

Moisture Target™ Series 6

User's Manual



Moisture Target™ Series 6

Hygrometer

User's Manual

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Information Paragraphs

- **Note** paragraphs provide information that provides a deeper understanding of the situation, but is not essential to the proper completion of the instructions.
- **Important** paragraphs provide information that emphasizes instructions that are essential to proper setup of the equipment. Failure to follow these instructions carefully may cause unreliable performance.
- **Caution!** paragraphs provide information that alerts the operator to a hazardous situation that can cause damage to property or equipment.
- **Warning!** paragraphs provide information that alerts the operator to a hazardous situation that can cause injury to personnel. Cautionary information is also included, when applicable.

Safety Issues

WARNING! It is the responsibility of the user to make sure all local, county, state and national codes, regulations, rules and laws related to safety and safe operating conditions are met for each installation.

Auxiliary Equipment

Local Safety Standards

The user must make sure that he operates all auxiliary equipment in accordance with local codes, standards, regulations, or laws applicable to safety.

Working Area

WARNING! Auxiliary equipment may have both manual and automatic modes of operation. As equipment can move suddenly and without warning, do not enter the work cell of this equipment during automatic operation, and do not enter the work envelope of this equipment during manual operation. If you do, serious injury can result.

WARNING! Make sure that power to the auxiliary equipment is turned OFF and locked out before you perform maintenance procedures on the equipment.

Qualification of Personnel

Make sure that all personnel have manufacturer-approved training applicable to the auxiliary equipment.

Personal Safety Equipment

Make sure that operators and maintenance personnel have all safety equipment applicable to the auxiliary equipment. Examples include safety glasses, protective headgear, safety shoes, etc.

Unauthorized Operation

Make sure that unauthorized personnel cannot gain access to the operation of the equipment.

Environmental Compliance

Waste Electrical and Electronic Equipment (WEEE) Directive

Baker Hughes is an active participant in Europe's *Waste Electrical and Electronic Equipment (WEEE)* take-back initiative, directive 2002/96/EC.



The equipment that you bought has required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

In order to avoid the dissemination of those substances in our environment and to diminish the pressure on the natural resources, we encourage you to use the appropriate take-back systems. Those systems will reuse or recycle most of the materials of your end life equipment in a sound way.

The crossed-out wheeled bin symbol invites you to use those systems.

If you need more information on the collection, reuse and recycling systems, please contact your local or regional waste administration.

Visit www.bakerhughesds.com/health-safetyand-environment-hse for take-back instructions and more information about this initiative.

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Chapter 1. Features and Capabilities

1.1 Introduction

The *Moisture Target Series 6 (MTS6)* is a microprocessor-based, single-channel hygrometer that measures moisture content in gases. It is intended for *Original Equipment Manufacturer (OEM)* applications, and is suitable for a wide range of process conditions that require real-time moisture measurement.

The MTS6 accepts any calibration range provided with Panametrics probes (see Chapter 5, *Specifications* for more information). It comes equipped with two standard alarm relays, one fault alarm relay, and a single analog output. It also has onboard data logging capability using an micro SD card.

1.2 Electronics Unit

The MTS6 displays measurement data on a liquid crystal display (LCD). You can program your unit and enter probe information using the keys on the front panel (see Figure 1). The MTS6 accepts line voltages of a universal power supply from 100 to 240 VAC, or 24 VDC, depending on what is ordered.



Figure 1: Front Panel

1.3 Probes

The *moisture probe* is the part of the system that comes in direct contact with the process. The MTS6 uses any Panametrics M Series (see Figure 2) or a VeriDri probe (see Figure 3) to measure dew point temperature in °C or °F. The sensor assembly is secured to the probe mount and is protected with a sintered stainless steel shield (see Figure 2).

Note: Other types of shields are available upon request.

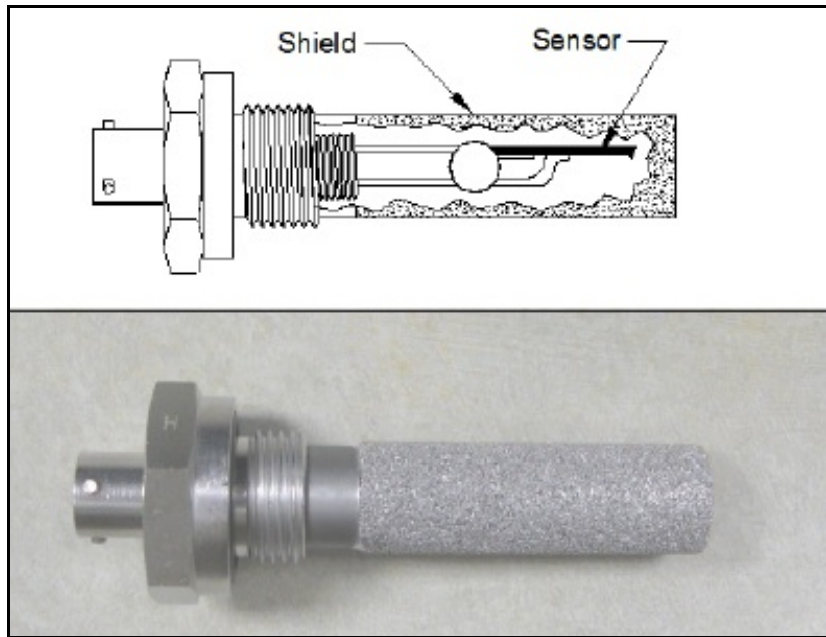


Figure 2: M Series Probe



Figure 3: VeriDri Probe

Chapter 2. Installation

2.1 Introduction

Installing the MTS6 includes the following steps:

- selecting the recorder output
- mounting the electronics unit
- mounting the sample system
- installing the probe into the sample system
- wiring the input power
- wiring the probe and alarm connections

WARNING! To ensure safe operation, the MTS6 must be panel mounted and operated as described in this manual. Also, be sure to follow all applicable local safety codes and regulations for installing electrical equipment.

Note: For the non-enclosure MTS6 package, please refer to Appendix D for mounting and installation.

2.2 Selecting the Recorder Output

Note: By default, the recorder is set to the current output.

Note: The customer will provide their own cable for connecting the recorder. Acceptable cables range from 16 to 26AWG.

The MTS6 has one isolated analog recorder output. The recorder output provides either a current or voltage signal, which is set by switch **S1** on the main PC board.

Complete these steps to check or reset switch **S1** (see Figure 8).

WARNING! Never connect line voltage or any other power input to the recorder output terminals.

1. Make sure the MTS6 is turned off and unplugged.

WARNING! The MTS must be isolated or disconnected from all voltage sources before changing the recorder output.

2. Remove the screw at the top of the back panel (see Figure 4).

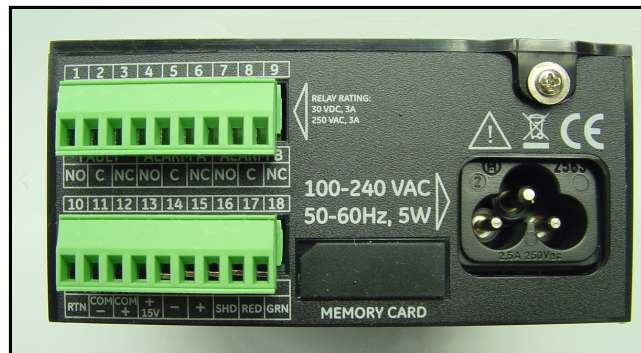


Figure 4: Back Panel

3. Lift the back edge of the cover (see Figure 5), slide the cover back (see Figure 6), and lift it from the enclosure (see Figure 7).

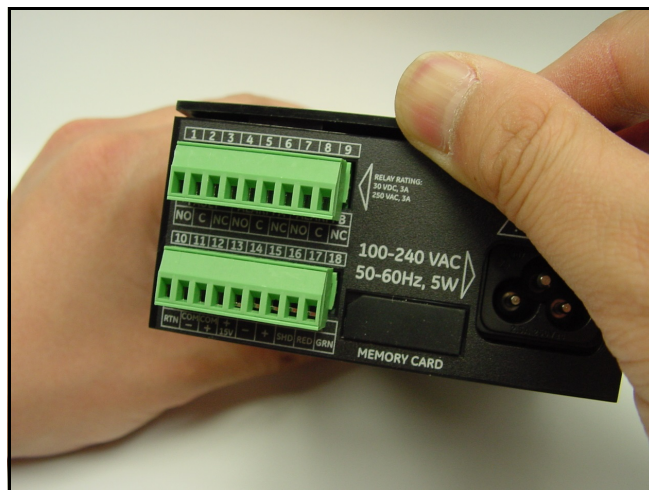


Figure 5: Lifting the Back Edge of the Cover

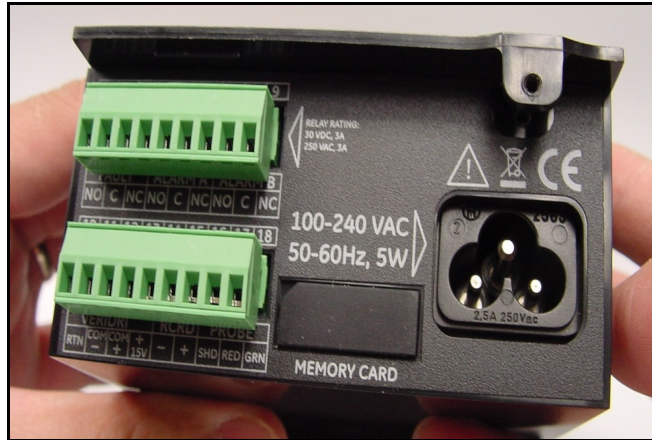


Figure 6: Sliding the Cover Back

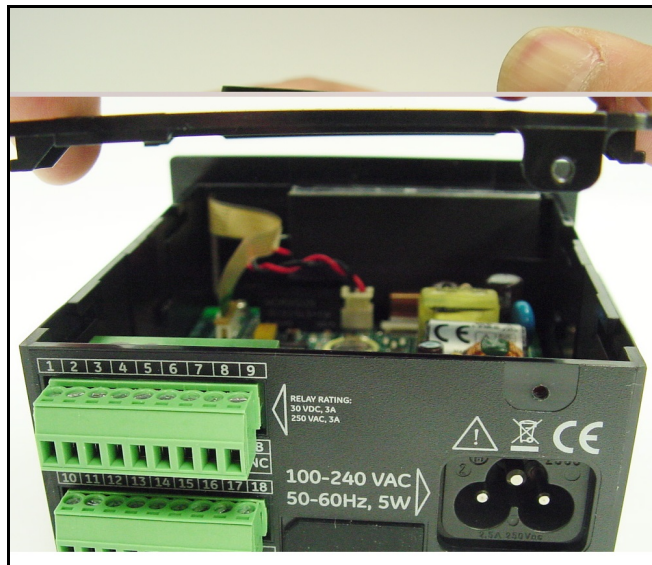


Figure 7: Lifting the Cover

4. Locate switch **S1** (see Figure 8, highlighted area).



CAUTION! Use proper ESD grounding prior to changing the switch.

5. Set switch **S1** to the desired position: **V** for voltage or **I** for current.

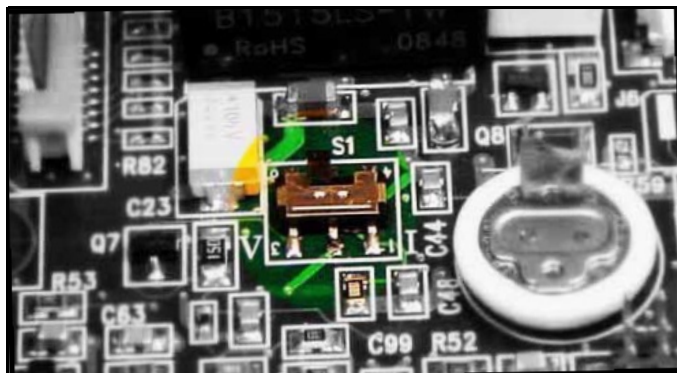


Figure 8: Switch S1 on the Main PC Board

6. After setting the switch, replace the cover and reinsert the rear enclosure screw.

2.3 Mounting the Electronics Unit

The MTS6 unit can be installed in a panel up to 0.25 in. (6 mm) thick. See Appendix A, *Outline and Installation Drawings*, for the required panel cutout dimensions.

IMPORTANT: For **NEMA 4** and **IP66** installation, the MTS6 must be mounted in a rigid, flat panel using the panel gasket and both mounting brackets provided.

2.3.1 Basic Mounting

To mount the MTS6 in a panel with a basic 94 mm (3.69") x 46 mm (1.81") opening, refer to the following figures and complete the following steps:

1. Remove the side panel mount label prior to installation.



Figure 9: Removing Side Panel Mount Label

2. Slide the small gasket along the MTS6 and place it around the back of the display (see Figure 10).



Figure 10: Installing the Gasket Behind the Display

3. Slide the MTS6 into the panel cutout (see Figure 11).



Figure 11: Sliding the MTS6 into the Panel Cutout

4. Behind the panel, insert the mounting brackets into the side holes provided (see Figure 12).

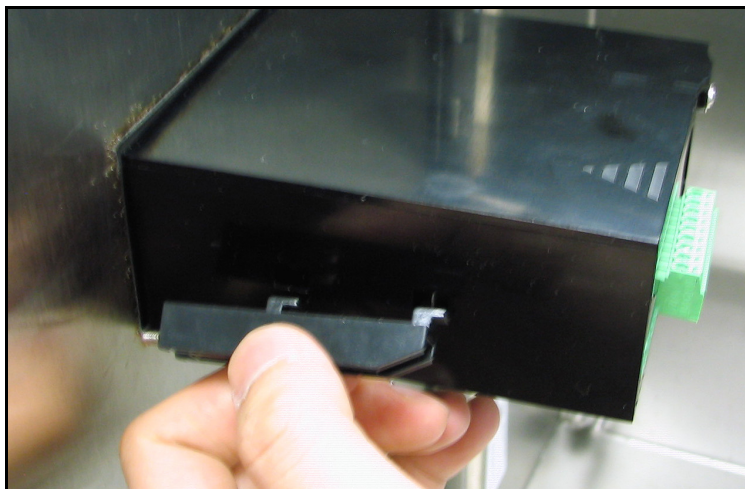


Figure 12: Installing the Mounting Brackets

5. Hold the chassis and lock each mounting bracket in place by sliding it toward the rear of the MTS6 (see Figure 13).

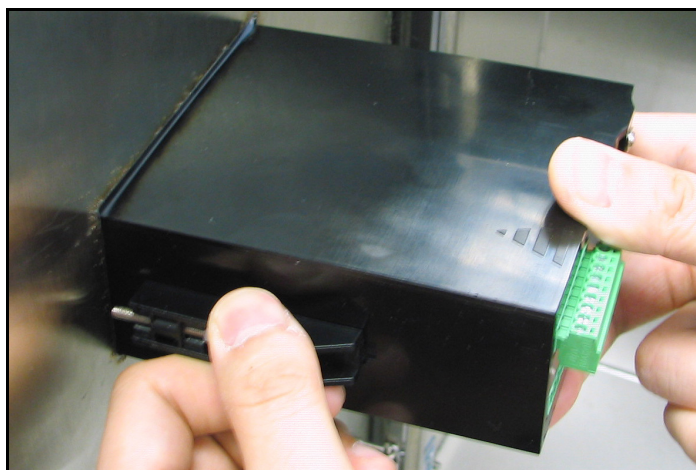


Figure 13: Locking the Mounting Brackets in Place

6. Use a screwdriver to extend the bracket screws to the back of the panel and secure the MTS6 in the panel cutout (see Figure 14).

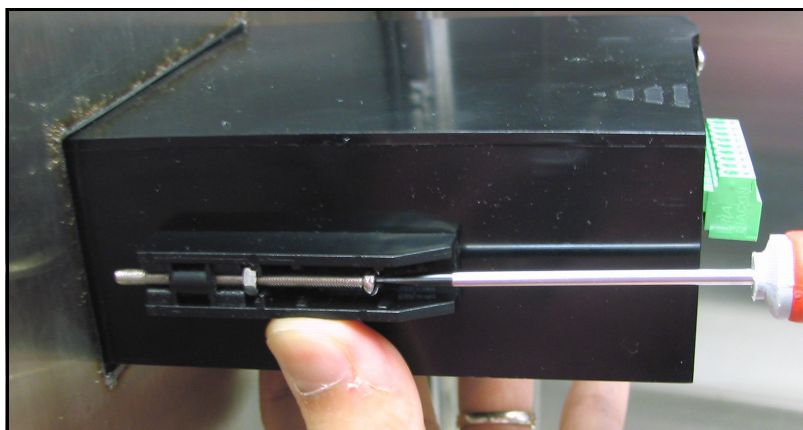


Figure 14: Securing the MTS6 to the Panel

7. Using a feeler gauge behind the gasket, check the compression, and tighten the bracket screws until the gap is $0.028'' \pm 0.002''$ (see Figure 15).



Figure 15: Checking the Gasket Compression

2.3.2 Adapter Plate Mounting

Some customers may need to retrofit an MTS6 into a cut-out sized for Panametrics's previous OEM panel-mount hygrometers: MTS5, MTS4 or PanaDry models. The previous generations were of a larger size requiring a 5.40" (137.2 mm) W x 2.65" (67.3 mm) H cut-out. The MTS6 is smaller, requiring a 3.69" (94 mm) W x 1.81" (46 mm) H cut-out. For those customers who need to retrofit the larger panel cut-out sizes, Panametrics offers an optional adapter plate. See Appendix A, *Outline and Installation Drawings*, for the required panel cutout.

1. Fit the larger gasket around the adapter plate (see Figure 16).



Figure 16: Installing the Adapter Plate Gasket

2. Fit the adapter plate into the panel cutout (see Figure 17).

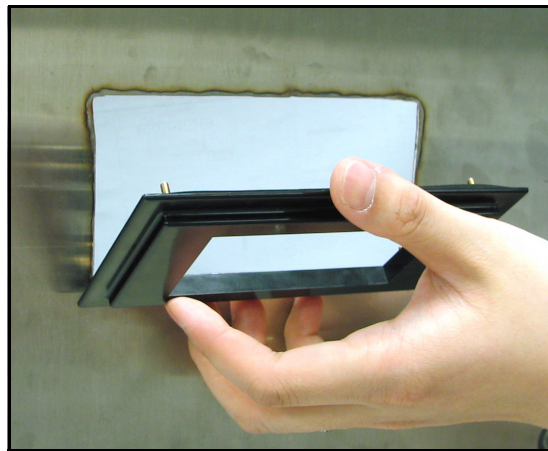


Figure 17: Inserting the Adapter Plate

3. Behind the panel, place the metal backing plate over the four adapter plate mounting screws (see Figure 18).

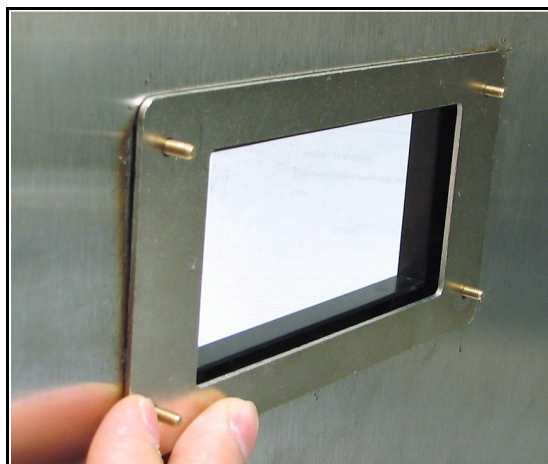


Figure 18: Applying the Backing Plate

4. Apply nuts to the four screws and secure the assembly to the panel (see Figure 19 and Figure 20). Use a feeler gauge behind the gasket, check the compression, and tighten the nuts until the gap is $0.032" \pm 0.002"$.

