

# 5150 Series HART® Communicator

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## User's Manual



## Safety Information



### Preventing injury

Failure to follow all instructions could result in injury:

- Read.
- Understand.
- Follow all safety warnings and instructions provided with this product.
- Meet or exceed your employer's safety practices.

### Not liable

In no event shall Meriam be liable for any indirect, special, incidental, consequential, or punitive damages or for any lost profits arising out of or relating to any services provided by Meriam or its affiliates.

It is not possible for Meriam to identify all foreseeable uses or misuses, therefore all persons involved in commissioning, using, or maintaining this product must satisfy their self that each intended application is acceptable.

### Safety Symbols

The following table defines the safety symbols, signal words, and corresponding safety messages used in the manual. These symbols:

- Identify potential hazards.
- Warn you about hazards that could result in personal injury or equipment damage.

Safety Symbols	Explaining the symbols
	This is the <b>Read Instruction Manual</b> symbol. This symbol indicates that you must read the instruction manual.
	This is the <b>Safety Alert</b> symbol. This symbol indicates a WARNING. Warnings alert you to actions that can cause personal injury or pose a physical threat. Please read these carefully.
	This is the Safety Glasses symbol. This symbol indicates that you must wear approved safety glasses during the task.
	This is the Safety Gloves symbol. This symbol indicates that you must wear approved safety gloves during the task.
	Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
	Indicates information essential for proper product installation, operation or maintenance.

## ATEX Documentation

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The information on the following two pages only applies to countries in the European Union.

### GB

All instruction manuals for ATEX Ex related products are available in English, German and French. Should you require Ex related instructions in your local language, you are to contact your nearest Meriam office or representative.

### DK

Alle brugervejledninger for produkter relateret til ATEX Ex er tilgængelige på engelsk, tysk og fransk. Skulle De ønske yderligere oplysninger om håndtering af Ex produkter på eget sprog, kan De rette henvendelse herom til den nærmeste Meriam afdeling eller forhandler.

### I

Tutti i manuali operativi di prodotti ATEX contrassegnati con Ex sono disponibili in inglese, tedesco e francese. Se si desidera ricevere i manuali operativi di prodotti Ex in lingua locale, mettersi in contatto con l'ufficio Meriam più vicino o con un rappresentante.

### E

Todos los manuales de instrucciones para los productos antiexplosivos de ATEX están disponibles en inglés, alemán y francés. Si desea solicitar las instrucciones de estos artículos antiexplosivos en su idioma local, deberá ponerse en contacto con la oficina o el representante de Meriam más cercano.

### NL

Alle handleidingen voor producten die te maken hebben met ATEX explosiebeveiliging (Ex) zijn verkrijgbaar in het Engels, Duits en Frans. Neem, indien u aanwijzingen op het gebied van explosiebeveiliging nodig hebt in uw eigen taal, contact op met de dichtstbijzijnde vestiging van Meriam of met een vertegenwoordiger.

### SF

Kaikkien ATEX Ex -tyyppisten tuotteiden käyttöohjeet ovat saatavilla englannin-, saksan- ja ranskankielisinä. Mikäli tarvitsette Ex -tyyppisten tuotteiden ohjeita omalla paikallisella kielellänne, ottakaa yhteyttä lähimpään *Meriam-toimistoon tai-edustajaan.*

### SK

Všetky návody na obsluhu pre prístroje s ATEX Ex sú k dispozícii v jazyku anglickom, nemeckom a francúzskom. V prípade potreby návodu pre Ex-prístroje vo Vašom národnom jazyku, skontaktujte prosím miestnu kanceláriu firmy Meriam.

### CZ

Všechny uživatelské příručky pro výrobky, na něž se vztahuje nevybušné schválení ATEX Ex, jsou dostupné v angličtině, němčině a francouzštině. Požadujete-li pokyny týkající se výrobků s nevybušným schválením ve vašem lokálním jazyku,

### LT

Visos gaminiø ATEX Ex kategorijos Eksploatavimo instrukcijos teikiami anglø, vokieèiø ir prancùzø kalbomis. Norëdami gauti prietaisø Ex dokumentacijà kitomis kalbomis susisiekite su artimiausiu bendrovës "Meriam" biuru arba atstovu.

### LV

Visas ATEX Ex kategorijas izstrādājumu Lietošanas instrukcijas tiek piegādātas angļu, vācu un franču valodās. Ja vēlaties saņemt Ex ierīšu dokumentāciju citā valodā, Jums ir jāsazinās ar firmas Meriam tuvāko ofisu vai pārstāvi.

### EST

Kõik ATEX Ex toodete kasutamishendid on esitatud inglise, saksa ja prantsuse keeles. Ex seadmete muukeelse dokumentatsiooni saamiseks pöörduge lähima Meriam Kontori või esindaja poole

### PL

Wszystkie instrukcje obsługi dla urządzeń w wykonaniu przeciwwybuchowym Ex, zgodnych z wymaganiami ATEX, dostępne są w języku angielskim, niemieckim i francuskim. Jeżeli wymagana jest instrukcja obsługi w Państwa lokalnym języku, prosimy o kontakt z najbliższym biurem Meriam.

## ATEX Documentation (continued)

### P

Todos os manuais de instruções referentes aos produtos Ex da ATEX estão disponíveis em Inglês, Alemão e Francês. Se necessitar de instruções na sua língua relacionadas com produtos Ex, deverá entrar em contacto com a delegação mais próxima ou com um representante da Meriam.

### F

Tous les manuels d'instruction des produits ATEX Ex sont disponibles en langue anglaise, allemande et française. Si vous nécessitez des instructions relatives aux produits Ex dans votre langue, veuillez bien contacter votre représentant Meriam le plus proche.

### D

Alle Betriebsanleitungen für ATEX Ex bezogene Produkte stehen in den Sprachen Englisch, Deutsch und Französisch zur Verfügung. Sollten Sie die Betriebsanleitungen für Ex-Produkte in Ihrer Landessprache benötigen, setzen Sie sich bitte mit Ihrem örtlichen Meriam-Vertreter in Verbindung.

### S

Alla instruktionsböcker för ATEX Ex (explosionssäkra) produkter är tillgängliga på engelska, tyska och franska. Om Ni behöver instruktioner för dessa explosionssäkra produkter på annat språk, skall Ni kontakta närmaste Meriam eller representant.

### GR

Όλα τα εγχειρίδια λειτουργίας των προϊόντων με ATEX Ex διατίθενται στα Αγγλικά, Γερμανικά και Γαλλικά. Σε περίπτωση που χρειάζεστε οδηγίες σχετικά με Ex στην τοπική γλώσσα παρακαλούμε επικοινωνήστε με το πλησιέστερο γραφείο της Meriam ή αντιπρόσωπο της.

### SLO

Vsi predpisi in navodila za ATEX Ex sorodni pridelki so pri roki v angleščini, nemščini ter francoščini. Če so Ex sorodna navodila potrebna v vašem tujejnem jeziku, kontaktirajte vaš najbliži Meriam office ili predstavnika.

### H

Az ATEX Ex műszerek gépkönyveit angol, német és francia nyelven adjuk ki. Amennyiben helyi nyelven kéri az Ex eszközök leírásait, kérjük keressék fel a legközelebbi Meriam irodát, vagy képviselőt.

### BG

Всички упътвания за продукти от серията ATEX Ex се предлагат на английски, немски и френски език. Ако се нуждаете от упътвания за продукти от серията Ex на родния ви език, се свържете с най-близкия офис или представителство на фирма Meriam.

### RO

Toate manualele de instructiuni pentru produsele ATEX Ex sunt in limba engleza, germana si franceza. In cazul in care doriti instructiunile in limba locala, trebuie sa contactati cel mai apropiat birou sau reprezentant Meriam.

### M

Il-manwali kollha ta' l-istruzzjonijiet għal prodotti marbuta ma' ATEX Ex huma disponibbli bil-Ingliż, bil-Ġermaniż u bil-Franċiż. Jekk tkun teħtieġ struzzjonijiet marbuta ma' Ex fil-lingwa lokali tiegħek, għandek tikkuntattja lill-eqreb rappreżentant jew ufficiċju ta' Meriam.

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## Trademarks

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## Meriam Contact Information

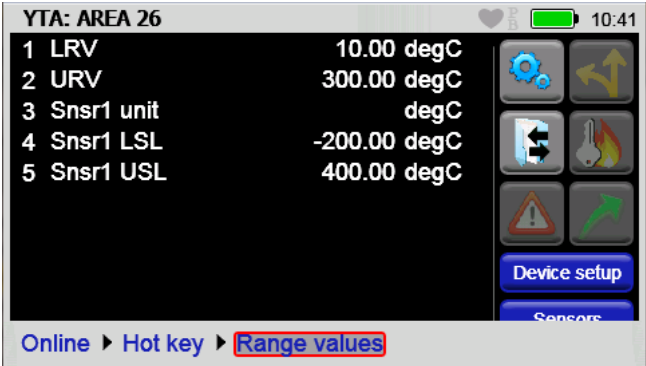

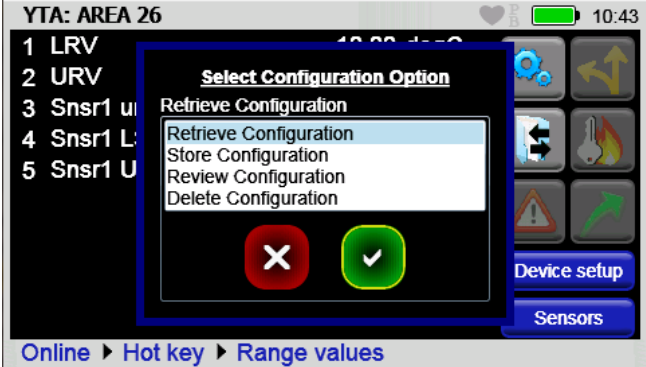
<b>Meriam Process Technologies</b>							
<b>Address</b>	Meriam Process Technologies 10920 Madison Avenue Cleveland, Ohio 44102 USA						
<b>Telephone</b>	US customers: <b>1-216-281-1100 or 1-800-817-7849</b> International customers: <b>001-216-281-1100</b>						
<b>Fax</b>	US customers: <b>1-216-281-0228</b> International customers: <b>001-216-281-0228</b>						
<b>E-mail addresses</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Departments</th> <th style="text-align: center;">E-mail addresses</th> </tr> </thead> <tbody> <tr> <td>Return Material Authorization / Service &amp; Repair Department</td> <td><a href="mailto:returnforms@meriam.com">returnforms@meriam.com</a></td> </tr> <tr> <td>Sales</td> <td><a href="mailto:sales@meriam.com">sales@meriam.com</a></td> </tr> </tbody> </table>	Departments	E-mail addresses	Return Material Authorization / Service & Repair Department	<a href="mailto:returnforms@meriam.com">returnforms@meriam.com</a>	Sales	<a href="mailto:sales@meriam.com">sales@meriam.com</a>
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<b>HART Communication Foundation</b>							
<b>HART website</b>	For more information regarding the HART Communication Foundation topics, go to <a href="http://www.hartcomm.org">www.hartcomm.org</a>						
<b>Local Meriam Representatives</b>							
<b>Find a local Meriam representative</b>	To find a find local Meriam representative, use this map to find contact information: <a href="#">REP LOCATOR</a> .						

## Definitions for Terminology

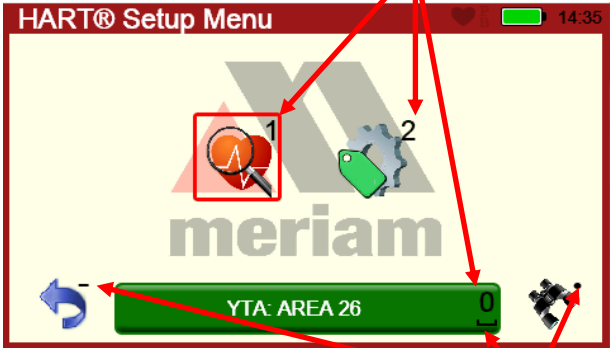
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Terminology	Definitions
Button or key	<ul style="list-style-type: none"><li>• A <i>button</i> always refers to an area on the screen that you can tap to select functionality.</li><li>• A <i>key</i> always refers to hardware push-buttons on the keyboard that you can press.</li></ul>
Highlight	<p>This manual uses the word <i>highlight</i> in two ways:</p> <ol style="list-style-type: none"><li>1. As a noun: <i>highlight</i> refers to an icon or a menu line that has the focus on-screen at any given time.</li><li>2. As a verb: <i>highlight</i> refers to:<ol style="list-style-type: none"><li>a. Pressing the arrow keys or Advance key to change the focus to a new button.</li><li>b. Pressing and holding a button on-screen for one second to change the focus to a new button.</li></ol></li></ol>

## Definitions for terminology (continued)

<p>Highlight colors</p>	<p>Highlights appear in three colors: <i>red</i>, <i>gray</i>, and <i>blue</i>.</p> <ul style="list-style-type: none"> <li>• A <b>red rectangle</b> appears in:             <ul style="list-style-type: none"> <li>○ The system menus.</li> <li>○ The HART Function button pane.</li> <li>○ The HART menu path bar.</li> </ul> </li> </ul>  <ul style="list-style-type: none"> <li>• A <b>gray</b> highlight appears in:             <ul style="list-style-type: none"> <li>○ The HART Navigation pane.</li> </ul> </li> </ul>  <ul style="list-style-type: none"> <li>• A <b>blue</b> highlight appears in selection boxes.</li> </ul> 
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## Definitions for terminology (continued)

Terminology	Definitions
<p>Select</p>	<p>This manual uses the word <i>select</i> to refer to:</p> <ul style="list-style-type: none"> <li>• Navigating the levels of menus in the communicator.</li> <li>• Opening additional screens: <ul style="list-style-type: none"> <li>○ To navigate the communicator’s menu levels.</li> <li>○ To view information.</li> <li>○ To view additional functions.</li> </ul> </li> <li>• Performing some task on the communicator.</li> </ul> <p><b>Note:</b> Highlight an on-screen button you want to choose and select it.</p> <p>You may <i>select</i> items by using one of several methods:</p> <div style="text-align: center;"> <p>Navigation numbers</p>  <p>Navigation shortcuts</p> </div> <ul style="list-style-type: none"> <li>• <b>Touchscreen</b> gestures as you do on a smartphone, such as: <ul style="list-style-type: none"> <li>○ Tapping on-screen buttons or icons.</li> <li>○ Swiping left or right.</li> <li>○ Scrolling up or down.</li> </ul> </li> <li>• <b>Navigation keys</b> use: <ul style="list-style-type: none"> <li>○ The <b>Arrows</b> and <b>Advance/Switch</b> buttons to highlight a button.</li> <li>○ The <b>Select</b> button to select the highlighted button.</li> </ul> </li> <li>• <b>Numeric keys:</b> <ul style="list-style-type: none"> <li>○ 1-9 and 0, minus and decimal.</li> <li>○ These Navigation shortcuts select the function directly.</li> </ul> </li> <li>• <b>A combination</b> of touchscreen gestures and keys.</li> </ul> <p><b>Note:</b> The <b>Spacebar</b> is used as a shortcut key only on system menus. Since it is directly above the Navigation keys, it offers an easy way to select the connection bar.</p>
<p>Standby or sleep</p>	<p>This manual uses the word <i>standby mode</i> to describe putting the communicator into an energy-saving mode, where it uses very little power. Some use the word <i>sleep mode</i> instead of <i>standby</i>.</p>

## Installing or removing the battery pack

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### Installing the battery

---

To install the battery pack:

1. Set the communicator enclosure with the display downward on a flat, stable surface.
2. Rest the battery pack in the battery pack compartment of the enclosure.
3. Leave a ½ in. gap (or 1.27 cm) between the battery pack and the connector on the communicator enclosure.
4. Slide the battery pack inside the enclosure until the connectors mate completely and the screws align with the threaded inserts on the communicator body.

