



# Installation Manual For the Edge E-Series Communications Management Unit (CMU)

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These instructions are not designed to imply or replace any operating or safety rules.  
It is the responsibility of the installer to understand and follow all company safety practices.  
Review "Cautions" section of this manual before proceeding.

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## 1. Abbreviations & Acronyms

ADS	Amsted Digital Solutions Inc.
CMU	Communications Management Unit
GNSS	Global Navigation Satellite System
IS	Intrinsic Safety
SCV	Supply Chain Visibility – ADS asset monitoring web portal
SMIP	Smart Mesh Internet Protocol
TARA	Totally Autonomous Reporting Agent – ADS web site for CMU and WSN setup.
WSN	Wireless Sensor Node – Remote sensor device

## 2. Unpacking the CMU

**If using a knife to cut the tape, do not let the blade extend more than ½ inch inside of the cardboard box.**

1. Inspect shipping box(s) to make sure there is no damage.
2. Carefully unpack the shipping box making sure to open the top of the box. There will be instruction guide(s) for modules associated with the system order.
3. Open shipping box(s) and verify that the internal contents match the shipping receipt. Contact Amsted Digital Support Center (Appendix D1) in the event of any above problems.
4. CMUs that are packaged as a set with Wireless Sensor Nodes must be kept together with their set.

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### 3. Powering on the CMU

**Note:** The CMU was powered down for shipping and must be powered on before TARA association and mounting to asset.

1. If the device has a red label on the top of the case, the CMU device is powered on by removing the red label and magnet. Set the magnet and red label aside for use after mounting.
2. CMUs without magnets and red labels are configured to be powered on using a Near Field Communication (NFC) reader (supplied by ADS). The ADS Windows applications (CoreMessaging or CoreProvisioning) must be used to power on the CMU.

**WARNING: The NFC tag reader must not be used in potentially explosive atmospheres. If using the NFC tag reader, power on the CMU in a non-hazardous area.**

**ATTENTION: Le lecteur d'étiquette NFC ne doit pas être utilisé dans des atmosphères potentiellement explosives. Si vous utilisez le lecteur d'étiquettes NFC, mettez la CMU sous tension dans une zone non dangereuse.**

## 4. Associating the CMU to an asset

Use the TARA web site to associate the CMU to an asset.

Navigate to the website below and log in using the supplied credentials

<https://portal.amsteddigital.net/lonxliveMassTARA/Default.aspx>

**Note:** If you receive the error message 'Invalid User Name / Password.', please contact Support Center at ADS to enable TARA access.

North America: 1-800-621-8442 [supportcenter@amsteddigital.com](mailto:supportcenter@amsteddigital.com)

Europe: +1 33 1 49 07 23 65 [supportcenter@amsteddigital.eu](mailto:supportcenter@amsteddigital.eu)

1. After logging in, you should see the following screen. This is the 'Install' tab for use when installing a device on a new asset. If replacing an existing CMU on an asset, please see the Uninstall instructions in section 7.A.1.

**The existing CMU must be uninstalled prior to associating the new CMU.**

The screenshot shows the TARA 1.5 web interface. At the top, there is a navigation bar with the Amsted logo and the title 'TARA 1.5'. Below the navigation bar, there are several tabs: 'Install', 'Uninstall', 'Replace', 'WSM', 'Detailed Status', 'Change Battery', 'Inspection', and 'About'. The 'Install' tab is selected. The main content area is titled 'Install Single Device' and contains a form with the following fields:

- Enter Serial Number :
- Enter Car Name :
- Choose Customer:
- Choose Fleet:
- 

Below the 'Install Single Device' form, there is another section titled 'Install Multiple Devices'. This section contains a table with four columns: 'Serial Number', 'Car Name/Number', 'Customer List', and 'Fleet List'. Each column has five rows of input fields. The 'Customer List' and 'Fleet List' columns have dropdown menus with 'Select Customer' and 'Select Fleet' respectively. An 'Install' button is located at the bottom right of this section.

2. If installing only one device, fill in the serial number of the CMU getting installed, the car mark and number (AAR format: ABCD 123456, with a separating space and leading zeros for numbers with less than 6 digits), and choose the customer name and fleet from the dropdown. Press the 'Install' button to record the association.

Note: European customers may enter the asset name in the European numeric format (12 12 1234 123-1)

Note: The TARA application will only register CMUs that have posted messages within the last 48 hours. The CMU self-test will take more than 3 minutes if cellular signals have poor signal quality. Allow an hour for several cellular reconnection attempts if the TARA application reports serial number errors.

Note:

The following message should be displayed:-

'Success! Unit <Serial Number> is now installed on <Asset Name> associated to <Customer>. If this is not correct - Contact customer support at ADS - 484-653-2600.'

If the above message is not displayed and an error message displayed, please capture the message and send to Support Center at ADS for further investigation. (Appendix D1)

3. If installing multiple CMUs, please use the section at the bottom of the page. Up to five (5) CMUs can be installed at one time, but if replacing existing CMUs the existing CMUs must be uninstalled prior to associating the new CMUs in section 7A1 Success messages will be displayed for all installed devices and they will also be removed from the table as they are processed. Unsuccessful installs will remain in the table for correction, with corresponding error messages displayed.

**Ansted**  
DIGITAL SOLUTIONS
TARA 1.5

Install
Uninstall
Replace
WSM
Detailed Status
Change Battery
Inspection
About

**Install Single Device**

Enter Serial Number :

Enter Car Name :

Choose Customer:

Choose Fleet:

**Install Multiple Devices**

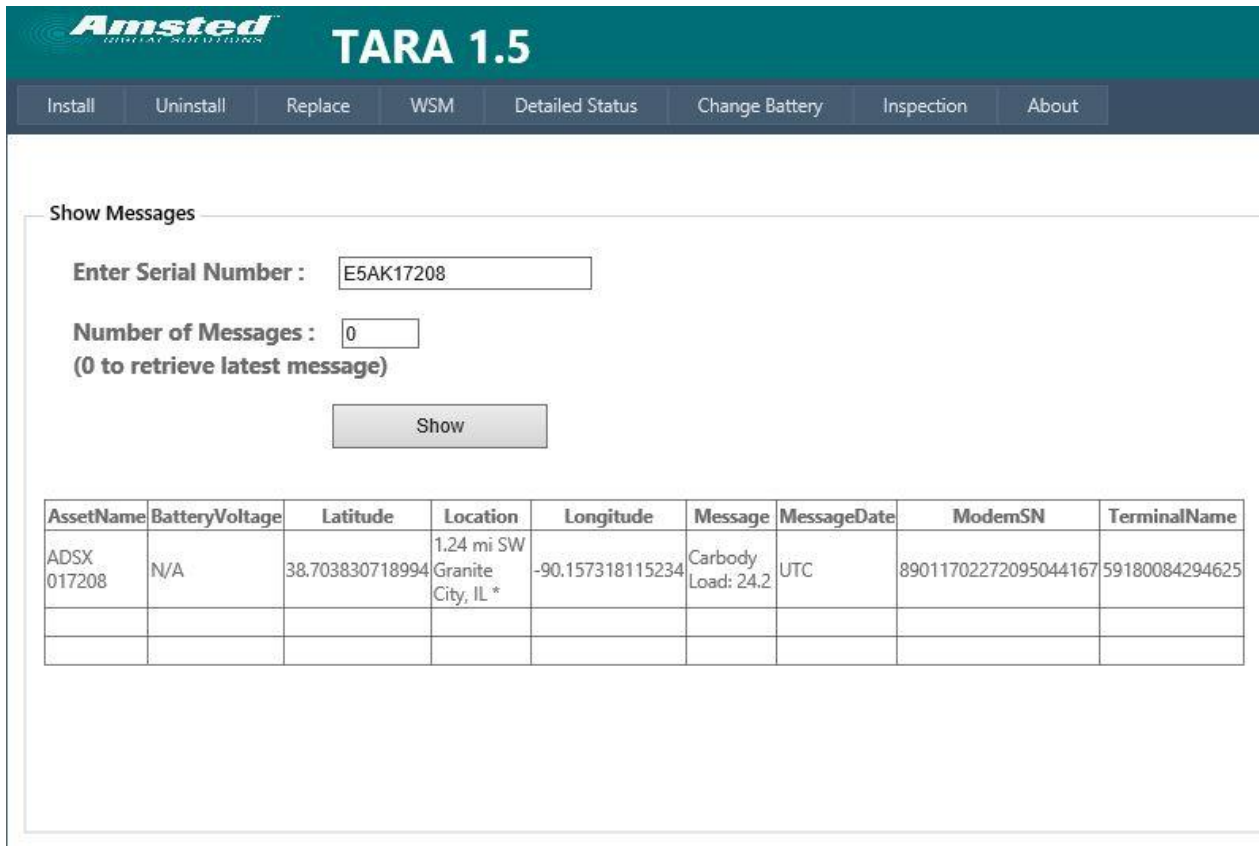
Serial Number	Car Name/Number	Customer List	Fleet List
<input type="text" value="E5AG12345"/>	<input type="text" value="ADSI 123456"/>	<input type="text" value="Select Customer"/>	<input type="text" value="Select Fleet"/>
<input type="text" value="E5AA54321"/>	<input type="text" value="ADSI 888888"/>	<input type="text" value="Select Customer"/>	<input type="text" value="Select Fleet"/>
<input type="text"/>	<input type="text"/>	<input type="text" value="Select Customer"/>	<input type="text" value="Select Fleet"/>
<input type="text"/>	<input type="text"/>	<input type="text" value="Select Customer"/>	<input type="text" value="Select Fleet"/>
<input type="text"/>	<input type="text"/>	<input type="text" value="Select Customer"/>	<input type="text" value="Select Fleet"/>

## 5. Mounting CMU device to an asset

See mechanical installation drawings in Appendices A and B for specific mounting details.

