



MaxAware
wireless control

Where accuracy counts...

Wireless Transmitters 2009



Quality control is easier than ever!

Wireless measurement system is an affordable solution for quality control in production plants.

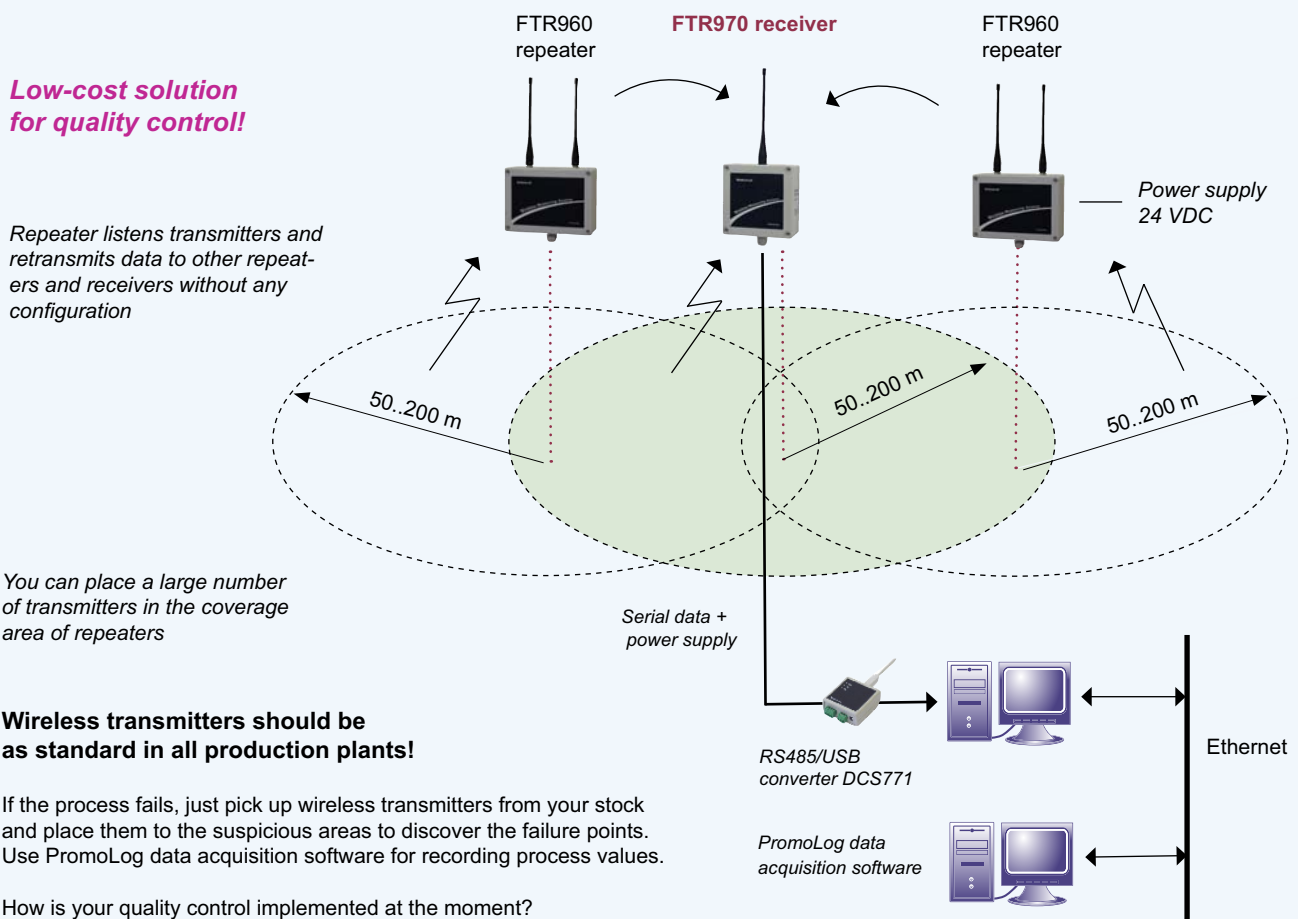
Application areas

- Temperature and mA/V- measurements
- Testing in the field circumstances
- Cold transportation
- Cold storage room monitoring
- Moving targets
- Equipment testing in maintenance

