

TITAN LOGIX CORP.

AIT100
INSTALLATION GUIDE
USER MANUAL



TITAN LOGIX CORP. AIT100 INSTALLATION GUIDE

Installation of the *AIT100* is critical for the accuracy of the gauge. A proper installation will produce a product that is virtually service free. The reliability of a gauge depends on the proper installation of the gauge and the training for all of those involved in the use of the gauge.

The following are steps to ensure that the installation will allow the maximum efficiency and accuracy of the *AIT100* and provide the user a product that can be trusted and relied upon.

The installation is done when the drilling rig is changing over from the conductor pipe to a B.O.P. stack. The welder is on location welding the bowl on and the B.O.P. has not been raised as of yet.

Titan Logix Corp. promotes safety. The installation of the *AIT 100* takes place in a small working environment with obstructions and distractions. Safety is the number one priority of the installation process and should not be compromised under any circumstances.

1. Once the B.O.P. has been raised, the flow T must be placed loose on top. This gives the installer the comfort of taking a partially built unit of the standard 45 degree probe or the 90 degree variation and placing it on the flow T to ensure that flange is welded on in a location that the probe will be free of obstructions. The top of the flange should be placed at least 2" below the bottom of the flow line. At this time the flange placement can be marked out and the crew can bring the flow T back down for the welder to mount the flange. (As illustrated in Fig 1.)
2. The top of the probe has a dead space of 3". With this in mind, the top of the probe must be at least 5" above the top of the flow line. Depending on the inclination of the flow line and the pump stroke rate being used, the flow line may be full while drilling. In these circumstances the top of the probe should be placed as high as the sub-structure will allow. (As illustrated in Fig 1.)
3. Once the flange has been welded on and the flow T is bolted securely on the top of the B.O.P., a partially built unit should be placed in the flange and an accurate measurement can be taken for the length of the probe required.
4. The probe is made up of a base that slides inside the flange, extensions ranging from 3 to 17", a probe head that the sensor mounts to, a 1/4" rod that is placed down the center, and the probe itself. Victaulic clamps are used to place together the outer parts of the probe. (As illustrated in Fig 2.)
5. Once the probe is built all but the head, the 1/4" rod can be marked and cut to length. Once this is done the head of the probe can be placed on and the 1/4" rod slides into a holder with a setscrew to keep it in place. (As illustrated in Fig 3.)
6. The probe is installed in the flange and bolted on with 8 - 5/8" nuts and 4 - 3" long studs, or a hammer union style flange depending on type of probe installed. (As illustrated in Fig 4.)
7. Once the probe is installed, the sensor can be placed on the probe. The sensor is **not** an NPT connection and should be placed on carefully, being sure not to cross thread or thread on with a burr.

Fig 1.

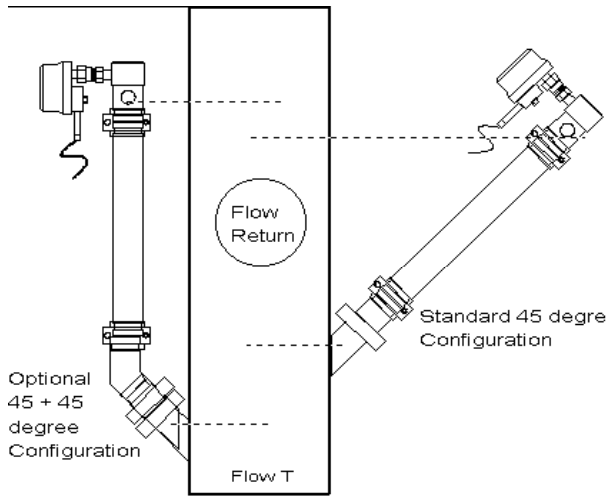


Fig 2.



Fig 3.



Fig 4.



AIT 100 FLOW MONITOR PROGRAMMING

PASON EDR

The AIT 100 flow monitor is a Passive loop 4-20 mA device, powered by 8-28 VDC. To program the 4-20mA output on the AIT 100, follow the steps provided.

1. On the PASON EDR system, select **MENU, SETUP, CALIBRATE**
2. Enter password **255.3158** (PASON phone #).
3. Select **PASON**.
4. Select the channel that is dedicated to the AIT unit. (**CUSTOM 1, CUSTOM 2, etc.**)
5. Select **NAME** and enter AIT FLOW, then change the sensor type to Manual and select % for the units.

