



Excellence in Compliance Testing

Certification Exhibit

FCC ID: R7PER6R1S2

FCC Rule Part: 15.247, 15.249

ACS Project Number: 15-0174

Manufacturer: Landis+Gyr Technology, Inc.
Model: M120

Manual

M120 Module User Guide

Publication: 98-1718 Rev AA



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M120 Module User Guide			
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Revision History			
Modification Date	Revision	Description	Author
06/09/2015	AA	Released	Charlie Goerges
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Introduction

The M120 is a battery operated module designed for automated gas meter reading. The M120 is capable of recording gas consumption data from residential gas meters. It has a 2-way radio that is compatible with electric meters, routers, and mesh extenders for relaying sensor data to the utility.

Federal Communication Commission (FCC) Compliance Notice

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.

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:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Consult Landis+Gyr or an experienced radio technician for help.



WARNING: Changes or modifications to this device not expressly approved by Landis+Gyr will void the equipment warranty.

Host FCC Label Requirements

The host label(s) must be clearly visible after the device is installed, and display the module FCC ID in the following format:

Contains FCC ID: R7PER6R1S2

The following statement must also be clearly visible:

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.

RF Exposure Information

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 (8 inches) will be maintained.

Electrical Characteristics

Battery:

- Battery type: Lithium-Manganese Dioxide
- Nominal voltage: 3.0 V
- Capacity: 4800 mAh
- Landis+Gyr Part number: 40-1235

DC Characteristics:

- Operating Voltage Range: 2.4 V - 3.3 V
- Typical Sleep Current: 7 uA

Radio Characteristics:

- Typical Antenna Gain: 0 dBi
- Frequency Range: 902 MHz - 928 MHz
- Modulation Format: FSK
- Transmit Output Power (typical)
 - Single Channel Mode: - 27 dBm
 - Frequency Hopping Mode: 24 dBm
- Receive sensitivity (typical)

- 9.6 kbps: -112 dBm
- 19.2 kbps: -110 dBm
- 38.4 kbps: -108 dBm
- 115.2 kbps: -101 dBm
- Max Input Power, No Damage: 10 dBm

Functional Description

The M120 is a wireless battery endpoint for the application of automatic gas meter reading. The primary function of the module is to record pulses that represent measurement of gas consumption, and then deliver the data to the utility for processing. The block diagram below demonstrates this operation.

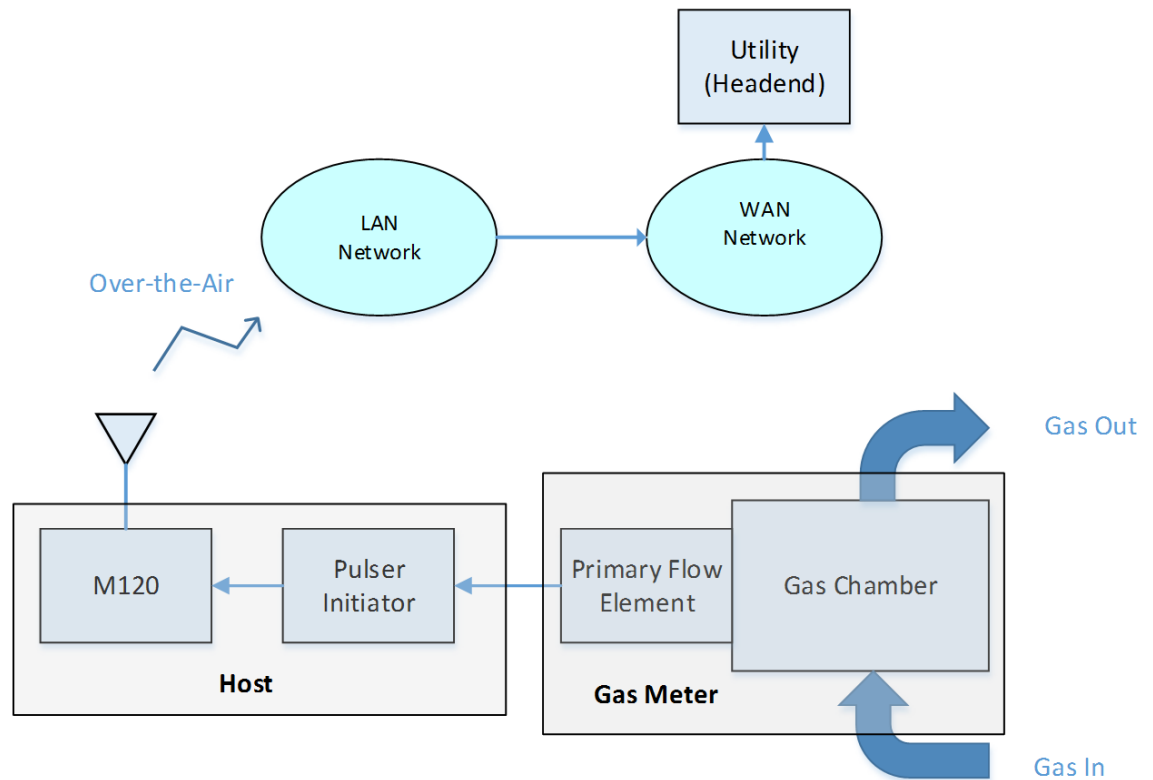


Figure 1. Operation Block Diagram

The module is designed to record pulses from a Form-C type pulse initiator. The pulse initiator is a sensor board that measures gas volume flow and relays the measurement to the M120 in the form of electrical pulses.

