

LoRaWAN®
ACM
CM3010

ELSTER/HONEYWELL



LoRaWAN® Absolute Encoder Communication Module (ACM) enables the acquisition of gas consumption data from Elster/ Honeywell Absolute Encoder AE2 and AE3 gas meters and transmits it wirelessly to the available LoRaWAN® network.

LoRaWAN® ACM is meant to be attached to the existing gas meter.

OVERVIEW

Efficient

LoRaWAN® ACM has bidirectional, battery powered, long range transceiver with low power consumption.

Intelligent

Real-time absolute consumption data is gathered wirelessly and processed automatically. Data is accessible from your LoRaWAN® provider.

APPLICATIONS

Gas metering

Frequent reporting provides a detailed usage overview.

FEATURES

- Long range wireless data transmission
- Absolute Encoder AE2 and AE3 reading
- Pre-installed long-life battery
- Gas metering
- Configurable reporting interval
- Maintenance free - install & forget
- Easy installation
- Average life 10 years*
- Secure communication

* Lifetime depends from the device location and reporting interval.

SPECIFICATIONS

Width:	47.0 mm
Height:	102.0 mm
Length:	123.0 mm
Weight:	200g
Operating temperature:	-20°C ... +65°C
Communication range:	up to 15km*
Tx power:	up to +20dBm
Rx Sensitivity:	-140dBm
MAC Layer:	LoRaWAN®
Physical Layer:	LoRa®
Body material:	PC
IP Rating:	54
Communication:	LoRaWAN®

* Communication range is dependent on the location of the sensor and nearest base station.

COMMUNICATION

Bit order:	LSB
Usage reporting:	Unconfirmed messages
Status reporting:	Confirmed messages

PORT LIST

fPort	Usage	Format	Uplink	Unit	Comment
16	Gas usage	uint32_t	yes	liters	Cumulative
24	Status		yes	-	Defined below
50	Configuration		no	-	Defined below
99	Boot/Debug		yes	-	Defined below

fPort16 gas usage

Byte 0	Byte 1	Byte 2	Byte 3
Liters (uint32)			

Message sample

Message in base64

```
TikAAA==
```

Message decoded to hex

```
4E290000
```

HEX message flip for MSB

```
0000294E
```

HEX message converted to decimal

```
10574 (liters)
```

fPort 24 Status Message

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Usage counter (uint32)				Battery Offset (int8)	Temperature °C (int8)	Sensor RSSI dBm (int8)

Message sample

Message in base64

```
EQAAAE4kqgYE
```

Message decoded to hex

```
110000004E24AA0604
```

Usage counter 11000000 HEX message flip for MSB

```
00000011
```

HEX message converted to decimal

```
17 (liters)
```

Battery HEX message

```
4E
```

HEX message converted to decimal

```
78
```

Offset value converted to volts

```
2.974V (see volts conversion map)
```

Temperature HEX message

```
24
```

HEX message converted to decimal

```
36°C
```

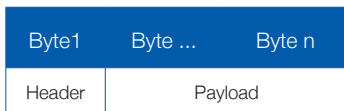
Sensor RSSI HEX message

```
AA
```

HEX message converted to signed decimal

```
-42 dBm
```

fPort 50 Configuration Message



Value	Bit #	Parameter	Payload size	Type	Value	Unit	Comment
0: not sent 1: sent	0	Reporting interval	32bit	uint	3600	seconds	0 = disabled
	1	Reporting interval	32bit	uint	1000	liters	0 = disabled
	2	Status interval	32bit	uint	86400	seconds	0 = default
	3	RFU					
	4	RFU					
	5	RFU					
	6	RFU					
	7	RFU					

Message sample

Message goal: Configure reporting interval to 600 sec & reporting interval to 400 liters

Header

Function selection

```

1 : Reporting interval (seconds) - set
1 : Reporting interval (units) - set
0 : Status interval - not set
0 : Counter - not set
0 : Temperature threshold - not set
0 : RFU
0 : RFU
0 : Functions - not set
    
```

Selection converted to binary

```
00000011
```

Selection converted to HEX

```
03
```

Reporting interval (seconds)

Converting interval 600 to HEX

258

Flip interval for LSB

58020000

Reporting interval (units)

Converting interval 400 to HEX

190

Flip interval for LSB

90010000

Compile message for sending (HEX)

03|58020000|90010000

Control value in base64 to control after sending

A1gCAACQAQAA

fPort 51 Update message

Byte 0
Header
FF

Activate update mode for BT update for 2 minutes. if nothing is done the device will reboot, join and resume working

NB! **Only** unconfirmed messages should be used for this message.