**Note:** Two standard 6-32 screws hold the battery pack in the communicator. These screws are a part of the battery pack. They have hexagonal sockets that require a 7/64 in. hex key wrench.

5. Thread the screws into the inserts to complete the installation.

**Note:** The 7/16 in. hex key wrench is included with the unit.

### NOTICE

### Don't over tighten

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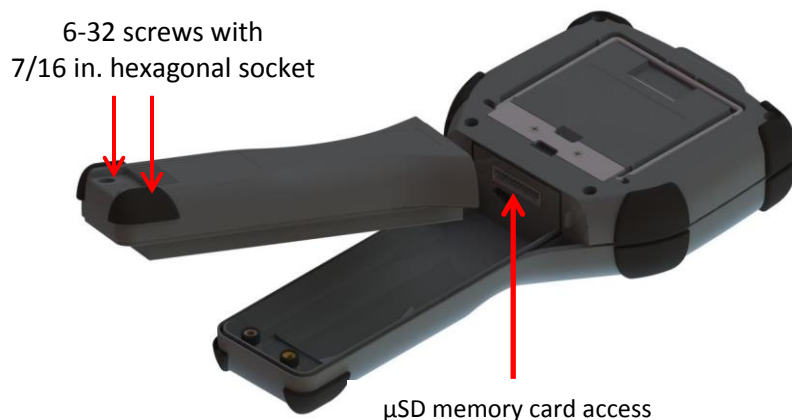
Do not over tighten the screws when you install the battery pack. Over tightening screws can cause damage the communicator.

**Note:** Maximum torque should not exceed seven (7) in-lb. (or 0.79 N-m).

### Removing the battery

---

Reverse the order of the steps in the *Installing a battery* section above.



## Charging the battery pack

### **NOTICE**

#### **Charge 10 hours**

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Charge the battery completely for 10 hours before first use. See the sections about [The charging cradle](#) for more detail.

## Memory System Card

#### **Uses for the memory card**

---

Meriam ships a  $\mu$ SD memory system card with the communicator. This system card is necessary for the following uses:

- Storage of required software.
- Software updates.
- HART DD files.
- Device configuration files.

#### **Use only with the 5150**

---

The  $\mu$ SD memory system card is not intended for use unrelated to the operation of the communicator. The 5150 Series System card **must** be installed to operate the communicator.

**Note:** While the  $\mu$ SD memory system card is in the 5150, there is no way to access the card except with the Meriam provided computer software.

### **NOTICE**

#### **Replace with Meriam Z9P780**

---

If you need to replace the  $\mu$ SD card, it must be replaced with Meriam part number **Z9P780** or the successor part number specified by Meriam.

- Replace the card only under the direction of Meriam personnel.
- Use of a non-system memory card voids the **Intrinsic Safety Compliance**.

#### **Installing & removing battery pack**

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To remove and to replace the memory system card you must remove the battery first. See the [Installing or removing the battery pack](#) section for more details.

#### **Removing the memory card**

---

Once you have removed the battery pack:

1. Press gently on the memory card to unlock it from the cardholder.
2. Carefully remove the memory card from the enclosure.

**Note:** Tweezers or small needle-nose pliers can be helpful in removing and inserting memory cards - apply gentle pressure only.

## Memory System Card (continued)

### Replacing the Memory Card

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Once you have removed the memory system card:

1. Insert the new memory card carefully into the cardholder. Verify the contacts are facing toward the back of the communicator and card label facing towards the front (screen side) of the communicator.
2. Be sure the memory card is resting in the holder before releasing it.
3. Gently press the card into the holder to lock it into place.
4. Install the battery pack and secure it to the communicator enclosure.

## 5150 Series HART Communicator Overview

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### Full function HART

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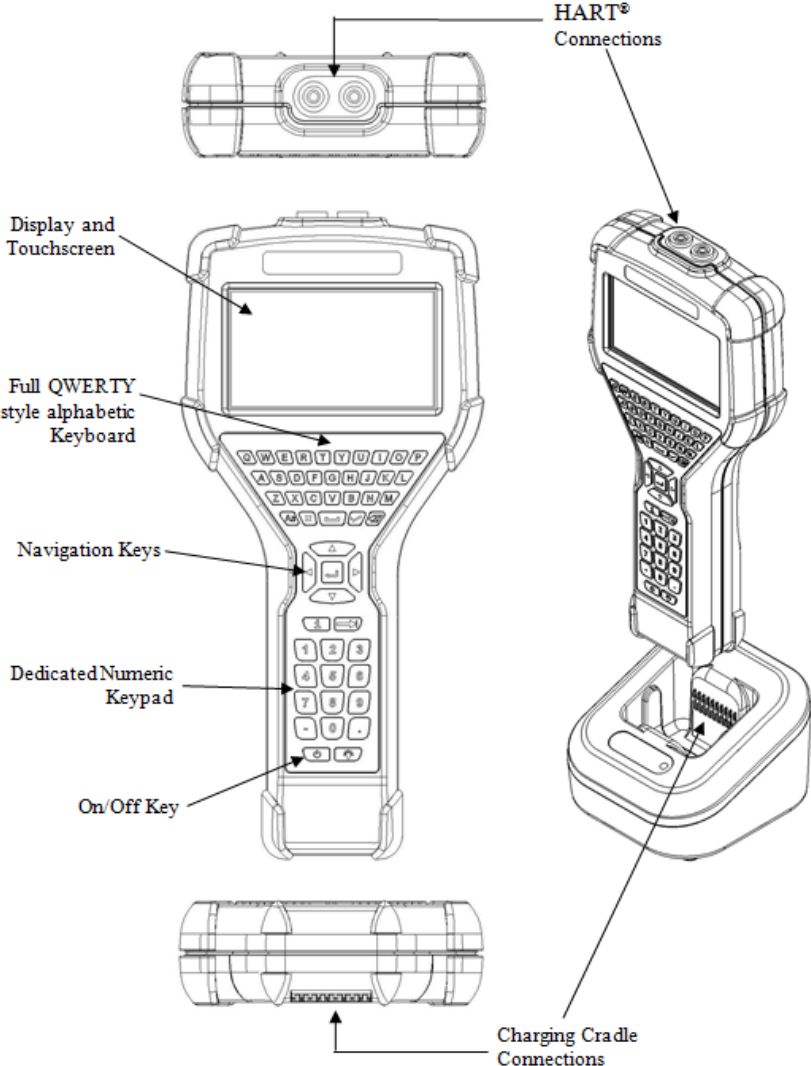
The 5150 Series HART Communicator is a full function HART Communicator supporting HART communication:

- Universal.
- Common Practice.
- Device Specific commands.

**Note:** These commands allow you to commission, configure, and maintain operations.

Overview (continued)

Diagram of the 5150





## Keyboards – touchscreen and dedicated

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### Touchscreen – System menus

#### Touchscreen - Display details

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The communicator has a 4.3-in. (10.9 cm) widescreen, backlit, TFT color touchscreen display:

- It has a 480 x 272 WQVGA pixel resolution.
- The entire viewable area of the screen is an active touch surface.
- The touchscreen responds to and is optimized for finger presses - even when you are wearing gloves.

#### Important:

- **No** stylus is necessary.
- **Never** tap the screen with sharp objects – simply use your finger.

#### Touchscreen - Two menu systems

---

The communicator displays two types of menus:

- System menus.
- HART menus.

#### Touchscreen - System menu

---

The system menu displays after you press the **Power** key. You can switch to the system menu from any HART menu. There are three distinct areas on the system menu:

- The **top** of the menu provides system information.
- The **middle** of the menu contains navigation icons to system actions or new system menus.
- The **bottom** of the menu contains current HART connection status and navigation buttons.



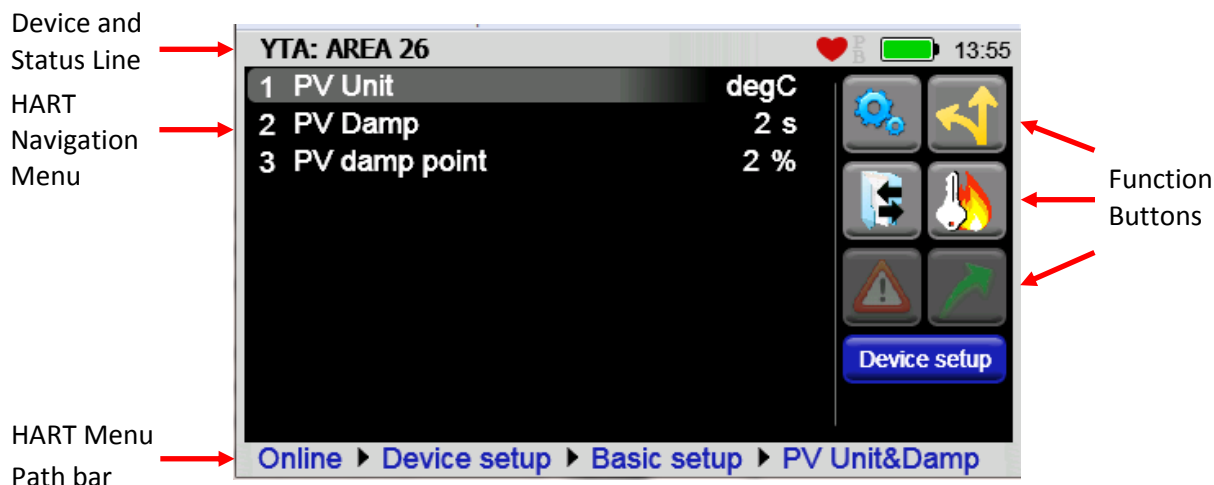
## Touchscreen - HART menus

### HART menus appear when connected to HART devices

The HART menus are only available when a HART communication enabled device is connected and communicating with the communicator. There are four distinct areas on a HART menu:

- The **top** of the menu provides information on the currently attached device as well as various status indicators.
- The **middle** of the menu is divided into two functional areas:
  - HART Menu navigation
  - Function buttons.
- The **bottom** of the menu contains the HART Menu Path bar.

### Sample HART menu display



## 5150 Operating Instructions

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### Power key functions

#### Turn on

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When you press and hold the **Power** key for two seconds, the communicator launches a complete system start sequence:

- The first screen displays the Meriam logo.
- The second screen displays a white screen with a list of drivers loading.
- The third screen displays the date and time.
- Now the communicator is ready to use.

#### Standby

---

When you press the **Power** key and release, the communicator enters the standby mode (sometimes referred to as sleep mode):

- The screen is off and the communicator ignores most user input to conserve battery power.
- The on-board computer maintains the previous system state of functionality to resume quickly.
- Do not use the standby mode as a substitute for turning off the unit for extended periods of time.

#### Resume

---

When you press the **Power** key and release, the communicator quickly resumes operation from being in Standby:

- It returns to the exact state of functionality that it was in before entering standby.
- From the Power Setup Menu, users can enter a specific time for the unit to automatically enter the standby mode to conserve battery power.

#### Turn off

---

When you hold the **Power** key until the screen turns off, the communicator is turned off:

- We recommend turning off the communicator as the best way to conserve battery life.

**Note:** The batteries will lose some power while not in use. For this reason, we recommend keeping the communicator in the charging cradle when not in use.

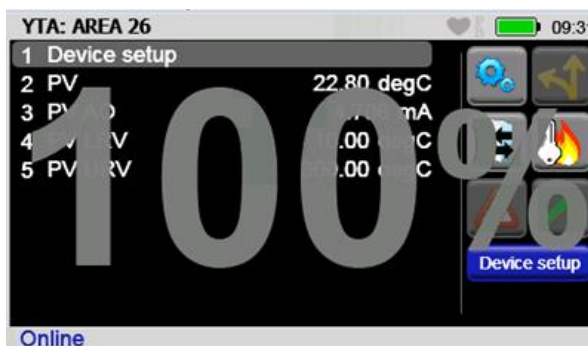
## Backlight—reducing intensity

### Pressing the Backlight key

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The **Backlight** key allows you to choose one of five levels of intensity: 20%, 40%, 60%, 80%, and 100% brightness. You can press the **Backlight** key while on any screen.

- Press the **Backlight** key and release it to display the current percent of backlight in use.
- Press it again within two seconds to change the intensity level to the next level.
- Continue to press it to set the intensity level you want.



### Reducing intensity improves battery life

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The following table presents the estimated savings using the various backlight levels.

Backlight intensity at:	While the communicator is on, the battery life is improved by:
20%	Up to 80%
40%	Up to 50%
60%	Up to 30%
80%	Up to 12%

## Backlight—settings for timeout

### Changing the timeout setting to save battery life

By default, the **Backlight** is set to *never* timeout.

- The *never* timeout setting can reduce your battery's life.
- You can change the setting to reduce the backlight intensity to 10% after 30 seconds, 1, 2, 3, 4, 5, or 10 minutes.
- Tap the screen or press a key to return to the previous level of intensity.

