

Easypulse User Manual

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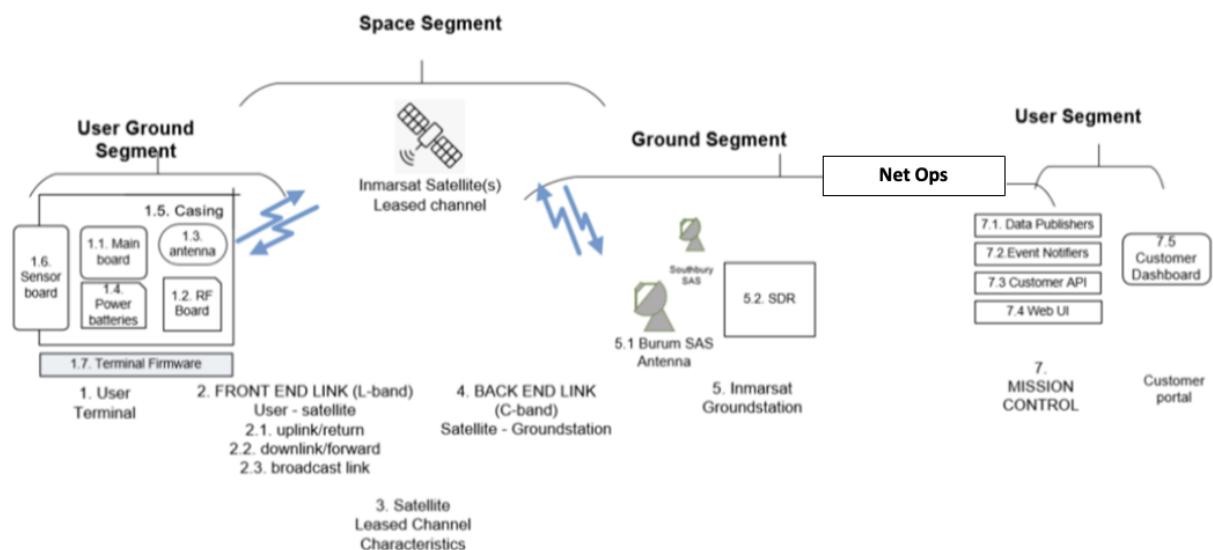
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1. Easypulse User Manual

Solution Overview

General System can be represented as on the figure below:



The E2E lifecycle of the Easypulse message consists of 4 major components:

- User Ground Segment - consists of the Easypulse Edge Station terminal
- Space Segment - The payload and link connectivity provided by our 3rd party satellite connectivity partner Inmarsat
- Ground Segment - Inbound and Outbound messaging from the Ground station/Teleport
- User Segment - Where you will be able to observe your data insights in the Hiber Dashboard aka Mission Control

The Easypulse Edge Station, from now referred to as Edge station, is a low cost, low power, easy-to-use device that enhances and optimises Customer operations by providing data insights into everyday-use of their machinery. With the Edge station (battery) you are able to track your assets, set geofence zones and take advantage of the sensory inputs which are available (3-axis accelerometers)

What's in the Box?

- Easypulse Edge Station
- USB C Cable
- Activation Magnet
- 4 x Magnets
- 4 x Dome nuts
- 4 x 45mm M6 Standoffs
- Double sided tape
- One Pager on device (instructions and marketing)
- Wire with loop clump and snap-hook (anchoring the device)

2. Safety Precautions

Introduction

Read these simple guidelines in regards to the Edge station. Not following them may be dangerous or against local laws and regulations.

Device Care and Maintenance

Handle your device with care. The following suggestions help you keep your device operational.

- Do not use mounting methods which have not been supplied or approved by Hiber.
- The device may only be opened by a specialist or an instructed person.
- Unauthorized modifications may damage the device and violate regulations governing radio devices.
- Do not drop, knock, or shake the device. Rough handling can break it.
- Do not clean the device with solvents, toxic chemicals or strong detergents as they may damage your device and void the warranty.
- Do not paint the device. Paint can prevent proper operation.

Damage

If the device is damaged contact support@hiber.global. Only qualified personnel may repair this device.

Small children

Your device is not a toy. It may contain small parts. Keep them out of the reach of small children.

Storage

Always store and use the device with any covers attached and stored in the provided packaging.

Safety distance

The Easypulse Edge station emits a radio frequency. So to be safe, you need to keep a minimum of 1m away from the device when it is operating and always turn it off before carrying out any work. Also, never install it where it will be closer than 1m to people when operating.

If the device needs maintenance, contact support@hiber.global. Only qualified personnel may perform maintenance on this device.

