



loop powered indicators  
for hazardous areas

## MTL66x DISPLAYS



- ◆ Loop powered 4-20mA
- ◆ Field and panel mounting
- ◆ Environmental protection to IP67 (IP65 panel mounted)
- ◆ Easy to configure
- ◆ Zone 0 or Zone 2 options
- ◆ Number of displayed digits configurable
- ◆ Backlight options

The **MTL661, MTL662 and MTL663 digital indicators** enable process variables to be displayed locally in hazardous and general purpose plant areas. A typical example would be the re-transmission of mass/flow computations from the safe area, through a suitable MTL IS interface to the indicator in the hazardous area.

The displays are loop powered from the 4-20mA process signal and their low voltage drop allows them to be installed in almost any 2-wire, 4-20mA transmitter loop.

All units can indicate measured values in a linear or a square root extraction mode; the latter being used, for example, to display flow from differential pressure measurement devices such as orifice plates, Dall tubes, or venturi.

The **MTL661 Field mounting unit** is housed in a tough aluminium enclosure, suitable for wall or pipe mounting. For corrosive atmospheres use either the MTL661-ABS or MTL663 - their plastic cases provide excellent resistance to harmful contaminants. The MTL661-ABS can also be panel mounted by fixing the rear cover behind the panel with an additional gasket (GAS66).

**MTL66x IS indicators are classified** as 'non-energy storing' simple apparatus so they can be inserted into any IS loop without recertification.



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Sept 2007

# MTL661, MTL662 & MTL663 ZONE 0 INDICATORS

IS, loop powered + backlight 'B' option CE

The MTL66x range offers a variety of field and panel mounting IS indicators to display the current flowing in a 4–20mA loop. The small voltage drop of <1V allows the loop powered display to be installed in almost any 4–20mA loop.

Configuration is carried out using the front panel switches (which can be password protected). Range units, upper and lower limits, decimal point positioning and number of digits displayed are all configured via the front panel.

## SPECIFICATION

### Unit location

Zone 0, IIC, T4 hazardous area  
Div 1, Group A, hazardous location

### Display

5½ digits - 26mm height (process value)  
Eleven 8mm digits (process units & current)

### Voltage requirements under all conditions

<1V, loop powered

### Ambient Temperature

Operating: -20°C to +70°C  
Storage: -40°C to +80°C

### Humidity

5-99%RH

### Input range

4-20mA

### Over-range

200mA maximum without damage

### Display Range

-99999 to 199999 (Configurable)  
Number of digits after decimal point configurable

### Zero and span

Setting: anywhere in range

### Scale direction

Normal or reverse: software selected.

### Out of range indication

"----- RANGE ERROR" displayed between 3.5 - 3.75mA  
"99999 RANGE ERROR" displayed at current >22mA

### Operating modes

Linear or square root extraction is software selectable.

### Accuracy at 20°C

± 0.01mA

### Effects of temperature on accuracy

Zero: ± 0.0025% of span /°C  
Span: ± 0.01% of span /°C

### Ripple rejection

<0.01mA error with 1mA peak to peak ripple at 50Hz

### Electrical safety

The input circuit of the indicator is designed such that it does not influence the intrinsically safe circuit to which it is connected. (In the USA the application is covered by the entity concept.)

Input circuit (terminals 4 & 5) in type of explosion protection intrinsically safe EEx ia IIC, with the following parameters:  
U<sub>i</sub>=30V, I<sub>i</sub>=200mA, P<sub>i</sub>=1.2W, C<sub>i</sub>=0nF, L<sub>i</sub>=0mH only for connection to a certified intrinsically safe circuit not exceeding these values.

### Backlight (see Accessories for IS interfaces)

Separately powered backlight from an IS power source  
(U<sub>o</sub> = 28V, I<sub>o</sub> = 200mA, P<sub>o</sub> = 0.96W max.)

### Dimensions

See final page



Aluminium & GRP models



ABS model

## APPROVALS

<b>Country (Authority)</b>	<b>UK</b> (ITS to CENELEC standards & ATEX Directive)
<b>Standards</b>	EN 50014 : 1997 + A1, A2 EN 50281-1-1 : 1998 + A1 EN 50020 : 2002 EN 50284 : 1999
<b>Certificate/ file no.</b>	KEMA 03 ATEX 1194X
<b>Approved for</b>	⊕ II 1 GD EEx ia IIC T4 T 100°C T <sub>amb</sub> = -20°C to +70°C

(The maximum temperature of the enclosure - T 100°C - is referred to an ambient temperature of 70°C and is applicable to a maximum dust layer thickness of 5mm.)

## ORDERING INFORMATION

When ordering a MTL661, MTL662 or MTL663 for Zone 0, use one of the following order codes to uniquely specify your requirement.

