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Manual

Gridstream M120 Two-Way Gas Endpoint Installation Guide

98-1123 Rev AA

Landis+Gyr

DRAFT

24 Feb 2010

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24 Feb 2010

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Preface

Landis+Gyr

This guide describes the installation process for the Landis+Gyr Gridstream M120 Two-Way Residential Meter Gas Module.

Any training provided directly to installers by the utility or by the Landis+Gyr project management team takes precedence over this guide, as long as it does not involve altering the meter module retrofit process.

About This Guide

This edition of the *Landis+Gyr Gridstream M120 Two-Way Residential Meter Gas Module Installation Guide* provides:

– basic information of the field installation, retrofit, and exchange procedure used for residential gas meters.
– basic safety guidelines and detailed instructions for installing and exchanging of gas meters.

Who Should Use This Guide

This guide is intended for use by utility employees responsible for installing meters and module retrofitting to already installed meters. It does not assume an expert level of industry or computer knowledge. This guide does assume that you are familiar with basic:

– utility operations.
– terminology of your industry.
– procedures for performing basic Handheld operations.

Typographical Conventions

This section describes the conventions used in this guide to make finding and understanding information easier. The following kinds of formatting in the text identify special information.

Convention	Description
All **bold**, initial capital letters	Refers to field names, buttons, menus, menu options, and keys. Examples: **Device** field, **Open** button, **File** menu, or **Ctrl** key.
All **bold** lower-case letters	Refers to the exact keystrokes you enter. What you type is always shown in lowercase letters. Example: Type **local** in the **Device** field.
Italicized lower-case word between less-than sign (<) and greater-than sign (>)	Refers to variables that occur in item names. Example: Add Sub Network To *<network name>* dialog, where *<network name>* refers to the name of a network.
<menu> | *<option>* | *<option>*...	Refers to the sequence of choices you should make to access a specific dialog or menu option. Examples: choose **Start** | **Settings** | **Control Panel** or choose **File** | **Open**.
Plus sign (+) between keys	Refers to pressing the keys at the same time. Example: **Alt+B**.
Comma (,) between keys	Refers to keys which are pressed sequentially. Example: **Alt,F**.

Note boxes provide essential information about Landis+Gyr Gas Meter Module and Meter Installation.

Cautions provide information that you must read to avoid making relatively moderate errors during Landis+Gyr Gas Meter Module and Meter Installation.

Warnings provide special, must-read information. If you ignore a warning, you may create a safety hazard, omit essential data or make a critical error. Warnings are in the same format as notes and printed in bold text.

Contacting Technical Support

Landis+Gyr technical support is available by telephone (888-390-5733) or email (solutionsupport.na@landisgyr.com). When you contact technical support, be prepared to give exact descriptions of:

- The problem you encountered.
- What happened and what you were doing when the problem occurred
- How you tried to solve the problem
- The exact text of any error messages

Telephone Access

Technical support is available Monday through Friday from 8:00 a.m. to 5:00 p.m. (ET) by calling 888-390-5733. If all support technicians are helping other customers, your call will be routed to the Landis+Gyr Support voice mail system.

Leave a brief message that includes the following information:

- Your name
- Your company's name
- Your telephone number

A support technician will return your call as soon as possible within normal business hours. Technicians return all calls in the order that they are received.

Email Access

If you prefer, you may email a description of your problem to:

solutionsupport.na@landisgyr.com

A support technician will return your email as soon as possible within normal business hours. Technicians return all emails in the order that they are received.

General Inquiries

Your feedback is important in helping to provide the most accurate and high-quality information. If you want to reach a Landis+Gyr representative, do one of the following:

- Telephone: 678-258-1500
- Fax: 678-258-1550

You can also mail your comments or inquiries to:

Landis+Gyr
Attn: Customer Support
30000 Mill Creek Avenue
Suite 100
Alpharetta, GA 30022

Ordering Publications

You can order publications from your sales representative. To order additional copies of this manual, use order number:

98-1123 Rev AA

Publication Comments

Landis+Gyr welcomes your feedback and comments. If you have comments or suggestions for improving this publication, please communicate your comments about this publication, its organization, or subject matter, with the understanding that we may use or distribute whatever information you supply in any way we believe appropriate without incurring any obligation to you.

You can send comments via email, conventional mail, or fax.

To send your comments via...	Use this contact information...
Email	solutionsupport.na@landisgyr.com
Conventional mail	Landis+Gyr, 30000 Mill Creek Ave., Suite 100, Alpharetta, GA 30022
Fax	(678) 258-1550

. If you would like a reply, please include your contact information:

• Name

• Telephone number or fax number

• Email address

• Company name and address

Be sure to include the following information along with your comment:

• Title and number of this manual

• Page number or topic related to your comment

2
Pre-Installation

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Proper planning and thorough preparation are critical for successful installation. This chapter outlines basic requirements for the pre-installation phase.

SAFETY OVERVIEW

Prior to starting the installation process, you must develop and launch an installer safety training plan for initial, refresher, and ongoing safety training. Ensure that installers receive appropriate initial and refresher training to meet their specific safety-related responsibilities. Safety training must be provided when:

• An existing installer assumes new duties for which he or she has not previously received training.

• New processes and methodologies representing new risks are introduced into the installation environment.

• Previously unidentified risks are reported.

The installation supervisory team assumes responsibility for ensuring that installers are properly trained, authorized, and continually qualified to perform their work. The team must also take responsibility for the safety of their installers and to assure safe work methodologies. Installers must understand that their supervisor's responsibility does not relieve them from their individual responsibility to perform the work safely and to follow all safety rules and procedures applicable to their work.

