Price $5.00

BINMASTER

Taking Control . . .To A Higher Level

PRO III X Series
CAPACITANCE PROBE



OPERATING INSTRUCTIONS
PLEASE READ CAREFULLY

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PRO III X
GENERAL SPECIFICATIONS

Supply:	115 VAC models and 230 VAC models
Supply Tolerance:	-15% +10%
Load:	1.5VA
Ambient Temperature: (Electronics)	-40° F to +185° F (-40° C to +85° C)
Sensitivity:	1 picofarad
Enclosure:	Type 4, 5, 9 and 12
Relay Output:	DPDT contacts; 5 Amps 250 VAC
Fail-Safe:	Switch selectable "High" or "Low" level modes
Calibration:	Set when probe is uncovered: COURSE adjust; single turn potentiometer FINE adjust; single turn potentiometer
Status Indicator:	Internal LED indicates material in contact with
Time Delay:	Adjustable up to 15 seconds
Conduit Entry:	3/4" NPT

1.0 INTRODUCTION

The Bin-Master PRO III is a point level control used to detect the presence or absence of solids or liquids. The PRO III operates on the capacitance principle and incorporates a "Quick Set" feature to simplify calibration. The PRO III includes switch selectable Fail-Safe output contacts.

Upon installation the PRO III is set up with the probe uncovered. The "Quick Set" feature allows simple setup and calibration of the unit to achieve low, medium, or high sensitivity settings. The PRO III has an adjustable time delay for monitoring covered or uncovered conditions.

2.0 APPLICATIONS

For applications in pressurized vessels up to 1500 PSI, the PRO III should be mounted with the 3/4" stainless steel coupling.

Application temperatures for the various probes are:

1. Delrin Sleeved Stainless Steel:	250 Deg. F
2. Teflon Sleeved Stainless Steel:	500 Deg. F
3. Flush Mount (Polyethylene):	180 Deg. F
4. Flush Mount (Teflon):	450 Deg. F
5. Bare Stainless Steel:	250 Deg. F

VAC

Bare metal stainless steel probes are suitable for granular or liquid material that is not electrically conductive. For electrically conductive material, an insulated probe must be used.

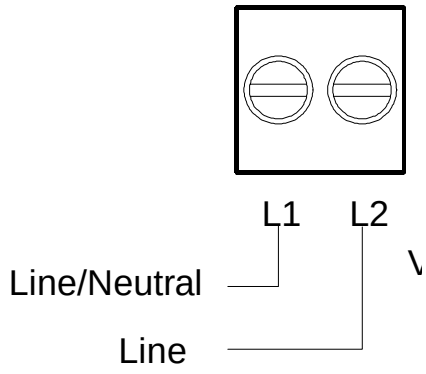
3.0 INSTALLATION

3.1 Location and Mounting

The probe should be located out of the direct flow of material. The PRO III is designed to mount utilizing either a 3/4" NPT coupling or 1 1/4" NPT coupling. Refer to Figures 1.1 for illustrations on installation and mounting options.

3.2 Input Power and Field Wiring

The PRO III is available in 115 VAC and in 230 VAC models. Before applying power check the supply voltage rating on the nameplate of the PRO III to confirm that you have the correct voltage rating for your power supply. Field wiring should conform to all national and local electrical codes and any other agency or authority having jurisdiction over the installation.



NOTE: IF ONE OF THE SUPPLY CONDUCTORS IS A NEUTRAL CONDUCTOR, THEN IT SHOULD BE CONNECTED TO TERMINAL "L1".

3.3 Grounding

An equipment grounding connection (earth ground) **must** be supplied to the unit for safety and to insure proper operation of the unit. This unit uses earth ground as a reference for calibration and detecting a covered or uncovered condition. Therefore, the vessel in which the PRO III is mounted must be made of metal, or a suitable metal ground plate must be installed where the PRO III is mounted.

4.0 FAIL-SAFE SELECTION

4.1 Description

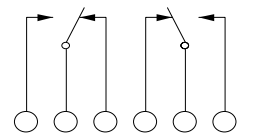
A Fail-Safe condition means that the relay contact positions are set up so that in the event of a power failure the relay will be de-energized and the contacts will indicate a condition that is deemed safe for the application. (Refer to FIGURE 2.1 for the location of the Fail-Safe selection switch.)

4.2 Fail-Safe High

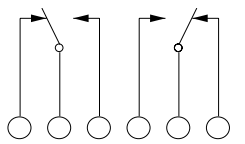
Fail-Safe High means that the relay will be energized when the probe is uncovered and will de-energize when the probe is covered. In this mode, a power failure will cause the relay contacts to indicate that the probe is covered whether it is or not.

