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Certification Exhibit

FCC ID: TEB-HUNTSU864
IC: 5931A-HUNTSU864

FCC Rule Part: 15.247
IC Radio Standards Specification: RSS-210

ACS Project Number: 15-0043

Manufacturer: Landis+Gyr Technologies, LLC
Models: 0864, 26-1552, 26-1553

Manual

Gridstream RF
High Speed Modular
FOCUS AX Module
Data Sheet

Publication: 98-9112 Rev AA

Landis+Gyr+

Draft 5.8.13

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Gridstream RF High Speed Modular FOCUS AX Module Data Sheet			
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Landis+Gyr 6436 County Road 11 Pequot Lakes, MN 56472 Website: www.landisgyr.com E-mail: solutionsupport.na@landisgyr.com Technical Support: 1-888-390-5733	Copyright© 2013 Landis+Gyr All rights reserved.		

Gridstream RF High Speed Modular FOCUS AX Data Sheet

General

The Gridstream RF High Speed Modular FOCUS AX communication module is designed to accommodate Landis+Gyr FOCUS AX meters for use in residential and light industrial services. The FOCUS AX Advanced Function meter is an Active Energy kWh/kW/TOU Meter. The meter features Digital Multiplication Measurement Technique, meets ANSI standards for performance and utilizes ANSI C12.19 protocol (between meter and AMR device).

Figure 1 - 1. The Gridstream RF High Speed Modular FOCUS AX Endpoint

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FCC Compliance Information

Models: 0864, 26-1552, 26-1553
FCC ID: TEB-HUNTSU864
IC: 5931A-HUNTSU864

Compliance Statement (Part 15.19)

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.

CAUTION: Changes or modifications not expressly approved by Landis+Gyr for compliance could void the user's authority to operate the equipment.

Endpoint Location

To comply with FCC's RF exposure limits for general population/uncontrolled exposure, the antenna(e) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.

RF Interference

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the meter off, the user is encouraged to try to correct the interference by one or more of the following measures:

• Re-orient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Consult Landis+Gyr or an experienced radio/TC technician for help.

Industry Canada

This device complies with Industry Canada licence-exempt RSS standard(s). 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.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce

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potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio transmitter (5931A-HUNTSU864) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Approved Antenna: Omni-directional antenna, 5.5 dBi gain, 902-928 MHz, antenna impedance is 50 ohms.

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.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Le présent émetteur radio (5931A-HUNTSU864) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Required Software

To work with the endpoint, you need one of the following software tools:

- Command Center version 5.0 or later
- RadioShop version 5.0 or later
- Endpoint Testing Manager version 4.0 or later

Endpoint Usage

The Gridstream RF High Speed Modular FOCUS AX communication module will be used:

- for residential and commercial metering applications.
- at homes and businesses.

The FOCUS AX Modular Gridstream RF endpoint requires professional installation by qualified personnel.

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Specifications

Table - 1. Gridstream RF High Speed Modular FOCUS AX Specifications

Category	Specification	Value or Range			
		FOCUS AX		FOCUS AX-SD	
		Form	Class	Form	Class
		1S	100	1S	100
		2S	200	2S	200
		2SE	320	12S	200
		2K	480	25S	200
		3S 120V	10/20		
Compatible Meters	Landis+Gyr FOCUS AX Supported Meter Forms	3S 240V	10/20		
		4S	10/20		
		12S/25	200		
		12SE/25	320		
		16S	200		
		16SE	320		
		36(6)S	20		
		9(8)S	20		
		45S	20		
Electrical	Voltage	9-16V (from meter's power supply)			
	Power	Max: 1.0W Typical: 0.6W			
RF 900 MHz	Output Power	+26 dBm +/-1 dBm			
	Adjacent Channel Power	39 dBc Nominal			
	Transmit Frequency	902 to 928 MHz ISM unlicensed (FCC Part 15)			
	Communication Protocol	Gridstream Protocol for Command Center			
	Receive Sensitivity	-108 dBm Nominal			
RF ZigBee	Output Power	+20 dBm +/- 2 dBm			
	Adjacent Channel Power	40 dBc Nominal			
	Transmit Frequency	2405-2480 MHz			
	Communication Protocol	ZigBee Protocol			
	Receive Sensitivity	-104 dBm Minimum			

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Table - 1. Gridstream RF High Speed Modular FOCUS AX Specifications (Continued)

Category	Specification	Value or Range
Standards Compliance	FCC Title 47 CFR Part 15	Radiated and Conducted Emissions (incl. intentional radiators)
	IEC 61000 4-2,3,4,5,11,12	Electromagnetic Compatibility
	ANSI C12.19	Compatible with Utility Industry End Device Tables
	ANSI C12.20-2002	National Standard for Electricity Meters - 0.2 and 0.5 Accuracy Classes
	ANSI C12.1-2008	Code for Electricity Metering
	ANSI C37.90.1-2002	Standard Surge Withstand Capability (SWC) Tests
Environmental	General Environmental	Outdoor, rain-protected, sunlight-exposed
	Operating Temperature Range	-40 to +70 C (under meter glass)
	Humidity	0 to 95% relative humidity, non-condensing
Mechanical	Size	3.242 L x 5.315 W x .094 inches, typical
	Weight	2.0 ounces (56.7 g), typical

Landis+Gyr
Gridstream RF
Enhanced S4x
Endpoint Data Sheet

Publication: 98-1484 Rev AA

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Modification Date	**Revision**	**Description**	**Author**
01/05/2015	AA	Pending	Kim Utesch
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Landis+Gyr Gridstream RF Enhanced S4x

Endpoint Overview

Figure 1. Gridstream RF E650 S4x Meter with Enhanced Communication Module

This communication module is not available as a stand alone product.

