Endpoint Low Flow LF430 • v4.3.4 • b0a8cfc
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ENDPOINT LOW FLOW USER MANUAL

This manual is for end users, operators and maintainers of the Endpoint Low Flow (model LF430) deployed in the field. Site planning, installation and commissioning are out of scope.

Endpoint Low Flow (LF) is a rugged, wireless, battery-powered flow meter that accurately measures grease volume in automatic lubrication systems. The Endpoint LF models are designed to be installed downstream of injectors and distributors to monitor critical points.



SAFETY

Read this manual before operating, servicing or removing the device.

Signal-word conventions used in this manual:

- DANGER: imminent hazard that will cause death or serious injury.
- WARNING: hazard that may cause death or serious injury.

- CAUTION: hazard that may cause minor or moderate injury.
- NOTICE: practice not related to personal injury.

Before any physical interaction with the device:

- Isolate and lock out all power sources to the asset and the lubrication system.
- Depressurise the lubrication system completely.
- Wear PPE appropriate to the asset and grease in use.

Lithium primary batteries:

- Use only GreaseBoss-supplied or approved replacement cells.
- Do not short-circuit, crush, puncture, incinerate or recharge.
- Observe correct polarity (negative terminal to spring).
- Dispose of via an approved lithium battery recycler.

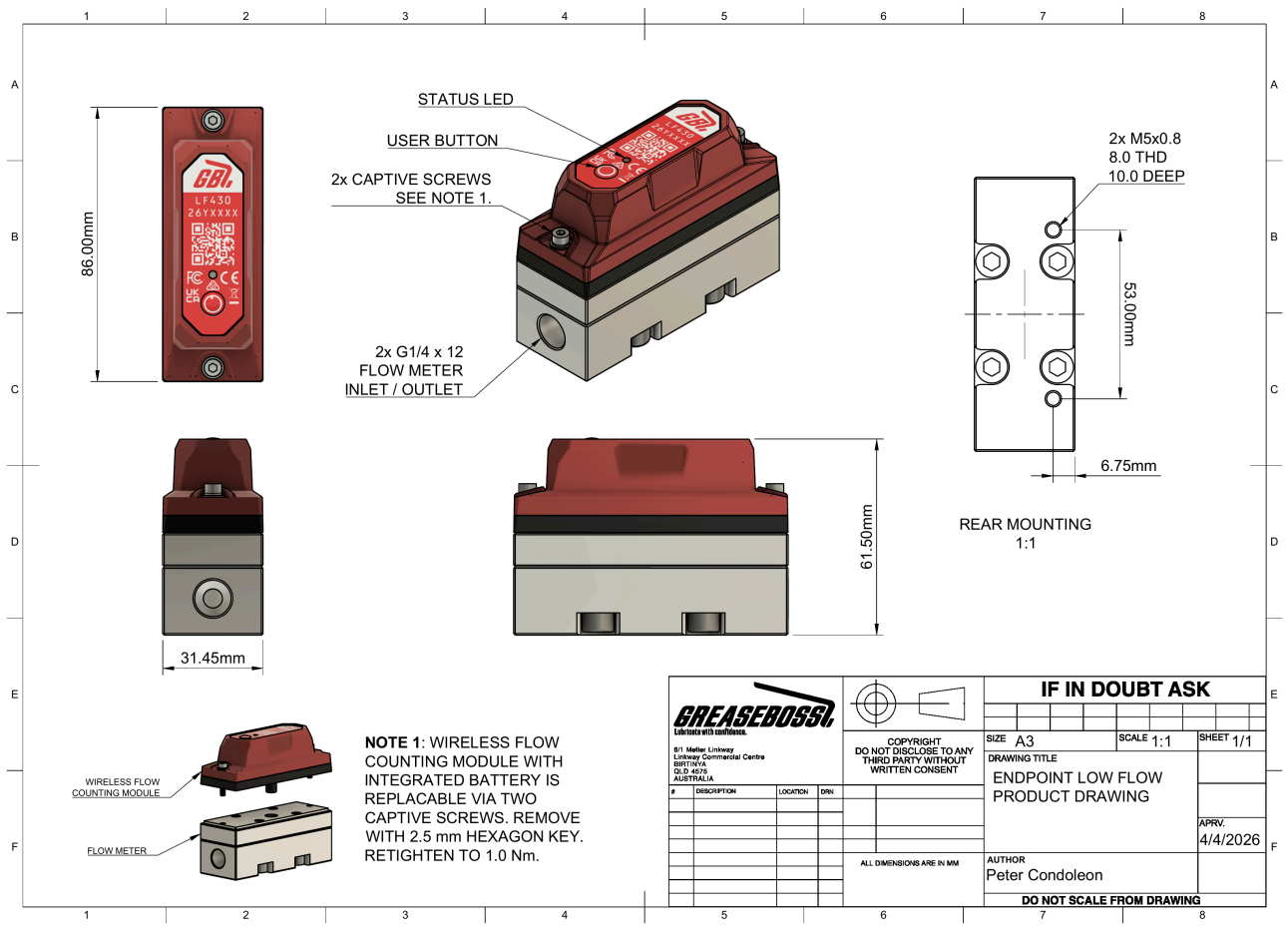
Intended use: monitoring of automatic lubrication systems within the rated pressure, temperature and fluid compatibility limits in the *Tech Specs*. Use outside these limits, or in environments with continuous immersion, intrinsic-safety requirements, or radio restrictions not covered by the device's regional approvals, is not permitted.

