JAGXTREME®

Operator Interface
(JXOI and JXHG)
Installation Guide

FCC Notice

This device complies with Part 15 of the FCC Rules and the Radio Interference Requirements of the Canadian Department of Communications. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

ORDERING INFORMATION

It is most important that the correct part number is used when ordering parts. Parts orders are machine processed, using only the part number and quantity as shown on the order. Orders are not edited to determine if the part number and description agree.

CUSTOMER FEEDBACK

Your feedback is important to us! If you have a problem with this product or its documentation, or a suggestion on how we can serve you better, please fill out and send this form to us. Or, send your feedback via email to: quality_feedback.mtwt@mt.com. If you are in the United States, you can mail this postpaid form to the address on the reverse side or fax it to (614) 438-4355. If you are outside the United States, please apply the appropriate amount of postage before mailing.

Your Name:	Date:
Organization Name:	METTLER TOLEDO Order Number
Address:	Part / Product Name:
	Part / Model Number:
	Serial Number:
Phone Number: ( ) Fax Number: ( )	Company Name of Installation:
E-mail Address:	Contact Name:
	Phone Number:

How well did this product meet your expectations in its intended use?	Comments:
☐ Met and exceeded my needs	
☐ Met all needs	
☐ Met most needs	
☐ Met some needs	
☐ Did not meet my needs	

PROBLEM:

UNACCEPTABLE DELIVERY:
- ☐ Shipped late
- ☐ Shipped early
- ☐ Shipped to incorrect location
- ☐ Other (Please Specify)

OUT OF BOX ERROR:
- ☐ Wrong item
- ☐ Wrong part
- ☐ Missing equipment
- ☐ Equipment failure

- ☐ Wrong documentation
- ☐ Missing documentation
- ☐ Incorrectly calibrated
- ☐ Other (Please specify)

Comments:

DO NOT WRITE IN SPACE BELOW; FOR METTLER TOLEDO USE ONLY

☐ Retail   ☐ Light Industrial   ☐ Heavy Industrial   ☐ Systems

RESPONSE: Include Root Cause Analysis and Corrective Action Taken.

B12745800A

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POSTAGE WILL BE PAID BY ADDRESSEE

Mettler-Toledo, Inc.
Quality Manager - MTWT
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Columbus, OH 43216
USA

Please seal with tape.

DECLARATION OF CONFORMITY
Konformitätserklärung
Déclaration de conformité
Declaración de Conformidad
Conformiteitsverklaring
Dichiarazione di conformità

We/Wir/Nous/Wij/Noi: **Mettler-Toledo, Inc.**
1150 Dearborn Drive
Worthington, Ohio 43085
USA

declare under our sole responsibility that the product,
erklären, in alleiniger Verantwortung, daß dieses Produkt,
déclarons sous notre seule responsabilité que le produit,
declaramos, bajo nuestra sola responsabilidad, que el producto,
verklaren onder onze verantwoordelijkheid, dat het product,
dichiariamo sotto nostra unica responsabilitá, che il prodotto,

Model/Type: **Jaguar and JagXtreme**

to which this declaration relates is in conformity with the following standard(s) or other normative document(s).
auf das sich diese Erklärung bezieht, mitder/den folgenden Norm(en) oder Richtlinie(n) übereinstimmt.
Auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou au(x) document(s) normatif(s).
Al que se refiere esta declaración es conforme a la(s) norma(s) u otro(s) documento(s) normativo(s).
Waarnaar deze verklaring verwijst, aan de volende norm(en) of richtlijn(en) beantwoordt.
A cui si riferisce questa dichiarazione è conforme alla/e sequente/i norma/e o documento/i normativo/i.

in combination with a weighing platform produced by Mettler-Toledo is in conformity with the following directives and standards.

Council directive on the harmonization of the laws of the Member states:	standards:
relating to non-automatic weighing instruments (90/384/EEC) amended by directive (93/68/EEC)	EN 45501
relating to electromagnetic compatibility (89/336/EEC) amended by directive (93/68/EEC; 92/31/EEC)	EN 55022:198, Class A
relating to electrical equipment designed for use within certain voltage limits (73/23/EEC amended by directive (93/68/EEC)	EN 60950

Worthington, Ohio USA,   May, 2000   Mettler-Toledo, Inc.

Darrell Flocken, Manager - Weights & Measures
Office of Weights and Measures

Original issue: July, 1995
Revised: October, 1996   added compliance to Low Voltage Directive
                    May, 2000   added JagXtreme

PRECAUTIONS

READ this manual BEFORE operating or servicing this equipment.

FOLLOW these instructions carefully.

SAVE this manual for future reference.

DO NOT allow untrained personnel to operate, clean, inspect, maintain, service, or tamper with this equipment.

ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.

CALL METTLER TOLEDO for parts, information, and service.

	⚠ WARNING
	DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, SERVICING, CLEANING, OR REMOVING THE FUSE. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

	⚠ CAUTION
	OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

	⚠ WARNING
	ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.

	⚠ WARNING
	FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD, CONNECT TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.

	WARNING!
	THE JAGXTREME OPERATOR INTERFACE IS NOT INTRINSICALLY SAFE! DO NOT USE IN AREAS CLASSIFIED AS HAZARDOUS BY THE NATIONAL ELECTRIC CODE (NEC) BECAUSE OF COMBUSTIBLE OR EXPLOSIVE ATMOSPHERES.

	WARNING!
	USE ONLY THE POWER CORD SUPPLIED OR AN EQUIVALENT TYPE. U.S. MODELS USE UL APPROVED TYPE SJT CORD; EC MODELS USE HARMONIZED APPROVED TYPE H05VV-F CORDS.

	⚠ WARNING!
	IMPROPER INSTALLATION OF THE POWER CABLE IN THE JXHG (HARSH VERSION) WILL RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE EQUIPMENT. THE HOT WIRE MUST BE APPLIED TO "L", NEUTRAL TO "N" AND GROUND TO ⏚

⚠CAUTION

FOR INSTALLATION OF ALL VERSIONS OF THE JAGXTREME OPERATOR INTERFACE, THE POWER CORD PLUG MUST BE CLEARLY IDENTIFIED AS DISCONNECT FOR TERMINAL POWER. THE POWER CORD MUST ALSO BE PLUGGED INTO OUTLET WITHIN 10 FEET (3 METERS) AND EASILY ACCESSIBLE TO OPERATOR.

CAUTION

DO NOT APPLY AC POWER TO THE JAGXTREME OPERATOR INTERFACE. POWER SHOULD NOT BE APPLIED UNTIL ALL INTERNAL WIRING HAS BEEN COMPLETED BY A QUALIFIED SERVICE TECHNICIAN.

WARNING!

IF AN ANALOG SCALE IS TO BE USED AND IT WILL BE LOCATED IN A HAZARDOUS (EXPLOSIVE) AREA, SPECIAL PRECAUTIONS MUST BE TAKEN. LOAD CELLS APPROVED FOR USE IN HAZARDOUS LOCATIONS MUST BE USED AND A LOAD CELL BARRIER AND/OR A LOW VOLTAGE ANALOG PCB MAY BE REQUIRED. CONTACT YOUR AUTHORIZED METTLER TOLEDO REPRESENTATIVE FOR DETAILS ON EACH SPECIFIC APPLICATION.

CAUTION

TO AVOID DAMAGE TO THE PCB OR LOAD CELL, REMOVE POWER FROM THE JXHG (HARSH VERSION) AND WAIT AT LEAST 30 SECONDS BEFORE CONNECTING OR DISCONNECTING ANY HARNESS.

CAUTION

WHEN USING THE JXHG (HARSH TERMINAL VERSION) DO NOT ATTACH AN ANALOG LOAD CELL TO THE DIGITOL SCALE INPUT ON THE CONTROLLER PCB COM2. DO NOT ATTACH A DIGITOL SCALE TO THE ANALOG LOAD CELL INPUT ON THE OPTIONAL ANALOG A/D PCB. DOING SO MAY RESULT IN DAMAGE TO THE LOAD CELL OR PCB.

CONTENTS

1 Introduction and Overview

Introduction

Note: The documentation CD-ROM contains a copy of this installation guide, as well as other documentation and software utilities needed for installing, configuring, operating, and servicing the JAGXTREME operator interface and/or the JAGXTREME terminal.

The following information is intended ONLY to help you install the JAGXTREME operator interface and connect the external wiring. Please read the information thoroughly before beginning installation. Separate instructions are provided for each model type (pedestal, panel-mount, and harsh environment). Note that throughout this manual, the JAGXTREME operator interface may be referred to as JXOI (denoting the pedestal and panel-mount versions) and/or JXHG (denoted the harsh environment terminal version).

Keep in mind that both the pedestal and panel-mount versions require a JAGXTREME terminal for operation. Because the harsh environment version is a self-contained unit (a JAGXTREME chassis and an operator interface both installed in a harsh environment enclosure), the installation instructions for this unit are much more complex than the instructions for the pedestal or panel-mount versions. Additional information on the JAGXTREME chassis can also be found in the technical manual. Refer to the section in the technical manual on the blind JAGXTREME terminal.