Safety Precautions during handling of Batteries

When used correctly, lithium batteries provide a safe and dependable source of power. As previously mentioned under no circumstances should unqualified individuals open up the device, however, for qualified personnel the following precautions should be taken to prevent misuse or abuse, injury, leakage, venting or in extreme cases, explosion and/or fire.

1. Keep batteries out of the reach of children



KEEP OUT OF REACH OF CHILDREN. Swallowing can lead to chemical burns, perforation of soft tissue, and death. Severe burns can occur within 2 hours of ingestion. Seek medical attention immediately.

2. Do not allow children to replace batteries without qualified adult supervision

When replacing batteries, ensure they are placed correctly with regard to polarity. Failure to do so can result in overheating, leakage, venting, rupture, explosion, fire and / or personal injury.

3. Do not short-circuit the batteries

When the positive (+) and negative (-) terminals of a battery are in electrical contact with each other, the battery becomes short-circuited. For example, loose batteries in a pocket with keys or coins, can be short-circuited. This can result in venting, leakage, explosion, fire and/or personal injury.

4. Do not charge batteries

Attempting to charge a non-rechargeable (primary) battery can cause internal gas and/or heat generation resulting in leakage, venting, explosion, fire and//or personal injury.

5. Do not force discharge batteries

When batteries are force discharged by means of an external power source, the voltage of the battery will be forced below its design capability and gases will be generated inside the battery. This can result in leakage, venting, explosion, fire and/or personal injury.

6. Do not mix battery packs or batteries of different types or brands

When replacing batteries, replace all of them at the same time with a new and Hiber-approved battery pack e.g replacement pack. Some batteries of a different brand and/or battery packs inserted in the device may lead to unexpected or adverse conditions in operation and/or result in device failure. This can also result in leakage, venting, explosion, fire and/or personal injury.

7. Exhaust batteries should be immediately removed from equipment and properly disposed of

When discharged batteries are kept in the equipment for a long time, electrolyte leakage can occur causing damage to the equipment and/or personal injury.

8. Do not heat batteries

When a battery is exposed to heat, leakage, venting, explosion or fire can occur and will result in personal injury.

9. Do not weld or solder directly to batteries

The heat from welding or soldering directly to a battery can cause leakage, venting, explosion and/or fire and can cause personal injury.

10. Do not dismantle batteries and/or battery pack

When a battery/battery pack is dismantled or taken apart, contact with the components can be harmful and can cause personal injury or fire.

11. Do not deform batteries

Batteries should not be crushed, punctured, or otherwise mutilated. Such abuse can cause leakage, venting, explosion or fire and cause personal injury.

12. A lithium battery with a damaged container should not be exposed to water

Lithium metal in contact with water can produce hydrogen gas, fire, explosion and/or cause personal injury.

13. Do not encapsulate and/or modify batteries and/or battery pack

Encapsulation or any other modification to a battery and/or battery pack can result in blockage of the safety vent mechanism(s) and subsequent explosion and personal injury. Therefore, no modifications to battery packs should be carried out by anyone other than the battery manufacturer.

14. Store unused batteries/battery packs in their original packaging away from metal objects. If already unpacked, do not mix or jumble batteries

Unpacked batteries could get jumbled or get mixed with metal objects. This can cause battery short-circuiting which can result in leakage, venting, explosion or fire, and personal injury. One of the best ways to prevent this from happening is to store unused batteries in their original packaging, if available. No modifications to battery packs should be carried out by anyone other than the battery manufacturer.

15. Remove batteries from equipment if it is not to be used for an extended period of time unless it is for emergency purposes

It is advantageous to remove batteries immediately from equipment which has ceased to function satisfactorily, or when a long period of disuse is anticipated. Although most lithium batteries on the market today are highly leak resistant, a battery that has been partially or completely exhausted might be more prone to leak than one that is unused.

16. Do not dispose of batteries in a fire

When batteries are disposed of in a fire, the heat build-up can cause an explosion and/or can cause personal injury.

Packaging and Handling of Battery Cartons

The packaging is adequate to avoid mechanical damage during transport, handling and stacking. Do not store batteries and/or battery packs in any other storage container other than that provided by Hiber so as to prevent the development of unintentional electrical contact, short-circuit, shifting and/or corrosion of terminals, and afford some protection from the environment.

