

**ISOMAG** ™

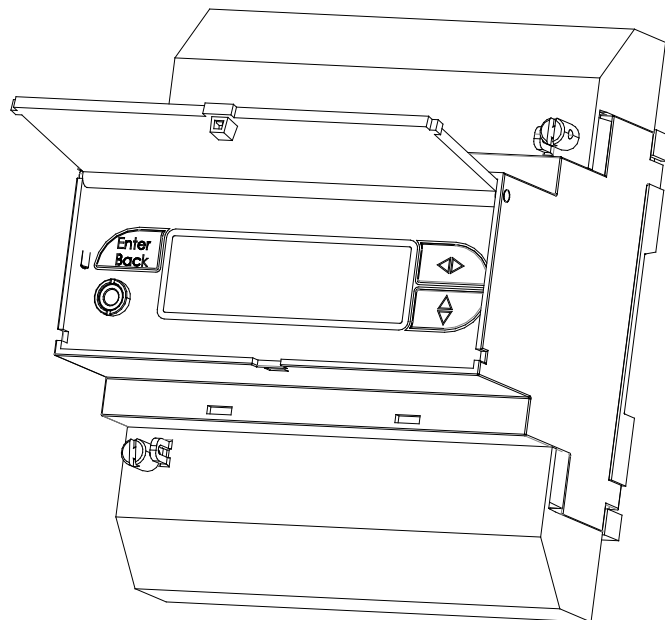
*The friendly magmeter*

**OPERATING MANUAL**

# **BACnet PROTOCOL**

**User Manual**

# **CONVERTER ML 311**



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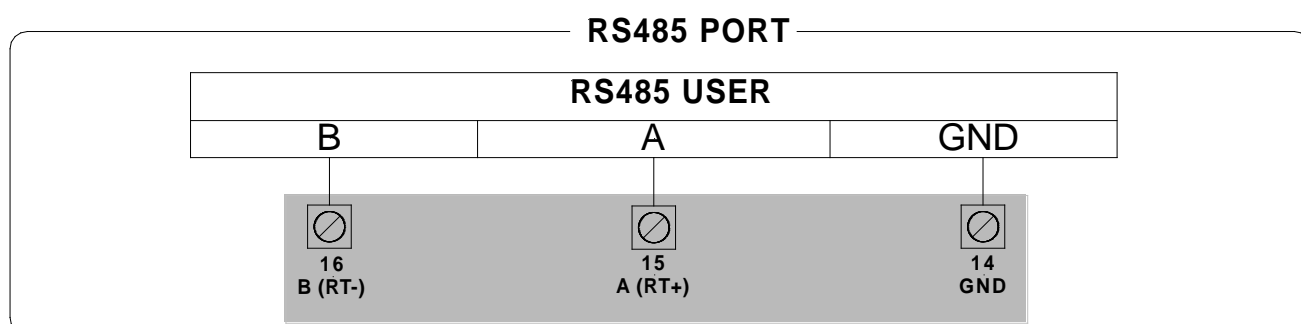
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Technical data	
<b>Device Object Name</b>	ML 311
<b>Bus termination</b>	Dip switch
<b>ISOIL ID number</b>	589
<b>Data Link Layer</b>	According to MS/TP Master/Slave
<b>Default Password Device Management</b>	"password"
<b>Communication speed</b>	9600 bit/sec
	19200 bit/sec
	38400 bit/sec
	76800 bit/sec

## Electrical connection



### Application

BACnet is a widespread and established field bus protocol used within building automation. BACnet is standardized according to ASHRAE 135 and ISO 16484-5.

### Functionality

The BACnet module communicates with BACnet on MS/TP via RS-485 as master or slave. The BACnet module transfers a number of both actual data as well as accumulated data.

### Reliability

The RS-485 port of the BACnet module is 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 port is reduced to a minimum.

### BACnet MS/TP MAC Addressing

The module can be addressed as master in the MAC address range 1-127 and as slave when configured to use an MAC address in the range of 128-254.

The MAC address, the communication speed and parity of the BACnet module is changeable via the IF21 interface of the meter and the PC programs IsoMid.

Please contact customer service for further information.

## BACnet service supported

### The BACnet module supports the following services

- BACnet Application Specific Controller (B-ASC)
- BACnet Master Mode by the use of address range 1-127
- BACnet Slave Mode by the use of address range 128-254