Note: Any internal wiring, installation of options or programming should be performed only by qualified technicians. This information is found in the JAGXTREME Terminal Technical Manual provided on the Documentation CD-ROM included with the terminal.
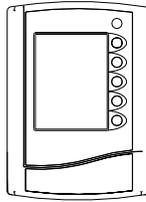
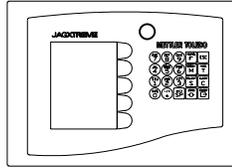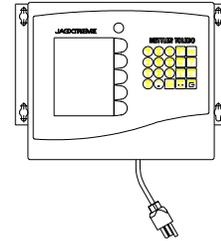| JXOI 1000 Pedestal Version | JXOI 0000 Panel-Mount Version | JXHG 0000 Harsh Environment Version |

Specifications

| Pedestal Version (JXOI 1000)	Panel-Mount Version (JXOI 0000)	Harsh Environment Terminal Version (JXHG)

Dimensions	9.50 x 6.7 x 1.8" (241 x 170 x 45.72 mm)	8.88 x 12.62 x 1.73" (320.5 x 225.6 x 43.94 mm)	9.42 x 12.62 x 9.56" (239.3 x 321 x 242.8 mm)
Shipping Weight	10 lbs (4.5 kg)	10 lbs (4.5 kg)	20 lbs (9.07 kg)
Enclosure Rating	Certified TYPE 12	Certified TYPE 4, TYPE 12	Certified TYPE 4, TYPE 12
Temperature	Operating: -10° to 40° C (14° F to 104° F; Storage: -20° to 60° C (-4° F to 140° F)		
Humidity	10 to 95%, non-condensing		
AC Power Requirements	100 – 264 VAC; 47-63 Hz; auto-sensing; 18 Watts Max. (with METTLER TOLEDO power supply)		85 to 264 VAC; 47 to 63 Hz; 20 Watts Max.
DC Power Requirements	12-24 VDC; Maximum current draw 600 mA		NA

Terminal Display	
Color (standard)	STN 256 colors
Pixels	240 x 320
Dot Pitch	0.36 mm
Contrast and Lighting	Software-controlled, temperature-compensated; cold cathode fluorescent

Serial and Ethernet		
Serial	RS232 serial port via 6-pin removable connector	Reference JAGXTREME Terminal Technical Manual
Keyboard	PS2 Keyboard	Reference JAGXTREME Terminal Technical Manual
Ethernet	RJ-45 10 BASE-T Ethernet	

| Software	
PC Editor	XTREMEBUILDER™ (Windows® application development software)
PC System Requirements	Pentium 166 or higher; Windows 98, ME, 2000 or NT 4.0; 25 Megabytes of disk space; 64 Megabytes of RAM; display resolution of 1024 x 768

Unpacking and Inspection

1. If upon delivery the shipping container for the JAGXTREME operator interface appears damaged, check for internal damage and file a freight claim with the carrier if required.

2. If the container is undamaged, unpack the operator interface from its protective package and inspect each component for damage.

3. Verify that you have the correct package contents.
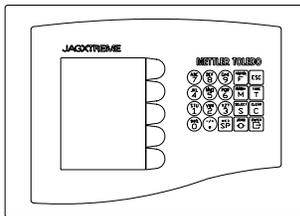
Package contents for the **panel-mount version of the JAGXTREME operator interface** (graphical display only) includes:

- Panel version of JAGXTREME operator interface (JXOIO) with mating connector for the power port
- Installation Guide
- JAGXTREME CD-ROM with documentation and utilities
- Ethernet crossover cable (10'/3m)
- Set of capacity labels
- Universal power supply with line cord
- Panel-mounting hardware
- Panel stiffener and gasket and nuts
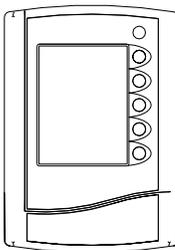
Package contents for the **pedestal version of the JAGXTREME operator interface** (graphical display only) includes:

- Pedestal version of JAGXTREME operator interface (JXOI1) with mating connector for the power port and bracket mounting screws
- Installation Guide
- JAGXTREME CD-ROM with documentation and utilities
- Ethernet crossover cable (10'/3m)
- Set of capacity labels
- Universal power supply with line cord
- Mounting bracket kit with Allen wrench and bracket
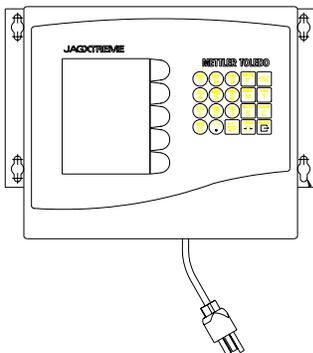
Package contents for the **harsh environment terminal version of the JAGXTREME operator interface** (JAGXTREME chassis and internal graphical display in enclosure) includes:

- Harsh environment operator interface/terminal (JXHG) with power cord
- Installation guide
- Mating connectors for the I/O ports
- Set of capacity labels
- Screwdriver
- JAGXTREME CD-ROM with documentation and utilities
- Wall mounting brackets and hardware

Locating the JXOI/JXHG

Before installing the JXOI/JXHG or making any connections, select an appropriate location for it in an area where exposure to severe environmental conditions such as dust, dirt, moisture, vibration, etc. is minimized. Care should be taken to ensure sufficient space around the unit to allow for adequate ventilation and easy access.

Consult the factory for certification information. Approval is pending as of this printing.

The JXOI pedestal unit has been certified to meet TYPE 12 standards.

The harsh environment unit has been certified to meet TYPE 4 and TYPE 12 standards.

Environmental Considerations

Temperature and Humidity
- Operating temperature: 14 to 113°F (-10 to 40°C) at 10% to 95% humidity, non-condensing.

- Storage temperature: -40 to 140°F (-40 to 60°C) at 10% to 95% humidity, non-condensing.

Environmental Protection
The JAGXTREME operator interface (JXOI/JXHG) is not intrinsically safe and must not be installed in areas classified as hazardous by the National Electric Code (NEC) or other appropriate international body.

	WARNING!
	THE JAGXTREME OPERATOR INTERFACE IS NOT INTRINSICALLY SAFE! DO NOT USE IN AREAS CLASSIFIED AS HAZARDOUS BY THE NATIONAL ELECTRIC CODE (NEC) BECAUSE OF COMBUSTIBLE OR EXPLOSIVE ATMOSPHERES.

Power Considerations

JXOI (Pedestal and Panel-Mount Versions)
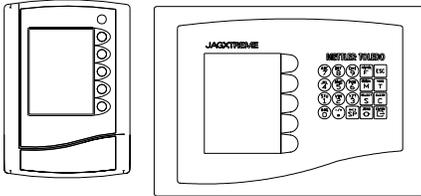
AC Power Supply Considerations (METTLER TOLEDO-supplied power supply)

- 100 to 264 VAC with a line frequency of 47 to 63 Hz.

- Power consumption -- 18 Watts maximum.

- Power termination -- single three-position removable power cord. The wire size range is 12 to 16 AWG.

DC Power Considerations (Third Party-supplied)

- 12-24 VDC

- Maximum current draw 600 mA

- The wire size range is 16 to 22 AWG.

JXHG (Harsh Environment Terminal Version)
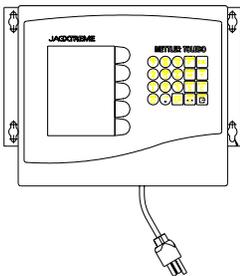
AC Power Supply Considerations

- 85 to 264 VAC with a line frequency of 47 to 63 Hz.

- Power consumption -- 20 Watts maximum.

- integral power cord (general purpose, harsh)

- The wire size range is 12 to 16 AWG.

Ground Integrity

The integrity of the power ground for equipment is important for safety and for the dependable operation of the terminal and its associated scale bases. A poor ground can result in an unsafe condition if an electrical short develops in the equipment. A good ground connection is needed to assure extraneous electrical noise pulses are minimized. The power line for the terminal must not be shared with equipment such as motors, relays, or heaters that generate line noise. If adverse power conditions exist, a dedicated power circuit or power line conditioner may be required.

To confirm ground integrity, a commercial branch circuit analyzer is recommended. This instrument uses a high amperage pulse to check ground resistance. It measures the voltage from the neutral wire to the ground connection and will provide an assessment of the line loading. Instructions with the instrument give guidelines about limits that assure good connections.

⚠ **WARNING!**

USE ONLY THE POWER CORD SUPPLIED OR AN EQUIVALENT TYPE. U.S. MODELS USE UL APPROVED TYPE SJT CORD; EC MODELS USE HARMONIZED APPROVED TYPE H05VV-F CORDS.

⚠ **WARNING!**

IMPROPER INSTALLATION OF THE POWER CABLE WILL RESULT IN APPLYING 120 VAC TO GROUND. THE HOT WIRE MUST BE ON TOP. THE TERMINAL SCREWS SHOULD FACE AWAY FROM THE OPTION CIRCUIT BOARD SLOTS.

