YHC5150X FieldMate Handheld Communicator

User 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 Yokogawa 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 Yokogawa or its affiliates.

It is not possible for Yokogawa to identify all foreseeable uses or misuses, therefore all persons involved in commissioning, using, or maintaining this product must satisfy themselves 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

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<tr>
<td>🌟</td>
<td>This is the <strong>Read Instruction Manual</strong> symbol. This symbol indicates that you must read the instruction manual.</td>
</tr>
<tr>
<td>⚠️</td>
<td>This is the <strong>Safety Alert</strong> symbol. This symbol indicates a <strong>WARNING</strong>. Warnings alert you to actions that can cause personal injury or pose a physical threat. Please read these carefully.</td>
</tr>
<tr>
<td>🕵️‍♂️</td>
<td>This is the Safety Glasses symbol. This symbol indicates that you must wear approved safety glasses during the task.</td>
</tr>
<tr>
<td>🧵</td>
<td>This is the Safety Gloves symbol. This symbol indicates that you must wear approved safety gloves during the task.</td>
</tr>
<tr>
<td>⚠️</td>
<td>Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.</td>
</tr>
<tr>
<td>🚨</td>
<td>Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.</td>
</tr>
<tr>
<td>🚨</td>
<td>Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.</td>
</tr>
<tr>
<td>💡</td>
<td>Indicates information essential for proper product installation, operation or maintenance.</td>
</tr>
</tbody>
</table>
ATEX Documentation

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 dichstbijzijnde vestiging van Meriam of met een vertegenwoordiger.

SF

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 nevýbušně schválení ATEX Ex, jsou dostupné v angličtině, němčině a francouzštině. Požadujete-li pokyny týkající se výrobků s nevýbušným schválením ve vašem lokálním jazyku.

LT
Visos gaminio ATEX Ex kategorijos Eksplotavimo instrukcijos teikiama anglų, vokiečių ir prancūzų kalbomis. Norėdami gauti prietaiso Ex dokumentaciją kitomis kalbomis susisiekite su artimiausiu bendrovės “Meriam” biuru arba atstovu.

LV
Visas ATEX Ex kategorijas izstrādājumu Lietošanas instrukcijas tiek piegādātas angļu, vācu un franču valodās. Ja vēlaties saņemt Ex ierīču dokumentāciju citā valodā, jums ir jāsaprašāt ar firmas Meriam tūkstošu ofisai vai pārstāvji.

EST
Kõik ATEX Ex toodete kasutamisjuhendid on esitatud inglise, saksa ja prantsuse keeles. Ex seadmete muuakese 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
Ολα 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 επικοινωνήσετε με το πληρέστερο γραφείο της Meriam ή αντιπρόσωπο της.

SLO
Vsí predpisy in navodila za ATEX Ex sorodni pridelki so pri roki v angliščini, nemščini ter francosčini. Ėe so Ex sorodna navodila potrebna v vašem tukejnjem jeziku, kontaktirajte vaš najbližši Meriam office ili predstavnik.

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

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 фирмата Meriam.

RO
Toate manualele de instrucțiuni pentru produsele ATEX Ex sunt in limba engleză, germană și franceză. În cazul în care doriți instrucțiunile în limba locală, trebuie sa contactați cel mai apropiat birou sau reprezentant Meriam.

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Trademarks

HART Communication Foundation

HART® and HART Communication Foundation are used by permission of the HART® Communication Foundation.

Yokogawa Contact Information

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<tr>
<td><strong>Address</strong></td>
</tr>
<tr>
<td>Yokogawa Corporation of America</td>
</tr>
<tr>
<td>2 Dart Road</td>
</tr>
<tr>
<td>Newnan, GA. 30265USA</td>
</tr>
<tr>
<td><strong>Telephone</strong></td>
</tr>
<tr>
<td>1-800-888-6400</td>
</tr>
<tr>
<td><strong>E-mail</strong></td>
</tr>
<tr>
<td><a href="mailto:meters-instr@us.yokogawa.com">meters-instr@us.yokogawa.com</a></td>
</tr>
<tr>
<td><strong>Website</strong></td>
</tr>
<tr>
<td><a href="http://www.yokogawa.com/us">www.yokogawa.com/us</a></td>
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Information in this document is subject to change without notice. Check the Yokogawa web site for latest manual revision:

http://www.yokogawa.com/us/products/field-instruments/ia-smart-communicators/yhc5150x.htm

HART Communication Foundation

<table>
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## Definitions for Terminology