## 6. Validating CMU Association to an Asset

The CMU association to an asset may be validated using the “Detailed Status” tab. Enter the asset serial number. Enter “1” for number of messages. Click on the box labeled “Show”. Contact Support Center at ADS if messages are not reported. (Appendix D1)



The screenshot shows the Amsted TARA 1.5 software interface. At the top, there is a navigation bar with the Amsted logo and the text 'TARA 1.5'. Below the navigation bar, there are several tabs: 'Install', 'Uninstall', 'Replace', 'WSM', 'Detailed Status', 'Change Battery', 'Inspection', and 'About'. The 'Detailed Status' tab is selected. Below the tabs, there is a section titled 'Show Messages'. This section contains a form with the following fields:

- Enter Serial Number :** A text input field containing the value 'E5AK17208'.
- Number of Messages :** A text input field containing the value '0'.
- (0 to retrieve latest message)** A label below the 'Number of Messages' field.
- Show** A button to submit the form.

Below the form, there is a table with the following data:

AssetName	BatteryVoltage	Latitude	Location	Longitude	Message	MessageDate	ModemSN	TerminalName
ADSX 017208	N/A	38.703830718994	1.24 mi SW Granite City, IL *	-90.157318115234	Carbody Load: 24.2	UTC	89011702272095044167	59180084294625

## 7. Miscellaneous

### A. Other TARA Web Site Commands

The TARA web site can also be used to send other TARA commands such as Uninstall, Replace, (WSM) wireless sensor monitor, Detailed Status, Change Battery. Below is a short description of each function.

#### 1. Uninstall

Used when uninstalling CMU devices from assets.

Enter the serial number and asset name for the device to be uninstalled. Check the RMA check box if the device is to be returned to ADS, and press the 'Uninstall' button. If the RMA checkbox is selected, the unit will be moved to the ADS-uninstalled fleet, otherwise it will be moved to the customer-uninstalled fleet. Note that the asset name entered must be in the AAR format 'ABCD 123456' unless the customer is designated as a European customer. Note: European customers may enter the asset name in the European numeric format (12 12 1234 123-1).

The screenshot shows the TARA 1.5 web interface. At the top, there is a navigation bar with the following tabs: Install, Uninstall, Replace, WSM, Detailed Status, Change Battery, Inspection, and About. The main content area is divided into two sections:

**Uninstall Single Device**

Enter Serial Number :

Enter Car Name :

Check this box if device will be returned to IONX under an RMA.   
This will remove the device from the customer's fleet in the database.

**Uninstall Multiple Devices**

Serial Number	Car Name/Number	Return Asset (RMA)
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>

For multiple uninstalls, up to 5 devices can be uninstalled using the 'Uninstall Multiple Devices' table at the bottom of the web page above.



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## **2. Replace**

Replace is no longer supported.

If replacing an existing CMU on an asset, please see the Uninstall instructions in section 7.A.1. The existing CMU must be uninstalled prior to associating the new CMU.

## **3. WSM (wireless sensor monitor)**

WSM is no longer supported.

## **4. Detailed Status**

See Section 6

## **5. Change Battery**

See Appendix E

## **6. Inspection**

Inspection no longer supported

## **B. Translations**

Translations available upon request.

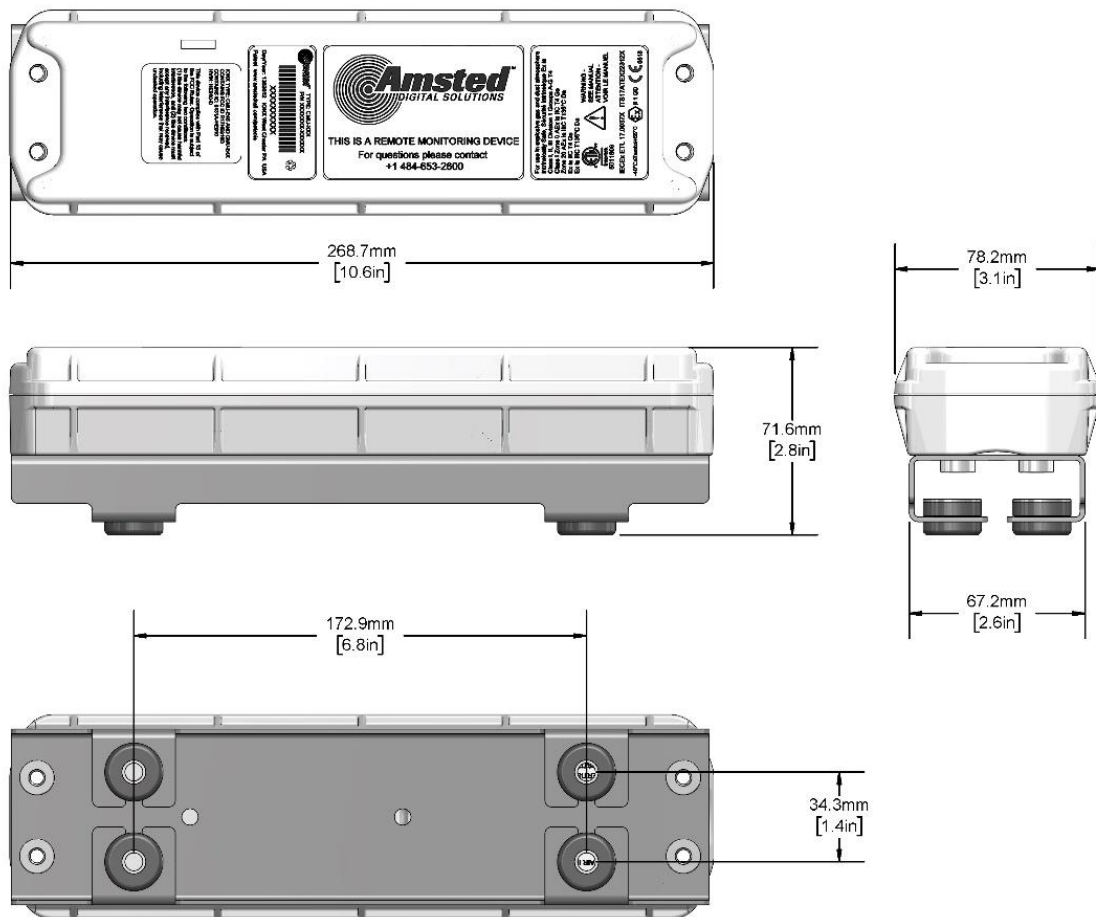
Traductions disponibles sur demande.

## Appendix A: Mounting E4S and E5S

### A1. Dimensions






**WARNING:** Mounting bracket is required for types CMU-E4S and CMU-E5S when commissioning for use in potentially explosive atmosphere. ADS part numbers 302262 and 301712, Isolation mount brackets for ExS, are approved for use in explosive atmosphere. Approval is pending for brackets 303644 and 303815.

**ATTENTION:** Le support de montage est requis pour les types CMU-E4S et CMU-E5S lors de la mise en service pour une utilisation dans une atmosphère potentiellement explosive. Le numéros de pièce ADS 302262 et 301712, supports de montage d'isolation pour ExS, sont approuvé pour une utilisation en atmosphère explosive. L'approbation est en attente pour les supports 303644 et 303815.

