



MODEL 9062 / 9064 LEVEL SWITCH
User Manual

Description

The 9060 series of level controls provide multiple alarm relays along the length of one Arjay probe. The control unit is remote mounted up to one kilometer from the probe using inexpensive 2-conductor shielded wire. All calibration, power wiring, and control hook-up is done safely away from the process vessel. The probe itself is explosion proof for Hazardous Locations or can be made Intrinsically Safe using an optional barrier.

The 9062 offers two independent alarm relays and the 9064 offers four independent relays. To set the alarm point, the product level is simply brought up to the point of desired alarm on the probe and the Calibrate button is pushed for two seconds. If two relays are desired at that point, you push the button once for each relay.

Provided with each relay is a full differential control function. Each relay can be set to cycle On and Off between two distinct points on the probe. This is typically used for pump or valve cycling to refill a tank automatically when the level is drawn down.

Operation

The probe mounted into a vessel forms a capacitor with the tank wall or ground reference. For non-metallic tanks, optional grounding shields or wraps are offered. In an empty vessel, the air indicates a specific capacitance value at the control unit. When the level is brought up to the desired alarm level, a higher capacitance value is reached. The relay is selected and by pushing the Calibrate button, the control unit locks the capacitance value into the program. Any level above this point will keep the relay in one state, and any level below this point will change the relay state.

A consistent material dielectric in the vessel will ensure accurate alarm control in both liquid and bulk solid applications.

Specifications

Controller

Electronic Housing:	subplate mount Nema 1 (optional Type 4X Fiberglass/polycarbonate available)
Power Input:	110 VAC, 220 VAC, 50/60 Hz 24 VDC, 12 VDC (specify voltage at time of order)
Relays:	9062: two SPDT, 10 amp @ 240VAC, dry 9064: four SPDT, 10 amp @ 240VAC, dry
Time Delay:	Field Selectable 0-20 seconds
Failsafe:	Field Selectable High or Low
Accuracy:	+/- 1 pf
Temperature Rating:	-20 C to 60C

Standard Probe

Housing:	explosion proof, epoxy coated cast aluminum
Wetted Parts:	Teflon and 316 SS (alternate materials available)
Temperature Rating:	-60 C to +260 C
Pressure Rating:	1500 psi
Process Connection:	3/4" npt, 316 SS (flanges and alternate thread sizes available)

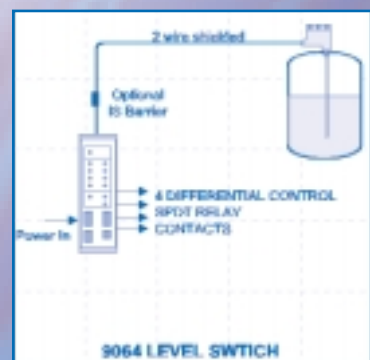
Arjay Engineering Ltd.

Tel: +1 (905) 829-2418 / 1-800-387-9487(N.America) Fax: +1 (905) 829-4701
www.arjayeng.com • E-mail: arjay@arjayeng.com



Multi-Point Level Alarm Switch

Model 9062 Model 9064



Applications

- Liquids and Solids
- Pump Control
- Overflow Alarms
- Batch Operations

Related Materials

- Dwg. 92003200
- Dwg. 990210
- Operation Manual

See Model 9820 for single point alarm

<u>MODEL</u> 9060 Series Diff.Level Switch	<u>DOCUMENT TYPE</u> USER MANUAL	<u>DOCUMENT FILE NAME</u> 9060UM21.DOC	<u>REV.</u> 2.1
<u>CREATE DATE</u> 06/16/2003 4:18 PM	<u>REV. DATE</u> 06/16/2003 4:22 PM	<u>PRINT DATE</u> 06/16/2003 4:22 PM	

TABLE OF CONTENTS

1.0	INSTRUMENT OVERVIEW.....	3
1.1	FEATURES	3
1.2	DESCRIPTION	3
2.0	INSTALLATION	5
2.1	PROBES.....	5
2.2	PROBE INSTALLATION	5
2.2	ELECTRICAL INSTALLATION.....	7
3.0	STARTUP AND CALIBRATION	8
3.1	CALIBRATION OVERVIEW	8
3.2	POWERUP	8
3.3	DIFFERENTIAL ALARM CALIBRATION	8
3.4	SINGLE POINT ALARM CALIBRATION.....	9
3.5	ALARM SETTINGS	10
4.0	APPLICATIONS	12
5.0	TROUBLESHOOTING	14

<u>MODEL</u> 9060 Series Diff.Level Switch	<u>DOCUMENT TYPE</u> USER MANUAL	<u>DOCUMENT FILE NAME</u> 9060UM21.DOC	<u>REV.</u> 2.1
<u>CREATE DATE</u> 06/16/2003 4:18 PM	<u>REV. DATE</u> 06/16/2003 4:22 PM	<u>PRINT DATE</u> 06/16/2003 4:22 PM	

1.0 INSTRUMENT OVERVIEW

1.1 FEATURES

- Pushbutton calibration
- RF Technology
- Up to 4 differential alarms with independent DPDT 10A relay contacts
- 0 – 20 second time delay
- Adjustable sensitivity
- User selectable high or low relay action
- No moving parts
- For use with any Arjay Capacitance probe

1.2 DESCRIPTION

The unit senses level using a RF capacitance measurement technique together with microcontroller technology for high resolution measurements. A probe mounted in a vessel forms a capacitor with the vessel wall, or with a concentric shield around the probe for non metallic vessels (ground reference). The capacitance of this arrangement is measured by the 906x and is used to provide point or differential level switch control. The Arjay RF capacitance measurement technique minimizes the effects of other electrical properties of the probe, vessel and the vessel contents and focuses only on the vessel capacitance. The level switch is connected to a large variety of Arjay capacitance probes via an inexpensive 2 wire shielded cable up to 1 km long.