⚠**CAUTION**

FOR INSTALLATIONS OF ALL VERSIONS OF THE JAGXTREME OPERATOR INTERFACE, THE POWER CORD PLUG MUST BE CLEARLY IDENTIFIED AS DISCONNECT FOR TERMINAL POWER. THE POWER CORD MUST ALSO BE PLUGGED INTO OUTLET WITHIN 10 FEET (3 METERS) AND EASILY ACCESSIBLE TO OPERATOR.

⚠ **CAUTION**

DO NOT APPLY AC POWER TO THE JAGXTREME OPERATOR INTERFACE. POWER SHOULD NOT BE APPLIED UNTIL ALL INTERNAL WIRING HAS BEEN COMPLETED BY A QUALIFIED SERVICE TECHNICIAN.

# 2 JXOI (Pedestal and Panel Versions) Installation Instructions

Overview
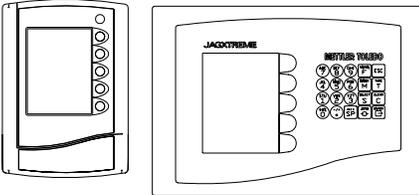
Separate installation instructions are provided in this chapter for the panel-mount and pedestal versions of the JAGXTREME operator interface in this chapter. Please refer to Chapter 3 for information on installing the JXHG (harsh environment terminal version).

NOTE: After installing the panel-mount and pedestal versions, the instructions for making the electrical connections are the same. Refer to the section in this chapter entitled JXOI (Pedestal and Panel-Mount) External Connections.
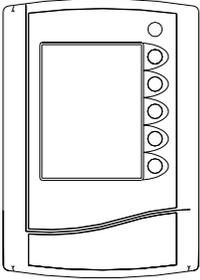
Mounting the JXOI (Panel-Mount)
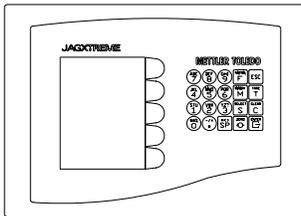
Required tools for installation:

* Drill

* #7 drill bit (0.211"/5.11 mm)

* 7 mm wrench or socket

To install the JXOI panel-mount unit, follow these steps and refer to the illustrations provided on the next page.

1. Cut an opening 11.12" (282 mm) x 7.38" (187 mm) to accommodate the unit. The tolerance for the panel-mount cutout is ±0.06" (2 mm). See Figure 3.

2. Drill ten holes 0.211" in size. Refer to Figure 3 on the next page for hole locations or use the supplied panel stiffener.

3. Position the supplied gasket around the unit's bezel.

4. Insert the unit through the panel flush against the panel. Confirm that the terminal is correctly oriented.

5. From the rear of the panel, slide the stiffener over the JXOI back cover and align the holes with the studs. Install the locking nuts in the four corners first, but do not tighten them.

6. Install the remaining locking nuts, and tighten them in a circular pattern from one corner.

7. Using a socket wrench, tighten all ten M4 Hex nuts to the following torque specification: panel-mounted models – 4 in-lb   0 x 0.2 N•m.

8. Inspect the front of the unit for a good seal to the front of the panel.

9. The JXOI is now ready for electrical connections.

JXOI (Panel-Mount) Mounting Dimensions

Dimensions: 8.88 x 12.62 x 1.73" (320.5 x 225.6 x 43.94 mm)

Figure 1 - Front

Figure 2 - Side

Figure 3 - Cutout

Mounting the JXOI (Pedestal)

Note: For non-permanent installation, use the optional weighted base kit (0917-0311).

Required tools and miscellaneous hardware:

- # 30 drill bit (0.128"/3.25 mm)

- Four 8-32 or M4 screws (for mounting JXOI to customer facility surface)

- Screwdriver or nut driver (depending on screws used)

- Phillips screw driver

- Allen wrench (supplied with unit)

To install the pedestal JXOI, follow these steps and refer to Figure 3.

1. Remove the swivel joint from the bracket by turning the wing nut counterclockwise.

2. Attach the swivel joint to the back of the JXOI using the four screws supplied.

3. Drill four holes two inches (50.8 mm) apart in a square pattern. Note: The easiest method may be to use the base of the bracket as a template. It can be removed by loosening the Allen screw.

4. Mount the bracket base to the surface using the appropriate screws. This will vary depending on the surface.

5. Tighten the Allen screw to allow the bracket to swivel as desired.

6. Insert the swivel joint on the bracket and tighten the wing nut to allow the unit to swivel as desired.

7. The JXOI is now ready for electrical connections.

JXOI (Pedestal) Mounting Dimensions

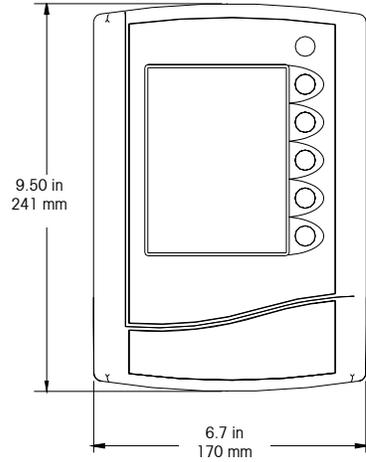Dimensions: 9.50 x 6.7 x 1.8" (241 x 170 x 45.72 mm)

9.50 in
241 mm

6.7 in
170 mm

Figure 1 - Front

3.956 in
100.6 mm

1.8 in
45.72 mm

Figure 2 - Side

2.50 in
63.5 mm
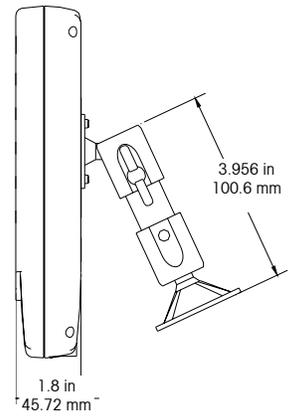
2.00 in
50.8 mm

2.00 in
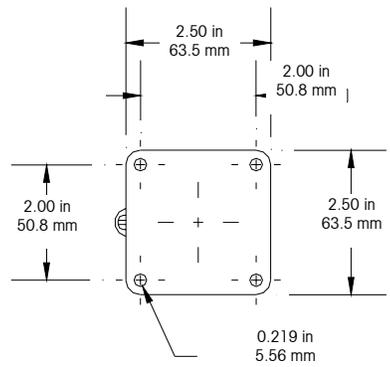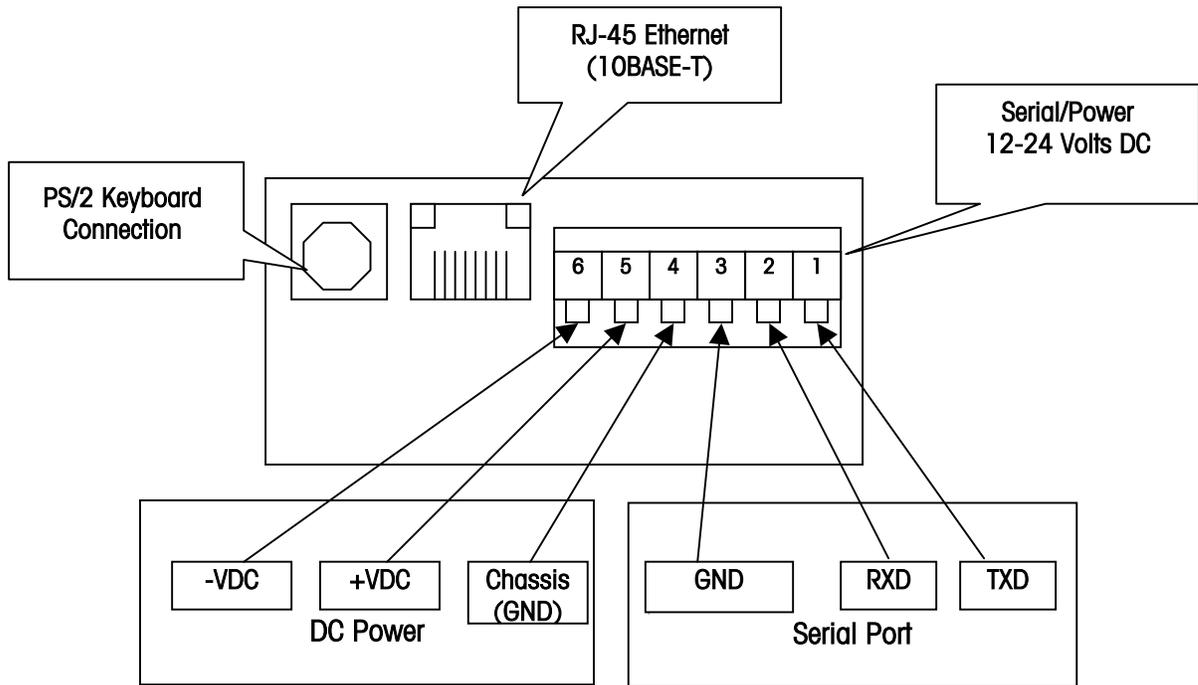50.8 mm

2.50 in
63.5 mm

0.219 in
5.56 mm

Figure 3 - Base Bracket

JXOI (Pedestal and Panel-Mount) Connections

The following diagram shows the external power and communication connections for the panel-mount and pedestal versions of the JXOI.