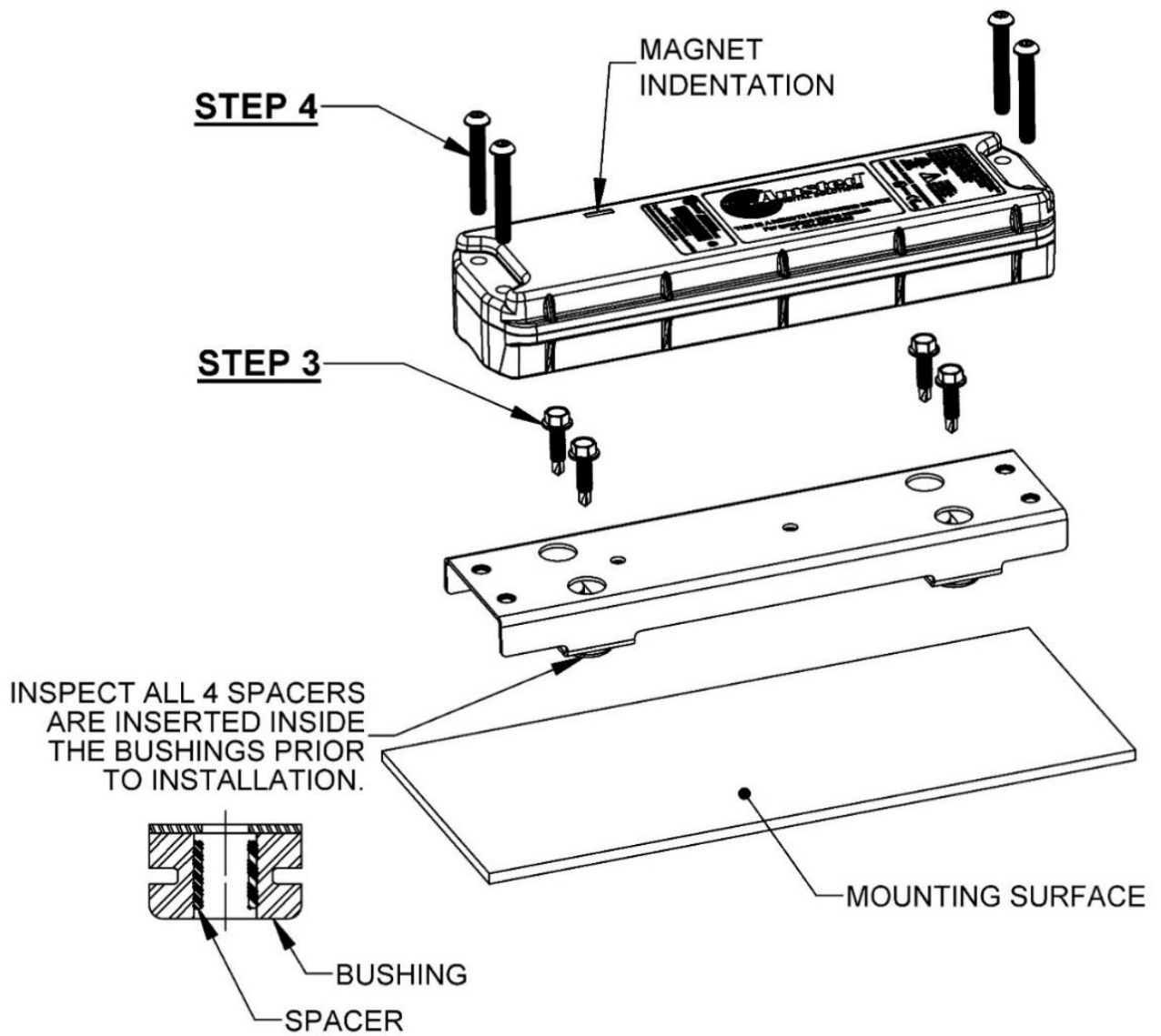


## A2. Screw-Mount Bracket

### Required Tools/Materials




Tool Name (Part No)	Description	
T27 Tamper Resistant Torx bit		Securing CMU case to mounting plate
Female square drive hex bit holder		Securing CMU case to mounting plate
9.5mm [3/8"] Magnetic Drive Socket		Starting self-drilling screws
4.5mm or [3/16"] Metal Drill Bit		Drilling pilot holes (Optional), should use a stop collar set to 9.5mm [3/8"] or less
Ratchet Head Torque Wrench set to 5.5 N-m [50 in-lb]		Securing screws
9.5mm [3/8"] Socket		Securing self-drilling screws

1. Choose a location (on the B-end of the railcar) for the CMU bracket that orients the CMU lid toward the sky to promote good Global Navigation Satellite System performance. Ensure mounting surface is free of imperfections that may prevent the bracket from mounting flush to the surface.
2. If mounting on a tank car, measure the distance between the outer jacket and the inner tank. Drill a 4.5mm [3/16"] test hole at one of the mounting screw locations. Use a stop collar set to 9.5mm [3/8"] on the drill bit. Use a small rod or probe to determine the distance between the outer jacket and the inner tank. Do not proceed if distance is less than 28.5 mm [1 1/8"].
3. Fasten bracket to asset using 4 self-drilling screws provided shown in figure below. Torque screws to 5.1-5.6 Nm [45-50 In-lbs].
4. Fasten CMU to bracket using 4 machine screws provided shown in figure below. Torque screws to 5.1-5.6 Nm [45-50 In-lbs].
5. **Upon completion of all optional WSN sensors and the CMU mounting**, place a magnet on top of the CMU at the magnet indentation for 20 seconds to force a cellular call from the CMU. The magnet from the red label may be reused for this.



### A3. Magnetic-Mount Bracket with Safety Tether

#### Required Tools/Materials for Safety Tether

Tool Name (Part No)	Description	
Electricians' Crimping Pliers		Crimps ferrules to wire rope
1/16 inch or 1.6 mm Ferrules - 2 per tether		Ferrules for wire rope
1/16 inch or 1.6 mm Wire Rope – 1.5m [5 ft] each		Wire rope for safety tether

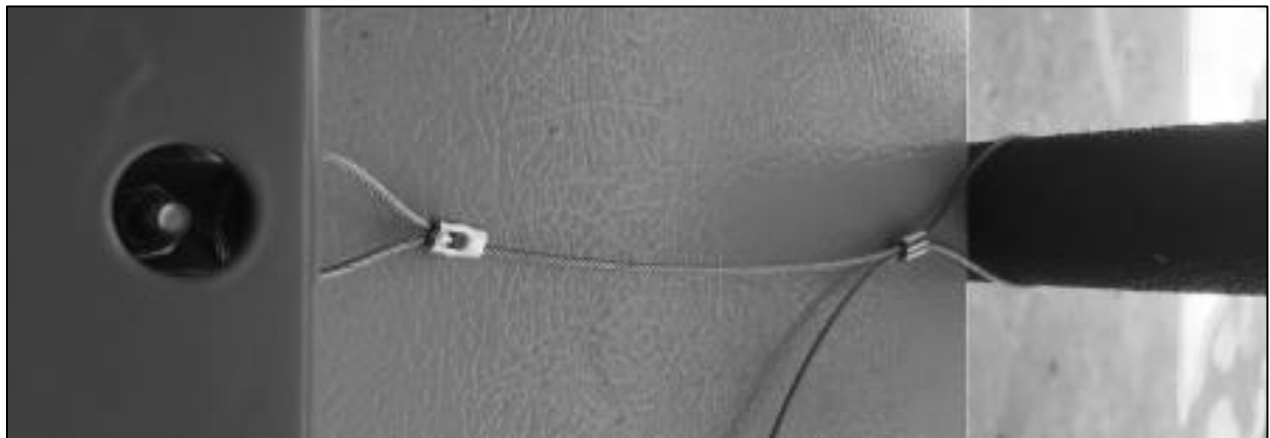
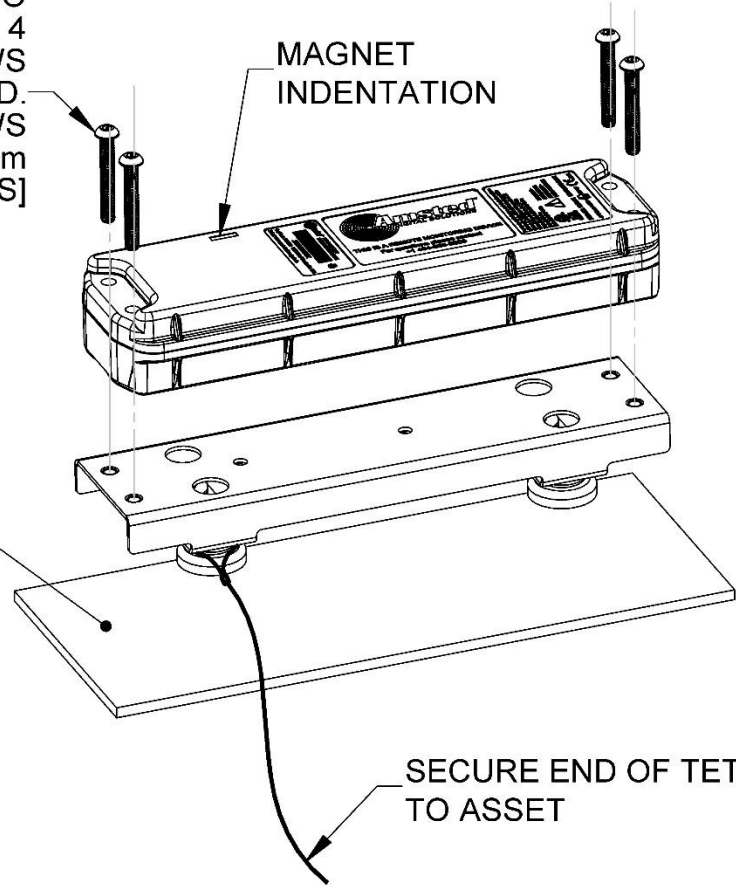
1. Choose a location (on the B-end of the railcar) for the CMU bracket that orients the CMU lid toward the sky to promote good Global Navigation Satellite System performance. Ensure there is a tie off point for the safety tether. Ensure mounting surface is free of imperfections that may prevent the magnets from mounting flush and securing to the asset's mounting surface.
2. Thread the wire rope through the ferrule and around one of the bracket feet, and back through the ferrule as shown on next page. Make the wire loop taut around the bracket foot so the safety tether cannot be removed over the magnet. Use electrician pliers to crimp the ferrule. Various electrician pliers are acceptable.
- 3 Take caution that the tether does not cause a tripping hazard or get tangled in other equipment.
4. If the entire length of wire rope is not needed, pull the excess wire through the second ferrule, crimp, and cut off any excess wire rope.
5. Fasten CMU to bracket using 4 machine screws provided. Torque screws to 5.1-5.6 Nm [45-50 In-lbs].
6. Upon completion of all optional WSN sensors and the CMU mounting, place a magnet on top of the CMU at the magnet indentation for 20 seconds to force a cellular call from the CMU. The magnet from the red label may be reused for this.