SETTING LOW

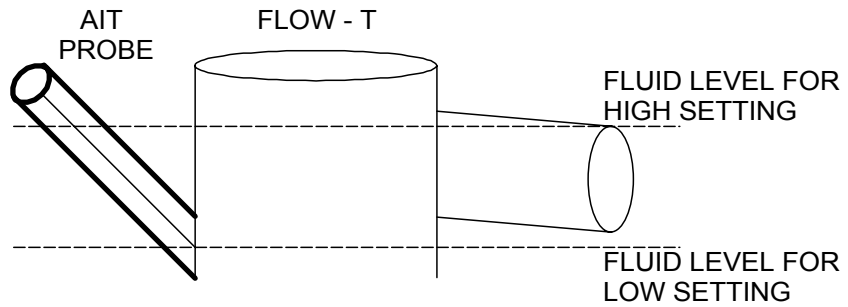
With the pumps shut off and the drill stem pulled off bottom, the AIT flow monitor unit will have no fluid in the anti-chamber. At this point select **CHANGE** then **OK** and enter 0. Once entered, exit the screens and AIT FLOW will change to 0.

SETTING HIGH

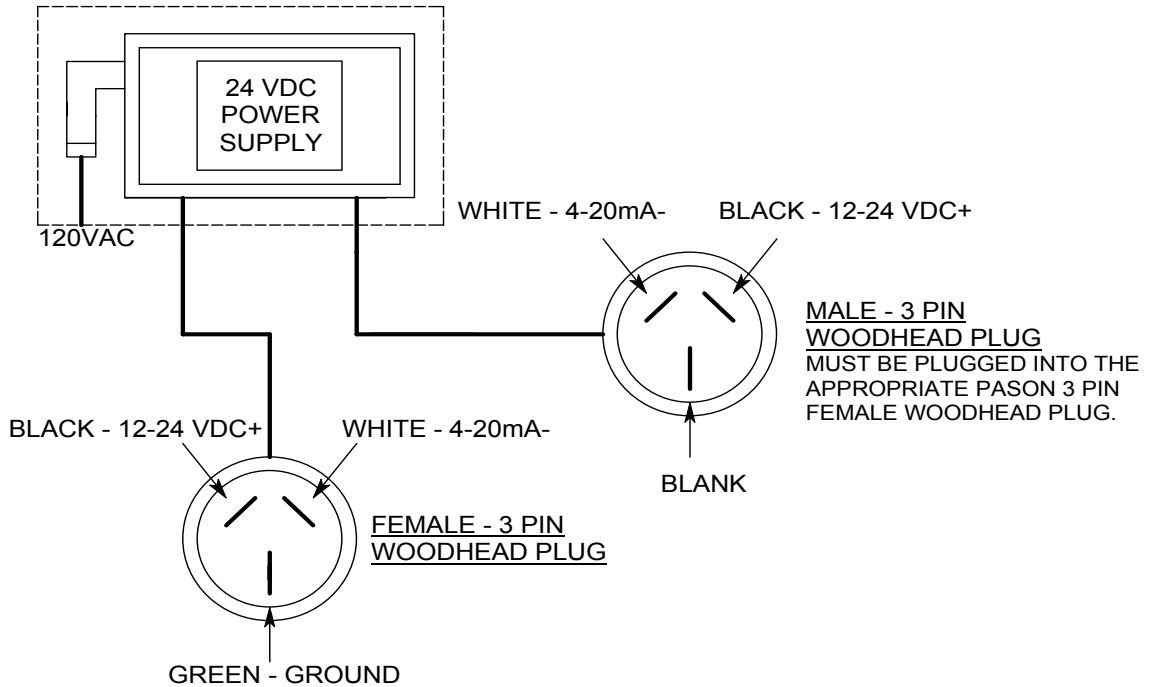
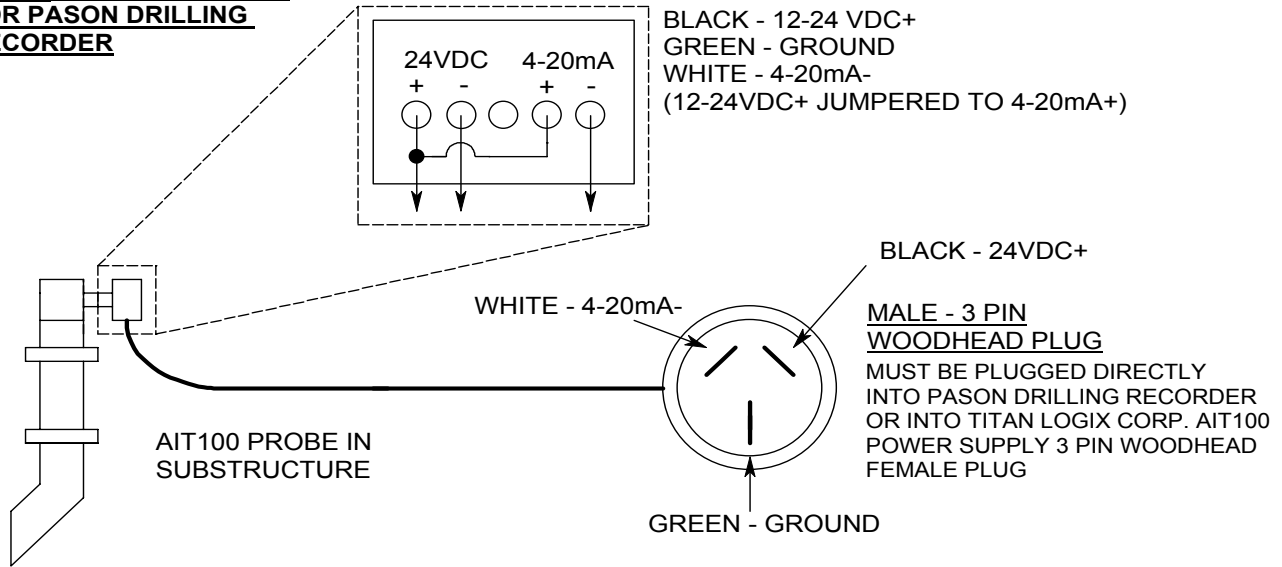
During drilling with return flow, enter the loop diagnostics screen on the PASON EDR. Depending on pump rate and angle of flow line the AIT unit will read anywhere from 8-16mA. Write the number down, Enter the AIT FLOW calibration screen, select **CHANGE** then **OK** and percent value that corresponds to the loop diagnostics mA reading according to the programming chart provided. Once this screen is exited the calibration will take effect and the AIT 100 flow monitor will be active.