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<th>Definitions</th>
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</table>
| **Button or key**               | • A **button** always refers to an area on the screen that you can tap to select functionality.  
                                 | • A **key** always refers to hardware push-buttons on the keyboard that you can press. |
| **DD or Device Description files** | Manufacturers create HART® compliant Device Description (DD) files that reside on the YHC5150X. You may need to check for updates to the DD files from time to time.  
                                 | • DD files “provide a standardized method for host systems to access and display valuable parameters located in field instruments so that the full capability of the device can be accessed via the HART protocol.”  
                                 | • DDs are “used to describe such parameters as device diagnostics, multi-variable measurements and device configuration information in a digital format. As applied in the HART Protocol, this digital information is imposed on top of the industry-standard, process control 4–20mA signal.” |
| **Highlight**                   | This manual uses the word highlight in two ways:  
                                 | 1. As a noun: highlight refers to an icon or a menu line that has the focus on-screen at any given time.  
                                 | 2. As a verb: highlight refers to:  
                                 |   a. Pressing the arrow keys or Advance key to change the focus to a new button.  
                                 |   b. Pressing and holding a button on-screen for one second to change the focus to a new button. |

**Note:** The two italicized statements come from the HART Communication Foundation’s web site:  
## Definitions for terminology (continued)

<table>
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<td><strong>Definitions</strong></td>
<td>Highlights appear in three colors: red, gray, and yellow.</td>
</tr>
<tr>
<td><strong>A red rectangle</strong></td>
<td>appears in System menus:</td>
</tr>
<tr>
<td><img src="image" alt="System Setup Menu" /></td>
<td><img src="image" alt="System Setup Menu" /></td>
</tr>
<tr>
<td><strong>A gray highlight</strong></td>
<td>appears in the HART Navigation pane.</td>
</tr>
<tr>
<td><img src="image" alt="HART Navigation Pane" /></td>
<td><img src="image" alt="HART Navigation Pane" /></td>
</tr>
<tr>
<td><strong>A yellow border</strong></td>
<td>appears in:</td>
</tr>
<tr>
<td>- Selection boxes when an item is selected.</td>
<td><img src="image" alt="HART Function button pane" /></td>
</tr>
<tr>
<td>- The HART Function button pane.</td>
<td><img src="image" alt="HART Function button pane" /></td>
</tr>
<tr>
<td>- The HART menu path bar.</td>
<td><img src="image" alt="HART menu path bar" /></td>
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### Highlight colors

- **Red**: Indicates important information or actions.
- **Gray**: Highlights system parameters or settings.
- **Yellow**: Marks selected items or active features.
Select

This manual uses the word `select` to refer to:

- Navigating the levels of menus in the communicator.
- Opening additional screens:
  - To navigate the communicator’s menu levels.
  - To view information.
  - To view additional functions.
- Performing some task on the communicator.

**Note:** Highlight an on-screen button you want to choose and select it.

You may select items by using one of several methods:

**Touchscreen** gestures as you do on a smartphone, such as:

- Tapping on-screen buttons or icons.
- Swiping left or right.
- Scrolling up or down.

**Navigation keys** use:

- The **Arrows** and **Advance/Switch** buttons to highlight a button.
- The **Select** button to select the highlighted button.

**Numeric keys**:

- 1–9 and 0, minus and decimal.
- These Navigation shortcuts select the function directly.

A **combination** of touchscreen gestures and keys.

**Note:** The **Spacebar** 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.

Standby or sleep

This manual uses the word **standby mode** to describe putting the communicator into an energy-saving mode, where it uses very little power. Some use the word **sleep mode** instead of **standby**.
Installing or removing the battery pack

**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.

**Notice**: The 7/64 in. hex key wrench is included with the unit.

**Don’t over tighten**

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.

---

6-32 screws with 7/64 in. hexagonal socket

µSD memory card access
Charging the battery pack

**NOTICE**

**Charge six (6) hours**
Charge the battery completely for six (6) hours before first use. See the sections about The charging cradle for more detail.

Memory System Card

**Uses for the memory card**
The communicator is shipped with a μSD 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 YHC5150X**
The μSD memory system card is not intended for use unrelated to the operation of the communicator. The YHC5150X Series System card *must* be installed to operate the communicator.

**Note:** While the μSD memory system card is in the YHC5150X, there is no way to access the card except with the Yokogawa provided computer software.

**NOTICE**

**Replace with Yokogawa 1W-Z9P780**
If you need to replace the μSD card, it must be replaced with Yokogawa part number 1W-Z9P780 or the successor part number specified by Yokogawa.