The endpoint assembly contains:

- Landis+Gyr E650 S4x meter
- Built-in antenna for ZigBee
- Gridstream RF Enhanced S4x communication module
- Exterior antenna for AMI radio

Required Software

To work with the endpoint, you need one of the following software tools:

- Command Center version 6.1 or later
- RadioShop version 5.5.5.7 or later
- Endpoint Testing Manager version 6.1.9 or later

About the LAN ID

The LAN ID is a unique identifier for each Gridstream RF endpoint. It is always displayed in hex. Landis+Gyr provides the LAN address. You cannot change the LAN ID of a radio.

Labels

The endpoint includes the following labels:

Figure 2. Label Identification

A. Landis+Gyr Product ID (printed and barcoded)

B. Landis+Gyr LAN ID, includes programmed module part number (printed and barcoded)

ZigBee Support

The Gridstream RF Enhanced S4x communication module supports an integrated ZigBee system on the chip. This enables the endpoint to communicate via Smart Energy Profile with other ZigBee enabled devices.

Endpoint Registration with Command Center

Communication module firmware version 9.10 or later and module Device Control Word (DCW) 9.11 or later is required for auto-registration. After the endpoint is installed in the field it will automatically register with the Head End System. No special tools are needed during installation as the normal Utility meter swap process can be utilized.

The meter automatically sends in the registration information containing items on how the meter/endpoint is configured so the host can properly interpret the incoming data. Some of the items contained in this are as follows:

- Default collector/destination.
- Reporting interval for Register Data.
- Reporting interval for Interval Data.
- Time Synchronization parameters.
- GMT offset.
- Periodic Register Data reporting.
- Periodic LP Data reporting.
- Meter configuration information.

Once this information has been sent the endpoint starts collecting and sending based on the default configuration loaded during manufacturing.

Retrieving Data

The endpoint is capable of delivering data via an On Request Read (ORR) or autonomously (periodically reported).

Availability of the following features depends on meter configuration. On Request Reads (ORR) available with this endpoint are:

- Register Data (Standard Table 23) which includes consumption, demand and TOU values
- Load Profile or Interval Data (Standard Table 64)
- Revenue Integrity Services which includes instantaneous measurements related to line voltage, current and phase angle

Availability of the following features depends on meter configuration. Options for periodic reported data with this module include:

- Register Data & Status Flags (Standard Tables 23 & 3) which includes consumption, demand, TOU values and meter status
- Load Profile or Interval Data & Status Flags (Standard Tables 64 & 3) which includes interval data and meter status

Demand Reset

When the Command Center Host delivers a Demand Reset command, the communication module passes the command to the meter, which performs the Demand Reset on the meter. The endpoint then passes the previous demand data captured by the meter (Standard Table 25) to the Host for processing.

Time Synchronization

Introduction

Time Synchronization is a feature of the Landis+Gyr Gridstream network and Command Center. It allows multiple date/times between devices to be synchronized automatically or manually, if required.

Time Synchronization Process Components

For the purposes of this paper, time synchronization processes are divided into four zones:

Zone A: NTP Server to Gridstream Collector

Zone B: Communications Module to Communications Module including Collector Radios, Router Radios and Endpoint Radios

Zone C: Communications Module to Metrology Clock at each endpoint

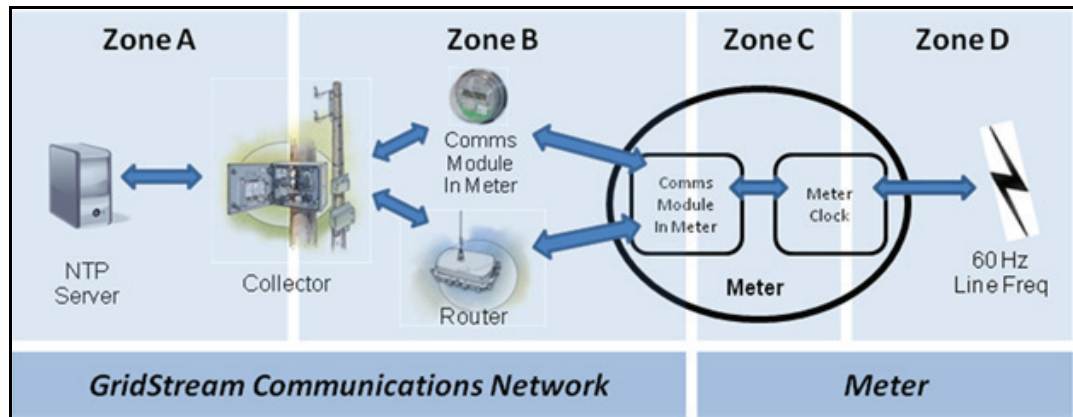**Zone D:** Metrology Clock to Utility Line Frequency (60 Hz)

Figure 3. Time Synchronization Process Components

Time Synchronization Process Overview

Time Synchronization for Zone A occurs:

1. Automatically at regular intervals. The configurable interval defaults to 4 hours. An event will be generated each time the Collector time is changed and the adjustment is greater than a configurable number of seconds.