Wireless data logging is now simple



Build a large data logging network easily by using repeaters

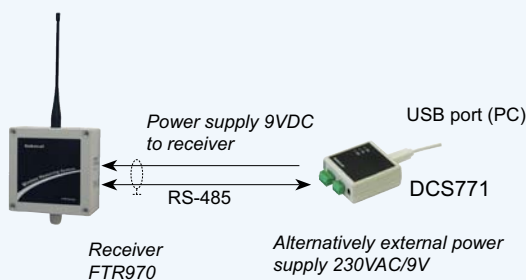


Receivers



	Receiver	Receiver with memory	Repeater	Receiver for DIN rail	Receiver with memory
Model	FTR970	FTR970-PRO	FTR960	RTR970	RTR970-PRO
Manufacturer	Nokeval	Nokeval	Nokeval	Nokeval	Nokeval
Input / Radio signal	Frequency 433.92 MHz	Frequency 433.92 MHz	Frequency 433.92 MHz	Frequency 433.92 MHz	Frequency 433.92 MHz
Number of channels	up to 1000 *	up to 1000 *	up to 500 *	up to 1000 *	up to 1000 *
Receiver	•	•	-	•	•
Repeater	-	-	•	-	-
Non-volatile memory	-	150.000 samples	-	-	150.000 samples
Data processing	PromoLog software (PC)	Readable by customer	-	PromoLog software (PC)	Readable by customer
Serial data / Ouput	RS485, RS232, USB	RS485, RS232, USB	-	RS485, RS232, USB	RS485, RS232, USB
Protocol	Nokeval SCL	SCL and Modbus RTU	-	Nokeval SCL	SCL and Modbus RTU
Operating temperature	-30..+60°C	-30..+60°C	-30..+60°C	-30..+60°C	-30..+60°C
Configuration software	MekuWin	MekuWin	-	MekuWin	MekuWin
Power supply	8..30 VDC	8..28 VDC	8..30 VDC	8..30 VDC	8..28 VDC
Installation	Field enclosure	Field enclosure	Field enclosure	DIN rail, 35 mm	DIN rail, 35 mm
Dimensions	130 x 130 x 60 mm WHD	130 x 130 x 60 mm WHD	180 x 130 x 60 mm WHD	70 x 85 x 60 mm WHD	70 x 85 x 60 mm WHD
Protection class	IP65	IP65	IP65	IP20	IP20
Note	Data processing by PromoLog data acquisition software or user's software.	The FTR970-PRO works independently without realtime data processing in PC.	The FTR960 listens to transmitters and retransmits data to a receiver or repeater.	Data processing by PromoLog data acquisition software or user's software.	The RTR970-PRO works independently without realtime data processing in PC.
* depends on transmission interval					
	FTR970	FTR970-PRO	FTR960	RTR970	RTR970-PRO

Versatile USB-RS485 converter DCS771



DCS771 serial converter is powered from USB port and can provide supply voltage to one receiver. More than one receivers can be powered through DCS771 if a 9 VDC external power supply is used.

Computer can be shut down without losing any measurement data if an external power supply is used with FTR970-PRO or RTR970-PRO receivers. Receivers have a memory of 150.000 samples.

Repeater FTR960



FTR960 has separate antennas for receiving and transmitting data. Repeaters do not need any configuration and can be also added afterwards if the installation environment of the wireless measuring system changes. Only 8...30 VDC power supply is required.

The use of repeaters reduces the maximum number of transmitters because repeaters use the same frequency channel as transmitters. The maximum amount of transmitters is determined by the transmission interval.

Desktop receiver MTR970



Features:
Frequency 433.92 MHz

Serial connection:
RS485, RS232,
Nokeval SCL protocol

Operating environment:
0..+60°C, indoors

Power supply:
9..30 VDC

Dimensions:
75 x 120 25 mm WHD

FTR264RHT MaxAware Wireless Control

Battery powered wireless RH and Temperature transmitter



Battery powered wireless humidity and temperature transmitter in robust ABS housing, suited for wall mounting.