Up to 4 independent differential alarms (High and low alarm points per relay) are available and are easily set with pushbutton convenience for differential level applications such as sump pump control. For single point applications, the high and low points are set to the same value.

The control relays are always in failsafe mode. The relay action may be set for high or low acting.

For horizontal probes, proximity sensors, or Flow Detector sensors, the unit can be calibrated without the level being at the alarm level.

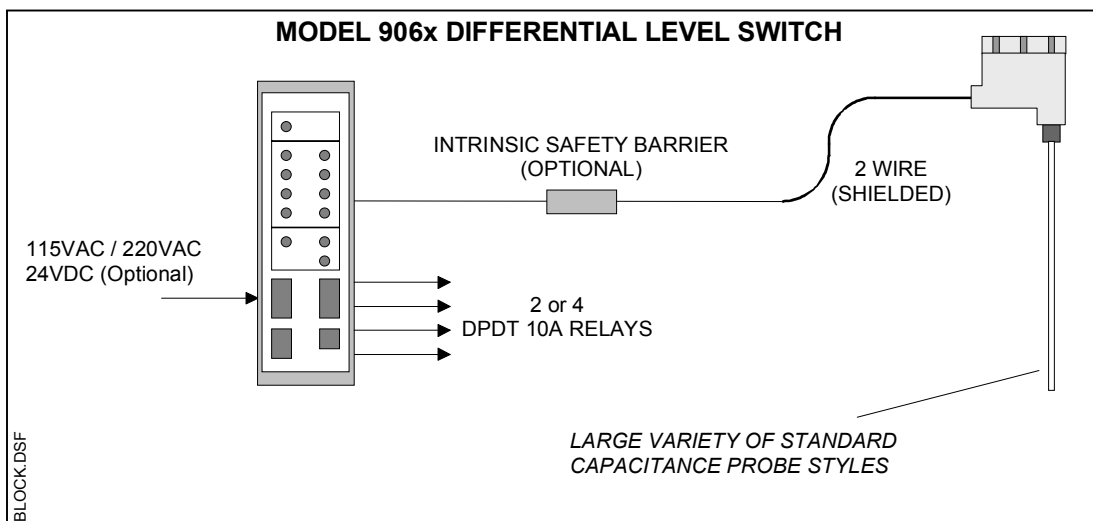


Figure 1.0

<u>MODEL</u> 9060 Series Diff.Level Switch	<u>DOCUMENT TYPE</u> USER MANUAL	<u>DOCUMENT FILE NAME</u> 9060UM21.DOC	<u>REV.</u> 2.1
<u>CREATE DATE</u> 06/16/2003 4:18 PM	<u>REV. DATE</u> 06/16/2003 4:22 PM	<u>PRINT DATE</u> 06/16/2003 4:22 PM	

OPERATION

The unit uses a RF Capacitance measurement technique for high resolution measurements. A probe mounted in a vessel forms a capacitor with the vessel wall (or with a concentric shield around the probe for non metallic vessels). The capacitance of this arrangement is measured by the 906X to provide up to 4 point or differential level switch controls.

USER INTERFACE

Power status	Green.
Alarm Status	Yellow indicator: On when not in alarm, Off when in alarm.
Status	Red: Steady on if instrument failure. Also used to indicate calibration status.
Calibrate	Pushbutton. Single switch to set both levels of differential alarm
Relay Select	Rotary switch: used to select a relay for calibration
Time delay	0 – 20 seconds. Set in 2 second increments.
Relay action	High or Low relay action. For high action, the alarm is set when the capacitance value rises above the high alarm point and is reset when the capacitance drops below the low alarm point. For low action, the alarm is set when the capacitance drops below the low alarm point and is reset when the capacitance rises above the high alarm point.
Dielectric switch	Used in horizontal probe, proximity plate sensor, flow sensor applications to indicate if the probe is at or not at the alarm point at calibration time. Used with the sensitivity switch.
Sensitivity	Used primarily in horizontal probes, proximity sensors, or Flow Detector sensors applications. It is used with the Dielectric switch to allow single point calibration without requiring the level to be at the alarm point.

PERFORMANCE

Resolution	The unit measures capacitance in pF. Capacitance to Level translation depends on the tank geometry and the type of material being measured. Capacitance: 0.02pF at 100pF, 0.1pF at 500pF, 0.2pF at 1000pF.
------------	--

PROBE CONNECTION

2 wire + shielded cable to probe - up to 1km long.

RELAY

Contacts	Up to 4. Set to Failsafe. DPDT 5A (resistive load) /250VAC/30VDC dry contacts. Selectable high or low acting alarm.
----------	--

POWER

115VAC or 220VAC @ 25mA max.
24VDC @ 60mA max.

MECHANICAL SPECIFICATIONS

Enclosure	Nema 1 equivalent
Dimensions /Weight	3.75" (95mm) diam. x 5.25" (133mm) high / 3lbs. (1.4kg)

ENVIRONMENTAL SPECIFICATIONS

Operating Temp.	-20 to 60°C for Controller only. For remote probe:-40 to 80°C
Relative Humidity	90% max. with no condensation.

<u>HARDWARE REV.</u> 3.0	<u>SOFTWARE REV.</u> 906X_07 and higher	Page 4 of 14
-----------------------------	--	--------------

<u>MODEL</u> 9060 Series Diff.Level Switch	<u>DOCUMENT TYPE</u> USER MANUAL	<u>DOCUMENT FILE NAME</u> 9060UM21.DOC	<u>REV.</u> 2.1
<u>CREATE DATE</u> 06/16/2003 4:18 PM	<u>REV. DATE</u> 06/16/2003 4:22 PM	<u>PRINT DATE</u> 06/16/2003 4:22 PM	

2.0 INSTALLATION

NOTE: If any damage to the instrument is found, please notify an Arjay Engineering representative as soon as possible prior to installation.

