MUC CompactRanger
Ultrasonic level, volume and flow meter in compact design

Multi-wire execution

2-wire execution

Kynar face for aggressive liquids

Foam face only for chemically non-aggressive liquids

All-in-one execution
The CompactRanger MUC contains both the ultrasonic transducer and the processor for echo analysis. with power supply in current loop only, or 11÷30VDC.

Multifunctional execution
The CompactRanger MUC can be configured for operation:
- two-wire: Measure
- two-wire IS: Intrinsically safe measurement to Atex standards (on request)
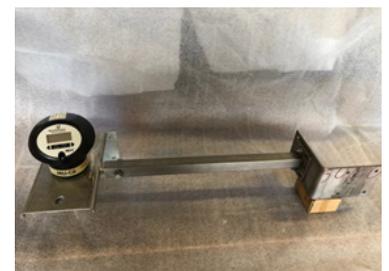- with three wires: Measurement and control

In the multi-wire configuration it handles two independent SPDT relays, plus two analogue outputs: 4 to 20mA and 0 to 10Vdc.

2-wire current loop design
for models MUC03ML, MU06ML , MUC10ML, MUC03KL, MUC06KL, MUC10KL, only operate in two-wire loop current 4÷20mA dc. These meters have neither an analogue 0-10Vdc output nor the two SPST relays: they only have the RJ11 connector, the programming keypad and the 4-digit display.

Multi-wire execution
MUC03MM, MU06MM and MUC10MM (foam-faced) and MUC03KM, MU06KM and MUC10KM (Kynar-faced) can be two-wire or three-wire depending on wiring.

Continuous product development may lead to changes in the data displayed

Minimum dead zone

200mm for measurements up to 3m and 300mm for measurements up to 10m.

Easy to install

It can be easily mounted by screwing it into a 1 1/2" or 2" Gas Cil sleeve, depending on model. An adapter from 1 1/2" to 2" is available on request.

Programming

The device can be programmed in the field via keyboard, or via PC and dedicated software supplied on request.
If a PC is used, it is possible to view the programming parameters, echo profile and possibly download the configuration file for later calibration.

Working range

CompactRanger MU-C can be supplied for working ranges of 3m, 6m and 10m.

Applications

The CompactRanger MU-C can be used on all high-boiling liquids, wherever a reliable and repeatable non-contact measurement is required.
Digital echo processing allows easy installation on a tank, sump, well, reservoir, silo, wherever a level display is required, or an analogue output to interface to your data acquisition or display system.
It is also capable of converting level measurement into volume or flow measurement.

Features

CompactRanger MU-C has small dimensions, an overall height of 175mm with a diameter of 130mm. It is equipped with cable glands. High transmission power and a very narrow transmission cone, together with digital echo processing, make the CompactRanger MU-C ideal for many 'difficult' applications such as foam or in tanks with obstacles. The integral display allows extremely easy programming of the instrument. CompactRanger MU-C can be fully programmed without compromising its degree of protection, using only the external integral keyboard, or it can be configured with a PC and the optional dedicated software, which allows fine calibration and saving of the configuration file for use on similar applications. CompactRanger MU-C measures and compensates temperature and the analogue or digital outputs are dependent on the type of connection made. The optional dedicated SW extends the capacity of the CompactRanger MU-C and allows the echo profile to be downloaded, analysed and stored. Echo profile analysis is a way to see exactly what is happening in the application, and make fine adjustments for extreme performance. The screens display all programming parameters.

Volume or flow measurement

Most common tank geometries are stored in the CompactRanger MU-C, making it easy to convert a simple level measurement into a volume measurement. In the case of special tanks, it is possible to convert the level measurement to volume using a freely programmable 11-point linearization curve. Through the software, a flow curve can be added and the CompactRanger MU-C can thus be transformed from a simple level measurement into a flow measurement, complete with alarms, but without totalization.

Technical specifications

Mechanical characteristics

Dimensions	175mm (total height) x 130mm (diameter)
Cable inlet	2 IP67 M16 x 1.5 cable glands for cables Ø4.5 ÷ 10mm
Assembly	3m and 6m versions only 1 1/2" or 2" Gas Cyl. (BSP) or NPT only for 10m version 2" Gas Cyl. (BSP) or NPT
Weight	~1Kg
Material	for non-aggressive liquids Valox 357 on request PVDF (KYNAR) for compatible aggressive chemicals

Environmental conditions

Process temperature	-40 to 80° (-40 to 75°C for ATEX version with S.I.)
Ambient temperature	-40 ÷ 65°C
Protection	IP67 electronics (IP68 on request) , IP68 transducer

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CompactRanger

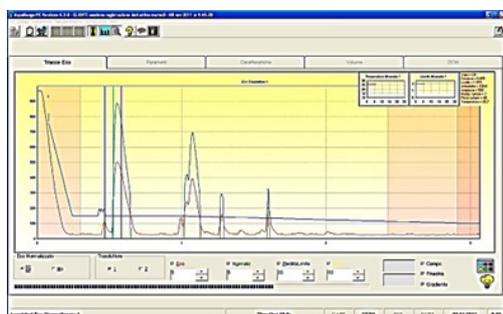| MODELS	Opening angle (-3dB)	Operating frequency	Measurement range
MU-C3	10°	125KHz	0.2 ÷ 3m
MU-C6	10°	75KHz	0.3 ÷ 6m
MU-C10	10°	41KHz	0.3 ÷ 15m

Main specifications

Power supply	11 to 30Vdc (17 to 30Vdc for ATEX version with I.S.), 3.8 to 22mA
Accuracy	±0.25% or 6mm (whichever is larger)
Solution	±0.1% or 2mm (whichever is larger)
Output 4 ÷ 20mA	5µA resolution
Temp. compensation	via internal temperature sensor (accuracy ±0.5°C)

Wiring

2-wire configuration	(in addition to general features) RS232 (RJ11 port) for diagnostics and software updates 4-digit LCD display, 4 keys for programming	Power consumption: 3.8 to 22mA
3-wire + relay configuration	(in addition to the general characteristics and 2-wire configuration) Backlit LCD display	Analogue output 0 to 10Vdc , 2 relays SPDT 1A @ 30Vdc/ac	Power consumption: <60mA with relays energised
2-wire ATEX configuration to I.S.	Power supply: 17 to 30Vdc from zener barrier MTL788+ or equivalent Intrinsic Safety (IS) according to ATEX II 1G EEx ia IIC T4 Certif. Sira 06Atex2014X

SW: ecoprofile visualization

SW: Programming

Multi-wire execution

Accessories

Dedicated PC software is available on request to access and modify all parameters; the echo trace can be displayed on the PC screen.