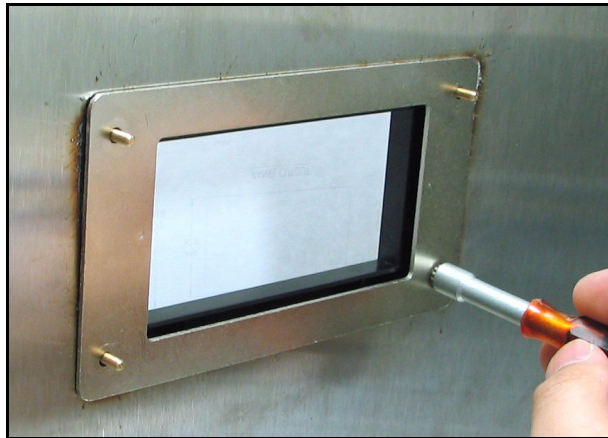


Figure 19: Securing the Assembly to the Panel

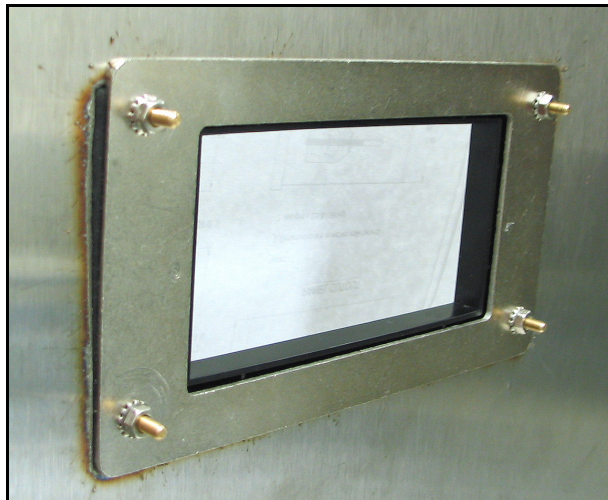


Figure 20: Plate Assembly Mounting Complete

Now mount the MTS6 using steps 1-6 in *Basic Mounting* on page 7. Re-verify the adapter plate gap after the MTS6 is mounted to the adapter plate. The installation should appear similar to Figure 21 and Figure 22.

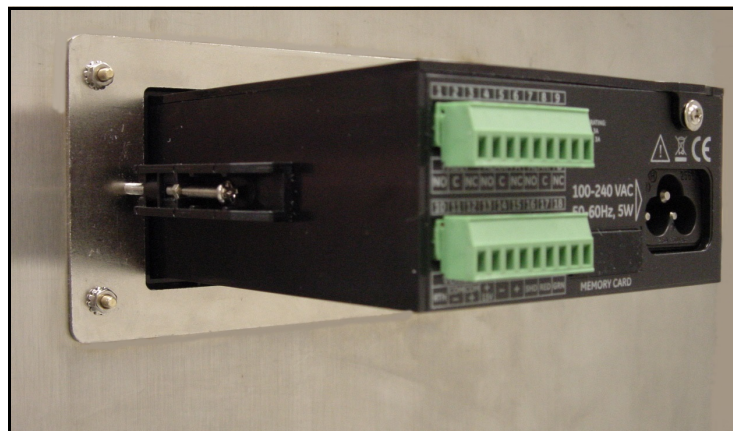


Figure 21: MTS6 Installation with Adapter Plate - Rear



Figure 22: MTS6 Installation with Adapter Plate – Front

2.4 Mounting the Sample System

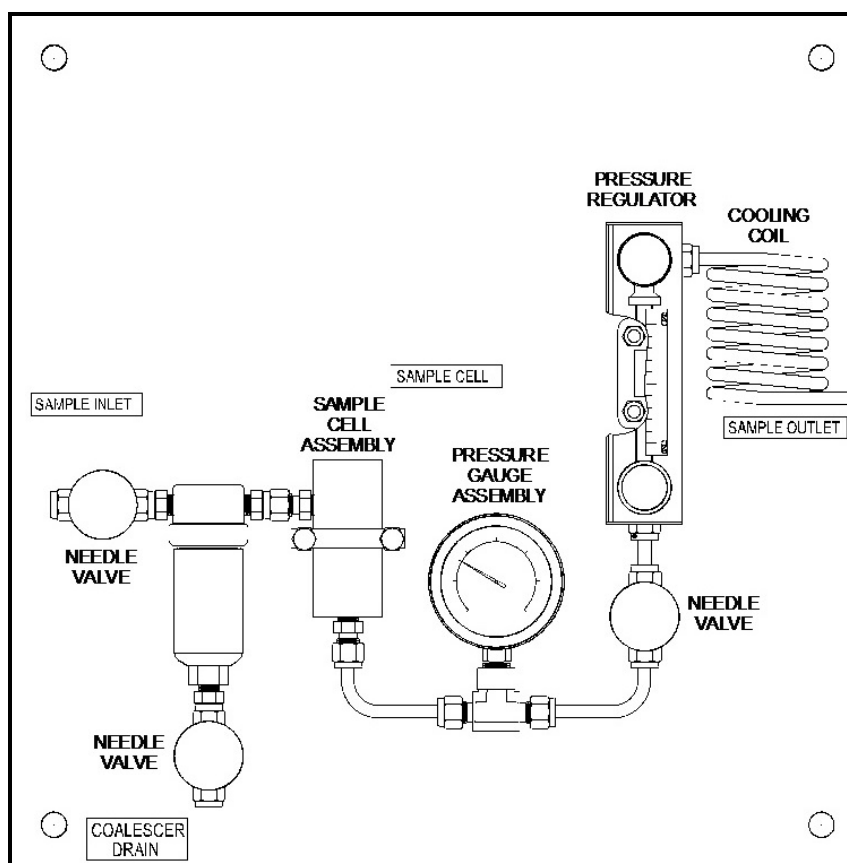


Figure 23: Typical Sample System

The sample system is normally fastened to a flat metal plate that has four mounting holes. Upon request, Panametrics can also provide the sample system in an enclosure.

Complete the following steps to mount the sample system:

1. Fasten the sample system plate or enclosure to a vertical wall or panel with a bolt in each of the four corners.
2. Connect the sample system inlet to the process and the outlet to the return, using appropriate stainless steel fittings and tubing.



CAUTION! Do not start the process flow through the system until the probe has been properly installed (see the following section).

2.5 Installing the Probe

Panametrics probes are usually installed in a sample system to protect the probe from any damaging elements in the process. The probe is mounted in a cylindrical container called the **sample cell**, which is included as part of your sample system.

Standard M2 probes and VeriDri probes are mounted into the sample system or process line with 3/4-16 straight threads that are sealed with an o-ring. Other fittings are available for special applications.



CAUTION! If the probe is to be mounted directly in the process line, without a sample system, consult Panametrics for proper installation instructions and precautions.

Refer to Figure 24 on page 13, and complete these steps to install the probe into the sample cell:

1. Insert the probe into the sample cell and thread the probe into the sample cell fitting. Make sure you do not cross the threads.
2. Tighten the probe securely.
3. Identify the sample cell inlet port as the connection that is perpendicular to the installed probe.



CAUTION! For maximum protection of the aluminum oxide sensor, the probe shield should always be left in place.

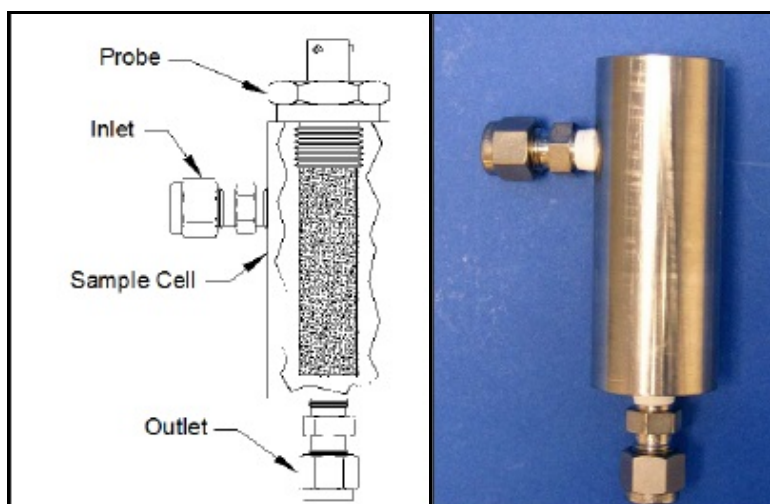


Figure 24: Probe/Sample Cell Assembly

2.6 Wiring the System

Wiring the MTS6 system includes the following steps:

- connecting the probe
- connecting the recorder output
- connecting the alarms
- installing the power cable

WARNING! To ensure safe operation, the MTS6 must be installed and operated as described in this manual. Also, be sure to follow all applicable local safety codes and regulations for installing electrical equipment.



The CAUTION! symbol is a reminder that MTS6 components can be damaged if electrical connections are not correctly made.

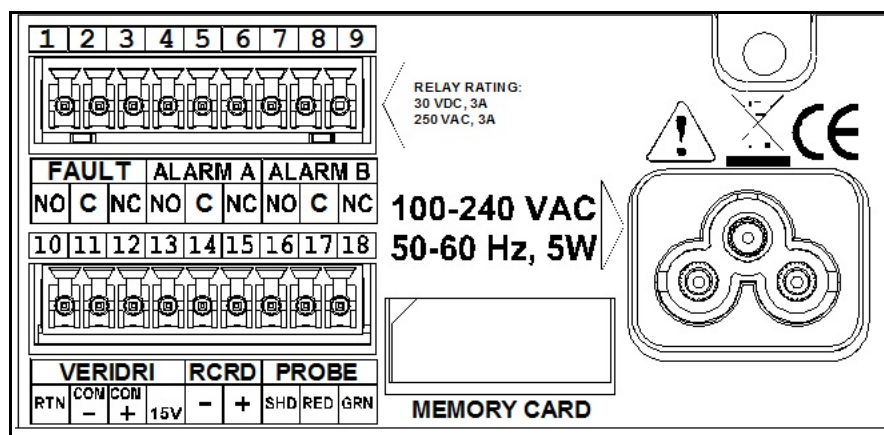


Figure 25: MTS6 Rear Panel Connections - AC Version

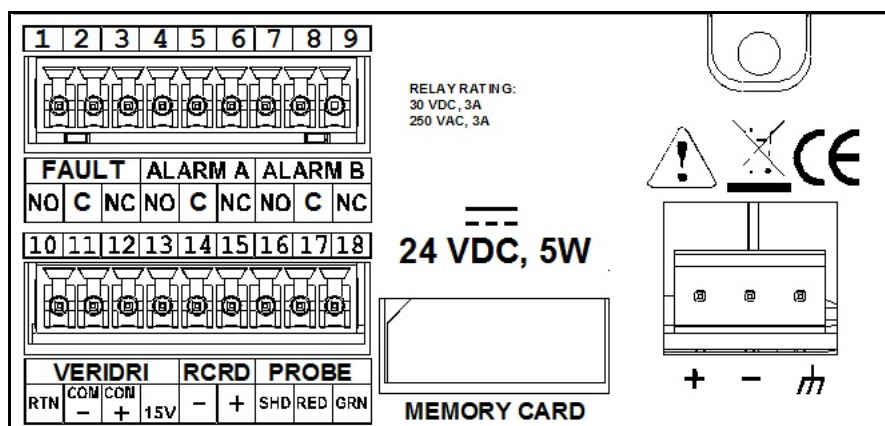


Figure 26: MTS6 Rear Panel Connections - DC Version

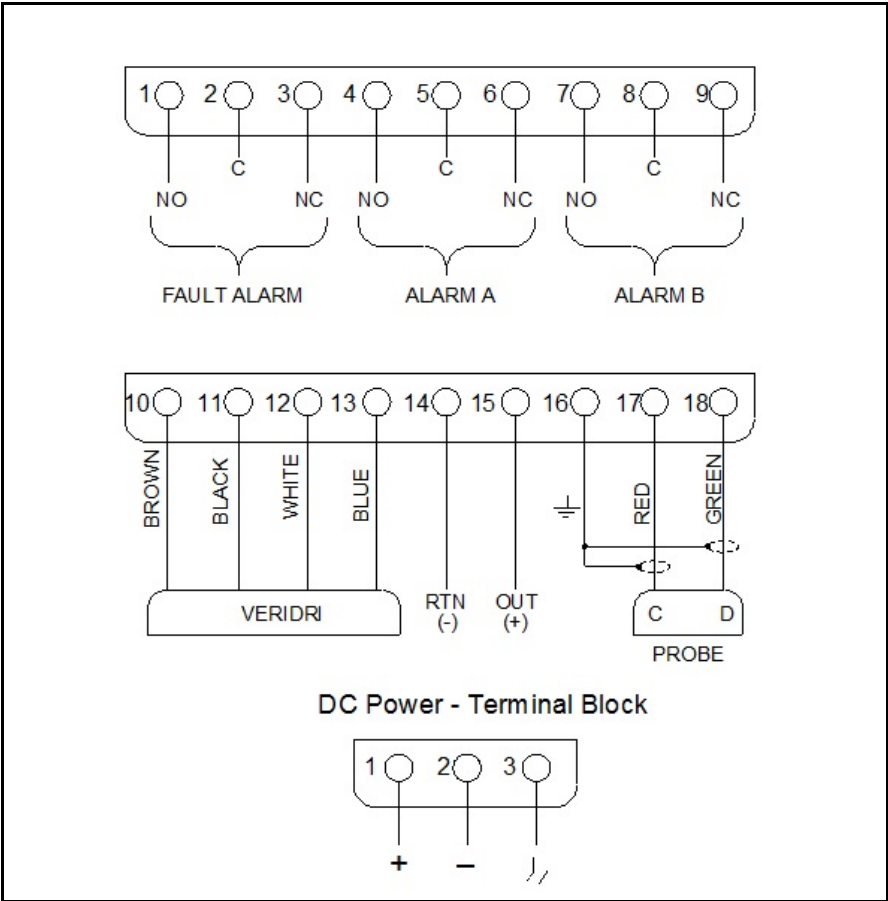


Figure 27: MTS6 Wiring Diagram

2.6.1 Connecting a Standard Probe

The probe must be connected to the MTS6 with a continuous run of Panametrics *two-wire shielded cable*. When connecting the probe, protect the cable from excessive strain (bending, pulling, etc.) and avoid subjecting the cable to temperatures above 65°C (149°F) or below -50°C (-58°F).

Note: Standard factory-assembled cables are available from Panametrics in lengths up to 600 meters (2000 feet).

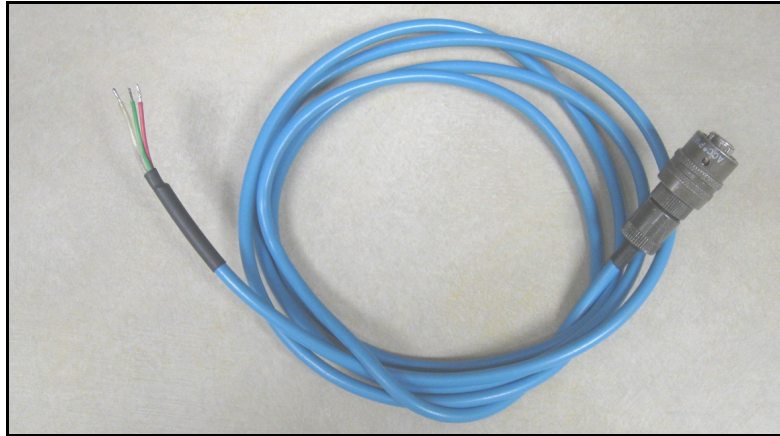


Figure 28: Two-Wire, Shielded, M Series Probe Cable

To connect the probe cable, refer to Figure 25 on page 14 and Figure 29 and Figure 30 on page 17, and complete the following steps:

1. Insert the end of probe cable with the bayonet-type connector onto the probe and twist the shell clockwise until it snaps into a locked position (approximately 1/8 turn).

IMPORTANT: Ensure that the power is off before proceeding.

2. Connect the end of the probe cable with the three leads to the lower terminal block (pins 16, 17 and 18) on the back of the MTS6.

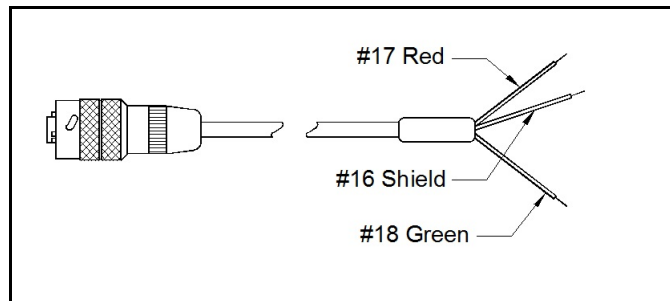


Figure 29: M Series Probe Cable Connections

IMPORTANT: To maintain good contact at the terminal block and to avoid damaging the pins on the wiring connector, pull the connector straight off (not at an angle) the terminal block. Then, make the cable connections while the connector is off the unit. Finally, after the wiring is complete, push the connector straight onto the terminal block (not at an angle).

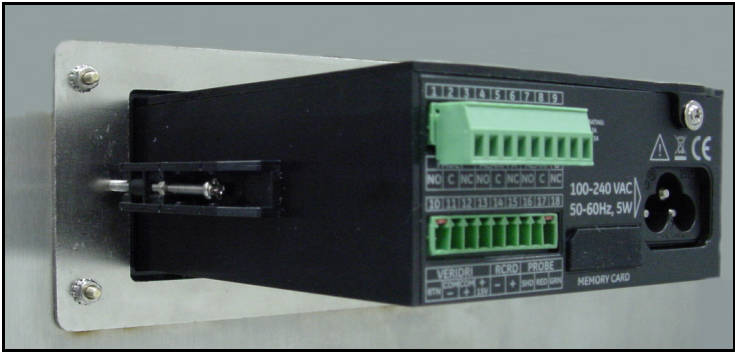


Figure 30: Bottom Connector Removed

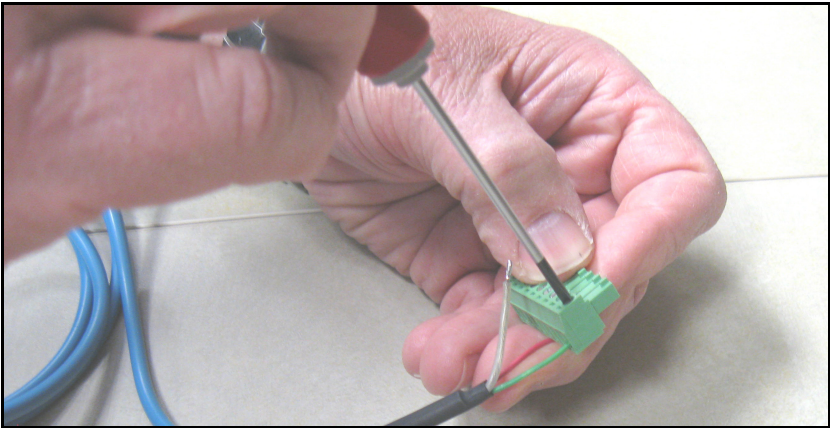


Figure 31: Making Probe Cable Connections to the Connector

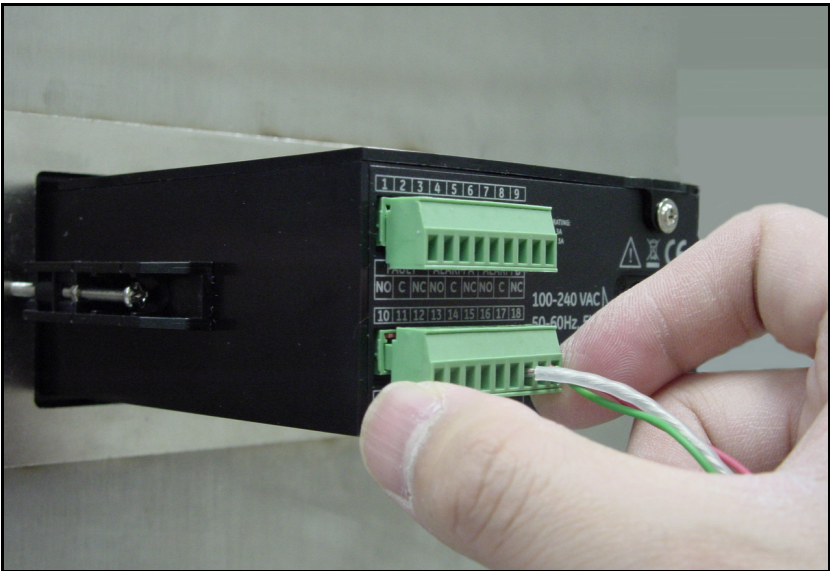


Figure 32: Reinserting the Connector into the Terminal Block

2.6.2 Connecting a VeriDri Probe

Use the following steps to wire the VeriDri to the MTS6.