- Replace the card only under the direction of Yokogawa personnel.
- Use of a non-system memory card voids the Intrinsic Safety Compliance.
Memory System Card (continued)

**Installing & removing battery pack**
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.

**Replacing the Memory Card**
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.
YHC5150X Series HART Communicator Overview

**Full function HART**

The YHC5150X 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.

**Diagram of the YHC5150X**
**Touchscreen — System menus**

**Touchscreen — Display details**

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 menus (continued)**

**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 menus:

- **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.

![Sample system display](image-url)
**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.
**YHC5150X Operating Instructions**

**Power key functions**

**Turn on**

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

- The first screen displays the Yokogawa 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.
Power key functions (continued)

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**

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.

![Backlight Setting](image)

**Reducing intensity improves battery life**

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

<table>
<thead>
<tr>
<th>Backlight intensity at:</th>
<th>While the communicator is on, the battery life is improved by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 %</td>
<td>Up to 80 %</td>
</tr>
<tr>
<td>40 %</td>
<td>Up to 50 %</td>
</tr>
<tr>
<td>60 %</td>
<td>Up to 30 %</td>
</tr>
<tr>
<td>80 %</td>
<td>Up to 12 %</td>
</tr>
</tbody>
</table>
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.

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.

<table>
<thead>
<tr>
<th>If...</th>
<th>Then...</th>
</tr>
</thead>
</table>
| You set the *Backlight* timeout to 30 seconds | - After the communicator is out of the cradle and it has no input for 30 seconds,  
- The communicator reduces the intensity to 10%. |
| You set the *Standby* timeout to 3 minutes | - 3 minutes and 30 seconds after the start of the Backlight timeout,  
- The communicator enters Standby mode. |
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.

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 at the 100% backlight setting.

Note: See the section for Installing or removing the battery pack.

Note: Order part number Z9A820-4 from Yokogawa to replace the battery pack.
The battery pack life (continued)

**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.

**Low battery level alerts for the XL Battery**

**Three low battery level alerts**

![Battery level alerts diagram]

**Yellow alert**

You must press the **Cancel** button to dismiss the message or the YHC5150X will enter *Standby* mode in 60 seconds. The battery charge is low and should be recharged as soon as possible.

**Red alert**

Press the **Cancel** button to dismiss the message or the YHC5150X enters *Standby* mode in 30 seconds.

1. The battery is empty and must be recharged.
2. Finish your work before the time expires.

**Final alert**

The battery is empty and no time remains.

1. All unsaved work is lost.
2. You cannot continue to work. Charge the battery now.


**Low battery level alerts (continued)**

**Standby mode and the alerts**

1. If the YHC5150X enters *Standby* mode due to any of the alerts, you can resume. However, a second alert appears quickly after resuming.

2. If the YHC5150X enters *Standby* mode after the red or final alerts, the final alert reappears quickly. Charge it now.
   
   You cannot continue to work.

**Reminder:** After two hours in *Standby* mode, the YHC5150X turns off.

**The charging cradle**

**Cradle connection details**

Look at the back of the cradle:

![Cradle diagram](image)

**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.
The charging cradle (continued)

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

<table>
<thead>
<tr>
<th>Light Status</th>
<th>Indicates...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>The communicator has not been correctly inserted or the power is disconnected.</td>
</tr>
<tr>
<td>Solid Green</td>
<td>The battery is fully recharged.</td>
</tr>
<tr>
<td>Flashing Amber</td>
<td>The battery is charging.</td>
</tr>
<tr>
<td>Solid Amber</td>
<td>The battery temperature is out of the charging range. The charging process has been suspended.</td>
</tr>
<tr>
<td>Flashing Red</td>
<td>There is a battery fault.</td>
</tr>
<tr>
<td>Solid Red</td>
<td>There is a charging fault.</td>
</tr>
</tbody>
</table>

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.

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.
The charging cradle (continued)

**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 YHC5150X 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.

⚠️ WARNING

Field-wiring practices
For the Intrinsically Safe model YHC5150XX:

- 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 & Decision
Upper/lower case toggle
Backspace

Navigation
Enter/Select

Information
Advance/Switch

Numeric
Minus
Decimal

Fixed
Power
Backlight

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.