### Navigating to the timeout settings

From the **Main System** screen:

1. Select the **System Setup** icon.



2. Select the **Power Management** icon.



3. Select the **Backlight timeout settings** icon.



## Standby—settings for timeout

### Change the timeout settings to save battery life

By default, the communicator is set to *never* timeout.

- The *never* setting can reduce your battery's life.
- You can choose to configure the setting to automatically enter standby mode after being inactive for 3, 4, 5, 10, or 15 minutes.
- Select the **Standby timeout settings** icon to change the timeout setting.

### Navigating to the Standby timeout settings

From the **Main System** screen:

1. Select the **System Setup** icon.



2. Select the **Power Management** icon.



3. Select the **Standby timeout settings** icon. See the following screen shot.



## Timeout—Backlight and Standby are cumulative

### An example of the cumulative timeouts

- The **Standby** timeout period does not start until the **Backlight** period has timed out.
- To determine the amount of time before a communicator automatically enters Standby mode, you must add the timeout settings for Backlight and Standby together.

If...	Then...
You set the <b>Backlight</b> timeout to 30 seconds	<ul style="list-style-type: none"> <li>• After the communicator is out of the cradle and it has no input for 30 seconds,</li> <li>• The communicator reduces the intensity to 10%.</li> </ul>
You set the <b>Standby</b> timeout to 3 minutes	<ul style="list-style-type: none"> <li>• 3 minutes and 30 seconds after the start of the Backlight timeout,</li> <li>• The communicator enters Standby mode.</li> </ul>

## The battery pack life

### Keep charging it

We strongly recommend putting the communicator in the charging cradle whenever you are not using it. This is the easiest way:

- To conserve battery life.
- To increase the overall number of battery charge cycles.



← 5150 in the charging cradle

## The battery pack life (continued)

### **For portable use**

---

A rechargeable lithium-ion battery pack powers the communicator for portable use. A fully-charged battery typically allows for:

- 10 hours of continuous operation.
- 40 hours while in the standby mode.

**Note:** See the section for [Installing or removing the battery pack](#).

**Note:** Order part number **Z9A820-2** from Meriam to replace the battery pack.

### **NOTICE**

### **Advanced battery fuel gauge**

---

The battery pack contains an advanced battery fuel gauge that actively monitors the battery capacity. It, therefore, does not require any *battery conditioning* throughout the life of the battery.



## The charging cradle

### Cradle connection details

---

Look at the back of the cradle:



### Automatically recharges

---

Each communicator includes a charging cradle and power adapter. The cradle automatically recharges the lithium-ion battery when the communicator is properly inserted into it.

**Note:** To fully recharge a depleted battery takes about six hours.

### Charging indicator

---

There is a multicolor LED on the front of the charging cradle. This LED indicates the current charging mode.



Light Status	Indicates...
Off	The communicator has not been correctly inserted or the power is disconnected.
Solid Green	The battery is fully recharged.
Flashing Amber	The battery is charging.
Solid Amber	The battery temperature is out of the charging range. The charging process has been suspended.
Flashing Red	There is a battery fault.
Solid Red	There is a charging fault.

### Connecting to a computer

---

You need to connect the USB cable to the charging cradle and to a computer to update files. The communicator must be in the cradle and turned on to update files.

**Note:** See the section for [Updating communicator software](#).

## The charging cradle (continued)

### **NOTICE**

#### **Insert the communicator not the battery**

---

The charging cradle is not intended to recharge a battery itself. To properly recharge a battery pack, you must insert the battery into the communicator before placing it into the charging cradle.

### **WARNING**

#### **Not intrinsically safe**

---

The charging cradle is not rated for intrinsic safety.

- You must use it in *non-hazardous areas only*.

**Note:** See the [Hazardous area use](#) section of this manual for more details.

**Note:** See the [Intrinsic Safety Control Drawing](#) in the **Appendix** of this manual for more details.

## Kickstand—useful for viewing the display

#### **Better angle to view the display**

---

The communicator is equipped with a kickstand to provide a better viewing angle than when it lays flat on a table.

- To open the kickstand pull it down until it snaps into the open position.
- To close the kickstand squeeze the base inwards from both sides to unlatch it and pull it down until it snaps into the closed position
- See the yellow arrows in the following figure.



## Loop Communication Jacks & Field-wiring practices

### Loop Communication Jacks

---

Loop Communication Jacks or Lead Set:

- All 5150 models are equipped with a standard size banana jacks on 0.75 in. or 1.9 cm center.
- The lead set supplied with the communicator has a standard banana plug on one end and mini-grabbers on the other for convenient connections.



### Field-wiring practices

---

For the Intrinsically Safe model 5150X:

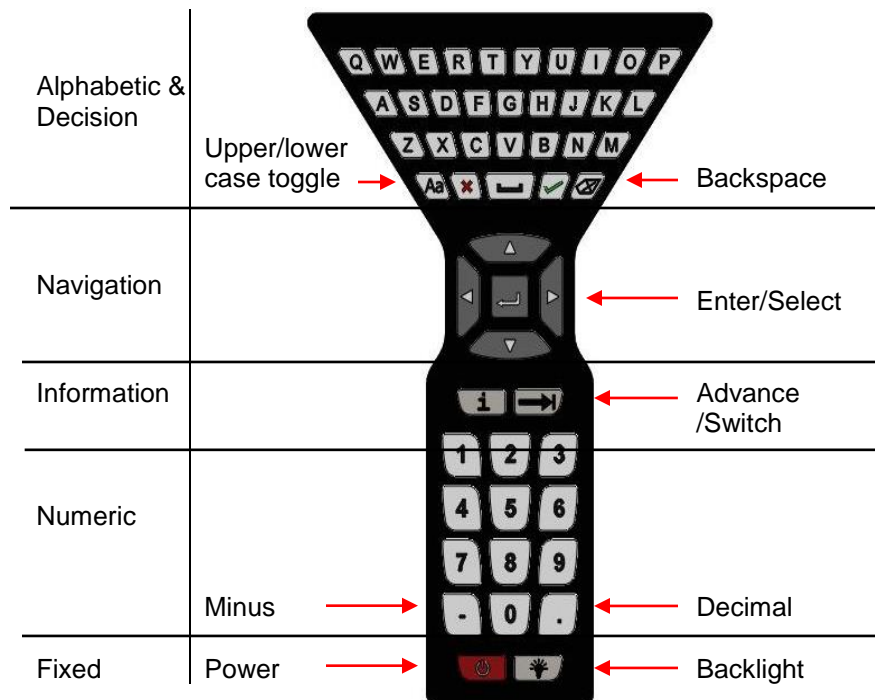
- Verify that the instruments you want to use in the loop are installed in accordance with intrinsically safe field-wiring practices before making a connection from the field device to the communicator's loop communication jack.
- See the [Hazardous area use](#) section of this manual.
- See the [Intrinsic Safety Control Drawing](#) in the *Appendix* for more information.

## Keyboard overview

### Arranged by frequency of use

The keyboard is arranged into four areas based on the frequency of use.

- **Most frequently used keys:**
  - The navigation.
  - The numeric keys.
- **Less frequently used keys:**
  - The alphabetic.
  - The fixed function keys.



### Alphabetic keys

The alphabetic keys are arranged in the same order as a standard QWERTY keyboard. The alphabetic keys are used for:

- Text data entries as well as
- Hexadecimal (A to F) numeric data entries.

**Note:** When you are not entering data, the input from these keys is ignored.

## Keyboard functions





### Decision keys & buttons

Decision keys on the keyboard become active when decision buttons appear on the screen. Decision keys function the same way as the decision buttons.

**Note:** See the section [Creating Shortcuts](#) for more details.

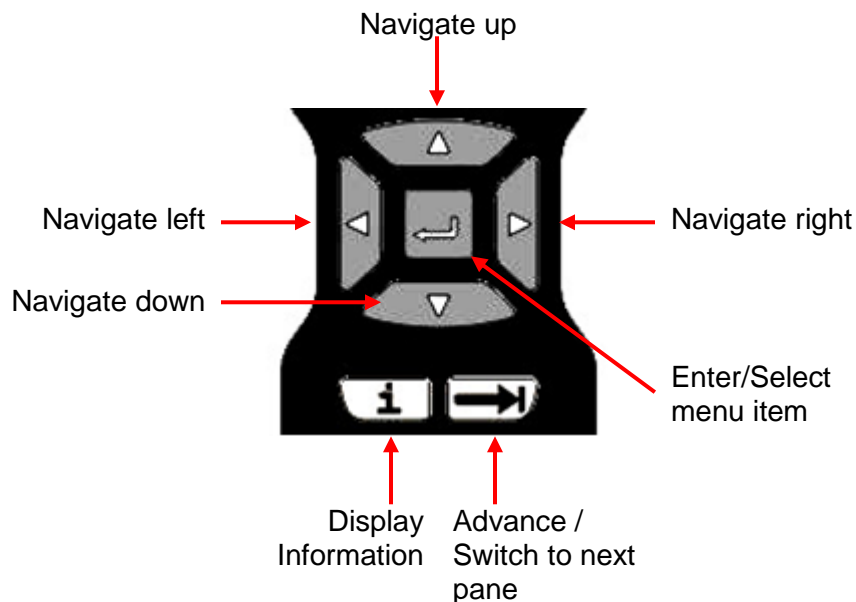
**Note:** Decision keys are also used for some subordinate operations related to the functions buttons. See [Function buttons in HART menus](#).

**Note:** See the decision keys and touchscreen buttons in the following table.

Decision	Key	Touchscreen button
Cancel or Esc		
Accept		

### Navigation & Information

Use the navigation keys to move the highlight around on-screen and to select the item that is highlighted.



**Note:** the **Display Information** key displays HART information where that is provided by the DD file.

**Note:** See the section [Shifting the highlight in HART menus](#) for more information about the **Advance/Switch** key.

## Keyboard functions (continued)

### Numeric keys

---

Numeric keys are used:

- To enter numeric data.
- To advance menus and initiate actions when indicated by the on-screen icons.

### Fixed function keys

---

These include the **Power** key and the **Backlight** key.

- See the section for [Power key functions](#).
- See the section for [Backlight—reducing intensity](#).

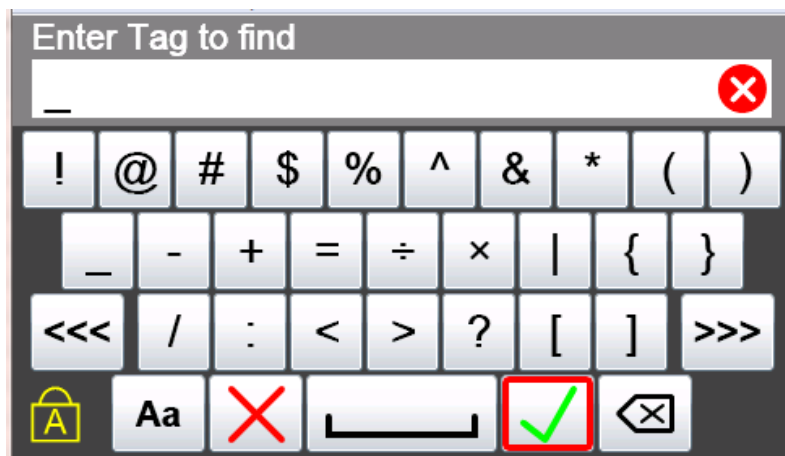
## Keyboard – the on-screen keyboard

### Use both the dedicated and on-screen keyboards

---

When you combine the functionality of the dedicated keyboard with the touchscreen data keys, you can simplify data entry and navigation. The touchscreen buttons:

- Appear only during text data entry.
- Appear in a large, easy to select key size.
- Add the complete ISO Latin-1 (ISO 8859-1) character set, except for numerals.





## ISO Latin-1 Character Set

### **ISO Latin-1 character set**

---

The 5150 Series and HART communication support the ISO Latin-1 character set for data entry.

- The ISO Latin-1 character set is also known as the ISO 8859-1 set.
- This character set has 181 characters in it.
- 181 characters are on the touchscreen keysets.
- Only 65 of these characters are on the dedicated keyboard.

### **181 characters on the touchscreen**

---

181 characters are available on the touchscreen.

- The first touch keyset that appears on screen are commonly used symbols. See [Touchscreen – Keyset #1](#).
- The touch keysets are grouped more logically than the standard order of the ISO Latin-1 Character Set. Additionally, the touch keysets appear in an order based on estimated usage.
- Since the ISO basic Latin alphabet characters are on the dedicated keyboard, they are the last touch keyset. See [Touchscreen – Keysets #2-5](#).

### **65 characters on the dedicated keyboard**

---

These 65 keys handle most data entry.

- 26 lowercase keys
- 26 uppercase keys
- 1 Caps Lock key
- 10 numeric keys
- 1 minus key
- 1 decimal key

### **Touchscreen buttons appear**

---

- Whenever a text edit window appears, the touchscreen keyboard becomes visible.
- The touchscreen keysets offer larger buttons than the keyboard for easier typing.



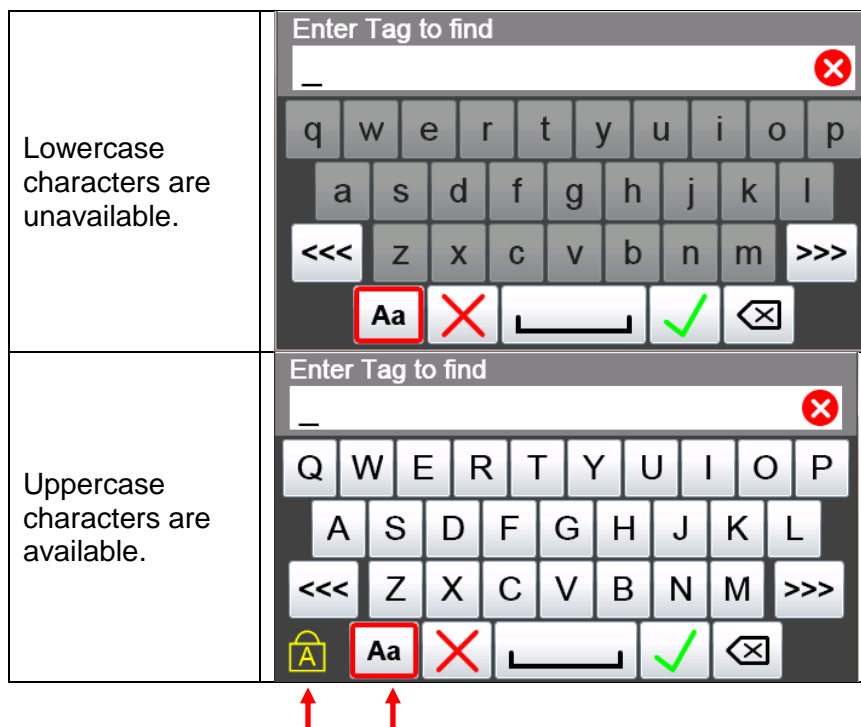
## Limited character sets

### Buttons and keys are unavailable

Some data parameters do not support the full ISO Latin-1 character set.

