Honeywell

THE POWER OF **CONNECTED**

IF4 – FIXED UHF RFID

USER GUIDE

(V1-EN)

Disclaimer

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Warning: warranty will be voided if you open the device enclosure.

Cybersecurity Information

This section describes the cybersecurity posture and operational guidance for an RFID UHF reader. The reader does not store sensitive information or cryptographic keys, implements authentication and authorization, provides password reset mechanisms, complies with ISO/IEC 18000-6 for the air interface, and supports Telnet over LAN (use of Telnet is the end-user's responsibility). The reader supports SSH connection.

1. **Scope and purpose.**
   This document applies only to the RFID reader device (edge reader). The customer server and customer backend systems are out of scope; the device (reader) includes its own access server to enable interaction.

2. **Product overview.**
   The reader interrogates UHF tags using the ISO/IEC 18000-6 air interface and forwards tag identifiers to a configured server. Security layer for tags is customer’s responsibility. The device is designed to avoid persistent storage of tag identifiers and does not retain cryptographic keys in non-volatile memory.

3. **Data handling and key management.**
   - No sensitive data storage: Tag identifiers are held only in transient buffers for transmission and are not logged persistently unless explicitly enabled by the customer. Honeywell is not a controller nor a processor of this information.
   - No cryptographic key storage: The reader firmware contains no persistent cryptographic key material.

4. **Authentication, authorization and password.**

- Authentication: The reader supports multiple accounts protected by a password.
    - Web Server: Administrator account and Operator account
    - USB: account used only for network configuration
    - SSH: only admin is allowed. SSH is disabled by default, user must enable it on the web page.
    - BRI TCP Ports: BRI TCP Ports are disabled by default, user must enable it on the web page before use.
- Authorization: This applies for the web server where we have an Administrator account and Operator account.

5. **Air interphase compliance.**

   The reader implements the parameters and procedures defined in ISO/IEC 18000-6 for UHF RFID communications to ensure interoperability with compliant tags and readers.

6. **Network access and Telnet**

   Telnet is available for local LAN management. Telnet transmits credentials in clear text and is considered insecure on untrusted networks; its risks are well documented. The device ships with Telnet enabled by default because it is the primary management channel. End users are responsible for network-level mitigations (segmentation, ACLs, VPNs) and for deciding whether to disable Telnet in their environment. Web login will block after 5 wrong attempts for 15 minutes.

7. **Deployment recommendations and operational control**
    - Change default admin password at first use.
    - Segment the reader on a management VLAN and restrict access via ACLs.
    - Ensure the customer's backend server implements TLS and secure storage.
    - Limit physical access to the device and control reset procedures.

8. **Residual risk and responsibilities**

   Residual risks include exposure of tag identifiers in transit if the backend does not apply encryption, and risks from Telnet use on untrusted networks. Even if reader implement encryption mechanisms, it is customer's responsibility the backend security, network controls, and operational procedures.

9. **References**
    - IEC 62443 overview and guidance.
    - ISO/IEC 18000-6 standard and RFID Gen2 guidance.
    - Telnet security considerations and risks.

Regulatory

Do not operate the equipment outside the configured/certified region.

Each Country has its own regulatory requirements.

Check local rules and limits before setting up/operating the equipment.

RAIN

RAIN-compatible fixed reader.

Honeywell

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Before You Begin

This section provides you with safety information, technical support information, and sources for additional product information.

Safety Information

Your safety is extremely important. Read and follow all warnings and cautions in this document before handling and operating Intermec equipment. You can be seriously injured, and equipment and data can be damaged if you do not follow the safety warnings and cautions.

A caution alerts you to an operating procedure, practice, condition, or statement that must be strictly observed to prevent equipment damage or destruction, or corruption or loss of data.

Note: Notes either provide extra information about a topic or contain special instructions for handling a particular condition or set of circumstances.

Who Should Read This Manual

This document is for the person who is responsible for installing, configuring, and maintaining the Honeywell IF4 RFID fixed Reader.

This document provides you with information about the features of the IF4, and how to install, configure, operate, maintain, and troubleshoot it.

Before you work with the IF4, you should be familiar with your network and general networking terms, such as IP address.

ATTENTION:
DO NOT OPERATE THE EQUIPMENT OUTSIDE THE CONFIGURED REGION.
EACH COUNTRY HAS ITS OWN REGULATORY REQUIREMENTS.
CHECK LOCAL RULES AND LIMITS BEFORE SETTING UP/OPERATING THE EQUIPMENT.

1) ABOUT THE RFID READER

This chapter introduces the IF4 Fixed Mount RFID Reader Series and includes descriptions of the reader features and basic operation.

