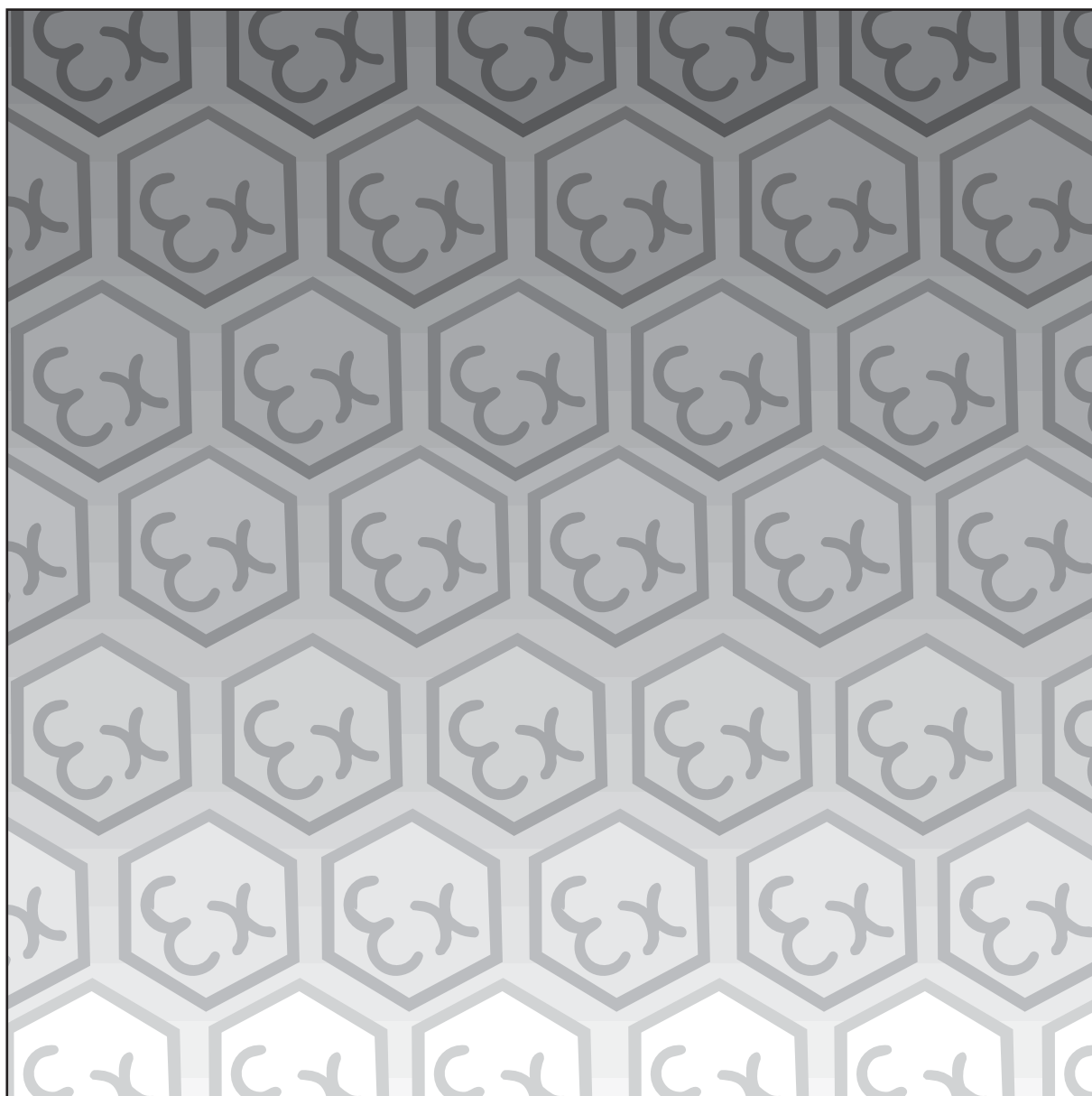


MTL661, MTL662 & MTL663

IS, Loop Powered Indicator



Instruction Manual

INM660



Health & Safety information iv

Safety instructions iv

Safety rules and precautionary measures iv

1 About this manual 1

2 Operation 1

2.1 General 1

2.2 Control panel 1

2.3 Operator information and functions 1

3 Configuration 2

3.1 Introduction 2

3.2 Programming SETUP-level 2

4 Installation 5

4.1 General directions 5

4.2 Installation / surrounding conditions 5

4.3 Enclosure Dimensions 5

4.4 Hardware and connections 5

4.5 Accessories for mounting displays 6

5 Maintenance 8

5.1 General directions 8

6. ATEX information 8

7 Product labelling 9

8 Case details 10

Health & Safety information

"Cautionary Note: In common with all other electrical apparatus installed in hazardous areas, this apparatus must only be installed, operated and maintained by competent personnel. Such personnel shall have undergone training, which included instruction on the various types of protection and installation practices, the relevant rules and regulations, and on the general principles of area classification. Appropriate refresher training shall be given on a regular basis. [See clause 4.2 of EN 60079-17].

This instruction manual supplements the requirements of nationally accepted codes of practice, for example, IEC/EN 60079-11 in Europe and the National Electrical Code, combined with ANSI/ISA-RP 12.6 in the USA. All installations should comply with the relevant sections of these codes.

In addition, particular industries or end users may have specific requirements relating to the safety of their installations, and these requirements should also be met".

For further ATEX information on this component see Section 6.



Safety instructions

Any responsibility lapses if the instructions and procedures described in this manual are not followed.

- ◆ **LIFE SUPPORT APPLICATIONS: The MTL661, MTL662 or MTL663 are not designed for use in life support appliances, devices, or systems where malfunction of the product can reasonably be expected to result in a personal injury. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify the manufacturer and supplier for any damages resulting from such improper use or sale.**
- ◆ **Electrostatic discharge can inflict irreparable damage to electronic equipment! Before installing or opening the unit, the installer should discharge himself/herself by touching a well-grounded object.**
- ◆ **This unit must be installed in accordance with the EMC guidelines (Electro-Magnetic Compatibility).**

Safety rules and precautionary measures

- ◆ The manufacturer accepts no responsibility whatsoever if the following safety rules and precautions instructions and the procedures as described in this manual are not followed.
- ◆ Modifications of the MTL661/2/3 implemented without preceding written consent from the manufacturer, will result in the immediate termination of product liability and warranty period.
- ◆ Installation, use, maintenance and servicing of this equipment must be carried out by authorised technicians.
- ◆ Check all connections, settings and technical specifications of the various peripheral devices with the MTL661/2/3 supplied.
- ◆ Never touch the electronic components (ESD sensitivity).
- ◆ Never expose the system to heavier conditions than allowed according to the casing classification (see manufacturer's plate and chapter 4.2.).
- ◆ If the operator detects errors or dangers, or disagrees with the safety precautions taken, then inform the owner or principal responsible.
- ◆ The local labour and safety laws and regulations must be adhered to.

Hardware version 4B030101

Software version 03.01.xx

Information in this manual is subject to change without prior notice. The manufacturer is not responsible for mistakes in this material or for incidental damage caused as a direct or indirect result of the delivery, performance or use of this material.

© All rights reserved. No parts of this publication may be reproduced or used in any form or by any means without written permission of your supplier.



Figure 1 MTL661 indicator

1 ABOUT THIS MANUAL

This manual explains the installation of the IS, field mounting MTL661(B), MTL663(B) and the panel mounting MTL662(B). A model number with a 'B' suffix indicates that it has a backlight.