Serial Port

The JAGXTREME operator interface comes standard with one serial port and a DC power supply interface on a 6-pin phoenix connector. The serial port uses RS-232 protocol. This can be used with the serial object. (Refer to the on-line documentation for the XTREMEBUILDER software.) The unit does not come with a serial cable.

Note: RS-232 – The default settings for the unit are 115 Kbaud, 8 data bits, no parity, and 1 stop bit.
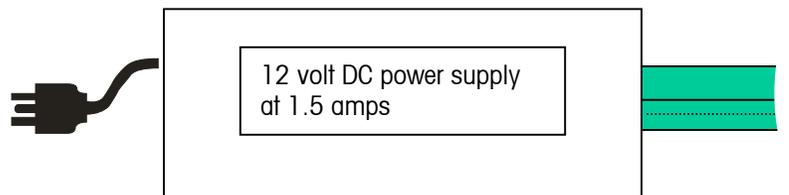
DC Power Supply Connection

A DC power supply is provided with the JXOI pedestal and panel-mount units. Connection to the JXOI removable terminal must be made at installation.

-VDC (no stripe on wire)

Pin 6

+ VDC (stripe on wire)

Pin 5
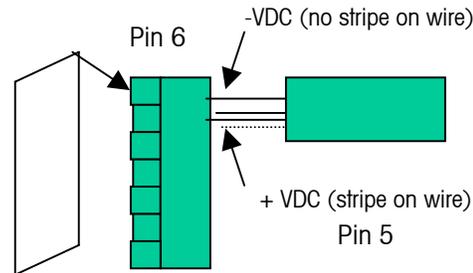
Removable Terminal Block

DC Power Connection Procedure

1. Connect the tinned –VDC supply wire to terminal number 6 on the removable terminal block.

2. Connected the tinned +VDC supply wire to terminal number 5 on the removable terminal block.

3. Secure the DC power supply wiring to provide appropriate protection from open circuits or shorts.

12 volt DC power supply at 1.5 amps

Note: AC power connection is via a removable line cord supplied with the DC power supply. Plug is dependent upon country finish code selected.

Ethernet Port

The Ethernet port is a standard 10BASE-T interface with an 8-pin (RJ-45) modular jack connector and uses TCP/IP protocol. An Ethernet crossover cable is supplied to connect the JXOI directly to a JAGXTREME terminal.

PS/2 Keyboard Interface

The PS/2 keyboard will support an external PS/2 keyboard to the JXOI.

Note: Keyboard wedges and other non-keyboard devices are not compatible with this interface and should not be used.

JXOI to JAGXTREME Terminal Connections

The JXOI can be connected to a maximum of six JAGXTREME terminals. The diagram below shows the JXOI pedestal model connected via Ethernet RJ-45 cables to an Ethernet hub. The Ethernet hub is connected to multiple JAGXTREME terminals using RJ-45 Ethernet cables. This type of configuration allows the JXOI to view the scale information from any of the terminals on the network.
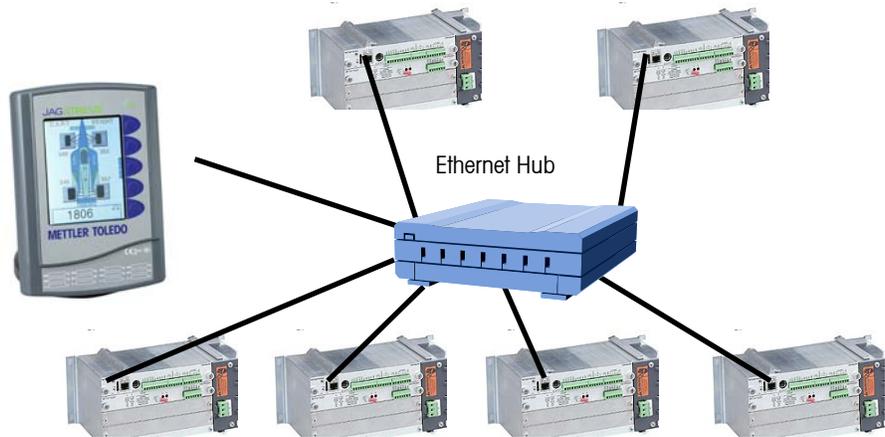
Ethernet Hub

JXOI connected to 6 JAGXTREME Terminals

Multiple JXOIs can be connected via Ethernet to one JAGXTREME terminal. This diagram shows the two JXOIs connected to an Ethernet hub via RJ-45 Ethernet cables. The Ethernet hub is then connected to the JAGXTREME terminal via RJ-45 Ethernet.
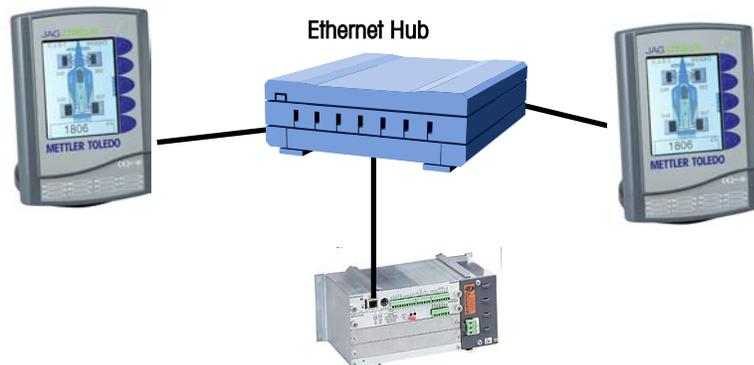
Ethernet Hub

Note: Refer to Chapter 3 for information on the Ethernet connections for the harsh environment terminal version.

NOTES

NOTES

3

JXHG (Harsh Environment Terminal Version) Installation Instructions

Overview

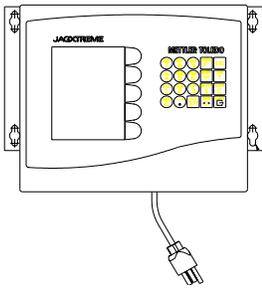The JXHG (harsh environment terminal version) is comprised of a JAGXTREME chassis and a graphical display housed in an enclosure. For additional information, refer to the section on the blind JAGXTREME terminal in the JAGXTREME Terminal Technical Manual.

Required tools:

- Flat bladed screw driver

- Drill

- Socket wrenches

Mounting the JXHG (Harsh Environment Terminal Version)

To mount the JXHG, follow these steps and refer to the illustrations provided.

1. Locate the two mounting brackets that came with the JXHG.

2. Mount the brackets using the four stainless steel hex head screws supplied with the unit. Refer to Figure 1 on the next page and note the correct positioning of the brackets. The slotted holes must protrude beyond the enclosure and the bracket tabs must point toward the front as shown in the illustration on the next page.

3. Tighten the brackets to the back of the enclosure (torque 25 inch pounds or 2.83 N•m).

4. Using the dimensions on the next page, prepare the mounting surface to accept the enclosure. The mounting surface and brackets must be able to support 45 lb (20 kg).

5. Place the enclosure on the mounting surface and secure with appropriate fasteners. You can now make the electrical connections.

JXHG (Harsh Environment Terminal Version) Mounting Dimensions

Dimensions: 9.42 x 12.62 x 9.56" (239.3 x 321 x 242.8 mm)
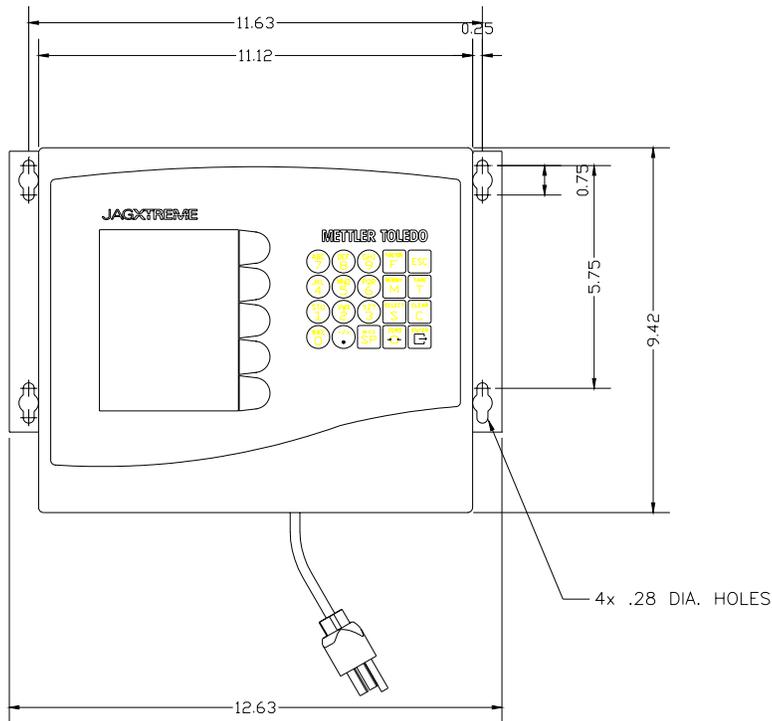
Figure 1
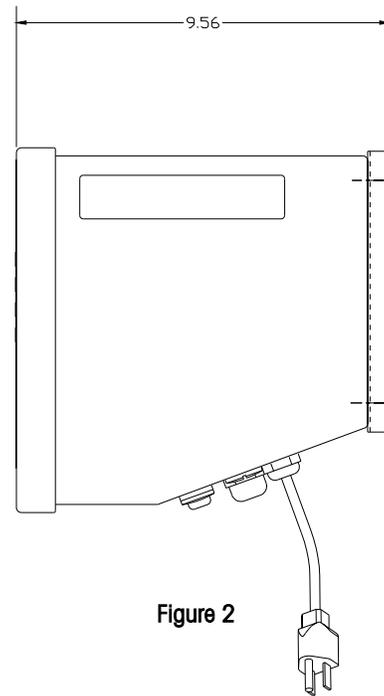
Figure 2

Opening the JXHG (Harsh Environment Terminal Version)
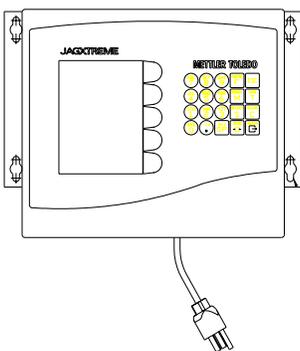
1. Disconnect power.