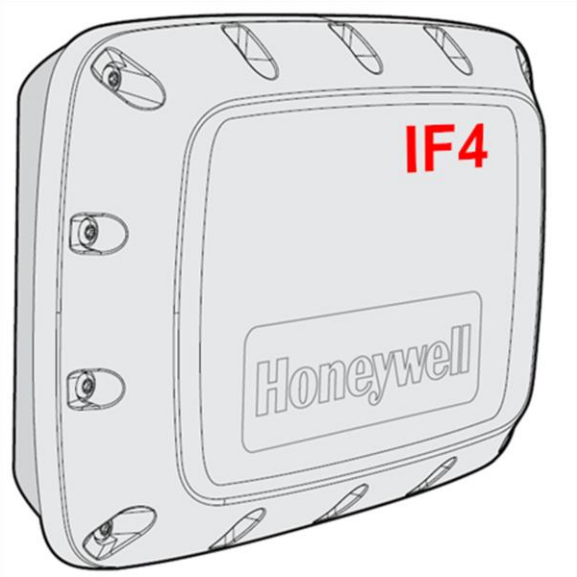


Fig. 1 – IF4 Fixed RFID reader – integrated antenna.

The IF4 Fixed RFID Reader is an RFID reader with an integrated antenna that provides connectivity between tag data and an enterprise system.

Features of the RFID reader include:

- Integrated antenna or two external antenna port options*.
- 1 GHz high performance processor.
- 1GByte RAM.
- 8 GByte Flash eMMC.
- Web browser interface for easy configuration.
- Support for EPCglobal Gen-2 tag types.
- IP65 seal rating for outdoor installations*.
- Support for Power Over Ethernet.
- VESA mount compatibility.
- Optional GPIO port – 4 inputs + 2 outputs*.

* Depends on part number.

1.1) IF4 MODELS

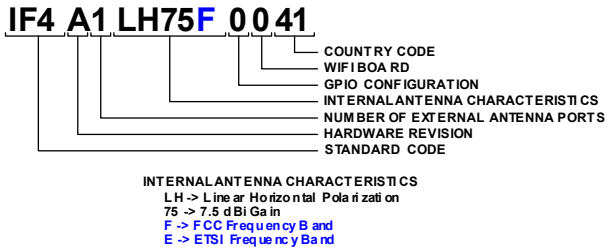
Table 1 shows the IF4 PN models - SKUs:

Part Number	RFID Protocol	Antenna		GPIO	RS232 BRI	Aux 12V out	DC power 10~30VDC input
		Integrated	External ports				
IF4A1LH75F00XX	GEN2+ARTEFATO	Yes	1	No	No	No	No
IF4A1LH75FE0XX	GEN2+ARTEFATO	Yes	1	Yes	Yes	Yes	Yes
IF4A200000E0XX	GEN2+ARTEFATO	No	2	Yes	Yes	Yes	Yes

Table 1 - IF4 SKUs

Fig 1- IF4 a) Without integrated antenna. b) With integrated antenna.

- **PART NUMBER GENERATION RULE**



* WiFi card not supported by IF4 model.

- **IF4 ACCESORIES.**

You can use these accessories (sold and ordered separately) with the IF4. To order accessories, contact your local sales representative.

Accessory	Description	Part Number
Mounting Bracket	Antenna mounting bracket without the fixing "U"	655-600-001
Ethernet Cable connector kit	The Ethernet Connector Kit provides a secure connection from your Ethernet cable to the IF4 and is required if you need to maintain the IP65 rating of the IF4.	213-030-001
PoE Injector 802.3af/at	The PoE injector provides the power supply with ethernet cable.	BT-CAT6E-P1-HP-48W
Power Supply 24V	The external power supply (AC/DC) provides the power supply.	LRS-35-24

1.2) READER PORTS AND CONNECTIONS

Depending on your configuration, the ports that are available on the IF4 may be different.