The manual is divided into two main sections:

The daily use of the unit is described in chapter 2 "Operation". These instructions are meant for users.

The chapters that follow are meant for electricians/technicians. These provide a detailed description of all software settings and hardware installation guidance.

This operation manual describes the standard unit and the options available. For additional information, please contact your supplier.

A hazardous situation may occur if the MTL661/2/3 is not used for its designed purpose, or if it is used incorrectly. Please take care to note the information in this operating manual indicated by the pictograms:



A "warning" indicates actions or procedures which, if not performed correctly, may lead to personal injury, a safety hazard or damage of the MTL661/2/3 or connected instruments.



A "caution" indicates actions or procedures which, if not performed correctly, may lead to personal injury or incorrect functioning of the MTL661/2/3 or connected instruments.



A "note" indicates actions or procedures which, if not performed correctly, may indirectly affect operation or may lead to an instrument response which is not planned.

2 OPERATION

2.1 General

The MTL661/2/3 may only be operated by personnel who are authorised and trained by the operator of the facility. All instructions in this manual are to be observed.

Take careful notice of the "Safety rules, instructions and precautionary measures" in the front of this manual.

This chapter describes the daily use of the MTL661/2/3. This instruction is meant for users / operators.

2.2 Control panel

The following keys are available:



Figure 2: Control panel

Functions of the keys



This key is used to program and save new values or settings. It is also used to gain access to SETUP-level; please read chapter 3.



This key is used to SELECT current and 0% / 100% value. The arrow-key ▲ is used to increase a value after PROG has been pressed or to configure the unit; please read chapter 3.



The CLEAR function has no use at Operator level but the arrow-key ► is used to select a digit after PROG has been pressed or to configure the unit; please read chapter 3.

2.3 Operator information and functions

In general, the MTL661/2/3 will always function at Operator level. The information displayed is dependant upon the SETUP-settings.

For the Operator, the following functions are available:

Display value, measuring unit and piegraph

This is the main display information of the MTL661/2/3. After selecting any other information, it will always return to this main display automatically. If activated, the 10-segment piegraph gives a quick impression about the actual value in relation to its measuring range in a scale of 0-100%.

Display current

If activated, the actual input current will be displayed after pressing SELECT.

Display 0% / 100%

If activated, the 0% value (=4mA) and 100% value (=20mA) will be displayed after pressing SELECT a few times.

Under range / Over range

If the input current is between 3.5mA and 3.75mA "-----" will be displayed.

If the input current is between 3.75mA and 4mA the value corresponding to 4mA will be displayed.

If the value is above 22mA the value "999999" will be displayed.

3 CONFIGURATION

3.1 Introduction



Here follows a description of all software settings and hardware connections, which are provided for electricians and non-operators.

3.2 Programming SETUP-level

3.2.1 General

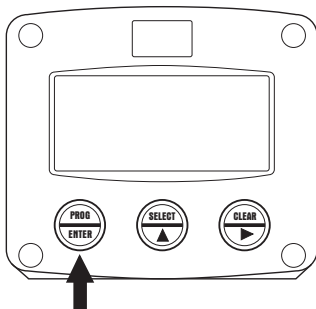
Configuration of the MTL661/2/3 is done at SETUP-level. SETUP-level is reached by pressing the PROG/ENTER key for 7 seconds; at which time, both arrows \blacktriangle will be displayed. In order to return to the operator level, PROG will have to be pressed for three seconds. Alternatively, if no keys are pressed for 2 minutes, the unit will exit SETUP automatically.

SETUP can be reached at all times while the MTL661/2/3 remains fully operational.



Note: A pass code may be required to enter SETUP. Without this pass code access to SETUP is denied.

To enter SETUP-level:



Press  for 7 seconds

Figure 3

SETUP-level structure

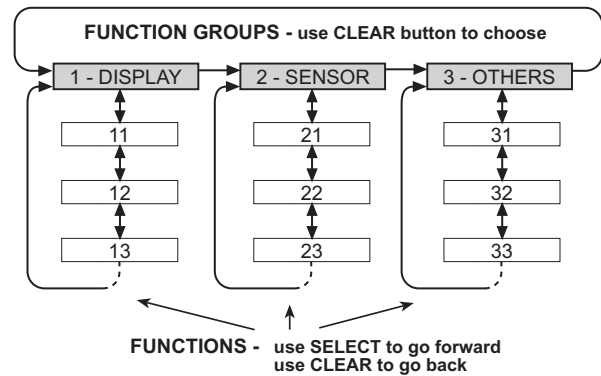


Figure 4 - Scrolling through SETUP-level

Selection of function-group and function:

SETUP is divided into several function groups and functions.

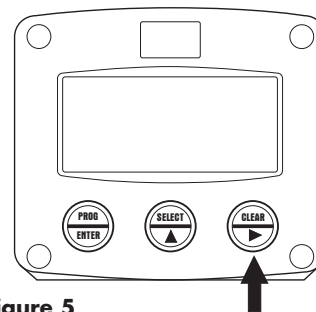


Figure 5

Select function group with

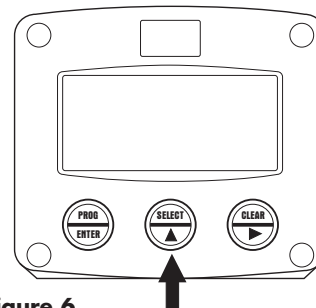


Figure 6

Select function with



forward




back

Each function has a unique number, which is displayed below the word "SETUP" at the bottom of the display. The number is a combination of two figures. The first figure indicates the function-group and the second figure the sub-function. Additionally, each function is expressed with a keyword.

To change or select a value:

a) Press  briefly; **PROGRAM** will start to flash

b) Select or enter a value with  and/or 

c) Press  to confirm the value / selection

To change a value, use \blacktriangleright to select the digits and \blacktriangle to increase the value.

To select a setting, both \blacktriangle and \blacktriangleright can be used.

If the new value is invalid, the increase sign \blacktriangle or the decrease-sign \blacktriangledown will be displayed while you are programming.

If the data is altered but ENTER has not been pressed, the alteration can still be cancelled by waiting for 20 seconds or by pressing ENTER for three seconds: the PROG-procedure will be left automatically and the former value reinstated.



Note: alterations will only be set after ENTER has been pressed!

To return to OPERATOR-level:

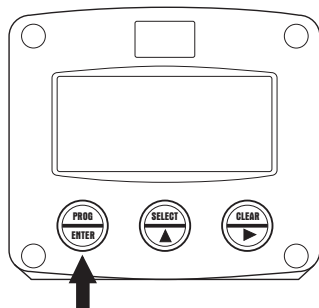


Figure 7

Press  for 3 seconds

To return to the operator level, PROG must be pressed for three seconds. If no keys are pressed for 2 minutes, the MTL661/2/3 will leave the SETUP mode automatically.