Table 2-1. Gas Meter Installation and Module Retrofit Tool List

Torque screwdriver with various slot and Phillips tips	5 - in - 1 screwdriver
#1 and #2 Phillips screwdrivers	Screwdriver - 1/8" slot blade
Screwdriver - 1/2" slot blade x 10"	screw-holding screwdriver
Awl, Heavy Duty	14" Pipe wrench (2)
24" Pipe wrench (1)	18" Pipe wrench (2)
14" curved jaw channel locks	Crescent wrench
Dead blow hammer	Ball Peen hammer
Diagonal cutters	Brass scraper 1-1/4" wide
Handheld	Shovel and spade
Identification	Clipboard
Pens/Pencils	Safety cones
Headlight flashlight	Non-spark flashlight
Door Hangers	Street Atlas
Personal Protective Equipment	RF Buster, P/N 26-1050

Table 2-1. Gas Meter Installation and Module Retrofit Tool List

WD-40	Thread Lubricant
Wire Brush	Cable ties
Leak detection soap	Pressure gauges
Grey spray paint and paint board (to prevent over spraying)	Cell phone or 2-way communication device
Jumper cables	Any required specialty tools

Your supervisor carries shovels, spades, hack saws, other specialty tools, and ladders. Take care to check the work area each time you change locations. Be certain there are no tools left behind.

Do not clean the module or the cover on-site. Static Discharge may result, can ignite a natural gas leak, and is a risk of fire or explosion.

RF Busters

Verify that the RF Buster is working correctly. Press and hold the push button Switch. The LED lights red, and the internal speaker sounds for approximately 1/2 second. If nothing happens or the LED lights and speaker sound continuously, then the 9V battery is probably low and needs to be replaced.

To access the battery compartment, open the spring-loaded cover on the back of the RF Buster. Take care not to misplace the cover or damage the battery door spring mechanism.

Figure 2 - 1. RF Buster

See Appendix B, *Using the RF Buster* for detailed instructions on how to use the RF Buster.

Install Material

The Gas Meter Exchange process consists of using predetermined route information that identifies the meters that need to be retrofitted with the Landis+Gyr Gas Meter Module and methods for recording data to document the installation. The route information describing the account address, existing meter ID, estimated meter reads, and any special instructions that describe circumstances unique to that particular account is supplied at the Cross Dock.

From the Cross Dock, obtain the Meter Modules to be installed. Installers will be issued data that includes the route, address, meter ID, and estimated read for the particular meters, plus specific instructions and required field collects information.

Each installer must validate that the route information is correct before leaving the Cross Dock.

Meter Compatibility

This Gas meter Compatibility List is the result of retrofit experience and feedback from American Meter.

Every attempt has been made to ensure the accuracy of the information in this table. There may be limitations to compatibility unknown to Landis+Gyr due to changes made which L+G has been unable to document through our research and substantial meter library. Any questions about the compatibility information should be forwarded to your L+G representative.

Metal indexes cannot be used and must be replaced. Only indexes with plastic gears and pointers are supported.

Table 2-2. Gas Meter Compatibility List

Model	Start Year	End Year	Drive
AL 175	1958	1993	1' / 2'
AL 250	1966	1985	2'
AL 310	1979	1985	2'
AL 425	1965	Current	2'
AT 250	1968	Current	1' / 2'
AT 350	1998	Current	2'
AC 175	1965	Current	1' / 2'
AC 250	1976	Current	1' / 2'
AC 630	1998	Current	2'
AM 250	1985	Current	1' / 2'

Validated Meter Index Part Numbers

Table 2-3. Indexes and Part Numbers (SC= Speed Counter, TC= Temperature Compensated)

Index Type	American Part No.	Dial or "B" number	Use Gridstream M120 Model #
1 Ft. Pointer w/ SC	28538G100	B172	26-1204
1 Ft. Pointer w/ SC & TC	28538G102	B174	
2 Ft. Pointer	04972G072	B424	
2 Ft. Pointer w/ SC & TC	04972G039	B177	
1 Ft. Odometer	54887G005	B697-W	26-1237
1 Ft. Odometer w/ TC	54885G006	B706-W	
2 Ft. Odometer	54885G006	B698-W	
2 Ft. Odometer	54885G015	B808-W	

⚠ **No warranty is expressed or implied regarding the use of similar but un-validated indexes.**

