttore si riserva il diritto di apportare modifiche e/o cambiamenti alle informazioni contenute nel presente documento senza preavviso