Order code	Type	Backlight	Case material	Weight gms *	Case style
<b>MTL661</b>	Field	No	Aluminium	825	A
<b>MTL661B</b>	Field	Yes	Aluminium	825	A
<b>MTL661-ABS</b>	Field	No	ABS	375	C
<b>MTL662</b>	Panel	No	Aluminium	425	B
<b>MTL662B</b>	Panel	Yes	Aluminium	425	B
<b>MTL663</b>	Field	No	GRP	500	A
<b>MTL663B</b>	Field	Yes	GRP	500	A

\* nominal



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# MTL661 AND MTL662 ZONE 2 INDICATORS

non-arcing, loop powered



The MTL661-NA (field mounting) and the MTL662-NA (panel mounting) are 4-20mA, loop-powered indicators for Zone 2 hazardous area operation. The small voltage drop of <math><1V</math> allows the loop powered display to be installed in almost any 4–20mA loop.

Configuration is carried out using the front panel switches (which can be password protected). Range units, upper and lower limits, decimal point positioning and number of digits displayed are all configured via the front panel.



## SPECIFICATION

### Unit location

Zone 2, IIC, T4 hazardous area  
Div 2, Group A, hazardous location

### Display

Six digits - 17mm height (process value)  
Eleven 8mm digits (process units & current)

### Voltage requirements under all conditions

<math><1V</math>, loop powered

### Ambient Temperature

Operating:  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$   
Storage:  $-40^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$

### Humidity

5-99%RH

### Input range

4-20mA

### Over-range

200mA maximum without damage

### Display Range

–999999 to 999999 (Configurable)  
Number of digits after decimal point configurable

### Zero and span

Setting: anywhere in range

### Scale direction

Normal or reverse: software selected.

### Out of range indication

"----- RANGE ERROR" displayed between 3.5 - 3.75mA  
"999999 RANGE ERROR" displayed at current >22mA

### Operating modes

Linear or square root extraction is software selectable.

### Accuracy at 20°C

$\pm 0.01\text{mA}$

### Effects of temperature on accuracy

Zero:  $\pm 0.0025\%$  of span / $^{\circ}\text{C}$   
Span:  $\pm 0.01\%$  of span / $^{\circ}\text{C}$

### Ripple rejection

<math><0.01\text{mA}</math> error with 1mA peak to peak ripple at 50Hz

### Dimensions

See final page

## APPROVALS

<b>Country (Authority)</b>	<b>UK</b> (ITS to CENELEC standards & ATEX Directive)
<b>Standards</b>	EN 50021:1999 EN 50281-1-1: 1998
<b>Certificate/ file no.</b>	KEMA 03 ATEX 1509
<b>Approved for</b>	Ⓔ II 3 GD EEx nA II T4 T 80°C $T_{\text{amb}} = -20^{\circ}\text{C}$ to $+70^{\circ}\text{C}$

(The maximum temperature of the enclosure - T 80°C - is referred to an ambient temperature of 70°C)

## ORDERING INFORMATION

When ordering a MTL661 or MTL662 for Zone 2, use one of the following order codes to uniquely specify your requirement.

Order code	Type	Backlight	Case material	Weight gms *	Case style
MTL661-NA†	Field	No	Aluminium	825	D
MTL662-NA†	Panel	No	Aluminium	425	E

\*nominal

† Delivered product will be labelled **MTL661** or **MTL662**, as appropriate, and marked to indicate "Zone 2 use only".

## ACCESSORIES

Order code	Description	Used with
WMP66	Wall mounting plate	661/663
PMA66	Pipe mounting adaptor	661/663
PIP66-ABS	Pipe mounting kit	661-ABS
PIP66	Pipe mounting kit	661-NA
GAS66	Spare gaskets	661-NA, 661-ABS
GAS660	Spare gaskets - pk of 10	661/663