**For example:** The **Find short tag** screen has a limited character set. This means:

- The non-functioning touchscreen buttons appear dimmed.
- The lowercase alphabetic keys do not work.
- Select the **Caps Lock** to use the uppercase characters.



↑ ↑  
A Caps Lock symbol appears next to the touchscreen **Caps Lock** button.

## Limited number of characters

### Yellow box appears

When characters entered in an edit box reach the size limit for a specific parameter, the cursor disappears and a yellow block appears after the last character. The communicator ignores any additional character entries.

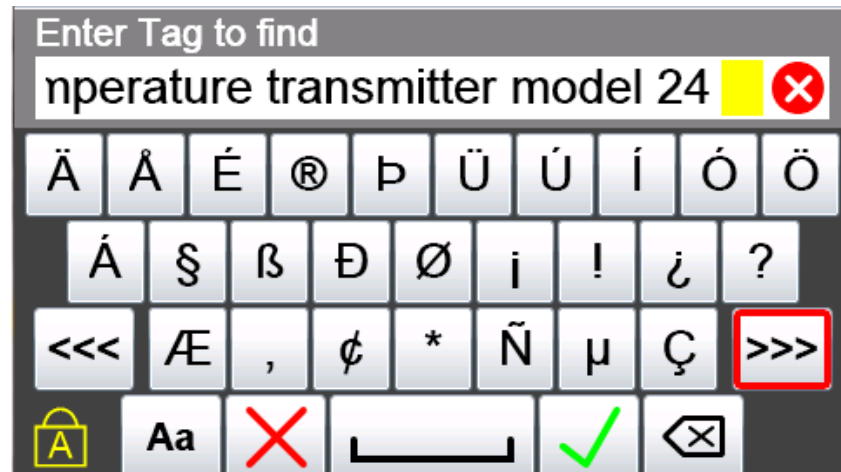
**For example:** The **Find short tag** edit box has an eight (8) character limit. As soon as you reach that limit, a yellow box appears. See the following screen shot.



## Navigating in the screen

### Viewing long text

Data entry always shifts the characters to the left as you type so the end of the entry is visible as in the following screen shot.



### Swipe the text to view all of the text line

If the length of the data entry exceeds the viewable area on the screen, use your finger to swipe the characters to the right as you do on a smartphone. You can then swipe the characters back to the left. Compare the text in the following screen shot with the preceding screen shot.



## Navigating the keysets

### Navigating 181 keys

---

To move to other keysets use:

- The **Navigate to previous keyset <<<** touchscreen button
- The **Navigate to the next keyset >>>** touchscreen button.

### Caps Lock

---

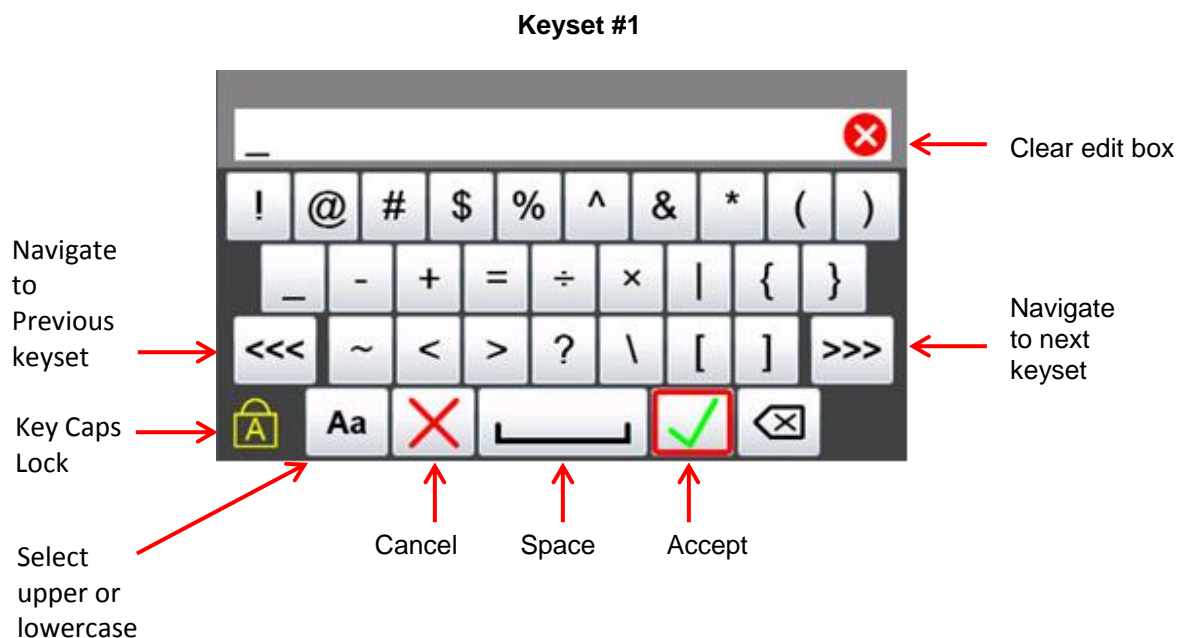
Selecting the **Caps Lock** does not affect the symbols in keyset #1 or keyset #2 in the following pages.

## Touchscreen - Keyset #1

### Diagram of Keyset #1

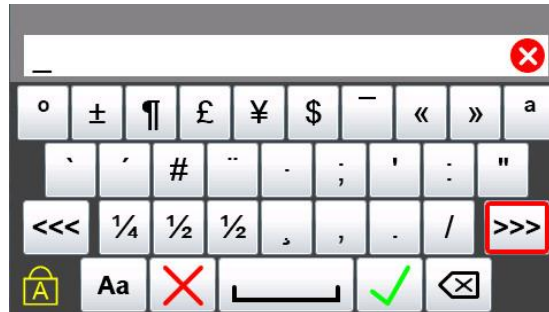
---

See the detailed diagram of the touchscreen keyboard in the following screen shot.



## Touchscreen - Keysets #2-5

Keypad #2



Keypad #3 (uppercase)



Keypad #3 (lowercase)



Keypad #4 (uppercase)



Keypad #4 (lowercase)



Keypad #5 (uppercase)



Keypad #5 (lowercase)



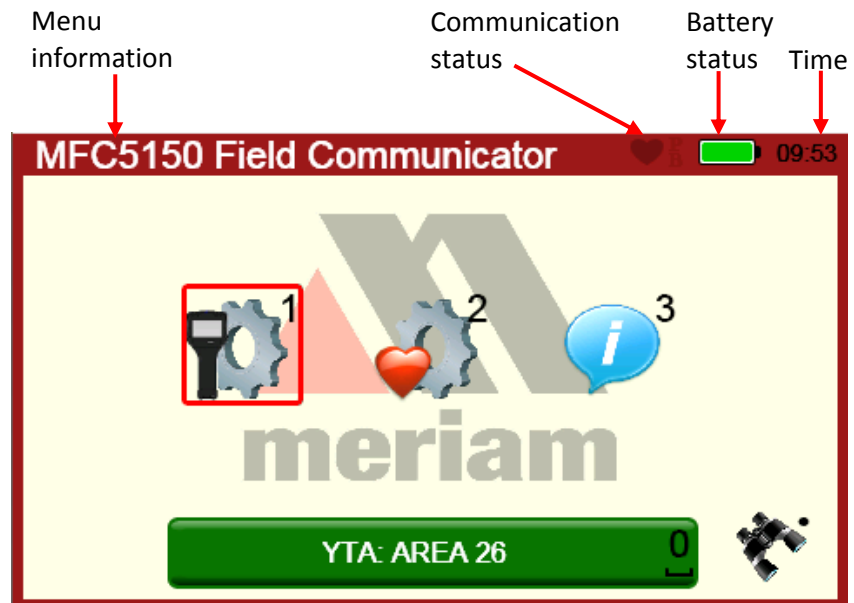
## Navigating the Communicator

### System Menus

System menus provide access to information and to settings related to the operation of the communicator.

### Communicator status line

The top of the system menus displays system information. You cannot use this area to navigate.



## Navigating the Communicator (continued)

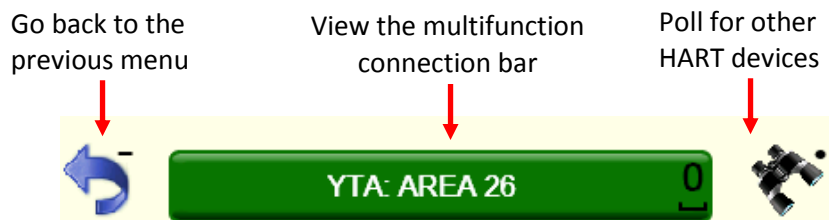
### Communicator status line explained

The following table explains the different parts of the System Menu.

Status line	Function
<b>Menu Information</b>	This area displays the system menu. When you see <b>5150 Field Communicator</b> , you are at the top-level menu.
<b>Communication Status</b>	This displays if HART communication is active, whether there is a primary master (host) on the loop, and if there is a burst mode device active.
<b>Battery Status</b>	This gives you a quick reference to the current condition of the battery. There is more information available in <b>System Information</b> .
<b>Current Time</b>	The current time is set by you in the Date/Time Setup Menu

### Using the bottom row of icons to navigate

The bottom area of the **HART Setup Menu** screen offers you three choices when connected to a HART device:



### Back key – go back to the previous system menu

Select the **Back** icon to navigate away from the current system menu back to the previous system menu:



## HART navigation and connection status

---

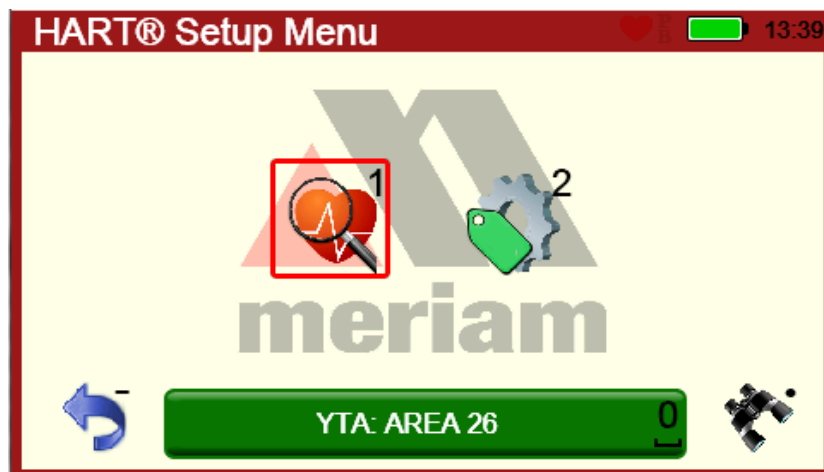
### Navigating to the HART Setup Menu

From the **Main System** screen, select the **HART Setup** icon to see the HART Setup Menu screen displayed in the following section.



### Viewing the HART Setup Menu and navigation options

The communicator displays the status of any HART connections and provides several ways to navigate.



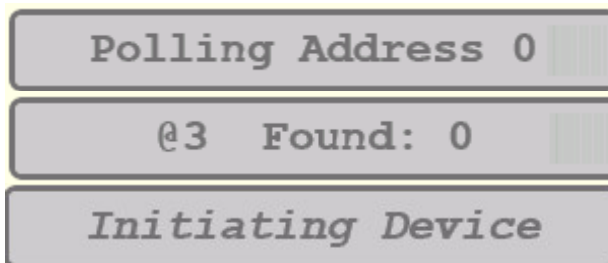
## HART connection status

### Gray connection bars

---

There are three occasions when the bar appears gray:

1. There is no device found: **Polling Address 0**.
2. There are no multidrop devices found: **@3 Found: 0**.
3. There is a device that is connecting: **Initiating Device**.



**Note:** If you select any of the gray bars, no action occurs.

### Yellow connection bar

---

A yellow connection bar appears when searching for more than one polling address and found at least one device. (Multidrop)



### Green connection bar

---

When the bar appears green, it indicates that a device is actively connected to the communicator. Select the green connection bar to display the HART menu system:



### Restart polling

---

The green connection bar indicates a device is connected to the communicator. When you select the **Restart Poll** icon, two actions occur:

- A new poll search disconnects the established HART connection.
- A new poll search starts for devices in the poll address range set by the user.





## HART list of found HART devices

### Display a list of devices

If the HART connection status bar indicates there are multiple devices found, then select the connection bar to display a list of the connected devices. From the list of found devices:

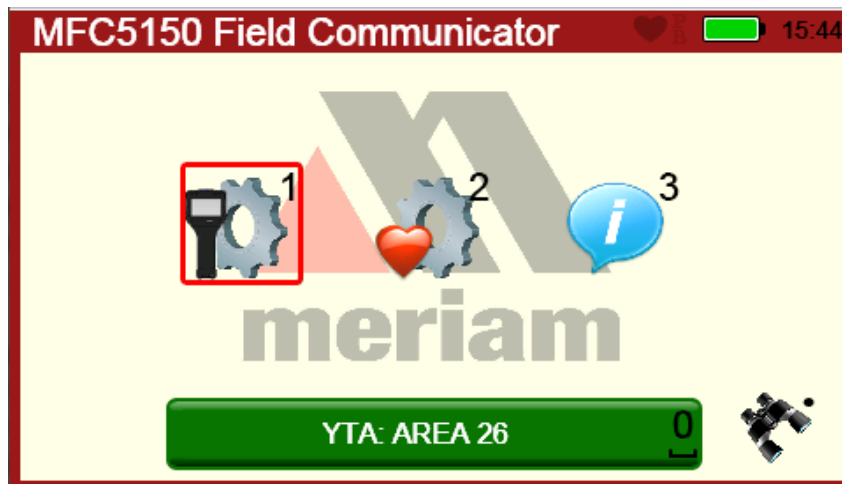
- Select the device you want to connect, or
- Cancel this operation.



## Main system menus




### Connected main menu

This is the main communicator menu.