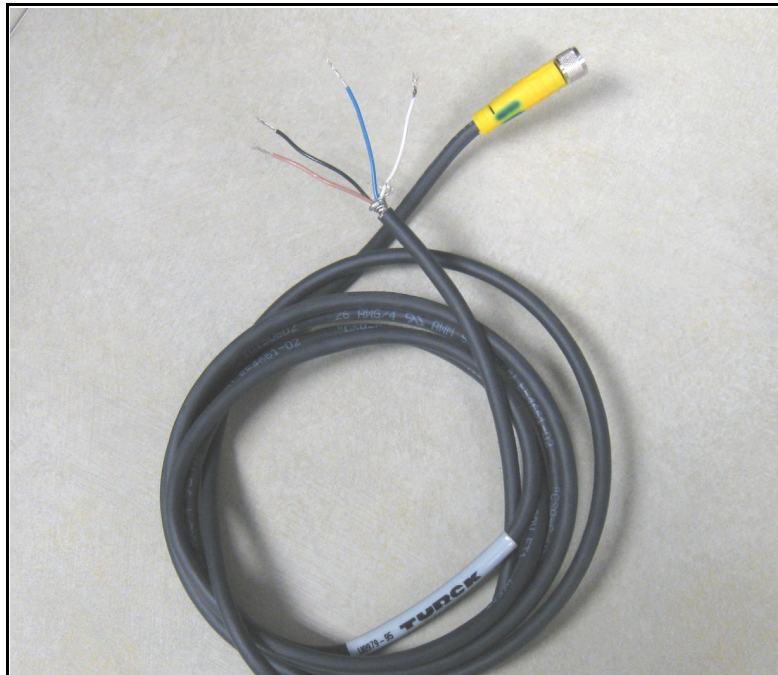


Figure 33: Four-Wire, VeriDri Probe Cable

1. Insert the end of probe cable with the connector onto the probe and twist the connector head clockwise until it is secure.

IMPORTANT: Ensure that the power is off before proceeding.

2. Using the flying leads at the end of the VeriDri cable, connect the probe to the lower terminal block (pins 10, 11, 12 and 13) on the back of the MTS6 (see Table 1 and Figure 35 and Figure 36 on page 19).

Table 1: VeriDri Wiring Connections

Wire Color	Pin Number	Designation
Brown	10	RTN
Black	11	COM -
White	12	COM +
Blue	13	+15V

IMPORTANT: To maintain good contact at the terminal block and to avoid damaging the pins on the wiring connector, pull the connector straight off (not at an angle) the terminal block. Then, make the cable connections while the connector is off the unit. Finally, after the wiring is complete, push the connector straight onto the terminal block (not at an angle).

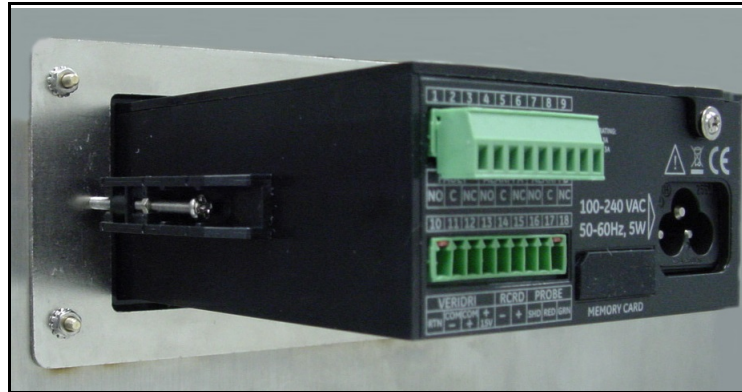


Figure 34: Bottom Connector Removed

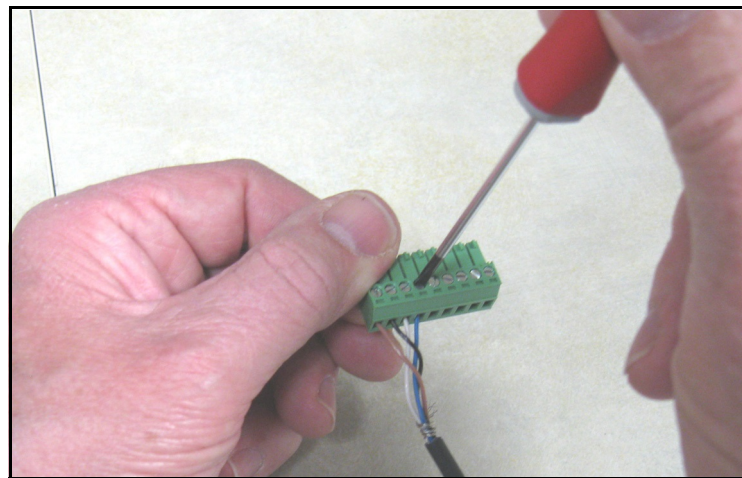


Figure 35: Wiring the Cable to the Connector



Figure 36: Reinserting the Connector into the Terminal Block

Note: When there is a No Link error for the VeriDri, check the wiring to ensure proper connections and make sure there is no short between the +15V and RTN.

2.6.3 Connecting the Recorder Outputs

IMPORTANT: Ensure that the power is off before proceeding.

Connect your recorder to the lower terminal block on the back of the MTS6 (pins 14 and 15), as shown in Figure 25 and Figure 26 on page 14.

IMPORTANT: To maintain good contact at each terminal block and to avoid damaging the pins on the connector, pull the connector straight off (not at an angle), make cable connections while the connector is away from the unit, and push the connector straight on (not at an angle) when the wiring is complete.

2.6.4 Connecting the Relays

Note: The customer will provide their own cable for connecting the alarm relays. Acceptable cables range from 16 to 26AWG.

The MTS6 has one fault alarm relay and two high/low alarm relays. Each alarm relay is a single-pole, double-throw contact set that contains the following contacts:

- Normally Open (NO)
- Common (C)
- Normally Closed (NC)

Table 2: Pin Designations for Relay Contacts

	Fault	Alarm A	Alarm B
Normally Open	1	4	7
Common	2	5	8
Normally Closed	3	6	9

2.6.4.1 Connecting the High/Low Alarms (A and B)

IMPORTANT: Ensure that the power is off before proceeding.

Each of these alarms can be set to trip on either a high or low condition. For a high alarm, the alarm will trip if the input exceeds the setpoint. For a low alarm, the alarm will trip if the input drops below the setpoint. Make connections to the Alarm A and Alarm B upper terminal block on the back of the MTS6, as shown in Figure 25 and Figure 26 on page 14.

IMPORTANT: To maintain good contact at each terminal block and to avoid damaging the pins on the connector, pull the connector straight off (not at an angle), make cable connections while the connector is away from the unit, and push the connector straight on (not at an angle) when the wiring is complete.

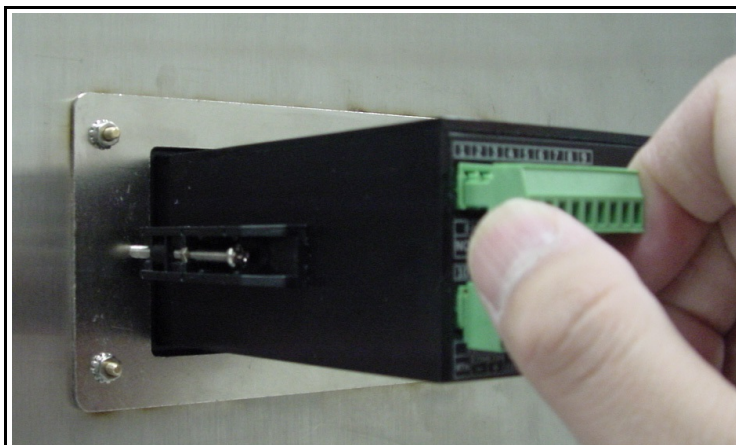


Figure 37: Removing the Upper Connector

2.6.4.2 Connecting the Fault Alarm

If enabled, the fault alarm trips when one or more of the following faults occurs:

- power failure
- range error (configurable)
- watchdog function system reset

Note: The watchdog function is a supervisory circuit that automatically resets the unit whenever a system error occurs.

The fault alarm may operate in *fail-safe* mode and uses pins 2 and 3 to provide a “normally closed” contact. When the MTS6 is operating in a non-fault state, the fault alarm relay is energized to open the contact between pins 2 and 3. When a fault occurs, the fault alarm relay is de-energized to close the contact between pins 2 and 3.

Note: The contact between pins 1 (normally open) and 2 works in the opposite way. The alarm is energized to close the contact during ordinary operation and the alarm is de-energized to open the contact when there is a fault.

IMPORTANT: Ensure that the power is off before proceeding.

To wire the fault alarm, make connections to the upper terminal block on the back of the MTS6, as shown in Figure 25 and Figure 26 on page 14.

IMPORTANT: To maintain good contact at each terminal block and to avoid damaging the pins on the connector, pull the connector straight off (not at an angle), make cable connections while the connector is away from the unit, and push the connector straight on (not at an angle) when the wiring is complete.

2.6.5 Installing the AC Power Cable

To install the AC power cable, included with the MTS6, simply plug the female connector end of the cable into the male connector on the rear panel of the MTS6 (see Figure 25 on page 14, Figure 38 and Figure 39).



Figure 38: Inserting the AC Power Cable



Figure 39: The AC Power Cable Installed

2.6.6 Installing the DC Power Cable

The DC power cable (with 14 to 26 AWG wires) is supplied by the customer. Use the following instructions to connect the cable to the MTS6.

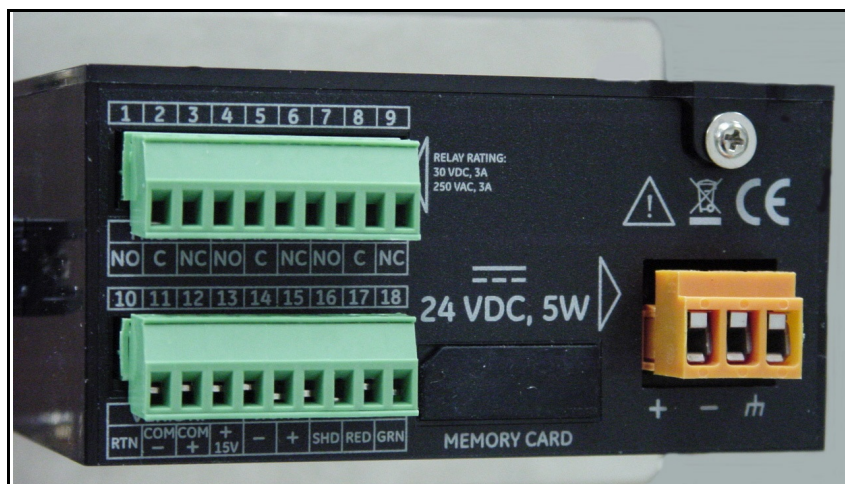


Figure 40: MTS6 Rear Panel Connections - DC Version

1. Remove the DC Connector from the rear panel (see Figure 41).

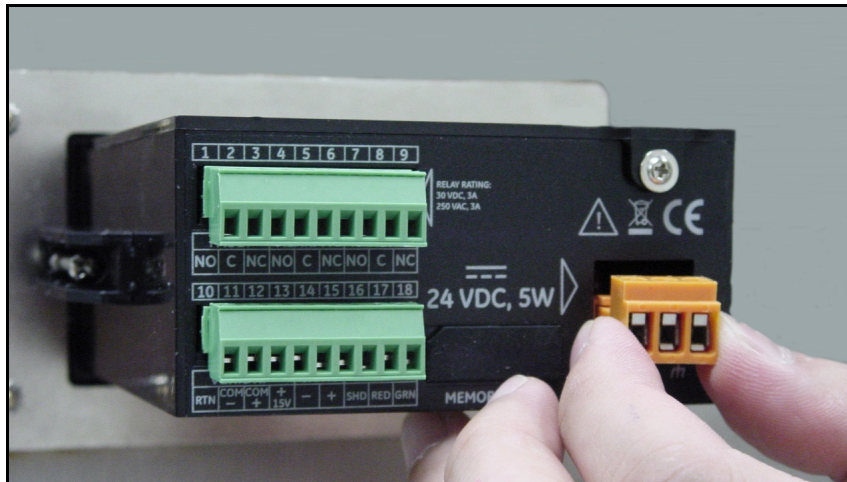


Figure 41: Removing the DC Connector

2. Strip each conductor of the DC power cable by approximately 3/8".
3. Insert each wire into the appropriate slot (+, – and chassis) and tighten each screw to secure them in place.
IMPORTANT: Ensure that the chassis ground connection is properly grounded.
4. Reinsert the DC connector into the rear panel (see Figure 42).

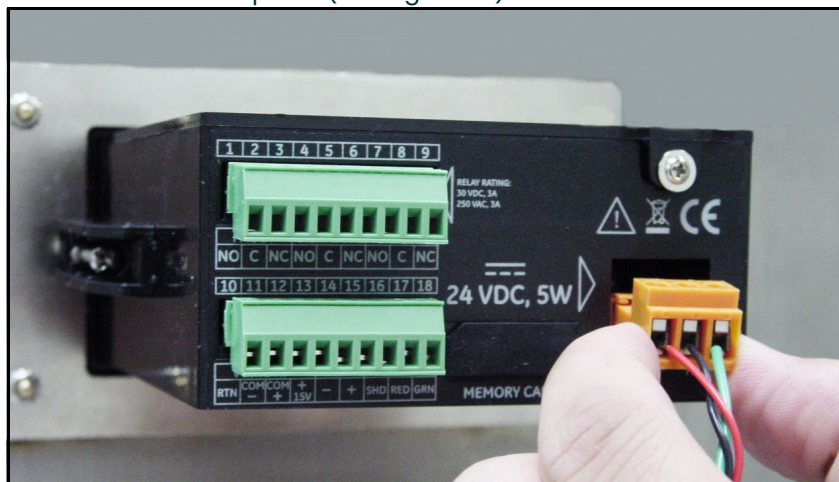


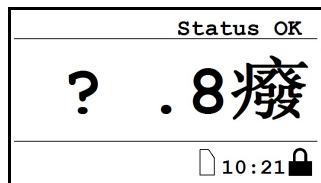
Figure 42: Reinserting the DC Connector

Chapter 3. Operation and Programming

3.1 Using the MTS6

3.1.1 Starting Up

After proper installation, the MTS6 Transmitter can be set up to accommodate the user's requirements. Typically, the user may need to configure the analog outputs, trim the analog outputs, and program logging. Refer to a Menu Map, Figure 49 on page 94 when using an M Series probe, or Figure 50 on page 95 when using a VeriDri probe, and complete the following steps. Upon startup, the MTS6 proceeds through several displays until a screen similar to the following appears:



After startup, the screen will need to be unlocked. To unlock the screen, press

✗ **✓** **✗**
Cancel, Enter, Cancel.

Note: In most instances; use the **Enter** key to save an entry and/or move ahead to the following screen; use the **Cancel** key to reject an entry and/or return to the previous

screen.

3.1.2 Accessing the Menus

After successfully unlocking the keypad, press **Cancel** **✗**. The MTS6 will display the Main Menu (see Figure 43). Use the arrow keys to select the menu item desired. Refer to *Menu Map*, Figure 49 on page 94.

Press **Enter** **✓** to select the highlighted item. Many menu items will display another menu. Use **Cancel** **✗** to return to the previous menu page. Pressing **Cancel** **✗** from the Main Menu will return the screen to the Measurement Display.

Note: Menu items displayed with an ellipsis (shown as a series of three dots after the menu item) will bring up more choices, while those without take immediate action.

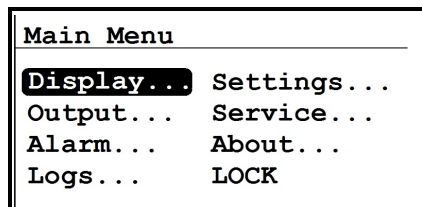


Figure 43: Main Menu

3.1.3 Entering Numeric Values

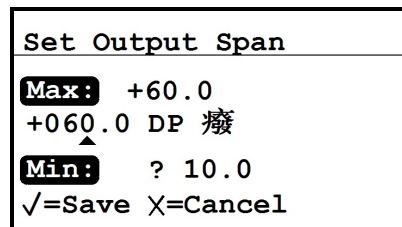
Since the MTS6 has no numeric keypad, numeric values are entered using a “combination lock” style of entry:

Use the left ◀ and right ▶ arrow keys to select the digit to change. The digit selected will be indicated with a ▲.

Use the up ▲ and down ▼ arrow keys to increment or decrement the digit.

Note: *If incrementing or decrementing a digit would cause the numeric value to exceed its allowable range (maximum/minimum value), the digit will not change.*

Press Enter ✓ to save the new value and return, or Cancel ✗ to return, leaving the original value intact.





```
Set Output Span
Max: +60.0
+060.0 DP 癢
  ▲
Min: ? 10.0
√=Save X=Cancel
```

Figure 44: Numeric Entry

3.2 Setting Up the Display

Main Menu	
Display...	Settings..
Output...	Service...
Alarm...	About...
Logs...	LOCK


When the screen is unlocked, touch the **Cancel**  key and the Main Menu appears with several options. To set up the display, select Display... and press **Enter** . The following screen appears:

3.2.1 Selecting Primary Units

Display Menu	
Unit Select	
Decimal	
Contrast	

To select units for the primary display, select Unit Select and press **Enter** . The following screen appears:

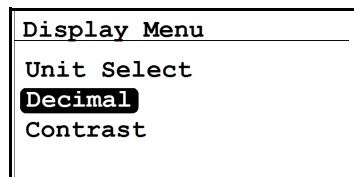
Select Display Unit:	
DP 癩	g/m ³
DP 癩	kg/m ³
PPMv	MH
mg/m ³	

Use the arrow keys to select the desired units and press **Enter** . The screen returns to the Display Menu.