Long and Short Post Gridstream M120 Module Covers

Post lengths differ for Gridstream M120 modules used for pointer- and odometer-type indexes. There are two part numbers used. The Long Post unit, model # 26-1204, is used for pointer-type indexes. The Short Post unit, model #26-1237, is used for odometer-type indexes. Beyond post length, modules can be differentiated in multiple ways. Check the lower bar code label on the side of the module cover. The model number is listed at the beginning of the label, and the last two characters that appear will be either "LP" or "SP" to indicate the model unit.
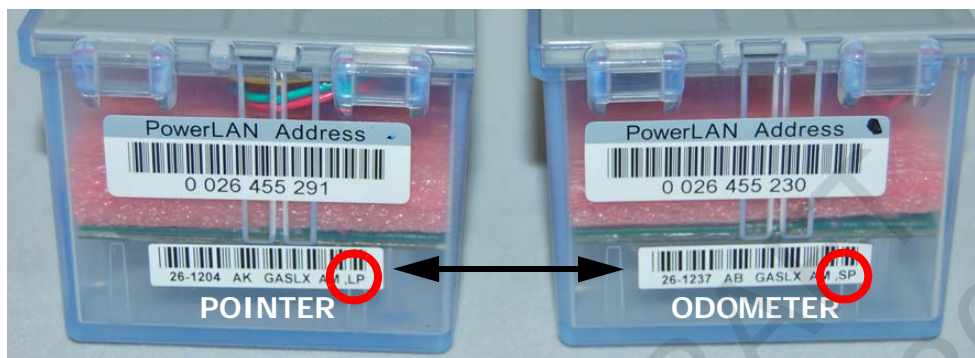
Figure 2 - 2. Long and Short Post Module Cover labels
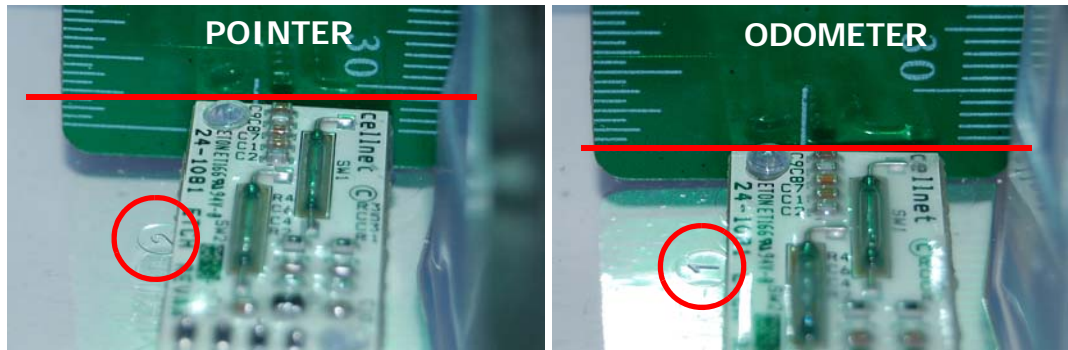
Figure 2 - 3. Long and Short Post Module Cover internal differences

The post length difference in the two models is only about a quarter-inch, but this critical installation parameter ensures accuracy and functionality. Note also the "1" and "2" cast into the cover next to the sensor board, with "2" designating pointer index usage and "1" being for the odometer index.

Installing the 26-1204 on a meter with an odometer index may cause the sensor to break.

Installing the 26-1237 on a meter with a pointer index may cause the endpoint to count incorrectly.

Meter Hardware

Table 2-4. Meter Index and Module Hardware

Use	Dimensions	Screw Type	Part No.
Index	10-32 x 1/4	SS Round Head	Cellnet: 22-0040
Module	1/4-20 x 5/8	SS Fillister Head	American: 43393P099

Compliance

This apparatus is suitable for Class I, Division 1, Group D Hazardous Locations.

Warning - Explosion Hazard - Substitution of components may impair suitability for Class I, Division 1.

Safety and Environment

Prerequisite Training

Installers should be instructed in the following safety elements as well as any site-specific safety issues:

• Hazard Communication (Employee Right to Know)

• Lifting

- Safe driving
- Use of hand tools
- Confined space

Preliminary Checks

The installer should already be able to operate the Handheld computer. Additionally, you should already have route information and the required number of endpoints.

- Verify that you are at the correct site, specified on the handheld computer or work order.
- Verify that the site is safe for you and your equipment.
- Notify the customer of your presence. Tell the customer that you must have access to the meter. If necessary, have the customer sign the work order.
- When installing meters, follow any guidelines issued by your company in addition to those given in this guide.
- Never perform an installation during a lightning storm or under excessively wet conditions.

Site Requirements

The site must comply with the following criteria:

- There is no chance that another object will be set over the antenna.
- Some instances may require additional cable.
- Maximum cable length is always 200 feet.

FCC Information to the User

Manufacturer: Cellnet

Model Name: Gridstream M120

FCC ID: R7PER6R1S1

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.

FCC Class B

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 interference in a residential installation. This equipment generates, uses, and can radiate 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 equipment off

and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult L+G or an experienced radio technician for help.

Changes or modifications to this device not expressly approved by Cellnet Technology, Inc. could void the user's authority to operate the equipment.

RF Exposure

In accordance with FCC requirements of human exposure to radio frequency fields, the radiating element shall be installed such that a minimum separation distance of 20 centimeters will be maintained.

3
On-Site Preparation

Arrival at Install Site

1   Upon arriving at the installation site, verify the address in the Handheld. Check the Handheld for special instructions for that site (for example, medical customer, dog, key required for access to meter, meter location, and so on). If a medical alert code appears in the Handheld for that address, they are to skip the install, enter an appropriate skip code, and move to the next exchange. A medical alert tag may be located on the electric meter.

2   If the installer comes across a meter where a medical alert code appears in the Handheld for that address, they are to discontinue the exchange, enter the appropriate skip code, and move to the next exchange.

3   Verify that the meter ID of the meter at the address is the same as that in the Handheld record; if not, verify it a second time. If the meter ID does not match, record the information, including mismatched ID on hard copy, record skip code of meter ID mismatch, and call your Supervisor for direction.

4   Verify that the seals are intact and present. If the meter is unsealed and there is no evidence of tampering, complete the meter exchange or module retrofit. If there is suspected tampering or evidence of diversion, do not complete the install. Record the diversion on hard copy, enter the skip code of diversion in Handheld, and call your supervisor immediately.

5   If the premise is vacant and the service is shut off at the service riser valve, complete the meter exchange if at all possible. If you are unable to gain access to the premise, finish your route and then try again before returning to the Cross Dock. Enter appropriate code in Handheld.