3.2.2 Setup functions and variables

1 DISPLAY		
11	UNIT	no unit - MM - CM - M - MEtEr - MIL - IN - Ft - YD - FAiH - SQFt - ML - L - NL - AL - M3 - NM3 - AM3 - GAL - USGAL - IGAL - bbl - CUft - MG - G - KG - tON - OZ - lb - ST - GR - CWT - PSI - PDIG - MbAR - MbARG - bAR - bARG - PA- PAG - KPA - KPAG - MMH2O - MH2O - NH2O - MMHG - INHG - °C - °F - K - P - RPM - % - PPM
12	TIME	/SEC - /S - /MIN - /M - /HR - /H - /DAY - /D - no unit
13	DECIMALS	0 - 1 - 2 - 3 - 4 (Ref: displayed value)
14	OFFSET	-99,999 - +99,999
15	SPAN	0.0001 - +99,999 unit/time-unit
16	DIRECTION	reverse - normal
17	CURRENT	enable / disable
18	PERCENTAGE	enable / disable
19	PIEGRAPH	enable / disable
2 SENSOR		
21	FORMULA	interpolation, square root
22	FILTER	00 - 99
23	CALIBRATE LOW	default - calibrate - set
24	CALIBRATE HIGH	default - calibrate - set
3 OTHERS		
31	MODEL	
32	SOFTWARE VERSION	
33	SERIAL NO.	
34	PASSWORD	0000 - 9999
35	TAGNUMBER	0000000 - 9999999

3.2.3 Details of SETUP functions

1 - DISPLAY

11 UNIT

This determines the measurement unit that will be displayed. A choice can be made from the range of units shown in Section 3.2.2.

Alteration of the measurement unit will have consequences for other SETUP-level values.

Please note that the Span has to be adapted as well; the calculation is not done automatically.

12 TIME

For flowrate calculations, a time unit can be set. The flowrate can be calculated per second (/SEC or /S); minute (/MIN or /M); hour (/HR or /H) or day (/DAY or /D).

Select "—" if no time unit is desired.

13 DECIMALS

This setting determines the number of digits following the decimal point. The following can be selected:

000000 - 11111.1 - 2222.22 - 333.333

14 OFFSET

The offset is the minimum *displayed* value of the range of measurement. This needs to be programmed into the display.

Example: Setting a temperature range

For a temperature range of 20°C to 120°C, the offset at the minimum signal of 4mA is 20°C. Therefore make offset **20°C**.

The minus for a negative value can be selected by pressing

the  and  button simultaneously.

15 SPAN

The span is the difference between the maximum and minimum *displayed* values for the range of 4 to 20mA inputs.

Example: Setting a temperature range

For a temperature range of 20°C to 120°C, the span is the difference between the top and the bottom values of the range, i.e. 100°C. Therefore make span **100°C**.

Example: Programming the span for a flowrate

Assume that a sensor generates 20mA at a flowrate of 2,481.3 litres/minute; then select the unit as "Litres", the time unit as "minute" and the number of decimals as "1".

Set the span as 2481.3

Enter for SETUP - 15: "2481.3".

16 DIRECTION

If the display is required to increase in value as the input current increases, select the scale direction "normal". Alternatively, select "reverse" if the display is required to decrease as the input current rises.

17 CURRENT

Select "enable" if you want the actual current value to be displayed for the operator.

18 PERCENTAGE

Select "enable" if you want to the 0% value and 100% value to be displayed for the operator.

19 PIEGRAPH

The piegraph (displayed at operator level) displays the input signal as a percentage. The minimum signal (setup 23) corresponds to 0% and the maximum signal (setup 24) to 100%.

With this function, the piegraph can be enabled / disabled.

2 - SENSORS

21 SIGNAL

The MTL661/2/3 can process the 4-20mA signal in two ways:

1) Interpolation: the signal is processed linearly

$$D = S \times I$$

2) Square root: for differential pressure

$$D = S \sqrt{I}$$

where:

D = Value: the displayed value

S = Span: the maximum value at 20mA. The span is programmed with setting 15.

I = Input: the scaled analogue value; in these formulas value 0 (zero) for 4mA and value 1 (one) for 20mA.

22 FILTER

The output signal from the field sensor is measured several times a second. The value measured is therefore a "snap-shot" of the signal and may fluctuate rapidly. This digital filter enables a more stable and accurate reading to be obtained through the choice of a suitable filtering value.



The effect of the filter is based on three variables: the filter value (01-99), the last measured analogue value and the last average value. The higher the filter value, the slower the response to an input change will be. Several filter values and their response times effects are indicated below:

Filter value	Response time on step change of analog value			
	Time in seconds			
	50% effect	75% effect	90% effect	99% effect
01	filter disabled	filter disabled	filter disabled	filter disabled
02	0.3 seconds	0.5 seconds	1.0 seconds	1.8 seconds
03	0.5 seconds	1.0 seconds	1.5 seconds	3 seconds
05	1.0 seconds	1.8 seconds	2.8 seconds	5.3 seconds
10	1.8 seconds	3.5 seconds	5.6 seconds	11 seconds
20	3.5 seconds	7.0 seconds	11 seconds	23 seconds
30	5.3 seconds	10 seconds	17 seconds	34 seconds
50	8.8 seconds	17 seconds	29 seconds	57 seconds
75	13 seconds	26 seconds	43 seconds	86 seconds
99	17 seconds	34 seconds	57 seconds	114 seconds

23 TUNE MIN / 4MA



Warning: be very sure that the offered signal is correct before the calibration is executed as this function has a major influence on the accuracy of the system!

This setting enables the user to calibrate a specific input value as the 4mA point, because the signal from the sensor might not be exact 4.0 mA at zero span. This adjusts the actual input value at zero.

After pressing PROG, three settings can be selected:

CALIBRATE – With this setting, the input will be calibrated with the actual "4mA" value. After pressing ENTER, CAL SET will be displayed as soon as the indicator completes its calibration. From that moment, the analogue input value must be more than the calibrated value before the signal will be processed.

DEFAULT – This resets the calibration to the manufacturer's factory setting.

CAL SET – This selects the value last used for calibration.

24 TUNE MAX / 20MA

This setting enables the user to calibrate a specific input value as the 20 mA point, because the signal from the sensor might not be exact 20.0 mA at the maximum span. This establishes the actual input value at full range.

After pressing PROG, three settings can be selected:

CALIBRATE: with this setting, the input will be calibrated with the actual "20mA" value. After pressing enter, CAL SET will be displayed as soon as the calibration is completed. From that moment, the analogue value must be less than the calibrated value for a reliable measurement.

DEFAULT: with this setting, the manufactures value is re-installed.

CAL SET: to select the last calibrated value.

3 - OTHERS

31 TYPE OF MODEL

For support and maintenance it is important to have information about the characteristics of the MTL661/2/3.

Your supplier will ask for this information in the case of a serious breakdown or to assess the suitability of your model for upgrade considerations.

32 VERSION SOFTWARE

For support and maintenance it is important to have information about the characteristics of the MTL661/2/3.

Your supplier will ask for this information in the case of a serious breakdown or to assess the suitability of your model for upgrade considerations.

33 SERIAL NUMBER

For support and maintenance it is important to have information about the characteristics of the MTL661/2/3.

Your supplier will ask for this information in the case of a serious breakdown or to assess the suitability of your model for upgrade considerations.

34 PASS CODE

All SETUP-values can be pass code protected.

This protection is disabled with value 0000 (zero).

Up to and including 4 digits can be programmed, for example 1234.

35 TAGNUMBER

For identification of the unit, a unique tag number of maximum 7 digits can be entered.