Note: If the VeriDri probe is being used, FH replaces MH.

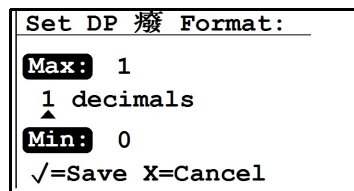
Note: If the ppmv software version was purchased, PPMv, mg/m³, g/m³, and kg/m³ will be available.

3.2.2 Setting Decimal Places



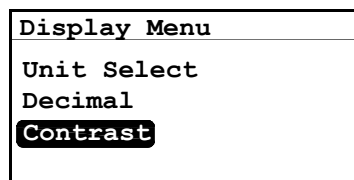
To set the decimal places for unit values, from the Display Menu use the arrow keys to select Decimal and press Enter ✓. The following screen appears.

The decimal places setting determines the number of digits displayed for the value to the right of the decimal symbol ("."), if possible.

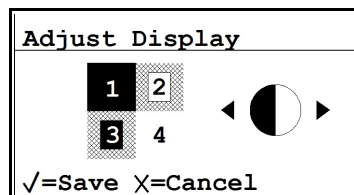


Use the arrow keys to change the number of decimal places and press Enter ✓, or press Cancel ✗ if no changes are necessary. The screen returns to the Display Menu.

3.2.3 Contrast



To modify the display contrast, from the Display Menu use the arrow keys to select Contrast and press Enter ✓. The following screen appears.



Use the Right/Left arrow keys to increase/decrease display contrast. Press Enter ✓ to save the changes, or press Cancel ✗ to return to the previous setup. The screen returns to the Display Menu.

3.3 Setting Up the Output

3.3.1 Entering the Output Menu

Main Menu	
Display...	Settings..
Output...	Service...
Alarm...	About...
Logs...	LOCK

To set up the output, from the Main Menu choose Output... and press Enter ✓. The following screen appears.

3.3.2 Selecting Output Units

Output Menu	
Units	Test
Type	Trim...
Upper	
Lower	

From the Output Menu, select Units and press Enter ✓. The following screen appears.

Select Display Unit:	
DP 燐	g/m ³
DP 燐	kg/m ³
PPMv	MH
mg/m ³	

Use the arrow keys to select the unit type and press Enter ✓. The screen returns to the Output Menu:

Note: If the VeriDri probe is being used, FH replaces MH.

Note: If the ppmv software version was purchased, PPMv, mg/m³, g/m³, and kg/m³ will be available.

3.3.3 Selecting an Output Type

Note: Before changing the output type, refer to Section 2.2 Selecting the Recorder Output on page 4 to make sure that Switch S1 is at the correct setting (V for voltage or I for current).

Output Menu	
Units	Test
Type	Trim...
Upper	
Lower	

To change the output type, from the Output Menu select Type and press Enter ✓. A screen similar to the following appears:

Output Menu		
Select Output Type:		
4-20mA	0-20mA	0-2V
✓=Accept X=Cancel		

Use the arrow keys to select a new output type. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the Output Menu.

3.3.4 Changing the Upper Output Span

Output Menu	
Units	Test
Type	Trim...
Upper	
Lower	

To adjust the upper output span, from the Output Menu select Upper and press Enter ✓. A screen similar to the following appears.

Set Output Span	
Max:	+60.0
	+060.0 DP °C
Min:	-110.0
✓=Save X=Cancel	

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to Output Menu.

3.3.5 Changing the Lower Output Span

Output Menu	
Units	Test
Type	Trim...
Upper	
Lower	

To adjust the lower output span, from the Output Menu select Lower and press Enter ✓. A screen similar to the following appears.

Set Output Zero	
Max:	+60.0
	-110.0 DP °C
Min:	-110.0
√=Save X=Cancel	

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to Output Menu.

3.3.6 Testing the Output

The Test Menu causes the MTS6 to generate a 0- or 4-20mA output, or a 0-2V output, at the percent of scale selected. For example, in 4-20mA operation, 0% = 4mA, 50% = 12mA, 100% = 20mA. This allows the proper function of recording or SCADA equipment to be verified. In 0-20 operation, 0% = 0mA, 50% = 10mA, 100% = 20mA

Output Menu	
Units	Test
Type	Trim...
Upper	
Lower	

To test system output, from the Output Menu select Test and press Enter ✓. The MTS6 will proceed to check the settings, and a screen similar to the following will appear.

Output Test Value:	
Max:	+110.00
	+050.00 %
Min:	-25.00
√=Apply X=Exit	

Use the left and right arrow keys to select each digit to be changed, and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the Output Menu.

Check your output wiring. If the reading on your SCADA or DCS is off slightly, then you may use the Trim feature to trim the output zero or span.

3.3.7 Trimming the Outputs

The Trim Menu enables the operator to compensate for differences in measurement of the 0/4-20 mA or 0-2V outputs by connected recorders or SCADA equipment. To trim the output:

Output Menu	
Units	Test
Type	Trim...
Upper	
Lower	

Select Trim from the Output Menu and press Enter ✓. The following screen appears.

Output Trim	
Reset Trim	
Trim Zero	
Trim Span	

When performing a Trim operation, the MTS6 unit requires you to first reset the trim. To reset the trim output, select Reset Trim and press Enter ✓. The following screen appears.

Output Trim
Reset Out Trim?
YES NO
√=Accept X=Cancel

Use the left or right arrow keys to select YES and press Enter ✓. This cancels any previous trim values, and returns the MTS6 to its factory adjustment. The display returns to the previous screen.

Output Trim
Reset Trim
Trim Zero
Trim Span

To trim the zero value, select Trim Zero and press Enter ✓. A screen similar to the following appears.

This will cause the MTS6 to output 4.000 mA or 0.4 V on the output being trimmed. The output value should then be read using the connected recorder, SCADA equipment, or

DVM. Enter the value read from the connected equipment as the Zero Trim value, as follows:

Note: Since you cannot trim 0 mA or 0 V for negative offsets, trim for the lower end of the scale is at the 4 mA or 0.4 V output level.

Enter Out Reading:
Max: 5.2000
04.0000 mA
Min: 3.0000
√=Save X=Cancel

Use the left and right arrow keys to select each digit to be changed, and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value).

Output Trim
Reset Trim
Trim Zero
Trim Span

The Output Trim menu returns with Trim Span highlighted. To change the span value, press Enter ✓. A screen similar to the following appears.

This will cause the MTS6 to output 20.000 mA on the output being trimmed. The output value should then be read using the connected recorder, SCADA equipment, or DVM. Enter the value read from the connected equipment as the Span Trim value.

Enter Out Reading:
Max: 22.2000
20.0000 mA
Min: 10.0000
√=Save X=Cancel

Use the left and right arrow keys to select each digit to be changed, and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value).

Trimming is complete. Accuracy can be verified using the Test Menu, above.

Example: Trim is reset, then Trim Zero is selected. The SCADA input reports 3.977 mA. The operator enters "3.977" as the Zero Trim value.

Trim Span is selected. The SCADA input reports 19.985 mA.

The operator enters "19.985" as the Span Trim value.

MTS6 will adjust the output accordingly to true the output as read by the customer recorder, SCADA or DVM.

Using the Test Menu, the operator verifies that a test value of 0% now reads 4.000 mA at the SCADA equipment, and a test value of 100% now reads 20.000 mA.

3.4 Setting Up Alarms

Note: The MTS6 is equipped with two programmable high/low alarm relays and one fault alarm.

3.4.1 Selecting an Alarm Output

Select	Upper
Status	Lower
Units	Test
Type...	

To set up alarm outputs, on the Main Menu choose Alarm and press Enter ✓. From the Alarm Menu choose Select and press

Enter ✓. A screen similar to the following appears.

Alarm Menu [A]	
Select Alarm:	
A	B
√=Accept X=Cancel	

Use the arrow keys to select the output (A or B) to be set up and press Enter ✓. The display returns to the Alarm Menu.

3.4.2 Selecting Alarm Status

Alarm Menu [A]	
Select	Upper
Status	Lower
Units	Test
Type...	

To select the alarm status, from the Alarm Menu select Status and press Enter ✓. The following screen appears:

Alarm Menu [A]	
Set Alarm Status:	
OFF	ON
√=Accept X=Cancel	

Use the arrow keys to select OFF or ON and press Enter ✓. The display returns to the Alarm Menu.

3.4.3 Selecting Alarm Units

Alarm Menu [A]	
Select	Upper
Status	Lower
Units	Test
Type...	

To select alarm units, from the Alarm Menu select Units and press Enter ✓.

Select Display Unit:	
DP °C	g/m ³
DP °F	kg/m ³
PPMv	MH
mg/m ³	

Use the arrow keys to select a unit. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the Alarm Menu.

Note: If the VeriDri probe is being used, FH replaces MH.

Note: If the ppmv software version was purchased, PPMv, mg/m³, g/m³, and kg/m³ will be available.

3.4.4 Selecting an Alarm Type

Alarm Menu [A]	
Select	Upper
Status	Lower
Units	Test
Type...	

To change the alarm type, from the Alarm Menu select Type and press Enter ✓. A screen similar to the following appears:

Select Alarm Type:	
Setpoint	
In Band	
Out Band	

Use the arrow keys to select an alarm type. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the Alarm Menu.

- SetPoint: Alarm activates when parameter exceeds upper limit, and deactivates when parameter is less than lower limit.
- Inner Band: Alarm activates when parameter is between upper and lower limits.
- Outer Band: Alarm activates when parameter is outside upper and lower limits.

3.4.5 How the Alarm Types Work

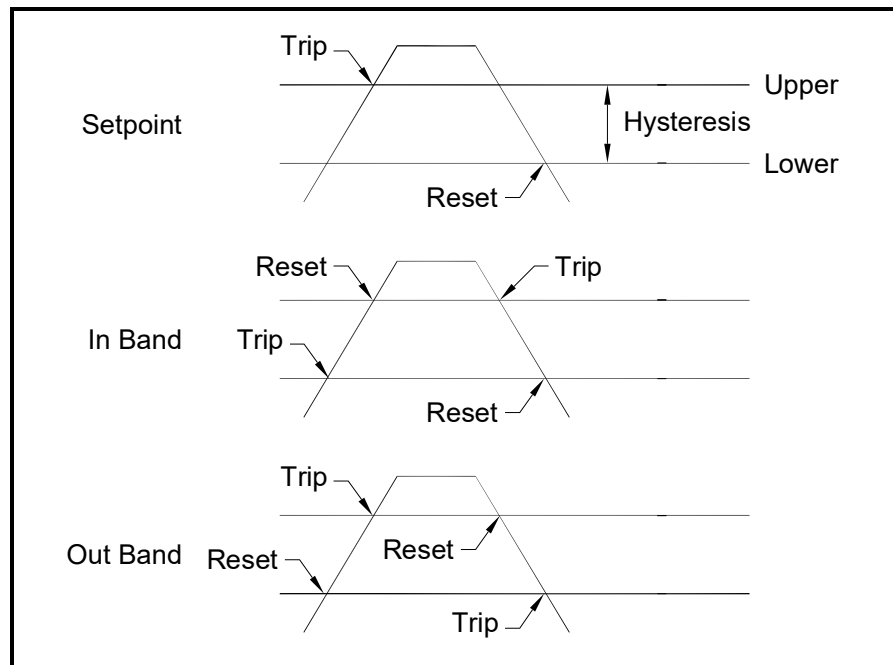


Figure 45: Example of Alarm Types

3.4.6 Changing the Upper Alarm Span

Alarm Menu [A]	
Select	Upper
Status	Lower
Units	Test
Type...	

To adjust the upper alarm span, from the Alarm Menu select Upper and press Enter ✓. A screen similar to the following appears.

Enter MIN Alm Value	
Max:	+60.0
	+000.0 DP °C
Min:	-110.0
✓=Save X=Cancel	

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the Alarm Menu.

3.4.7 Changing the Lower Alarm Span

Alarm Menu [A]	
Select	Upper
Status	Lower
Units	Test
Type...	

To adjust the lower alarm span, from the Alarm Menu select Lower and press Enter ✓. A screen similar to the following appears.

Enter MIN Alm Value	
Max:	+60.0
	+000.0 DP °C
Min:	-110.0
✓=Save X=Cancel	

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the Alarm Menu.

3.4.8 Testing the Alarm Relays

Alarm Menu [A]	
Select	Upper
Status	Lower
Units	Test
Type...	

To test the alarm relay, and devices connected to it, from the Alarm Menu select Test and press Enter ✓. A screen similar to the following appears.

Alarm Menu [A]	
Alarm is TRIPPED	
Reset	Trip
✓=Accept X=Cancel	

Use the left and right arrow keys to select Reset or Trip and press Enter ✓. If Reset was selected, the message Alarm is RESET appears. If Trip was selected, the message Alarm is Tripped appears. Press Cancel ✗ to return to the Alarm Menu.

3.5 Logging

3.5.1 Checking the Data Log Status

Logging Menu
Status
Manage...
Settings...
Eject Card

To check the data log status, from the Logging Menu select Status and press Enter ✓. A screen similar to the following appears.

Data Log RUNNING
File: 01270803
Interval: 60 secs
Size: 23 KB

The current data log status is displayed. After about 10 seconds, the screen returns to the Logging Menu.

3.5.2 Log Settings Menu

Note: To access the Settings... option under the Logging Menu, the log file must be stopped (see Starting/Stopping Log Files on page 40).

3.5.2.1 Setting Log Units

Logging Menu
Status
Manage...
Settings...
Eject Card

From the Logging Menu select Settings... and press Enter ✓. The following screen appears.

Set Log Params
Units
Interval
FieldSep
Flags

To set units to log, from the Set Log Params menu, select Units and press Enter ✓. The following screen appears.

Units to Log:	
1	DP °C
2	DP °F
3	-----
4	-----

Use the arrow keys to select the unit to log, and press Enter ✓. The following screen appears.

Units to Log:	
Choose Unit Action:	
Modify	Remove
X=Cancel	

To change the unit setting, select Modify and press Enter ✓. The following screen appears.

Select Unit #1:	
DP °C	g/m ³
DP °F	kg/m ³
PPMv	MH
mg/m ³	

Use the arrow keys to select the unit to be represented by #1 and press Enter ✓. The screen returns to the Units to Log menu.

Note: If the VeriDri probe is being used, FH replaces MH.

Note: If the ppmv software version was purchased, PPMv, mg/m³, g/m³, and kg/m³ will be available.

To remove a unit, from the Units to Log menu, select Remove and press Enter ✓. Select the unit to be removed, press Enter ✓, and the unit is deleted. Press Cancel ✗ to return to the Set Log Params menu.

3.5.2.2 Setting the Log Interval

Set Log Params
Units
Interval
FieldSep
Flags

To set the log interval, from the Set Log Params menu, select Interval and press Enter ✓. The following screen appears.

Set Log Interval	
Max:	86400
	00005 seconds
Min:	1
√=Save X=Cancel	

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the Set Log Params menu.

3.5.2.3 Setting a Field Separator

Set Log Params
Units
Interval
FieldSep
Flags

To designate a mark to separate the log fields, from the Set Log Params menu select FieldSep and press Enter ✓. The following screen appears.

Set Log Params
Field Separator:
Comma Tab
✓=Accept X=Cancel

Use the arrow keys to select the mark used to separate the log fields and press Enter ✓. The screen returns to the Set Log Params menu.

3.5.2.4 Setting Log Status Flags

Note: The flags used to identify the log status are as follows:

Range Err	No Comm	Bad Message	No Data	Read Err
Over Range	No Link	Auto Cal	No Cal	ADC Failure
Under Range	Bad CRC	No Refs	Write Err	Cal Error

Set Log Params
Units
Interval
FieldSep
Flags

To turn log status flags on or off, from the Set Log Params menu select Flags and press Enter ✓. The following screen appears.

Set Log Params
Log Status Flags:
Off On
✓=Accept X=Cancel

Use the arrow keys to select OFF or ON and press Enter ✓. The screen returns to the Set Log Params menu.

Press Cancel ✗ to return to the Logging Menu.

3.5.3 Managing Log Files

Logging Menu
Status
Manage...
Settings...
Eject Card

To manage the log file status, from the Logging Menu select Manage and press Enter ✓. If no log has been created, the following screen appears.

3.5.3.1 Creating a New Log

Note: In order for the new log option to be available, there can be no log running or paused. If there is any previous log running/paused, it will need to be closed. Once closed, the closed log file cannot be resumed.

Manage Log Files
New Log
Directory
Erase Log

To create a new log, from the Manage Log Files menu select New Log and press Enter ✓. A screen similar to the following appears.

Log Created.
New Log:
File: 01281244
was created.

A file name is assigned by the MTS6 to the new log. This name corresponds to the date and time the log is started. A log started on May 1 at 4:37 pm will be named 05011637. After about 10 seconds, the screen returns to the Manage Log Files menu.

Note: When a new log is created, the Manage Log Files menu changes to the following screen.

3.5.3.2 Pausing a Log

Manage Log Files
Pause/Close
Directory
Erase Log

When a new log is created, it can be paused or closed. To pause the log, from the Manage Log Files menu select Pause/Close and press Enter ✓. The following screen appears.

Manage Log Files
File: 06150618
PAUSE CLOSE
✓=Accept X=Cancel

Select Pause and press Enter ✓. the screen returns to the Manage Log Files menu.

Note: When a log is paused, the Manage Log Files menu changes to the following screen.

3.5.3.3 Resuming a Log

Manage Log Files
Resume/Close
Directory
Erase Log

A paused log can be resumed or closed. To resume the log function, from the Manage Log Files menu select Resume/Close and press Enter ✓. The following screen appears.

Manage Log Files
File: 06150618
RESUME CLOSE
✓=Accept X=Cancel

Select Resume and press Enter ✓. the screen returns to the Manage Log Files menu.

Note: When a log is resumed, the Manage Log Files menu displays the Pause/Close option again.

Note: If a log is running and it reboots due to a power failure, it will always return to the previous state prior to the power failure. If it was running, it will continue to run. If it was paused, it will stay paused and can be resumed.

3.5.3.4 Viewing the Log Directory

Manage Log Files
New Log
Directory
Erase Log

To view the existing log names, select Directory and press Enter ✓. A screen similar to the following appears.

File Listing	
1 01270801	5 01281240
2 01270802	6 01281241
3 01270803	7 01281242
4 01281238	8 01281243
1/27/2010 08:01 162 bytes	

When a listing is highlighted, the date, time and size of each log appears at the bottom of the screen. Use the arrow keys to move from one listing to another. To return to the Manage Log Files menu, press Cancel ✗.

3.5.3.5 Deleting Log Files

Manage Log Files	
Pause/Close	
Directory	
Erase Log	

To erase an existing log file(s), from the Manage Log Files menu, select Erase Log and press Enter ✓. The File Listing screen appears.

File Listing	
1 01270801	5 01281240
2 01270802	6 01281241
3 01270803	7 01281242
4 01281238	8 01281243
1/27/2010 08:01 162 bytes	

Using the arrow keys, move to the listing to be deleted, and press Enter ✓. The following screen appears.

File to Erase:	
ERASE Log 01281243?	
YES NO	
√=Accept X=Cancel	

Using the arrow keys, select YES to erase the listing, or NO to save the listing. Press Enter ✓ and the screen returns to File Listing. If YES was selected, the particular number is gone. If NO was selected, the number is still present.