6   Inspect the meter for any gas leaks, unsafe conditions, excessive rusting, or damage. While performing this technical review, inspect the meter for poor conditions such as excess rust, tampering, or odor of gas. If you judge the meter is seriously damaged, report it, enter the appropriate code in the Handheld, and call your supervisor for directions.

7   If it is determined that the meter has no unsafe conditions, you are ready to proceed with the module retrofit. Data will be required to be entered into the Handheld. If the reading is out of range (indicated by a prompt on the Handheld), then retype the meter identification number's last four digits to re-verify the correct meter. Reenter the gas meter index read into the Handheld.

    See *"To Begin Meter Module Retrofit"* on page 43 for information about module exchange instructions.

8   If the meter is to be exchanged and it is partially buried, enter a skip code of "buried" and move to the next account. If a tilted meter is to be exchanged, perform the exchange and correct the tilt. If a module is to be installed on a tilted meter, complete the install, and enter a skip code of "tilted."

9   If the installer is met by a violent or threatening customer, immediately leave the premise and call your Supervisor. If necessary, dial 911, after which you will enter into the Handheld and on the hardcopy a skip code of "violence code."

4
Gas Meter Exchange

Meter Exchange Process

Arriving at the Location

1   The installer confirms that they are at the right route address for that appointment using the Handheld. The installer arrives at the location on-time and with all the tools and equipment necessary to complete the installation without having to return to the support vehicle. If applicable, locate the outside shutoff valve in case of trouble or emergency.

2   When the customer answers the door, introduce yourself and state the reason for your visit.

   –   verify that the customer is at least eighteen years of age.

   –   Show the customer your identification.

3   Confirm the nature of the appointment and the time commitment required from the customer. Make sure the customer knows and agrees that it is convenient for you to turn off the gas during the installation process.

Verifying the Meter Site

Locate the meter and confirm the existing meter number, type, and size.

   –   If the meter number is correct but type and size do not match the equipment that you have been issued, call your Supervisor and request the appropriate equipment.

   –   If the meter ID does not match the information in the handheld, call your Supervisor for meter number verification.

   –   If all information is correct, continue the installation process.

   –   Prior to proceeding with the meter exchange process, inspect the condition of the gas regulator. If the regulator is defective, it must be replaced. Follow the utility-specific guidelines for regulator exchange.

Confirming Proper Installation Conditions

1   For the installation to qualify, confirm *ALL* of the following pre-existing conditions:

  – Visually examine the shut-off that it does *NOT* show signs of leaking or disrepair.

  – Perform the sniff test for signs of gas leaks using the Natural Gas Detection Device, and then the soap test on the shut off and couplings.

  – No Diversion or Tampering Evident - Visually inspect the service to the meter for signs of diversion or tampering.

  – Appropriate Access - Confirm that access to the meter allows a minimum acceptable work area to be established. Minimum work area includes wrench clearance, access to shut-off.

  – Appropriate Service & Piping Condition - Visually inspect the age and condition of the service and piping. Confirm that service and piping are fit for the removal and installation of a new meter and that there are no pre-existing leaks.

  – Appropriate Meter Orientation - Confirm that the meter is installed horizontally or such that the meter exchange cannot take place.

  – If any improper conditions are found contact your Supervisor immediately. The Supervisor will confirm your assessment and give you direction for either completing the installation or issuing a skip code in the Handheld.

2   Set up the area for installation. For inside sets, turn on all available lighting. Clear an appropriate workspace and lay out all tools, and equipment. Prepare for leaks or emergency shut-off.

Shutting Off the Service

1   Notify the customer that gas service will be interrupted and reconfirm that all gas apparatuses are off. Inspect each gas appliance for proper operation. Inspect the meter set for corrosion, burial or overbuilding, damage, improper installation, misalignment, outdated regulator (Model 1213B or 043R), or the smell of natural gas.

2   Connect the bonding jumper from service riser to the premise line. Verify that the existing meter is off by isolating (shut off) all gas apparatuses and confirm that there is no flow on the meter and register. If the meter is not functioning correctly, contact the Supervisor immediately. The Supervisor will confirm your assessment and give you direction.

3   Manually close the customer's shut off valve.

  – If you have any problem closing the valve, contact your Supervisor for direction which may include, if applicable, using the outside curb stop for shut-off.

  – If the outside curb stop is activated, your Supervisor will notify the Utility Supervisor.

4   Remove the original meter.

  a   Using a pipe wrench and backup, attempt to loosen the meter coupling nuts.

  b   Use mild torque building to moderate steady torque until the coupling nut begins to turn.

  c   Do not jerk or snap the wrenches. Damage could occur.

  d   Loosen both coupling nuts and remove the old meter from the meter set. If you have any problem loosening the coupling nuts, contact your supervisor for direction.

  e   When applicable, remove all old gasket material in the coupling nuts . Inspect the regulator and exchange the regulator if it is damaged or defective.

> Do not clean the module or the cover on-site. Static discharge can ignite a natural gas leak and is a risk of fire or explosion.

Installing the New Meter

1. Remove the new meter tag from the new meter.
2. Write install date, address, and initials on new meter tag.
3. Place new meter tag on the old meter register.
4. Insert new gaskets where applicable.
5. Exchange the regulator if it is damaged or outdated. Exchange any damaged insulating unions. Level the meter set if the set is tilted.
6. Tighten the inlet-coupling nut.
7. Install pressure gauge to meter outlet, slowly open the rise valve, and adjust regulator to appropriate gas pressure at the meter outlet.
   a. Close the riser valve and remove the pressure gauge.
   b. Verify meter operation.
   c. Reconnect the outlet piping.
8. Before re-servicing - if service was shut off prior to the meter exchange, do not restore service.