2. Locate the two slots on the bottom lip of the front of the harsh environment enclosure.

3. Gently insert the blade of a slotted screwdriver into one of the slots and press inward (toward the enclosure). This releases a pressure tab that allows the access panel of the enclosure to open slightly.

4. Repeat steps 2 and 3 for the other slot.

5. Remove the access panel away from the enclosure. The access panel is connected to the Controller PCB by a cable and cannot be removed without disconnecting the cable. You should be able to access the unit with the front panel connected.

6. With the access cover removed, you are now ready to make connections to the unit. The illustration and table on the next page describe the recommended wiring connections.
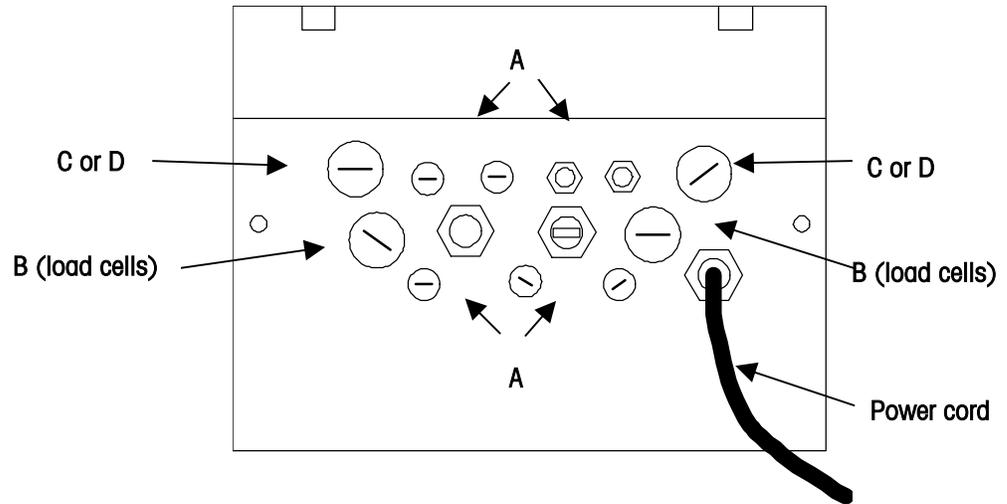
Reference Letter	Suggested Cable
A	Serial I/O Cables (Except DigiTOL) PLC I/F Cabling
B	Analog Load Cell Cabling DigiTOL Load Cell Cabling
C	Ethernet Cabling RJ-45 Category 5
D	QWERTY Keyboard PS/2

Connecting the Load Cell

Make the load cell connection to the Controller PCB (DigiTOL scales), the optional
Analog A/D PCB (analog load cells), or the POWERCELL I/O PCB, following the
instructions provided here.

	WARNING!
	IF AN ANALOG SCALE IS TO BE USED AND IT WILL BE LOCATED IN A HAZARDOUS (EXPLOSIVE) AREA, SPECIAL PRECAUTIONS MUST BE TAKEN. LOAD CELLS APPROVED FOR USE IN HAZARDOUS LOCATIONS MUST BE USED AND A LOAD CELL BARRIER AND/OR A LOW VOLTAGE ANALOG PCB MAY BE REQUIRED. CONTACT YOUR AUTHORIZED METTLER TOLEDO REPRESENTATIVE FOR DETAILS ON EACH SPECIFIC APPLICATION.

	CAUTION
	TO AVOID DAMAGE TO THE PCB OR LOAD CELL, REMOVE POWER FROM THE JXHG AND WAIT AT LEAST 30 SECONDS BEFORE CONNECTING OR DISCONNECTING ANY HARNESS.

	CAUTION

> DO NOT ATTACH AN ANALOG LOAD CELL TO THE DIGITOL SCALE INPUT ON THE CONTROLLER PCB COM2. DO NOT ATTACH A DIGITOL SCALE TO THE ANALOG LOAD CELL INPUT ON THE OPTIONAL ANALOG A/D PCB. DOING SO MAY RESULT IN DAMAGE TO THE LOAD CELL OR PCB.

Analog Load Cell Connections

The maximum cable length for analog load cell connections to the terminal depends on the total scale resistance (TSR) of the scale base. To calculate TSR:

$$TSR = \frac{\text{Load Cell Input Resistance (Ohms)}}{\text{\#Load Cells}}$$

The chart below gives recommended cable lengths based on TSR and cable gauge.

Recommended 6-Conductor Maximum Cable Length			
TSR (Ohms)	24 Gauge* (feet/meters)	20 Gauge (feet/meters)	16 Gauge (feet/meters)
350	800/243.84	2000/609.6	4000/1219.2
87	200/60.96	600/182.88	1000/304.8
58	100/30.48	300/91.44	500/152.4
35	70/21.336	190/57.91	350/106.68

The following diagrams describe analog load cell terminal strip wiring for standard 6-wire and 4-wire cable.

Standard 6-wire Cable
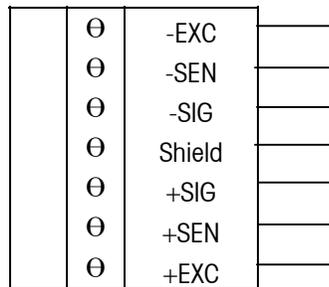
Note: COM2 is not available for use as a DigiTOL scale interface.

4-wire Cable
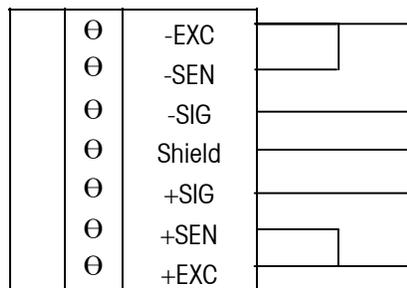
* If an increase in load results in a decrease in weight display, reverse the signal wires (+SIG and –SIG).

POWERCELL Connections (Non-Hazardous Area POWERCELL Applications)

Recommended maximum cable distance is 900 feet (274.32 meters) for all non-hazardous applications regardless of the number of cells (16 or 20 gauge wire). The following shows the connection to a RAAD box, MTX, or CMOS J-Box.

JXHG		RAAD Box, MTX, or CMOS J-Box
⊖	COM A	A
⊖	COM B	B
⊖	GND	GND
⊖	GND	GND
⊖	GND	GND
⊖	+20V*	+VA
⊖	+20V	+VB
⊖	+20V	+VC
⊖		
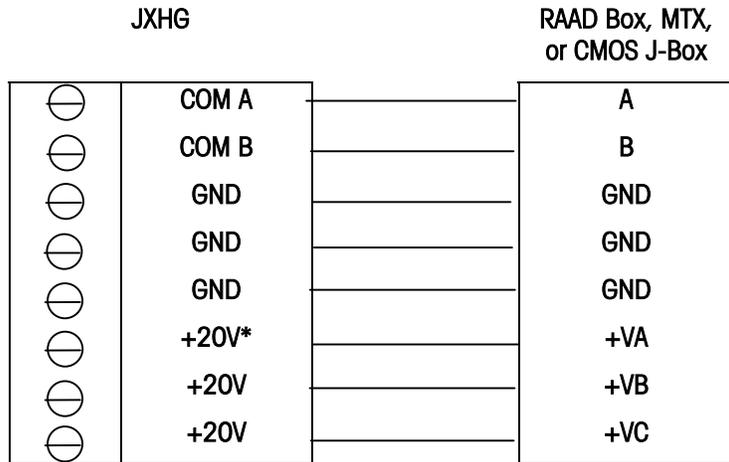
External power connector Pin 1 is +V and Pin 2 is ground. Note: Set Jumper W9 to external power supply if external power is used.

