



### Specification

Part Numbers	227676200-1: 230V ac; 227676200-2: 110V ac; 227676200-4: 24V DC.
Type	Capacitance Level Indicator with 0-10 Volt and 4-20mA outputs and two independent switchpoints with variable differential.
Supply	<b>Either</b> 110 / 230V : 50Hz : 5VA : Tolerance : +10%, -15%. ac voltages factory set by internal links.
Signal Input	<b>Or</b> +24V DC : 4W : Tolerance : ± 10%.
Transducer Supply	0.2 - 3.2 Volts DC from 88 Series capacitance probe or Band Electrode. Capacity ranges 10-250pF, 200-500pF, $C_{o(Max)}$ - 250pF : $R_{(input)}$ - 820Ω. 8.5 Volt stabilised at 13mA.

### Level Indicator Section

Controls	Set Zero (0%). Set Full Scale output (100%). Set Sensitivity - High/Low.
Outputs	0 -10 Volts at $R_{(Min)}$ = 10kΩ. 4-20mA at constant Current at $R_{(Max)}$ = 500Ω. 4-20mA output is short circuit proof.
Monitor	Digital Panel Meter - 3½ Digit with 0.1% resolution.
Display Accuracy	± 0.5% ± 1 digit of output voltage. 4-20mA accuracy ± 0.5% of output voltage.

### Level Switch Section

Controls	Set Upper Level. Set Lower Level. 'Set' Selector Switch (biased). 'Set Failsafe' - High/Low.
Differential Indicators	Upper Alarm Level (Amber). Lower Alarm Level (Amber). 'Normal' Operation (Green). 'Alarm' Condition (Red).
Relay Output	Changeover Contacts - SPDT - Voltage Free. Rating 3A at 250vAC 750VA( $\phi = 0.7$ ) Contacts AgCdO - 500mA at 24V DC (NI).

### Physical

Operating Temperature	-10°C to 50°C.
Housing	T16 - ABS case with glass loaded polyester base.
Fixing	Base mounted by 2 x 4mm diameter blind holes for screws or clip mounting to symmetrical DIN rail.
Protection	IP300 BS56490/IEC 529.
Cable Entry	5 removable blind grommets. 2 knockouts in base - 15mm diameter.
Weight	0.80 kg nett.
Size	76mm x 150mm x 107mm overall.

Note: We reserve the right to alter the design or specification of this product without prior notice.

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- Pressure and Temperature



### Declaration of Conformity

#### EFM762 Capacitance Level Indicator

This is to certify that the above named product fully complies with the Electromagnetic Compatibility Directive 89/336/EEC and the Low Voltage Directive 73/23/EEC of the European Union and with the requirements of the normative sections of the following harmonised European Standards.

EN61000-3:	Electromagnetic Compatibility - Generic Emission Standard. Residential, Commercial and Light Industry.
EN61000-2:	Electromagnetic Compatibility - Generic Immunity Standard. Heavy Industry.
EN61010-1:	Safety requirements for electrical equipment for measurement, control and laboratory use.

Signed:

(D C Ward)

Position: Technical Services Manager,  
Date: 04/04/2006

This declaration applies to the following part number(s):  
227676200-1 : 230V ac version.  
227676200-2 : 110V ac version.  
227676200-4 : 24V dc version



### Application

The **EFM762 Capacitance Level Indicator with two trip points** is designed for continuous level indication in tanks/silos containing products suitable for use with Eurogauge probes, and within the range of either the series 3640 Level Indicator Transducer or the Series 8022 Band Electrode. Application, installation, commissioning and servicing of the EFM752 must only be undertaken by suitably qualified personnel authorised to undertake such work and subject to observation of the relevant electrical and any other regulation which may affect the installation as a whole.

### Installation

The EFM762 must be located on a flat, vibration free surface which is not exposed to direct sunlight. Connect the system in accordance with the schematic wiring diagram. Connect the Probe/Transducer Assembly to the EFM762 using standard 3-core screened cable kept separate from power carrying cables. **NOTE: MINERAL INSULATED CABLE MUST NOT BE USED!** Ensure that the cable entry connection to the Probe head and Probe Cap is tight to prevent moisture ingress.

### Commissioning

The equipment is intended for operation with the electrical supply permanently energised. With the supply switched on and all other electrical connections completed the unit must be allowed to warm up for at least five minutes before attempting any adjustment. Set the sensitivity switch to the high position then proceed as follows:

#### 'Zero' Adjustment with Tank Empty (Probe Uncovered)

1. Turn 100% control Fully clockwise.
2. Turn 0% control Fully clockwise.
3. Turn 100% control If display meter is reading over 100%, turn control anti-clockwise to reduce amplifier gain until display meter shows approximately 80%.
4. Turn 0% control Anti-clockwise to bring display meter reading back down to approximately 5 -10% on meter scale. (Ignore if display meter reads less than 20%).
5. Turn 100% control Clockwise to stop position, i.e. maximum amplification.
6. Turn 0% control To achieve zero reading.

