ENERGY METER AND DATA MANAGEMENT

ISONRG®

MANAGING ENERGY

DATA MANAGEMENT TERMINAL

The **DMT (Data Managment Terminal)** is a data center able to receive up to 120 M-Bus points of measure. Its can operate and monitor by M-Bus plants as complete systems with state-of-the-art technology and customer-friendly operation.

The 7**" TFT touch screen display** ensures easy-to-handle on-site operation without the need of a PC. Because it contains a Web server, the instrument can also be remotely operated via either a direct telephone link (GPRS) or an Intranet/Internet network. It can be operated with every Web browser which reproduces the operating display of the instruments and allows protocol files to be created.

Existing plants can be updated very simply or else expanded as required, since the DMT is totally compatible with the earlier **M-Bus protocol (EN1434)**.

Features

- M-Bus central device with integrated Web server
- Capacity for up to 60 or 120 M-Bus meters
- 7" touch screen and plain text in various languages
- Data logger with internal memory (4Gb)
- Lan 10/100bps full duplex via RJ-45
- Integrated telephone modems (GPRS) as optional
- RS232 and RS485 interface
- Wi-Fi Connection as optional
- SD memory card slot (up to 32Gb)

With consistent use of World Wide Web technology, the DMT supports the simple changeover to various operating languages located in the internal memory.

This means that any change requires another language file in the internal memory.

The following languages are at present available:

- Italian - English - Spanish - Portuguese

The rear panel provides various connections.

The **DMT** can record plant and meter data at periodical intervals inside the internal memory (4 Gb).

Can be used a SD card as a removable data carrier between the **DMT** and a PC if the data are recorded in the internal memory.

The size of the SD memory card determines the extent of the memory available for carrying data from the **DMT**. The maximum capacity of the SD card is 32 GB.

All logger files are stored exclusively in CSV format (Microsoft Excel / ASCII-File /*.CSV).

The semicolon (;) is thus used for column formatting and the carriage return (CR) for a new line.

The internal memory also contains the Linux driver, language information and the configuration data for the devices.

Address readed	**Secondary address**
M-Bus installation	**2- wire system**
M-Bus data transmission rate	**2400 Baude**
IFK	

DMT applications

The fields of applications of the **DMT** range from analytical building management for invoicing services to facility management and domestic systems. It can be installed wherever a simple and cost-effective solution is required for on-site operation or remote monitoring. The **DMT** is an Internet-compatible M-Bus central device with state-of-the-art technology for the following applications:

DMT as a modern remote display:

DMT supplies on-site readings from all meters connected to an M-Bus (Meter-Bus) network. For the first time an instrument of this class is able to offer a 7" LCD touch screen with an easy, self-explanatory procedure in your own particular language. Readings require no PC, no special reading program and no interface cable.

Using the data logger:

The data can also be optionally recorded on the inner memory and then transferred to a SD memory card for later evaluation on a PC. The **DMT** works as M-Bus Internet gateway. With **DMT** your data is now online. The **DMT** links M-Bus and Web technologies is an ideal combination. As an M-Bus/Internet gateway, the **DMT** supplies M-Bus data in seconds to your workstation from meters recording water, heat, gas and electricity. Using a standard Internet browser and a direct modem connection, the **DMT** can be remotely operated or data can be downloaded as an Excel-compatible file and later exported to a billing system.

UP TO 120 M-BUS POINTS OF MEASURE

	CALCULATOR FOR SYSTEM	COMPACT	FLOW SENSOR FOR SYSTEM		
			ELECTROMAGNETIC SENSOR	ULTRASONIC SENSOR	MECHANICAL SENSOR
			ISOMAG or others	ISOFLUX or others	
					
1		–	●	●	●
2		–	●	●	●
3	–		–	–	–
4	–		●*	●*	●*
5		–	●	●	●
6					
7					
8					
120	UP TO 120 M-BUS POINTS OF MEASURE				

Any meter for any kind of measurement (e.g. gas, electricity etc..) if provided by Mbus protocol can be connected to the DMT.

* Can be used for the second circuit

ENERGY METERS

HVAC&R - Building automation

Thermal energy is determined by a calculation which derives from the application of the following physical relation:

E=V*K*Δt

Where:

V = Volume of the thermal carrierfluid (to be measured)

K = Specific calorific coefficient of the thermal carrier fluid called Enthalpy (in relation to the internal thermal fluid in use, see PTB tables)

Δt = Thermal carrier fluid temperature difference between IN-FLOW and RETURN-FLOW (to be measured)

HEATING/COOLING METER:

Direct measuring methodology requires the flow to be measured directly from the thermal carrier fluid and the energy is usually performed by using:

- **flow meter by pulses or analog**
- **energy calculator**
- **two paired temperature sensors**

ML311 ENERGY METER

ML311 is an Energy meter usable for any kind of flow meter with pulse or analog output as: Turbines, Bulk, Woltmann, Impellers, Single or Multi jet, Ultrasonic and, of course, Electromagnetic meters.