The Wireless Flow Counting Module is fully potted in polyurethane resin and is replaced as a sealed assembly. The battery is not field-serviceable; do not attempt to open or modify the module.

PRODUCT OVERVIEW

The Endpoint Low Flow is a battery-powered, single-port wireless flow meter for monitoring grease delivery downstream of injectors and distributors at critical lubrication points. It measures flow volume in one direction and reports data to a nearby GreaseBoss Gateway over Bluetooth Low Energy. The Gateway forwards data to GreaseCloud, where it is visualised and used to process reports or alerts.

External features, port arrangement and mounting geometry are shown in the product drawing below.



The device consists of a flow meter body and a fully potted Wireless Flow Counting Module retained by two captive screws. Record the serial number (`GBLF…`) and the assigned grease point at commissioning.

SPECIFICATIONS

See Tech Specs for full mechanical, electrical and environmental data. Highlights:

- Single-port flow meter, ¼" BSPP female, bidirectional flow with unidirectional sensing, oval-gear positive displacement
- 1× SAFT LS14500 AA primary cell, fully potted; 3 to 5 year service life
- Bluetooth Low Energy 2.4 GHz

- Operating temperature –40 °C to +85 °C
- Maximum pressure 52 MPa (7,500 PSI)
- Designed to IP68 (Official certification pending)

MOUNTING

The device is mounted via two rear-face threaded holes in the flow meter body. Refer to the Rear Mounting view in the product drawing for the hole pattern.

- 2× M5×0.8, 8.0 mm minimum thread, 10.0 mm deep
- Hole pitch: 53.00 mm

CONTROLS AND INDICATORS

The Status LED and User Button are located on the top of the Wireless Flow Counting Module; refer to the product drawing for their position.

The device has a single button on the lid and a multi-colour LED. All user interaction is through these.

BUTTON PRESS MATRIX

PRESS DURATION	ACTION	EXPECTED RESPONSE
1 second	Power / battery quick-check	Single short green LED flash. No flash indicates a depleted battery or device fault.
5 seconds (hold and release)	Force sync to GreaseBoss Gateway	LED sequence indicates sync progress and outcome (see *LED legend*).

Product-specific press durations are listed in the section below.

LED LEGEND

After a 5-second sync attempt, observe the LED sequence:

LED BEHAVIOUR	MEANING
Flashing **blue**	Device is searching for a Gateway.
Blink **red** three times	Device unable to find Gateway: out of range, Gateway not powered, or RF interference. Wait two minutes and retry up to three times.
Flashing **green**	Device is connected and syncing with a Gateway.
Flashing **green** followed by **solid green**	Sync successful: Gateway has acknowledged.
Flashing **green** followed by **solid red**	Sync failed: out of range, Gateway not powered, or RF interference. Wait two minutes and retry up to three times.
No LED activity on a 1-second press	Battery depleted or device fault.

NORMAL OPERATION

The device sleeps between grease events to conserve battery. When grease passes through the meter, the Low Flow wakes, measures flow, and queues a sync. It then transmits to the Gateway when next in BLE range.