PROGRAMMING CHART

mA	Percent	mA	Percent
4.0	0.0	12.5	53.1
4.5	3.1	13.0	56.3
5.0	6.3	13.5	59.4
5.5	9.4	14.0	62.5
6.0	12.5	14.5	65.6
6.5	15.6	15.0	68.8
7.0	18.8	15.5	71.9
7.5	21.9	16.0	75.0
8.0	25.0	16.5	78.1
8.5	28.1	17.0	81.3
9.0	31.3	17.5	84.4
9.5	34.4	18.0	87.5
10.0	37.5	18.5	90.6
10.5	40.6	19.0	93.8
11.0	43.8	19.5	96.9
11.5	46.9	20.0	100.0
12.0	50.0		



TITAN LOGIX CORP.
AIT100 WIRING DIAGRAM
FOR PASON DRILLING
RECORDER



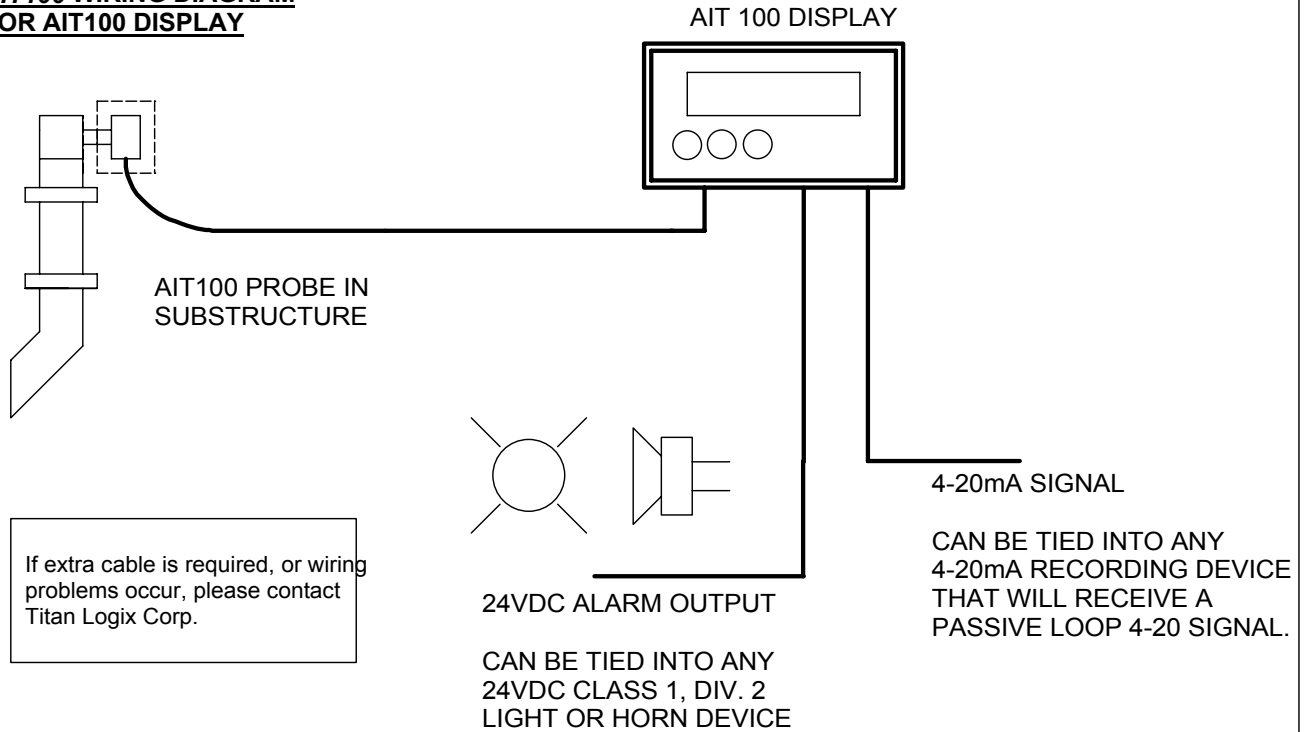
NOTE:

