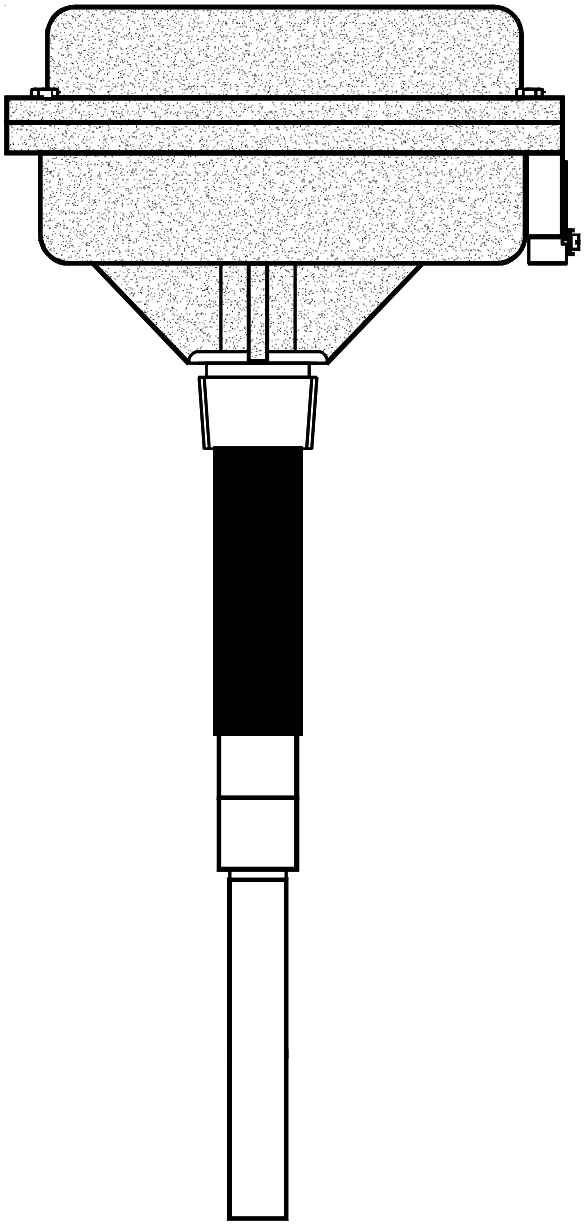
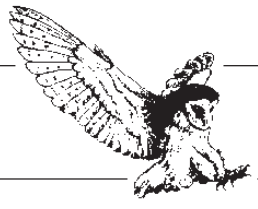
SYNATEL
INSTRUMENTATION LTD.



DIGIMATIC
LEVEL CONTROL
type DML2



OPERATING INSTRUCTIONS

OVERALL SPECIFICATION - DML2

Protection: ..... IP65.
Enclosure: ..... Modified Polyamide 66.
Mounting: ..... Via 1" BSP Taper thread.
Voltage: ..... 110V/230V ac 50/60 Hz or 24V dc (+7.5%.to -15%).
Rating: ..... 2.5VA.
Operating Temperature: ... -10 to +50°C.
Humidity: ..... 90%RH.
Output: ..... S.P.C.O contacts rated at 2.5A 240V non-inductive.
Timer Delay: ..... 0 - 128 second variable. (prevents false signaling from splashing). Set via pushbutton.
Earth Bonding: ..... Earth stud located on exterior of main case. This stud must be connected to earth, bonded to container or metalwork of container &, if used, connected to exterior of armour cabling.
Probe Length: ..... 200mm, 1 metre, 2 metre or 10 metre wire rope.

To Order: Specify DIGIMATIC DML2+ length of probe required

Guarantee

The equipment is covered by a 12 months guarantee from the date of shipment. Any faults arising due to faulty materials or workmanship, within the guarantee period, will be corrected free of charge providing the equipment is returned to us carriage paid.

Certificate of Conformity

The equipment covered by these instructions has been manufactured and tested in accordance with our quality assurance procedures and conforms fully with our published specifications.

Health and Safety

Provided that the equipment covered by these instructions is installed and operated as directed, it presents no hazard and conforms fully to health and safety regulations.

DETECTION AND CONTROL IN ACTION

CE

THIS PRODUCT CONFORMS TO THE REQUIREMENTS FOR CE MARKING

When this product is incorporated into other machinery or apparatus, that apparatus must not then be put into service (in the E.C) until it has been declared in conformity with the appropriate E.C Directive/s.

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17) If the unit reaches maximum or minimum setting, it will be indicated by short CAL LED flashes

18) See step 5. Unit can be left in manual mode or returned to auto mode for auto calibration when material is available.

Returning to Factory Set Sensitivity (Probe Uncovered Only)

19) Follow "Automatic Calibration - Material Available" but carry out the complete procedure without covering the probe. The unit will recognise that covered and uncovered settings are the same and will return to factory defaults.

TIMERS

To set timer link must be in calibration position. Press button for the time period required. Cal led flashes to indicate the time in seconds being set.