2. Manually when a Time Sync command is issued to the Collector.

3. When a Collector is powered up after an outage.

Network Time Synchronization for Zone B occurs:

1. Automatically with every maintenance packet which occurs every 8 hours. The collector injects its time into the mesh and the mesh network keeps the communications module time up to date. During maintenance, each endpoint reviews each of its active neighbors to determine the one with the best time (based on time age). An event is generated when the time drift is greater than 20 seconds.

2. When an endpoint is powered up.

Time Synchronization for Zone C occurs:

1. Automatically every day at 1:23 AM for each meter with an internal clock as time is compared between the communications module and the metrology clock. Events are generated if time drift is greater than a configurable number of seconds.

2. Manually when a Time Sync.

3. When an endpoint is powered up.

Time Synchronization for Zone D occurs:

1. Automatically within a range of 57-63 Hz. The meter monitors line frequency over an hour period, and then adjusts its internal time clock during the subsequent hour. A 3 Hz variation in line frequency corresponds to a maximum 180 second variation from 60 Hz over an hour period.

   At the top of the hour, the meter calculates the previous hour's time variation in seconds and applies this to the subsequent hour. Every 15 seconds thereafter, the meter will adjust the time clock forward or backward by 1 second until the previous hour's time variation is accounted for.

When the clock is set via the meter optical port, the AMI network, or following any power outage, the previous hour time variations is zeroed. Following this time change, a full hour of line frequency monitoring is required. Time adjustment begins again at the top of the second hour following the time change.

Power Outage/Restoration

When an outage occurs, the meter uses an early power failure signal to alert the communication module to disconnect from the meter's power immediately. The communication module saves critical module data to non-volatile memory and creates and sends a power outage message. This message includes the following information:

- LAN ID
- Outage time
- Reboot count.

The communication module sends the message, then assists with routing other packets until the back-up energy source can no longer keep the radio alive.

When power is restored, the communication module connects with the network. With network communications restored, the communication module sends a power restoration message that includes details such as:

- LAN ID
- Outage time
- Restoration time
- Reboot count.

The communication module stores a history of up to the last five power outage and restoration event pairs in the event log. The Host can request this data.

ⓘ   NOTE: The module is designed with a high temperature protection feature in which the firmware automatically starts draining the super capacitor responsible for outage notification at 65 degrees Celsius.

Supporting Passwords

The endpoint supports passwords provided by the utility. See two-way Endpoint Testing Manager for loading password into the communication module.

Downloading Firmware

The communication module and ZigBee firmware can be upgraded remotely via host tools. Both the communication module and ZigBee firmware can remotely initiate a self-restart with communications enabled, if the downloaded firmware causes a catastrophic functional failure. Once the endpoint completely receives the new code, it operates with the new code.

ⓘ   NOTE: The metrology firmware must be upgraded locally using field tools.

Encrypting Data

The Gridstream RF network currently supports use of one encryption key per network. If you enable the S4x with encryption, the host must have a matching encryption key.

Configuration Tables

The Gridstream RF Communication Module Configuration structure passes the data to configure the endpoint. It is used for both C&I and Residential applications.

This table is currently 55 bytes long. It contains information necessary to configure several services on the endpoint, such as firmware reads, autonomous data return configuration.

The endpoint receives the packet, and using the data, configures its own operation. The host maintains a record of the endpoint's configuration.

Item	General Description
Packet Contents	Identifies which elements in this packet are set. Elements that are not set are ignored. There still must be a place in the packet for it, though.
Config Byte 1	Not used.
Config Byte 2	Not used.
Config Byte 3	Not used.
Config Byte 4	Not used.
Config Byte 5	Not used.
Reporting Interval LP	In Minutes.
Pump Period Register	In Minutes.
Pump Period RIS	Not used.
Pump Period Status	Not used.
Pump Period Snap Read	Not used.
User ID	2 byte User ID used while running ANSI Logon Service
Logon User	10 byte User Name that is used while running the ANSI Logon Service
Security Password	The full 20 bytes are required for the S4x.
Sustained Outage Duration	Defines the number of seconds after which an outage will be classified as sustained. If less than this amount, the outage is momentary. A value of zero will cause all outages to be considered "sustained".
Max Meter Time Drift	The number of seconds that the meter clock can drift from the radio clock, after which an alarm is triggered.
Meter Time Read Period	The period at which the module checks the time in the meter. In Seconds
GMT Offset	The GMT Offset in 15 minute increments. Signed. Valid values are -128 (0x80), corresponding to GMT-32hours to +127 (0x7F), corresponding to GMT+ 31hours

Standards Compliance

The Gridstream RF Enhanced S4x module is Smart Utility Network (SUN) 802.15.4g ready.