Press the Cancel ✗ key to return to the Manage Log Files menu.

3.5.4 Ejecting the SD Card

Removing the MicroSD card requires two steps. First, the active files must be closed. This step is referred to as ejecting the SD Card. The MicroSD card can now be removed from the MTS6.

Note: Physically removing the MicroSD card from the MTS6 without performing the eject routine below may result in data loss. This will not result in damage to either the MicroSD card or to the MTS6.

Logging Menu	
Status	
Manage...	
Settings...	
Eject Card	

To eject the SD card, from the Logging Menu, select Eject Card and press Enter ✓. The following screen appears.

Logging Menu	
Eject SD Card?	
EJECT CANCEL	
√=Accept X=Cancel	

Use the arrow keys to select EJECT or CANCEL and press Enter ✓. The screen returns to the Logging Menu.

Press Cancel ✗ to return to the Main Menu.

Note: If EJECT was selected, the MicroSD card may now be removed from the MTS6. To remove and read the card see Reading the MicroSD Card on page 97.

3.5.5 Viewing Data Logs

Any MicroSD card reader may be used to read the MicroSD card. The log file is in text format, therefore, any word processing or spreadsheet program may be used to read the data.

Refer to Appendix C for examples on how to work with log files.

3.6 Setting Other Information

Main Menu	
Display...	Settings...
Output...	Service...
Alarm...	About...
Logs...	LOCK

To change other settings, from the Main Menu select Settings... and press Enter ✓. The following screen appears.

3.6.1 Entering the Passcode

The Settings Menu is the only menu that requires a passcode. The passcode is a four-digit number that enables only authorized users to enter setup data. The MTS6 prompts you to enter the passcode when you enter the Settings Menu. See page 62 for your default passcode.

3.6.2 Setting the Fault Alarm

Settings Menu	
Fault Alm...	Clock...
AutoCal...	Probes
Cal Data...	DpC Offset
V/V Ratio...	

To configure the fault alarm, from the Settings Menu select Fault Alarm and press Enter ✓. The following screen appears.

Note: To access the Fault Alarm menu, the User Passcode is required (see section 3.6.1 above).

User Passcode:
0000
√=Save X=Cancel

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Once the passcode has been entered, press Enter ✓ and the following screen appears.

3.6.2.1 Setting Fault Alarm Status

Fault Alarm
Status
Type
Options
Test

To check the status of the fault alarm, from the Fault Alarm menu, select Status and press Enter ✓. The following screen appears.

Fault Alarm
Set Fault Alarm:
OFF ON
√=Accept X=Cancel

To change the status of the fault alarm, select OFF or ON and press Enter ✓. The screen returns to the Fault Alarm menu.

3.6.2.2 Setting the Fault Relay Type

Note: For more information on the meaning of relay types, see section 2.6.4b Connecting the Fault Alarm on page 21.

Fault Alarm
Status
Type
Options
Test

To check and/or change the fault relay type, select Type and press Enter ✓. The following screen appears.

Fault Alarm
Fault Relay:
Fail-Safe Normal
√=Accept X=Cancel

To change the type of fault relay, select the other option and press Enter ✓. The screen returns to the Fault Alarm menu.

3.6.2.3 Setting Fault Alarm Options

Fault Alarm
Status
Type
Options
Test

Fault Alarm
Alarm on Range Error
Yes No
√=Accept X=Cancel

To view the status other options select Options and press Enter ✓. The following screen appears.

To change the status of the range error alarm, select Yes or No and press Enter ✓. The screen returns to the Fault Alarm menu. Press Cancel ✗ to return to the Settings Menu.

3.6.2.4 Testing the Fault Alarm

Fault Alarm
Status
Type
Options
Test

To test the fault alarm, select Test and press Enter ✓. The following screen appears.

Fault Alarm
Fault Alm is TRIPPED
Reset Trip
√=Accept X=Cancel

To reset the fault alarm, select Reset and press Enter ✓. To trip the fault alarm, select Trip and press Enter ✓. Press Cancel ✗ twice to return to the Settings Menu.

3.6.3 Setting Autocal

Note: To enter the Autocal Settings menu, you must be using a standard M Series probe. If a VeriDri probe is being used, AutoCal is not necessary and will not be accessible.

```

Settings Menu
Fault Alm... Clock...
AutoCal... Probes
Cal Data... DpC Offset
V/V Ratio...
  
```

To change the Autocal settings, from the Settings Menu select AutoCal and press Enter ✓. The following screen appears.

```

AutoCal Settings
Interval
Cal Now
  
```

To change the Autocal interval settings, select Interval and press Enter ✓. A screen similar to the following appears.

```

Enter AutoCal Interval
Max: 72
08 Hours
Min: 0
√=Save X=Cancel
  
```

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the AutoCal Settings menu.

```

AutoCal Settings
Interval
Cal Now
  
```

To accept or reject AutoCal, select Cal Now and press Enter ✓. A screen similar to the following appears.

```

AutoCal Settings
AutoCal Now
Yes No
√=Accept X=Cancel
  
```

To accept AutoCal, select Yes. To reject AutoCal select No. Press Enter ✓ to confirm your selection and return to the AutoCal Settings menu.

3.6.4 Setting Calibration Data 1

Note: If you are using a standard M Series probe, the following steps will apply. If you are using a VeriDri probe, see Setting Calibration Data 2 on page 48.

```

Settings Menu
Fault Alm... Clock...
AutoCal... Probes
Cal Data... DpC Offset
V/V Ratio...
  
```

Note: To update calibration data, from the Settings Menu select Cal Data and press Enter ✓. The following screen appears.

Note: To access the Cal Data menu, the User Passcode is required (see section 3.6.1 on page 43).

User Passcode:

0000

√=Save X=Cancel

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Once the passcode has been entered, press Enter ✓ and the following screen appears.

Cal Data

MH/DP Cal...

FH DPCal...

Cal Reference...

Probe SN

If you are using a standard M Series probe, the MH/DP Cal will be highlighted. Press Enter ✓. The following screen appears.

3.6.4.1 Selecting the Number of Points**Edit MH/DP Cal**

Select Num of Points

Select Cal Point

Edit MH

Edit DP/°C

To select the number of points, highlight Select Num of Points and press Enter ✓. The following screen appears.

Select Num of Points

Max: 20

14

Min: 2

√=Save X=Cancel

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the Edit MH/DP Cal menu.

3.6.4.2 Selecting the Calibration Point**Edit MH/DP Cal**

Select Num of Points

Select Cal Point

Edit MH

Edit DP/°C

To select the calibration point, highlight Select Cal Point and press Enter ✓. The following screen appears.

Select Hygro Cal Point

Max: 13

00

Min: 0

√=Save X=Cancel

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the Edit MH/DP Cal menu.

3.6.4.3 Setting the MH Calibration

```

Edit MH/DP Cal
Select Num of Points
Select Cal Point
Edit MH
Edit DP/°C

```

To set up the MH calibration, highlight Edit MH and press Enter ✓. The following screen appears.

```

Set MH [00]
Max: 15.0000
  0.0000
Min: 0.0000
√=Save X=Cancel

```

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the Edit MH/DP Cal menu.

3.6.4.4 Setting the Dew Point Calibration

```

Edit MH/DP Cal
Select Num of Points
Select Cal Point
Edit MH
Edit DP/°C

```

To set up the dew point calibration, highlight Edit DP/°C and press Enter ✓. The following screen appears

```

Set DP/°C [00]
Max: +100.00
-110.00 °C
Min: -200.00
√=Save X=Cancel

```

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the Edit MH/DP Cal menu.

Press Cancel ✗ to return to the Cal Data menu.

3.6.5 Setting Calibration Data 2

Note: If you are using a VeriDri probe, the following steps will apply. For a standard M Series probe, see Setting Calibration Data 1 on page 45.

```
Settings Menu
Fault Alm... Clock...
AutoCal... Probes
Cal Data... DpC Offset
V/V Ratio...
```

To view calibration data, from the Settings Menu select Cal Data and press Enter ✓. The following screen appears.

Note: To access the Cal Data menu, the User Passcode is required (see section 3.6.1 on page 43).

User Passcode:

0000
▲

✓=Save ✕=Cancel

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Once the passcode has been entered, press Enter ✓ and the following screen appears.

```
Cal Data
MH/DP Cal...
FH/DPCal...
Cal Reference...
Probe SN
```

If you are using a VeriDri probe, the FH/DPCal will be highlighted. Press Enter ✓. The following screen appears.

3.6.5.1 Selecting the Calibration Point

```
Read FH/DP Calibration
Select Cal Point
Read FH Value
Read DP Value
```

To select the calibration point, highlight Select Cal Point and press Enter ✓. The following screen appears.

```
Select Hygro Cal Point
Max: 13
00
▲
Min: 0
✓=Save ✕=Cancel
```

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✕ to keep the previous value), and return to the Edit MH/DP Cal menu.

3.6.5.2 Reading the FH Value

```
Read FH/DP Calibration
Select Cal Point
Read FH Value
Read DP Value
```

To view the FH value, highlight Read FH Value and press Enter ✓. The following screen appears.

Viewing FH [00]
Read Only
10.6821
X=Exit

The FH value is for viewing only. When you are ready, press **Cancel** **X** to return to the Read FH/DP Calibration menu.

3.6.5.3 Reading the DP Value

Read FH/DP Calibration
Select Cal Point
Read FH Value
Read DP Value

To view the DP value, highlight Read DP Value and press **Enter** **✓**. The following screen appears.

Viewing DP [00]
Read Only
-110.00
X=Exit

The DP value is for viewing only. When you are ready, press **Cancel** **X** to return to the Read FH/DP Calibration menu.

Press **Cancel** **X** twice to return to the Settings Menu.

3.6.6 Reading and Setting the Calibration References

Note: The following procedure applies only if an M Series probe is being used. If a VeriDri probe is used, Cal Reference... is not accessible.

IMPORTANT: The MTS6 is factory programmed with high and low reference MH values. These values are generated from a factory lab calibration and should not be changed without first consulting Panametrics technical support. Changes to these values will alter the accuracy of the unit measurements.

Settings Menu	
Fault Alm...	Clock...
AutoCal...	Probes
Cal Data...	DpC Offset
V/V Ratio...	

To update calibration data, from the Settings Menu select Cal Data and press Enter ✓. The following screen appears.

Note: To access the Cal Data menu, the User Passcode is required (see section 3.6.1 on page 43).

User Passcode:
0000
√=Save X=Cancel

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Once the passcode has been entered, press Enter ✓ a screen similar to the following appears.

Cal Data
MH/DP Cal...
FH/DPCal...
Cal Reference...
Probe SN

To view and/or edit the calibration reference settings, select Cal Reference and press Enter ✓. The following screen appears.

3.6.6.1 Setting the Calibration High Reference

Edit Cal Refs
High Reference
Low Reference

To update high reference settings, from the Edit Cal Refs menu select High Reference and press Enter ✓. A screen similar to the following appears.

High Int. MH Ref.
Max: 15.0000
3.0249 MH
Min: 0.0000
✓=Save X=Cancel

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Once the changes have been made, press Enter ✓. The screen returns to the Edit Cal Refs menu.

3.6.6.2 Setting the Calibration Low Reference

Edit Cal Refs
High Reference
Low Reference

To update low reference settings, from the Edit Cal Refs menu select Low Reference and press Enter ✓. A screen similar to the following appears.

Low Int. MH Ref.
Max: 15.0000
0.1750 MH
Min: 0.0000
✓=Save X=Cancel

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Once the changes have been made, press Enter ✓. The screen returns to the Edit Cal Refs menu.

3.6.7 Entering the M Series Probe Serial Number

Note: The following procedure applies only if an M Series probe is being used. If a VeriDri probe is used, Probe SN is not accessible.

Settings Menu	
Fault Alm... Clock...	
AutoCal... Probes	
Cal Data... DpC Offset	
V/V Ratio...	
User Passcode:	
0000	
√=Save X=Cancel	

To update the probe serial number, from the Settings Menu select Cal Data and press Enter ✓. The following screen appears.

Note: To access the Cal Data menu, the User Passcode is required (see section 3.6.1 on page 43).

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Once the passcode has been entered, press Enter ✓ a screen similar to the following appears.

Cal Data
MH/DP Cal...
FH/DPCal...
Cal Reference
Probe SN

To view and/or edit the probe serial number, select Probe SN and press Enter ✓. The following screen appears.

Enter M2 Probe SN	
Max:	99999999
	10000000
Min:	0
√=Save X=Cancel	

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Once the changes have been made, press Enter ✓. The screen returns to the Cal Data menu.

3.6.8 Setting the Volume Mixing Ratio

Note: Setting the Volume Mixing Ratio is an optional feature, available only if the ppmv software version was purchased.

```

Settings Menu
Fault Alm... Clock...
AutoCal...   Probes
Cal Data...  DpC Offset
V/V Ratio...
```

Note: To set the volume mixing ratio, from the Settings Menu select V/V Ratio and press Enter ✓. The following screen appears.

Note: To access the Cal Data menu, the User Passcode is required (see section 3.6.1 on page 43).

```

User Passcode:

0000
▲
√=Save X=Cancel
```

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Once the passcode has been entered, press Enter ✓ and the following screen appears.

3.6.8.1 Setting the Pressure Units

```

Volume Mixing Ratio
Press. Units
Press. Value
k x PPMv
```

To set the pressure units, select Press. Units and press Enter ✓. The following screen appears.

```

Volume Mixing Ratio
Pressure Units:
kPa (a) Bar (g) PSI (g)
√=Accept X=Cancel
```

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the previous menu.

3.6.8.2 Setting the Pressure Value

Volume Mixing Ratio
Press. Units
Press. Value
k x PPMv

To set the pressure value, select Press. Value and press Enter ✓. The following screen appears.

Line Pressure:
Max: 70000.000
00101.325 kPa(a)
Min: 0.000
✓=Save ✗=Cancel

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the previous menu.

3.6.8.3 Setting the k x PPMv Multiplier

Volume Mixing Ratio
Press. Units
Press. Value
k x PPMv

To set the k x PPMv multiplier, select k x PPMv and press Enter ✓. The following screen appears.

K X PPMV Multiplier
Max: 100.000
001.000
Min: 0.001
✓=Save ✗=Cancel

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the previous menu.

3.6.9 Resetting the Time

Settings Menu	
Fault Alm...	Clock...
AutoCal...	Probes
Cal Data...	DpC Offset
V/V Ratio...	

To reset the time, from the Settings Menu select Clock and press Enter ✓. The current time appears on the following screen.

3.6.9.1 Setting the Hour

Thu 2/4/2010 13:44	
Hour	Year
Minutes	
Month	
Date	

To change the hour, select Hour and press Enter ✓. The following screen appears.

Set Hour [0-23]:	
Max:	23
	13
Min:	0
√=Save X=Cancel	

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the previous menu.

3.6.9.2 Setting the Minutes

Thu 2/4/2010 13:44	
Hour	Year
Minutes	
Month	
Date	

To change the minutes, select Minutes and press Enter ✓. The following screen appears.

Set Minutes [0-59]:	
Max:	59
	44
	▲
Min:	0
√=Save X=Cancel	

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the previous menu.

3.6.9.3 Setting the Month

Thu 2/4/2010 13:44	
Hour	Year
Minutes	
Month	
Date	

To change the month, select Month and press Enter ✓. The following screen appears.

Set Month [1-12]:	
Max:	12
	02
	▲
Min:	1
√=Save X=Cancel	

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the previous menu.

3.6.9.4 Setting the Date

Thu 2/4/2010 13:44	
Hour	Year
Minutes	
Month	
Date	

To change the date, select Date and press Enter ✓. The following screen appears.

Set Date:	
Max:	28
	04
	▲
Min:	1
√=Save X=Cancel	

Use left and right arrow keys to select the digit to be changed. Use up and down arrow keys to change the value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the previous menu.

3.6.9.5 Setting the Year

Thu 2/4/2010 13:44	
Hour	Year
Minutes	
Month	
Date	

To reset the year, select Year and press Enter ✓. The following screen appears.

Set Year:	
Max:	2099
	2010
Min:	2007
√=Save X=Cancel	

Use the left and right arrow keys to select each digit to be changed. Use the up and down arrow keys to change the value. When finished, press **Enter** ✓ and return to the previous menu, then press **Cancel** ✗ to return to the Settings Menu.

Note: The Service menu is accessible only to service engineers and requires the use of a Factory-Level passcode.

3.6.10 Selecting the Probe Type

Note: Use the following procedure to select the probe type.

IMPORTANT: Changing the probe setting will default the output and alarm settings to DPC. Also, the default fault trip point values will be set along with the default output range values.

Settings Menu	
Fault Alm...	Clock...
AutoCal...	Probes
Cal Data...	DpC Offset
V/V Ratio...	

From the Settings Menu select Probes and press **Enter** ✓. The following screen appears.

Note: To access the Probes menu, the User Passcode is required (see section 3.6.1 on page 43).

User Passcode:	
0000	
√=Save X=Cancel	

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Once the passcode has been entered, press **Enter** ✓ and the following screen appears.

User Passcode:	
Select Probe:	
STANDARD	VeriDri
√=Accept X=Cancel	

Use the left or right arrow key to select the correct probe type and press **Enter** ✓. The MTS6 reboots in 5 seconds.

3.6.11 Setting a Constant DP °C Offset

This feature enables the customer to add a constant DP °C offset to their reading. It allows for positive or negative offset limiting to $\pm 50^{\circ}\text{C}$. It works only within the calibrated range of the sensor. Alarms A & B are based on the offset value, and likewise, they will work only within the calibrated range of the sensor.

Note: Use the following procedure to set the DP °C Offset.

Settings Menu	
Fault Alm...	Clock...
AutoCal...	Probes
Cal Data...	DpC Offset
V/V Ratio...	

From the Settings Menu select DpC Offset and press Enter ✓. The following screen appears.

Enter Td Offset:	
Max:	+50.00
	+05.00 °C
Min:	-50.00
√=Save X=Cancel	

Use the left and right arrow keys to select each digit to be changed and the up and down arrow keys to increase or decrease its value. Press Enter ✓ to save (or Cancel ✗ to keep the previous value), and return to the previous menu.

3.7 Viewing System Information

3.7.1 Checking the ID

Main Menu	
Display...	Settings...
Output...	Service...
Alarm...	About...
Logs...	LOCK

To check identification information, from the Main Menu, select About and press Enter ✓. The following screen appears.

About MTS6	
ID	Wiring
Status	
Version	
Probe	

To check the identity information, select ID and press Enter ✓. A screen similar to the following appears.

Menu: X	
Sensing MTS6	
Copyright © 2009	
Unit SN:	-----
Unit SN:	xxxxxx
Probe SN:	-----

The information includes serial numbers for the MTS6 unit and the probe. To return to the About MTS6 menu, press Cancel ✗.

3.7.2 Checking the Status

About MTS6	
ID	Wiring
Status	
Version	
Probe	

Menu: X	
Uptime: 0d 00h	
SD Card Installed.	
Format is FAT16	
0.27 MB used	
244.68 MB free	

To check the status of the MTS6, from the About menu select Status and press Enter ✓. A screen similar to the following appears.

The information includes the amount of space being used and that which is free. To return to the About MTS6 menu, press Cancel ✗.

3.7.3 Checking the Software Version

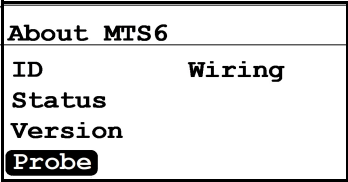
About MTS6	
ID	Wiring
Status	
Version	
Probe	

To check the software version, from the About menu select Version and press Enter ✓. A screen similar to the following appears.