**Recommended IS interfaces for powering display**  
MTL5042, MTL4541, MTL7787+

**Recommended IS interfaces for powering backlight**  
MTL5021, MTL4521, MTL7728P+

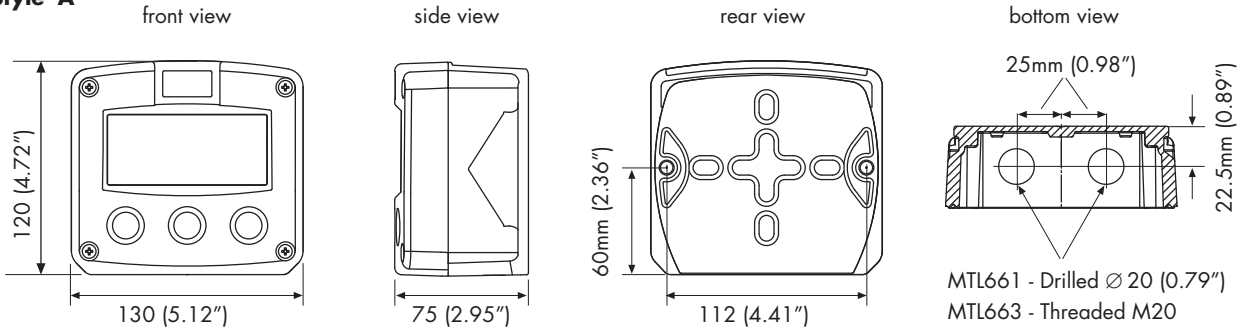


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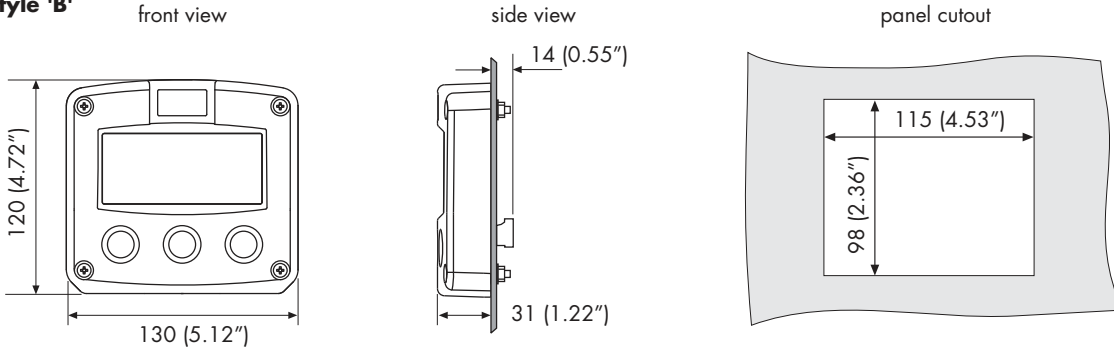
Sept 2007

## CASE DIMENSIONS (mm)

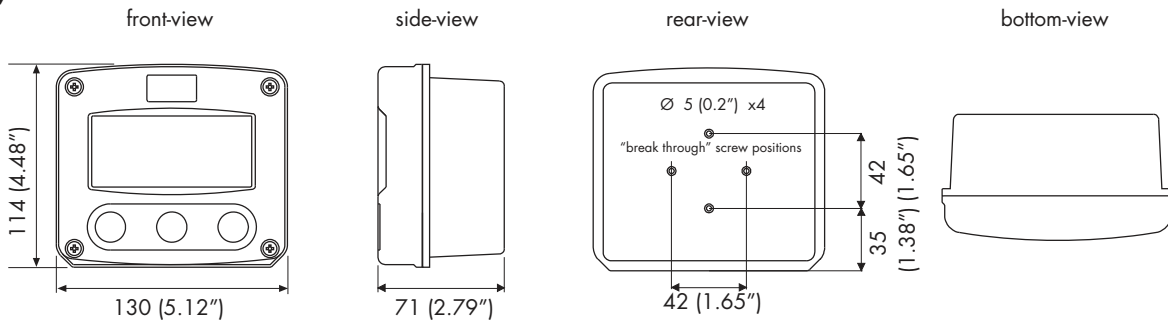
### Style 'A'



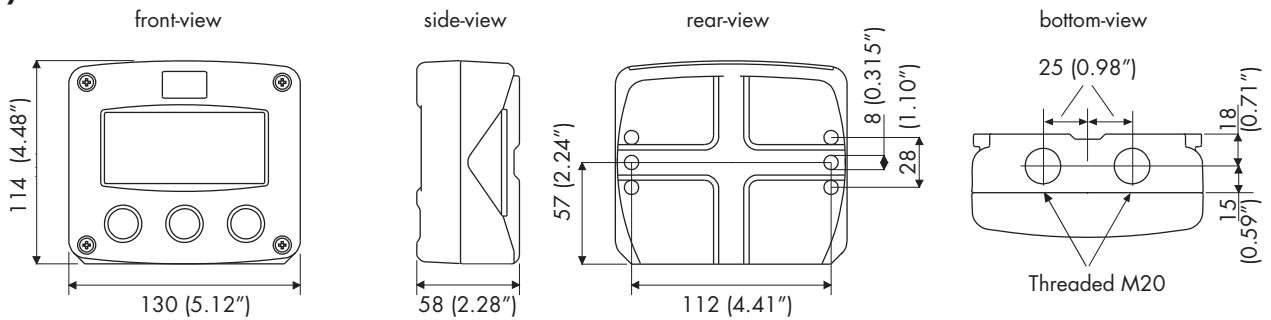
### Style 'B'



### Style 'C'



### Style 'D'



### Style 'E'