2.1 PROBES

Capacitance probes may be selected from a variety of styles for use with liquids, liquid interfaces, and granular materials. The probe length is customer specified for the height of material desired to be measured. Usually Teflon coated probes are used.

2.2 PROBE INSTALLATION

Standard probe entry in to a tank is via a 3/4" NPT opening (standard probes) or 1" NPT opening (heavy duty probes). Flanges and concentric shields are available as options. The entrance configuration may vary depending on the application requirements.

TO SCREW IN PROBE (THREADED ENTRY) USE WRENCH ON LOWER HEX. The probe fittings are compression type with Teflon ferrules assembled by applying torque between the two hex sections. The fittings are sealed at the factory to provide a compression seal capable of withstanding high pressures. Once opened they cannot be reassembled without replacing the ferrules.

Probe mounting depends on the type of probe used. The following are points to consider:

- Reference ground:** This is VERY IMPORTANT and is typically the metal walls of the tank. For non metallic tanks, a concentrically shielded probe is required in which case the shield provides its own Ground. IMPORTANT: For standard threaded entry and flange entry probes (without concentric shields), make sure the fittings are clean to ensure a GOOD ELECTRICAL CONNECTION BETWEEN THE PROBE HEAD ENCLOSURE AND THE TANK (REFERENCE GND). For horizontally mounted probes, the reference ground is not as important since the change in capacitance between alarm and no alarm is generally large. It is important that there are no moving objects in the probe vicinity to avoid false alarms.
- The distance between the probe and the ground reference:** This only applies to standard probes without concentric shields. The closer the distance to the tank wall, the greater the sensitivity of measurement; too close and bridging problems may occur.
- Horizontal probe mounting:** A horizontally mounted rod type probe should be mounted so that the lower face of the probe is parallel to and at the level of the desired alarm point. For viscous materials that have a tendency to cling to buildup, the probe should be mounted at a slight angle downward to allow the material to drain off the probe.
- Vertical probe mounting:** vertically mounted rod type probe should be mounted so that its midpoint is at the desired alarm point for single point applications. This allows a greater variation if the alarm point is later required to be changed. The alarm point may be calibrated anywhere along the length of the probe.
- Location:** Avoid installing rod type probes in nozzles or recesses where material can accumulate to give false readings.
- The measurement accuracy is affected by the temperature change of the material in the tank.** The amount of measurement error depends on the material. If the temperature change is

<u>HARDWARE REV.</u> 3.0	<u>SOFTWARE REV.</u> 906X_07 and higher	Page 5 of 14
-----------------------------	--	--------------

<u>MODEL</u> 9060 Series Diff.Level Switch	<u>DOCUMENT TYPE</u> USER MANUAL	<u>DOCUMENT FILE NAME</u> 9060UM21.DOC	<u>REV.</u> 2.1
<u>CREATE DATE</u> 06/16/2003 4:18 PM	<u>REV. DATE</u> 06/16/2003 4:22 PM	<u>PRINT DATE</u> 06/16/2003 4:22 PM	

excessive, temperature correction will be required. Contact the Arjay representative for more information.

- Agitators or moving objects in the tank:** Moving objects in the tank close to the probe such as agitator blades, moving baffles etc. appear as moving ground references to a capacitance probe and will cause measurement errors. In applications where these objects are present, a concentrically shielded probe must be used.

CAUTION: INSTALL PROBE WITH CARE: DAMAGE TO TEFLON SHEATH WILL CAUSE MEASUREMENT ERRORS.