FASTEN UNIT TO  
BRACKET USING 4  
MACHINE SCREWS  
PROVIDED.  
TORQUE SCREWS  
TO 5.1-5.6 N-m  
[45-50 IN-LBS]

MAGNET  
INDENTATION

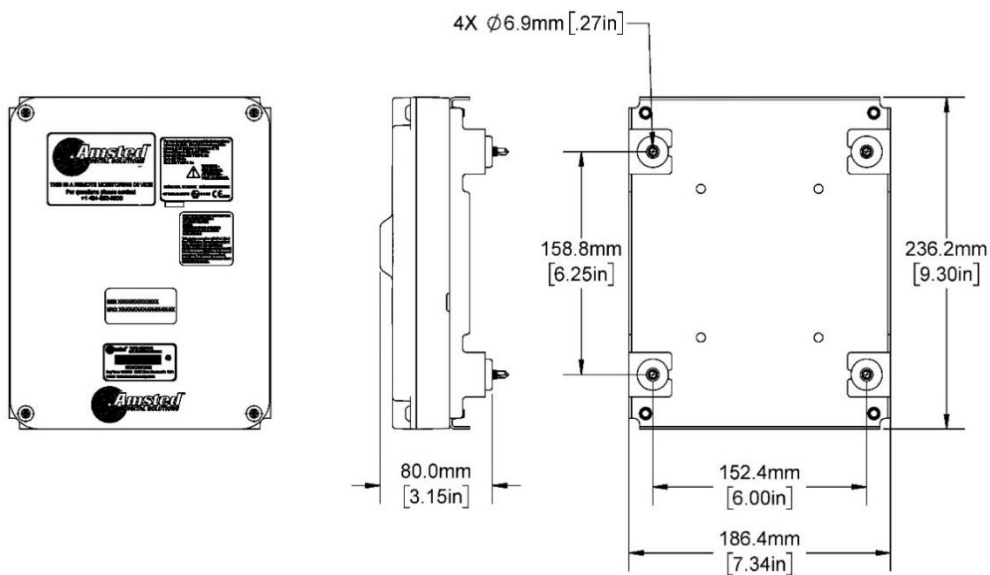
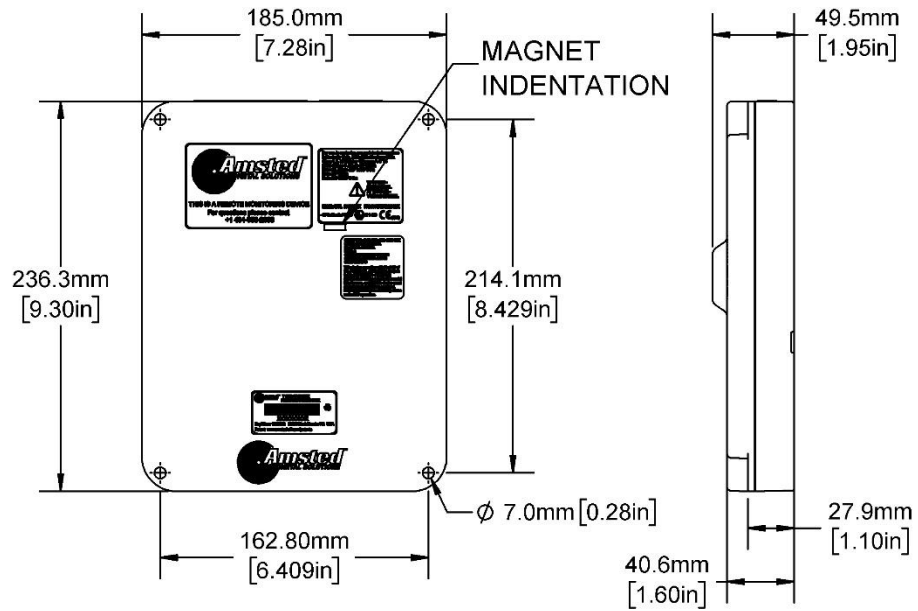
MOUNTING  
SURFACE

SECURE END OF TETHER  
TO ASSET




## Appendix B: Mounting E4X, E5X, and E6X

### B1. Dimensions



## B2. Screw-Mount Bracket

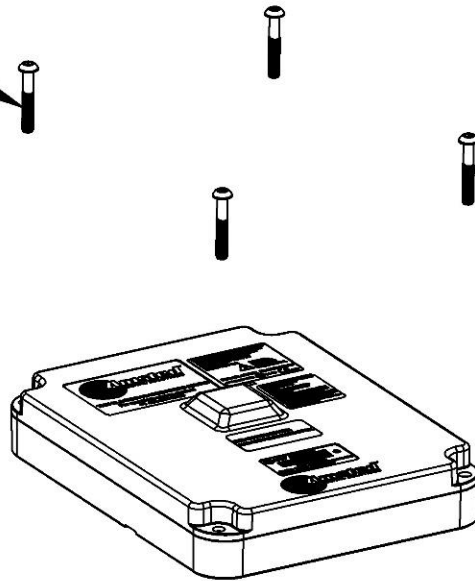
### Required Tools/Materials

Tool Name (Part No)	Description	
T27 Tamper Resistant Torx bit		Securing CMU case to mounting plate
Female square drive hex bit holder		Securing CMU case to mounting plate
9.5mm [3/8"] Magnetic Drive Socket		Starting self-drilling screws
4.5mm or [3/16"] Metal Drill Bit		Drilling pilot holes (Optional), should use a stop collar set to 9.5mm [3/8"] or less
Ratchet Head Torque Wrench set to 5.5 N-m [50 in-lb]		Securing screws
9.5mm [3/8"] Socket		Securing self-drilling screws

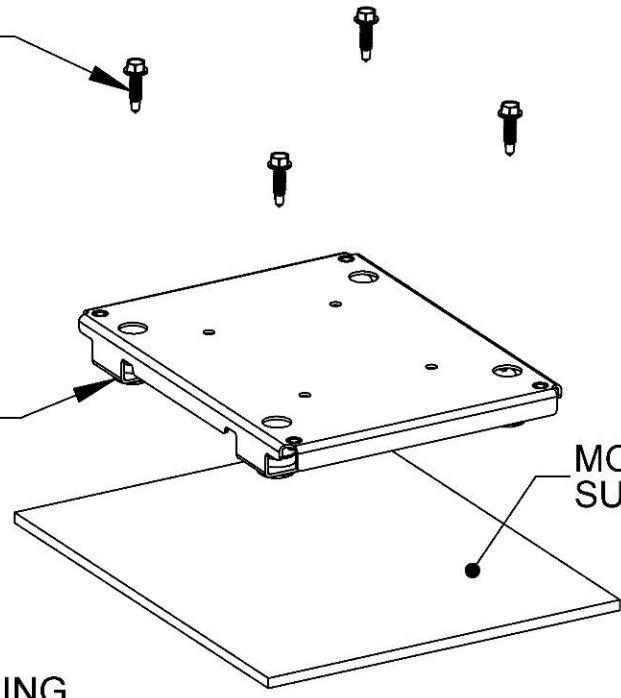
1. Choose a location (on B end of the railcar) for the CMU bracket that orients the CMU lid toward the sky to promote good Global Navigation Satellite System performance. Ensure mounting surface is free of imperfections that may prevent the bracket from mounting flush to the surface.
2. If mounting on a tank car, measure the distance between the outer jacket and the inner tank. Drill a 4.5mm [3/16"] test hole at one of the mounting screw locations. Use a stop collar set to 9.5mm [3/8"] on the drill bit. Use a small rod or probe to determine the distance between the outer jacket and the inner tank. Do not proceed if distance is less than 28.5 mm [1 1/8"].
3. Fasten bracket to asset using 4 self-drilling screws provided shown in figure below. Torque screws to 5.1-5.6 Nm [45-50 In-lbs].
4. Fasten CMU to bracket using 4 machine screws provided shown in figure below. Torque screws to 5.1-5.6 Nm [45-50 In-lbs].
5. Upon completion of all optional WSN sensors and the CMU mounting, place a magnet on top of the CMU at the magnet indentation for 20 seconds to force a cellular call from the CMU. The magnet from the red label may be reused for this.



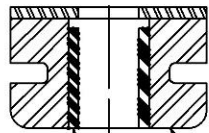
**STEP 4**



**STEP 3**



INSPECT ALL 4 SPACERS  
ARE INSERTED INSIDE  
THE BUSHINGS PRIOR  
TO INSTALLATION.