> During the installation, replace all biscuits in the outlet piping, and leave meter off "as found".

Restoring Service, Purging the Air, and Performing the Leak Test

1. Open the shut-off valve very slowly.
   – If you have any problem opening the valve, contact your Supervisor for direction.
2. Check the test dial for movement to make certain no leaks occurred while performing the installation.
   a. Seal the regulator.
   b. Disconnect the bonding jumper.
   c. Clean and paint the meter set.
3. Check the coupling nuts, service and piping for leaks. Perform "leak test" (sniff test for signs of gas leaks using the Natural Gas Detection Device and the soap test) and re-tighten if necessary.
4. Reenter the property and purge the air from the gas line by bleeding the furthest gas apparatus from the meter. You must bleed each individual apparatus.

Relighting All Apparatuses and Confirming Their Operation

Follow the procedure provided to you by the Utility for appliance relighting. If any adverse conditions arise, immediately shut off the gas, contact your supervisor for instructions, and record the appropriate comment in the Handheld such as, red/yellow tag defective appliance situation. Enter a Skip code such as, "red/yellow tag" in the Handheld.

Programming the Module

Refer to Chapter 3, *Using the Handheld Device*.

Performing Data Collection

1   See Chapter 3, *Using the Handheld Device*.
2   Seal the new meter.

Cleaning Up the Work Area

Clean up all installation tools, equipment and debris. Turn off any lights that you may have turned on. Restore the customer premise to the pre-visit condition.

Exiting the Premise

1   Do a final check to ensure that you have all of your equipment and tools.
2   Thank the customer for allowing us to service their gas meter, exit the premise, and provide the customer with a door hanger.

Module Retrofit (Index or Register) Replacement

Refer to Chapter 5, *Meter Module Retrofit*.

Customer Skip or Cancellation

If the customer's existing conditions do not qualify for new meter installation, notify your Supervisor. Wait at the site until your Supervisor arrives for further instructions. If, in the Supervisor's opinion, the condition of the customer's existing service piping or appliances is such that significant damage would result from attempting to remove and replace the existing gas meter, your Supervisor will so inform the Utility of the condition. The Supervisor will advise you to:

•   Inform the customer as to why the change-out will not take place.
•   Document the situation in your handheld.
•   Continue on to your next appointment.

If There Is Damage On Site When You Arrive

IMMEDIATELY turn off the gas. This will eliminate or minimize any property damage to customer.

•   Call your Supervisor immediately. Communicate the urgency of the situation. Your Supervisor will immediately initiate any necessary actions.
•   Do not leave the customer site until directed to do so.
•   It may be necessary to dial 911.

Battery Change Out

When the NOC analyst notices that the battery flag (R) is set, it could be due to:

- a single end-point occurrence, where the end-point may require more current to operate. In this case, a single battery needs to be replaced

- occurrence on several end-points, where a battery change out program needs to be implemented within the following year

- the flag being set during the coldest part of the day, where the battery may have less than 20% of energy left (2-4 years of service time)

- occurrence more often even during the daylight hours. In this case, the battery has even less energy remaining (1-2 years of service time)

To Change Out The Battery

1. Swipe a magnet on the left hand side of the main board compartment
2. Listen for up to ten beeps on the RF buster (which ensures that the latest data is saved to non-volatile memory)
3. Remove the four meter cover mounting screws
4. Remove the Gridstream M120 module from the gas meter
5. Open the battery compartment door
6. Replace the battery assembly with a new one (battery model #40-1590H)
7. Close the battery door
8. Replace the module onto the gas meter using the four original mounting screws
9. Insert two new security seals into the housing.

. .

If the gasket is old and no longer provides a good meter to module seal, replace the meter gasket with a new one.

If the module has already gone stale, perform the above steps, with the exception that when the battery door is open, connect the USB programming cable to the Gridstream M120 module. Use the HH to re-enter the energy value from the mechanical index dials and re-program the module.

Once the above steps are completed, it will require at least three hours for all flags to be cleared (based on five transmissions per hour and Alarm Count = 10).

5
Meter Module Retrofit

This chapter outlines the procedure for Meter Module installation. Examples of two supported index types appear in the following illustration.

Figure 5 - 1. Two Examples of Supported Index Types

To Begin Meter Module Retrofit

Prior to beginning the meter module retrofit, make sure you have followed the steps on Page -15.

1   Remove the tamper seals and index cover from the original gas meter.

Figure 5 - 2. Meter Module kit before installation

2   Remove all of the original gasket material. Replace the index if it is damaged, if the gears are discolored, or if it is metal.

> **Metal indexes cannot be used and must be replaced. Indexes must use ALL plastic gears and pointers and be housed in a plastic case.**

Validated Meter Index Part Numbers

Table 5-1. Indexes and Part Numbers (SC= Speed Counter, TC= Temperature Compensated

| Index Type	American Part No.	Dial or "B" number	Use Gridstream M120 Model #
1 Ft. Pointer w/ SC	28538G100	B172	26-1204
1 Ft. Pointer w/ SC & TC	28538G102	B174	
2 Ft. Pointer	04972G072	B424	
2 Ft. Pointer w/ SC & TC	04972G039	B177	
1 Ft. Odometer	54887G005	B697-W	26-1237
1 Ft. Odometer w/ TC	54885G006	B706-W	
2 Ft. Odometer	54885G006	B698-W	
2 Ft. Odometer	54885G015	B808-W	

> No warranty is expressed or implied regarding the use of similar but un-validated indexes.