<table>
<thead>
<tr>
<th>Decision</th>
<th>Key</th>
<th>Touchscreen button</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancel or Esc</td>
<td><img src="image" alt="Cancel" /></td>
<td><img src="image" alt="Cancel" /></td>
</tr>
<tr>
<td>Accept</td>
<td><img src="image" alt="Accept" /></td>
<td><img src="image" alt="Accept" /></td>
</tr>
</tbody>
</table>
**Keyboard functions (continued)**

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

![Navigation keys diagram]

- **Navigate up**
- **Navigate left**
- **Navigate down**
- **Navigate right**
- **Enter/Select Menu item**
- **Display Information Menu item**

**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.

**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.

![On-screen keyboard](image)

**ISO Latin-1 Character Set**

**ISO Latin-1 character set**

The YHC5150X 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.
ISO Latin-1 Character Set (continued)

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.

![Enter Tag to find](image)

**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.

![Enter Tag to find](image)

**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.

![Enter Tag to find](image)
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 figure of Keyset #1.

1. Navigate to Previous keyset.
2. Key Caps Lock.
3. Select Upper or lowercase.
5. Space.
6. Accept.
7. Clear edit box.
8. Navigate to next keyset.
Touchscreen — Keysets #2–5

Keyset #2

Keyset #3 (uppercase)  Keyset #3 (lowercase)

Keyset #4 (uppercase)  Keyset #4 (lowercase)

Keyset #5 (uppercase)  Keyset #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.

1. Menu information.
2. Communication status.
3. Battery status.
4. Time.
Navigating the Communicator (continued)

Communicator status line explained
The following table explains the different parts of the System Menu.

<table>
<thead>
<tr>
<th>Status line</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menu Information</td>
<td>This area displays the system menu. When you see YHC5150X Field Communicator, you at the top-level menu.</td>
</tr>
<tr>
<td>Communication Status</td>
<td>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.</td>
</tr>
<tr>
<td>Battery Status</td>
<td>This gives you a quick reference to the current condition of the battery. There is more information available in System Information.</td>
</tr>
<tr>
<td>Current Time</td>
<td>The current time is set by you in the Date/Time Setup Menu</td>
</tr>
</tbody>
</table>

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:

- Go back to the previous menu
- View the multifunction connection bar
- Poll for other HART devices

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 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**.

![Gray Connection Bars]

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

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

![Yellow connection bar icon]

**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.

![Green connection bar icon]

**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:

<table>
<thead>
<tr>
<th>Main System Icons</th>
<th>Icon Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![System Setup]</td>
<td>System Setup</td>
<td>Provides access to the system setup menus for changing communicator parameters.</td>
</tr>
<tr>
<td>![HART Setup]</td>
<td>HART Setup</td>
<td>Provides access to the HART setup menus for changing HART specific parameters.</td>
</tr>
<tr>
<td>![System Information]</td>
<td>System Information</td>
<td>Provides access to information regarding model number, serial number, battery level and so on.</td>
</tr>
</tbody>
</table>
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:

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

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

<table>
<thead>
<tr>
<th>Power Setup Menu Icons</th>
<th>Icon Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Backlight Timeout</td>
<td>You can set the timeout to automatically reduce the backlight to the minimum setting (10%) during periods of inactivity.</td>
</tr>
<tr>
<td>2</td>
<td>Standby Timeout</td>
<td>You can set the timeout to automatically switch the system to standby mode during periods of inactivity.</td>
</tr>
</tbody>
</table>
**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.

![Language Selection Menu](image)

**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.

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.

![Calibration Icon](image)

**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.
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 four options.

HART Setup icons

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

<table>
<thead>
<tr>
<th>HART Menu Icons</th>
<th>Icon Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HART Polling Address Range Selection</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Setup HART Tag For Display</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Offline Configuration</td>
<td>You can configure an offline device. See Advanced Tools.</td>
</tr>
<tr>
<td></td>
<td>DD Browser</td>
<td>You can review all DDs on the YHC5150X by manufacturer, device revision level, and DD revision level.</td>
</tr>
</tbody>
</table>
**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.
Shifting the highlight in HART menus (continued)

The Navigation pane has a gray highlight
The highlighted menu line item in the Navigation pane appears as gray.

Yellow 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.
Shifting the highlight in HART menus (continued)

Yellow 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.

![Yellow highlighted area]

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.

![Status line diagram]

Note: You cannot use the Status line to navigate.
Status Line for the connecting device (continued)

Status Line descriptions
The following table lists the features of the Status line.