The 0% control must on **no account** be re-adjusted otherwise the instrument will have to be re-calibrated with the tank empty. The tank must now be filled to the normal 100% full level.

#### 'Full' Adjustment with Tank Full

1. Turn 100% Control Slowly turn anti-clockwise to adjust reading on the display meter to between 90% and 95% indication. **Note:** If the reading does not fall below 100%, set the sensitivity switch to the low position.
2. Turn 100% Control Until display meter indicates 100% level.

#### Calibration is now complete and the Instrument is ready for use

### Notes

Where the tank cannot readily be emptied for zeroing to be carried out, band or concentric probes should be used enabling the user to carry out the zero adjustment with the probe outside the tank suspended in free air. The zero level should be checked and re-adjusted when the tank reaches the actual empty level.

A preliminary full adjustment can be carried out when the tank cannot be completely filled. Follow the above instructions to set the indication on the meter in accordance with the actual tank contents. In order to avoid possible inaccuracies we strongly recommend that this procedure is only carried out when the tank can be filled to the **exact** half full mark on horizontal cylindrical tanks; then the full adjustment procedure described above can be adopted to set the readout meter to the 50% mark in lieu of 100%. It is essential that the level is checked when the tank has been filled to the full mark and any adjustment made accordingly.

#### Setting Up the Switch (Trip) Point

##### Maximum Failsafe (High Level)

In the high (maximum) failsafe mode the latching relay is de-energised when the tank contents reach the high level alarm switchpoint and remains de-energised until the tank contents fall below the low level alarm switchpoint. Relay contacts should be wired so that an alarm status is indicated when the relay is de-energised.



### Commissioning Procedure

Set the failsafe switch to the high level position.  
Hold the set selector switch in the high alarm position, adjust high alarm control for the upper switchpoint.  
Hold the set selector switch in the low alarm position, adjust low alarm control for the lower switchpoint.  
In the event of a power failure the relay contacts assume a high level alarm status (failsafe condition).

### Minimum Failsafe (Low Level)

In the low (minimum) failsafe mode the latching relay is de-energised when the tank contents reach the low level alarm switchpoint and stays de-energised until the tank contents rise to the high level alarm switchpoint. The relay contacts should be wired so that an alarm status is indicated when the relay is de-energised.