WHEN REPLACING AN INDEX, YOU MUST ENTER THE METER READ INTO THE HANDHELD AND NOTE "INDEX EXCHANGED" IN THE COMMENT SECTION. For Index visual verification and exchange, see Appendix A, *Supplemental Information About Indexes*.
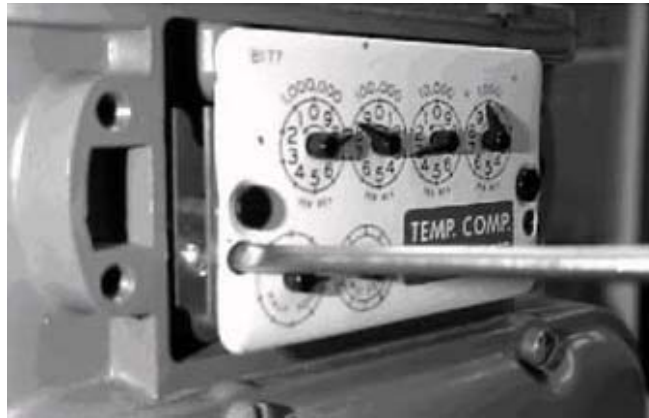
Figure 5 - 3. Removing the Index (one screw on each side)

3   Clean the area behind the index and cover gasket surface on the meter with a wire brush and a gasket scraper.

4   Verify that the meter dial area is free of any debris that may hamper module installation.

5   Remove the battery door.

6   Configure the module.

7   Position the module door so that the battery connector is near the jack and connect the battery.

8   Manuver the door into position, guide the tabs into the receivers, and snap the battery door onto the meter module.
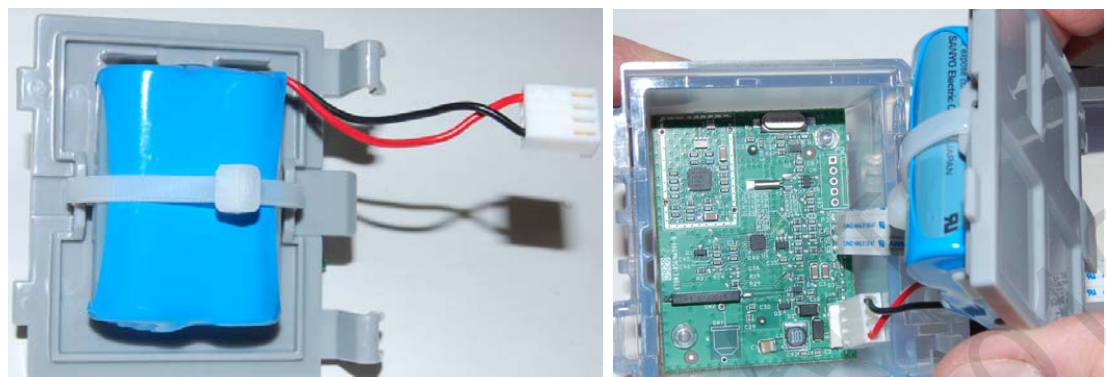

Figure 5 - 4. Connecting the battery pack

> ⓘ   This module is powered by a model 40-1235 battery pack. Battery pack appearance may vary.

6   Install the Meter Module to the meter by screwing in the four original mounting screws. Tighten the screws until the cover sits snug, then tighten an additional quarter-turn.

Figure 5 - 5. Battery Compartment closed

After the battery is installed, prepare to install the Dial Wheel.
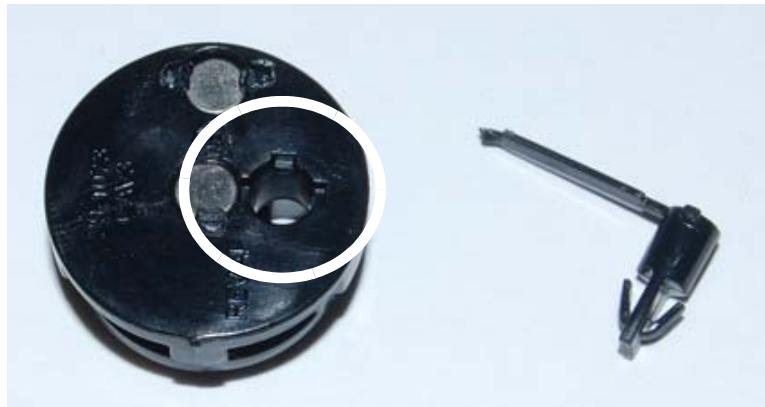
*Figure 5 - 6. Dial Wheel Kit (note Dial Wheel Pin Tab Hole indentations) separated*

Figure 5 - 7. Dial Wheel Pointer Slot

7   While holding the Dial Wheel, note the location of the Pointer Slot. With the index sitting on a work surface, set the Dial Wheel on the index face with the pointer slot oriented towards the pointer.