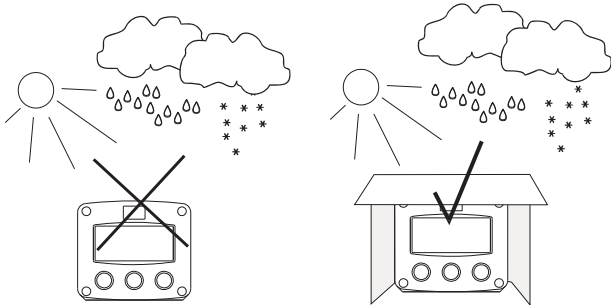
4 INSTALLATION

4.1 General directions

Take careful notice of the "Safety rules, instructions and precautionary measures" at the front of this manual.

4.2 Installation / surrounding conditions

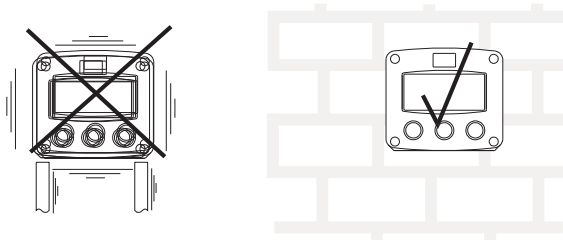
Take the relevant IP classification of the casing into account (see manufacturer's plate). Even an IP67 (NEMA 4X) casing should NEVER be exposed to strongly varying (weather) conditions.



When panel-mounted, the unit is IP65 (NEMA 4)!

When used in very cold surroundings or varying climatic conditions, take the necessary precautions against moisture by placing a dry sachet of silica gel, for example, inside the instrument case.

Mount the MTL661/2/3 on a solid structure to avoid vibrations.



4.3 Enclosure Dimensions

For dimensions of the enclosures and any panel mounting cutouts see Section 8.

4.4 Hardware and connections

4.4.1 Mounting the MTL661(B) & MTL663(B)

Two 8mm diameter holes (see Section 8) are provided through the side flanges to assist with the mounting of the indicator. See also Section 4.5 for details of wall and pipe mounting the MTL661(B).

4.4.2 Mounting the MTL661(B)-ABS

The MTL661-ABS does not have holes drilled in the back cover, but it has four positions marked for the drilling of holes. Remove the back cover before drilling holes for mounting. See Section 4.5.3 for details of pipe mounting the MTL661-ABS.

WHEN INSTALLING, PAY SPECIFIC ATTENTION TO:

- The use of separate cable glands, with effective IP67 (NEMA4X) seals, for all wires, to maintain the enclosure rating.
- The use of IP67 (NEMA4X) plugs for all unused cable entries: to maintain the enclosure rating.
- Cable shields may be connected together, using terminals 2 and 3, to maintain shield continuity.

4.4.3 Terminal connectors

The following screw-clamp terminal connectors are provided:

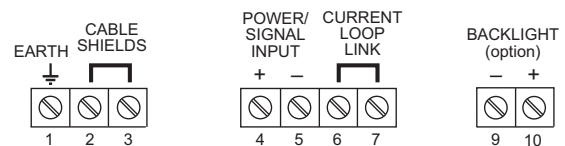


Figure 8 - MTL661/2/3 terminal connectors showing standard configuration and backlight options .

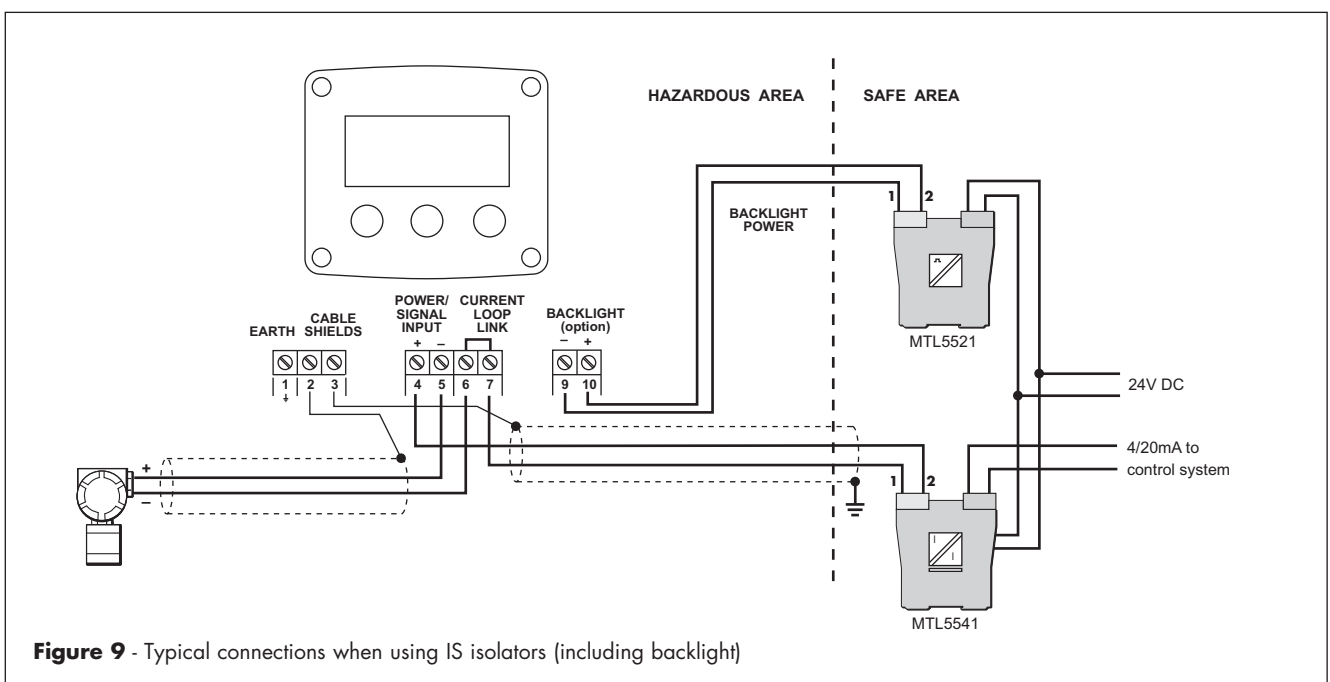


Figure 9 - Typical connections when using IS isolators (including backlight)

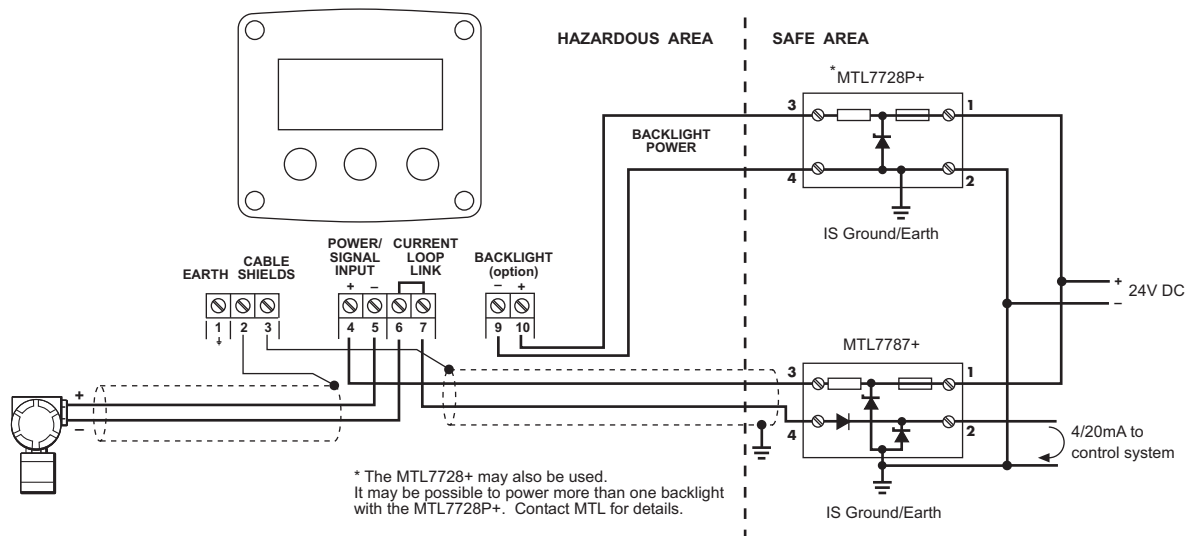


Figure 10 - Typical connections when using IS barriers (including backlight)

4.4.4 Grounding

An internal screw is provided inside the rear cover for grounding purposes (see Figure 11). Terminal 1 on the inside of the front panel assembly provides a grounding point for the front panel (see Figure 10).