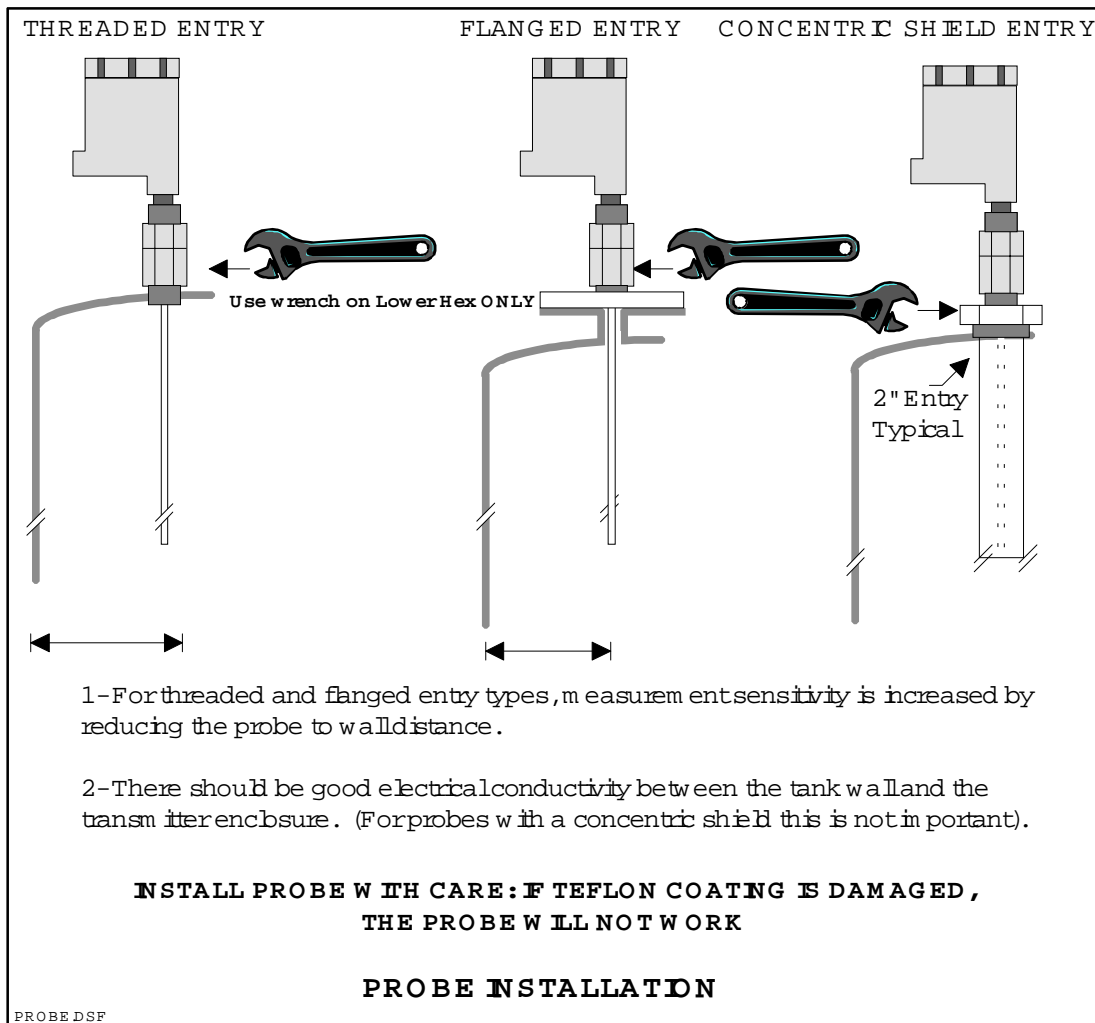


Figure 2.0

<u>MODEL</u> 9060 Series Diff.Level Switch	<u>DOCUMENT TYPE</u> USER MANUAL	<u>DOCUMENT FILE NAME</u> 9060UM21.DOC	<u>REV.</u> 2.1
<u>CREATE DATE</u> 06/16/2003 4:18 PM	<u>REV. DATE</u> 06/16/2003 4:22 PM	<u>PRINT DATE</u> 06/16/2003 4:22 PM	

3.0 STARTUP AND CALIBRATION

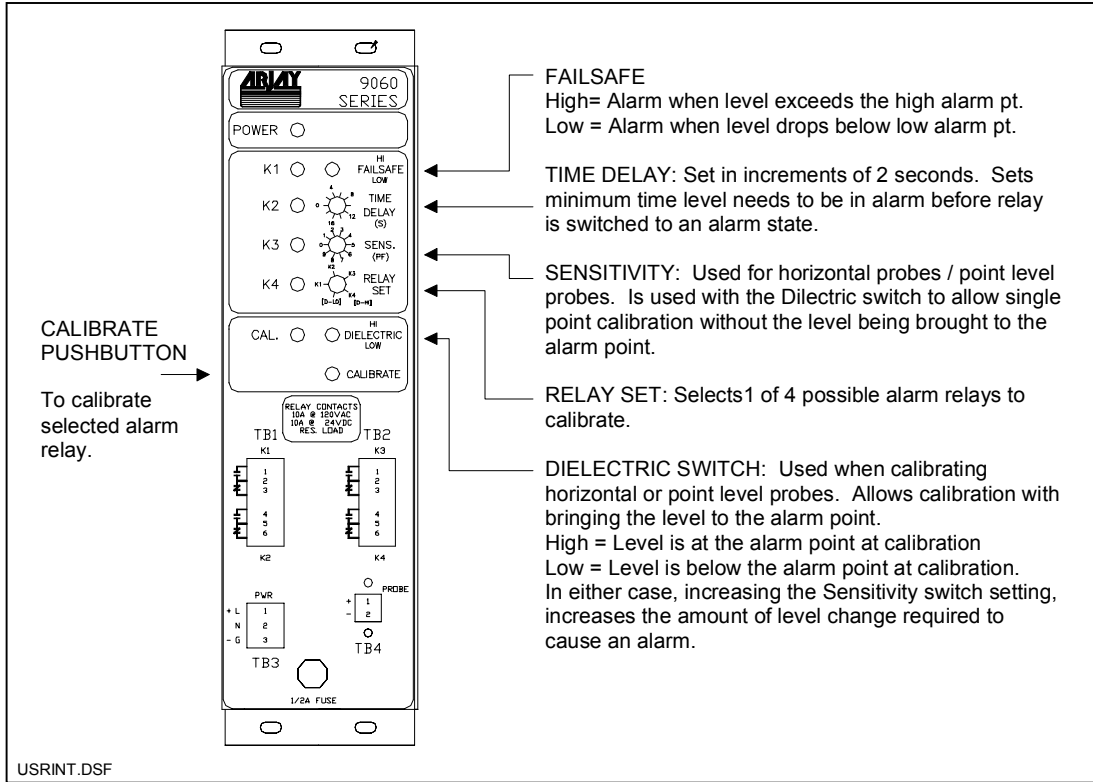


Figure 3.0

3.1 CALIBRATION OVERVIEW

Calibration and switch settings are determined by the type of probe and application. There are 2 main application types:

1. Differential level control. This application requires the use of a vertical probe.
2. Single point level switch using a vertical probe, horizontal probe, proximity sensor, or Dry Pump (Flow detection) probe.

3.2 POWERUP

After the unit has been installed as per the installation procedure in section 2, power up the unit. The Power indicator should be Green. The red Status indicator may be on or off and is not valid until a successful calibration has been done.

If the Status indicator is red refer to the troubleshooting procedure in section 5.0 for details.

3.3 DIFFERENTIAL ALARM CALIBRATION

This application requires a vertically mounted probe. Along the vertical length of the probe, the high and low alarm points of up to 4 independent alarms may be calibrated.

For this application, the Dielectric and Sensitivity switch settings are not important. They should be set to Low and 0 respectively.