Message sample

Message goal: Set device to update mode

Header

Select Header HEX code

FF

Compile message for sending (HEX)

FF

Control value in base64 to control after sending

/w==

fPort 99 Boot/Debug Message

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11	Byte 12
Header (HEX)	Payload										
0x00 Boot	Serial (HEX)				Firmware (HEX)			Elster meter ID (uint32)			
0x01 Shutdown											

Message sample

Message in base64

```
ADoAAksAApiXyL8B
```

Message decoded to hex

```
003A00024B00029897C8BF01
```

Header HEX message

```
00
```

HEX translated to type

```
Boot
```

Serial HEX message

```
3A00024B
```

Flip HEX message for MSB

```
4B02003A
```

Firmware version

Major version in HEX

```
00
```

HEX value converted to decimal

```
0
```

Minor version in HEX

```
02
```

HEX value converted to decimal

```
2
```

Patch version in HEX

```
98
```

HEX value converted to decimal

```
152
```

Elster meter ID HEX message

97C8BF01

Flip HEX message for MSB

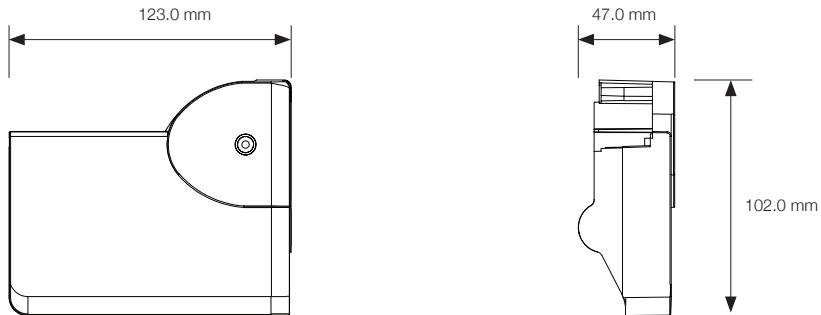
01BFC897

Convert HEX message to decimal

29345943

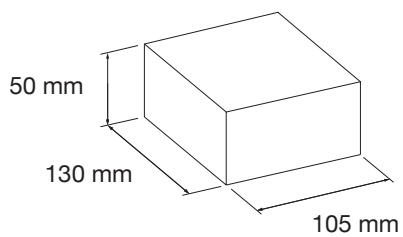
DIMENSIONS / PACKAGING

Dimensions



Packaging

1 pcs box



COMPATIBILITY

Supported protocols

AE02:04.01:01.01 (M-BUS Standard (EN 13757))

AE02:02.01:01.01 (M-BUS OMS)

AE03:05.01:01.01 ("MP" (M-BUS/SCR+ OBIS OMS))

AE03:04.01:01.01 (M-BUS - GWF)

ORDERING INFORMATION

Article / SKU	Package qty	Frequency	Region
CM3010A#0001EU	1	868 MHz	EU
CM3010B#0001AU	1	922 MHz	AU
CM3010C#0001US	1	915 MHz	US
CM3010D#0001AS	1	923 MHz	AS
CM3010E#0001CN	1	780 MHz	CN
CM3010F#0001KR	1	922 MHz	KR
CM3010G#0001EU	1	433 MHz	EU
CM3010H#0001CN	1	470 MHz	CN
CM3010I#0001IN	1	866 MHz	IN

CONTACT INFORMATION

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REVISION HISTORY

- 1.0 - First version
- 1.1 - Added ordering details.
- 1.2 - Communication protocol & battery info added
- 1.3 - Consumption field size corrected. Compatibility added.

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