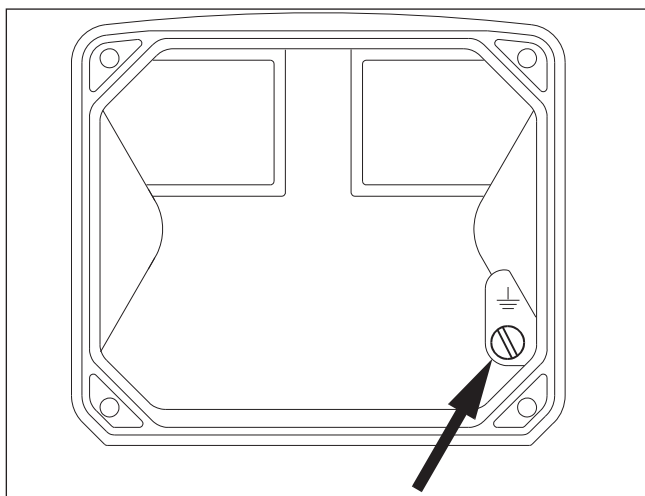


Figure 11 - Grounding aluminium enclosure.

4.5 Accessories for mounting displays

MTL has produced accessories to enable a user to mount any of these displays on a flat surface (e.g a wall) or on curved surfaces such as pipes or tubular structures.

The following accessories are available to order.

Order code	Description	Used with
WMP66	Wall mounting plate	MTL661/MTL663
PMA66	Pipe mounting adaptor	MTL661/MTL663
PIP66	Pipe mounting kit	MTL661/MTL663
PIP66-ABS	Pipe mounting kit	MTL661-ABS
GAS66	Spare gaskets	MTL661-ABS
GAS660	Spare gaskets - pk of 10	MTL661/MTL663

4.5.1 Using the WMP66 wall mounting plate



Figure 12 Wall mounting plate

The wall mounting plate is for use with any of the MTL661 or MTL663 display models. Holes are provided in the plate to accommodate bolts or screws up to 5mm diameter and the rear of the display has relief for the heads of the bolts/screws.

- Use the plate as a template on the mounting surface and mark the positions of the holes required (vertical or horizontal) through the holes in the plate.
- Drill holes in the surface to suit the fixings.
- Mount the wall mounting plate with the chosen fixings.
- Fit the display unit onto the two threaded studs and secure it with the two self-locking nuts provided.

4.5.2 Using the PMA66 pipe mounting adaptor

The PMA66 pipe mounting adaptor, shown in Figure 13, has a stainless steel bracket, to enable an MTL661 or MTL663 field display to be mounted on any vertical pipe that has an outside diameter between 50 and 80mm.

The pipe mounting adaptor consists of the following items:

Quantity	Description
1	Wall mounting plate (WMP66)
1	Pipe mounting bracket
2	Circular hose clips



Figure 13 PMA66 Pipe mounting adaptor

This mounting kit can be used for vertical or horizontal pipes.

Each hose clip should be unscrewed, opened and passed through the mounting bracket slots. The clips can then be fitted over the pipe and re-engaged with their screw adjusters. Tighten the clips so that the bracket faces in the direction required for the final display.

Remove the three bracket screws and attach the WMP66 plate so that the studs for mounting the display are positioned horizontally (i.e. left and the right).

Fit the display onto the studs on the plate and secure it with the locking nuts provided.

4.5.3 PIP66 pipe mounting kit

The PIP66 offers an alternative pipe mounting arrangement using a stainless steel bracket and U bolts. This is suitable for use on pipes of 35mm to 75mm diameter.



Figure 14 PIP66 kit fitted on MTL661

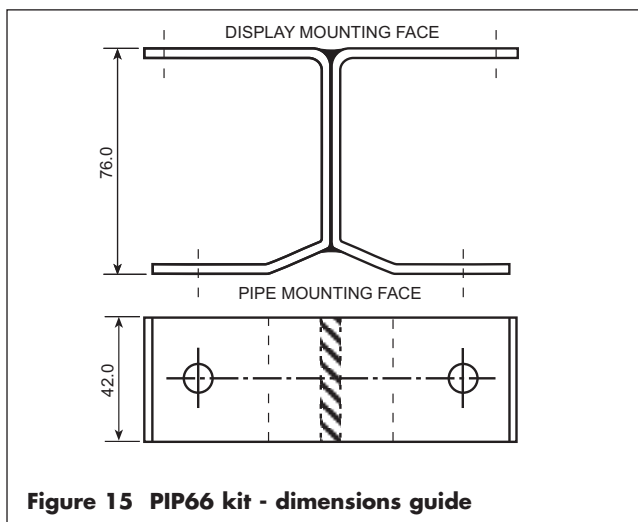


Figure 15 PIP66 kit - dimensions guide

4.5.4 Using the PIP66-ABS kit with the MTL661-ABS



Figure 16 PIP66-ABS pipe mounting adaptor

The PIP66-ABS pipe mounting kit has a stainless steel bracket, and accessories, to enable an MTL661-ABS field display to be mounted on a vertical and horizontal pipe that has an outside diameter between 45 and 70mm.

Each pipe mounting kit consists of the following components:

Quantity	Description
1	Mounting plate
2	M5 x 10 countersunk thread-forming screw

Remove the rear cover of the display and, using a 4.2mm drill bit, open up two holes to suit the orientation of the bracket. For example, if the mounting pipe is vertical, drill out the upper and lower hole positions.

IMPORTANT

Do NOT drill all four hole positions, as this will void the IP rating and hence the certification.

Use the 4.2mm drill and the thread forming screws supplied to ensure a gas-tight seal.

Screw the two M5 thread-forming screws through the rear cover, and with the bracket in position, continue to screw into the threaded holes on the mounting bracket and tighten. **Note:** the screws form a gas tight seal when forming their thread through the rear cover.

Drill the rear cover, where necessary for a gland and then mount the rear cover on the pipe using a suitable size hose clip. (not provided). Wire the display to the cable ends and then replace the front section of the display unit.

The PIP66 offers an alternative pipe mounting arrangement using a stainless steel bracket and U bolts. This is suitable for use on pipes of 35mm to 75mm diameter.

4.5.4 Gas-tight panel mounting

The standard front bezel attachment screws fitted to the display will accommodate a panel thickness of up to 3mm.

Spare GAS66 and GAS660 gaskets are available if required.