## BACnet object map:

### BACnet object supported:

Object type	Instance	NAME	Used unit
Device	75	PROP_OBJECT_IDENTIFIER	Dimensionless
Device	77	PROP_OBJECT_NAME	Dimensionless
Device	79	PROP_OBJECT_TYPE	Dimensionless
Device	28	PROP_DESCRIPTION	Dimensionless
Device	58	PROP_LOCATION	Dimensionless
Device	112	PROP_SYSTEM_STATUS	Dimensionless
Device	121	PROP_VENDOR_NAME	Dimensionless
Device	120	PROP_VENDOR_IDENTIFIER	Dimensionless
Device	70	PROP_MODEL_NAME	Dimensionless
Device	44	PROP_FIRMWARE_REVISION	Dimensionless
Device	12	PROP_APPLICATION_SOFTWARE_VERSION	Dimensionless
Device	98	PROP_PROTOCOL_VERSION	Dimensionless
Device	139	PROP_PROTOCOL_REVISION	Dimensionless
Device	97	PROP_PROTOCOL_SERVICES_SUPPORTED	Dimensionless
Device	96	PROP_PROTOCOL_OBJECT_TYPES_SUPPORTED	Dimensionless
Device	76	PROP_OBJECT_LIST	Dimensionless
Device	62	PROP_MAX_APDU_LENGTH_ACCEPTED	Dimensionless
Device	107	PROP_SEGMENTATION_SUPPORTED	Dimensionless
Device	11	PROP_APDU_TIMEOUT	Dimensionless
Device	73	PROP_NUMBER_OF_APDU_RETRIES	Dimensionless
Device	155	PROP_DATABASE_REVISION	Dimensionless
Device	63	PROP_MAX_INFO_FRAMES	Dimensionless
Device	64	PROP_MAX_MASTER	Dimensionless
Analog Input	AI-0	Volume_Heat_Conveying_Liquid	l
Analog Input	AI-1	Volume_Heat_Conveying_Liquid	m3
Analog Input	AI-2	Thermal_Energy_Heat_Counter_Low	Wh, kWh
Analog Input	AI-3	Thermal_Energy_Heat_Counter_High	kWh, MWh
Analog Input	AI-4	Thermal_Energy_Heat_Partial_Counter_Low	Wh, kWh
Analog Input	AI-5	Thermal_Energy_Heat_Partial_Counter_High	kWh, MWh
Analog Input	AI-6	Volume_Cool_Conveying_Liquid	l
Analog Input	AI-7	Volume_Cool_Conveying_Liquid	m3
Analog Input	AI-8	Thermal_Energy_Cool_Counter_Low	Wh, kWh
Analog Input	AI-9	Thermal_Energy_Cool_Counter_High	kWh, MWh
Analog Input	AI-10	Thermal_Energy_Cool_Partial_Counter_Low	Wh, kWh
Analog Input	AI-11	Thermal_Energy_Cool_Partial_Counter_High	kWh, MWh
Analog Input	AI-12	Volume_Hot_Water	l
Analog Input	AI-13	Volume_Hot_Water	m3
Analog Input	AI-14	Volume_Hot_Water_Partial_Counter	l
Analog Input	AI-15	Volume_Hot_Water_Partial_Counter	m3
Analog Input	AI-16	Volume_Cold_Water	l
Analog Input	AI-17	Volume_Cold_Water	m3
Analog Input	AI-18	Volume_Cold_Water_Partial_Counter	l
Analog Input	AI-19	Volume_Cold_Water_Partial_Counter	m3
Analog Input	AI-20	Thermal_Power	W, kW, MW
Analog Input	AI-21	Flow_Rate	m3

Analog Input	AI-22	Flow_Temperature	°C
Analog Input	AI-23	Return_Temperature	°C
Analog Input	AI-24	Delta_Temperature	°C
Analog Input	AI-25	Power %	%
Analog Input	AI-26	Flow rate %	%
Analog Input	AI-27	T1 %	%
Analog Input	AI-28	T2 %	%
Analog Input	AI-29	Delta T %	%
BinaryInput	BI-0	Thermal Power max alarm	Dimensionless
BinaryInput	BI-1	Thermal Power min alarm	Dimensionless
BinaryInput	BI-2	DT max alarm	Dimensionless
BinaryInput	BI-3	DT min alarm	Dimensionless
BinaryInput	BI-4	T1 max alarm	Dimensionless
BinaryInput	BI-5	T1 min alarm	Dimensionless
BinaryInput	BI-6	T2 max alarm	Dimensionless
BinaryInput	BI-7	T2 min alarm	Dimensionless
BinaryInput	BI-8	Flow rate max alarm	Dimensionless
BinaryInput	BI-9	Flow rate min alarm	Dimensionless
BinaryInput	BI-10	Measure overflow	Dimensionless
BinaryInput	BI-11	Pulse overflow	Dimensionless
BinaryInput	BI-12	Analog input out range	Dimensionless
BinaryInput	BI-13	Energy out range	Dimensionless
BinaryInput	BI-14	RTD error	Dimensionless
BinaryInput	BI-15	Supply error	Dimensionless
BinaryInput	BI-16	Plant type: Off=Heat On=Cool	Dimensionless
BinaryInput	BI-17	Control Plant type: Off=Local On=remote	Dimensionless
BinaryOutput	BO-0	Plant Type Selection: Off=Heat On=Cool	Dimensionless
BinaryOutput	BO-1	Reset Partial Counters (all):off=Count; On=Reset	Dimensionless
BinaryOutput	BO-2	Reset Event Logger	Dimensionless

## BACnet Interoperability Building Block (BIBB's):

<b>BIBB Data Sharing</b>	<b>Name</b>	<b>BACnet Service</b>	<b>Init</b>	<b>Exec</b>
DS-RP-B	Data Sharing - Read Property-B	ReadProperty		X
DS-WP-B	Data Sharing - Write Property-B	WriteProperty		X

<b>Device Management</b>	<b>Name</b>	<b>BACnet Service</b>	<b>Init</b>	<b>Exec</b>
DM-DDB-B	Device Management - Dynamic Device Binding-B	Who-Is		X
		I-Am	X	
DM-DOB-B	Device Management - Dynamic Object Binding-B	Who-Has		X
		I-Have	X	
DM-RD-B	Device Management - Reinitialize Device-B	ReinitializeDevice		X

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