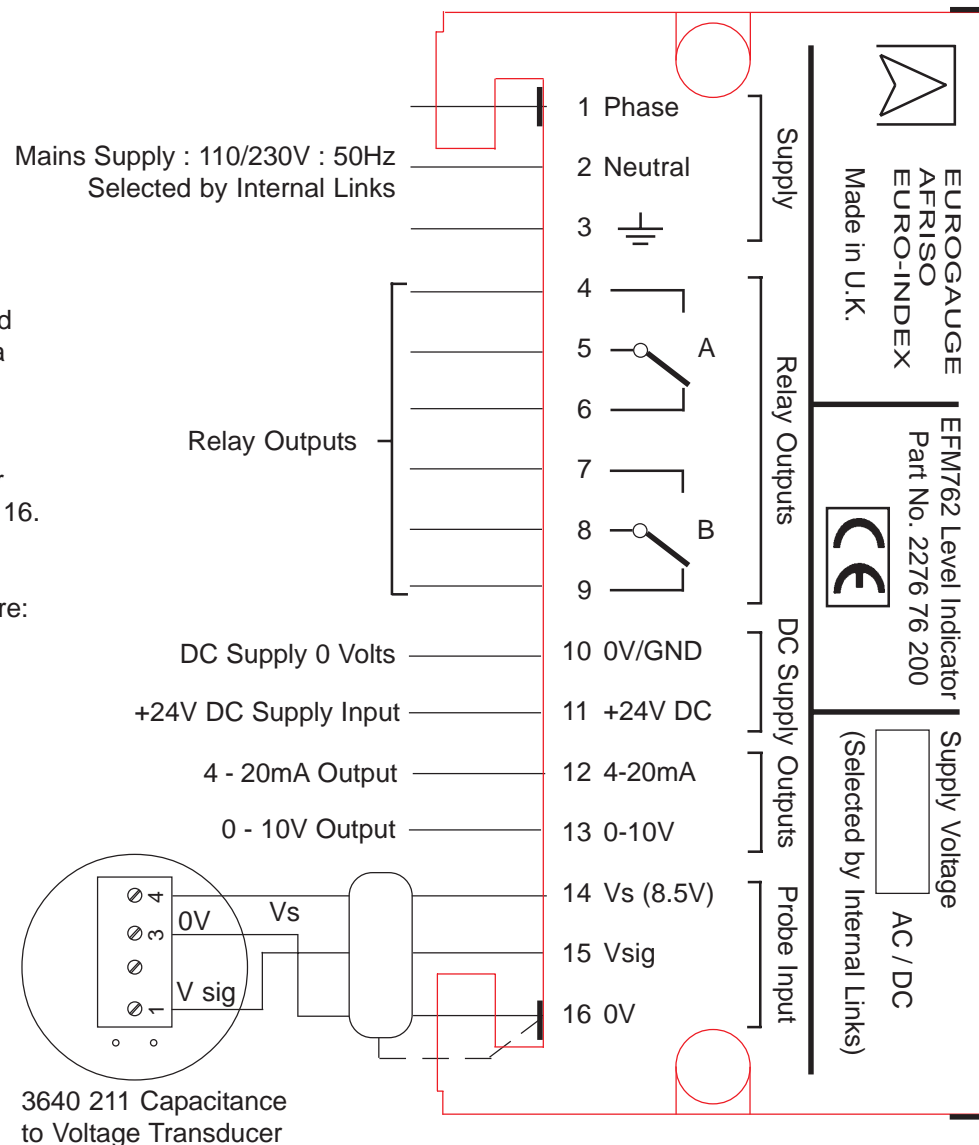
### Commissioning Procedure

Set the failsafe switch towards low.  
Hold the set selector switch in the high alarm position and adjust high alarm control for the upper switchpoint.  
Hold the set selector switch in the low alarm position and adjust low alarm control for the lower switchpoint.

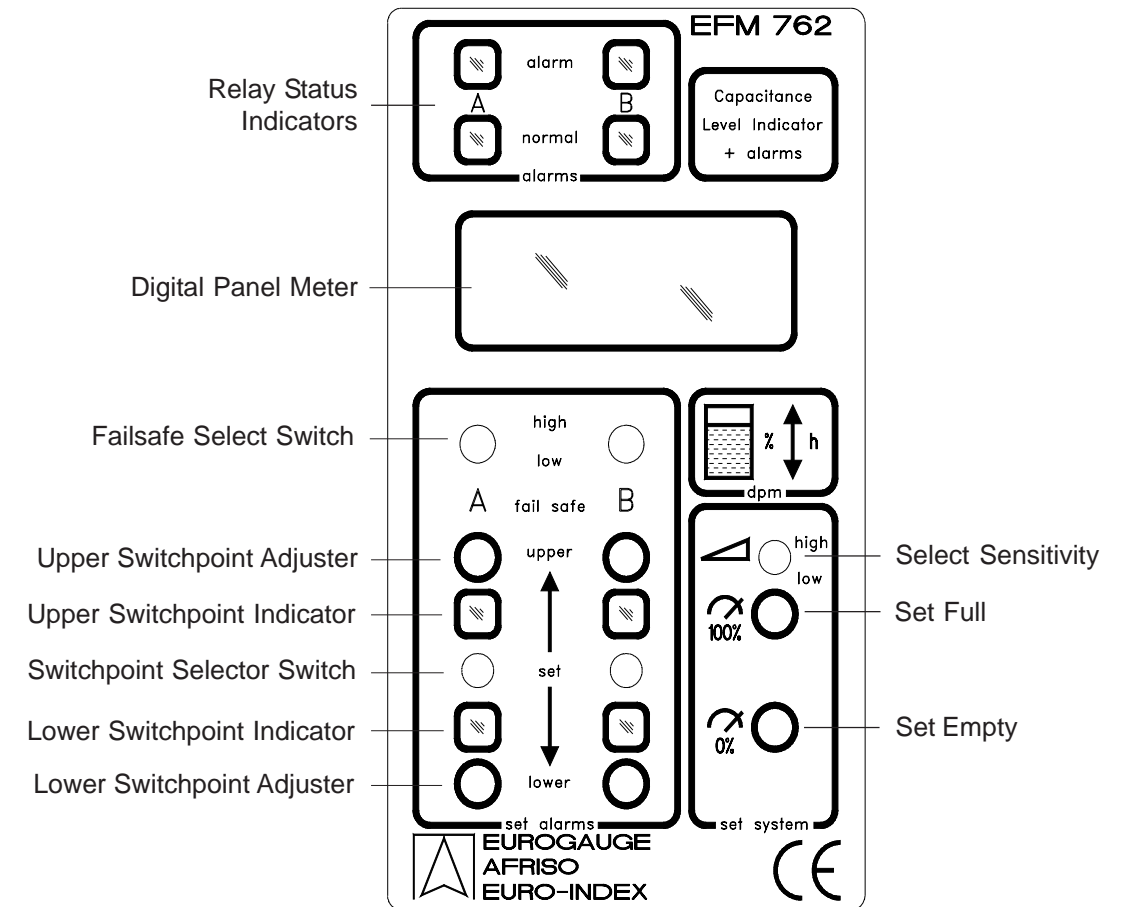
### Notes:

The 'lower' switchpoint cannot be set higher than the 'high' switchpoint.  
The upper switchpoint maximum setting is 99% and the lower switchpoint minimum setting is 1%.  
The minimum differential is dependent on where the upper switchpoint is set. At 90% the minimum differential is 4%, whilst at 20% the minimum differential is 1%.

### Wiring Connections



### Front Panel Controls



### Outline and Dimensions

#### Housing

ABS Case with polyester base

#### Fixing

Base mounting by 2 x 4mm dia. blind holes for screws, or clip mounting to symmetrical DIN rail.

#### Cable Entry

6 removable blind grommets (4 side, 1 top, 1 bottom) plus 2 x 15mm drill outs in base.