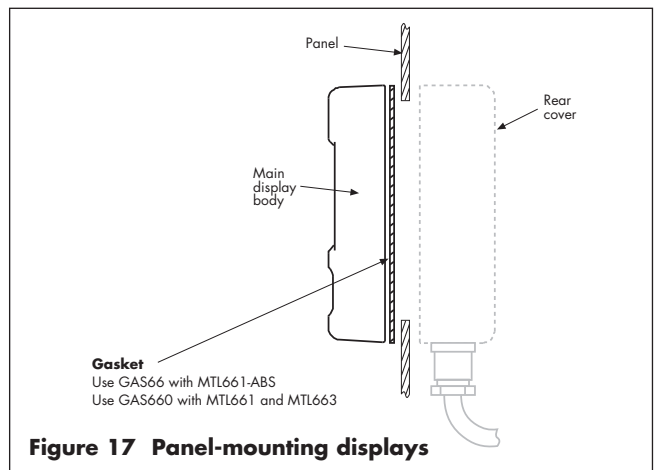


Figure 17 Panel-mounting displays

5 MAINTENANCE

5.1 General directions

- Mounting, electrical installation, start-up and maintenance of the instrument may only be carried out by trained personnel authorised by the operator of the facility. Personnel must read and understand this Operating Manual before carrying out its instructions.
- The MTL661/2/3 displays may only be operated by personnel who are authorised and trained by the operator of the facility. All instructions in this manual are to be observed.
- Ensure that the measuring system is correctly wired up according to the wiring diagrams. Protection against accidental contact is no longer assured when the housing cover is removed or the panel cabinet has been opened (danger from electrical shock). The housing may only be opened by trained personnel.
- Take careful notice of the "Safety rules, instructions and precautionary measures" in the front of this manual.

The MTL661/2/3 displays do not require special maintenance unless they are used in low-temperature applications or in surroundings with high humidity (i.e. above 90% of the annual mean). It is the users responsibility to take precautions to dehumidify the internal atmosphere of the MTL661/2/3 in such a way that no condensation will occur, for example by placing a sachet of dry silica-gel crystals in the casing just before closing it. Furthermore, it is required that the silica-gel be replaced or dried periodically as advised by the silica-gel supplier.

Check periodically:

- The condition of the casing, cable glands and front panel.
- The input/output wiring for reliability and ageing symptoms.
- The process accuracy. As a result of wear and tear, re-calibration of the sensor might be necessary. Do not forget to re-enter any subsequent Span alterations.
- Clean the casing with soapy-water. Do not use any aggressive solvents as these might damage the coating.

6. ATEX INFORMATION

The Essential Health and Safety Requirements (Annex II) of the EU Directive 94/9/EC [the ATEX Directive - safety of apparatus] requires that the installation manual of all equipment used in hazardous areas shall contain certain information. This annex is included to ensure that this requirement is met. It compliments the information presented in this document and does not conflict with that information. It is only relevant to those locations where the ATEX Directives are applicable.

6.1 General

- a) In common with all other electrical apparatus installed in hazardous areas, this apparatus must only be installed, operated and maintained by competent personnel. Such personnel shall have undergone training, which included instruction on the various types of protection and installation practices, the relevant rules and regulations, and on the general principles of area classification. Appropriate refresher training shall be given on a regular basis. [See clause 4.2 of EN 60079-17].
- b) This apparatus has been designed to meet the requirements of Intrinsically safe apparatus in accordance with EN 60079-0 and EN 60079-11 and is normally mounted in the hazardous area.
- c) This apparatus has been designed and manufactured so as to provide protection against all the relevant additional hazards referred to in Annex II of the directive, such as those in clause 1.2.7.

6.2 Installation

- a) The installation should comply with the appropriate European, national and local regulations, which may include reference to the IEC code of practice IEC 60079-14. In addition particular industries or end users may have specific requirements relating to the safety of their installations and these requirements should also be met. For the majority of installations the Directive 1999/92/EC [the ATEX Directive - safety of installations] is also applicable.
- b) This apparatus must not be subjected to mechanical and thermal stresses in excess of those permitted in the certification documentation, this manual and the product specification. If necessary the product must be protected by an enclosure to prevent mechanical damage.
- c) The apparatus must not be installed in a position where it may be attacked by aggressive substances and must be protected from excessive dust, moisture and other contaminants.
- d) This is IS apparatus and is normally mounted in a hazardous area. It meets the requirement of Category 1 apparatus and may be installed in a Zone 0 location, provided that the relevant installation requirements are met.

6.3 Inspection and maintenance

- a) Inspection and maintenance should be carried out in accordance with European, national and local regulations which may refer to the IEC standard IEC 60079-17. In addition specific industries or end users may have specific requirements which should also be met.
- b) Access to the internal circuitry must not be made during operation.
- c) If the outer enclosure of the apparatus needs to be cleaned, this should be done with a cloth lightly moistened by a dilute mixture of detergent in water.

6.4 Repair

- a) This product cannot be repaired by the user and must be replaced with an equivalent certified product. Repairs should only be carried out by the manufacturer or his authorised agent.

6.5 Marking

- a) The products are labelled in a manner reproduced on the following two pages. The serial number and date of manufacture are programmed into the apparatus (see Figure 16) and a printed date-mark is provided inside the unit. This manual applies to products manufactured and date marked during or after the year 2009.



Figure 16: Display showing date and serial number

Important Note: The certificate number has an 'X' suffix, which means that special conditions of use apply when it is mounted in a Zone 0 hazardous area. Please refer to the product's certificate for full details.

7 PRODUCT LABELLING

7.1 MTL661 & MTL661B

MTL661
LOOP POWERED 4-20mA INDICATOR
Intrinsically Safe - Electrostatic hazard - clean only with a moist cloth IP67

CE 1180 N695

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEx KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Tamb
-25°C to +70°C
-13°F to +158°F

MTL661
LOOP POWERED 4-20mA INDICATOR
Electrostatic hazard - clean only with a moist cloth

CE 1180

II 1 GD KEMA03ATEX1194 X EEx ia IIC T4 T100°C
II 3 GD KEMA03ATEX1509 EEx na II T4 T80°C

Measurement Technology Limited, Luton, Beds, England
Manufactured in The Netherlands

Tamb=-20°C to +70°C
IP67
NEMA 4X

MTL661
LOOP POWERED 4-20mA INDICATOR
Intrinsically Safe - Possible electrostatic hazard - Clean only with a moist cloth - Do not rub

CE 1180 N695

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEx KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Tamb
-25°C to +70°C
-13°F to +158°F

Date code: XXXX

Input Parameters
Terminals 4 and 5
Ui=30V Ii=200mA Pi=1.2W Ci=0nF Li=0mH

SHIELDING EARTH LINK
1 2 3

POWER SIGNAL LOOP CURRENT INPUT LINK
+ - 4 5 6 7

MTL661
LOOP POWERED 4-20mA INDICATOR
Intrinsically Safe - Possible electrostatic hazard - Clean only with a moist cloth - Do not rub

CE 1180

II 1 GD KEMA03ATEX1194 X EEx ia IIC T4 T100°C
II 3 GD KEMA03ATEX1509 EEx na II T4 T80°C

Measurement Technology Limited, Luton, Beds, England
Manufactured in The Netherlands