Two types are available:

- FTR264RHT, RH and T transmitter
- FTR264RHT-2, same as above but with 2 additional external inputs for analog signals

Technic specifications:

Range	: 0..100%RH, -30..70°C
Accuracy	: ± 2%RH, ± 0,5°C
Send interval	: 4s .. 5 min.
Radio signal	: 433.92 MHz
max.range	: 20..100 m (dep. on situation)
Power supply	: 2x 3,6V Litium AA,2400mAh
Bat. life	: 1 to 3 year (dep. on send interval)
Dimensions	: 196 x 80 x 36mm

Applied in

- * Laboratories
- * Shopping malls
- * cool rooms
- * Out-door (with optional wethersheild)
- * Storage rooms
- * Computer rooms



Wireless Transmitters

MaxAware Wireless Control

Receivers

Transmitters

Software

Applications

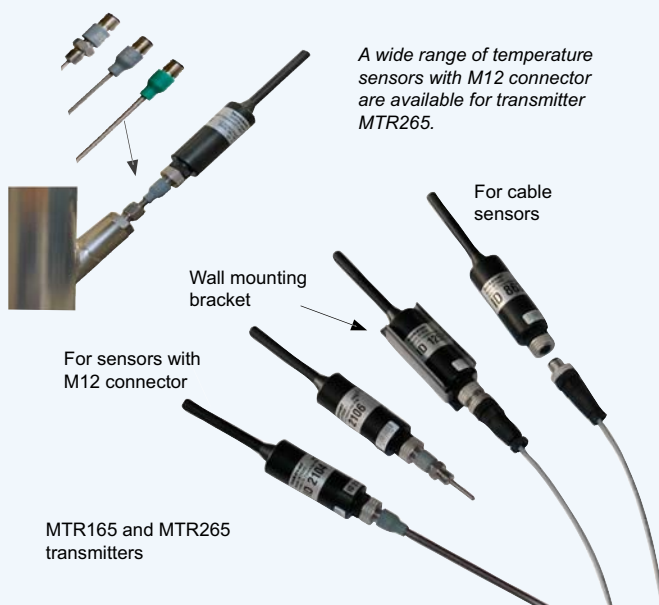
Temperature sensors

New Wireless Transmitter Series

Easy to recalibrate

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	Internal temperature sensor	External temperature sensor	Replacement measuring modules	Transmitter for 4..20 mA, 0..10V	Transmitter for temp. sensors
Model	FT10-RT433-IS	FT10-RT433-CS	FT10-IS / F10-CS	MTR165	MTR265
Manufacturer	Nokeval	Nokeval	Nokeval	Nokeval	Nokeval
Number of channels	1	1	1	1	1
Input	Internal Pt100 sensor inside the replaceable measuring module	External Pt100 cable sensor with the replaceable measuring module	Internal or external Pt100 sensor. Factory calibrated replacement measuring module. User replaceable.	0..20 mA, 4..20 mA, 0..2000 mV, 0..10V, 0..100 V	Pt100, thermocouple K, J, T, E, L, N
Radio signal	Frequency 433.92 MHz	Frequency 433.92 MHz		Frequency 433.92 MHz	Frequency 433.92 MHz
Operating temperature	-30..+60°C	-30..+60°C	-30..+60°C	-30..+70°C	-30..+70°C
Maximum range	50..500 m	50..500 m	-	50..300 m	50..300 m
Accuracy	< ±0.5°C	< ±0.5°C	< ±0.5°C	±0.05% of span	±0.2°C Pt100 ±0.75°C thermocouple
Configuration	MekuWin or 6790	MekuWin or 6790	MekuWin or 6790	MekuWin or 6790	MekuWin or 6790
Transmitting interval	5 s..5 min	5 s..5 min		5 s..5 min	5 s..5 min
Sensor connection	Internal sensor	Fixed external sensor	Designed for regular calibration demands.	M12 connector	M12 connector
Power supply	1.5V alkaline battery size LR6 (AA)	1.5V alkaline battery size LR6 (AA)	FT10-IS Internal Pt100 sensor	3V Lithium battery size CR2032	3V Lithium battery size CR2032
Battery life	Typically > 3 years *	Typically > 3 years *	FT10-CS External Pt100 cable sensor	Typically 1 year *	Typically 1 year *
Dimensions	60 x 352 x 33 mm WHD	60 x 352 x 33 mm WHD		92 x Ø29 mm + 80 mm	92 x Ø29 mm + 80 mm
Protection class	IP67 (watertight)	IP67 (watertight)		IP66	IP66
Note	Developed for regular calibration demands in cold rooms and freezers. Response time 15 min. EN 13485 certified.	Cable sensor Pt100: Temperature range -50..+250°C Accuracy ±0.3°C Length of probe 50 mm, stainless steel, ø6 mm with teflon cable 3 m	External sensor type: PT6T-Pt100-50-6.0-3m/3 Length 50 mm, ø6 mm, 2 m Teflon cable. Temperature range -50..+250°C	Includes wall mounting bracket and M12 connector with screw terminals for input wires. Input resistance 50 Ω for current inputs.	Includes wall mounting bracket and M12 connector (with screw terminals) for temperature sensor.
*-IS	Meas. module included				
*-CS		without sensor			