3. General Specifications

Main components	
Modules	GNSS module (GPS, Glonass, Galileo, BeiDou/QZSS)
	(2x) 3-axis accelerometer
Available sensor data	
Sampled and transmitted every 15 minutes	Location (GPS lon/lat coordinates)
	Speed (km/h)
	Movement detection
	Vibration (start/stop vibration event)
	Shock (extreme event detection)
	Vehicle run time and idle time (vibration on & moving/static asset)
Dashboard	
Features	Map
	Trip history breadcrumb view with configurable period
	Geofencing
	Alarms on geofence crossing
	Historical data
Programming	
Firmware	Over-the-air firmware updates and configurable settings
API for 3rd party platforms	
Hiber gRPC API based on	Protobuf - Google's protocol buffer
	Protobuf libraries in most used languages,

such as Java, Javascript, Golan, C#, C, and C++	
gRPC - Remote Procedure Call (RPC) definition in the protobuf format, based on HTTP/2	
Power supply	
Power source	Battery powered*
Maximum battery lifetime at 25°C temperature	1 year at 1 message every 15 minutes
	3 years at 1 message every 1 hour
	5 years at 1 message every 6+ hours
Capacity	410Wh
* Batteries cannot be replaced by the customer. We'll ship you a new device before the batteries are depleted.	
Memory	
Data storage and backup	Store-and-forward capability
Satellite connectivity	
Coverage	Between 60N and 60S latitudes
Communication	2-way communication
EIRP	< 7dBW
Frequency	Tx: 1626.5 - 1660.6 MHz
	Rx: 1525 - 1559 MHz
Payload	32 Bytes per message. Multiple messages can be send per transmission
Maximum data transmission	96+ times per day to hiber.cloud, based on the subscription model
Fixed transmission interval	15 minutes (typical)
Data polling	By user request

Installation

Slap-n-Track	Mounting plate
	Magnets
	Adhesive (optional)
Direct mounting	Mounting plate
	Bolting (optional)
	Glueing (optional)

Mechanics

Dimensions	160 x 160 x 90 mm (excluding mounting plate)
	225 x 225 x 100 mm (including mounting plate and magnets)
Weight	2.5 kg (including mounting plate and magnets)
IP rating	IP67, dust and water ingress
Operation temperature	-20°C to +65°C

Security

Encryption	AES-256 data encryption (optional)
	Hardware encryption and data security (ARM® Cortex®-M33)

4. Easypulse Edge Station Installation

The Edge station can be positioned in any location provided enough space to do so.

The device can be installed on-location in a multitude of ways:

- Magnets or Adhesive
- Mounting solution (provided by Hiber)
- Custom Mounting Solution (down to the request of the Customer/Client)



Mounting with magnets



Example of custom mounting solution

Installation Best Practice

Install the Edge station with a clear line of sight, in a horizontal position and mounted on top of the vehicle with no obstruction mounted/placed on the top of the device (e.g., do not place under the vehicle, under a seat in a cabin or park in an enclosed space). This will benefit the RF performance component of the Edge station coverage leading to better availability of the network. **Due to vibration testing on-going, do not place the device on the under-carriage of a railcar use case.**

Edge Station Vehicle Choice

As the edge station is still in the R&D phase; the range of machines and vehicles to be compatible with the device are not, as of yet, defined. This is why the edge station has been designed with installation-flexibility in mind.

Edge Station Terminal Activation Procedure

Step 1: Identifying location & connecting to the satellite

The Edge station requires an internet connection for initial configuration set up. Therefore, please ensure this is done prior to going into the field for installation. This process is only temporary. In the future, there will be a working forward link - this will enable in-field configuration set up.

Step 2: Activating the device & establishing connection

Hold the magnet over the (location sensor/sticker) and wait until you hear a beep from the device, hold it there until the pitch of the beep goes up. If The device is now turned on (beware! The sound is very soft). Once the device is turned on, place it somewhere where it has clear visibility to the sky for a good connection and in a horizontal position.

Step 3: Verifying successful satellite connection & observing customer data

You can check the device is enabled and successfully operating by logging into the Hiber Easypulse Mission Control.