POWERCELL Connections to DigiTOL Scales with NMOS POWERCELLs and Pit Power Supplies

For applications in which the POWERCELL PCB is connected to a DigiTOL scale with any number of NMOS POWERCELLs, the JXHG must be wired with the auxiliary power supply (P/N 0917-0168 for 100/110/120 VAC operation, 0917-0169 for 220/240 VAC operation).

Auxiliary Power Supply
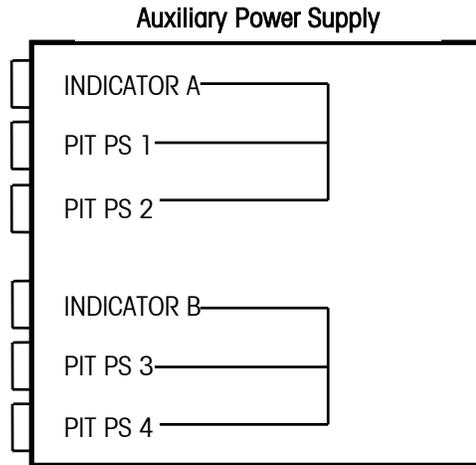
The purpose of the auxiliary power supply is to provide two identical circuits, each with a 24 VDC power supply output capable of driving up to two pit power supplies. Each pit power supply can drive a maximum of 12 load cells. As shown above, the INDICATOR A and B inputs are connected to the pit PS outputs. The two circuits are completely isolated. The only exception is the same 24 VDC power supply output being used for pit PS1 and 3. The second 24 VDC supply is shared between pit PS2 and 4.

If only one channel is needed, INDICATOR A must be used.

The W1 jumper is located on the printed circuit board in the auxiliary power supply. The W1 jumper enables and disables the circuit that senses voltage at the INDICATOR B input. If this circuit is enabled (W1 removed) and input voltage at pin 5 of both INDICATOR A and B is not present, the 24 VDC output at pit PS 1, 2, 3, and 4 will be turned OFF. If only the INDICATOR A input is being used, jumper W1 must be inserted shorting both pins.

Connect the JXHG to the auxiliary power supply as follows:
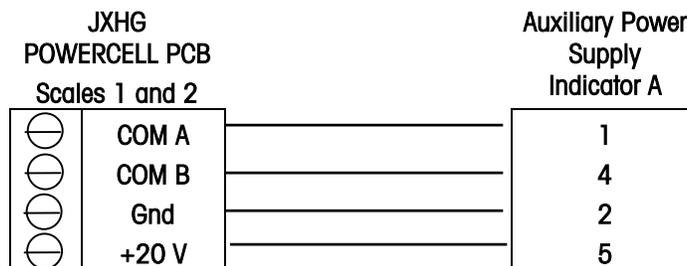
If a second JAGXTREME terminal exists, the interface cable between the second terminal and the auxiliary power supply would be wired the same. However, the interface cable would plug into the auxiliary power supply at INDICATOR B. The W1 jumper on the auxiliary power supply must not be shorting the two pins together.

Replacing an Existing 8146 or 8530 on a DigiTOL Scale having an Auxiliary Power Supply and Pit Power Supply(s)

Wire the JXHG POWERCELL PCB to the auxiliary power supply as shown previously. The home-run cables plugged into pit PS 1, 2, 3, or 4 can be left as is.

Replacing an Existing 8530 on a DigiTOL Scale with a Pit Power Supply and not having an Auxiliary Power Supply

An auxiliary power supply must be supplied. Wire the JXHG POWERCELL PCB to the auxiliary power supply as shown previously. Plug the home-run cable from the 8530 into pit PS 1.

Shield wire must be connected to chassis ground or "GND" terminal at the JXHG end for reliable operation.

You can purchase this adapter harness (0900-0284) or cut the base cables and wire directly to the terminals.

Replacing an Existing 8146 or 8530 on a DigiTOL Scale if a Second Scale Is Present

The POWERCELL PCB should be programmed for two scales (Scale 1 + Scale 2 = 24 load cells maximum). The home-run cable(s) should be plugged into pit PS 1 (and pit PS 2 if a second home-run cable exists).

Replacing an Existing 8146 or 8530 on a DigiTOL Scale if a Third Scale Is Present

The first JAGXTREME terminal or JXHG with a POWERCELL PCB should be wired as indicated previously. The second terminal with a POWERCELL PCB should be wired into INDICATOR B of the auxiliary power supply and the home-run cable going to the third scale should be plugged into pit PS 3 or 4.

Home-Run POWERCELL PCB Cable Maximum Length

The maximum cable distance from the pit power supply to the JXHG POWERCELL PCB depends on the number of POWERCELLs, home-run cable gauge, and the AC power voltage level. Use the following table to determine the cable gauge and recommended cable distance:

Number of RAAD Boxes	Number of CMOS or MTX Cells	Home-Run Cable Distance	
		20 Gauge (Feet/Meters)	16 Gauge (Feet/Meters)
1	4	900/274	900/274
2	6	712/217	900/274
2	8	475/144	900/274
3	10	332/101	878/267
3	12	237/72	644/196

IDNET (High Precision) Base Cable Connections

The maximum recommended cable length for IDNET bases is 300 feet (90 meters.)

The following diagram describes IDNET cell terminal strip wiring.

JXHG High Precision I/O Port Connector	IDNET Adapter Harness (0900-0284)	
+32 VDC	Blue	B
+12 VDC	Gray	C
GND	Pink	H
RXD+	Brown	D
TXD+	Green	A
RXD-	White	F
TXD-	Yellow	J
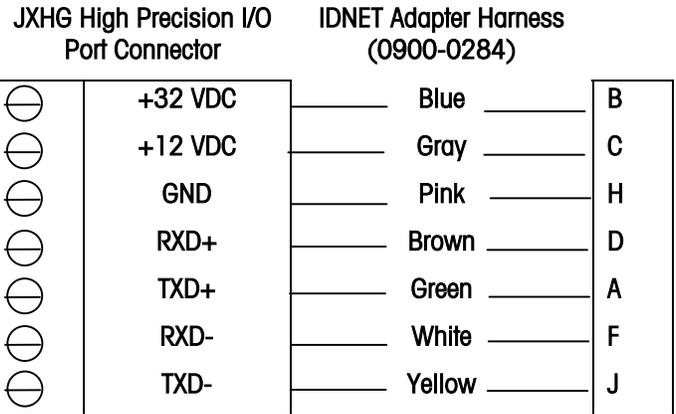
PS2 Keyboard and Serial Port Connections Controller PCB

Note: Keyboard wedges and other non-keyboard devices are not supported.

Refer to the following diagrams for proper cable connections to the JXHG's serial ports COM1 and COM2. COM1 and COM2 are located on the Controller board, which is positioned in the top slot.

The COM1 and COM2 terminal strips will accommodate wire sizes from 16 to 22 AWG. The terminal strips may be removed to facilitate wiring. Removal of the terminal strips permits easier viewing of the terminal designations printed on the board back plate.
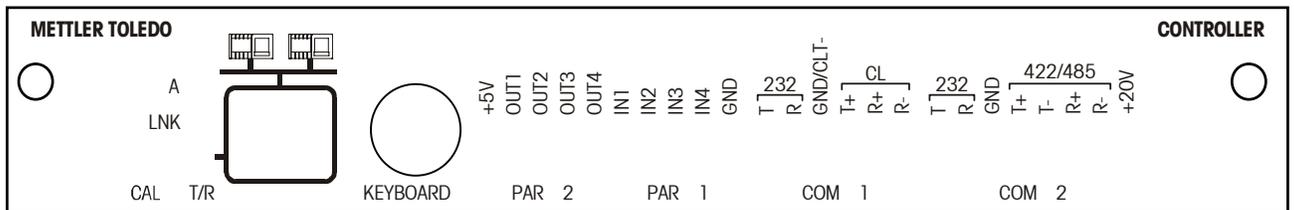
Keyboard

The JXHG controller PCB also provides a standard PS2 keyboard connection for connecting an external PS2 keyboard (see illustration above.)

For enclosures using the pass-through cable grips, you must pass the cable through the grip, grommet, and housing before wiring to the connector.

COM1 20 mA (Controller PCB Serial Port)

The following diagram and table describe COM1 pin-to-pin cable connections using a 20 mA loop. The maximum recommended cable length for 20 mA interfacing is 1000 feet (300 meters).

JXHG COM1

Θ	TXDA	
Θ	RXDA*	
Θ	Gnd	Signal Ground (Active Current Loop Transmit -)
Θ	CLTX+	Active Current Loop Transmit +
Θ	CLRX+	Current Loop Receive +
Θ	CLRX–	Current Loop Receive -

*This connection is only required for devices that input data to the terminal, such as devices that send ASCII "C, T, P, Z, or U".

JXHG COM1	8860	8623	8614 8616 8619	8618 9323 9325
TXDA	—	—	—	—
RXDA	—	—	—	—
GND	18	10	12	9
CLTX+	16	8	11	8
CLRX+	—	—	—	—
CLRX–	—	—	—	—

COM1 RS-232 (Controller PCB Serial Port)

The following diagram and table describe COM1 pin-to-pin cable connections using an RS-232 cable. Maximum recommended cable length is 50 feet (15 meters).