Flash Memory Options

The Gridstream RF Enhanced S4x module has increased flash memory. The standard hardware configuration will have 4MB flash memory. An 8MB flash memory option is also available.

Enhanced S4x Endpoint Specifications

Table 1. Specifications

Category	Specification	Value or Range			
		Form	Class	Voltage	Units
		1S	CL100	120	Vac
		2S	CL200	240	Vac
		2SE	CL320	240	Vac
		3S	CL20	120	Vac
		3S	CL20	240	Vac
		4S	CL20	240	Vac
Compatible Meters	Landis+Gyr E650 S4x Supported Meter Forms	45S	CL20	120/277	Vac
		36(6)S	CL20	120/277	Vac
		9(8)S	CL20	120/277	Vac
		12S/25S	CL200	120	Vac
		12S/25S	CL200	12/277	Vac
		12SE/25SE	CL320	120	Vac
		12SE/25SE	CL320	120/277	Vac
		16S	CL200	120/277	Vac
		16SE	CL320	120/277	Vac
900 MHz Radio General	RF Frequency Range	902.2-927.9 MHz			
	RF Baud Rate	9.6, 19.2, 38.4, 50.0, 115.2 kbps			
	Output Power	+26.3 dBm (425 mW) Typical			
	Receive Sensitivity	-110 dBm typical (@9.6 kbps)			
	Antenna Type	Printed Inverted F, vertically polarized			
	Antenna Gain	-1.5 dBi total in azimuth plane typical			
	Antenna Type	Omnidirectional Whip			
	Antenna Gain	5.5dBi			

Table 1. Specifications (Continued)

Category	Specification	Value or Range
ZigBee Radio General	RF Frequency Range	2.400 GHz Min -2.485 GHz Max
	RF Baud Rate	250 kbps Typ
	Output Power	>+22dBm
	Receive Sensitivity	Nominal -105.5 dBm, minimum -104 dBm
	Antenna type	Printed Inverted F, omnidirectional, horizontally polarized
	Antenna Gain	-1.5 dBi total in azimuth plane typical
Standards Compliance	FCC Title 47 CFR Part 15	Radiated and Conducted Emissions (incl. intentional radiators)
	IEC 61000 4-2,3,4,5, 6, 8, 9, 11	Electromagnetic Compatibility
	ANSI C12.20	National Standard for Electricity Meters - 0.2 and 0.5 Accuracy Classes
	ANSI C12.1	Code for Electricity Metering
	ANSI C37.90.1 (1989)	Standard Surge Withstand Capability (SWC) Tests
Mechanical	Size	3.6 W x 5.0 L x 0.88 H inches, typical (excluding antenna)
	Weight	1.7 ounces (48.2 g), typical
Environmental	Storage Temperature	-40 to +85 Degrees Celsius
	Operating Temperature	-40 to +85 Degrees Celsius (inside meter housing)
	Relative Humidity	0 to 95% Relative Humidity non-condensing

Gridstream
RF Electric Endpoint
Fix-up Antenna
Installation Guide

Publication: 98-1245 Rev AA

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3/26/2013	AA	Released	Vicky Costello
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Gridstream RF Electric Endpoint Fix-up Antenna Installation Guide

Overview

This publication outlines the procedure for remote passive antenna installation on Gridstream RF Electric Endpoints.
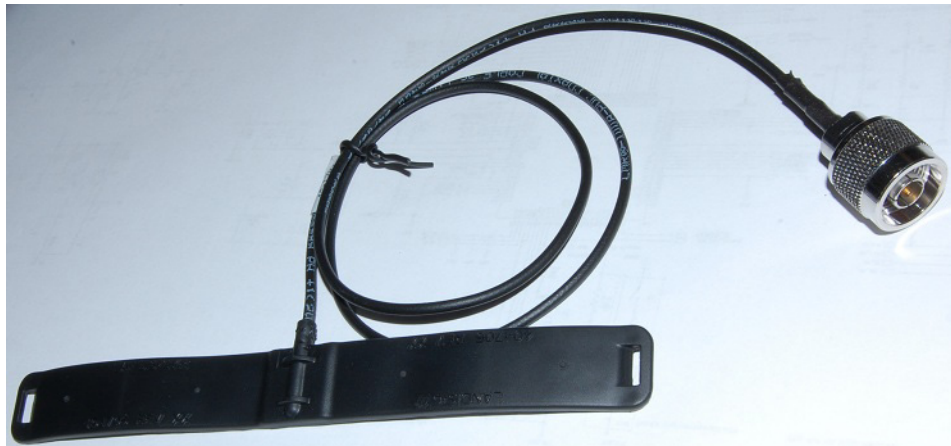

Figure 1. Remote Passive Antenna

This antenna couples radio frequency energy from a Landis+Gyr Gridstream RF Electric Endpoint's 902-928 MHz antenna into a coax cable connected to a remote antenna located at an optimal location for better connection to the Gridstream RF network. Coupling loss (including the 2.5 ft. cable) ranges from 5 to 9 dB, with 5 being a typical value. Environmental performance is rated for: 0 to 95% relative humidity, -40 to +85° C.