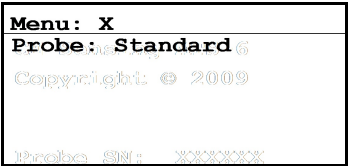
Menu: X	
Prog: dev.001.	
Option: PPMV	
Copyright © 2009	

The information includes the program number and any options. To return to the About MTS6 menu, press Cancel ✗.

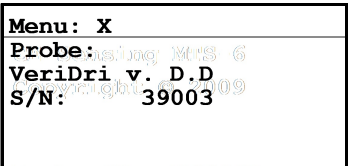
3.7.4 Checking the Probe



To check the probe details, from the About menu select Probe and press Enter ✓. A screen similar to one of the following appears.



Data when using an M Series probe. To return to the About MTS6 menu, press Cancel ✗.



Data when using a VeriDri probe. To return to the About MTS6 menu, press Cancel ✗.

3.7.5 Checking the Wiring

About MTS6	
ID	Wiring
Status	
Version	
Probe	

To view the MTS6 wiring diagram, from the About menu select Wiring and press Enter ✓. A screen similar to the following appears.

Menu: x	
1	FAULT ALM A ALM B 9
	NO C NC NO C NC NO C NC
10	VERIDRI RCDR H2O PROBE 18
	⊥ C- C+ V+ - + SHL RED GRN

To return to the Main Menu, press Cancel ✗ twice.

3.8 Locking the Menu

Main Menu	
Display...	Settings...
Output...	Service...
Alarm...	About...
Logs...	LOCK

To lock the ability to make changes to the menu, select LOCK and press Enter ✓. The screen returns to the normal reading.

Note: To unlock the menu, refer to Starting Up on page 27.

Your passcode is 2719.

Please remove this page and put it in a safe place for future reference.

Chapter 4. Service and Maintenance

4.1 Introduction

The MTS 6 is designed to be maintenance and trouble free. However, because of severe process conditions and other factors, minor problems may occur from time to time. Some of the most common problems and recommended maintenance procedures are discussed in this chapter. If you cannot find the information you need in this chapter, please consult Panametrics for help.



CAUTION! Do not attempt to troubleshoot the MTS 6 beyond the instructions in this chapter. If you do, you may damage the unit and void the warranty.

This chapter covers the following topics:

- common problems
- replacing/recalibrating moisture probes
- cleaning the front panel

Proceed to the appropriate section to perform any of the above tasks.

4.2 Common Problems

If the MTS 6 measurements read too wet or too dry, or if they do not make sense, there may be a problem with either the probe or a process component. Use the descriptions of common problems in Table 3 on page 2 to troubleshoot and solve such problems.

Table 3: Troubleshooting Guide for Common Problems

Possible Cause	Response and Action
Symptom: The accuracy of the moisture sensor is questioned.	
There is insufficient time for the system to equilibrate.	Response: Reads too wet during dry down conditions or too dry in wet up conditions. Action: Change the flow rate. A change in dew point indicates the sample system is not at equilibrium or there is a leak. Allow sufficient time for sample system to equilibrate and moisture reading to become steady. Check for leaks.
Dew point at the sampling point is different from the dew point of the main stream.	Response: Reads too wet or too dry. Action: Readings may be correct if the sampling point and main stream do not run under the same process conditions. The different process conditions cause readings to vary. If sampling point and main stream conditions are the same, check sample system pipes, and any pipe between the sample system and main stream for leaks. Also, check sample system for adsorbing water surfaces, such as rubber or plastic tubing, paper-type filters, or condensed water traps. Remove or replace the contaminating parts with stainless steel parts.
Sensor or sensor shield is affected by process contaminants	Response: Reads too wet or too dry Action: Clean the sensor and the sensor shield, then reinstall the sensor.
Sensor is contaminated with conductive particles.	Response: Reads high dew point. Action: Clean the sensor and the sensor shield, then reinstall the sensor. Also, install a proper filter (i.e. sintered or coalescing element).
Sensor is corroded	Response: Reads too wet or too dry Action: Return probe to factory for evaluation.
Stream particles causing abrasion.	Response: Reads too wet or too dry. Action: Return probe to factory for evaluation.

4.3 Replacing/Recalibrating Moisture Probes

For maximum accuracy, moisture probes should be returned to the factory for recalibration every 6–12 months, depending on the application. Under very severe conditions, more frequent calibrations are recommended. However, under very mild conditions, less frequent calibrations are necessary. Contact a Panametrics applications engineer for your specific recommended calibration frequency.

All new or recalibrated moisture probes must be installed in accordance with the instructions in Chapter 2, *Installation*.

IMPORTANT: To maintain good contact at the terminal block and to avoid damaging the pins on the wiring connector, pull the connector straight off (not at an angle) the terminal block. Then, make the cable connections while the connector is off the unit. Finally, after the wiring is complete, push the connector straight onto the terminal block (not at an angle).

After the probe has been installed and wired, enter the probe calibration curve data as described in Chapter 3, *Operation and Programming*. Each probe is shipped with its own *Calibration Data Sheet*, which includes the serial number for that probe.

4.4 Cleaning the MTS6 Front Panel

When necessary, use the procedure below to clean the front panel. You will need the following:

- Clean, lint free cloth
- Cleaning solution (soap and warm water)

To clean the front panel:

1. Moisten the cloth with the cleaning solution.
2. Gently wipe the front panel clean.
3. Use a dry cloth to dry the front panel.

Chapter 5. Specifications

5.1 Electronics

Input:

moisture signal from Panametrics thin-film aluminum oxide moisture sensor on an M Series probe or a VeriDri probe

Intrinsic Safety:

external safety barrier for moisture input (optional)

Analog Output:

single, isolated recorder output for dew point, internally optically isolated, 10-bit (0.1%) resolution

0–2 V: 10 k Ω minimum load resistance

0–20 mA: 400 Ω maximum series resistance

4–20 mA: 400 Ω maximum series resistance

Outputs are user-programmable within the range of the instrument and the corresponding probe.

Alarm Relays:

1 fault alarm and 2 programmable high/low alarms:

Form C SPDT Relays:	Standard 3A @ 250VAC 3A @ 30VDC
------------------------	--

Standard designs are available for the high/low alarms, set to trip at any level within the range of the instrument, and programmable from the front panel.

Alarm Setpoint Repeatability:

$\pm 0.1^\circ\text{C}$ dew point

MicroSD:

Supports MicroSD and MicroSDHC (high capacity) cards up to 32 GB, with individual logs up to 4 GB in size. The factory-supplied card has a capacity of 4 GB, or over 90 million average log records.

Note: *The MTS6 unit has been fully tested with SanDisk MicroSD/SDHC and Kingston MicroSD cards. It is therefore recommended that the customer use SanDisk or Kingston brand cards.*

Configurations:

panel-mount, PC board

Display:

128 x 64 matrix LCD display with LED backlight

Front Panel:

weatherproof membrane front panel display/keypad meets NEMA 4 and IP66 requirements (panel-mount version only)

Display Functions:

dew point temperature $^\circ\text{C}$ or $^\circ\text{F}$, or sensor signal MH or FH

Input Power:

option 1, AC: universal power 100–240 VAC @ 50–60 Hz
option 2, DC: 24 VDC nominal $\pm 10\%$

Power Dissipation:

AC units: 5 W maximum
DC units: 5 W maximum

Temperature:

operating: -20° to $+60^{\circ}\text{C}$
storage: -40° to $+70^{\circ}\text{C}$

Warm-Up Time:

meets specified accuracy within three minutes

Dimensions:

panel-mount: 2.24 x 4.09 x 4.79 in. (H x W x D)
(57 x 104 x 121.78 mm)
cutout required: 1.81 x 3.69 in. (H x W)
(46 x 93.6 mm)
board-mount: 5.9 x 5.1 x 2.2 in. (H x W x D)
(150 x 130 x 56 mm)

European Compliance:

complies with EMC Directive 2004/108/EC and 2006/95/EC Low Voltage Directive (Installation Category II, Pollution Degree II)

5.2 Moisture Measurement

Sensor Type:

thin-film aluminum oxide moisture sensor probe

Moisture Probe Compatibility:

compatible with all Panametrics M-Series aluminum oxide moisture probes and VeriDri transmitters

Traceability:

All moisture probe calibrations are traceable to National Institute of Standards and Technology (NIST) standards or National Physical Lab, U.K. (NPL) as accredited by Irish National Accreditation Board (INAB).

Probe Cable Length:

M Series: 2,000 ft (600 m) maximum
VeriDri: 1,000 ft (300 m) maximum

Moisture Probe Pressure Rating:

M1: 5 microns Hg to 75 psig (5 barg)
M2: 5 microns Hg to 5,000 psig (345 barg)
VeriDri: 5 microns Hg to 5,000 psig (345 barg)

Dew/Frost Point Temperature:

Overall Calibration Range:
 -110° to 60°C

Available Calibration Range Options:
Standard: -80° to 20°C with data to -110°C
Extended High: -80° to 60°C with data to -110°C

Accuracy: $\pm 2^{\circ}\text{C}$ from -65° to 60°C $\pm 3^{\circ}\text{C}$ from -110° to -66°C *Repeatability:* $\pm 0.5^{\circ}\text{C}$ from -65° to 60°C $\pm 1.0^{\circ}\text{C}$ from -110° to -66°C

Chapter A. Outline and Installation Drawings

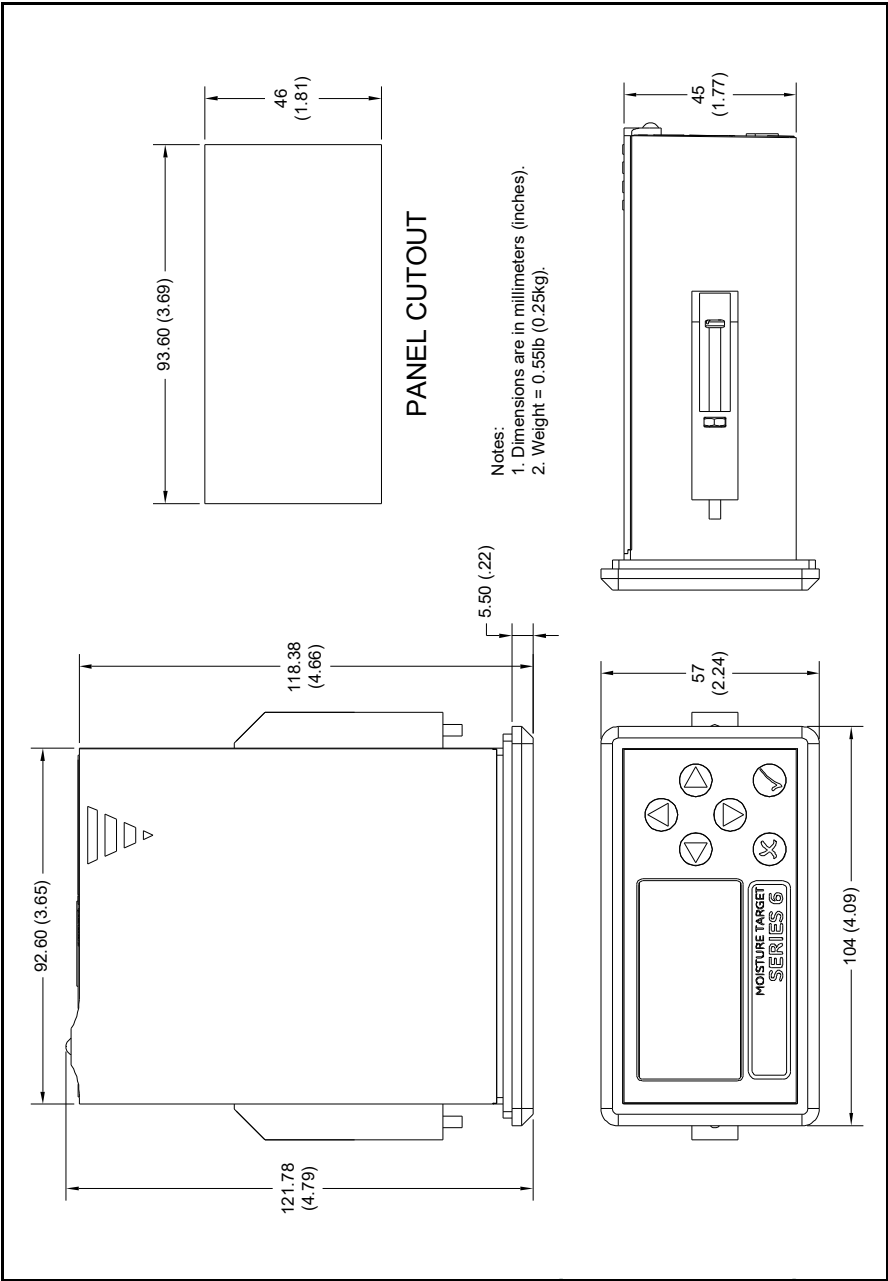


Figure 46: MTS6 Outline and Mounting (ref. dwg #712-1550)

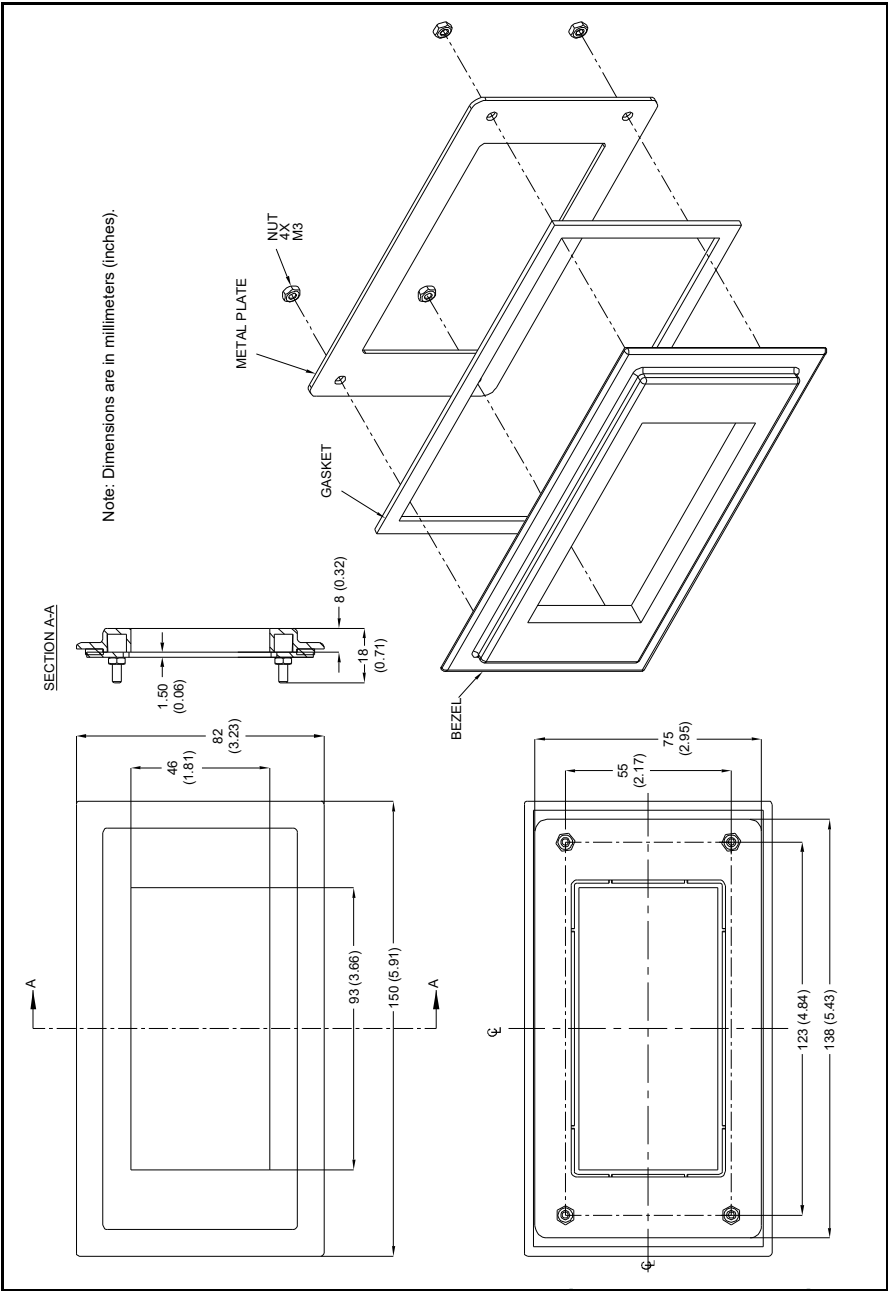


Figure 47: MTS6 Optional Adapter Plates (ref. dwg #705-1297)

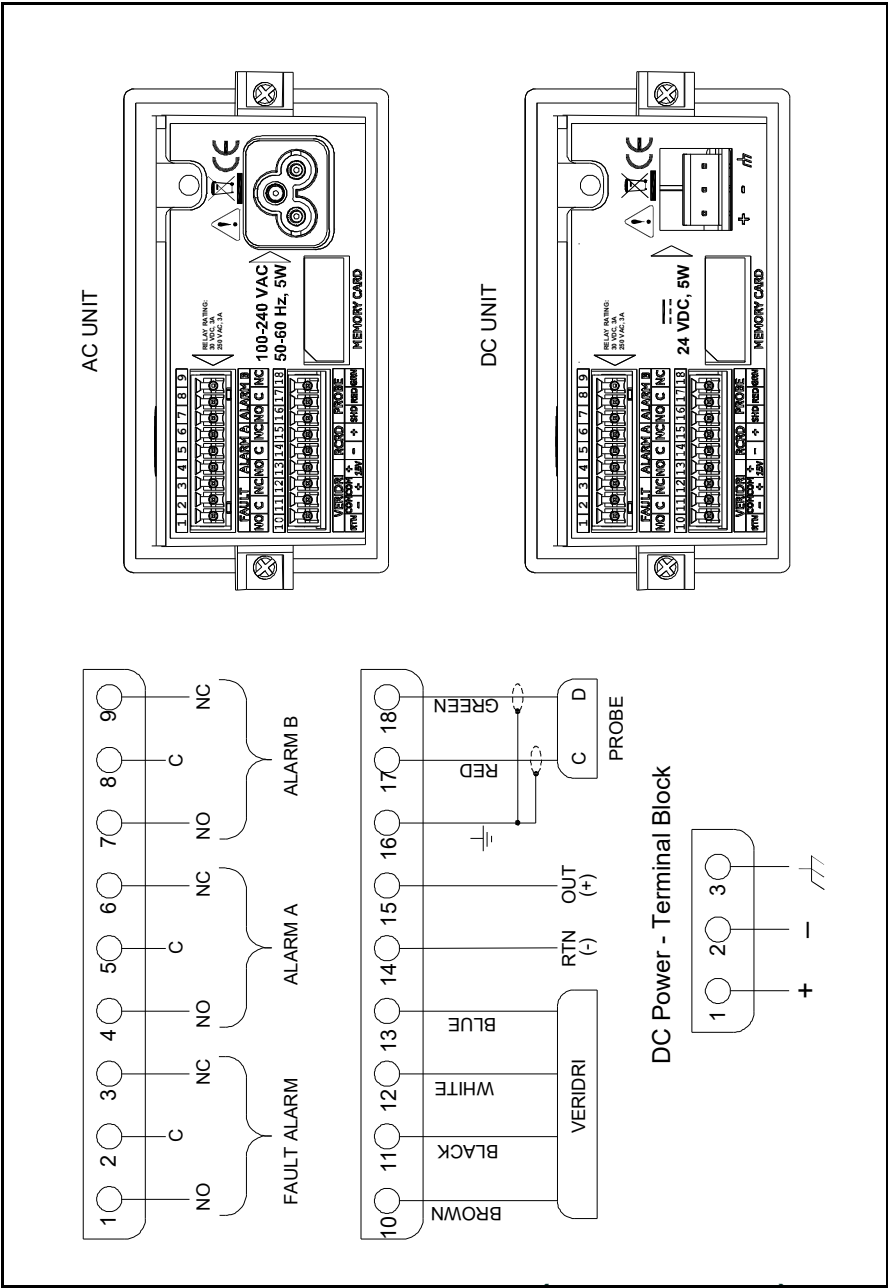


Figure 48: Interconnection Diagram (ref. dwg #702-1015)