JXHG COM 1

Ɵ	TXD	RS-232 Transmit
Ɵ	RXD	RS-232 Receive
Ɵ	GND	Signal Ground
Ɵ	CLTX+	
Ɵ	CLRX+	
Ɵ	CLRX−	

Pin Connection for METTLER TOLEDO Devices Using COM1 RS-232					
JXHG COM1	8863	8846 8867	8806 8807 8808 8845 8856 8857 8860 8861 8865	9323-TB2 9325-TB2 8624	8618
TXDA	3	2	3	2	InputCom
RXDA	2	3	2	—	—
GND	5	7	7	3	RS232 Input
CLTX+			—	—	—
CLRX+			—	—	—
CLRX−			—	—	—

NOTE: The COM 2 +20V terminal is used to power the JXHG.

The COM4+20 V terminal voltage output is determined by the W2 jumper on the Multifunction I/O PCB.

COM2/COM4 RS-232 (Controller PCB Serial Port)

The following describes COM2 pin-to-pin cable connections using an RS-232 cable and the connections to COM4 when an optional Multifunction I/O PCB is installed. The maximum recommended cable length for RS-232 is 50 feet (15 meters). Maximum recommended total distance for RS-422 and RS-485 is 2000 feet (600 meters).

JXHG COM2/COM4

Θ	TXD	RS-232 Transmit
Θ	RXD	RS-232 Receive
Θ	GND	Signal Ground
Θ	TXD+	RS-422/485 Transmit +
Θ	TXD−	RS-422/485 Transmit −
Θ	RXD+	RS-422/485 Receive +
Θ	RXD−	RS-422/485 Receive −
Θ	+20 V	+20 VDC Supply

| Pin Connection for METTLER TOLEDO Devices Using COM2 RS-232/RS-485						
JXHG COM2	8806 8807 8808 8844 8845 8857 8861 8865	8846 8867	8863	8617-TB2 9323-TB2 9325-TB2	8618
TXDB	3	2	3	2	—
RXDB	—	3	2	—	—
GND	7	7	5	3	—
TXD+	—			—	RS-485B
TXD−	—			—	RS-485A
RXD+	—			—	—
RXD−	—			—	—
+20 V	—			—	—

Discrete Wiring

The Controller PCB contains four discrete input and four discrete output connections.

PAR 1 Input Connections

The input connections must be referenced to ground. A switch or relay contact may be used to make this connection. The remote device should hold the input at logic ground for at least 100 ms. Scale functions are performed when the input is held to ground (leading edge triggered). The maximum recommended cable length between the remote device and the JXHG is 10 feet (3 meters).
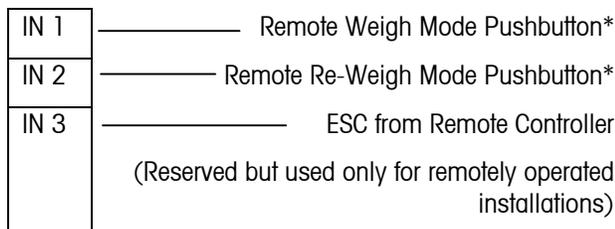
Each of the four PAR 1 inputs can be configured for different remote inputs including input from the keypad for remote print, unit switching, alternate scale selection, or template selection. Polarity (switch to ground or open a ground connection to initiate remote input) can also be selected.

PAR 1 Terminal
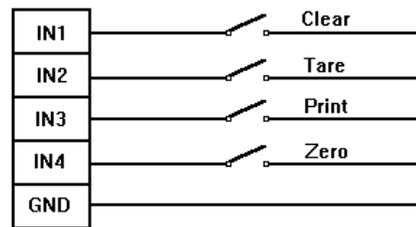
Input Wiring Example

When the optional JagMAX software (available only in North America) is used, the terminal reserves inputs one and two for use with the optional traffic light controller. The terminal reserves input three for an optional pushbutton to return the terminal to local control. (Used only remotely operated installations.)

IN 1	—————— Remote Weigh Mode Pushbutton*
IN 2	———— Remote Re-Weigh Mode Pushbutton*
IN 3	—————— ESC from Remote Controller
	(Reserved but used only for remotely operated installations)

*See optional traffic light controller wiring diagram.

Input Wiring Example

PAR 2 Output Connections

Each of the four PAR 2 outputs can be configured to announce setpoints 1 through 12 coincidence. The 12 setpoint outputs can be configured to request either Feed or Fast Feed, or announce setpoint tolerance status. The standard number of outputs is 4. Eight additional outputs are available if a multifunction PCB is installed.
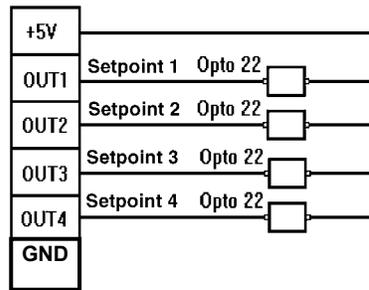
PAR 2 outputs can be configured to announce "current scale status" conditions such as:

- Net or Gross Mode
- Motion
- Under Zero
- Gross Zero
- Over Capacity

Outputs are negative-true, open collector type.

PAR 2 outputs can be referenced to the 5 volt supply available on the PAR2 connector or can sink up to 35 mA of current and have a maximum voltage of 30 volts DC from an external source. The maximum cable length between the remote device and the JXHG is 10 feet (3 meters).

PAR 2 Terminal

Output Wiring Example

JAGXTREME PAR 2		PLC Sourcing Input Card
+5V	- NC	
OUT1		IN1
OUT2		IN2
OUT3		IN3
OUT4		IN4
GND		GND
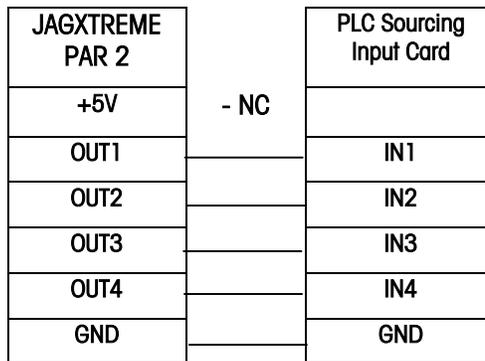
PLC Input Wiring Example

Optional JagMAX Software

When using the optional JagMAX software (available in North America only), the terminal reserves the first three outputs for use with the optional traffic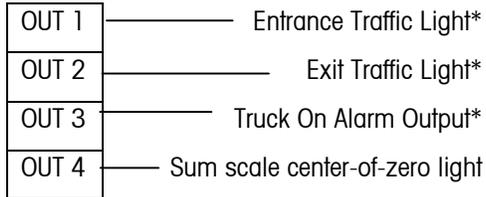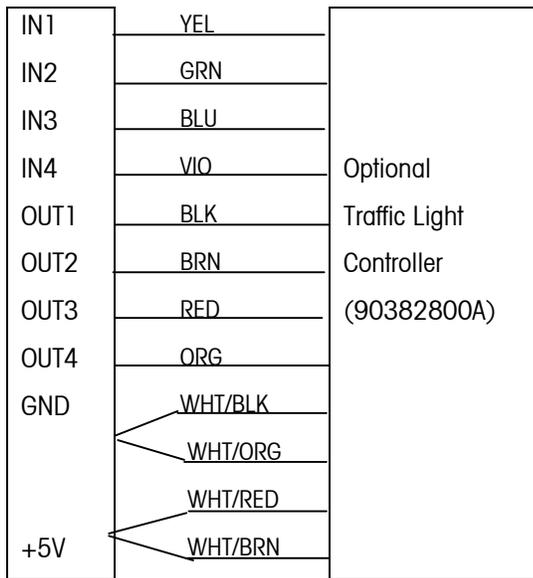 light controller, and the fourth is reserved to indicate the center of zero for the summation scale for Canadian applications.

OUT 1	———————— Entrance Traffic Light*
OUT 2	——————— Exit Traffic Light*
OUT 3	—————— Truck On Alarm Output*
OUT 4	———— Sum scale center-of-zero light

*See optional traffic light controller wiring diagram.

IN1	YEL	
IN2	GRN	
IN3	BLU	
IN4	VIO	Optional
OUT1	BLK	Traffic Light
OUT2	BRN	Controller
OUT3	RED	(90382800A)
OUT4	ORG	
GND	WHT/BLK	
	WHT/ORG	
	WHT/RED	
+5V	WHT/BRN	

**Optional JagMAX Software
Traffic Light Controller Wiring Diagram**

Optional Multifunction I/O PCB Serial and Discrete Connections

This section gives proper cable connections to COM 3, COM 4, PAR 3, AND PAR 4, which are located on the optional Multifunction I/O PCB.
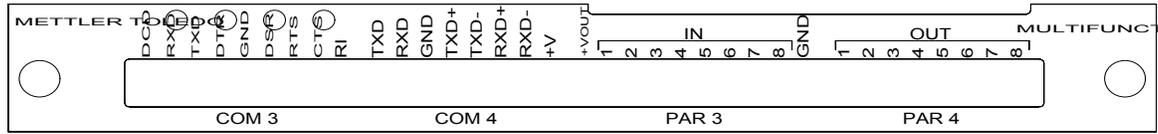
COM3 Interconnect Wiring

COM3 supplies all inputs and outputs to allow full handshaking and modem interfacing. The COM3 port is only available with the optional Multifunction PCB. When interfacing COM3 to devices other than those listed for COM2 RS-232, refer to the documentation for the particular device for handshaking needs and suggested wiring. The following general interconnect options are offered for the 9 and 25 pin connectors.