BUSHING  
SPACER

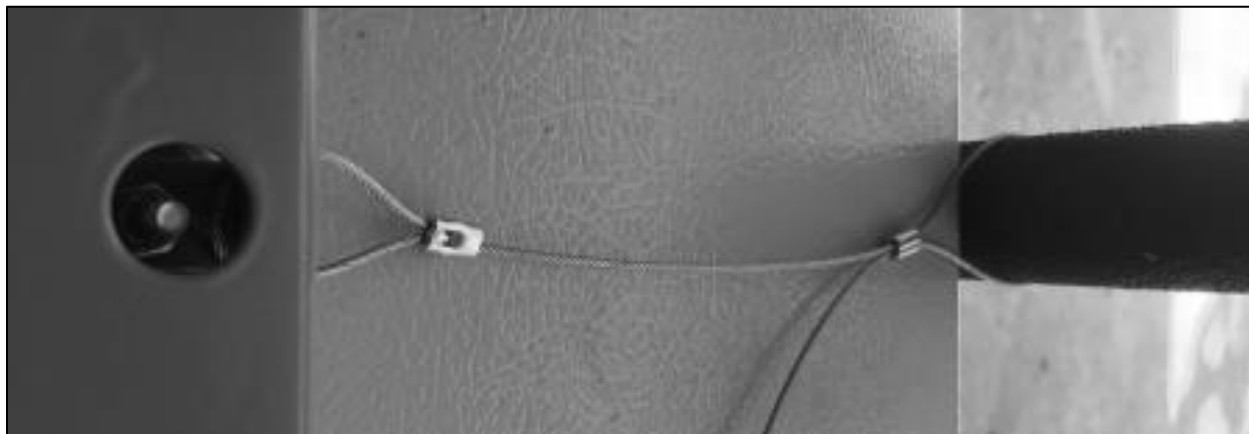
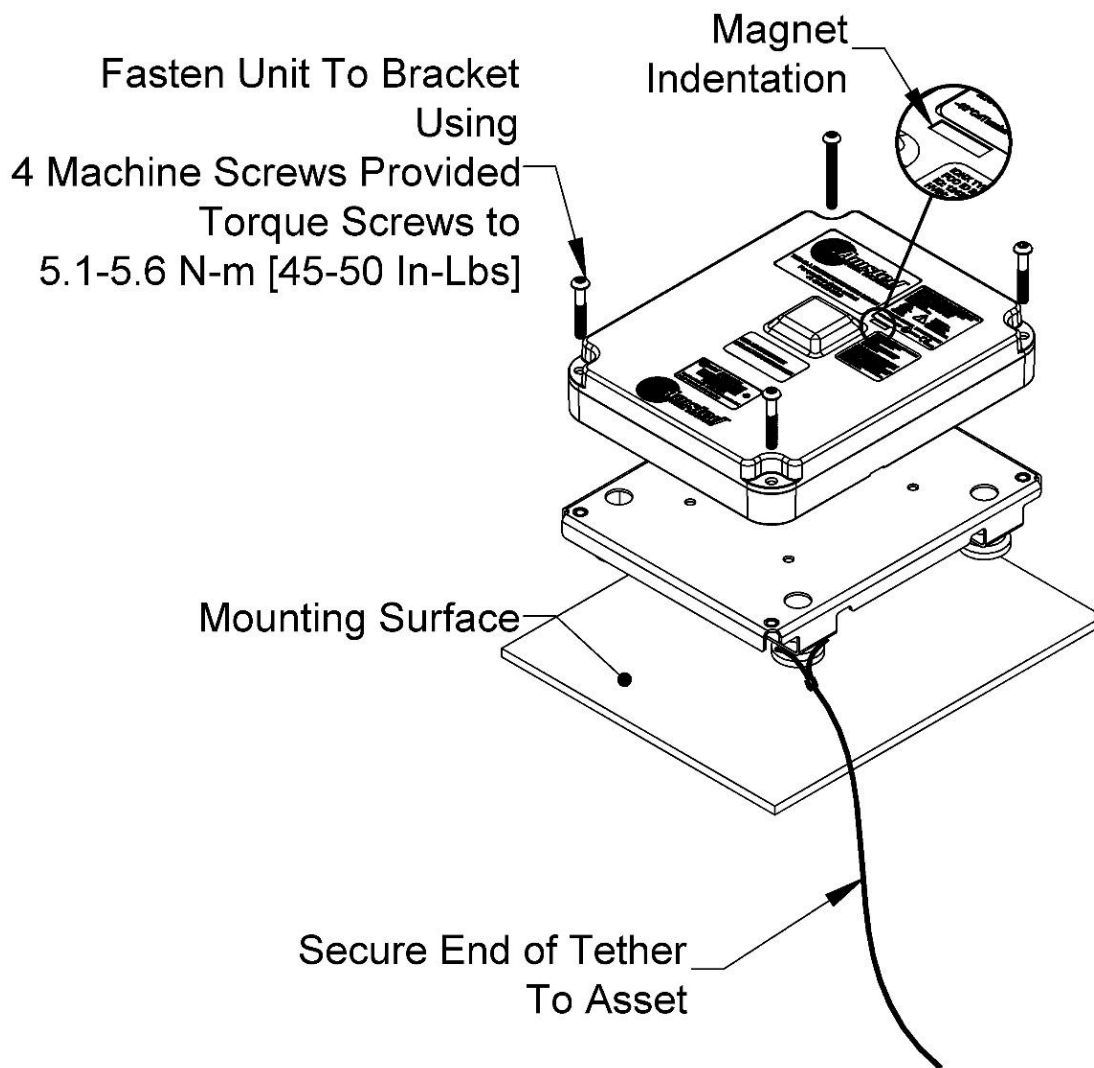
MOUNTING  
SURFACE

### B3. Magnetic-Mount Bracket with Safety Tether

#### Required Tools/Materials for Safety Tether

Tool Name (Part No)	Description
Electricians' Crimping Pliers	 Crimps ferrules to wire rope
1/16 inch or 1.6 mm Ferrules - 2 per tether	 Ferrules for wire rope
1/16 inch or 1.6 mm Wire Rope – 1.5m [5 ft] each	 Wire rope for safety tether

1. Choose a location (on the B-end of the rail car) for the CMU bracket that orients the CMU lid toward the sky to promote good Global Navigation Satellite System performance. . Ensure there is a tie off point for the safety tether. Ensure mounting surface is free of imperfections that may prevent the magnets from mounting flush and securing to the asset's mounting surface.
2. Thread the wire rope through the ferrule and around one of the bracket feet, and back through the ferrule as shown below. Make the wire loop taut around the bracket foot so the safety tether cannot be removed over the magnet. Use electrician pliers to crimp the ferrule. Various electrician pliers are acceptable
3. Take caution that the tether does not cause a tripping hazard or get tangled in other equipment.
4. If the entire length of wire rope is not needed, pull the excess wire through the second ferrule, crimp, and cut off any excess wire rope.
5. Fasten CMU to bracket using 4 machine screws provided. Torque screws to 5.1-5.6 Nm [45-50 In-lbs].
6. Upon completion of all optional WSN sensors and the CMU mounting, place a magnet on top of the CMU at the magnet indentation for 20 seconds to force a cellular call from the CMU. The magnet from the red label may be reused for this.



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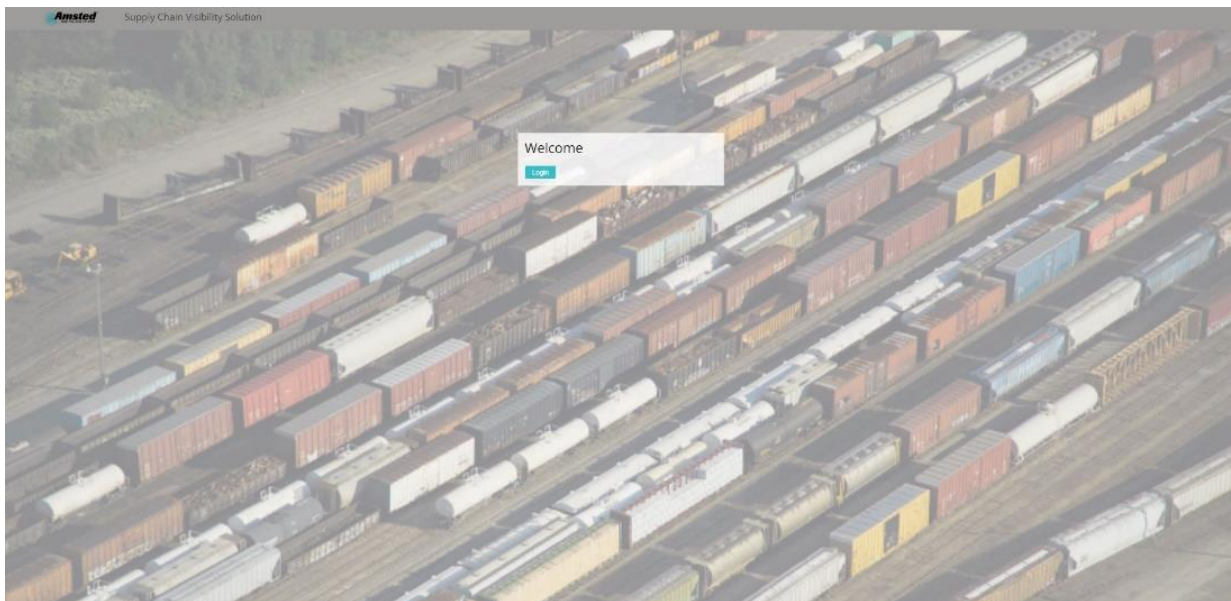
## Appendix C: Supply Chain Visibility Tool

The SCV tool uses message data stored on ADS servers to provide asset utilization, status and health information for fleet management.

Amsted Digital Support Center has to set up a user account and assign a fleet name or multiple fleet names to the user account.

The SCV tool has separate user guides.

Use Firefox or Google Chrome to navigate to <https://portal.amsteddigital.net/SCV/Home>.  
Use the “Login” icon.



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## Appendix D: General Information

### D1. Support Center

Amsted Digital Solutions provides customer service for CMU and WSN issues at their support center. A Representative can be reached at:

North America: 1-800-621-8442 [supportcenter@amsteddigital.com](mailto:supportcenter@amsteddigital.com)

Europe: +1 33 1 49 07 23 65 [supportcenter@amsteddigital.eu](mailto:supportcenter@amsteddigital.eu)

### D2. Forcing the CMU to call

If there is a problem verifying messages on the SCV website or through the TARA website, CMUs can be forced to call by applying a magnet to the reed switch indentation for 20-seconds, and then removing. The CMU should send a report within 15-minutes.



If the CMU serial number is associated to a car name through the TARA website, but no reports are received on the website, contact the ADS Support Center.

Alternatively, the ADS CoreMessaging application can be used with an NFC reader to start a cellular call.



## Appendix E: Battery Replacement

### Required Tools/Materials

Tool Name (Part No)	Description
T-20 Torx driver with torque capability of 22-24 in/lbs	 A photograph of a T-20 Torx driver with a black handle and a silver shaft.
7.2V Power Supply or Wall Wart	 A photograph of a black power supply unit with a coiled black cable and two prongs at the bottom.