Chapter B. Menu Maps

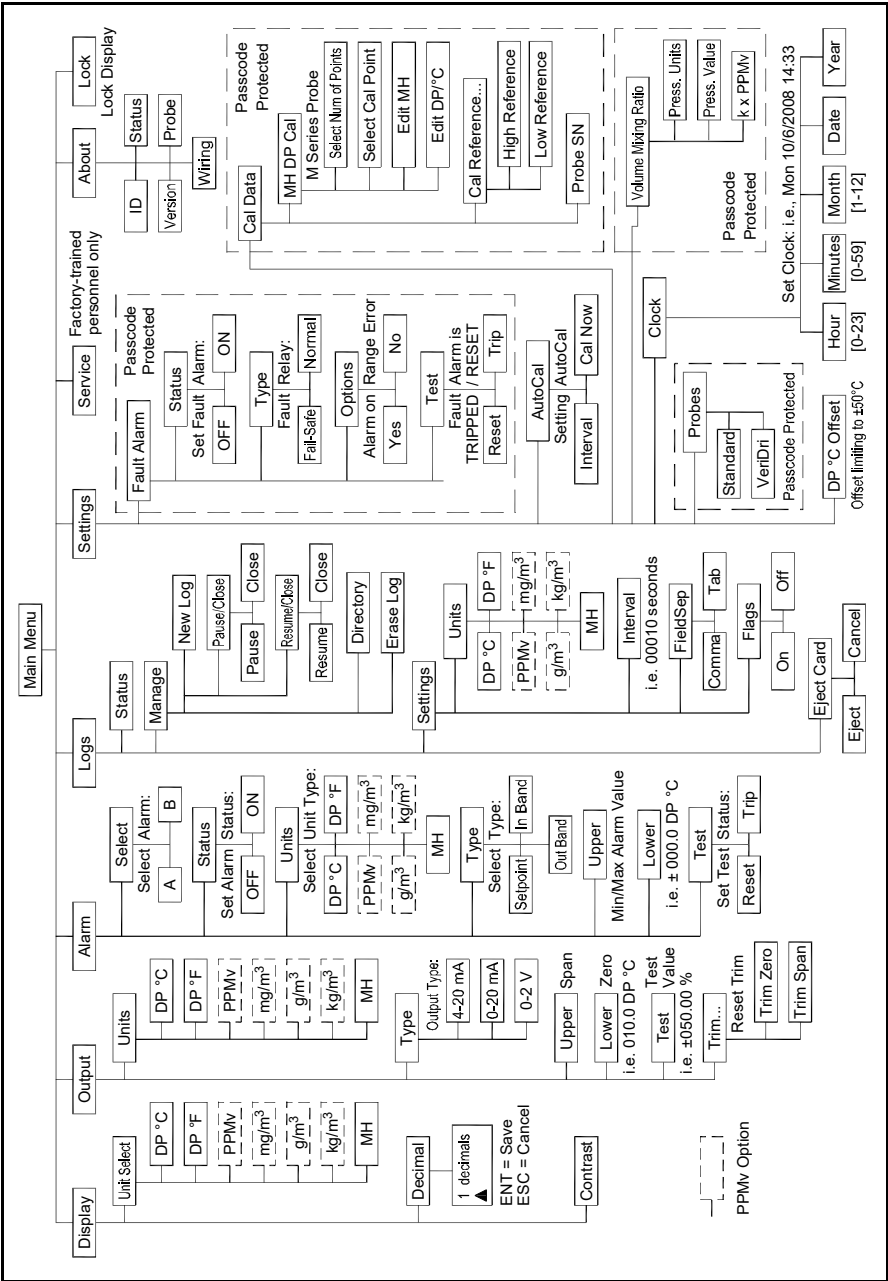


Figure 49: Main Menu Map Using M Series Probe

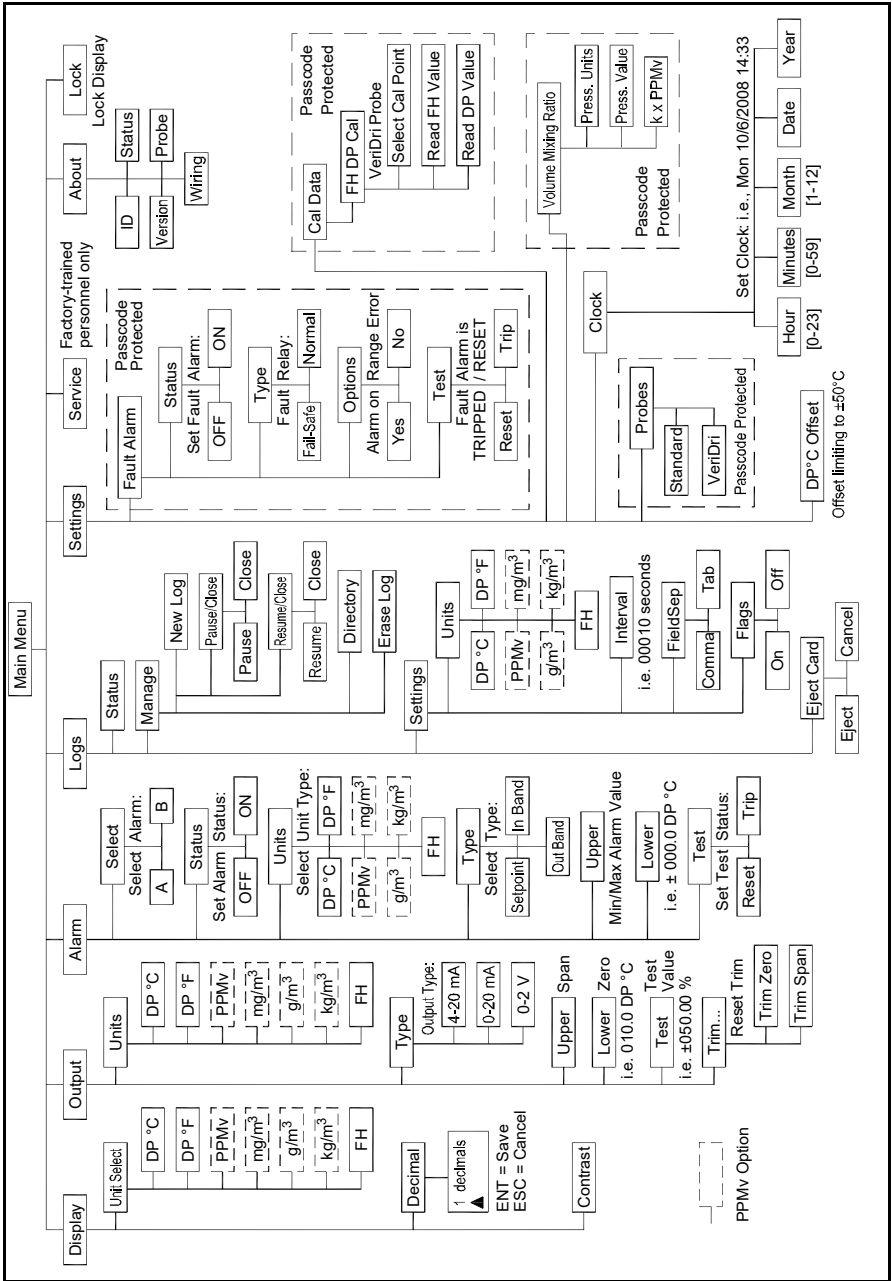


Figure 50: Main Menu Map Using VeriDri Probe

[no content intended for this page]

Chapter C. Reading the MicroSD Card

C.1 Removing the Card

IMPORTANT: Before removing the MicroSD Card, refer to section 3.5.4 Ejecting the SD Card on page 42, to first stop the data log.

1. Locate the memory card in the lower center of the rear panel and pull the flexible cover from the left. The cover hangs from the right side (see Figure 51 and Figure 52).

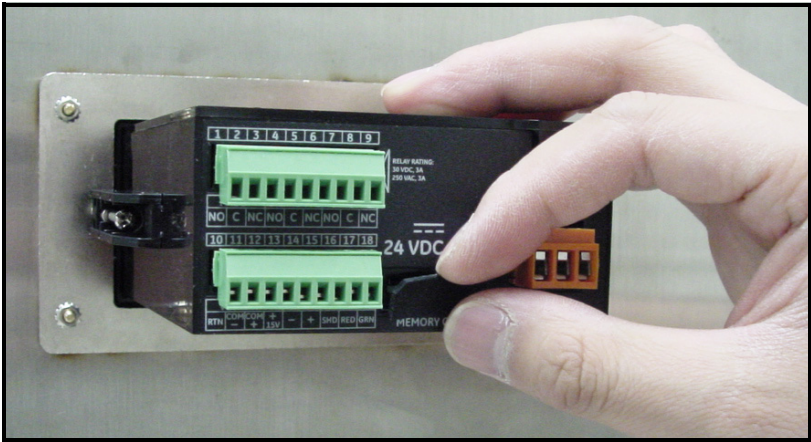


Figure 51: Pulling the Flexible Cover

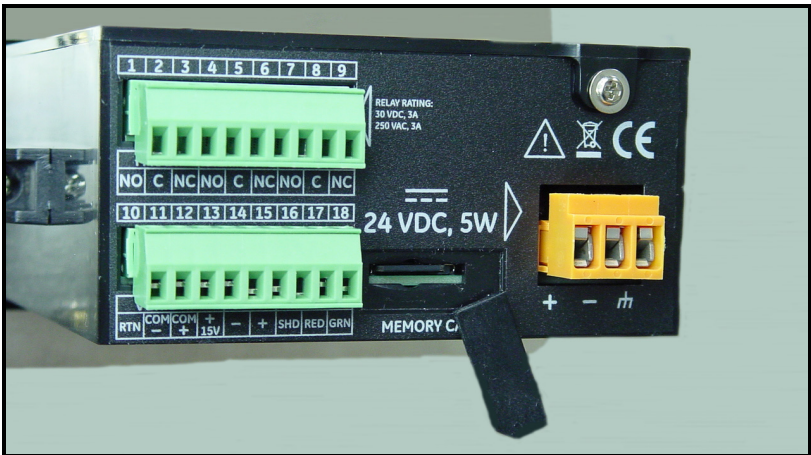


Figure 52: The Opened Memory Card Holder

2. Push in the memory card until it clicks and pull it from the MTS6 chassis (see Figure 53 and Figure 54).



Figure 53: Pushing in on the MicroSD Card

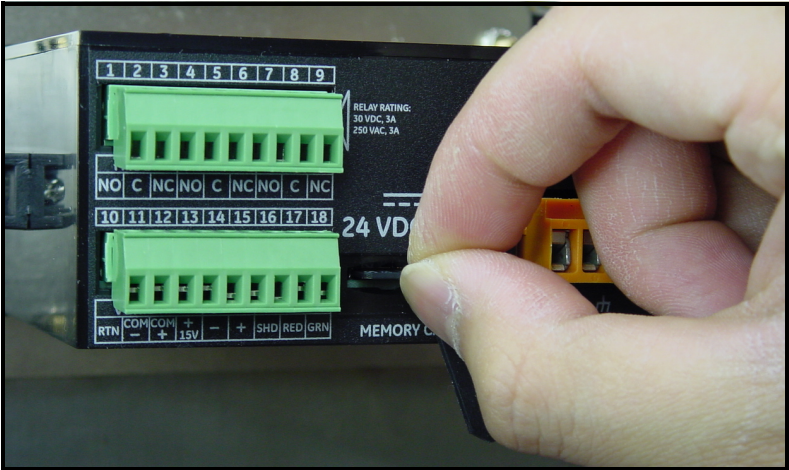


Figure 54: Removing the MicroSD Card

3. Plug the memory card into a card reader and insert the reader into a computer (see Figure 55 and Figure 56).



Figure 55: Plugging the Reader into a PC



Figure 56: The Reader Plugged In

C.2 Accessing the Files

1. From the PC, open My Computer and find the device (see Figure 57).

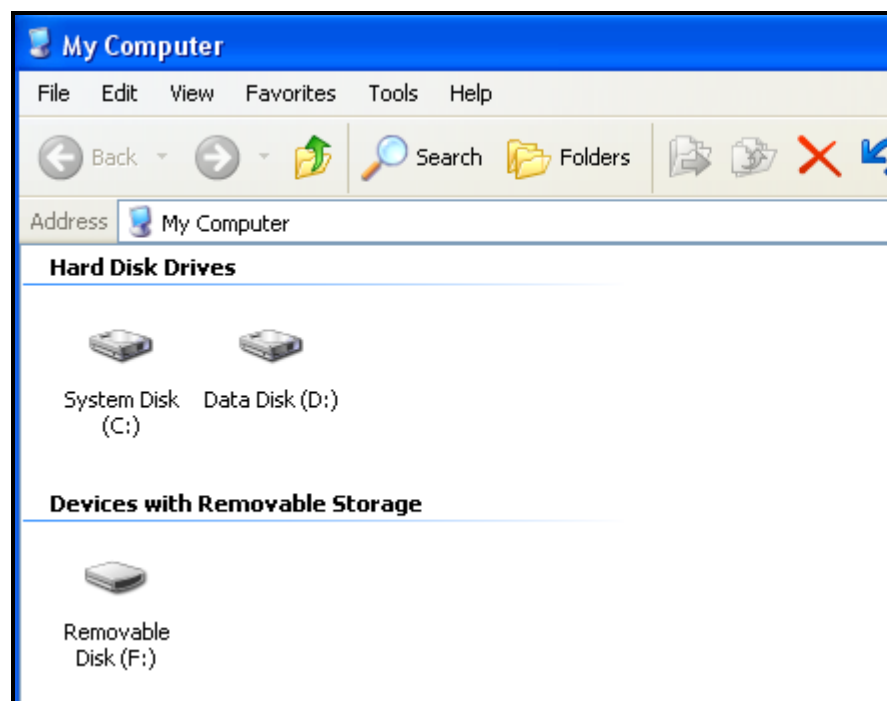


Figure 57: Locating the Device

2. Click on Removable Disk and a screen similar to Figure 58 on page 101 appears.

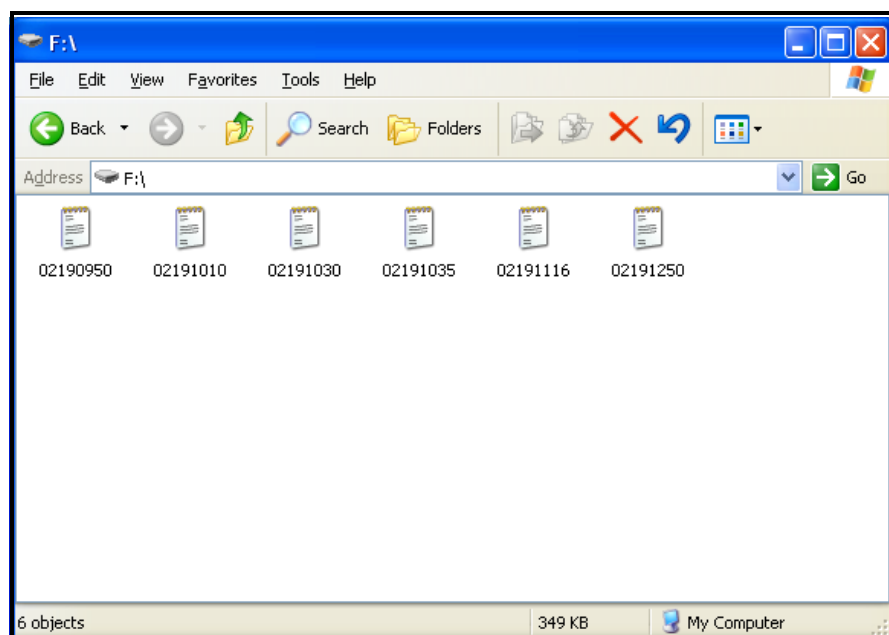


Figure 58: List of Log Files

3. Click on the desired file and a screen similar to Figure 59 appears.

Date/Time	DP °C	DP °F	DP °C	DP °C	Status	Alarm A	Alarm B
2/19/2010 12:50:45	-10.2	13.7	-10.2	-10.2	-10.2	0	0
2/19/2010 12:50:48	-10.2	13.7	-10.2	-10.2	-10.2	0	0
2/19/2010 12:50:51	-10.2	13.7	-10.2	-10.2	-10.2	0	0
2/19/2010 12:50:54	-10.2	13.6	-10.2	-10.2	-10.2	0	0
2/19/2010 12:50:57	-10.2	13.6	-10.2	-10.2	-10.2	0	0
2/19/2010 12:51:00	-10.2	13.7	-10.2	-10.2	-10.2	0	0
2/19/2010 12:51:03	-10.2	13.7	-10.2	-10.2	-10.2	0	0
2/19/2010 12:51:06	-10.2	13.7	-10.2	-10.2	-10.2	0	0
2/19/2010 12:51:09	-10.2	13.7	-10.2	-10.2	-10.2	0	0
2/19/2010 12:51:12	-10.2	13.7	-10.2	-10.2	-10.2	0	0
2/19/2010 12:51:15	-10.2	13.6	-10.2	-10.2	-10.2	0	0
2/19/2010 12:51:18	-10.2	13.6	-10.2	-10.2	-10.2	0	0
2/19/2010 12:51:21	-10.2	13.6	-10.2	-10.2	-10.2	0	0
2/19/2010 12:51:24	-10.2	13.6	-10.2	-10.2	-10.2	0	0
2/19/2010 12:51:27	-10.2	13.6	-10.2	-10.2	-10.2	0	0
2/19/2010 12:51:30	-10.2	13.6	-10.2	-10.2	-10.2	0	0
2/19/2010 12:51:33	-10.2	13.6	-10.2	-10.2	-10.2	0	0
2/19/2010 12:51:36	-10.2	13.6	-10.2	-10.2	-10.2	0	0

Figure 59: Log File Notepad

4. Log files can be opened with a text editor. Open Excel and select Open.

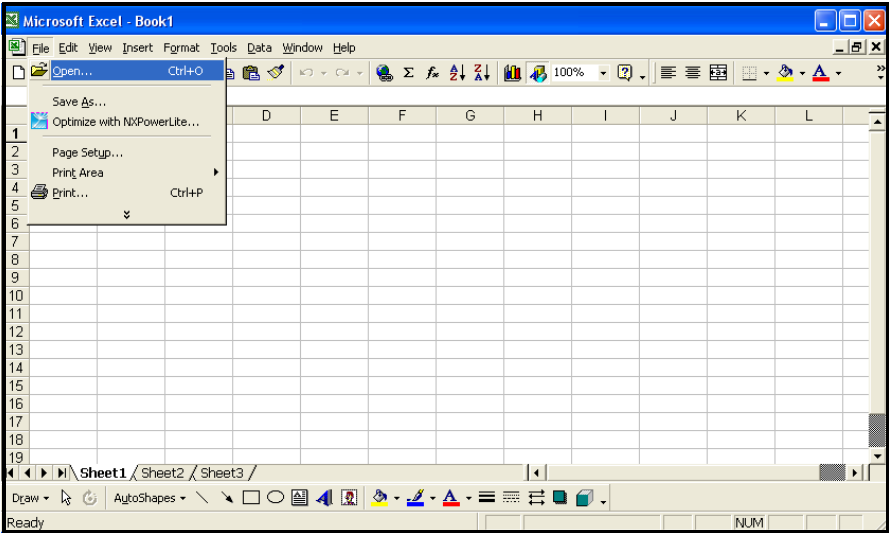


Figure 60: Importing Log Files to Excel

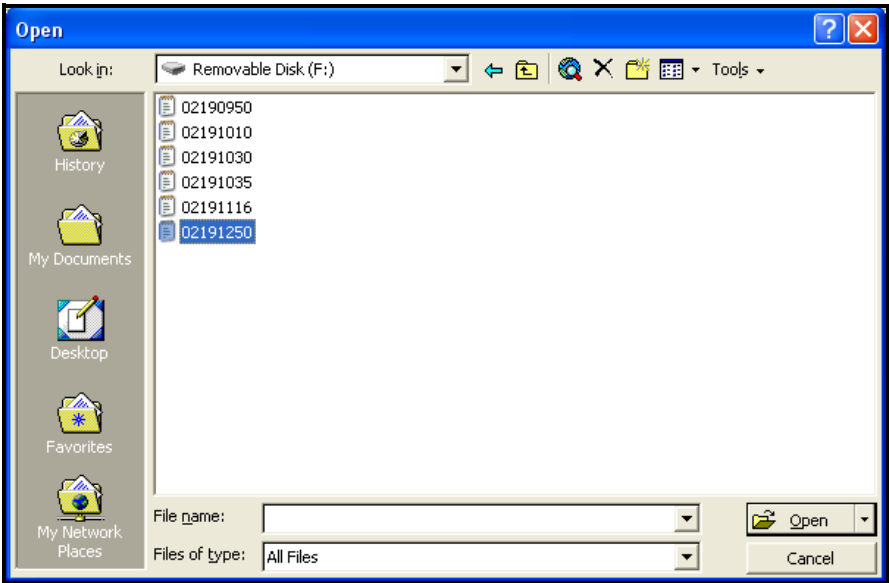


Figure 61: Selecting the Log File to Open

C.3 Setting Up the Files

- Open the file by clicking twice on the number.

