MT-331 – Telemetry Module

- Integral 2G/3G or 2G/4G modem, depending on the version
- Independent CPU and watchdog system
- Electronics protected with conformal coating
- GPRS/LTE packet transmission
- 4 configurable binary inputs/outputs
- 2 dedicated binary/counter inputs
- 2 configurable binary/4–20 mA analogue inputs/ 0–10 V analogue inputs
- 1-Wire port (support up to four DS18B20 temperature sensors)
- Supply output for powering external sensor (7–24 V)
- LED status diodes (network logon, GSM signal strength, device activity, status of the module)
- Internal built-in Li-ion battery (1300/2600 mAh-option)
- Energy saving functions for DC supply or solar panel (green line products of Inventia)
- Data logger with capacity of 28000 records
- Remote configuration, programming, actualizations and diagnostic via GPRS/LTE
- Micro USB configuration port
- Internal temperature measurement

- Option of soldered MIM card replaced SIM or using for redundancy communications
- Pressure and/or humidity measurements
- 3 year warranty

MT-331 Telemetry module is a modern unit equipped in 2G/3G uBlox SARA-U201 or modem 2G/4G uBlox LARA-R211, depending on the version. MT-331 is keeping aluminum housing and attractive price of economical family and offer resources and possibilities that are available in advanced telemetry devices. Configurable modes of inputs/outputs allow to prepare resources for the specific needs of application. Except 2 dedicated binary inputs user can configured additional 4 inputs (also as counter mode) and additional 2 binary inputs (instead of analogue). In control applications that required outputs user can configure 4 channels. Measure functions can be realized by 2 configurable analogue inputs, mode 4–20 mA or 0–10 V. Built-in Li-ion battery keeps power on in case of loss the main powers supply. Supply output provide a stabilized voltage for external circuits and measurement sensors, also in energy saving mode.

MT-331 Telemetry module is a green line, energy efficient module compatible with renewable energy sources. Energy saving mode supported with internal built-in LI-ion battery allows to connect external battery's as main supply. Device can be also supplied directly from solar panels. In energy saving mode the module "goes to sleep" (as in batteries family modules MT-7xx) and wakes up according to configured schedule or occurrence of some events.

Except standard SIM cards (Subscriber Identification Module) the MT-331 used built-in MIM card (Machine Identification Module) which is soldered in packaging mount process of electronics. Depending from preferences user can use:

a. Only MIM card, without SIM
b. Only SIM card, without MIM activation
c. SIM and MIM card (mobile network redundancy).

Module is equipped with flash memory reserved for capacity of 28000 records data logger with maximal

resolution of 1 sec. When actual value of register will be saved with 5 minutes period, the logger can store measured data of 96 days.

With MT-331 module we supply free of charge applications: MT-Manager and MTC for remote and local configuration, resources monitoring and firmware actualization, MT-Data Provider (OPC server, relation data base data saving engine) for communications environment for Microsoft Windows. These applications allow easy integration with available on the market popular SCADA systems.

MT-331 is equipped with stylish aluminum housing with DIN rail connectors. Though the MT-331 is derived from economical Inventia modules series it has a 3 year warranty, like in professional series, and we are sure it will be useful in many professional applications.

Functionality:

- Transmission modes:
  - » GPRS/UMTS/HSPA+/LTE – packet transmission
  - » SMS
  - » MQTT 3.1
- Configurable resources of binary inputs, outputs, counters and analogues
- Data logger with 1 second resolution stored data events in flash memory (capacity 28000 records)
- Remote access to configuration parameters, remote firmware changing
- Configurable access security – IP and Phone list, optional password
- 6 binary inputs can be configured as counters (up to 100 Hz, without analogue inputs)
- Unsolicited message according to event rules and scheduler
- Dynamical SMS contents
- DIN rail mounting
- Energy saving function – modem is powered only when transmitting
- User Friendly configuration software

General

Size (height x width x depth)	124x63x30 mm
Mass	100 g
Mounting method	DIN Rail 35 mm
Operating temperature	0 to +55 °C for battery 1,3 Ah -20 to +55 °C for battery 2,6 Ah
Protection class	IP 30

Modem

Producer/Type	uBlox SARA-U201	LARA-R211
Region	Global	Europe, APAC
GSM 2G Band	850/900/1800/1900 MHz	900/1800 MHz
UMTS	Five Bands 800/850/900/1900/2100 MHz	---
LTE	---	3, 7, 20 (800, 1800, 2600)
Antenna	50 Ω	50 Ω
SIM Card	Mini (25 x 15) mm	Mini (25 x 15) mm

Power supply

Direct current DC	9 – 30 V		
Mean input current (for 12 V DC without external recipients)	Idle 10 mA	Active 180 mA	Max 250 mA
Internal lithium-ion accumulator	1,3 or 2,6 Ah		

Internal temperature sensor

Sensor type	internal
Measuring range	-25 to +80 °C
Accuracy	±1 °C

Sensors powering output VOUT

Output voltage regulation range	7 – 24 V
Regulation step	0,1 V
Max. output current	20 mA at 24 V 40 mA at 7 – 16 V

Binary inputs I1 – I6

Input voltage	30 V
Input resistance	12,7 kΩ
Input voltage ON (1)	> 9 V
Input voltage OFF (0)	< 3 V

Binary inputs I7 – I8

Input voltage	30 V
Input resistance	15,4 kΩ
Input voltage ON (1)	> 9 V
Input voltage OFF (0)	< 3 V
Minimal pulse length "1"	10 ms

Binary outputs Q1 – Q4

Output type	transistor "open drain" type
Recommended mean current for a single Output	100 mA
Maximum current for a single Output	250 mA
Output Resistance in ON state	3 Ω max.
Maximum voltage applied	24 V

Analog inputs 1W, AN1, AN2

Input 1W – temperature measurement

Sensor type	1-Wire DS18B20
Measuring range	-55...+125 °C
Accuracy	±1 °C

Input AN1, AN2 – voltage measurement

Measuring range	0 – 10 V
Max. input voltage	18 V
Input resistance	207 kΩ typ.
A/D converter	12 bit
Accuracy	±0,5 %

Input AN1, AN2 – current measurement

Measuring range	4 – 20 mA
Max. input current	50 mA
Dynamic inputs impedance	120 Ω typ.
Voltage drop for 20mA	< 2,4 V max.
A/D converter	12 bit
Accuracy	±0,5 %

Drawings and dimensions (all dimensions in milimeters)