ML311 is also certified MID004 referring to EN1434 norms following Directives 2004/22, very important for European market.

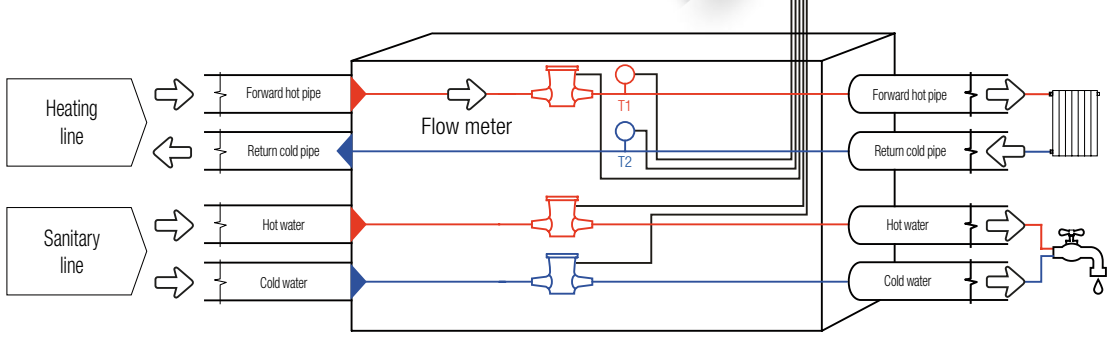
The new Energy meter has got a very accurated calculation either for water or other fluid as Glycole, an automatic switch from hot to cold for cogeneration and trigeneration plants, a large 12 months logger and can get until three pulses signals use to cold and heat home water.

ML311 can be connected to any kind of thermistor probe as PT100/500/1000 with 2 or 4 wires.

It can also transmit data by different protocols as RS232, RS485, MODbus, BACnet, Mbus.

ISONRG

ML 311 ENERGY	
Housing	PPO housing sealable
Protection rate	IP40/IP54 (with covering)
Version	Stand alone - Housing for mounting on DIN rail (acc. to DIN60715)
Display	4 lines × 15 characters, back lighted (blue version opt.)
Language	6 programmable languages (I, E , S, F, D, P)
Special function	Bi-directional; Dual range; Diagnostic; Energy Saving; Heat/cold switch; Reset input
Pulse/Freq Outs	Programmable functions/open collector (N° 2, 1250Hz, 100mA, 40Vdc - 12,5KHz opt.)
Digital/Analog Inputs	Programmable function: 1 Analog (flow rate) 3 Pulses (hot & cold water & volume)
Current Output	N°1, 0/4....20mA - RL=1000 (i.e. volume/energy)
Data logger	12 months (i.e. consumption for heating/cooling)
Serial com	RS232, RS485, MODBUS, BACnet MS/TP, M-bus, N2Open
Power supply	90÷265 Vac - 45÷66Hz or 18÷63Vdc/15÷45Vac - 45/66Hz optional
Accuracy	± 0,2% r.v.
Repeatability	Better than 0,1%



ENERGY METERS

IFK ENERGY METER

The device is equipped with 8-digits LCD (Liquid Crystal Display) with special symbols to display parameters, measurement units and operation modes.

The following information can be displayed:

- integral and instantaneous measured parameters
- archive data
- device configuration information
- report printing control information

Display resolution (directly corresponding with pulse output value), depending on programmed maximum flow rate value.

The **IFK** is designed for metering and monitoring of heating and cooling energy in closed heating/cooling systems, installed in dwelling houses, office buildings or energy plants.

The calculator **IFK** is a sub-assembly of a heat meter, together with standard flow sensors (based on ultrasonic, electromagnetic or mechanical measurement principle with standard pulse output), temperature and pressure sensors.

IFK measures and calculates supplied flow parameters, displays measurement data on the display, records and stores data in the internal archive.

The calculator can serve two independent heating systems simultaneously:

- up to 5 temperature measurement channels,
- up to 5 flow measurement channels,
- up to 2 pressure measurement channels.

Data recording and storage

Following daily, weekly and monthly parameter values are recorded in calculator's memory:

- absolute integral instantaneous parameter values
- hourly, weekly and monthly alterations of integral parameters
- hourly, weekly and monthly average values for all measured temperature and pressure values- error and information codes that occurred during the last hour, day and month Archive data is retained even if device is disconnected from power supply for the whole lifetime period.

Data logger capacity:

Following daily, weekly and monthly parameter values are recorded in calculator's memory:

- absolute integral instantaneous parameter values
- hourly, weekly and monthly alterations of integral parameters
- hourly, weekly and monthly average values for all measured temperature and pressure values
- error and information codes that occurred during the last hour, day and month

Archive data is retained even if device is disconnected from power supply for the whole lifetime period.