Coupler Part Numbers

The same coupler is used for all remote antenna installations. The part number and description is as follows:

- 40-1705 flex loop, 2.5 ft. antenna cable, cable tie, adhesive

In the case where the length above is insufficient, Landis+Gyr recommends the extension cable listed below, terminated with a female "N" connector on one end and a male "N" connector on the other:

- 19-1742, extension cable, 20 ft.

Required Materials

The following materials are required to complete a remote antenna installation.

- Alcohol wipes
- RTV - Part Number 30-0109, Dow Corning #839
- Cold flow sealing tape
- Hardware, appropriate to installation
- 45-1221, Kit, Antenna (consisting of items listed below)
    - 106119-000 Remote Antenna, 5dBi Whip
    - 28-1012, Antenna Ground Plane
    - 16-0214: Barrel Connector N-Female to N-Female, "Bulkhead"

List of Terms

The following is a list of terms used to identify remote antennas and related equipment.

Coupling Antenna

This is the flexible circuit that is at the end of the antenna assembly. It is referred to interchangeably as the flex circuit, flex dipole, patch antenna, coupler, and so on.

Remote Antenna

Refers to the omni whip antenna which will be "remoted" from the coupling antenna. The remote antenna is ideally mounted "line of sight" to the Gridstream RF Mesh network.

Optional Materials

The following items may be required, depending on the installation.

- 22-1542: Grommet, 1.25" OD, 1.0" ID with 0.25" center hole
- Mounting brackets, Landis+Gyr part numbers:
    - 28-1800: Bracket, antenna, meter box, right
    - 28-1801: Bracket, antenna, meter box, left
    - 28-1802: Bracket, antenna, ceiling mount
    - 28-1804: Bracket, antenna, wall, flat

Tools

The following tools may be required, depending on the installation.

- Flat head screwdriver
- Utility knife
- Battery-operated drill with 5/8- and 1-inch high speed metal bits
- Phillips head screwdriver
- Wire cutters
- Tape measure

Performance

Table 1. Performance

Parameter	Minimum	Typical	Maximum	Units	Condition
Frequency	902		928	MHz	
Coupling Loss		5	9	dB	
Polarization		Linear			
VSWR		1.78:1			Final antenna assembly on FOCUS AX: modular
Impedance		50		ohm	
Input RL		11		dB	Final antenna assembly on FOCUS AX: modular

General Installation Guidelines

Determine the optimum location for remote antenna installation. This will vary depending on the location of the meter. In general, the antenna should be:

- Installed as close to line of sight with a Gridstream RF network equipment as is possible.

- Mounted so that it is at least four inches from the nearest structure.

- Mounted so that a meter box cover, if the endpoint is enclosed in one, can be removed without interference from the remoted antenna.

- For inside-premise installations, remoted antennas may be mounted in the proximity of an available window, or may need to be routed to the outside if the signal strength is insufficient.

- Mounted so that the antenna connector is OUTSIDE the meter box. A 1-inch hole should be drilled in the meter box so that the connector can be fed through the box. Use the appropriate mounting bracket to mount the antenna external to the meter box.

- Mounted so that any length of additional cable is minimized. The best practice for maximum cable length is to not exceed line loss (refer to cable manufactures line loss chart) vs. gain of antenna, the RF link loss by use of passive antenna can be excluded from the line loss calculation.

It is the responsibility of local installation organizations to ensure that local wiring codes and requirements are met, including the application of a safety ground, when required.

ⓘ NOTE: This device and the supplied installation components are UV-resistant.

Gridstream RF Enhanced FOCUS AX/AX-SD Mounting Procedure

(i)   NOTE: The passive antenna should be mounted within 5 mm (0.25") of the indicated location to achieve specified performance.

1. Clean the meter cover where the flex antenna will be installed. Wipe the cover mounting area with an alcohol wipe and let the area dry for one minute before proceeding with the installation.

2. Peel the paper backing off of the adhesive tape (bottom of coupling antenna).

3. *Firmly press the center of the antenna to the bottom (6 o'clock position) of the meter while aligning the lower/left of center edge of the antenna with the lower edge of the window on the inner meter housing.*

4. Wrap the cable tie through and over antenna guides, and around the meter. Thread the cable tie into the mating end of itself.
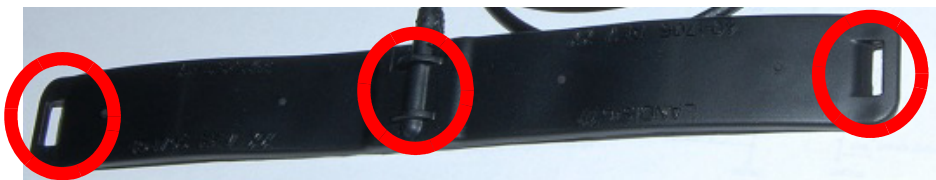

Figure 2. Antenna Guides

5. Ensure that the cable tie is evenly placed over the antenna and cinch tight.

6. Install the remote antenna at the location indicated by the link assessment performed. If a link assessment tool is not available, select a location that provides the best line of sight to the nearest collector.