<table>
<thead>
<tr>
<th>Status Line Part</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connected HART Device</td>
<td>This displays the model name of the HART device currently communicating with the YHC5150X Series communicator</td>
</tr>
<tr>
<td>HART Tag</td>
<td>This displays the tag information returned from the HART device.</td>
</tr>
<tr>
<td>HART Beat</td>
<td>This alternates red and gray when there is active communication.</td>
</tr>
<tr>
<td></td>
<td>This remains gray when there is no communication.</td>
</tr>
<tr>
<td>Other active HART comm</td>
<td>This displays other HART devices that are active in the HART loop.</td>
</tr>
<tr>
<td></td>
<td>“P” indicates a Primary Master.</td>
</tr>
<tr>
<td></td>
<td>“B” indicates a Bursting Slave Device in burst mode.</td>
</tr>
<tr>
<td>Battery Level</td>
<td>This displays the remaining charge (green) that battery pack has.</td>
</tr>
<tr>
<td>Current Time</td>
<td>Time of day.</td>
</tr>
</tbody>
</table>

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.
**DD files control HART menus**

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

![Parameter status column example](image)

*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 (one example of a shortcut).

1. System settings.
2. Configuration Option.
3. Display Status.
4. User shortcut(s).
5. New shortcuts.
6. Hotkey.
7. Commit Changes.

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 buttons

Explaining the Function buttons

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

<table>
<thead>
<tr>
<th>Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="System Settings" /></td>
<td>The <strong>System Settings</strong> button returns you to the system menus. The HART connection is not dropped when you select this button. Select the green HART connection bar to return to the HART menus when you have finished using the system menus. <strong>Note:</strong> Some system setting changes may require the HART connection to be re-established before the changes will occur.</td>
</tr>
<tr>
<td><img src="image" alt="New Shortcuts" /></td>
<td>The <strong>New Shortcuts</strong> button allows users to create shortcuts to HART menus.</td>
</tr>
</tbody>
</table>
| ![Select Configuration Option](image) | The Select **Configuration Option** button displays two icons:  
  - The first is the Not ready button. It looks like a folder. It displays four options:  
    - Retrieve Configuration (not active).
    - Store Configuration (not active).
    - Review Configuration (active).
    - Delete Configuration (active).  
  - The second is the Ready button. It looks like folder that has two arrows. It displays four options:  
    - Retrieve Configuration (active).
    - Store Configuration (active).
    - Review Configuration (active).
    - Delete Configuration (active). |
### Function buttons — More buttons

#### More Function buttons

<table>
<thead>
<tr>
<th>Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Hotkey button" /></td>
<td>The <strong>Hotkey</strong> 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.</td>
</tr>
</tbody>
</table>
| ![Display Status button](image) | The **Display Status** button displays the current:  
- HART device status.  
- Communication status.  
- **More status available** indicators.  

**Note:** This button is only illuminated when there is a status available. |
| ![Commit Changes button](image) | The **Commit Changes** button illuminates when you have modified parameters on the communicator and you have not committed those changes to the device.  
- Select this icon to begin the process of updating the device to match the communicator parameters.  
- View a list of parameters that have been changed by highlighting the **Commit** button and select **Accept**. |
| ![Device setup](image) | The **User Shortcut** buttons are device specific and appear when you have created shortcuts to simplify HART navigation on that device. |
Creating Shortcuts

New shortcut button
Select the New shortcuts button if you want to create your own shortcut to the current HARTNavigation 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 — Invalid shortcuts