**Warning:** Case can build up electrostatic charge. Clean the case by spraying with water. Do not use cloth to clean the CMU. Remove CMU to area known to be non-hazardous.

**ATTENTION:** Le boîtier peut accumuler une charge électrostatique. Nettoyez le boîtier en pulvérisant de l'eau. N'utilisez pas de chiffon pour nettoyer le CMU. Retirez la CMU dans une zone connue comme non dangereuse.

**WARNING:** Do not open CMU in potentially explosive atmosphere.

**ATTENTION:** N'ouvrez pas la CMU dans une atmosphère potentiellement explosive.

1. Turn the CMU unit over and remove the T-20 Torx screws (ADS P/N 300842) that hold the lid in place. See Figures below.

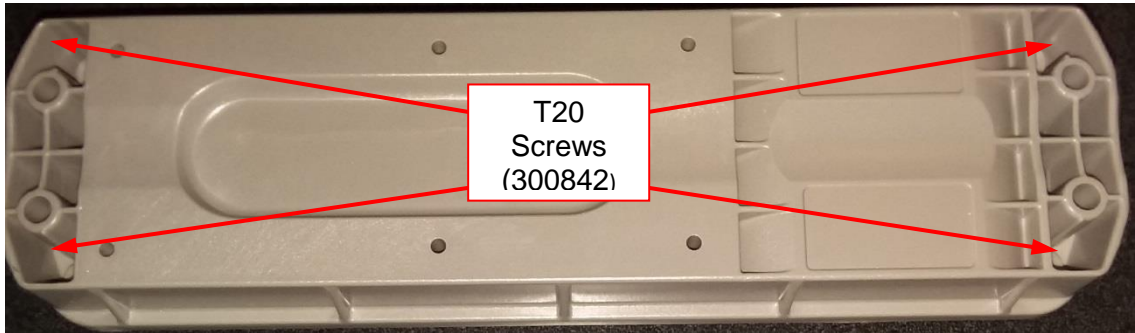


Figure E1

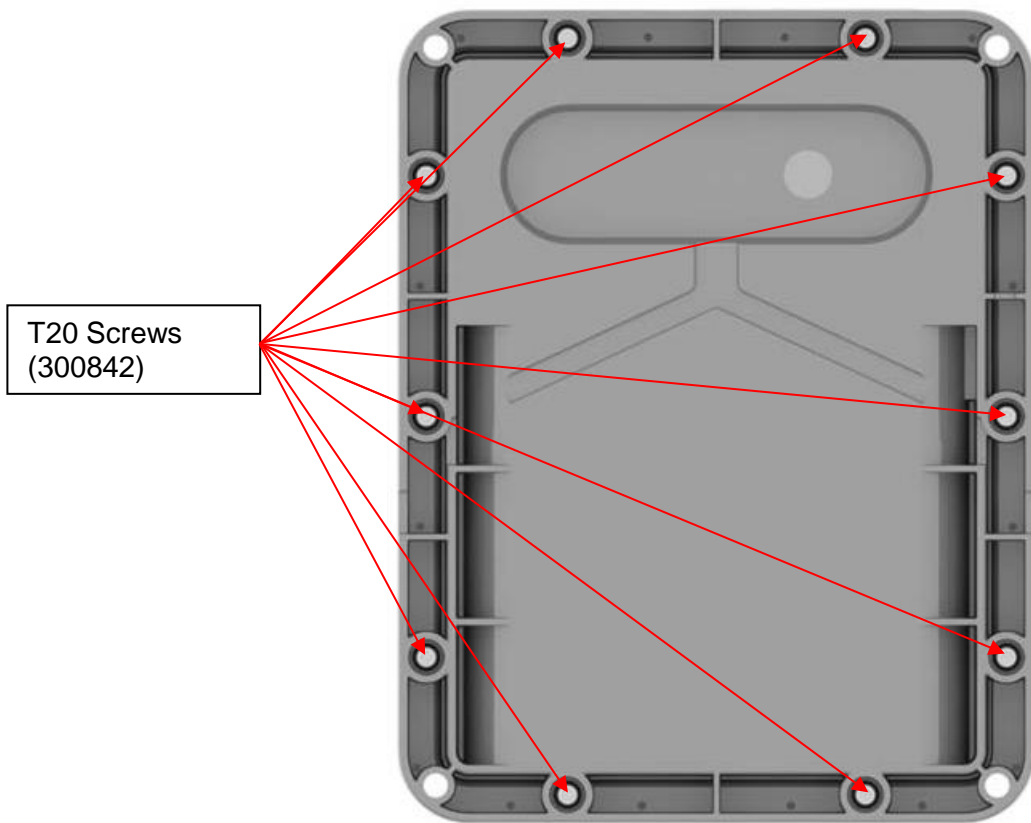


Figure E2

2. Carefully turn the unit over, being sure to hold the lid in place, as you do so.
3. Remove the lid, and set it aside. Inspect the enclosure and seal as directed by Appendix F: Inspection of Equipment for Return to Service.

**Note: Make sure the correct serial number sticker on lid stays with the correct CMU board.**



**Do NOT swap lids or bases. Do NOT work on more than one device at a time.**



Figure E3

4. Carefully lift the power cable from beside the main board and disconnect the battery.



Figure E4

5. Remove the battery pack, and keep battery pack with lid for step 8.

**WARNING: DO NOT PLACE USED HAZARDOUS BATTERY PACKS IN THE TRASH. THESE SHOULD BE TAKEN TO A RECYCLING FACILITY THAT CAN PROPERLY DISPOSE OF THEM.**

**ATTENTION: NE PLACEZ PAS LES PACKS DE BATTERIE DANGEREUX UTILISES DANS LA POUBELLE. CES DERNIERS DOIVENT ETRE UTILISES DANS UNE INSTALLATION DE RECYCLAGE QUI PEUT LES DISPOSER CORRECTEMENT.**

6. Connect a 7.2V power supply or wall wart to the power cable of the main board for a **minimum of 5 minutes** (preferably more) to pre-charge the main board and prevent errors once the new battery is connected(see Figure E5, below).

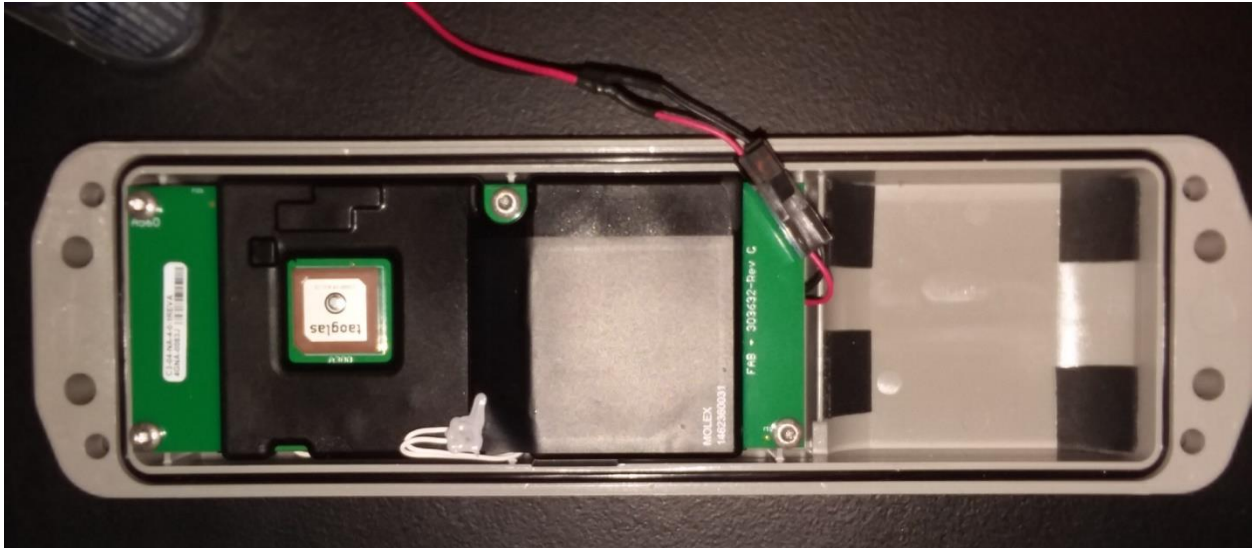


Figure E5

7. Disconnect the power supply and select a new battery pack to install.

**WARNING: BATTERY PACK 303382: USE ONLY WITH ADS MODELS E4S and E5S.**

**WARNING: BATTERY PACK 303406: USE ONLY WITH ADS MODELS E4X, E5X, and E6X.**

**ATTENTION: BATTERY PACK 303382: N'UTILISER QUE SUR LES MODÈLES ADS E4S et E5S.**

**ATTENTION: BATTERY PACK 303406: À UTILISER UNIQUEMENT SUR LES MODÈLES ADS E4X, E5X et E6X.**

8. Navigate to the website address below and log in using the ADS supplied credentials.

<https://portal.amsteddigital.net/IonxliveMassTARA/Default.aspx>

- Log in.
- Select the “Change Battery” tab shown below.
- Enter CMU Serial Number, Old Battery Serial Number and New Battery Serial Number.