The AIT100 is 4-20mA passive current loop device. 12-24 VDC+ must be tied to the 4-20mA+ for the sensor to function. If the power supply is not more than 75mA, it will result in a max current output less than 20mA. If this occurs, a Titan Logix Corp. AIT100 power supply must be used.

NOTE:

The AIT 100 unit will output 20mA at maximum fluid level and 4mA when empty. This is calibrated on the PASON drilling recorder to read from 0-100 percent, or as user sees fit.

TITAN LOGIX CORP.
AIT100 WIRING DIAGRAM
FOR AIT100 DISPLAY



4-20 mA SIGNAL

The 4-20 signal provided by the AIT100 unit, is calibrated such that 4mA is output at the bottom of the probe when there is no fluid present. 20mA is output when the anti-chamber probe is full of fluid. This should be calibrated on drilling recorder units such that 4mA will be represented by 0 and 20mA represented by 100.

ALARM OUTPUT

The alarm output on the AIT100 unit is operated by relays on the display board. The maximum Amperage that can be controlled is 2A. If the alarm device being controlled is more than this, an interposing relay must be used. The HI and LOW alarms are user settable by simply holding down the button of the desired alarm until the alarm appears, and changing the value by pressing the up or down button. When the desired value is reached, allow the display to return to normal functionality.

ALARM DELAY

When this button on the AIT100 display is pressed, the display will flash slowly. This allows the user to complete drilling operations such as tripping, without the alarm being activated. The maximum time allowed for this function is 15 min. To change the time of this delay, hold down both the up and down buttons at the same time until "dE" and a number appears on the screen. This number is the amount of minutes that the alarm will be delayed for. To change it, simply press up or down until the desired time is reached.

AIT100 TROUBLESHOOTING GUIDE

<u>PROBLEM</u>	<u>POSSIBLE SOLUTION</u>
Reading negative number on drilling recorder	<p>Check in the LOOP DIAGNOSTICS of the drilling recorder.</p> <ol style="list-style-type: none">1. If the reading on the AIT sensor is 0.0mA;<ul style="list-style-type: none">• Check all of the connections to the drilling recorder, as well as the wiring of any plugs to be sure that all wires and connections are terminated.• Check that the output on the power supply is 12-24VDC.2. If the reading on the AIT sensor is between 4 and 20mA;<ul style="list-style-type: none">• With the pumps off, and the AIT sensor reading 4mA, calibrate the low to 0.• While drilling, use the chart on the following page to calibrate the high.
Reading 0 on drilling recorder	<p>Check in the LOOP DIAGNOSTICS of the drilling recorder. If the reading on the AIT sensor is 4mA;</p> <ul style="list-style-type: none">• Check that the AIT sensor is tight to the probe (1-3/4" nut).• Flush out the unit via the 1" NPT fitting located near the top of the probe using a wash gun.• Remove probe during non-pumping activity and be sure that the 1/4" rod is not pulled out from the top of the inside of the probe, and is resting in the anchor of the probe and is secured by a setscrew.
Reading not moving (Eg.80)	<p>Flush out the probe using a pressure hose via the 1" NPT fitting in the top of the unit in the sub-structure. If there is still no movement, remove the unit during a non-pumping operation and ensure that there is no blockage inside the probe. Follow the above steps to calibrate the gauge.</p>
Reading above 100	<p>Check in the LOOP DIAGNOSTICS of the drilling recorder and calibrate the unit according to the calibration chart provided in this manual.</p>