7. Once installed to the antenna, wrap the connector using cold flow tape. Tape should be wrapped tightly and in a continuous manner. The tape should cover the cable one inch past the end of the connector.

8. Secure the cable to the side of the structure using appropriate hardware for the building construction.
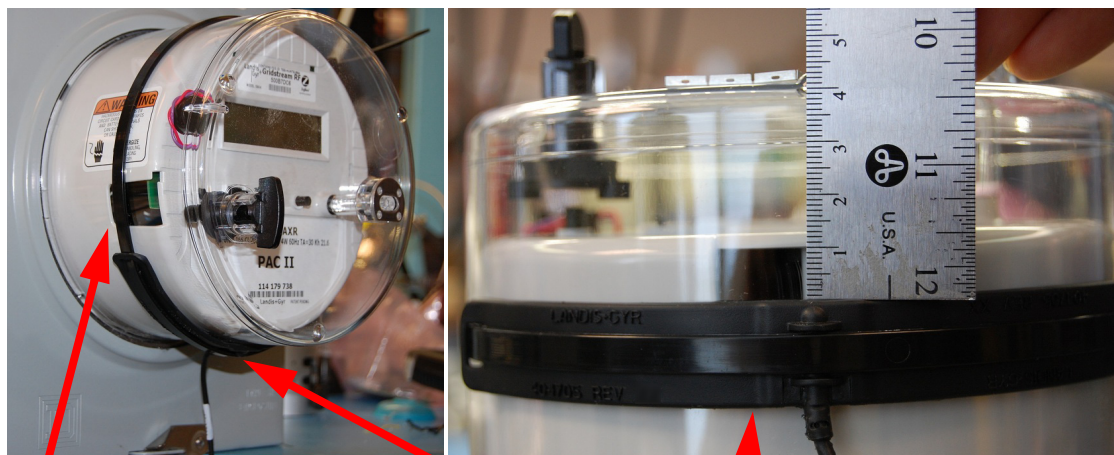
Cable Tie

Align the lower edge of the antenna with the lower edge of the bottom window on the inner meter housing, with the antenna center point as shown.

Figure 3. Installation On FOCUS AX/AX-SD Meters

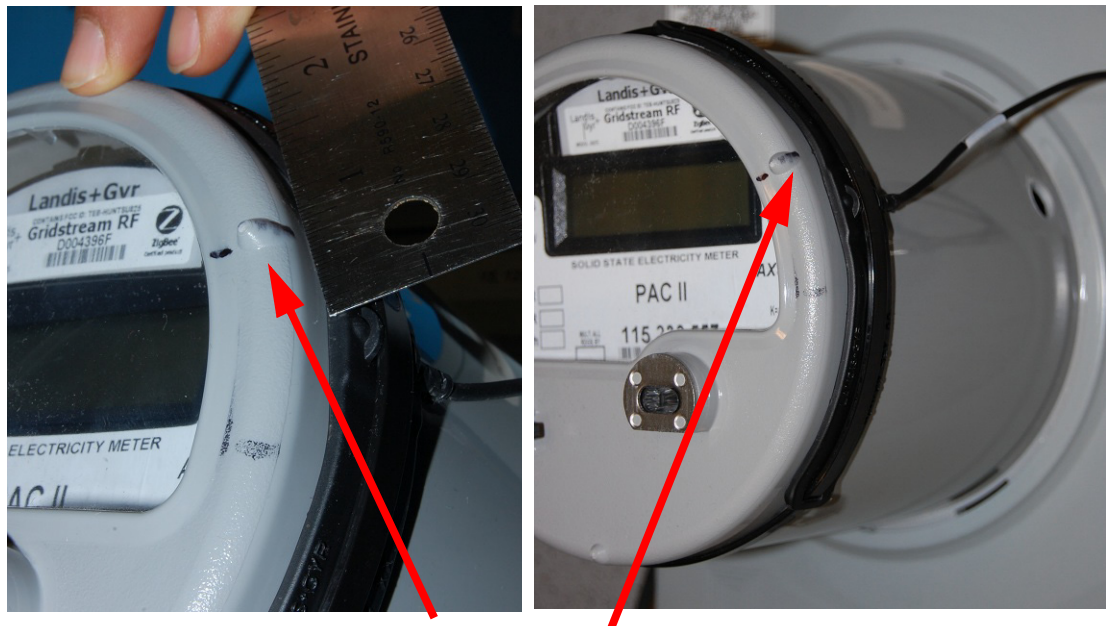# Gridstream RF Enhanced S4e Mounting Procedure

(i) NOTE: The passive antenna should be mounted within 5 mm (0.25") of the indicated location to achieve specified performance.

1. Clean the meter cover where the flex antenna will be installed. Wipe the cover area with an alcohol wipe and let the area dry one minute before proceeding with the installation.

2. Peel the paper backing off of the adhesive tape (bottom of coupling antenna).

3. ***Firmly press the center of the antenna onto the meter housing at the 2:30 o'clock position, 1.5 cm clockwise past the nub on the outer meter cover. Align the top edge of the antenna with the texture line on the S4e meter housing.***

4. Wrap the cable tie over and through the antenna guides, and around the meter. Thread the cable tie into the mating end of itself.