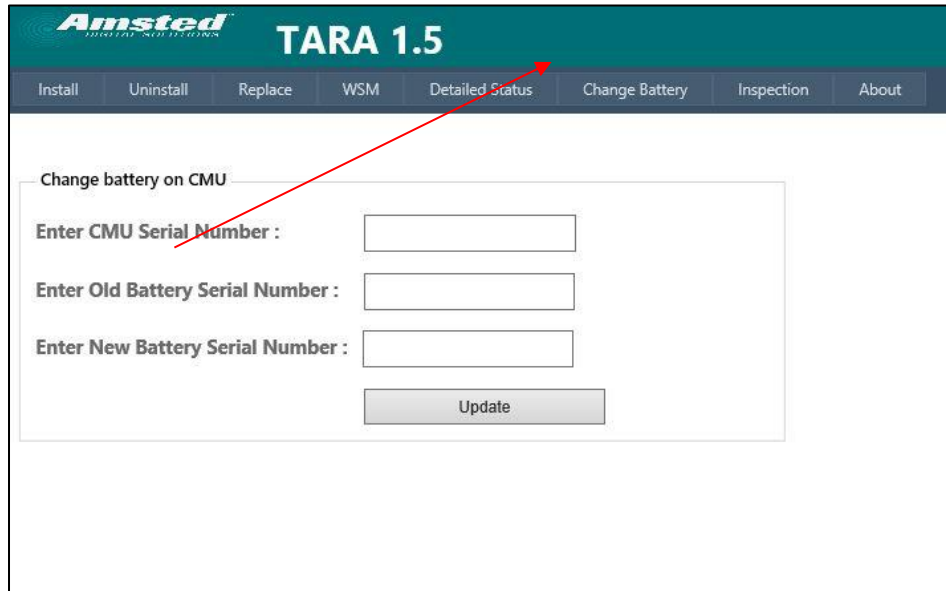


Figure E6

9. Install the new battery pack above into battery chamber so that the connector is facing main board, as shown in Figure E7 below.



Figure E7

10. Connect the battery to the main board.

11. The CMU will wake up, self-test, get a position fix, and transmit messages to the ADS servers. Confirm that a device activation message was received using ADS TARA application.

12. Tuck the power cable and NFC antenna wires into the case.
13. Place the lid on the base enclosure.

**WARNING: ENSURE NO CABLES ARE PINCHED BETWEEN THE LID AND BASE WHEN COVERING.**

**ATTENTION: ASSUREZ-VOUS QUE LES CÂBLES NE SONT PAS BRISÉS ENTRE LE COUVERCLE ET LA BASE LORS DE LA COUVERTURE.**

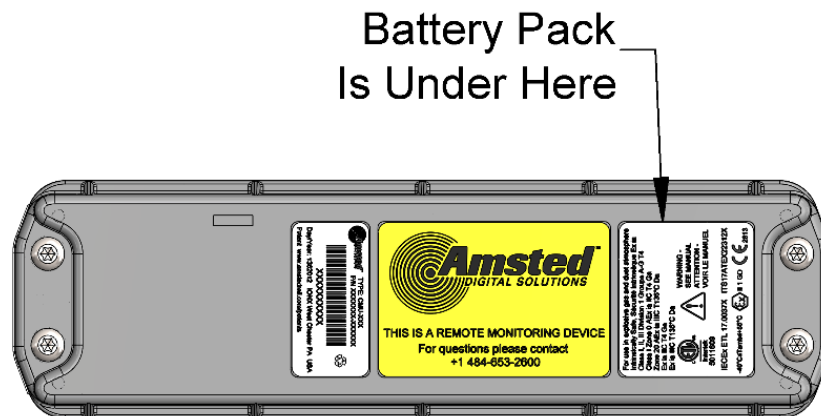


Figure E8

14. Inspect the enclosure and seal as directed by Appendix F: Inspection of Equipment for Return to Service.
15. Press down on the lid around the edges to insure the O-Ring is fully seated.
16. Turn assembly over and attach the lid to the base using the T-20 torx screws that were removed.

**WARNING: SLOWLY TURN THE SCREWS COUNTER-CLOCKWISE UNTIL YOU FEEL THEM CLICK INTO THE EXISTING THREAD BEFORE TIGHTENING TO ENSURE HOLE IS NOT RE-THREADED. FAILURE TO DO THIS WILL STRIP THE THREADS.**

**MISE EN GARDE: TOURNER LENTEMENT LES VIS DANS LE SENS ANTIHORAIRE JUSQU'À CE QUE VOUS SENTEZ CLIQUER DANS LE FILET EXISTANT AVANT DE LE SERRER POUR VOUS ASSURER QUE LE TROU NE SOIT PAS RETIRÉ. LE FAIT DE NE PAS FAIRE CECI FERMERA LES FILS.**

17. Tighten screws to a torque of 2.5-2.7 N-m [22.0-24.0 in-lbs].

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## Appendix F: Inspection of Equipment for Return to Service

1. Enclosure base and lid shall be free of cracks.
2. O-ring shall be free of cracks. If any part of the o-ring is removed, the o-ring gland must be cleaned to be free of particulates.
3. Clean top edge of enclosure base and o-ring surface with damp cloth.
4. Clean enclosure lid o-ring bump-out with damp cloth.
5. Inspect power wires. Insulation shall be free of cracks.
6. Inspect NFC antenna and wire. Both shall be free of cracks.
7. Inspect circular Gore vent under enclosure base. Gore vent shall show no evidence of peeling, puncture, or cracking.
8. E6X version only: Inspect coax cable and antenna. Both shall be free of cracks.

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## Appendix G: Compliance Requirements

E-Series CMU and WSN-4 series wireless sensors are produced for Amsted Digital Solutions, Inc. by:

IONX, LLC  
300 Willowbrook Ln, Suite 320  
West Chester, PA 19382  
USA

### Intrinsic Safety Compliance

Conforms To:

UL STDS 913, 60079-0, & 60079-11

Certified To:

CSA STD C22.2 # 157, 60079-0, 60079-11, & 25

### Electromagnetic Compliance

For Part Numbers C04S2IS-NA3010 and C04X8IS-NA3010:

FCC ID RI7HE910 applies.

For Part Numbers C05S2IS-NA3010 and C05X8IS-NA3010:

FCC ID 2ADEPCMUE5-A applies.

FCC ID RI7HE910 applies.

For Part Number C06X8IS-NA3010:

FCC ID 2ADEPCMUE6-A applies.

FCC ID RI7HE910 applies.

For Part Number C04S2IS-NA4011 and C04X8IS-NA4011:

FCC ID RI7ME910C1WW applies.

For Part Number C05S2IS-NA4011 and C05X8IS-NA4011:

FCC ID 2ADEPCMUE5-B applies.

FCC ID RI7ME910C1WW applies.

For Part Number C06X8IS-NA4011:

FCC ID 2ADEPCMUE6-B applies.

FCC ID RI7ME910C1WW applies.

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

**NOTE: THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.**

**NOTE: This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.**

---

Pour le Numéro de Pièce C04S2IS-NA3010 et C04X8IS-NA3010:  
Numéro de certification d'Industrie Canada IC: 5131A-HE910 s'applique.

Pour le Numéro de Pièce C05S2IS-NA3010 et C05X8IS-NA3010:  
Numéro de certification d'Industrie Canada IC: 12436A-CMUE5A s'applique.  
Numéro de certification d'Industrie Canada IC: 5131A-HE910 s'applique.

Pour le Numéro de Pièce C06X8IS-NA3010:  
Numéro de certification d'Industrie Canada IC: 12436A-CMUE6A s'applique.  
Numéro de certification d'Industrie Canada IC: 5131A-HE910 s'applique.

Pour le Numéro de Pièce C04S2IS-NA4011 et C04X8IS-NA4011:  
Numéro de certification d'Industrie Canada IC: 5131A-ME910C1WW s'applique.

Pour le Numéro de Pièce C05S2IS-NA4011 et C05X8IS-NA4011:  
Numéro de certification d'Industrie Canada IC: 12436A-CMUE5B s'applique.  
Numéro de certification d'Industrie Canada IC: 5131A-ME910C1WW s'applique.

Pour le Numéro de Pièce C06X8IS-NA4011:  
Numéro de certification d'Industrie Canada IC: 12436A-CMUE6B s'applique.  
Numéro de certification d'Industrie Canada IC: 5131A-ME910C1WW s'applique.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Cet appareil n'a pas d'antenne externe.

REMARQUE: Cet équipement est conforme aux limites d'exposition aux rayonnements RF d'Industrie Canada établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à une distance minimale de 20 cm entre le radiateur et toute partie de votre corps.

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For Part Numbers C04S2IS-NA3010 and C04X8IS-NA3010:  
Industry Canada Certification Number IC: 5131A-HE910 applies.

For Part Numbers C05S2IS-NA3010 and C05X8IS-NA3010:  
Industry Canada Certification Number IC: 12436A-CMUE5A applies.  
Industry Canada Certification Number IC: 5131A-HE910 applies.

For Part Number C06X8IS-NA3010:  
Industry Canada Certification Number IC: 12436A-CMUE6A applies.  
Industry Canada Certification Number IC: 5131A-HE910 applies.

For Part Number C04S2IS-NA4011 and C04X8IS-NA4011:  
Industry Canada Certification Number IC: 5131A-ME910C1WW applies.

For Part Number C05S2IS-NA4011 and C05X8IS-NA4011:  
Industry Canada Certification Number IC: 12436A-CMUE5B applies.  
Industry Canada Certification Number IC: 5131A-ME910C1WW applies.

For Part Number C06X8IS-NA4011:  
Industry Canada Certification Number IC: 12436A-CMUE6B applies.  
Industry Canada Certification Number IC: 5131A-ME910C1WW applies.

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

This device has no external antenna.

NOTE: This equipment complies with the Industry Canada RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.