<u>MODEL</u> 9060 Series Diff.Level Switch	<u>DOCUMENT TYPE</u> USER MANUAL	<u>DOCUMENT FILE NAME</u> 9060UM21.DOC	<u>REV.</u> 2.1
<u>CREATE DATE</u> 06/16/2003 4:18 PM	<u>REV. DATE</u> 06/16/2003 4:22 PM	<u>PRINT DATE</u> 06/16/2003 4:22 PM	

1. Set the Relay Set switch to the desired Alarm to be calibrated: 1 - 4 for model 9064, 1 - 2 for model 9062.
2. Bring the level to the first alarm point. This can be the high or low alarm level. After calibration, the 906X automatically assigns the high alarm point to the point with the higher measured capacitance.
3. Press the Calibrate pushbutton until the Status indicator glows red. The Status indicator then starts flashing indicating that the first alarm point has been stored.
4. Bring the level to the second alarm point. Press the Calibrate pushbutton until the Status indicator glows steady red. The Status indicator goes off in a few seconds.
5. This completes the calibration procedure for the selected alarm.
6. Repeat above steps for calibrating the remaining alarms if necessary.

Please refer to section 3.6 for setting the time delay and relay action. Also refer to the Applications section for examples.

3.4 SINGLE POINT ALARM CALIBRATION

The 906X is a differential level switch so for single alarm points, the high and low alarm points must be calibrated for the same level.

For horizontal probes, proximity sensors, and Dry Pump monitors (Flow switch) application, the 906X allows calibration without requiring the level to be at the alarm point. This is done using the Dielectric and Sensitivity switch settings.

The Dielectric switch value is set to High if at calibration time, the level of material in the vessel or pipe is above the alarm point i.e. for horizontal probes, the probe is immersed. After calibration, the actual alarm point is internally set to the captured capacitance minus the Sensitivity switch value. For example, if the capacitance at calibration was 100pF and the Dielectric switch was set to High then the actual alarm point is internally set to 100pF - the Sensitivity switch value. So if the sensitivity switch is set to 5, the actual alarm point is 95pF. Increasing the Sensitivity switch setting thus increases the amount of level change required to switch from the alarm state at calibration.

Conversely, the Dielectric switch is set to Low if the level is below the alarm point during calibration. After calibration, the actual alarm point is internally set to the captured capacitance plus the Sensitivity switch value. For example, if the capacitance at calibration was 100pf and the Dielectric switch was set to Low then the actual alarm point is internally set to 100pF + the Sensitivity switch value. So if the sensitivity switch is set to 5, the actual alarm point is 105pF. Therefore, again, Increasing the Sensitivity switch setting increases the amount of level change required to switch from the alarm state at calibration.

NOTES:

NOTE: FOR VERTICAL PROBES, CALIBRATION SHOULD BE DONE WITH THE LEVEL AT THE DESIRED ALARM POINT. THE DIELECTRIC AND SENSITIVITY SWITCHES ARE NOT IMPORTANT AND MAY BE SET TO LOW AND 0 RESPECTIVELY.

THE DIELECTRIC SWITCH SETTING IS ONLY CAPTURED AT CALIBRATION TIME. IT'S SETTING AFTER CALIBRATION DOES NOT AFFECT OPERATION.

THE SENSITIVITY SWITCH VALUE IS READ CONTINUOUSLY. IT'S SETTING AFTER CALIBRATION DOES AFFECT OPERATION (THE SENSITIVITY VALUE IS ADDED TO OR SUBTRACTED FROM THE CAPACITANCE VALUE CAPTURED AT CALIBRATION TO PRODUCE THE NEW ALARM POINT.

<u>HARDWARE REV.</u> 3.0	<u>SOFTWARE REV.</u> 906X_07 and higher	Page 9 of 14
-----------------------------	--	--------------

<u>MODEL</u> 9060 Series Diff.Level Switch	<u>DOCUMENT TYPE</u> USER MANUAL	<u>DOCUMENT FILE NAME</u> 9060UM21.DOC	<u>REV.</u> 2.1
<u>CREATE DATE</u> 06/16/2003 4:18 PM	<u>REV. DATE</u> 06/16/2003 4:22 PM	<u>PRINT DATE</u> 06/16/2003 4:22 PM	

1. For vertical capacitance probes, bring the level to the desired alarm point.
2. For horizontal probes, proximity sensors, or Dry Pump monitors, determine if the level is above or below the desired alarm point. If it is below, set the Dielectric switch to Low. Conversely, if it is higher than the desired alarm level, set the Dielectric switch to High.
3. Press the Calibrate pushbutton until the Status indicator glows red. The Status indicator then starts flashing indicating that the first alarm point has been stored.
4. Press the Calibrate pushbutton again until the Status indicator glows red. The second alarm point is assigned the same level value as the first resulting in a single alarm point.
5. This completes the calibration procedure. The Status indicator should be off.
6. Set the Sensitivity switch to some value other than 0pF. The amount depends on the application. The value sets the amount (in pF) the measured capacitance has to change from the current value to switch alarm states. A sensitivity value of 1 is most commonly used.

Please refer to section 3.5 below for setting the time delay and relay action.

3.5 ALARM SETTINGS

The relay is always in the failsafe condition: i.e. in alarm, the relay is off and vice versa.

NOTE: FOR ALL APPLICATIONS WHERE THE 906X IS CONTROLLING PUMP ACTION, THE NORMALLY OPEN (NO) CONTACTS MUST BE USED TO ENSURE THE PUMP IS SHUT OFF IN THE EVENT OF A POWER FAILURE TO THE 906X. THE RELAY ACTION SWITCH MAY BE USED GIVE THE CORRECT CONTACT CONDITIONS.

There are 3 alarm settings:

1. FAILSAFE ACTION. This is set via the FAILSAFE action switch. When set to High, the failsafe relay is de-energized and alarm indicator is off when the level rises above the High Alarm point for at least the alarm delay period. When the level falls below the Low Alarm point, the relay is energized and the Alarm indicator is on (with no time delay).

Conversely, when the Relay Action switch is set to Low, the failsafe relay is de-energized and alarm indicator is off when the level drops below the Low Alarm point for at least the alarm delay period. The relay is energized and the alarm indicator is on (with no time delay) when the level rises above the High Alarm point

Note: for Single point alarms, the High and Low Alarm points are at the same level.