### Main menu icons

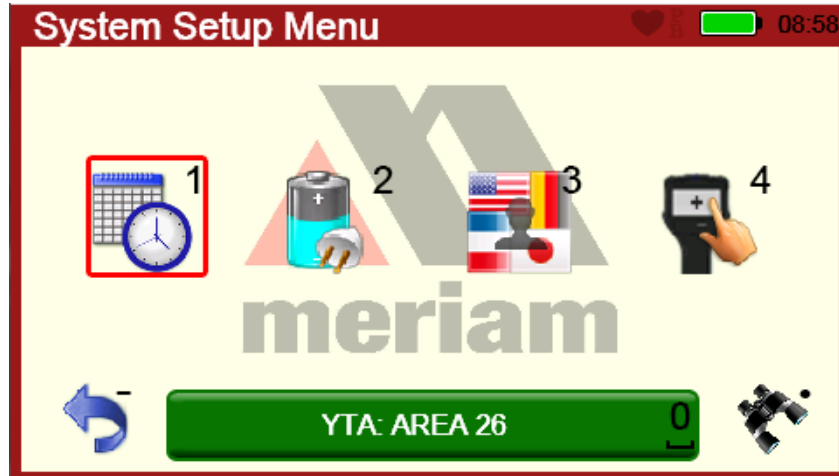
The following table lists the three main system icons and describes them:

Main System Icons	Icon Name	Description
	<b>System Setup</b>	Provides access to the system setup menus for changing communicator parameters.
	<b>HART Setup</b>	Provides access to the HART setup menus for changing HART specific parameters.
	<b>System Information</b>	Provides access to information regarding model number, serial number, battery level and so on.

## System Setup Menu





### System Setup menu icons

The following pages provide more information about each of the four icons in the System Setup Menu.



### Descriptions of Setup icons

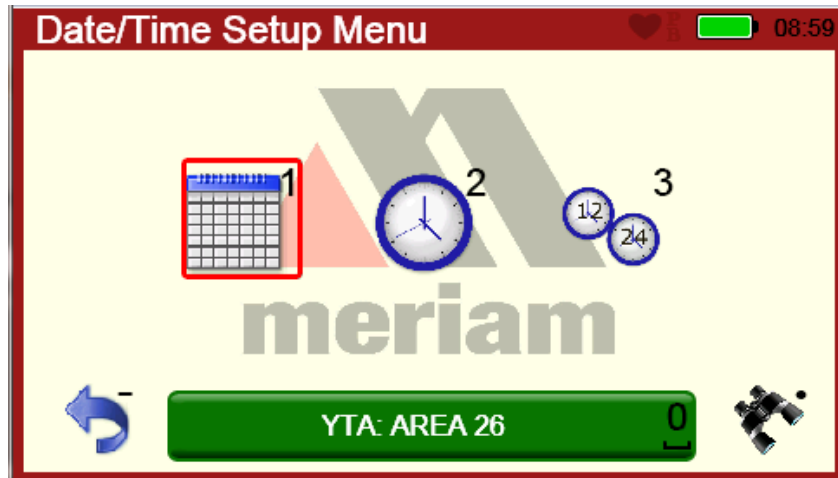
The following table lists the four **System Setup Menu** icons and describes them:

Setup Menu Icons	Icon Name	Description
 1	<b>Date &amp; Time Setup</b>	You can set the current date and time for timestamps on files and system indicators.
 2	<b>Power Management</b>	You can adjust settings for power usage (backlight and standby timers).
 3	<b>Language</b>	You can select the preferred language.
 4	<b>Touchscreen Calibration</b>	You can calibrate the touchscreen.

## Date/Time Setup – System menu




### Date/time Setup

This is the **Date/Time Setup Menu** screen.



### Date/Time Menu Icons

The following table lists the three **Date/Time Menu** icons and describes them:

Date/Time Menu Icons	Icon Name	Description
	<b>Date</b>	You can adjust the system day, month and year.
	<b>Time</b>	You can adjust the system minutes and hour.
	<b>12-hour or 24-hour mode</b>	You can choose 12-hour or 24-hour time for display.

## Power Setup – System Menu



### Power Setup Menu

Power Setup Menu displays two icons.



### Power Setup Icons

The following table lists the two **Power Setup Menu** icons and describes them:

Power Setup Menu Icons	Icon Name	Description
	<b>Backlight Timeout</b>	You can set the timeout to automatically reduce the backlight to the minimum setting (10%) during periods of inactivity.
	<b>Standby Timeout</b>	You can set the timeout to automatically switch the system to standby mode during periods of inactivity.

## Language Selection – System Menu

### Display available languages

Select this icon to display a list of available languages. You can change the language that is be used for all System menus.



**Important:** The languages that display are used for the System menus and for HART menus when supported by the DD file.

### Select your language

From the list of available languages:

- Highlight the language that you want to use.
- Select **Accept**.

**Note:** Select **Cancel** to avoid making a selection



## Language Selection – Displayed

### Turn off and Turn on

Once you have selected a new language, you **must** turn off the communicator and then turn it on to see new language settings take effect.



**Note:** You may see some menus immediately change language before you turn the communicator off.

### New language displayed

In the following example, French is displayed in a HART menu and on the HART menu path bar.



## Language Selection – Displayed (continued)

### **NOTICE**

#### **Some screens not translated**

---

User defined text fields do not support multiple language translations such as:

- Some HART parameters (tag, long tag)
- File names.
- Shortcut labels.

## Calibrating the touchscreen– System Menu

#### **Begin calibrating the touchscreen**

---

Select the **Calibration** icon to display a standard calibration screen. By tapping the crosshair when it appears in different locations on the screen, the touchscreen calibration is measured.



#### **Accept the new settings or keep the old settings**

---

After tapping the crosshair when it appears, the communicator offers you two choices:

- Either press the **Enter/Select** key to accept the new settings or touch the screen.
- Or, press the **Esc** key to keep the old settings. The Esc key is the **Cancel** decision key.

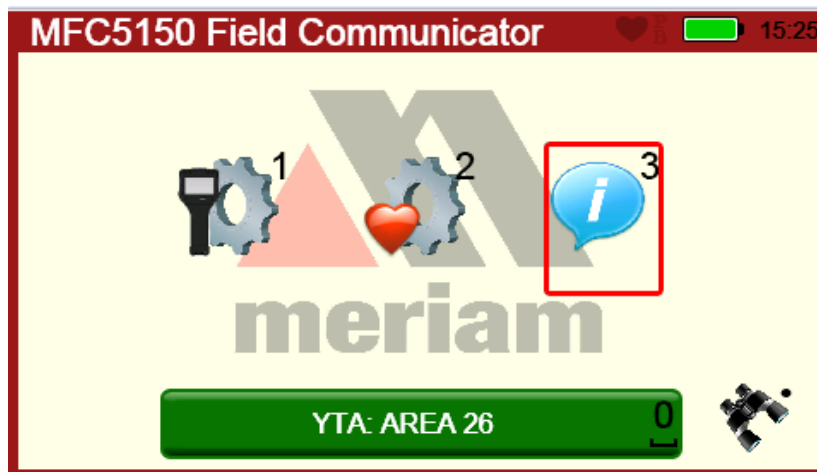
New calibration settings have been measured.  
Press the Enter key to accept the new settings.  
Press the Esc key to keep the old settings.



## System Information – System Menu

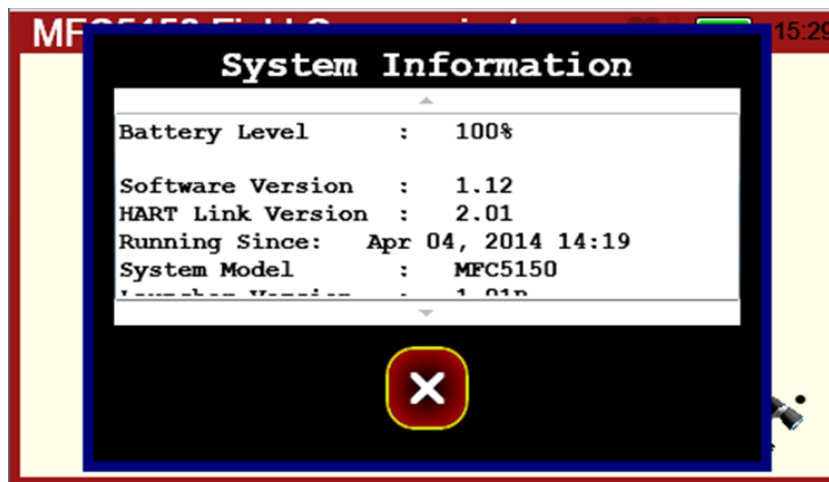
### View status details about the communicator

The System Information icon displays information, such as Battery Level, Software Version, and other system details about the communicator.



### System Information

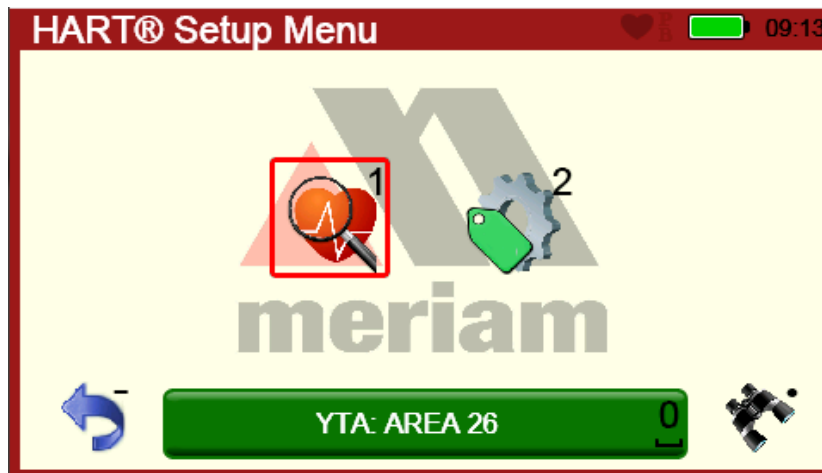
This display window lists both communicator information and HART information. Swipe up or down on the display to view more information. You can also use the up or down arrow keys to view more details.



## HART Setup Menu



### HART Setup Menu

The HART Setup Menu provides two options.



### HART Setup icons

The following table lists the HART Setup Menu icons and describes them:

HART Menu Icons	Icon Name	Description
	<b>HART Polling Address Range Selection</b>	You can select a range of addresses to poll or select a tag or long tag to use in polling for a HART enabled device.
	<b>Setup HART Tag For Display</b>	You can select which tag to display on HART connection bar. Choices are tag or long tag. If a long tag does not exist on the connected device, a short tag will always be displayed.

## Shifting the highlight in HART menus

### Connected HART devices

---

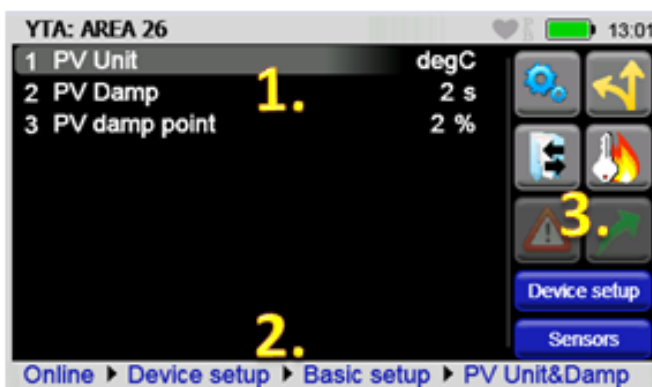
Once a HART device has been properly connected and HART communication is established between that device and the communicator, you can open HART Menus.

### Three navigation panes

---

You can navigate the HART menus in three panes:

1. The Navigation pane.
2. The Menu Path bar pane.
3. The Function pane.



### Shifting the highlight

---

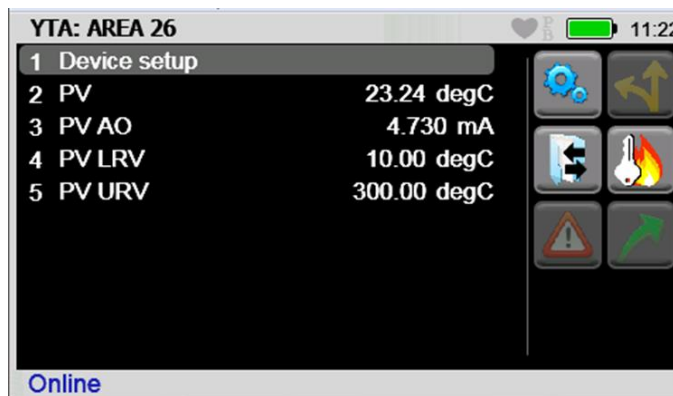
Press the **Advance/Switch** key to shift between the three panes.



### The Navigation pane has a gray highlight

---

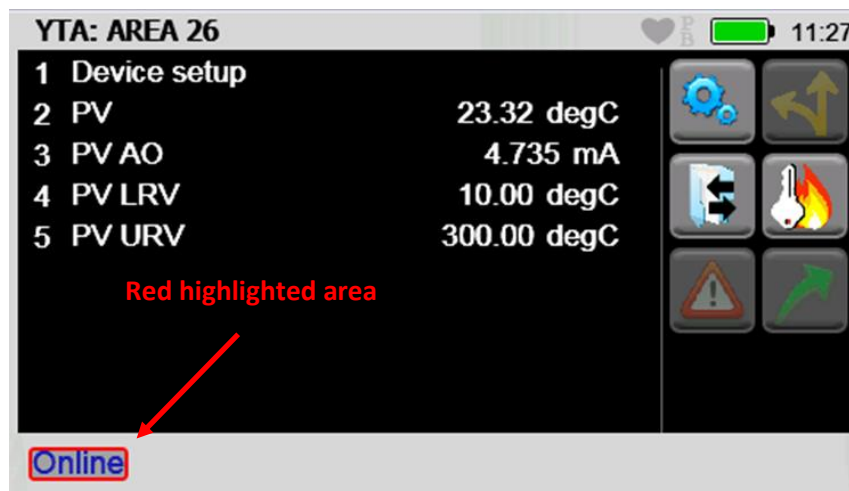
The highlighted menu line item in the **Navigation** pane appears as *gray*.



## Shifting the highlight in HART menus (continued)

### Red highlight on the menu path bar

Press the **Advance/Switch** key once and the highlight moves from the Navigation menu to the **Menu** path bar. The highlight always defaults to the first menu in the path. This allows you to return to the home menu with only two key strokes (**Advance** and then **Enter**).