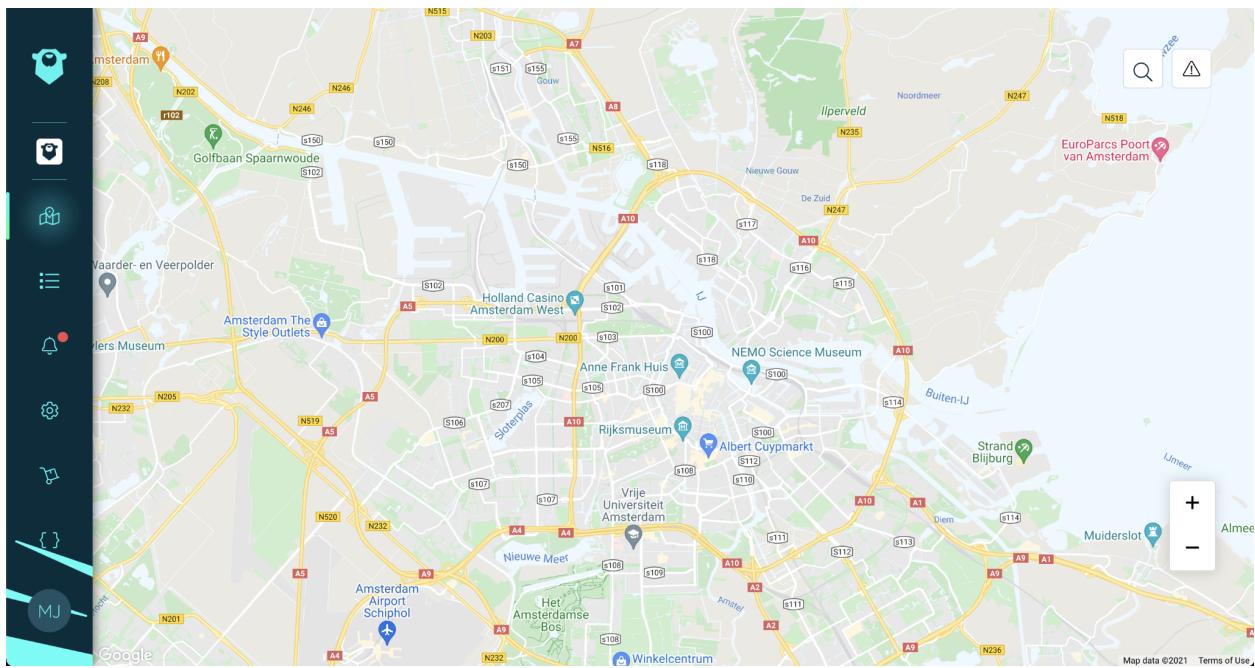


Table of parameters collected, description, respective unit, range (min-max)

Parameter	Description	Unit(s)	Range
Location	Coordinates of location at the time of data capture	Latitude, longitude (deg)	+/- 1.8m
Geofence	Entry and exit captures of enclosed area	Latitude, longitude (deg)	n/a
Distance	Distance travelled by asset	km	-
Speed	Speed of the asset at the time of data capture	km/h	-
Shock	Detection of shock observed by the asset	TRUE/FALSE	n/a
Vibration	Detection of vibration of the asset	TRUE/FALSE	n/a
Motion	Detection of motion of the asset	TRUE/FALSE	n/a
Run-time	Duration of the asset in operation (moving)	h/day, h/week, h/month	-
Idle-time	Duration of the asset in idle (on but not moving)	h/day, h/week, h/month	-
Off-time	Duration of the asset is off	h/day, h/week, h/month	-
Theft	Detection of attempts to steal the asset and/or it's contents	TRUE/FALSE	n/a

How to set the Geofence?

1. Step 1: **Create a location** which describes the area of the geofence, if it doesn't already exist
2. Step 2: **Create an alarm** (or reuse an existing alarm) using the location defined in step 1
3. Step 3: **Assign the alarm** from step 2 to the asset(s) you want to monitor with a geofence
4. When the asset moves outside the location (defined in step 1) an alarm (defined in step 2) will be triggered. You can see notifications of such alarms in the *Alerts Panel* or you can subscribe to receive notifications for *modem alarms* by setting your email preferences in the *Notifications* section.

5. Environmental Protection

Avoid sea water

Using this device in marine environments with exposure to salt water may damage the enclosure. Therefore, it is recommended that care is taken to ensure the device avoids sea water as best possible.

Snow

The possibility of snow coverage on the top surface of the device may hinder the RF performance of the Edge station. Therefore, it is recommended that inspection of the device is carried out to ensure expected operational availability.

6. Technical Support

If you cannot find the information you are looking for, you can submit an online support ticket through our Customer Operations team <https://support.hiber.global/>. Our helpful team will get back to you as soon as possible to answer any questions that you may have.

How to reset the device?

Contact Hiber Technical Support on our website: <https://support.hiber.global/> or email us at: support@hiber.global

7. Conformity (certification in process)

CE (R&TTE)

The Easypulse Edge Station is CE certified (R&TTE directive) as stated in “Declaration of Conformity with R&TTE Directive” enclosed in electronic copy at the end of this appendix.

IC

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.

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.

This Class [B] digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe [B] est conforme à la norme NMB-003 du Canada.

FCC

Note: 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 may cause harmful interference to radio communications if not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation.

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.

NOTICE:

Changes or modifications made to this equipment not expressly approved by Hiber may void the FCC authorization to operate this equipment.