Figure 5 - 8. Dial Wheel with pointer slot positioned for pointer entrance

8   Slide the Dial Wheel toward the pointer until the Dial Wheel center contacts the pointer. The pointer center will gently impede the Dial Wheel. Do not force the Dial Wheel on the pointer center.
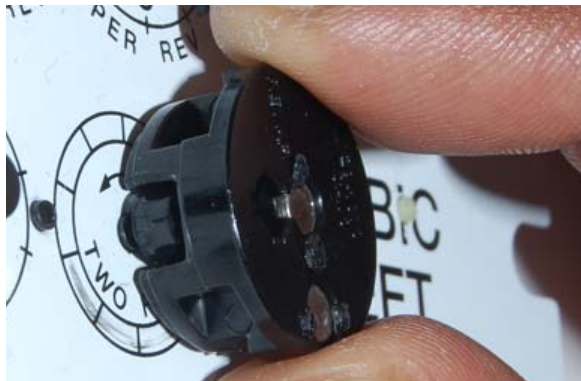
Figure 5 - 9. Dial Wheel placed on pointer

9   Take the Dial Wheel Pin and insert the pin into the Dial Wheel hole. Note the position of the three tabs of the Dial Wheel pin. Use the plastic connecting strip to orient the Dial Wheel pin to fit into the corresponding slot of the Dial Wheel Pin hole.
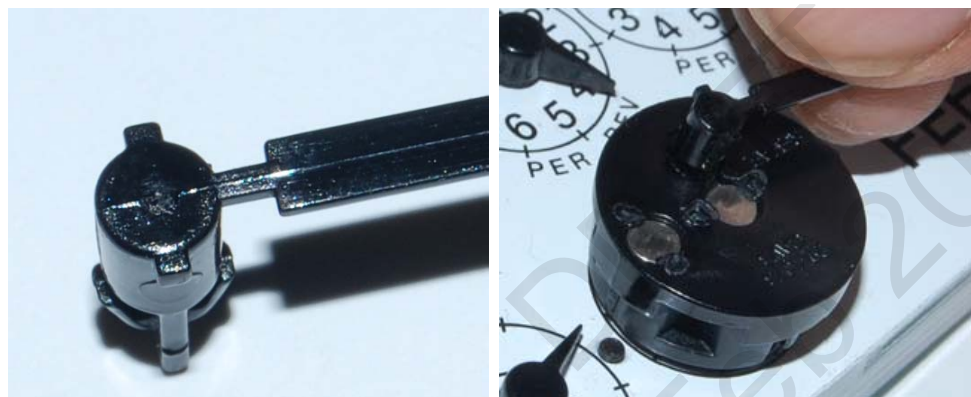
Figure 5 - 10. Orienting the Dial Wheel Pin before installation

10   You will feel a gentle click as the pin seats into place. Snap off or cut away the plastic connecting strip.

*Figure 5 - 11. Installing the Dial Wheel Pin*

After both screws are tightened and the Meter Index is installed, position the Gridstream M120 module for installation. Install, but do not tighten to mounting torque, the first of the module mounting screws.
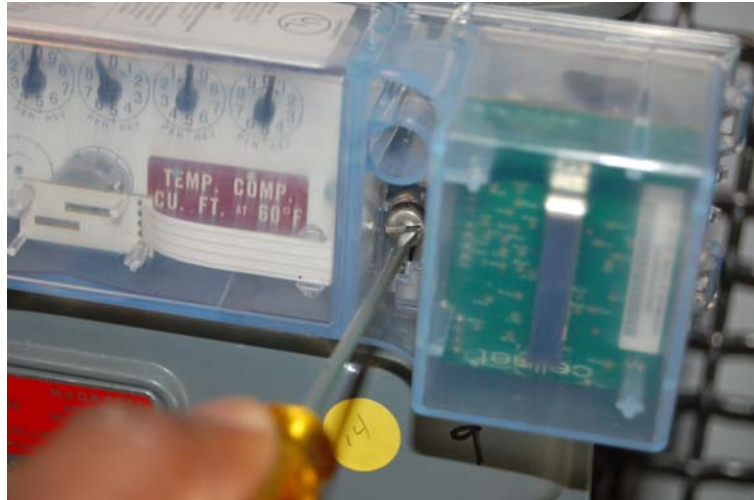
Discard the foam spacer in the Gridstream M120 index cover compartment before mounting the index cover onto the meter.

Use a torque screwdriver set at 10 inch-pounds to install the screws for all module installations.
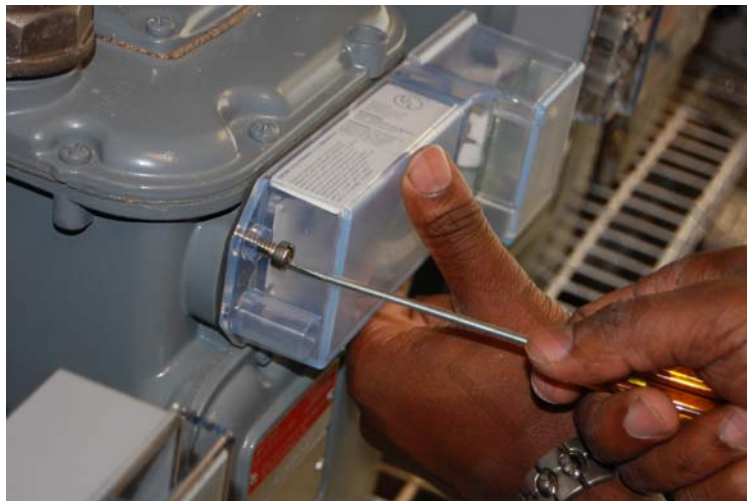
Figure 5 - 12. Installing the first Gridstream M120 Module cover mounting screw

Figure 5 - 13. A screw-holding screwdriver will simplify installing this mounting screw

11   Install the remaining screws. If available, use a screw-holding screwdriver to install
     the lower right-side module mounting screw will simplify this action. Tighten the
     screws until the cover sits snug, then tighten the screws an additional quarter turn.
     Prepare to verify that the module is transmitting.

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Figure 5 - 14. Index and Gridstream M120 Index Cover

Figure 5 - 15. RF Buster oriented to Meter Module for testing

12 Use the RF Buster to verify that the module is transmitting by holding the RF Buster with the magnet side to the top upper right quadrant of the module plastic housing. The RF Buster should beep ten times, indicating that the transmitter is sending RF packets. See Appendix B, *Using the RF Buster* for more information.