# Appendix H: Declaration of Conformity



## Declaration of Conformity



We, IONX LLC, 300 Willowbrook Lane, West Chester, PA 19382 USA declare under the sole responsibility that our Communications Management Units CMU-E4S, CMU-E4X, CMU-E5S, CMU-E5X, AND CMU-E6X, to which this declaration relates, are in conformity with the following standards when installed per the device installation requirements.

**1. ATEX Directive 2014/34/EU**

- Equip. Gr. II Cat. 1G, Ex ia IIC T4 Ga, -40°C ≤ Ta ≤ 55°C
- Equip. Gr. II Cat. 1D, Ex ia IIIC T135°C Da

Intertek Cortland NY

EC Type Examination, Certificate Number: ITS17ATEX22312X

IECEx Certificate Number: IECEx ETL 17.0037X

The design was assessed to the below standards:

IECEx	ATEX
IEC 60079-0:2011 Ed 6+CORR1+CORR2	EN 60079-0:2012+A11:2013
IEC 60079-11:2011 Ed 6+CORR1	EN 60079-11:2012



- II 1 GD
- 40°C ≤ Tamb ≤ 55°C



2813

**2. North America**



5011609

Intertek Cortland NY

- Class I Division 1 Group A,B,C,D T4
- Class II, III Division 1 Group E,F,G T135°C
- Class I Zone 0, AEx ia IIC T4 Ga
- Class II Zone 20, AEx ia IIIC T135°C Da
- 40°C ≤ Tamb ≤ 55°C

Canada Requirements	USA Requirements
CSA C22.2 No 157-92 +G1;U2	UL 913 (8th Ed.)+R:16Oct2015
CSA-C22.2 No 60079-0:15	ANSI/UL 60079-0:13+R:20Oct2017
CSA-C22.2 No 60079-11:14	ANSI/UL 60079-11:13+R:28Mar2014
CSA C22.2 No. 25-1966 +G1	

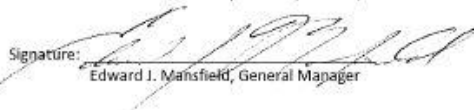
**3. Radio Equipment Directive 2014/53/EU**

EN 55016-2-3 (EN 55022)	Radiated Emissions, 30 MHz to 6 GHz	Part 2-3
EN 61000-4-2	Electrostatic Discharge	Part 4-2
EN 61000-4-3	Radiated Immunity, 27 MHz to 1 GHz, 1.4 to 2.5 MHz	Part 4-3
EN 61000-4-6	Electromagnetic compatibility testing and measurement techniques	Part 4-6
EN 50121-3-2:2006	Railway applications – Electromagnetic compatibility – Part 3-2: Rolling Stock – Apparatus	Part 3-2, 2006

**4. Other Standards**

ETSI EN 301 489-1 V 1.9.2 (2011-09)	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements	Part 1, 2008
ETSI EN 300 330 V2.1.1 (2017)	Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz	
CFR, Title 47	Code of Federal Regulations, Telecommunications Radio Frequency Devices	Part 15
CFR, Title 47	Code of Federal Regulations, Telecommunications, Part 2, Frequency Allocations and Radio Treaty Matters; General Rules and Regulations	Part 2
ANSI C63.4:2003	American National Standard, Methods of Measurement of Radio - Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003
ICES-003	Industry Canada, Interference - Causing Equipment Standard	Issue 6
ISO 7637-2: 2004	Road vehicles - Electrical disturbances from conduction and coupling -Part 2: Electrical transient conduction along supply lines only	Part 2, 2004
CISPR 16	Specification for Radio Disturbance and Immunity Measuring Apparatus and Methods	
MIL-PRF-15733	Filters and Capacitors, Radio Frequency Interference, General Specifications for	H
AAR S-9401	AAR, Manual of Standards and Recommended Practices, Section K –Part I, Railway Electronics	Section K, Part 1, 2005
Directive 2011/65/EU	ROHS Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment. First year of CE marking 2018.	

The manufacturer bears full responsibility for the production conformity to the requirements stated in the declaration.

Signature:   
Edward J. Mansfield, General Manager

Date: 24 Feb 2020

# Cautions

These instructions are not designed to imply or replace any operating or safety rules. It is the responsibility of the installer to understand and follow all company safety practices.

**⚠ WARNING** In order to comply with hazardous classification, only those items specifically listed can be used and must be used only as shown. Substitution of components may affect intrinsic safety.

**⚠ WARNING** Installation shall be carried out in accordance with the applicable code of practice by suitably trained personnel.

**⚠ WARNING** Repair of this equipment shall be carried out in accordance with the applicable code of practice.

**⚠ WARNING** Any machining, drilling, and/or sanding related to the installation of this system should be pre-approved by the authorized department before work is started.

**⚠ WARNING** If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised.

**⚠ WARNING** RF Device: Unit cannot be painted or coated with any material. Coating can adversely affect the performance of the device. Unit shall be masked appropriately if post installation coating is required.

**⚠ WARNING** EXPLOSION HAZARD: The equipment temperature Class is T4 and only certified for use in ambient temperatures. Product is rated from  $-40^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$  and should not be used outside this range in an explosive environment.

**⚠ WARNING** POTENTIAL ELECTROSTATIC CHARGING HAZARD: Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. This is particularly important if the equipment is installed in a zone 0 location.


**⚠ WARNING** POTENTIAL ELECTROSTATIC CHARGING HAZARD: Suitable for hose down cleaning only. Do not clean unit with a dry cloth. Static can be generated when two dry parts are rubbed together.


**⚠ WARNING** DO NOT OPEN WHEN EXPLOSIVE ATMOSPHERE IS PRESENT. Battery replacement shall be done in an area known to be non-hazardous. Use only replaceable battery pack ADS model 303382 (19 mAH) or 303406 (76 mAH). See battery replacement procedure in Appendix E.


**⚠ WARNING** Products contain Primary Lithium batteries. Proper disposal procedures are required at end of life conditions. Use local regulatory disposal method for lithium Thionyl chloride batteries. For example, disposal procedure 49 CFR 173.185 or Directive 2006/66/CE.

# Avertissements


Ces instructions ne sont pas conçues pour impliquer ou remplacer des règles d'utilisation ou de sécurité. Il est de la responsabilité de l'installateur de comprendre et de suivre toutes les pratiques de sécurité de l'entreprise. Instructions complètes pour utiliser CMU en français en attente.


 **AVERTISSEMENT** Afin de se conformer à la classification des matières dangereuses, seuls les éléments spécifiquement énumérés peuvent être utilisés et doivent être utilisés uniquement comme indiqué. La substitution de composants peut affecter la sécurité intrinsèque.


 **AVERTISSEMENT** L'installation doit être effectuée conformément au code de pratique applicable par du personnel dûment formé.

 **AVERTISSEMENT** La réparation de cet équipement doit être effectuée conformément au code de pratique applicable.


 **AVERTISSEMENT** Tout usinage, perçage et / ou ponçage lié à l'installation de ce système doit être préalablement approuvé par le service autorisé avant le début des travaux.

 **AVERTISSEMENT** Si l'équipement est susceptible d'entrer en contact avec des substances agressives, il est de la responsabilité de l'utilisateur de prendre les précautions appropriées qui empêchent qu'il soit affecté de manière négative, garantissant ainsi que le type de protection n'est pas compromis.


 **ATTENTION** Dispositif RF: L'unité ne peut être peinte ou revêtue d'aucun matériau. Le revêtement peut nuire aux performances de l'appareil. L'unité doit être masquée de manière appropriée si un revêtement post-installation est requis.


 **ATTENTION** DANGER D'EXPLOSION: La classe de température de l'équipement est T4 et seulement certifiée pour une utilisation à des températures ambiantes. Le produit est évalué de -40°C à +55°C et ne doit pas être utilisé en dehors de cette plage dans un environnement explosif.

 **ATTENTION** DANGER D'EXPLOSION: L'installation doit être effectuée conformément au code de pratique en vigueur par du personnel qualifié.

 **ATTENTION** DANGER DE CHARGE ÉLECTROSTATIQUE POTENTIEL: Dans certaines circonstances extrêmes, les pièces non métalliques incorporées dans l'enveloppe de cet équipement peuvent générer un niveau de charge électrostatique capable d'amorçage. Par conséquent, l'équipement ne doit pas être installé dans un endroit où les conditions externes favorisent l'accumulation de charges électrostatiques sur ces surfaces. Ceci est particulièrement important si l'équipement est installé dans un emplacement de la zone 0.

 **ATTENTION** DANGER DE CHARGE ÉLECTROSTATIQUE POTENTIEL: Convient uniquement au nettoyage par tuyau. Ne nettoyez pas l'appareil avec un chiffon sec. Statique peut être généré lorsque deux parties sèches sont frottées ensemble.

 **ATTENTION** NE PAS OUVRIR LORSQU'UNE ATMOSPHÈRE EXPLOSIVE EST PRÉSENTE. Le remplacement de la batterie doit être effectué dans une zone connue comme non dangereuse. Utilisez uniquement une batterie remplaçable ADS modèle 303382 (19 mAH) ou 303406 (76 mAH). Voir la procédure de remplacement de la batterie à l'annexe E.

 **ATTENTION** Les produits contiennent des batteries au lithium primaire. Des procédures d'élimination appropriées sont requises en fin de vie. Utiliser une méthode d'élimination réglementaire locale pour les piles au lithium-chlorure de thionyle. Par exemple, procédure d'élimination 49 CFR 173.185 ou Directive 2006/66/CE.

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## DOCUMENT REVISION HISTORY AND APPROVALS

Document History and Approvals are electronic and stored in Arena.



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