This switch is also used to switch contact conditions. For example, for pump control applications where the pump must be shut off in the event of a power failure to the 906X, the Normally Open contacts must be used. The state of the relay contacts during an alarm is changed using the Relay Action switch.

2. ALARM TIME DELAY. This is set via the Time Delay switch. An alarm based on the Relay Action switch must be present for at least the time delay value for the relay to switch to the alarm state. There is no delay when switching off the alarm. The delay range is 0 – 20 seconds.

The delay is always to enter the alarm condition (failsafe relay de-energized, alarm indicator off). If the Relay Action switch is set to High, the delay is applied to de-energize the failsafe relay as the level rises above the High Alarm Point. If the Relay Action switch is set to Low, the delay is applied to de-energize the failsafe relay as the level drops below the Low Alarm point.

3. SENSITIVITY SETTING. This has already been described in section 3.4. It is primarily used for horizontal probes, proximity sensors, or Dry Pump monitors. The switch setting is used to add to

<u>HARDWARE REV.</u> 3.0	<u>SOFTWARE REV.</u> 906X_07 and higher	Page 10 of 14
-----------------------------	--	---------------

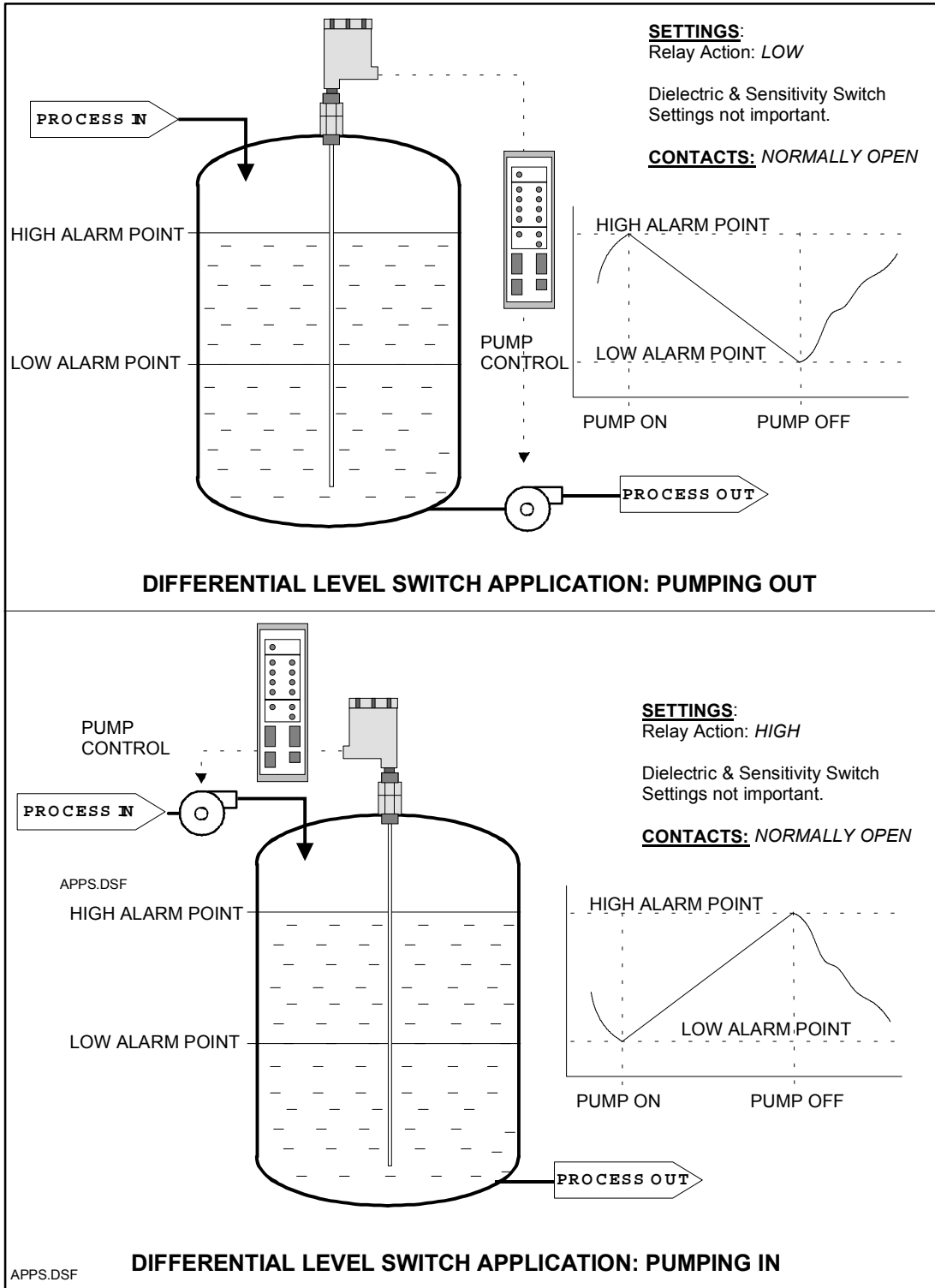
<u>MODEL</u> 9060 Series Diff.Level Switch	<u>DOCUMENT TYPE</u> USER MANUAL	<u>DOCUMENT FILE NAME</u> 9060UM21.DOC	<u>REV.</u> 2.1
<u>CREATE DATE</u> 06/16/2003 4:18 PM	<u>REV. DATE</u> 06/16/2003 4:22 PM	<u>PRINT DATE</u> 06/16/2003 4:22 PM	

or subtract from the calibrated level value to add more immunity from noise and also to allow calibration to be performed without the level being at the desired alarm point. See the applications section for more details. Typical applications use a sensitivity setting of 1