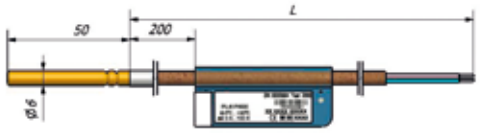
- up to last 32 months – for daily and monthly records
- up to last 3,5 months (2600 hours) - for hourly records.

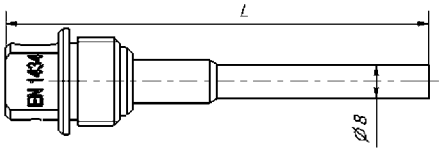
IFK ENERGY	
Housing	PPO housing sealable
Protection rate	IP65
Version	Stand alone - Housing for mounting on DIN rail (acc. to DIN60715)
Display	8 digits LCD
Language	EN
Special function	Two indipendent heating systems with 5 temperature 5 flow measurement channels 2 pressure measurement channels
Pulse/Freq Outs	Two outputs class OD
Digital/Analog Inputs	Digital inputs
Current Output	Two configurable: 0-20mA or 4-20mA
Data logger	Up to last 32 months (for daily and monthly records)
Serial com	Mbus; Mod Bus; RF
Power supply	Battery or 230Vac
Accuracy	Better than ± (0,5% + 3/ DT)%

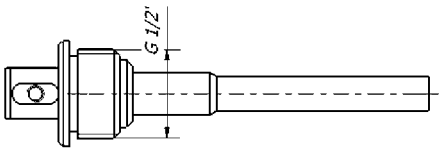
02/2016 gandini-rendina.com

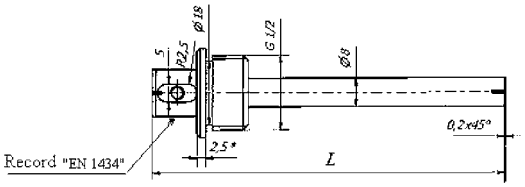
Temperature sensor pair PLT/PLH

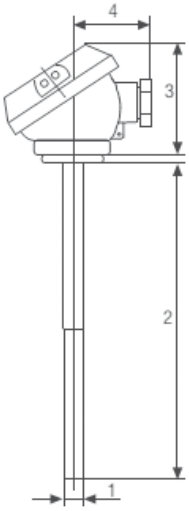
Wire connection	**PLT**: 2 wire max 5 mt 4 wire max 10 mt - with head **PLH**: until 30 mt
Sensor type	Pt500 (Pt 100 & Pt 1000 on request)
Measurement	Temperature difference, which is measured by temperature sensors pair and which is directly related to the quantity of thermal energy, calculated by the calculator, where are connected.
Measurement limits:	▶ limits for temperature difference ranges: **PLT**: Δ θ = 3.... 100K; 2.... 100K **PLH**: Δ θ = 3.... 180 °K
Temp. measurement range	**PLT**: 0 °C … 150 °K - **PLH**: 180 °C
Maximum admissible temperature of medium	**PLT**: 150 °C - **PLH**: 180 °C
Tolerance class	B according to EN 60751 **PLH**: Δ on request
Connection cable length for 2/4 wires	**PLT**: 3 mt, 5 mt, 10 mt **PLH**: longer cables by head version to be wired
Connection cable type for 2-wire	Not shielded, 2 × 0,5 mm^2 (connected permanently)
Connection cable type for 4-wire	Not shielded, 4 × 0,35 mm^2 (connected permanently)
Max permissible RMS value of sensor current	0,5 mA
Response time t0,5	< 10 s
Total resistance of signal leads (2-wire connection)	• 0,22 Ω - for cable length 3 m (2 wire) • 0,36 Ω - for cable length 5 m (2 wire) • 0,72 Ω - for cable length 10 m (4 wire)
Environmental	• Ambient temperature +5 °C … +55 °C • Mechanical environment Class M1 • Electromagnetic environment class E1
Approvals	Paired calibrated at EN1434-MI004
Pockets	**PLT**: brass until DN150, max stem length: 225 mm PN16 **PLH**: SSteel >I DN150, max stem length: 225 mm PN40

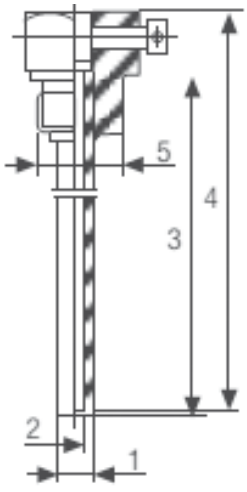












Information shown in this brochure are not exhaustive, for detailed characteristics refer to individual data sheet.

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

Production & Warehouse
35044 Montagnana (PD) Italy
Via Piemonte, 1

20092 Cinisello Balsamo (MI) Italy
Viale Matteotti, 62

Cinisello Balsamo - Milano (Italy)
Via Fratelli Gracchi, 27
tel. +39 0266027.1 - fax +39 026123202
Italy: www.isoil.it - **isothermic@isoil.it**
International: www.isoil.com - **sales@isoil.it**