Figure 4. Antenna Guides

5. Ensure that the cable tie is evenly placed over the antenna and cinch tight.

6. Install the remote antenna at the location indicated by the link assessment performed. If a link assessment tool is not available, select a location that provides the best line of sight to the nearest collector.

7. Once installed to antenna, wrap the connector using cold flow tape. Tape should be wrapped tightly around the cable and in a continuous manner. The tape should cover the cable one inch past the end of the connector.

8. Secure the cable to the side of the structure using appropriate hardware for the building construction. See Figure 5 on page 8.

Align the antenna center point on the meter housing at the 2:30 o'clock position, 1.5 cm clockwise past the nub on the outer meter cover

Figure 5. Installation On Gridstream RF Enhanced S4e Meters

Gridstream RF Integrated FOCUS AX/AX-SD Mounting Procedure

ⓘ NOTE: The passive antenna should be mounted within 5 mm (0.25") of the indicated location to achieve specified performance.

1. Clean the meter cover where the flex antenna will be installed. Wipe the cover mounting area with an alcohol wipe and let the area dry for one minute before proceeding with the installation.

2. Peel the paper backing off of the adhesive tape (bottom of coupling antenna).

3. *Firmly press the center of the antenna to the 5 o'clock position of the meter while positioning the upper edge of the antenna 3.3 cm below the top surface of the meter cover.*

4. Wrap the cable tie through and over antenna guides, and around the meter. Thread the cable tie into the mating end of itself.

Figure 6. Antenna Guides

5. Ensure that the cable tie is evenly placed over the antenna and cinch tight.

6. Install the remote antenna at the location indicated by the link assessment performed. If a link assessment tool is not available, select a location that provides the best line of sight to the nearest collector.

7. Once installed to the antenna, wrap the connector using cold flow tape. Tape should be wrapped tightly and in a continuous manner. The tape should cover the cable one inch past the end of the connector.

8. Secure the cable to the side of the structure using appropriate hardware for the building construction.
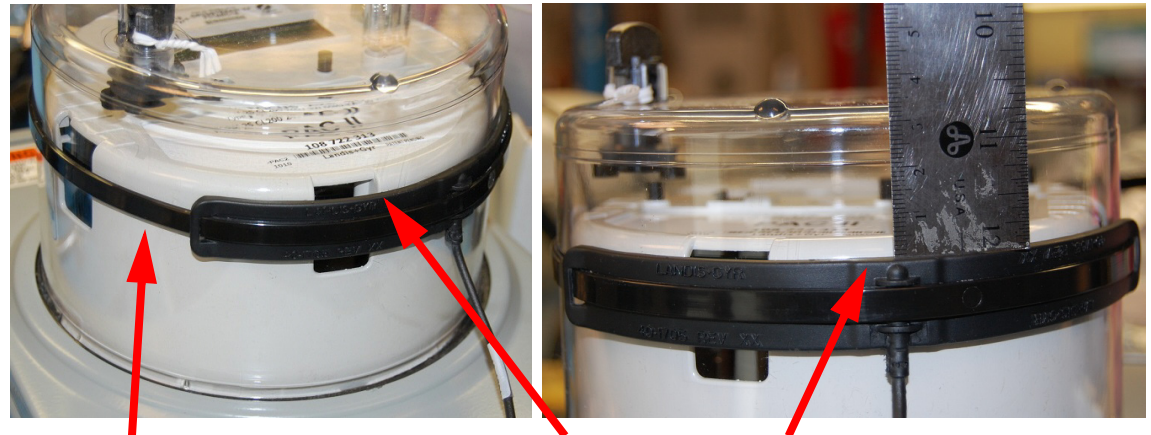
Cable Tie   **Align the antenna center point at the 5:00 position with the upper edge of the antenna 3.3 cm below the top surface of the meter cover**