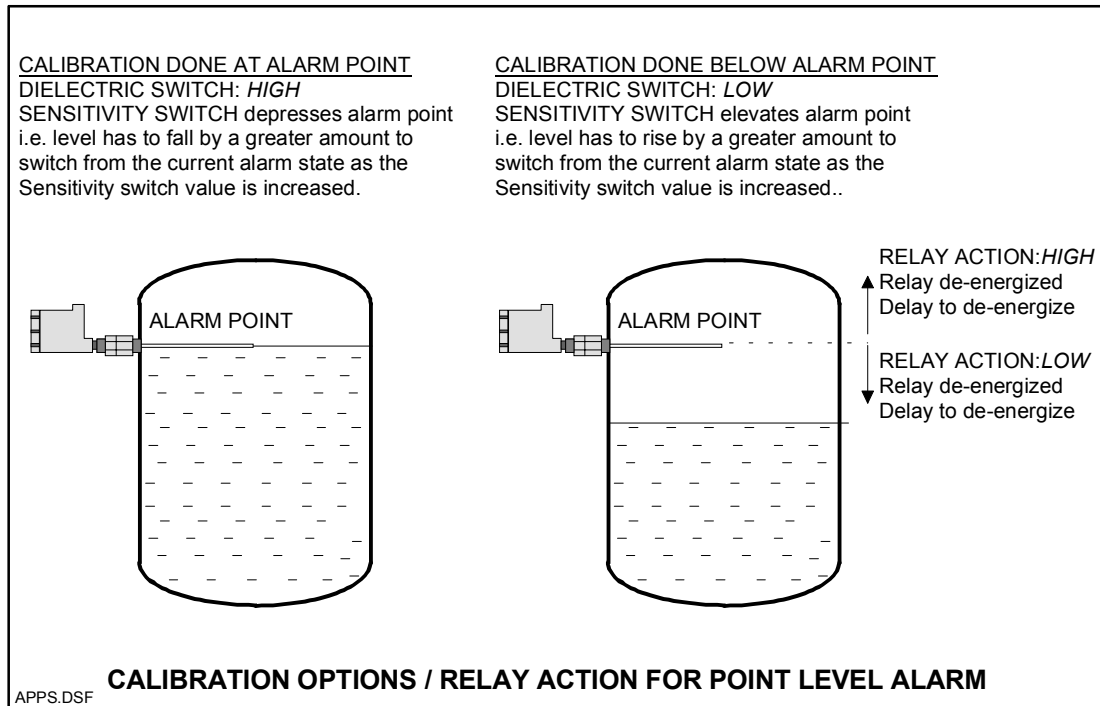
**THIS COMPLETES THE SETUP AND CALIBRATION PROCEDURE
FOR THE 9060 LEVEL SWITCH**

<u>MODEL</u> 9060 Series Diff.Level Switch	<u>DOCUMENT TYPE</u> USER MANUAL	<u>DOCUMENT FILE NAME</u> 9060UM21.DOC	<u>REV.</u> 2.1
<u>CREATE DATE</u> 06/16/2003 4:18 PM	<u>REV. DATE</u> 06/16/2003 4:22 PM	<u>PRINT DATE</u> 06/16/2003 4:22 PM	

4.0 APPLICATIONS



<u>MODEL</u> 9060 Series Diff.Level Switch	<u>DOCUMENT TYPE</u> USER MANUAL	<u>DOCUMENT FILE NAME</u> 9060UM21.DOC	<u>REV.</u> 2.1
<u>CREATE DATE</u> 06/16/2003 4:18 PM	<u>REV. DATE</u> 06/16/2003 4:22 PM	<u>PRINT DATE</u> 06/16/2003 4:22 PM	