FTR262 transmitter can be powered using either batteries (2 x standard AA) or external 9..24 VDC power supply. This transmitter is specially suitable for measurements with short transmission intervals (5..30 s) and has long battery life time.



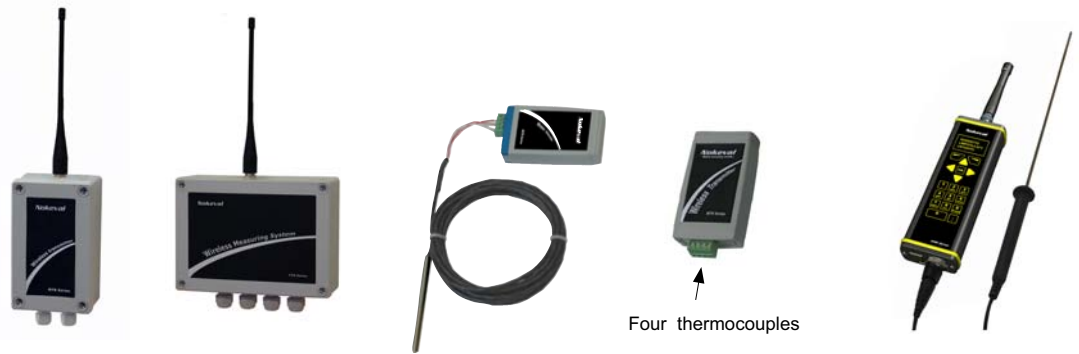
FTR262

2 channel transmitter FTR860 is designed for wide supply voltage range 24...240 VAC or VDC.

FTR860 has two digital inputs that can be used, for example, to control when to send measurement data. This transmitter always requires an external supply voltage.