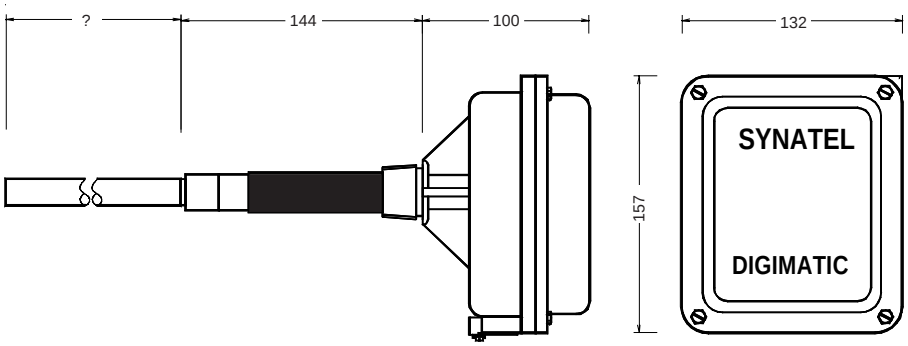
To cancel timer, press button for less than 1 second.

NOTES:-

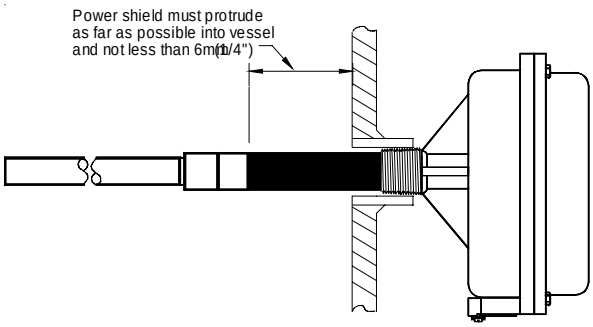
a) The DIGIMATIC sensitivity is proportional to the surface area of the probe. The standard 200mm x 16mm dia. probe is ideal for the majority of materials and should be treated as the minimum if possible.

If the probe length needs to be reduced to less than 200mm, the surface area should be maintained. This can be achieved by increasing the diameter, by fitting a metal tube over the probe, or by bending the probe rod. In certain high density materials it may be possible to reduce the length without compensation.

b) Synatel offer a free product test service. To use this service, supply 2 litres of product in a sealed container (to prevent ingress or loss of moisture), the product will be tested and its suitability confirmed. Your should also notify us of any safety precautions which should be observed during testing.



DIMENSIONS (FIG 5)



Powershield Detail

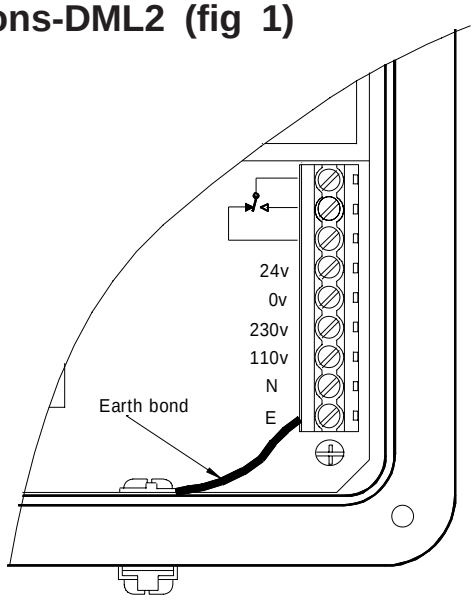
POWERSHIELD DETAIL (FIG 6)

Introduction

The DIGIMATIC is a fixed point Level Controller incorporating a microcomputer which is used to automatically calibrate the probe to suit the material being detected. Full manual overide facilities are included.

The DIGIMATIC employs a power shield to minimise the effect of material adhering to the probe making it ideal for detecting most materials including sticky or viscous types. It is equally suited to both liquids and solids . The probe may be a solid rod, metal plate or wire rope.
The self contained DIGIMATIC is normally supplied with a loose probe, available as a stainless steel rod in standard lengths of 300mm, 1 metre or 2 metres, or as a 10 metre wire rope suspension probe and weight. The probe should be screwed to the DIGIMATIC. Prior to attachment, the probe length can be reduced or increased, if desired, but see notes a) and b) regarding minimum surface area.

Connections-DML2 (fig 1)



Installation

A thread locking compound is already applied to the probe fixing stud of the DIGIMATIC. This will prevent the probe rod from vibrating loose, once fitted. The compound is fully hardened 20 minutes after fitting rod.

DIGIMATIC will operate on 110V/230V ac 50/60Hz or 24V dc supplies. The unit may be wired in ordinary un-screened cable of any length and need not be separated from other cables.

A SUPPLY EARTH IS ESSENTIAL!

When mounting the DIGIMATIC, care must be taken to ensure that the exposed end of the power shield protrudes into the container. See fig. 6. Mount unit securely to minimise vibration.