The Wireless Flow Counting Module is fully potted and is replaced as a complete assembly (see *Maintenance*); do not attempt to open or modify the module. Do not exceed the rated pressure or temperature. Do not modify the antenna or RF path.

MAINTENANCE

ACTIVITY	INTERVAL	NOTES
Visual inspection	Per asset service interval	Mounting integrity, fittings and hose strain relief, no leaks, no impact damage to the housing.
Battery quick-check	As needed	Press the button for 1 second; a single green flash confirms the battery is OK.
GreaseCloud health review	Weekly	Review the Health Tab for offline status, weak RSSI and voltage trend.

ACTIVITY	INTERVAL	NOTES
Module replacement	When the voltage trend declines or the device reports Offline due to battery	Contact GreaseBoss Support to order a replacement Wireless Flow Counting Module. Loosen the two captive screws with a 2.5 mm hexagon key, lift off the depleted module, fit the fresh module, and retighten to 1.0 Nm. Re-sync (5 s press) after replacement. Return depleted modules to GreaseBoss for controlled disposal and recycling.

DECOMMISSIONING AND DISPOSAL

Isolate and depressurise the lubrication system before removal. Remove the Wireless Flow Counting Module per the module replacement procedure and return it to GreaseBoss for controlled disposal and recycling. The flow meter body may be retained, refurbished or returned to GreaseBoss for controlled disposal.

REGULATORY COMPLIANCE

ITEM	VALUE
Manufacturer / responsible supplier	GB Operations Pty Ltd (GreaseBoss), Shop 6, 1 Metier Linkway, Birtinya QLD 4575, Australia
Product marketing name (PMN)	Endpoint Low Flow
Model / hardware version (HVIN)	LF430
Radio module	u-blox BMD-380
FCC ID	Contains FCC ID: XPYBMD380
IC (ISED)	Contains IC: 8595A-BMD380
Antenna	Integrated chip antenna (module)
Frequency band	2402 to 2480 MHz (Bluetooth Low Energy)
Maximum transmit power	+8 dBm conducted

The identifiers referenced below are printed on the device serial decal. Quote them in full when contacting a regulator or GreaseBoss Support.

UNITED STATES (FCC) AND CANADA (ISED)

This device complies with Part 15 of the FCC Rules and with Innovation, Science and Economic Development Canada's licence-exempt RSS(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.

> L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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;
> 2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

WARNING: Any changes or modifications not expressly approved by the grantee could void the user's authority to operate this equipment.

> AVERTISSEMENT : Tout changement ou toute modification n'ayant pas été expressément approuvé par le titulaire du certificat peut annuler le droit de l'utilisateur d'utiliser cet équipement.

CLASS A DIGITAL DEVICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in an industrial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAN ICES-003 (A) / NMB-003 (A)

> Cet appareil numérique de classe A est conforme à la norme canadienne ICES-003. Son utilisation dans une zone résidentielle risque de provoquer du brouillage préjudiciable, auquel cas l'utilisateur devra corriger le brouillage à ses propres frais.

RF EXPOSURE

This equipment complies with the FCC and ISED Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and all persons during normal operation.

> Cet équipement est conforme aux limites d'exposition aux rayonnements de la FCC et d'ISDE Canada établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé en gardant une distance minimale de 20 cm entre le radiateur et toute personne pendant le fonctionnement normal.

EUROPEAN UNION (CE) AND UNITED KINGDOM (UKCA)

GB Operations Pty Ltd (GreaseBoss) declares that this device is in conformity with Directive 2014/53/EU (Radio Equipment Directive) and with the UK Radio Equipment Regulations 2017. The full text of the EU and UK declarations of conformity is available from GreaseBoss Support.

AUSTRALIA AND NEW ZEALAND (RCM)

This device carries the Regulatory Compliance Mark. GB Operations Pty Ltd (GreaseBoss) is the responsible supplier and declares compliance with the applicable ACMA and EESS requirements for Australia and with the equivalent MBIE and RSM requirements for New Zealand.

DISPOSAL

The crossed-out wheeled bin symbol on the device indicates that within the European Union and the United Kingdom this product must not be discarded as unsorted municipal waste at end of life. Return it to GreaseBoss, or hand it to a designated collection facility for the recovery and recycling of waste electrical and electronic equipment. Lithium primary cells must be disposed of separately via an approved battery recycler.