FTR860

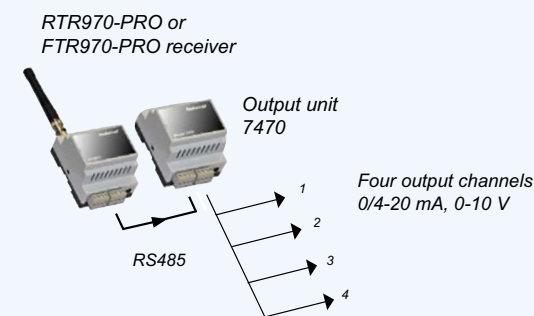


Four thermocouples

	Universal input	2 channel transmitter	Laboratory transmitter	Laboratory transmitter	Wireless portable meter
Model	FTR262	FTR860	MTR262	MTR264	KMR260
Manufacturer	Nokeval	Nokeval	Nokeval	Nokeval	Nokeval
Number of channels	1	2	1	4	1
Inputs	Pt100, thermocouple K, J, T, E, L, N, 0..2000 mV, 0..10 V, 0..100 V, 0/4..20 mA	Pt100, thermocouple K, J, T, E, L, N, mV and 0/4..20 mA	Pt100, thermocouples K, J, T, E, L, N, mV, 0..10 V, 0..100 V, 0/4..20 mA 0..2000 mV	Thermocouples K, J, T, E, L, N and 0..2000 mV	Automatic sensor type detection between Pt100 and thermocouple K. Other sensors J and T.
Radio signal	Frequency 433.92 MHz	Frequency 433.92 MHz	Frequency 433.92 MHz	Frequency 433.92 MHz	Frequency 433.92 MHz
Operating temperature	-30..+60°C	-30..+60°C	0..+60°C	0..+60°C	0..+40°C
Maximum range	50..300 m	50..300 m	20..100 m	20..100 m	50..300 m
Accuracy	±0.2°C Pt100 sensor ±0.75°C or ±1.5°C TC **	±0.2°C Pt100 sensor ±0.75°C thermocouple	±0.2°C Pt100 sensor ±0.75°C or ±1.5°C TC **	±0.75°C or ±1.5°C **	±0.2°C Pt100 ±0.75°C thermocouple
Configuration	MekuWin or 6790	MekuWin or 6790	MekuWin or 6790	MekuWin or 6790	PromoLog or keypad
Transmitting interval	5 s..5 min	5 s..5 min	5 s..5 min	5 s..5 min	-
Sensor connection	Screw terminal 1,5 mm ²	Screw terminal 1,5 mm ²	Screw terminal, 1,5 mm ²	Screw terminal, 1,5 mm ²	Quick connector
Power supply	2 x 1.5 V AA battery or external 9-24 VDC	External power supply 24...240 VDC/VAC	3V Lithium battery size CR2032	3V Lithium battery size CR2032	LiPo battery, recharging using USB port
Battery life	Typically > 3 years *	-	Typically 1 year *	Typically 9 months *	10 h in continuous use
Dimensions	80 x 130 x 60 mm WHD	180 x 130 x 60 mm WHD	78 x 45 x 18 mm WHD	78 x 45 x 18 mm WHD	57 x 191 x 32 mm WHD
Protection class	IP65	IP65	IP20	IP20	IP64
Note	* Battery life with one minute transmitting interval at 25°C. ** TC accuracy in operating temperature 0..40°C (±0.75°C) and -30..+60°C (±1.5°C).	Suitable only for external power supply. Digital inputs: 2 digital inputs, 240 VDC/VAC max.	Field enclosure to IP65 as an option.	Field enclosure to IP65 as an option.	128 x 64 pixel self-luminous OLED display. Data transmitted wirelessly or through USB connection. See sensors on page 30
	FTR262	FTR860	MTR262	MTR264	KMR260

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Analog outputs



Several output units 7470 can be connected to serial bus RS485 (max. 8 units = 32 channels).

KMR260 was developed for routine measurement needs.

No more writing down lists of measuring values by hand. Just select an operator, a location and a target quickly and easily from preprogrammed lists and your selections are sent wirelessly, together with the measuring value, to PromoLog data acquisition software. This rugged high-accuracy instrument can also be used without utilizing the wireless transmitter by using the USB connection to transfer the lists and results.

- Graphic display:
- Temperature value
 - Operator
 - Location
 - Target name

Typical applications include food processing and distribution.



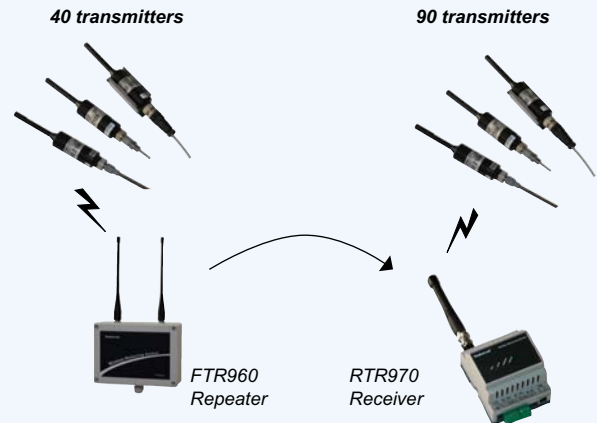
Number of transmitters

The maximum number of radio transmitters in a coverage area is limited by radio regulations. The use of repeaters reduces the maximum number of transmitters because repeaters use the same frequency channel as transmitters. The following table shows the maximum number of allowed radio transmitters in a coverage area.

Transmission Interval (s)	One Receiver	Receiver + 1 repeater	Receiver + 2 repeaters
	FTR970 RTR970	FTR960	FTR960
Maximum number of transmitters			
5	22	11	7
10	43	22	14
20	87	43	29
30	130	65	43
40	174	87	58
50	217	109	72
60	261	130	87
70	304	152	101
80	348	174	116
90	391	196	130
120	522	261	174
240	1043	522	348