Tamb=-20°C to +70°C

Input Parameters
Terminals 4 and 5
Ui=30V Ii=200mA Pi=1.2W Ci=0nF Li=0mH

SHIELDING EARTH LINK
1 2 3

POWER SIGNAL LOOP CURRENT INPUT LINK
+ - 4 5 6 7

MTL661-ABS
LOOP POWERED 4-20mA INDICATOR
Intrinsically Safe - Electrostatic hazard - clean only with a moist cloth IP67

CE 1180 N695

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEx KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Tamb
-25°C to +70°C
-13°F to +158°F

MTL661-ABS
LOOP POWERED 4-20mA INDICATOR
Intrinsically Safe - Possible electrostatic hazard - Clean only with a moist cloth - Do not rub

CE 1180 N695

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEx KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Tamb
-25°C to +70°C
-13°F to +158°F

Date code: XXXX

Input Parameters
Terminals 4 and 5
Ui=30V Ii=200mA Pi=1.2W Ci=0nF Li=0mH

SHIELDING EARTH LINK
1 2 3

POWER SIGNAL LOOP CURRENT INPUT LINK
+ - 4 5 6 7

MTL661B
LOOP POWERED 4-20mA INDICATOR
Intrinsically Safe - Electrostatic hazard - clean only with a moist cloth IP67

CE 1180 N695

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEx KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Tamb
-25°C to +70°C
-13°F to +158°F

MTL661B-ABS
LOOP POWERED 4-20mA INDICATOR
Intrinsically Safe - Electrostatic hazard - clean only with a moist cloth IP67

CE 1180 N695

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEx KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Tamb
-25°C to +70°C
-13°F to +158°F

MTL661B
LOOP POWERED 4-20mA INDICATOR
Intrinsically Safe - Possible electrostatic hazard - Clean only with a moist cloth - Do not rub

CE 1180 N695

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEx KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Tamb
-25°C to +70°C
-13°F to +158°F

Date code: XXXX

Input Parameters
Terminals 4 and 5
Ui=30V Ii=200mA Pi=1.2W Ci=0nF Li=0mH

SHIELDING EARTH LINK
1 2 3

POWER SIGNAL LOOP CURRENT INPUT LINK
+ - 4 5 6 7

Terminals 9 and 10
Ui=28V Ii=200mA Pi=0.96W Ci=0nF Li=0mH

BACKLIGHT SUPPLY
- + 9 10

MTL661B-ABS
LOOP POWERED 4-20mA INDICATOR
Intrinsically Safe - Possible electrostatic hazard - Clean only with a moist cloth - Do not rub

CE 1180 N695

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEx KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Tamb
-25°C to +70°C
-13°F to +158°F

Date code: XXXX

Input Parameters
Terminals 4 and 5
Ui=30V Ii=200mA Pi=1.2W Ci=0nF Li=0mH

SHIELDING EARTH LINK
1 2 3

POWER SIGNAL LOOP CURRENT INPUT LINK
+ - 4 5 6 7

Terminals 9 and 10
Ui=28V Ii=200mA Pi=0.96W Ci=0nF Li=0mH

BACKLIGHT SUPPLY
- + 9 10

7.2 MTL662 & MTL662B

MTL662
LOOP POWERED 4-20mA INDICATOR
Date code: XXXX

CE 1180 N695
Tamb -25°C to +70°C
-13°F to +158°F

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEX KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Intrinsically Safe - Possible electrostatic hazard - Clean only with a moist cloth - Do not rub

Input Parameters
Terminals 4 and 5
Ui=30V Ii=200mA Pi=1.2W Ci=0nF Li=0mH

SHIELDING EARTH LINK
1 2 3

POWER SIGNAL INPUT LOOP LINK
+ - 4 5 6 7

MTL662B
LOOP POWERED 4-20mA INDICATOR
Date code: XXXX

CE 1180 N695
Tamb -25°C to +70°C
-13°F to +158°F

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEX KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Intrinsically Safe - Possible electrostatic hazard - Clean only with a moist cloth - Do not rub

Input Parameters
Terminals 4 and 5
Ui=30V Ii=200mA Pi=1.2W Ci=0nF Li=0mH

SHIELDING EARTH LINK
1 2 3

POWER SIGNAL INPUT LOOP LINK
+ - 4 5 6 7

Terminals 9 and 10
Ui=28V Ii=200mA Pi=0.96W
Ci=0nF Li=0mH
BACKLIGHT SUPPLY
- + 9 10

MTL662
LOOP POWERED 4-20mA INDICATOR

CE 1180
II 1 GD KEMA03ATEX1194 X EEx ia IIC T4 T100°C
II 3 GD KEMA03ATEX1509 EEx nA II T4 T80°C
Tamb=-20°C to +70°C

Measurement Technology Limited, Luton, Beds, England
Manufactured in The Netherlands

Intrinsically Safe - Possible electrostatic hazard - Clean only with a moist cloth - Do not rub

Input Parameters
Terminals 4 and 5
Ui=30V Ii=200mA Pi=1.2W Ci=0nF Li=0mH

SHIELDING EARTH LINK
1 2 3

POWER SIGNAL INPUT LOOP LINK
+ - 4 5 6 7

7.3 MTL663 & MTL663B

MTL663
LOOP POWERED 4-20mA INDICATOR
IP67

CE 1180 N695
Tamb -25°C to +70°C
-13°F to +158°F

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEX KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Intrinsically Safe - Electrostatic hazard - clean only with a moist cloth

MTL663B
LOOP POWERED 4-20mA INDICATOR
IP67

CE 1180 N695
Tamb -25°C to +70°C
-13°F to +158°F

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEX KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Intrinsically Safe - Electrostatic hazard - clean only with a moist cloth

MTL663
LOOP POWERED 4-20mA INDICATOR
Date code: XXXX

CE 1180 N695
Tamb -25°C to +70°C
-13°F to +158°F

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEX KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Intrinsically Safe - Possible electrostatic hazard - Clean only with a moist cloth - Do not rub

Input Parameters
Terminals 4 and 5
Ui=30V Ii=200mA Pi=1.2W Ci=0nF Li=0mH

SHIELDING EARTH LINK
1 2 3

POWER SIGNAL INPUT LOOP LINK
+ - 4 5 6 7

MTL663B
LOOP POWERED 4-20mA INDICATOR
Date code: XXXX

CE 1180 N695
Tamb -25°C to +70°C
-13°F to +158°F

KEMA 03ATEX1194 X II 1 G Ex ia IIC T4
IECEX KEM 08.0008X II 1 D Ex iaD 20 IP 65 / 67 T 100°C
Ga Ex ia IIC T4
Ex iaD 20 IP 65 / 67 T 100°C

Measurement Technology Limited, Luton, Beds, England

Intrinsically Safe - Possible electrostatic hazard - Clean only with a moist cloth - Do not rub

Input Parameters
Terminals 4 and 5
Ui=30V Ii=200mA Pi=1.2W Ci=0nF Li=0mH

SHIELDING EARTH LINK
1 2 3

POWER SIGNAL INPUT LOOP LINK
+ - 4 5 6 7

Terminals 9 and 10
Ui=28V Ii=200mA Pi=0.96W
Ci=0nF Li=0mH
BACKLIGHT SUPPLY
- + 9 10

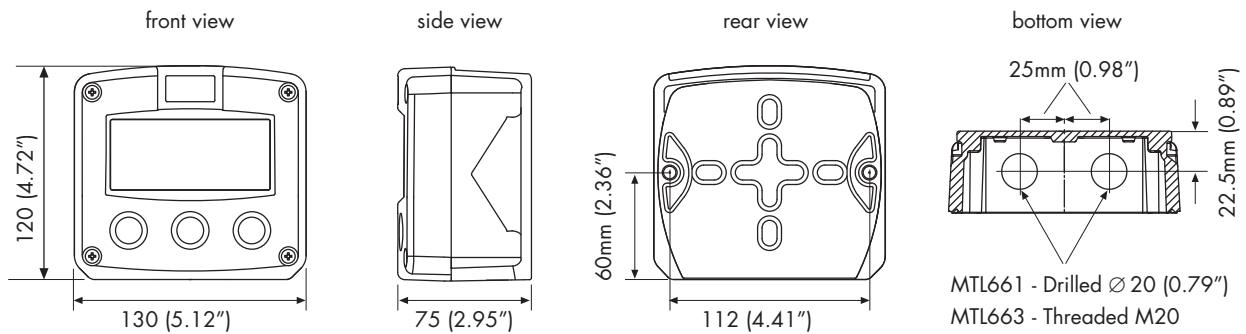
8 CASE DETAILS

Refer to case outlines and dimensions below.