The radio has two operating modes, frequency hopping and single channel. The frequency hopping mode is the normal operating mode for network communication. The single channel mode is a low power mode, and is primarily used for field diagnostic purposes.

Host Installation

The battery is connected to the battery connector. The sensor board is connected to the M120 through a flex-cable. See picture below.

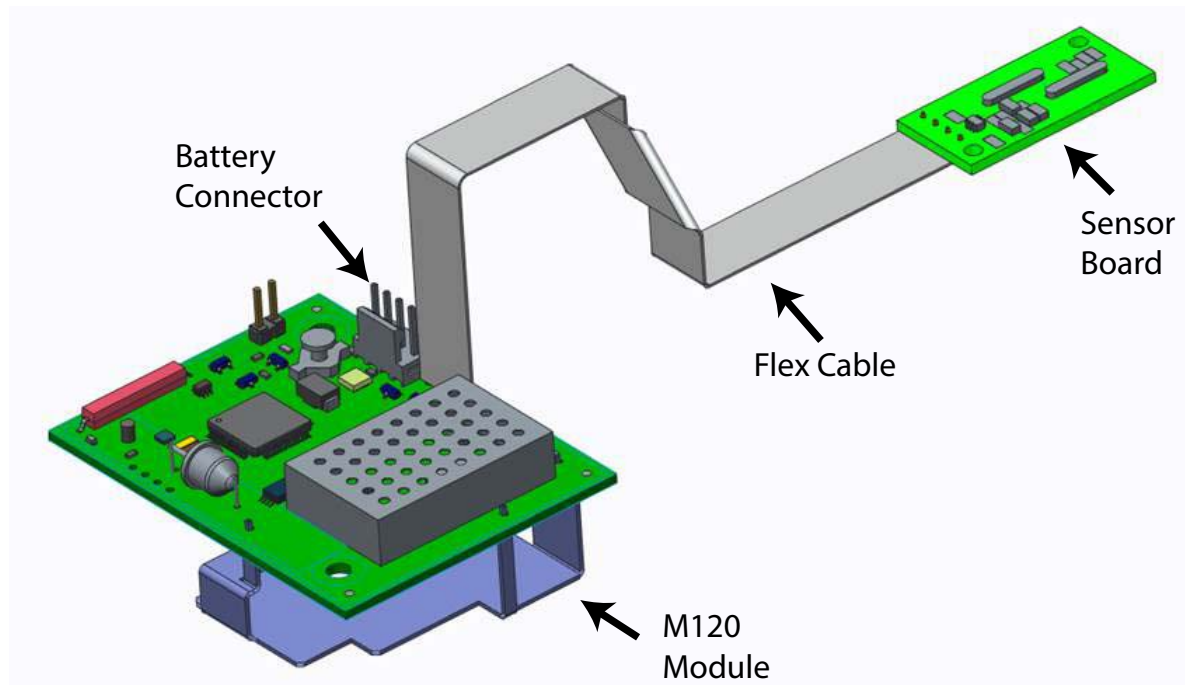
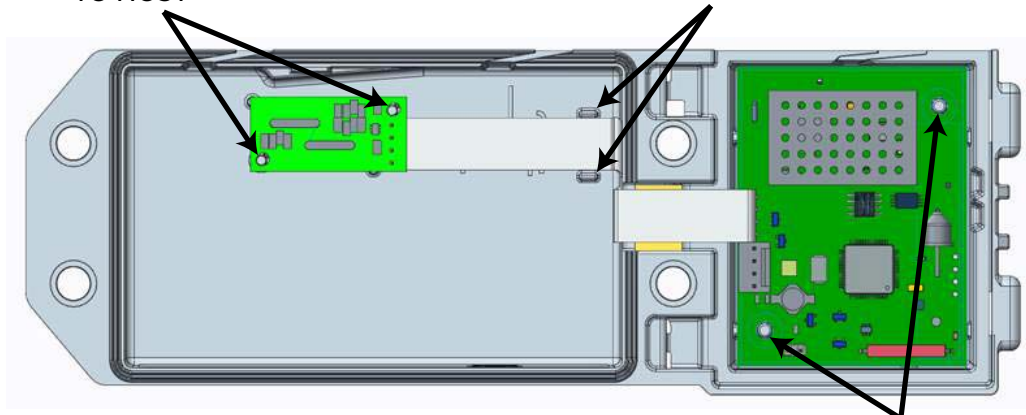


Figure 2. Sensor Board and Battery Connection to M120 Module

The M120 module and sensor board (pulse initiator) are designed to be heat-staked inside a plastic enclosure. See picture below.

HEAT STAKE THESE PINS
TO HOLD SENSOR BOARD
TO HOST

HEAT STAKE THESE PINS TO
HOLD FLEX-CABLE TO HOST



HEAT STAKE THESE TWO
PINS TO HOLD M120 TO HOST

Figure 3. M120 Module and Sensor Board Staking Locations