**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.

```
Intermediate menu

Online ➤ Device setup ➤ Basic setup

Online menu (Root menu)  ➤ 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.
Advanced Tools for HART — Two Option buttons

Two Options
The YHC5150X provides you with two advanced options:

1. **DD Browser**: Use this button to review all the DDs on the YHC5150X.
2. Offline Configuration: Use this button to:
   1. Create new configurations.
   2. Modify existing configurations.

**Note**: To use both functions you can navigate the three levels.

   1. Manufacturer (first level).
   2. Device name (second level).
   3. Device revision number (third level).

Three ways to navigate in the DD Browser
Select the **DD Browser** button to navigate the levels.

Three ways to navigate through the lists in each level:

1. Select the **up** or **down** arrow keys.
2. Type one or more letters of the manufacturer’s name or device name.
3. Tap the touchscreen to select a name or device.
**Advanced Tools for HART — Two Option buttons**

**Cancel button in DD Browser**
Select the **Cancel** button (the red button with the “X”) to return to the **HART Setup Menu** from any of the levels in DD Browser.

![Cancel button in DD Browser](image)

**Note:** `<ALL 1378>` tells you that there are 1378 DD files in total.
Advanced Tools for HART — DD Browser

Use the DD Browser to view a list of manufacturers

Typing one or more letters is the fastest way to navigate to the manufacturers’ list. Use the up and down arrows to move to a specific manufacturer.

Do one of the following to view the devices by that manufacturer:

1. Select the Enter key.
2. Tap the touchscreen to select a specific one.
3. Select the right arrow key.

Navigate lists in a complete circle

1. Select the up arrow key when you are on <ALL 1378> to navigate to the end of the alphabet. (See the figure below.)
2. Or, select the down arrow key when you are at the end of the alphabet to go to the beginning of the alphabet. This feature allows you to navigate in a circle.

Note: Navigating in this way applies to all levels in the DD Browser and Offline Configuration.
Advanced Tools for HART — View device names and revisions

View a list of device names

1. When the list of device names appears, you may use the up and down arrow keys or select one or more letters to jump quickly through this list.
2. Select the Enter key or the right arrow key to view all the device revisions for that device.

![Device list example]

Note: <ALL 25> tells you that the ZYX manufacturer has 25 DD files.
View device names and revisions (continued)

View a list of device revisions
1. When the list of device revisions appears: you may use the up and down arrow keys to jump quickly through this list.
2. Select the right arrow key to highlight the DD revision for that device revision.

Note: The bottom left side of the screen displays the manufacturer’s name and the device name. The bottom right side displays the file name.

Remember: You can use the left arrow key to move back through the other levels to:

1. Device revisions.
2. Device names.

The right side of the screen (gray area)
On the Device Revision level, the right side displays details about what you selected on the left side. (See the figure above.)
**Advanced Tools for HART — Offline Configuration**

**Offline Configuration navigation**
Select this button to navigate the offline configurations. You navigate them the same way you navigated through the levels in the DD Browser.

![](image)

**Note:** If you are communicating with a physical device when you select this button, the message *Disconnect and try again* appears.

**Two ways to use the offline configuration**
After selecting the Offline Configuration button, you can:

1. Create a new configuration from:
   1. A `<BLANK>` configuration.
   2. An existing configuration on the YHC5150X and store it with a new name.

2. Edit an existing configuration.
Advanced Tools for HART — Offline Configuration

The <All> configurations on the first screen

The <All> selection:

1. New YHC5150Xs do not have saved configurations so none are listed in the <All> gray area on the right side.
2. YHC5150Xs with saved configurations:
   1. In the figure below, that YHC5150X has 23 device configurations stored on it.
   2. Select the right arrow or tap the right side to make it active.
   3. You can navigate this list in the same way as in the DD Browser.
   4. You may select an item on the right side instead of having to navigate through the manufacturers, device names, device revisions, and <BLANK> DD files.

![Configuration List Example]

Note: As you navigate to specific manufacturers, you will see the appropriate configurations for your selection. As you navigate through specific devices and revisions, you will see fewer and fewer.
Advanced Tools for HART — Offline Configuration

Creating a new configuration
Create new configurations in one of two ways:

1. Select a DD configuration from the list on the right side and Store it with a new name.
2. Navigate the lists of manufacturers, device names, device revisions, and select

   1. Select <BLANK> to create a new DD configuration offline.
   2. Select the green checkmark.

![Configuration Display]

Note: <BLANK> only appears at the last level.

Confirm you want to create an offline configuration
Select the green checkmark to confirm that you want to create a Configure Offline.

![Confirmation Display]

Note: Selecting the Cancel button takes you back to the HART Setup Menu.
Advanced Tools for HART — Waiting for the Offline Configuration

**Wait while the YHC5150X initiates the offline device**

After confirming your selection, the YHC5150X returns you to the HART Setup Menu briefly while it initiates the offline device configuration.