**Note:** The word **Online** in the screen shot above means you are at the root level menu in the HART menu system.

### Red highlight on a Function button

Press the **Advance/Switch** key once and the highlight moves from the **Menu** path bar to the **Function** buttons on the right.

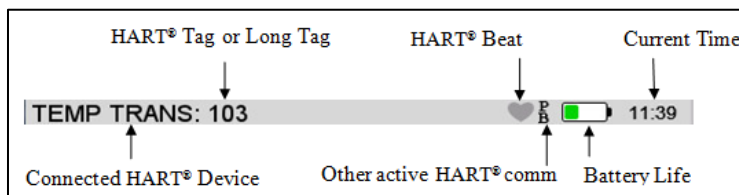


**Note:** Pressing the **Advance/Switch** key once moves the highlight from the **Function** buttons to the **Navigation** menu.

## Status Line for the connecting device

### Status line diagram

The **Status Line** at the top of the display contains HART communication and system information. See the features of the Status Line identified in the following figure.



**Note:** You cannot use the **Status** line to navigate.

### Status Line descriptions

The following table lists the features of the Status line.

Status Line Part	Function
<b>Connected HART Device</b>	This displays the model name of the HART device currently communicating with the 5150 Series communicator
<b>HART Tag</b>	This displays the tag information returned from the HART device.
<b>HART Beat</b>	<ul style="list-style-type: none"> <li>This alternates red and gray when there is active communication.</li> <li>This remains gray when there is no communication.</li> </ul>
<b>Other active HART comm</b>	<p>This displays other HART devices that are active in the HART loop.</p> <ul style="list-style-type: none"> <li>“P” indicates a Primary Master.</li> <li>“B” indicates a Bursting Slave Device in burst mode.</li> </ul>
<b>Battery Level</b>	This displays the remaining charge (green) that battery pack has.
<b>Current Time</b>	Time of day.

## DD files control HART menus

### Device Description (DD) files

---

The HART DD files control the information that appears in the navigation pane. The DD becomes activated when the HART device connects.

**Note:** The manufacturer of the HART device and the HART Communication Foundation determine what appears in the navigation pane.

### Menu Line Items

---

Menu Line Items have three columns in the Navigation pane:

- Parameter name.
- Parameter value.
- Parameter status.

### Parameter status column

---

Green arrows in the right column indicate that you have changed parameter values that has not been committed to the device. This particular status only applies to parameters.

1	Snsr typ	T/C typ T	← Parameter has been changed by the user.
2	Snsr conectn	2 Wire	
3	Snsr1 snsr s/n	3942	←
4	50/60 Hz filter	60_Hz	
5	Alarm Latching	Alarm Latching Disabled	
6	Low Alarm Level	3.60 mA(NAMUR)	
7	Output Respons	Fast Output Response	
8	Final asmbly num	77294	
9	Tag	103	
0	-MORE-		

**Note: Loading...** in the parameter value column indicates the communicator is in the process of retrieving data for the first time.

### The -MORE- menu item

---

If there are more than 10 items on a menu, the tenth item displays as “-MORE-”.

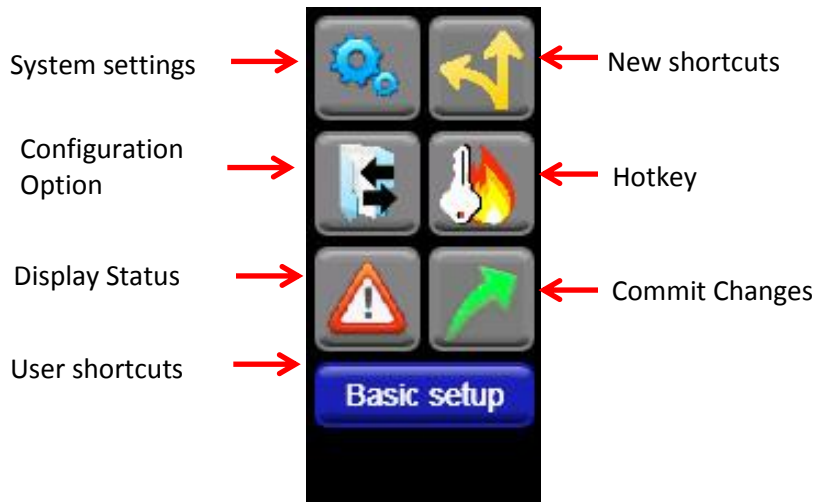
**Note:** This has the advantage that you can continue to navigate using numeric keys instead of having to scroll.

## Function buttons in HART menus

### Navigating the Function buttons

---

The following figure identifies the Function buttons and user shortcuts (examples of shortcuts).



### Scroll up or down in the Function pane

---

When you create shortcuts, you may need to scroll up in the Function pane to see all the other shortcuts and scroll down to see the Function buttons.




**Note:** You can use your finger to swipe the touchscreen to scroll up or down or you can use the arrow keys to scroll up and down.. Compare the two following figures.



## Function buttons

### Explaining the Function buttons





The following table lists the buttons with their functions in the HART menus.

Buttons	Function
	<p>The <b>System Settings</b> button returns you to the system menus.</p> <ul style="list-style-type: none"> <li>• The HART connection is not dropped when you select this button.</li> <li>• Select the green HART connection bar to return to the HART menus when you have finished using the system menus.</li> </ul> <p><b>Note:</b> Some system setting changes may require the HART connection to be re-established before the changes will occur.</p>
	<p>The <b>New Shortcuts</b> button allows users to create shortcuts to HART menus.</p>
	<p>The <b>Select Configuration Option</b> button displays two icons:</p> <ul style="list-style-type: none"> <li>• The first is the <b>Not ready</b> button. It looks like a folder. It displays four options: <ul style="list-style-type: none"> <li>○ Retrieve Configuration (not active).</li> <li>○ Store Configuration (not active).</li> <li>○ Review Configuration (active).</li> <li>○ Delete Configuration (active).</li> </ul> </li> <li>• The second is the <b>Ready</b> button. It looks like folder that has two arrows. It displays four options: <ul style="list-style-type: none"> <li>○ Retrieve Configuration (active).</li> <li>○ Store Configuration (active).</li> <li>○ Review Configuration (active).</li> <li>○ Delete Configuration (active).</li> </ul> </li> </ul>



## Function buttons (continued)

### More Function buttons

Buttons	Function
	<p>The <b>Hotkey</b> button – the company that manufactured the transmitter defined a menu that allows the user quick access to pre-defined functionality from anywhere in the HART menus.</p>
	<p>The <b>Display Status</b> button displays the current:</p> <ul style="list-style-type: none"> <li>• HART device status.</li> <li>• Communication status.</li> <li>• <b>More status available</b> indicators.</li> </ul> <p><b>Note:</b> This button is only illuminated when there is a status available.</p>
	<p>The <b>Commit Changes</b> button illuminates when you have modified parameters on the communicator and you have not committed those changes to the device.</p> <ul style="list-style-type: none"> <li>• Select this icon to begin the process of updating the device to match the communicator parameters.</li> <li>• View a list of parameters that have been changed by highlighting the <b>Commit</b> button and select <b>Accept</b>.</li> </ul>
	<p>The <b>User Shortcut</b> buttons are device specific and appear when you have created shortcuts to simplify HART navigation on that device.</p>

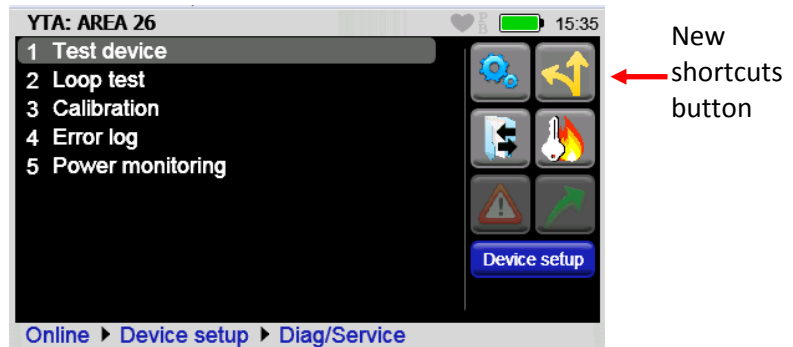
## Creating Shortcuts

### New shortcut button

---

Select the **New shortcuts** button if you want to create your own shortcut to the current HART Navigation menu. You can customize the name on a button using a maximum of 20 characters.

**Note:** In the following example, the new shortcut button appears under the Function buttons as *Device setup*. It was created to go back to Device Setup.

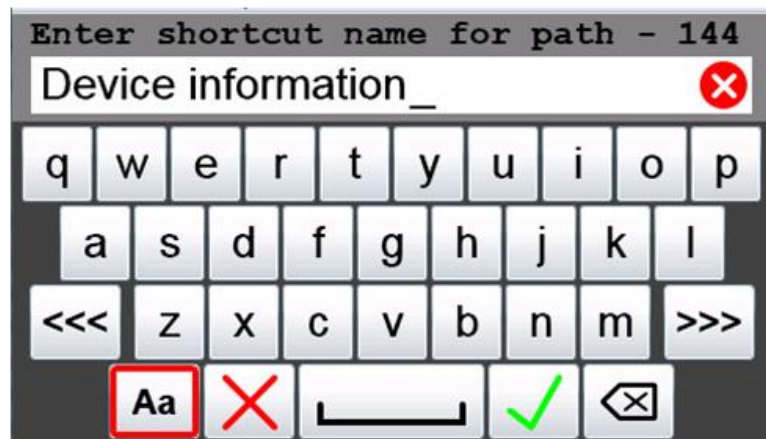


### Managing shortcuts

---

Each device DD can have ten shortcuts. Only the shortcuts for the currently connected device appear while connected to that device.

- To delete all shortcuts for the current device, highlight the **New shortcut** button, and select **Cancel**.
- To delete a single shortcut, highlight the specific **User Shortcut** button and select **Cancel**.
- To rename a shortcut, highlight the specific **User Shortcut** button and select **Accept**.



## Creating Shortcuts (continued)

### **NOTICE**

#### **An invalid shortcut**

---

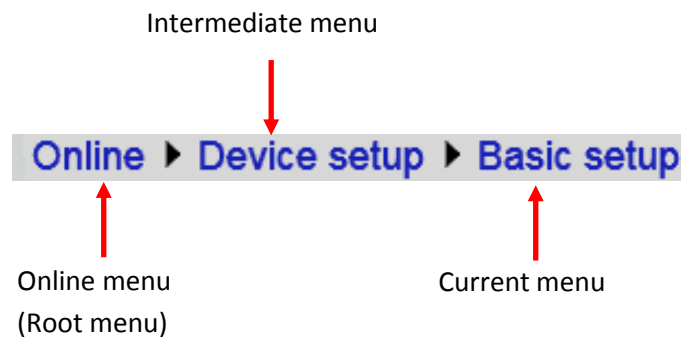
It is invalid to create a shortcut on the **Online** menu (often called the **Root** menu).

## HART menu path bar

#### **Structure of the menu path bar**

---

The HART Menu Path bar displays the current menu name and all the menu names along the menu path traversed to reach the current menu.



**Note:** The HART Menu Path bar also provides direct access to any of the menus along the menu path bar. Simply select the desired menu (touchscreen or arrow keys) from any displayed on the Path Bar and it will become the active menu.

## HART Communication with the 5150 Series

---

### Maintain field devices

---

The communicator provides device specific HART communication functions that allow the user

- To poll.
- To commission devices.
- To configure or re-configure.
- To maintain supported HART field devices.
- To maintain devices through analog and sensor trim adjustments.

### HART commands

---

To facilitate communication with a HART field device the communicator uses the following commands:

- Universal,
- Common Practice and
- Device Specific.

### Device Description file (DD) uses

---

- Many other features defined by the device manufacturer are also supported.
- The communicator will communicate with any HART device through Universal and Common Practice Commands using the standard Generic DD but must have the DD for a specific HART device installed before it can execute Device Specific Commands.
- When HART device support for new devices becomes available, the communicator software can be easily updated using a computer with an internet connection and software provided.

### Updating your communicator with DDs

---

See the section for [Updating communicator software](#) for more information and links about DD files.

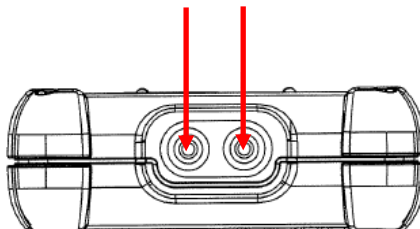
## Banana Jacks and Load Loops < 250 $\Omega$

### Banana Jacks

---

You make HART connections using two standard banana jacks (3/4 in. center) located on the top of the communicator.

HART connections are standard  
banana jacks (3/4 in. center or 1.9 cm)



**Note:** Polarity is not a concern for HART connections. Therefore, both jack collars are black.

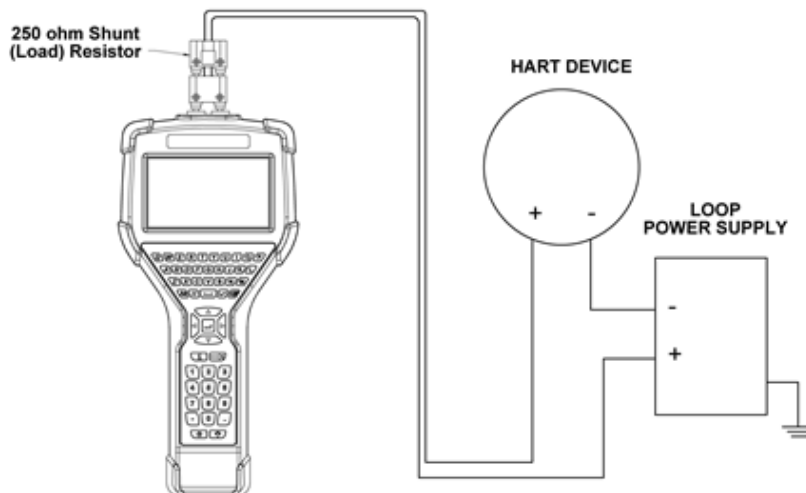
**Note:** Meriam supplies a HART lead kit complete with mini-grabber connections and a 250  $\Omega$  load resistor with each unit.