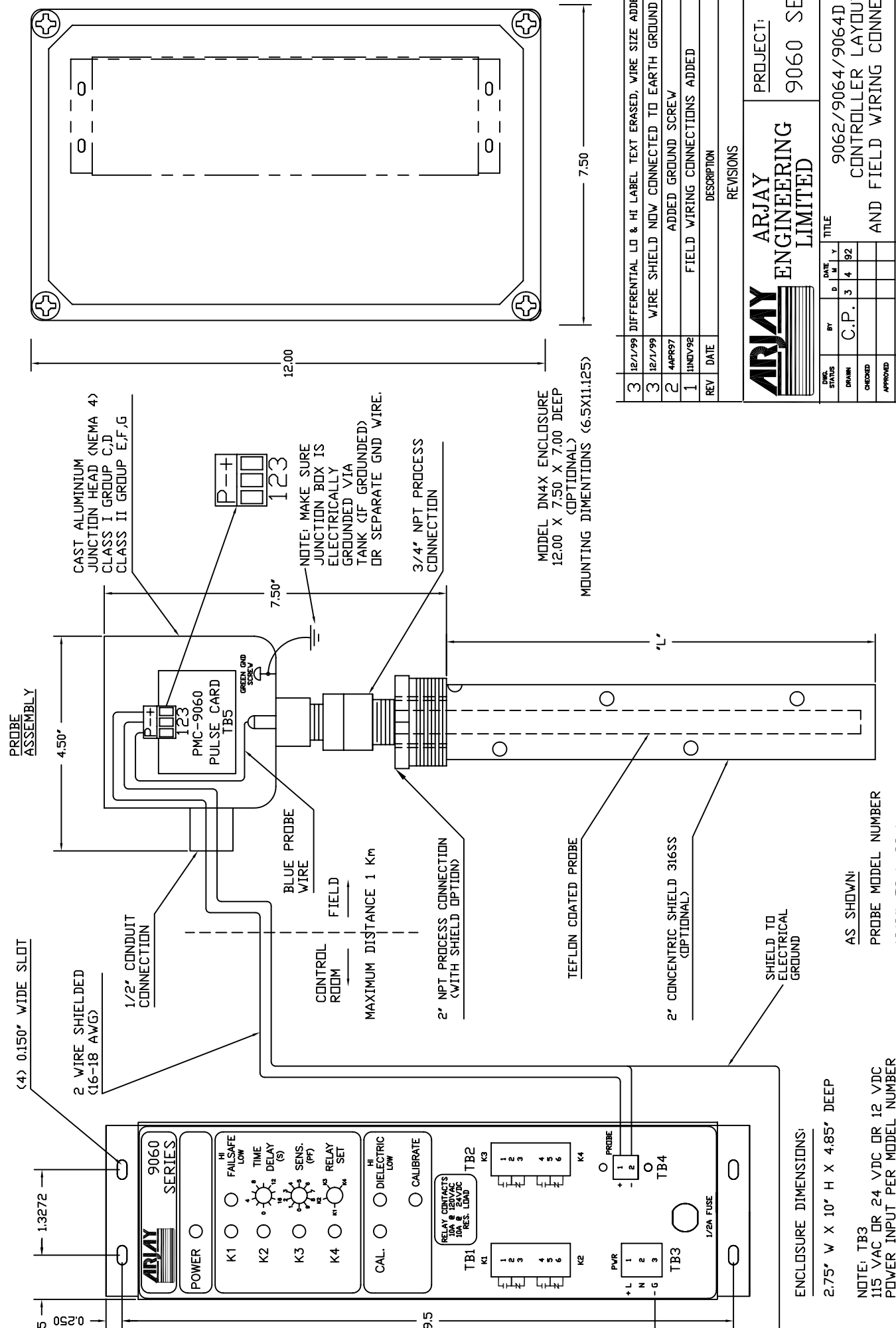


NOTES ON HORIZONTAL PROBES: If the probe is not shielded, the measured capacitance will slowly rise as the level approaches the probe based on the material in the tank, the tank shape and probe length. Therefore if the calibration is done while the level is below the probe using the Dielectric switch set to Low, the 906X may trigger an alarm before the level actually reaches the probe. This discrepancy may be reduced by setting the sensitivity switch to its max. value of 7. **The application should be verified to ensure the resulting alarm point is at the desired level.**

<u>MODEL</u> 9060 Series Diff.Level Switch	<u>DOCUMENT TYPE</u> USER MANUAL	<u>DOCUMENT FILE NAME</u> 9060UM21.DOC	<u>REV.</u> 2.1
<u>CREATE DATE</u> 06/16/2003 4:18 PM	<u>REV. DATE</u> 06/16/2003 4:22 PM	<u>PRINT DATE</u> 06/16/2003 4:22 PM	

5.0 TROUBLESHOOTING

CONDITION	DO THIS
1. No indicators on at powerup	<p>Check power to unit. Make sure power applied is as specified for the unit. If power is ok, check the fuse. If fuse is blown call an Arjay representative to analyze why the fuse is blown.</p>
2. Status indicator is RED	<p>This indicates that the probe signal is either weak, unstable, out of legal range, or not present. Check the probe first:</p> <ul style="list-style-type: none"> • At the probe, disconnect the blue probe wire coming from the base of the probe enclosure. • measure the resistance with a digital resistance meter between the now isolated blue wire and the metal enclosure. Do not touch the metal ends of the meter leads to avoid the meter from reading body resistance. • For a good probe, the resistance should read open (OL on the meter display). Any other value indicates a bad probe. • In either case, call an Arjay representative or Arjay Technical support. • If the probe is ok, re-connect the blue probe wire. Re-calibrate the unit - only a single alarm is required. If during or after calibration, the status indicator stays on then call an Arjay representative for technical support.



(4) 0.150" WIDE SLOT

2 WIRE SHIELDED (16-18 AWG)

1/2" CONDUIT CONNECTION

BLUE PROBE WIRE

CONTROL ROOM

FIELD

MAXIMUM DISTANCE 1 Km

2" NPT PROCESS CONNECTION (WITH SHIELD OPTION)

TEFLON COATED PROBE

2" CONCENTRIC SHIELD 316SS (OPTIONAL)

SHIELD TO ELECTRICAL GROUND

PROBE ASSEMBLY

4.50"

CAST ALUMINIUM JUNCTION HEAD (NEMA 4) CLASS I GROUP C,D CLASS II GROUP E,F,G

PMC-9060 PULSE CARD TB5

P-+ 123

NOTE: MAKE SURE JUNCTION BOX IS ELECTRICALLY GROUNDED VIA TANK (IF GROUNDED) OR SEPARATE GND WIRE.

3/4" NPT PROCESS CONNECTION

MODEL DN4X ENCLOSURE 12.00 X 7.50 X 7.00 DEEP (OPTIONAL) MOUNTING DIMENSIONS (6.5X11.125)

7.50

12.00

REV	DATE	DESCRIPTION	CHK'D	APPD
3	12/1/99	DIFFERENTIAL LO & HI LABEL TEXT ERASED, WIRE SIZE ADDED		
3	12/1/99	WIRE SHIELD NOW CONNECTED TO EARTH GROUND		
2	4APR97	ADDED GROUND SCREW		
1	11NOV92	FIELD WIRING CONNECTIONS ADDED		

REVISIONS				
DWG. STATUS	BY	DATE	TITLE	
		D	M	Y
DRAWN	C.P.	3	4	92
CHECKED				
APPROVED				
SCALE	REF. DIMS.	DWG. NO.	PROJECT:	
		92003200	ARJAY ENGINEERING LIMITED	
			9060 SERIES	
			9062/9064/9064D	
			CONTROLLER LAYOUT	
			AND FIELD WIRING CONNECTIONS	
			SHT.	REV.
			1	3

AS SHOWN:
PROBE MODEL NUMBER
1S(2")-TS-L-CS-L

ENCLOSURE DIMENSIONS:
2.75" W X 10" H X 4.85" DEEP

NOTE: TB3
115 VAC OR 24 VDC OR 12 VDC
POWER INPUT PER MODEL NUMBER
(USE PIN 1 & 3 FOR 12 VDC OR 24 VDC)

ALL DIMENSIONS ARE IN INCHES