**Blue connection bar**

When the connection bar turns blue with the name of the offline device you selected, you can select the bar to create an offline configuration.

**Note:** The offline icon covers part of the HART icon to indicate that you are no longer connected to a physical device.
**Advanced Tools for HART—Indicators in Offline Configuration**

**Question marks and default variables in the DD file**

When a `<BLANK>` offline configuration appears, you may see:

1. **Question marks:** These appear in text fields and they mean that the DD file had been created offline and the YHC5150X doesn’t know what the values should be.
2. **List values:** The first value listed in the DD file displays as the default value.
3. **Zeros:** These may be the actual default value or they represent other possible values.

![DD File Example]

**Note:** The question marks on the title bar come from the **Tag** field.
**Advanced Tools for HART—Indicators in Offline Configuration**

**Modified parameters alert – yellow arrow**

When you change a parameter in an offline configuration, a yellow arrow appears in the *Status* column alerting you to unsaved changes.

1. Select the *Configuration Options* button in the *Functions* panel to *Store* the configuration with a name.
2. This stored configuration will appear in the first level <All> list and appropriate subsets. Additionally, the number next to <All> increases by one.
Advanced Tools for HART — Function buttons

Function buttons in Offline Configuration

During Offline Configuration, there are only four Function buttons available.

The **System Settings** button takes you to the HART Setup Menu. Press the Blue connection bar to return.

The **Configuration Options** button provides you with the same options as online configurations.

The **Display Status** button alerts you to parameters with undetermined values. See the figure below.

The **Cancel** button stops the Offline Configuration and returns to the HART Setup Menu with no offline configuration device displayed.

**Note:** Only when you create a configuration offline — like the one in the figure below — does an undetermined value appear. An undetermined value is a common offline state when there are conditions on which the parameter is dependent (conditional attributes).

**Recommendation:** You should change these parameters before storing this configuration.

![Configuration Example](image)

When you download a DD or configuration from **FC Manager**, you must turn off the YHC5150X and turn it on to see these new files on the YHC5150X.
HART Communication with the YHC5150X 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.
Connecting the YHC5150X to Smart Transmitters with HART technology

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: Yokogawa supplies a HART lead kit complete with mini-grabber connections and a 250 Ω load resistor with each unit.

Part number ZA900529-00014

Wiring diagram: Loop resistance < 250 Ω
For low loop resistance (less than 250 Ω), a 250 Ω resistor may be needed in the loop to insure reliable HART communication. Yokogawa supplies a 250 Ω load resistor in the form of a standard adapter (part number ZA36821). Refer to the following diagram for connection details.
Loop resistance > 250 Ω

Wiring diagram: loop resistance > 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.

![Polling Address 0](image)

Gray connection bar: Initiating
When the bar is gray, the currently selected device is in the process of connecting.

![Initiating Device](image)

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.

![@13 Found: 3](image)
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.
Specific and Generic HART communication (continued)

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 µSD Memory Card
You may store the current parameter settings for a connected HART device as a file on the µSD 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:

   1. **As Found** (device settings before modification).
   2. **As Left** (device settings after modification).

   **Note:** The configuration file is saved in the communicator µSD 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.

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 Ω and less than 1100 Ω. If less than 250 Ω, then use the supplied 250 Ω load resistor in series with the loop (see the diagram in the Connecting the YHC5150X to Smart Transmitters 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.

1. 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.
2. 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:
   
   1. See the section Updating communicator software.
   2. 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
Hazardous area use

Intrinsically Safe Model
The YHC5150XX 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:

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Location</th>
<th>Non-hazardous Area</th>
<th>Hazardous Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>YHC5150</td>
<td>General Purpose</td>
<td>Yes</td>
<td>NO</td>
</tr>
<tr>
<td>YHC5150X</td>
<td>Intrinsically Safe</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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.
- Yokogawa reserves the right to revise the Intrinsic Safety Control Drawing without notice.
- Contact Yokogawa for the current Intrinsic Safety Control Drawing. (phone 800.888.6400)
Double check the Intrinsic Safety Control Drawing

For Intrinsically Safe model YHC5150XX, 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 YHC5150X Series requires service and must be returned for repair, please contact Yokogawa at the numbers listed below.

To assist us in processing your repair request, please have the Model & Serial Number of the unit available when you call. This information is located on the YHC5150X Series label.