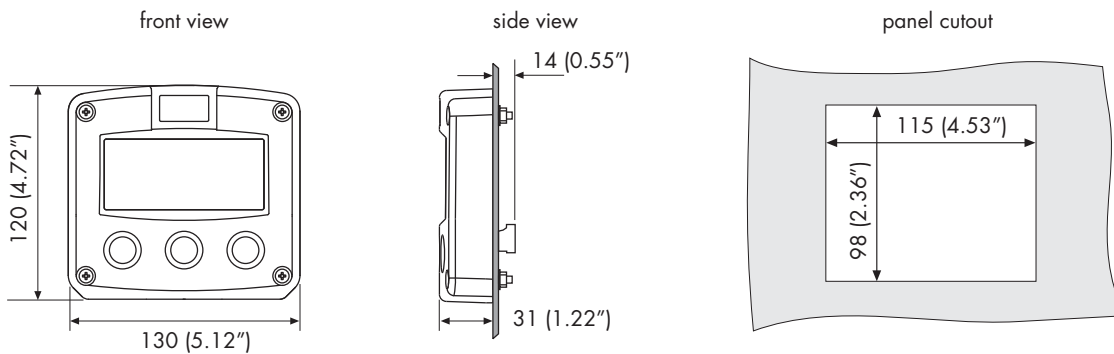
Order code	Type	Backlight	Case material	Weight gms *	Case style
MTL661	Field	No	Aluminium	825	A
MTL661B	Field	Yes	Aluminium	825	A
MTL661-ABS	Field	No	ABS	375	C
MTL662	Panel	No	Aluminium	425	B
MTL662B	Panel	Yes	Aluminium	425	B
MTL663	Field	No	GRP	500	A
MTL663B	Field	Yes	GRP	500	A

* nominal

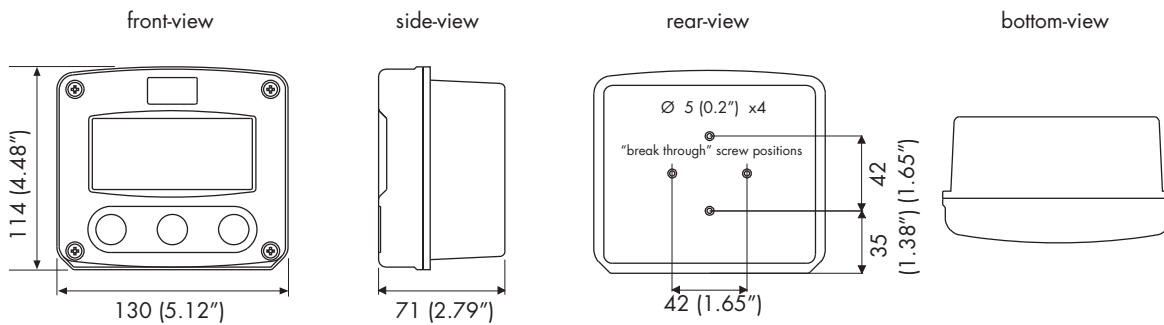
Case style 'A'



Case style 'B'



Case style 'C'



MTL Instruments Pty Limited

9 /12 Billabong Street
Stafford
Queensland 4053
Australia
Tel: + 61 1300 308 374 Fax: + 61 1300 308 463
E-mail: enquiries@mtlaus.com.au

MTL Canada Safety Instrumentation

#102, 4249 97 Street
Edmonton, Alberta
Canada T6E 5Y7
Tel: +1 780 485 3132 Fax: +1 780 485 3122
E-mail: cinfo@mtlnh.com

MTL Instruments China Co. Ltd.

Room 1002A, The Gateway
No 10 Yabao Road, Chaoyang District
Beijing 100020
China
Tel: +86 010 8562 5718/5720/5721 Fax: +86 010 8562 5725
E-mail: bjsales@mtl-inst.cn

MTL Instruments sarl

Les Carrés du Parc
10 rue des Rosiéristes
69410 Champagne au Mont d'Or
France
Tel: +33 (0)4 78 64 98 32 Fax: +33 (0)4 78 35 79 41
E-mail: info@mtl-inst.fr

MTL Instruments GmbH

An der Gumpgesbrücke 17
D-41564 Kaarst
Germany
Tel: +49 (0)2131 718930 Fax: +49 (0)2131 7189333
E-mail: info@mtl.de

MTL India

No. 36, Nehru Street
Off Old Mahabalipuram Road
Sholinganallur
Chennai - 600 119
India
Tel: + 91 (0)44 24501660/24501857 Fax: + 91 (0)44 24501463
E-mail: sales@mtlindia.com

MTL Italia srl

Via Cantù 11
I - 20092 Cinisello Balsamo MI
Italy
Tel: +39 (0)2 61802011 Fax: +39 (0)2 61294560
E-mail: info@mtl-inst.it

MTL Instruments KK

3rd Floor, Gotanda Masujima Building
1-8-13 Higashi-Gotanda, Shinagawa-Ku
Tokyo 141-0022
Japan
Tel: +81 (0)3 5420 1281 Fax: +81 (0)3 5420 2405
E-mail: sales@mtlkk.co.jp

MTL Instruments BV

PO Box 55, 6680 AB Bommel
de Houtakker 36, 6681 CW Bommel
The Netherlands
Tel: +31 (0)481 450250 Fax: +31 (0)481 450260
E-mail: info@mtlbenelux.com

MTL Instruments Pte Limited

No. 2 Serangoon North Avenue 5
#06-01 Fu Yu Building
Singapore 554911
Tel: +65 6 487 7887 Fax: +65 6 487 7997
E-mail: sales@mtlsing.com.sg

MTL Instruments

Villa No. 4, Sector 2-17, Street 6
PO Box 53234,
Abu Dhabi, UAE
Tel: +971 2 446 6840 Fax: +971 2 446 6841
E-mail: mtlgulf@mtl-inst.com

Measurement Technology Limited

Great Marlings, Butterfield, Luton, Beds
England LU2 8DL
Tel: +44 (0)1582 723633 Fax: +44 (0)1582 422283
E-mail: enquiry@mtl-inst.com

MTL Incorporated

3413 N. Sam Houston Parkway W.
Suite 210
Houston TX 77286
USA
Tel: +1 281 571 8065 Fax: +1 281 571 8069
E-mail: info@mtl-inst.com