FAIL SAFE HIGH RELAY CONTACT POSITION

UNCOVERED



COVERED

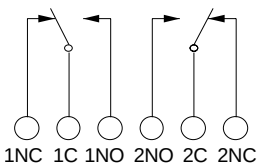


4.3 Fail-Safe Low

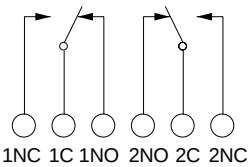
Fail-Safe Low means that the relay will be de-energized when the probe is uncovered and will energize when the probe is covered. In this mode, a power failure will cause the relay contacts to indicate that the probe is uncovered whether it is or not.

FAIL SAFE LOW RELAY CONTACT POSITION

UNCOVERED



COVERED



5.0 CALIBRATION

The PRO III Quick Set calibration uses two single turn potentiometers making calibration very simple. One potentiometer labeled COARSE is used to compensate for the capacitance of the empty vessel. The other potentiometer labeled FINE is used to set up the desired sensitivity. Refer to FIGURE 2.1 for the location of these potentiometers on the printed circuit board. A tool for adjusting the COARSE and FINE potentiometers is provided inside the top cover of the PRO III. The cover has a convenient clip for storing the tool so it will always be available.

NOTE: Accurate calibration requires that the appropriate probe is attached to the PRO III and the unit installed in the vessel. The probe must be UNCOVERED and material well below it.

5.1 Calibration Verification

Following calibration adjustment, the sensitivity setting that you have selected should be checked by verifying that the PRO III senses a covered probe condition with your material.

5.2 Calibration Procedure

1. Turn both the COARSE and FINE potentiometers fully counter clockwise (CCW). The internal COVERED indicator light should be OFF.

2. Turn the COARSE potentiometer slowly clockwise (CW) to the point where the COVERED indicator light just turns ON and stays on.

3. Turn the FINE potentiometer slowly clockwise (CW) until the COVERED indicator light just turns OFF. (If the COARSE potentiometer has been carefully adjusted, this should occur when the FINE potentiometer is between the 8 and 10 O'clock position.) Now continue to turn the FINE potentiometer clockwise (CW) to the desired sensitivity setting.

HIGH sensitivity:	1/16 to 1/8 turn (1 to 3 picofarad)
MEDIUM sensitivity:	1/8 to 1/4 turn (3 to 6 picofarad)
LOW sensitivity:	1/4 to 1/2 turn (6 to 12 picofarad)

NOTE: It may be convenient to think of the FINE potentiometer as a clock face where the distance between consecutive hour numbers represent a change in sensitivity of approximately 2 picofarad. Thus turning the FINE potentiometer clockwise one hour position past the point at which the COVERED indicator just turns OFF would provide a sensitivity of approximately 2 picofarad. Two-hour positions past that point would provide approximately 4 picofarad sensitivity, etc.

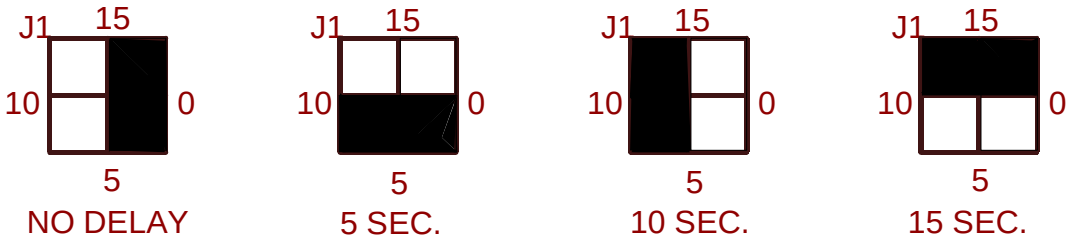
5.3 Sensitivity Selection

Sensitivity Setting (typical)	**Dielectric Constant of Material**
HIGH sensitivity:	4 or less
MEDIUM sensitivity:	4 to 10
LOW sensitivity:	10 or higher

6.0 TIME DELAY

The PRO III has a selectable time delay of up to 15 seconds. This is a time delay for the output to change states from an uncovered to a covered condition and from a covered to an uncovered condition. This time delay affects the relay contacts only. The internal LED (DS1) will immediately respond to a change in covered or uncovered condition regardless of the time delay setting.

Minimum time delay is when the DELAY is in the 0 position. (Refer to the figure below for the location of the DELAY jumper.) Maximum time delay is with the DELAY jumper in the 15 position.