<table>
<thead>
<tr>
<th>Method</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone:</td>
<td>1-800-888-6400</td>
</tr>
<tr>
<td>Web:</td>
<td><a href="http://www.yokogawa.com/us">www.yokogawa.com/us</a></td>
</tr>
</tbody>
</table>

E-mail: We need the following information in the email:

- Look on the YHC5150X Series label to find the Model and the Serial number.
- Give a brief description of the problem.
- Send the e-mail to: meters-instr@us.yokogawa.com

Return Material Authorization

Do not send any unit for repair unless you contacted Yokogawa 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 Yokogawa 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.

Ship the box to

Yokogawa Corporation of America
2 Dart Road
Newnan, GA. 30265
Appendices

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 at the 100 % backlight setting (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 (¾ in. center) for HART communication.
Communication (serial cable to computer port) / Battery charging. Connection via charging cradle.

APPROVALS: YHC5150XX (ATEX/I.S.)

ATEX Intrinsically Safe
Ex Il 1 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, li = 200mA, Ci = 0, Li=0, Vi=30V,
Um (USB) = 5V, Um (battery) = 5V

CE compliance

APPROVALS: YHC5150X (general purpose)

CE compliance

MEMORY:
Dedicated µSD flash memory card for YHC5150X 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**

<table>
<thead>
<tr>
<th>If there is any...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Deformation,</td>
<td>• Unplug the charging cradle.</td>
</tr>
<tr>
<td>• Cracks,</td>
<td>• Never use it again.</td>
</tr>
<tr>
<td>• Damage to the charging cradle,</td>
<td></td>
</tr>
<tr>
<td>• Damage to the power cord, or</td>
<td></td>
</tr>
<tr>
<td>• Damage to the power adapter.</td>
<td></td>
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</tbody>
</table>

**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 2012/19/EU**

**European Union only**

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

- This product complies with the WEEE Directive (2012/19/EU) marking requirement.
- The following marking indicates that you must not discard this electrical / electronic product in domestic household waste.

![WEEE symbol]

**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 it in domestic household waste.
- When disposing of products in the EU, contact your local Yokogawa 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

**Yokogawa Part numbers**

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

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1W-ZA900529-00014</td>
<td><strong>HART Test Lead Kit</strong> — included with unit. This is the standard banana plugs, mini-grabbers, 250 Ω shunt resistor.</td>
</tr>
<tr>
<td>1W-ZA36821</td>
<td><strong>Standard size 250 Ω shunt resistor</strong> — included with unit. This is required for HART low resistance loops.</td>
</tr>
<tr>
<td>1W-Z9P790</td>
<td><strong>Soft carrying case</strong> — included with unit. This is a custom, soft case with adjustable shoulder strap and HART lead compartment.</td>
</tr>
<tr>
<td>1W-Z9P791</td>
<td><strong>Hand strap</strong> — included with unit.</td>
</tr>
<tr>
<td>1W-Z9A820-4</td>
<td><strong>YHC5150X Series Lithium Ion Battery Pack</strong> — included with unit.</td>
</tr>
<tr>
<td>1W-Z9A879</td>
<td><strong>YHC5150X Series battery charging kit</strong> — included with unit. 100 – 240 Vac, 50/60 Hz. It includes charging cradle, power cord, and USB cable.</td>
</tr>
<tr>
<td>1W-Z9P802</td>
<td><strong>USB cable: Type A to B.</strong> It is 2 m length (6.60 feet) — included with unit. You must have this to update the unit.</td>
</tr>
<tr>
<td>1W-Z9P822</td>
<td><strong>YHC5150X Series battery charging power cord</strong> — included with unit.</td>
</tr>
<tr>
<td>1W-Z9P823</td>
<td><strong>7/64 in. Hex key wrench</strong> — included with unit. This fits the battery pack screws.</td>
</tr>
<tr>
<td>1W-Z9P780</td>
<td><strong>YHC5150X Series µSD system memory card</strong> — included with unit. The YHC5150X software is installed on it.</td>
</tr>
<tr>
<td>1W-Z9A1100</td>
<td><strong>Kickstand Replacement Kit</strong> — included with unit.</td>
</tr>
</tbody>
</table>
**Recommendations for your battery**

**Make it last longer:**

1. Charge it often.

   **Note:** Disregard “battery memory,” “battery training,” and “fully discharge the battery periodically” comments people may make. These concepts have nothing to do with the lithium-ion battery in the YHC5150X.

2. Keep it cool.

   **Note:** High temperatures will reduce the charge it can hold.

   **Temperature Specifications**

<table>
<thead>
<tr>
<th></th>
<th>°F - Fahrenheit</th>
<th>°C – Celsius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>-40 to 140</td>
<td>-40 to 60</td>
</tr>
<tr>
<td>Operating</td>
<td>14 to 122</td>
<td>-10 to 50</td>
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</table>


**Storing your YHC5150X for more than 30 days?**

1. Charge your battery to 30% to 60%.
2. Remove your battery from the YHC5150X and you help make it last longer.
3. We recommend that you take the battery out of storage, put it in the YHC5150X, and put it in the charger once every six months and charge it to 50%.

**Two factors affect your battery’s life in storage**

1. Keep it in a cool storage location. High temperatures reduce the amount of time it can hold a charge.
2. Make sure it has a 30% to 60% charge before you turn it off.

   **Note:** Don’t charge it to 100% before putting it in storage.

**Important:** Failing to follow the tips above will lead to a permanent reduction in the number of hours your battery can hold a charge.
Intrinsic Safety Control Drawing