**Part number** ZA900529-00014

### Load loops < 250 $\Omega$

---

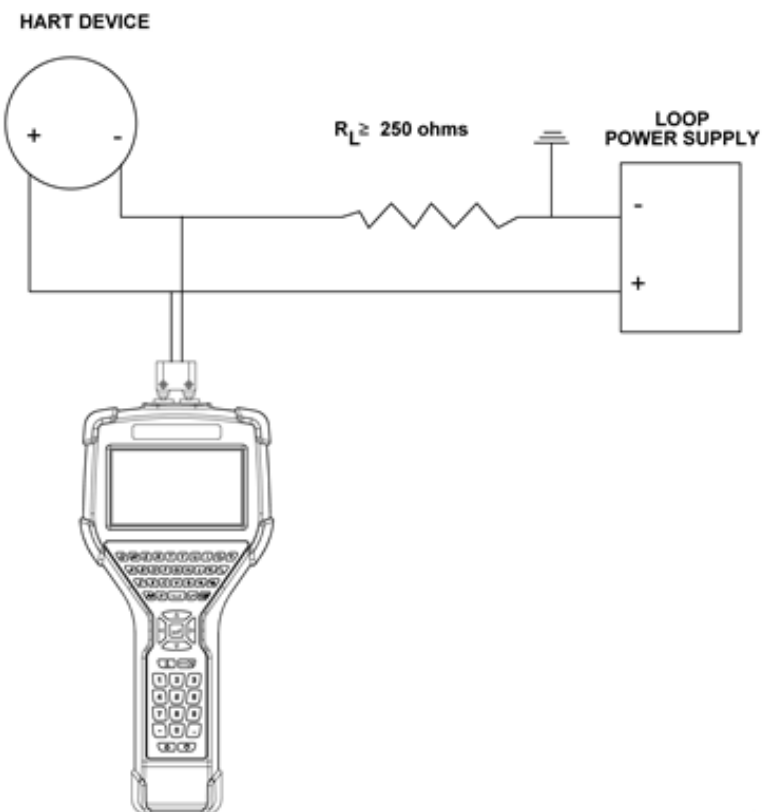
For low load loops (less than 250  $\Omega$ ), a 250  $\Omega$  resistor may be needed in the loop to insure reliable HART communication. Meriam supplies a 250  $\Omega$  load resistor in the form of a standard adapter (part number ZA36821). Refer to the following diagram for connection details.



## Load Loops > 250 Ω

### Load loops > 250 Ω

When connecting the communicator to a loop with a resistive load greater than 250 Ωs, the HART jacks may be connected across the loop + and - or to the HART device communication terminals. Refer to the following diagram for connecting across the loop + and -.



## Polling: HART Communication

### **A communicator is in one of three states:**

---

The three states are:

1. Polling.
2. Initiating.
3. Connected.

**Note:** If the communicator is not connected or initiating, then it is always polling for devices on a loop.

### **Gray connection bar: Polling Address or Found is “0”**

---

When the bar is gray, there is no device found.



### **Gray connection bar: Initiating**

---

When the bar is gray, the currently selected device is in the process of connecting.



### **Gray connection bar: no actions**

---

If you select the gray bar, no action will occur. The communicator will continue to send poll address messages within the configured range as long as a device has not been selected for connection. If new devices are added to the loop, within the configured range, they will be found automatically.

### **Yellow connection bar: Number of Devices Found**

---

A yellow bar displays the number of devices that the communicator has found.



## Polling: HART Communication (continued)

### Display all devices

---

Select the yellow connection bar to display a list of connected devices.



### Select a device

---

Select a device and select **Accept**.

- The box collapses and the communicator initiates a connection.
- Once the device connects the bar turns green.

### Green connection bar: connected

---

Whenever the bar is green, it indicates that a device is actively connected to the communicator.

- The communicator does not continue to poll for other devices.
- If the green bar is selected, the communicator initiates the online HART menus.
- If you want to connect to a different device, select the Restart Poll icon to resume polling for devices and the current HART connection will be dropped.



## Specific and Generic HART communication

### **Find specific devices**

---

The communicator supports a large and growing number of Device Specific DDs (Device Definition files).

### **Find generic devices**

---

The communicator includes Generic HART Communication capability to communicate with HART devices that are not yet supported with Device Specific DD files or that do not require DD files.

- Generic communication allows you to communicate with any HART device using Universal and Common Practice commands to poll, configure, and maintain HART devices.
- Specific functions supported include most polling, tagging, device configuration and trim operations for analog outputs.
- Generic communications do not support Device Specific commands for higher order HART functions.
- Review the User's Manual for the HART device of interest for more information on device specific command support.

### **Generic starts automatically**

---

The Generic HART Communication mode starts automatically when HART communication is initiated with a device for which no Device Specific DD (device object file) is stored in the communicator's flash memory. When this occurs, the status line displays:

- *Generic.*
- The device tag.

### **Generic mode running**

---

In general, the Generic HART mode operates similar to its device specific DD counterpart:

- See section [Polling: HART Communication](#) of this manual for more details.
- However, the communicator does not display Device Specific related communication menus or options when in the Generic communication mode.
- For example, the **Zero** and **Sensor trim** menu options (normally executed by Device Specific commands) are not displayed for pressure transmitters without DD support.

## Managing Configuration Files

### The Configuration Option button

---

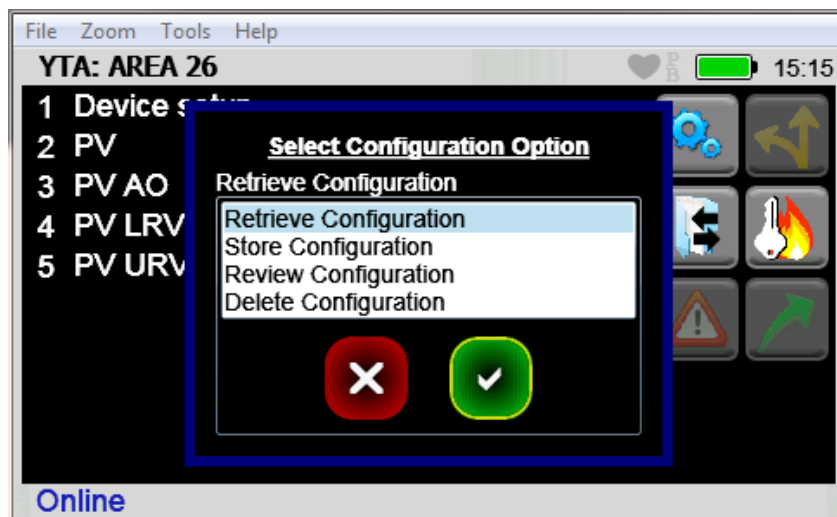
The **Configuration Option** button gives you four configuration options.



### Four configuration options

---

After you select the **Configuration Option**, it displays four options:



## Managing Configuration Files (continued)

### **First Option: Retrieve a device configuration**

---

To retrieve a device configuration, you select the **Configuration** button.

- The configuration files are stored per device model and revision.
- When you select **Retrieve configuration**, only the configurations that pertain to the model of the connected device are displayed.
- You can select a file and select **Accept**. This retrieves the stored parameters to the communicator's parameter cache.
- The parameter-changed indicator appears next to the affected parameters, and the Commit Changes button is illuminated.
- You now have the option of making further modifications to the parameters on the HART menu or committing them to the device.

**Note:** You cannot retrieve a configuration until all configuration parameters from the device load.

### **Second Option: Store files to $\mu$ SD Memory Card**

---

You may store the current parameter settings for a connected HART device as a file on the  $\mu$ SD system card for later use. This file can then be used:

- For duplicating settings to a new device of the same model.
- For restoring settings to a repaired device.
- For documentation purposes.

**Note:** You cannot retrieve a configuration until all configuration parameters from the device load.

**Note:** The manufacturer of the HART device defines what parameters are stored.

## Managing Configuration Files (continued)

### **Configuration dialog boxes**

---

Dialog boxes direct you to take the appropriate actions:

1. They prompt you for a file name. The default file name is the tag parameter defined in the device. You may change this to any file name not currently in use for this device model. If the user picks a name already in use, the communicator gives you an option of cancelling or overwriting the current file.

**Note:** Unsupported characters are unavailable and ignored.

2. If the configuration has not already been marked as **As Modified**, the user has to choose a configuration type. The choices are:

- a. **As Found** (device settings before modification).
- b. **As Left** (device settings after modification).

**Note:** The configuration file is saved in the communicator  $\mu$ SD memory card and can be retrieved to update any transmitter of the same model and revision.

### **Third option: Review Configuration**

---

This option allows you to select a configuration to review all the parameters in it.

### **Fourth option: Delete Configuration**

---

This option allows you to delete a configuration that you no longer want to keep.

**Note:** You do not need to delete configurations to save space on the memory card.

## Managing Configuration Files (continued)

### Commit Changes

---

If the **Commit Changes** button is illuminated, you should commit the communicator parameters to the device before you continue.

- If the parameters are not committed and you choose to store the parameters, you are warned that the parameters do not match the device.
- If you decide to continue to store the file, it is marked as **As Modified**.



### **NOTICE**

#### **Be careful when retrieving a configuration**

---

Before retrieving a configuration, remember that **Retrieving a Configuration** overwrites any uncommitted configuration parameters that have not been committed to the device.

**Important:** Consider whether you need to **Commit Changes** to the device *now* to avoid losing any modified, uncommitted parameters.

## Troubleshooting HART Communications

### **Troubleshoot: No Devices Found**

---

If a HART device is connected to the communicator but “*Polling Address 0*” appears or the device is not in the table of found devices, follow these steps:

1. Make sure all connections are correct and secure.
2. Check for shorts, open circuits, and multiple grounds.
3. Determine if the loop resistance is greater than 250  $\Omega$  and less than 1100  $\Omega$ s. If less than 250  $\Omega$ , then use the supplied 250  $\Omega$  load resistor in series with the loop (see the diagram in the [Banana Jacks and Load Loops < 250  \$\Omega\$](#)  section).
4. Determine if any device is in burst mode. Disable burst mode if possible during troubleshooting.
5. Check the polling address type and range selected from the system menus. If the polling address set on the transmitter is outside of the range selected for the communicator, it cannot discover the device.
  - a. Set the poll type to “by address” and set the polling address range to the maximum:
    1. 0-15 for HART Universal Revision 5 devices.
    2. 0-63 for newer HART devices.
  - b. Allow the communicator to poll and determine if the device is found.
6. If multiple HART devices are in the loop, there could be an address conflict (two devices at same address). Testing the devices individually is the best path.
7. Determine if there are multiple master devices on the loop. HART communication only permits one primary and one secondary master.
8. Remove all other secondary master devices from the loop for troubleshooting.

## Troubleshooting HART Communications (continued)

### **Troubleshoot: Generic**

---

When the message *Generic* displays after connecting to a HART device, there are two possible causes:

1. No device-specific DD for that device is currently installed in communicator memory. This could occur if the device DD has not been released by the HART Communication Foundation, or if the DD database on your computer requires updates. See the following resources:
  - a. See the section [Updating communicator software](#).
  - b. See <http://www.hartcomm.org/> for full list of DDs.
2. The connected HART device supports only HART Universal and Common Practice commands (for example: generic commands). There are several such devices on the market, particularly level type devices.

### **Troubleshoot: Multiple Devices**

---

If multiple devices of the same name appear at different addresses, the cause is normally a HART Universal Revision 5 device in the loop and the polling range selected on the communicator extending beyond HART polling address 15. This generally causes no problems and you may select any one of the duplicate entries to connect to the device.

**Note:** Addresses beyond 15 were undefined until HART Universal Revision 6.

## Updating communicator software

### **Follow these instructions**

---

The following link contains the instructions and links necessary to update your communicator software:

- System files.
- DD files.

[http://www.5150update.com/Installing\\_Field\\_Communicator\\_Manager\\_Software.pdf](http://www.5150update.com/Installing_Field_Communicator_Manager_Software.pdf)

### **Important note about updating the communicator**

---

Depending on the amount of data to transfer from the computer to the communicator, this step can take a long time.

## Hazardous area use

### Intrinsically Safe Model

The 5150X HART Communicator includes certification for Intrinsically Safe operation.

- Refer to the [Intrinsic Safety Control Drawing](#) in the *Appendix* of this manual for more information.

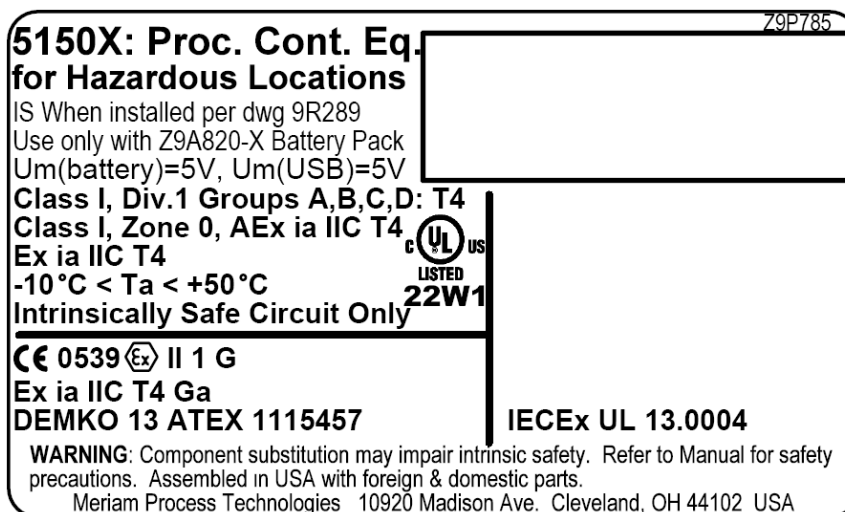
### Hazardous and non-hazardous locations

The following table identifies model numbers and areas of acceptable use:

Model Number	Location	Non-hazardous Area	Hazardous Area
5150	General Purpose	Yes	NO
5150X	Intrinsically Safe	Yes	Yes

### Example of a name plate

Communicators with Intrinsically Safe certification can be identified by model number or by a special name plate on the back. One example of a nameplate on an Intrinsically Safe communicator is displayed in the following figure for reference.





## Hazardous area - Warnings & Cautions

### WARNING

#### **No substitutions**

---

**IMPORTANT:** Substituting components may impair Intrinsic Safety.

### WARNING

#### **Preventing explosions**

---

**IMPORTANT:** To prevent ignition of flammable or explosive atmospheres:

- Disconnect power before servicing.
- **NEVER** attempt to open the battery pack and replace batteries.

### CAUTION

#### **Restrictions on electrical connections**

---

Serious injury or death may result from explosions.