7.0 WARRANTY AND CUSTOMER SERVICE

7.1 Limited Warranty

The manufacturer warrants this equipment for two (2) years according to the following terms:

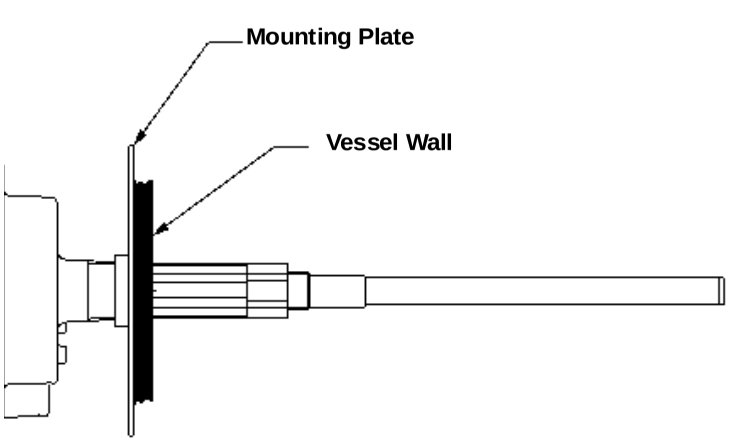
1.) This warranty extends to the original purchaser only and commences on the date of original purchase. The original purchaser must mail to the manufacturer the "Warranty Registration" card to confirm the equipment purchase. Failure to do so may void the warranty.

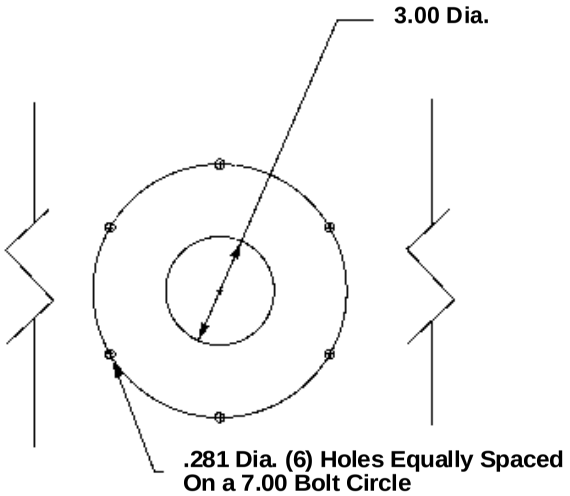
2.) The manufacturer will repair or replace any part of this equipment found to be defective, provided such part is delivered prepaid, to the factory. Manufacturer's obligation is limited to the cost of material and labor to repair or replace and does not include transportation expenses.

3.) This warranty shall not apply to any product that has, in our judgment, been tampered with, altered, subject to misuse, neglect or accident. In addition, the warranty does not extend to repairs made necessary by normal wear.

Figure 2.1

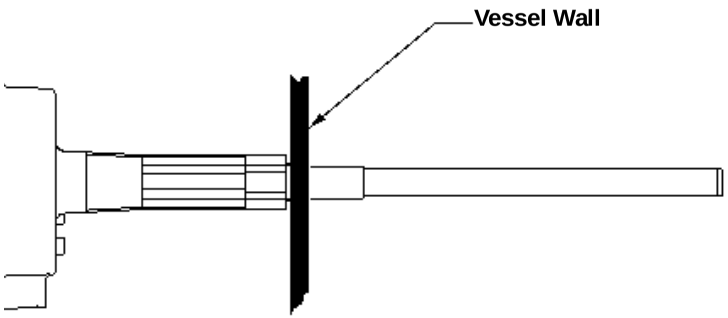
4.) This warranty is in lieu of all other warranties, expressed or implied.

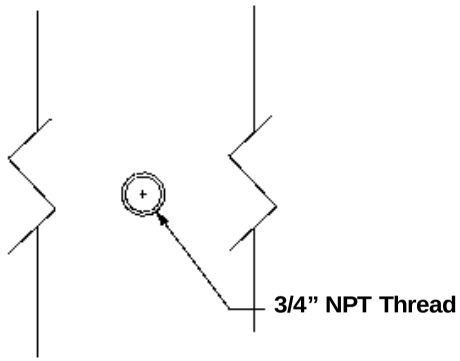




Standard Mounting Plate

Mounting Hole Pattern
In Vessel Wall





Explosion Proof
High Pressure Coupling

Mounting Hole
In Vessel Wall

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Figure 1.1

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