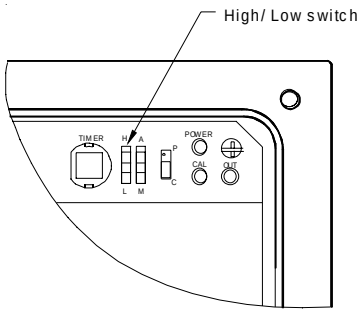
Connect in accordance with fig 1, and set fail safe switch to required position (see below), ensure that cable gland and back cover are fully tightened when finished. The DIGIMATIC has two 20mm cable entries, one of which is blank, the blank may be drilled out carefully if required; it must not be knocked out. The unit should be wired and earthed in accordance with appropriate Electrical Regulations. The unit must be earthed and the terminal MUST be bonded to the earth bond stud.

On metal containers, unit earth MUST be bonded to container. If the container is non-metallic, metal flanges or couplings used to mount probe should be bonded to earth. This also applies to probes mounted in wooden or plastic tops of metal bins.

Fail Safe Setting

The “High/Low” switch (fig 2), sets the fail safe mode. In the “High” position, the relay is de-energised with material present. In the “Low” position, the relay is energised with material present. Normally, the “High” position is used for high level probes and the “Low” for low level probes. Intermediate probe settings depend upon individual requirements.

FIG 2



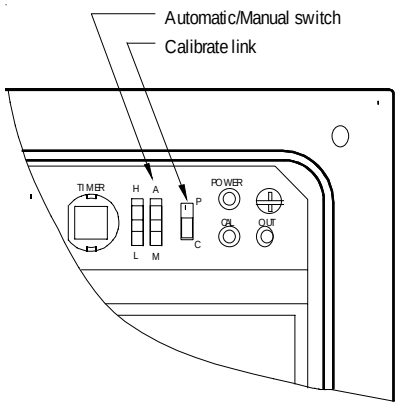
Commissioning

The DML2 can be calibrated automatically, manually or by a combination of both methods. After initial calibration, the unit can be recalibrated by any of the methods detailed, as and when required.

IMPORTANT - The calibration link must be fitted in the C (calibrate) position, otherwise, all push buttons are disabled.

Automatic calibration is generally the best method. If the unit is to be manually calibrated, it should be calibrated automatically or semi automatically first and then modified manually afterwards.

FIG 3



Automatic Calibration - Material Available

1) Fit the calibrate link in the 'C' position and set the auto/manual switch to the 'A' position (fig 3).

2) With the probe uncovered, press and release the "uncovered" button. The CAL light will flash slowly for about 2 seconds and then rapidly for about 8 seconds. "Uncovered" calibration is now complete.

3) Fill the container to cover the probe to the required trip level and completely cover the probe for horizontally mounted ones.

4) Press the calibrate covered button. The LED will flash for about 2 seconds.

5) Calibration is now complete. Set any time delay required and then either remove the programming link or fit it in the 'P' (park) position. The CAL light will now illuminate when the probe is covered.

Semi Automatic Calibration - Material Not Available
Method 1

Note: Read these instructions carefully before calibrating. This method uses a time out feature and calibration will be incorrect if the time out occurs before completion.

6) Proceed as per step 1 above.

7) Press and release the uncovered button. The "Cal" LED will flash slowly for about 2 seonds, and will then flash rapidly for about 8 seconds.

8) Whilst the Cal LED is flashing at high speed, press the uncovered button up to 99 times to set the desired calibration. The time out feature is reset back to 8 seconds each time the button is pressed. Typical settings are given in the chart below.

9) 8 seconds after the last press, the unit will time out and then the calibrate LED will flash for the number of presses to confirm the setting.

Material	No. of Presses
Light. (grass, grain etc.)	5
Medium. (flour, oil etc.)	10
Heavy. (sand, aggregates etc.)	15

Semi Automatic Calibration - Material Not Available
Method 2

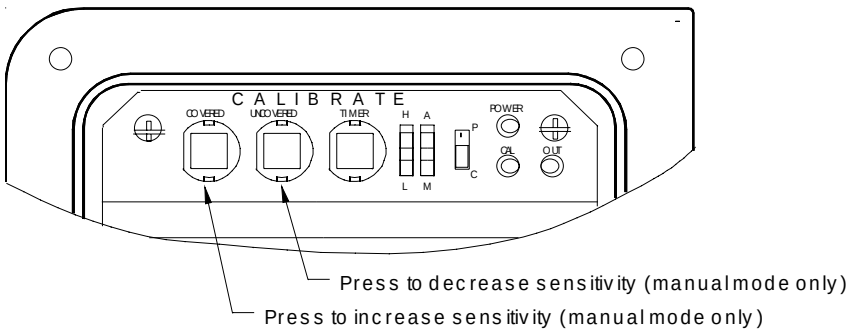
10) Carry out steps 1 and 2 above.

11) Set the auto/manual switch to M.

12) Press the uncovered button and count "Cal" LED flashes, to set required setting. Typical settings are given above.

13) See step 5. Unit can be left in manual mode or returned to auto mode for auto calibration when material is available.

Manual Calibration (Fig 4)



14) Set the unit up automatically using any of the methods detailed above.

15) Set the auto/manual switch to manual.

16) Each press of the covered button increases sensitivity and each press of the uncovered button decreases sensitivity. If either button is held down, the Cal LED will flash, each flash indicating one press. As the unit approaches the relay switch point, the output relay may pulse. This is not a fault.