Before making electrical connections to an Intrinsically Safe model at the HART jacks, verify the HART instrument of interest is installed in accordance with intrinsically safe field-wiring practices.

### CAUTION

#### **Restrictions in hazardous areas**

---

Restrictions apply to the use of Intrinsically Safe units in hazardous areas.

- Refer to [Intrinsic Safety Control Drawing](#) in the *Appendix* of this manual for more information.
- Meriam reserves the right to revise the Intrinsic Safety Control Drawing without notice.
- Contact Meriam for the current Intrinsic Safety Control Drawing.

US customers: **1-216-281-1100** or **1-800-817-7849**

---

International customers: **001-216-281-1100**

---

### CAUTION

#### **Double check the Intrinsic Safety Control Drawing**

---

For Intrinsically Safe model 5150X, consult the [Intrinsic Safety Control Drawing](#) in the *Appendix* of this manual for:

- Restrictions.
- Special instructions in use.
- Electrical connections allowed.

## Returning for repair

### First - Request a Number

---

In the event that a 5150 Series requires service and must be returned for repair, please contact Meriam using one of the methods listed in the following table to request a **Return Material Authorization (RMA)** number:

Method	Information
<b>Website:</b>	<ul style="list-style-type: none"><li>• <a href="http://www.meriam.com/resources/service-repair-authorization/">http://www.meriam.com/resources/service-repair-authorization/</a></li><li>• Complete information online and submit the form.</li></ul>
<b>Fax:</b>	<ul style="list-style-type: none"><li>• If you printed and completed the <b>Service &amp; Repair Authorization</b> form, then fax it to:</li><li>• US customers: <b>1-216-281-0228</b></li><li>• International customers: <b>001-216-281-0228</b></li></ul>
<b>E-mail:</b>	<p>We need the following information in the email:</p> <ul style="list-style-type: none"><li>• Look on the 5150 Series label to find the <b>Model</b> number &amp; the <b>Serial</b> number.</li><li>• Give a brief description of the problem.</li><li>• Send the e-mail to: <a href="mailto:returnforms@meriam.com">returnforms@meriam.com</a></li></ul>

### Return Material Authorization

---

*Do not send* any unit for repair unless you contacted Meriam for a Return Material Authorization (RMA) number.

- **Important:** If you have not received this number and clearly marked it on the package being shipped back, we will return the unit at your expense.
- The Meriam **Service & Repair Department** will provide you with this number when you complete the website form, fax or e-mail your information.
- An RMA number must accompany all incoming packages to insure proper tracking, processing, and repair work

### Questions? Call Meriam

---

US customers: **1-216-281-1100** or **1-800-817-7849**

International customers: **001-216-281-1100**

### Ship the box to

---

#### Meriam Process Technologies

10920 Madison Avenue  
Cleveland, Ohio 44102  
USA

## Appendices

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### Product Specifications

**BASE UNIT:**

11.9 in. L, 5.6 in. W (at display), 2.50 in. W (at handle), 1.9 in. D.  
(30.2 cm L, 14.2 cm W (at display), 6.3 cm W (at handle), 4.8 cm D)

PC/ABS alloy plastic case with shock absorbing bumpers, rated IP51, 2.1 lbs. including battery. Passes one meter drop test onto concrete

**DISPLAY:**

4.3-in. widescreen backlit TFT color touchscreen display with 480 x 272 WQVGA pixel resolution.

**POWER:**

Li-ion battery pack, 3.6 volts nominal.  
1.5A charging cradle. 100-240Vac, 50/60Hz input.

**BATTERY LIFE (Approximate):**

10 hours continuous use (typical)  
40 hours standby (typical)

**TEMPERATURE SPECIFICATIONS:**

Storage: -40° F to 140° F (-40° C to 60° C)  
Operating: 14° F to 122° F (-10° C to 50° C)  
Charging: 50° F to 104° F (10° C to 40° C)

**CONNECTIONS:**

Standard banana jacks (3/4 in. center) for HART communication.  
Communication (serial cable to computer port) / Battery charging. Connection via charging cradle.

**APPROVALS: 5150X (ATEX/I.S.)**

ATEX Intrinsically Safe  
cUL<sub>us</sub> Listed



G; Ex ia IIC T4 Ga

Intrinsically Safe, Exia

Class I, Div. 1 Groups A, B, C, D: T4

-10° C < Ta < +50° C

IECEX UL 13.0004

Entity parameters:

Pi = 1.25W, Ii = 200mA, Ci = 0, Li=0, Vi=30V, Um (USB) = 5V, Um (battery) = 5V



CE compliance

**APPROVALS: 5150 (general purpose)**

CE compliance

**MEMORY:**

Dedicated µSD flash memory card for 5150 Series application software, DD and configuration storage.

## Safety notices

### WARNING

#### **Avoid intense heat**

---

Do not subject the batteries to intense heat. This could cause:

- Overheating,
- Fire,
- Rupture, or
- Explosion.

### CAUTION

#### **Electrical shock**

---

<b>If there is any...</b>	<b>Then...</b>
<ul style="list-style-type: none"><li>• Deformation,</li><li>• Cracks,</li><li>• Damage to the charging cradle,</li><li>• Damage to the power cord, or</li><li>• Damage to the power adapter.</li></ul>	<ul style="list-style-type: none"><li>• Unplug the charging cradle.</li><li>• Never use it again.</li></ul>

### CAUTION

#### **Don't disassemble or modify**

---

Do not take apart or modify any component. This could:

- Cause personal injury.
- Cause the communicator to fail.
- Invalidate certification.
- Void the warranty.

### CAUTION

#### **No extension cords**

---

Plug the power adapter directly into an outlet.

**Important:** Do not use an extension cord with the power adapter.

## Waste Electrical and Electronic Equipment (WEEE), Directive 2002/96/EC

### European Union *only*

---

**Important:** This directive is only valid in the EU.

- This product complies with the WEEE Directive (2002/96/EC) marking requirement.
- The following marking indicates that you must not discard this electrical / electronic product in domestic household waste.



### European Union Product Category

---

With reference to the equipment types in the WEEE directive Annex 1, this product is classified as a “*Monitoring and Control Instrumentation*” product.

- Do not dispose of in domestic household waste.
- When disposing of products in the EU, contact your local Meriam representative.

### US government agencies

---

You must check with the US Environmental Protection Agency (EPA), state agencies, and other local authorities before you dispose of electrical or electronic waste.

- The EPA [www.epa.gov](http://www.epa.gov)
- You must remember that some state and local authorities have stricter requirements than the federal requirements.

### Other countries

---

You must check requirements of your national and local regulations before you dispose of electrical or electronic waste.

## Spare parts list

### Meriam Part numbers

See [Meriam Contact Information](#) to order these parts:

Part Number	Description
<b>ZA900529-00014</b>	<b>HART Test Lead Kit</b> - included with unit. This is the standard banana plugs, mini-grabbers, 250 $\Omega$ shunt resistor.
<b>ZA36821</b>	<b>Standard size 250 <math>\Omega</math> shunt resistor</b> - included with unit. This is required for HART low resistance loops.
<b>Z9P790</b>	<b>Soft carrying case</b> - included with unit. This is a custom, soft case with adjustable shoulder strap and HART lead compartment.
<b>Z9P791</b>	<b>Hand strap</b> - included with unit.
<b>Z9A820-2</b>	<b>5150 Series Lithium Ion Battery Pack</b> - included with unit.
<b>Z9A879</b>	<b>5150 Series battery charging kit</b> - included with unit. 100 – 240 Vac, 50/60 Hz. It includes charging cradle, power cord, and USB cable.
<b>Z9P802</b>	<b>USB cable: Type A to B.</b> It is 2 m length (6.60 feet) - included with unit. You must have this to update the unit.
<b>Z9P822</b>	<b>5150 Series battery charging power cord</b> - included with unit.
<b>Z9P823</b>	<b>7/64 in. Hex key wrench</b> - included with unit. This fits the battery pack screws.
<b>Z9P780</b>	<b>5150 Series <math>\mu</math>SD system memory card</b> - included with unit. The 5150 software is installed on it.

# Intrinsic Safety Control Drawing

**NON-HAZARDOUS LOCATION**  
MFC 5150  
MFC 5150X

**HAZARDOUS LOCATION**  
MFC 5150X

**MFC 5150 SERIES HART COMMUNICATOR**

**REVISIONS HISTORY**

REV.	ECO #	DESCRIPTION	DATE	BY
IR	EO-7186	INITIAL RELEASE	3-15-13	JS
A	EO-7184	ADD UN TO LABEL & POLARITY MARKS. SWEED	5-14-13	JS

**Hart Terminals:**  
Connect to Certified Intrinsically Safe circuit only for Hart Communication.  
 $U_1 = 30V$ ,  $I_1 = 200mA$ ,  
 $I_2 = 1.25A$ ,  $C_1 = 0$ ,  
 $I_3 = 0$

**Charger assembly may be used.** (Meriam P/N Z9A879)  
 AC/DC adapter may be used. (Meriam P/N Z9PE22) Input 110-240 VAC / 50/60 Hz, 24 Watts, 1.6 Amps, 15 Volts  
 3. Um (battery) = 5V, Um (USB) = 5V

**Hart Terminals:**  
30 VDC Max.  
Hart Communication

**NOTE:** Capacitance and inductance of the field wiring from the intrinsically safe equipment to the associated apparatus shall be calculated and must be included in the system calculations as shown in Table 1. Cable capacitance, Ccable, plus intrinsically safe equipment capacitance, Ci, must be less than the marked capacitance, Cm, of the associated apparatus. Similarly, the sum of the inductance applies for inductance (Lcable, Li and Lo respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used: Ccable = 60pF/ft., Lcable = 0.2uH/ft.

**TABLE 1:**

I.S. Equipment	Associated Apparatus
Vmax (or U)	Voc or Vt (or Uo)
Pmax (or Pi)	Is or It (or Io)
Ci + Ccable	Ca (or Co)
Li + Lcable	La (or Lo)

If Po of the associated apparatus is not known, it may be calculated using the formula  $P_o = (V_{oc} \cdot I_{sc})/4 = (U_o \cdot I_o)/4$

**WARNINGS:**

- SUBSTITUTING OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY!  
To prevent ignition of flammable or explosive atmospheres,
  - Do not open or service unit in flammable or explosive atmosphere.
  - Do not use any battery pack other than 5150 Series Pack Z9A820-X.
  - Do Not Charge in Hazardous Location.
- Associated apparatus output current must be limited by a resistor such that the output voltage-current plot is a straight line drawn between open-circuit voltage and short-circuit current.
- Selected associated apparatus must be third party listed as providing appropriate protection for the associated apparatus. The output voltage exceeding Vmax (or Uo not exceeding Uo), Isc or It not exceeding Imax (or Io not exceeding Io), and the Po of the associated apparatus must be less than or equal to the Pmax or Pi of the intrinsically safe equipment, as shown in Table 1.
- Associated apparatus must not be used in combination unless permitted by the associated apparatus certification.

**5150 Series Battery Pack**  
WARNING: HAZARDOUS LOCATION ONLY. SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

**SMALL BATTERY LABEL**

**LARGE BATTERY LABEL**

**CERT LABEL**

**5150 Series Charger Asm.**

**5150 Series Battery Pack**

**5150 Series Battery Pack**

**NOTE:** CONDUCTED METAL PARTS ARE CONSTRUCTED FROM 300 SERIES STAINLESS STEEL. EXTERNAL PARTS FROM STEEL WITH ZINC ANTI-CORROSION COATING. NO LIGHT METALS ALLOWED.

**PROPERTY AND CONFIDENTIALITY:**  
NO INFORMATION CONTAINED IN THIS DRAWING IS TO BE RELEASED TO ANY OTHER PERSON OR ORGANIZATION WITHOUT THE WRITTEN PERMISSION OF DENKMO TECHNOLOGIES, INC.

**APPROVALS**

NAME	DATE
DESIGN	1-8-13
CHECKED	1-13-13
ENG. APPR.	

10020 MADISON AVENUE  
CLEVELAND, OHIO 44102

**meriam**  
process technologies  
a Sealed Air Company

**TITLE:** MFC 5150 HART Communicator  
**Meriam Control Drawing**

**SIZE (DWG. NO.):** C 9R289  
**REV:** A

**SCALE:** 1:1 | **WEIGHT:** SHEET 1 OF 1

## EC Declaration of Conformity



## EC Declaration of Conformity

This is to declare, in accordance with Directive 94/9/EC, that the following product(s) are designed and manufactured in accordance with Annex II of Directive 94/9/EC.


The manufacturer attests on their own responsibility that the apparatus has been constructed in accordance with the principles of good engineering in safety matters, and that any routine verification and test required by Clause 27 of EN 60079-0:2006 has been successfully completed.

### Manufacturer:

Meriam Process Technologies, a Scott Fetzer Company  
10920 Madison Avenue, Cleveland, Ohio 44102, USA

### Product Description:

Multifunction Calibrator with HART Communication Terminals, Model 5150X series.

CE 0539  II 1 G  
DEMKO 13 ATEX 1115457  
Ex ia IIC T4 Ga  
IECEX UL 13.0004  
Intrinsically Safe, Exia  
Class I, Div. 1 Groups A, B, C, D: T4  
-10° C < Ta < +50° C Li = 0, Ci = 0

### Certifying Agency:

UL International DEMKO A/S Testing & Certification (0539)  
P.O. Box 514, Lyskaer 8, DK-2730 Herlev, Denmark

**This Declaration is based on Compliance with the following Standards:**

### Regarding Hazardous Environments:

- EN 60079-11:2012 Electrical apparatus for explosive gas atmospheres - Intrinsic safety 'i'
- EN 60079-0:2012 Electrical apparatus for explosive gas atmospheres - General requirements
- EN 60079-26:2007 Special requirements for construction, test and marking of electrical apparatus of equipment group II, Category 1 G.

### Regarding Electromagnetic Compatibility (EMC) for Handheld Class A device

Series 5150 hand held unit compliant with EMC Directive 2004/108/EC

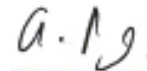
- EN 61326-1:2006 Electrical equipment for measurement, control and laboratory use-EMC requirements
- EN 60529:1992 Degrees of Protection Provided by Enclosures (IP Code:IP51)

For and on behalf of  
Meriam Process Technologies,

 7/29/13

John Balogh Date:  
Standards Engineer  
Meriam Process Technologies

**Authorized Representative in EU:**



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