Figure 7. Installation On FOCUS Integrated AX/AX-SD Meters

Antenna Brackets and Antenna Mounting

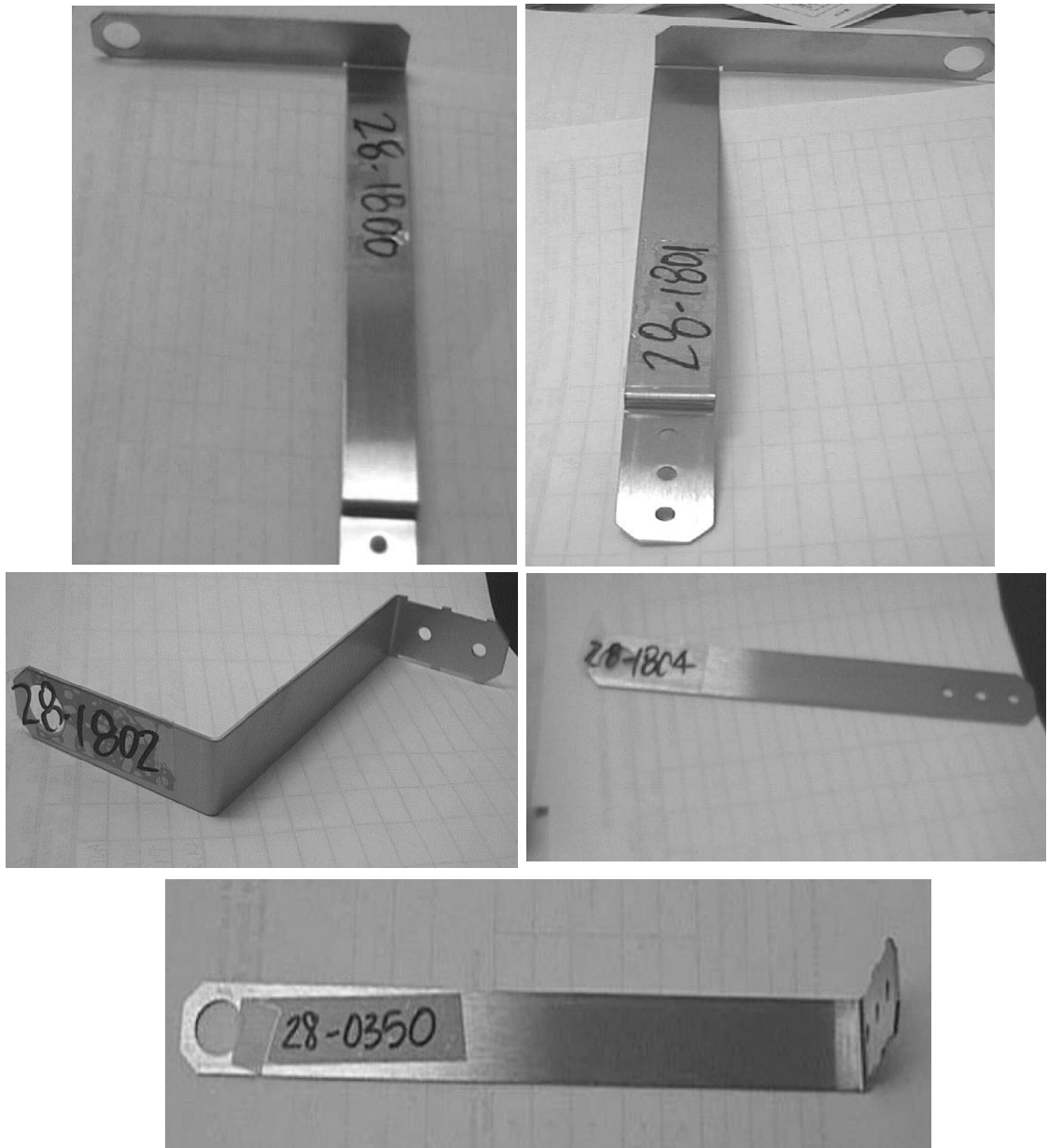*Figure 8. Typical Remote Antenna Brackets*

ⓘ   NOTE: To mount these brackets, use screw and bolt hardware that is approved by the local utility.
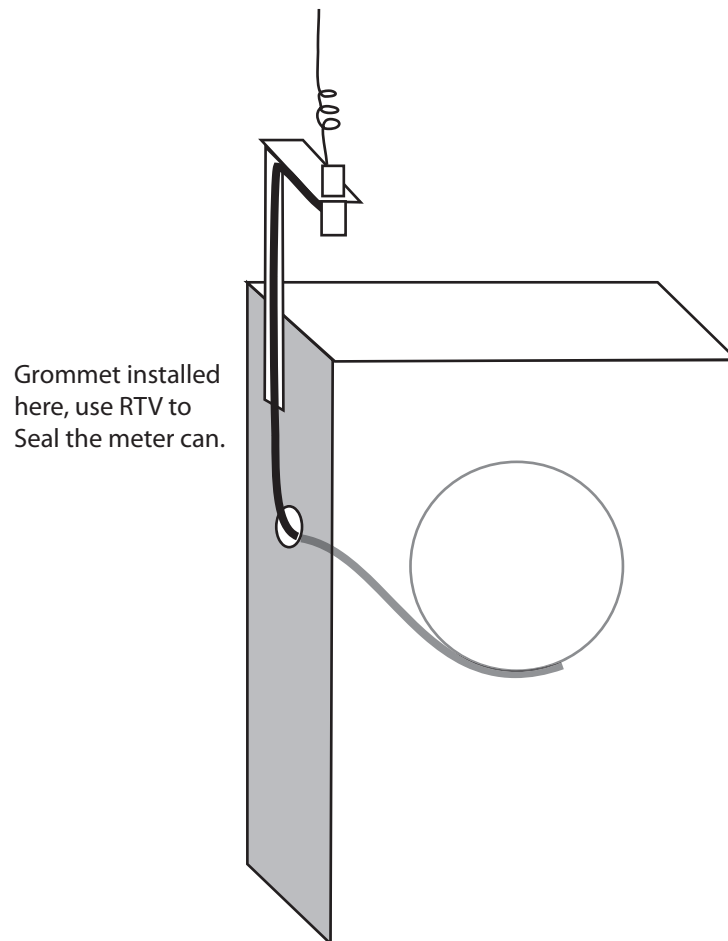
Grommet installed
here, use RTV to
Seal the meter can.

Figure 9. Example Remote Antenna Illustration