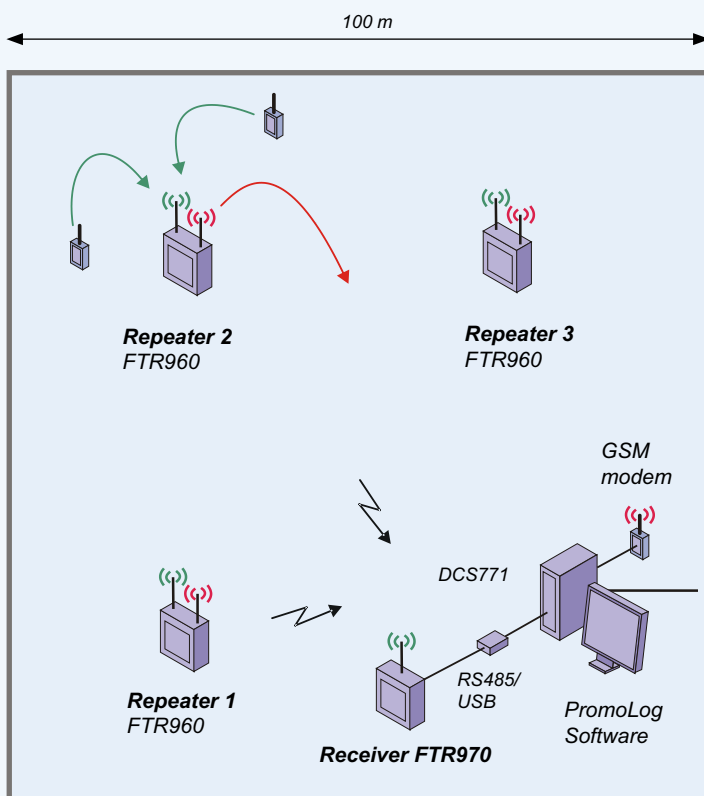
For example, if you have transmission interval of 60 seconds and one repeater and one receiver, the maximum number of transmitters is 130. Without repeaters you can use 261 transmitters. Four-channel model MTR264 counts as 4 transmitters.

Example case of overlapping coverage areas with one minute transmission interval.



Both receivers can listen to an unlimited number of transmitters, but radio regulations limit the number of transmitters to 130 when one minute transmission interval is used. The use of repeaters decreases the maximum number of transmitters as it also transmits data on the same channel.

How to place receivers and repeaters in large rooms



Wireless transmitters are the easy way to solve quality control problems in your production.

One receiver FTR970 + 3 repeaters. FTR960 can cover very large rooms as shown in the picture. Repeaters do not need any settings, only a power supply.

Typical applications are large cold storage facilities.

Unbeatably cost-effective recalibration with FT10 transmitters

The most cost-effective solution for keeping your transmitters certifiably calibrated!

Radio transmitter

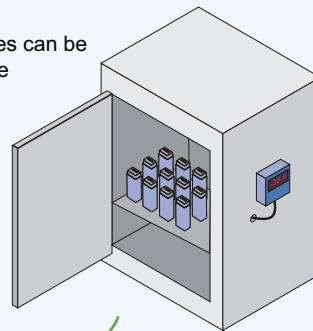


- Developed for high accuracy and easy recalibration
- Measuring modules can be replaced very easily without tools
- Radio transmitters' ID numbers do not change
- Calibration certificates can be downloaded from our website
- Very low-cost calibration system

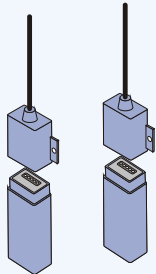
Measuring module



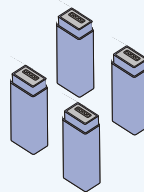
Several measuring modules can be calibrated at the same time in a calibration chamber.



Replacement modules can be sent to customers in advance, thus avoiding breaks in measurements.



Plug & play measuring modules are very easy to replace in-situ without altering any settings!



All measuring modules are calibrated at three points: -30°C, 0°C and +30°C

Replaced measuring modules are returned to Nokeval. Reusable packing material from replacement module shipment can be used.



Measuring unit FT10-IS
with internal Pt100 sensor

Nokeval can make an agreement with customer on regular calibration upon which recalibrated replacement units are sent in advance when it is time to recalibrate the transmitters.

Includes on-line calibration certificate.



Measuring unit FT10-CS
with Pt100 cable sensor

Same as above but the cable sensor and measuring module are calibrated together in three points: -30°C, 0°C and +30°C.

Includes on-line calibration certificate.