Note: *Ensure that the file type equals all types.*

The following screen appears (see Figure 62).

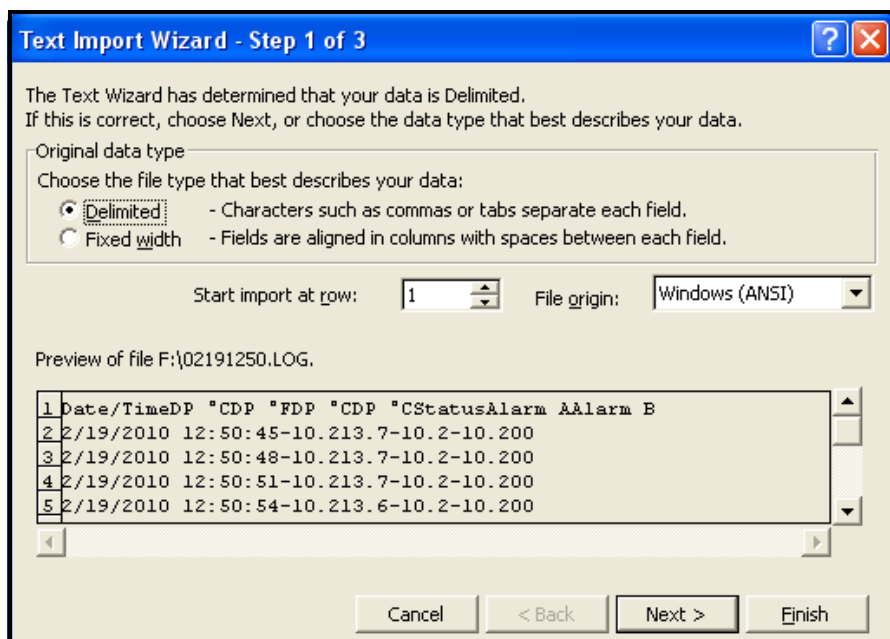


Figure 62: Excel Import Wizard 1

- Follow the directions on the screen, make changes if necessary, and click on Next >. The following screen appears (see Figure 63 on page 104).

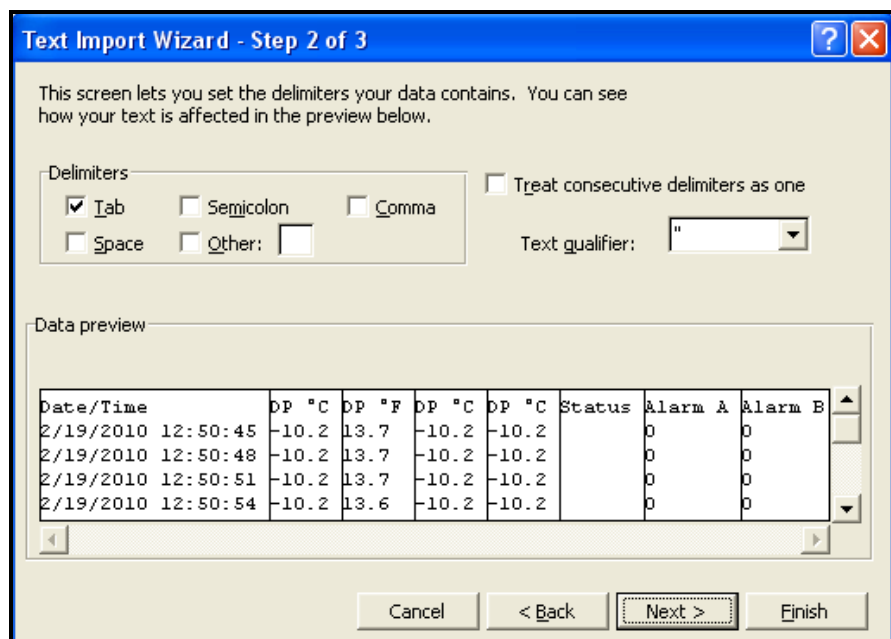


Figure 63: Excel Import Wizard 2

- Set the desired data delimiters, and click on Next >. The following screen appears (see Figure 64 on page 105).

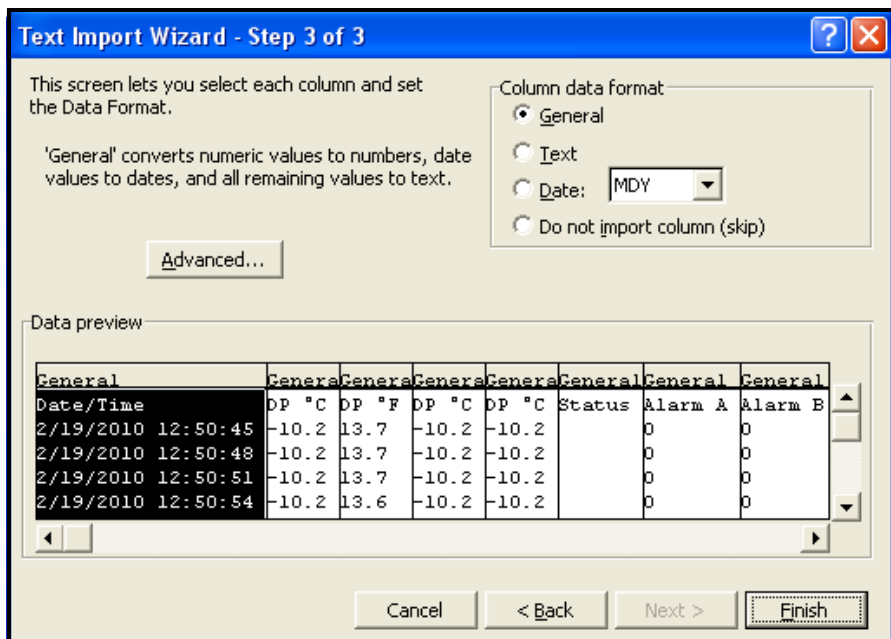


Figure 64: Excel Import Wizard 3

8. Select each column and set the data format for it (see Figure 64).
9. When the setup is complete, click on Finish, and a screen similar to Figure 65 on page 106 appears.

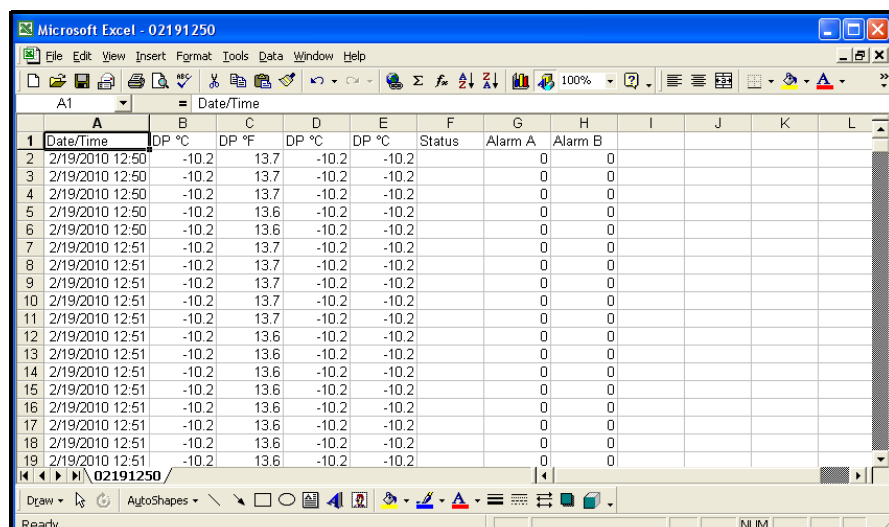


Figure 65: Successful Excel Import

The log file is now properly formatted for graphing or analysis.

Chapter D. The Non-Enclosure MTS6 Package



Caution! Risk of electric shock.

1. Mount the MTS6 package in an enclosed panel where no hazardous live wires are exposed. See Figure 49 for dimensions.

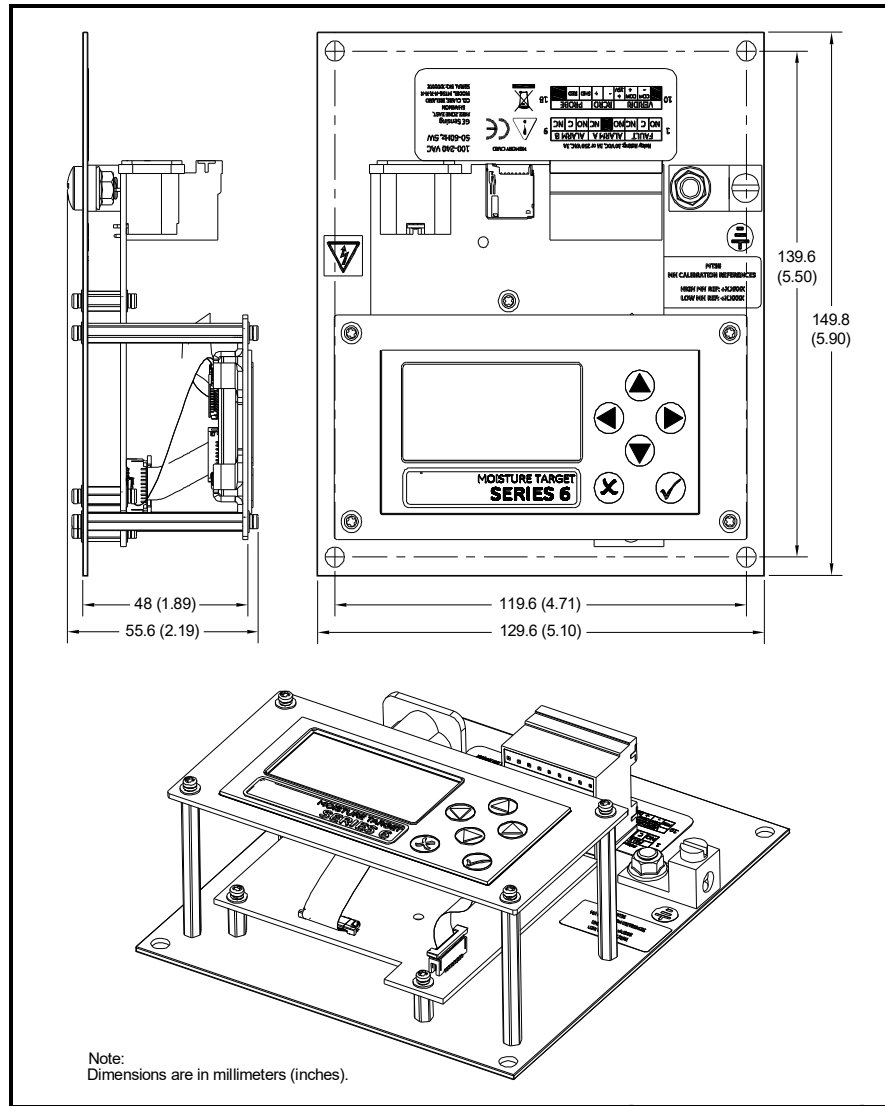


Figure 49: MTS6 Non-Enclosure Package Outline (ref. dwg #712-1687)

2. Ground the MTS6 baseplate using the provided ground lug.
3. Connect the MTS6 unit according to the local electrical code.

A		G	
Adapter Plate		Gasket	9
Gasket	12	Adapter Plate	12
Inserting	13	I	
Alarm Relays	81	ID, Checking	72
Alarms		Information, Setting	54
Changing the Lower Span	45	Input	81
Changing the Upper Span	45	Input Power	82
Fault	29	Installation	
How Alarm Types Work	44	Adapter Plate Gasket	12
Resetting Test Status	46	Applying the Backing Plate	13
Selecting a Type	43	Gasket	9
Selecting an Output	42	Inserting the Adapter Plate	13
Selecting Status	42	Mounting Brackets	10
Selecting Units	43	Panel Mount	15
Setting Up	42	Probe	17
Wiring	27	Securing Plate Assembly	14
Analog Output	81	Intrinsic Safety	81
Autocal, Setting	57	L	
B		Locking the Menu	74
Backing Plate, Applying	13	Logs	
Brackets, Mounting	10	Checking the Status	46
C		Creating	50
Cable, Standard Probe	21	Deleting Numbers	52
Calibration		Managing Files	50
MH/DP	57	Setting a Field Separator	49
Probe	79	Setting Status Flags	49
Reading the DP Value	60	Setting the Interval	48
Reading the FH Value	60	Setting Units	47
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D		Moisture Measurement	83
Decimal Places, Setting	37	Mounting	
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Gasket	9	MTS-6 into Panel Cutout	9
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E		Sample System	17
Electronics	81	Securing MTS-6 to Panel	11
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European Compliance	83	N	
F		Non-Enclosure Package	85, 87, 89, 91
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Connecting	29	O	
Description	29	Offset, Constant DP °C	71
Setting	54	Operation	33
Setting Options	56	Outline and Mounting	85, 87, 89, 91
Testing	56		
Fault Relay Type, Setting	55		

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Changing the Lower Span	40
Changing the Upper Span	39
Selecting the Type	39
Selecting Units	38
Setting Up	38
Testing	40
Trimming	40
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Passcode, Entering	54
PC Board, SI Location	7
Plate Assembly, Installing	14
Power Cable	
AC Connection	30
DC Connection	30
Power Dissipation	82
Primary Units, Selecting	36
Probe	
Checking	72
Inserting Standard Connector	23
Installing	17
M Series	2
Mounted in Sample Cell	18
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Standard Wiring	21
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Replacing the Probe	79
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Personal Equipment	iii
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Input	81
Input Power	82
Intrinsic Safety	81
Moisture Measurement	83
Power Dissipation	82
Temperature	83
Warm-Up Time	83
Starting Up	33
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Switch SI	7
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Temperature	83
Display Range	1
Operating Range	1
Time, Resetting	67
Troubleshooting Guide	77
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VeriDri Probe	2
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Warm-Up Time	83
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Checking	74
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DC Power Cable	30
Non-Enclosure Package	85, 87, 89, 91
Recorder Output	4
Standard Probe	21, 23
VeriDri Probe	24

Warranty

Each instrument manufactured by Panametrics, is warranted to be free from defects in material and workmanship. Liability under this warranty is limited to restoring the instrument to normal operation or replacing the instrument, at the sole discretion of Panametrics. Fuses and batteries are specifically excluded from any liability. This warranty is effective from the date of delivery to the original purchaser. If Panametrics Sensing determines that the equipment was defective, the warranty period is:

- one year from delivery for electronic or mechanical failures
- one year from delivery for sensor shelf life

If Panametrics determines that the equipment was damaged by misuse, improper installation, the use of unauthorized replacement parts, or operating conditions outside the guidelines specified by Panametrics Sensing, the repairs are not covered under this warranty.

The warranties set forth herein are exclusive and are in lieu of all other warranties whether statutory, express or implied (including warranties or merchantability and fitness for a particular purpose, and warranties arising from course of dealing or usage or trade).

Return Policy

If a Panametrics instrument malfunctions within the warranty period, the following procedure must be completed:

- 1.** Notify Panametrics, giving full details of the problem, and provide the model number and serial number of the instrument. If the nature of the problem indicates the need for factory service, Panametrics will issue a RETURN AUTHORIZATION NUMBER (RAN), and shipping instructions for the return of the instrument to a service center will be provided.
- 2.** If Panametrics Sensing instructs you to send your instrument to a service center, it must be shipped prepaid to the authorized repair station indicated in the shipping instructions.
- 3.** Upon receipt, Panametrics will evaluate the instrument to determine the cause of the malfunction. Then, one of the following courses of action will then be taken:
 - If the damage is covered under the terms of the warranty, the instrument will be repaired at no cost to the owner and returned.
 - If Panametrics determines that the damage is not covered under the terms of the warranty, or if the warranty has expired, an estimate for the cost of the repairs at standard rates will be provided. Upon receipt of the owner's approval to proceed, the instrument will be repaired and returned.

We,

Panametrics
1100 Technology Park Drive
Billerica, MA 01821
USA

declare under our sole responsibility that the

Moisture Target™ Series 6 Hygrometer

to which this declaration relates, is in conformity with the following standards:

- EN 61326-1: 2006, Class A, Table 2, Industrial Locations
- EN 61326-2-3: 2006
- EN 61010-1: 2012, Overvoltage Category II

following the provisions of the 2004/108/EC EMC and 2006/95/EC Low Voltage Directives.

The unit listed above and any ancillary equipment supplied with it do not bear CE marking for the Pressure Equipment Directive, as they are supplied in accordance with Article 3, Section 3 (sound engineering practices and codes of good workmanship) of the Pressure Equipment Directive 97/23/EC for DN<25.

Table 4

Billerica - October 2013

Issued



Mr. Gary Kozinski
Certification & Standards, Lead Engineer

[no content intended for this page]

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