13 Install new tamper seals over two diagonal screws (upper right and lower left).

Figure 5 - 16. Meter module with security seals installed

14 Clean up debris from the retrofit and installation processes. Enter the appropriate information on a door hanger tag. A door hanger tag must always be left after a meter is serviced or exchanged.

15 At the end of the day, the installer returns to the Cross Dock for the check-in process. The installer should also turn in inventory of unused, defective, or broken gas Meter Modules. The installer is responsible for reconciling any discrepancies in changed data before the check-in process can be completed. Meter modules will not be checked out to an installer who has not completed the previous day's check-in process.

Do not clean the module or the cover on-site. Static discharge can ignite a natural gas leak and is a risk of fire or explosion.
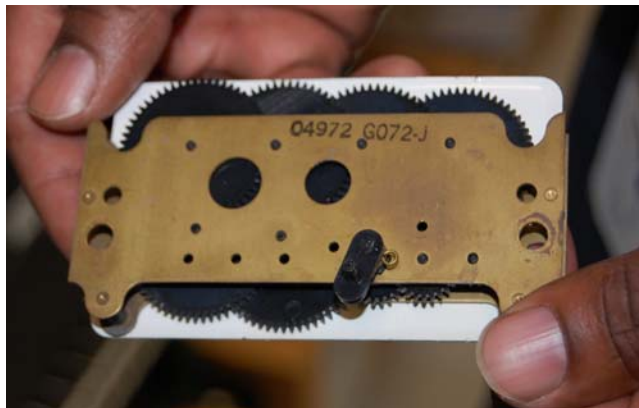
A

Supplemental Information About Indexes

Index Type

Metal indexes cannot be used with the Gridstream M120 system. If the meter has a metal index, the index MUST BE EXCHANGED for a plastic index.

⚠ **Metal indexes cannot be used and must be replaced. Only indexes with plastic gears and pointers are supported.**

Figure A - 1. Metal Index

Figure A - 2. Plastic Index

Validated Meter Index Part Numbers

Table A-1. Indexes and Part Numbers (SC= Speed Counter, TC= Temperature Compensated)

Index Type	American Part No.	Dial or "B" number	Use Gridstream M120 Model #
1 Ft. Pointer w/ SC	28538G100	B172	26-1204
1 Ft. Pointer w/ SC & TC	28538G102	B174	
2 Ft. Pointer	04972G072	B424	
2 Ft. Pointer w/ SC & TC	04972G039	B177	
1 Ft. Odometer	54887G005	B697-W	26-1237
1 Ft. Odometer w/ TC	54885G006	B706-W	
2 Ft. Odometer	54885G006	B698-W	
2 Ft. Odometer	54885G015	B808-W	

No warranty is expressed or implied regarding the use of similar but un-validated indexes.

B
Using the RF Buster

Landis⁺
|Gyr⁺

This Appendix provides instructions on the proper use of the RF Buster. It covers the proper placement of the RF Buster to ensure activation and troubleshooting for L+G gas modules.

Required Tools

The part number for the RF Buster is 26-1050.

Figure B - 1. RF Buster

Before using the RF Buster, test it by pressing the button. The RF Buster's LED lights red, and the internal speaker sounds for approximately ½ second. If nothing happens, or if the LED lights and the speaker sounds continuously, the 9V battery may be low. Replace the battery and repeat the test.

To access the battery compartment, open the spring-loaded cover on the back of the RF Buster. Take care not to misplace the cover or damage the battery door spring mechanism.

Residential Meter Modules

1   With the RF Buster LED facing you, press the button.

2   Place the corner of the RF Buster containing the magnet by the location of the reed switch on the Meter Module.

3   Continue to press the button. Hold the RF Buster within six inches of the module. The magnet triggers ten RF transmissions from the gas module, with each transmission separated by one second. The RF Buster LED lights and the internal speaker sounds about one-half second for each transmission detected.

4   If the module is functional, it will transmit.

If the RF Buster does not detect a transmission from the module, store the RF Buster. Remove the four module screws, place the module in its original packing bag, mark the module "defective," and return it to the meter shop.

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Figure B - 2.   Proper Placement of the RF Buster

GLOSSARY

AMR	Automated Meter Reading. Energy use data gathering from utility meters by any means other than walking up to the meter, looking at the dials, and recording the meter read for billing.
C.F.H.	Cubic feet per hour
CPR	Cellnet Pulse Recorder: serves as a customer end point device providing LAN service to meters; equipped with "pulse" outputs.
DES Server	Data Exchange Server
IDs	Utility-issued identification to denote an individual as an official Installer for the utility.
LAN	Local Area Network: the most basic level of the network. The LAN is the constellation of endpoints, collectors, and concentrators that feed data up through the network.
LP	Load Profile: method of obtaining a usage pattern, over a span of time, for an energy customer, typically based on intervals of 15, 30, or 60 minutes.
MRB	"Material Repair Board" Process of removing modules from the field.
OCDB	Operations Center DataBase. Endpoint Management system that reports to network, exchanges information with the utility and RIMS.
Personal Protective Equipment	Personal Protective Equipment, all necessary equipment used for the safety of the installer while performing work on metering equipment as defined in this manual.
PSR	Packet success rate: Number of good data packets received per total number of packets sent, expressed as a percentage.
RIMS	Retrofit Information Management System, an Oracle program managing the shop floor assembly and programming of modules, also stands for myriad of data tables. Exchanges information with OCDB.