COM3 With Full Handshaking

COM3	DB25	DB9	DCE
DCD	—	—	
RXD	2	2*	*This connection is only required for devices that input data to the terminal, such as devices that send ASCII "C, T, P, Z, or U".
TXD	3	3	
DTR	6	6	
GND	7	5	
DSR	20	4	
RTS	5	8	
CTS	4	7	
RI	—	—	

COM4 Interconnect Wiring

The wiring instructions for the COM2 serial port apply to COM4 on the Multifunction PCB. Refer to the section presented earlier entitled COM2/COM4 RS-232 (Controller PCB Serial Port) to interface COM4 to DigiTOL scales and printers.

PAR 3 Discrete Input Port

Each of the eight PAR 3 inputs can be configured for different remote inputs including input from the keypad (Tare, Clear, Zero, Select, Escape, and Enter). PAR 3 inputs can also be configured for remote print, unit switching, alternate scale selection, or template selection. Polarity (switch to ground or open a ground connection to initiate remote input) can also be selected.

The wiring instructions for the PAR 1 discrete inputs apply to PAR 3 on the Multifunction PCB. Refer to the section entitled PAR 1 Input Connections for wiring details.

PAR 4 Discrete Output Port

Each of the eight PAR 4 outputs can be configured to announce setpoints 1 through 12 coincidence. The 12 setpoint outputs can be configured to request either Feed or Fast Feed, or to announce setpoint tolerance status. PAR 4 outputs can also be configured to announce "current scale status" conditions such as:

- Net or Gross Mode
- Gross Zero
- Motion
- Over Capacity
- Under Zero

The +VOUT terminal supplies a jumper selectable voltage of +5, +12, or +20 VDC.

The wiring instructions for the PAR 2 discrete outputs apply to PAR 4 on the Multifunction PCB. Please refer to the section entitled PAR 2 Output Connections for wiring details.
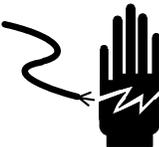
Connecting the Power Cable

A power cord is provided with the JXHG.

WARNING!

IF AN ANALOG SCALE IS TO BE USED AND IT WILL BE LOCATED IN A HAZARDOUS (EXPLOSIVE) AREA, SPECIAL PRECAUTIONS MUST BE TAKEN. LOAD CELLS APPROVED FOR USE IN HAZARDOUS LOCATIONS MUST BE USED AND A LOAD CELL BARRIER AND/OR A LOW VOLTAGE ANALOG PCB MAY BE REQUIRED. CONTACT YOUR AUTHORIZED METTLER TOLEDO REPRESENTATIVE FOR DETAILS ON EACH SPECIFIC APPLICATION.

CAUTION

TO AVOID DAMAGE TO THE PCB OR LOAD CELL, REMOVE POWER FROM THE JXHG (HARSH TERMINAL VERSION) AND WAIT AT LEAST 30 SECONDS BEFORE CONNECTING OR DISCONNECTING ANY HARNESS.

CAUTION

WHEN USING THE JXHG (HARSH TERMINAL VERSION) DO NOT ATTACH AN ANALOG LOAD CELL TO THE DIGITOL SCALE INPUT ON THE CONTROLLER PCB COM2. DO NOT ATTACH A DIGITOL SCALE TO THE ANALOG LOAD CELL INPUT ON THE OPTIONAL ANALOG A/D PCB. DOING SO MAY RESULT IN DAMAGE TO THE LOAD CELL OR PCB.

⚠ WARNING

FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD, CONNECT TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.

⚠	WARNING!
	USE ONLY THE POWER CORD SUPPLIED OR AN EQUIVALENT TYPE. U.S. MODELS USE UL APPROVED TYPE SJT CORD; EC MODELS USE HARMONIZED APPROVED TYPE H05VV-F CORDS.

|	⚠ WARNING!
	IMPROPER INSTALLATION OF THE POWER CABLE IN THE JXHG (HARSH TERMINAL VERSION) WILL RESULT IN DAMAGE TO THE EQUIPMENT. THE HOT WIRE MUST BE APPLIED TO "L", NEUTRAL TO "N" AND GROUND TO ⏚

Ethernet Connections for the JXHG

The JXHG can be connected to LAN, WAN, automation or enterprise systems using Ethernet, a standard network hardware platform.
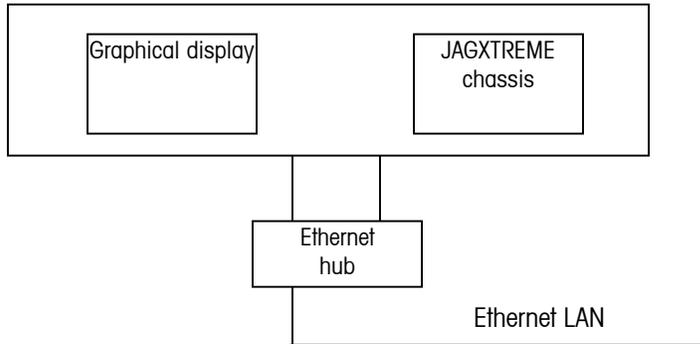
The Ethernet connection on the rear of the JXHG's Controller PCB is designed for an RJ-45 connector. METTLER TOLEDO recommends using Category 5 cable, which provides unshielded, four twisted pair cable. Depending upon the equipment to which the JXHG will be connected, either a "crossover" or standard cable is required.

- When connecting directly between a PC and a JXHG (point to point connection), a crossover cable is used.

- To connect the JXHG to other equipment through a hub, a standard cable is normally used as the hub provides the crossover connections. Refer to the specifications of the hub used to determine if a crossover cable is required.

- An optional network splitter kit (0917-0337) is available for connecting the JXHG to a 10BASE-T Ethernet network. See option 2 that follows or contact your authorized METTLER TOLEDO representative for additional information.

NOTE: The JXHG is a JAGXTREME chassis mounted in a harsh environment enclosure with the graphical display. The communication between the JAGXTREME controller board and the graphical display is enabled through the use of an Ethernet crossover cable installed at the factory. If the JXHG will be connected to a local area network (LAN) or to other JAGXTREME terminals using the Ethernet interface, this connection will need to be changed. Two options are provided here.
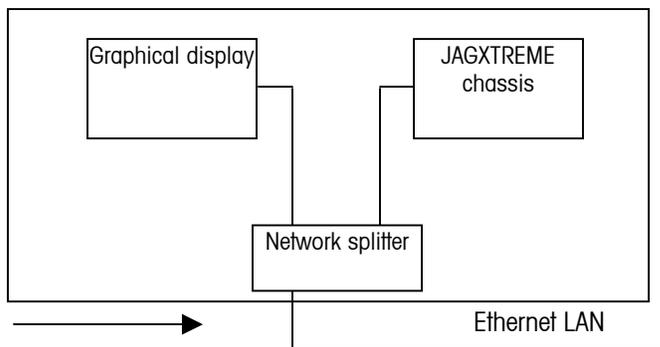
```
┌──────────────────────────────────────────┐
│ ┌────────────────┐  Ethernet  ┌─────────┐ │
│ │Graphical display│ Crossover  │JAGXTREME│ │
│ │                 │            │ chassis │ │
│ └────────────────┘            └─────────┘ │
└──────────────────────────────────────────┘
```
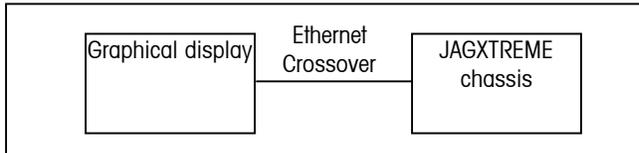
Option 1 – Replace the Ethernet crossover cable with two straight Ethernet cables and an external hub.

```
┌──────────────────────────────────────────┐
│ ┌────────────────┐        ┌─────────┐     │
│ │Graphical display│       │JAGXTREME│     │
│ │                 │       │ chassis │     │
│ └────────────────┘        └─────────┘     │
└──────────────────────────────────────────┘
            ┌──────────┐
            │ Ethernet │
            │   hub    │
            └──────────┘
                         Ethernet LAN
```

Option 2 – Purchase the optional network splitter kit (0917-0337) and replace the crossover cable per the instructions supplied with the kit.

```
┌──────────────────────────────────────────┐
│ ┌────────────────┐        ┌─────────┐     │
│ │Graphical display│       │JAGXTREME│     │
│ │                 │       │ chassis │     │
│ └────────────────┘        └─────────┘     │
│           ┌────────────────┐              │
│           │Network splitter│              │
│           └────────────────┘              │
│                         Ethernet LAN      │
└──────────────────────────────────────────┘
```

Note: The length of the wire is limited to 100' (30.5 m)

NOTES

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