C	Port	Description	Type
1	Ethernet	10Base/100Base-T port that connects the reader to your Ethernet network. The reader auto-negotiates with the server to set the best data rate. This port uses MDI/ MDI-X auto-switching so you can connect either a standard Ethernet cable or a crossover cable. The port also supports Power Over Ethernet (POE). To power the reader, you need an 802.3at-compliant power supply.	RJ 45 F
2	GPIO (optional)	General purpose GPIO input/output ports that connects the reader to industrial controls such as relays or indicator	DB 15 F
3	USB	Connects the reader to a desktop PC for configuration only.	USB B F
4	Antenna	Connects an external antenna to reader.	TNC F Rev

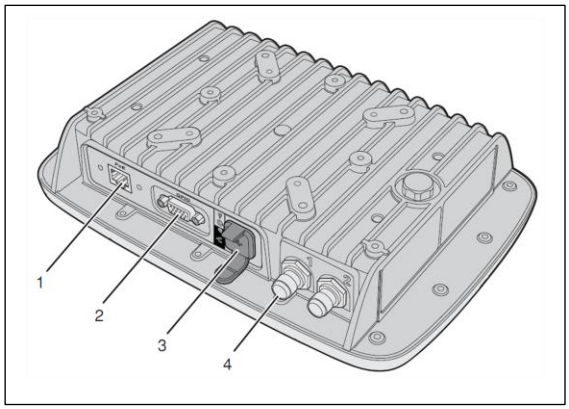


Fig. 2 – IF4 Reader – back view.

IS STRONGLY RECOMMENDED TO USE SHIELDED CABLES FOR ETHERNET, SERIAL RS232 AND GPIO CONNECTIONS.

1.3) LED INDICATORS

The Honeywell IF4 fixed RFID Reader has two LEDs to indicate its status during operation.

Symbol	Name	Color	Description
	RFID antenna	Solid Green	RF field is active
		Blinking Green	A tag is being interrogated.
		Blinking Red	The reader cannot output the requested RF power level, or an RF fault is detected.
		Off	The reader is not powered.
	Ethernet network	Solid Green	The reader is powered, an Ethernet link is established, and the host is connected.
		Flickering Green	Packets of information are being sent through the Ethernet port.
		Blinking Green and Orange	An Ethernet link is established, but there is no host connection.
		Blinking Red	The reader is powered, but an Ethernet link is not established.
		Off	The reader is not powered.

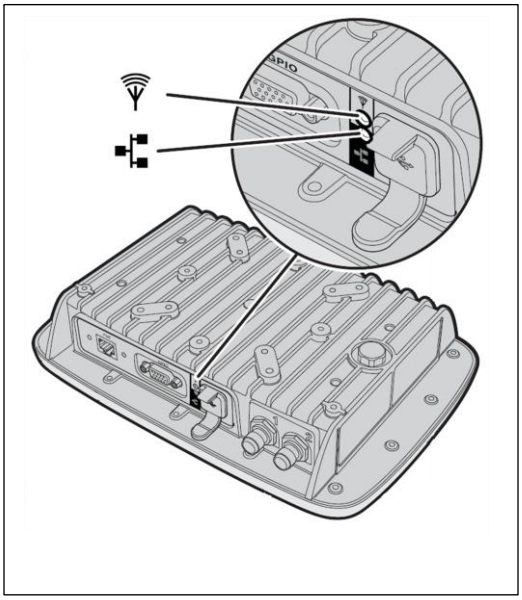


Fig. 3 – IF4 – LED indicators.

1.4) GROUNDING THE READER

It is strongly recommended to properly ground the IF4 fixed RFID reader.

The figure below shows this implementation.

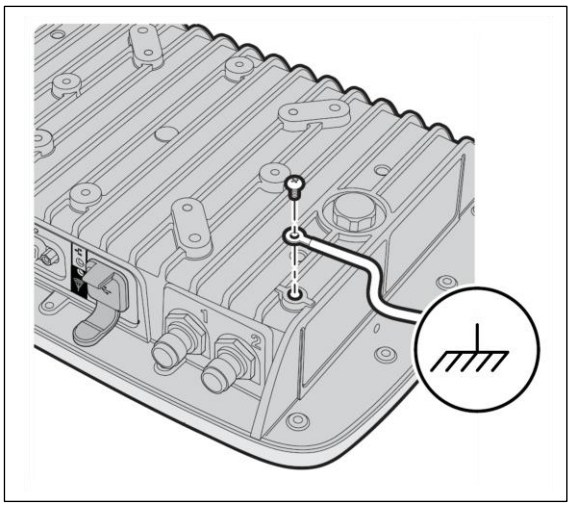


Fig. 4 – Grounding the IF4.

Recommended: Flexible wire #2.5 [mm^2] (#14[AWG]).

PROFESSIONAL INSTALLATION REQUIRED!
It must be installed only by a trained professional.

1.5) POWERING THE READER

The Honeywell IF4 fixed RFID reader is powered by PoE (Power Over Ethernet) or External DC power supply.

USE ONLY ONE OPTION FOR POWER – PoE OR DC EXTERNAL INPUT.

a) Powering with PoE.

You can use a P0E injector accessory or connect to a PoE switch - 48 [VDC] x 20 [W] min.

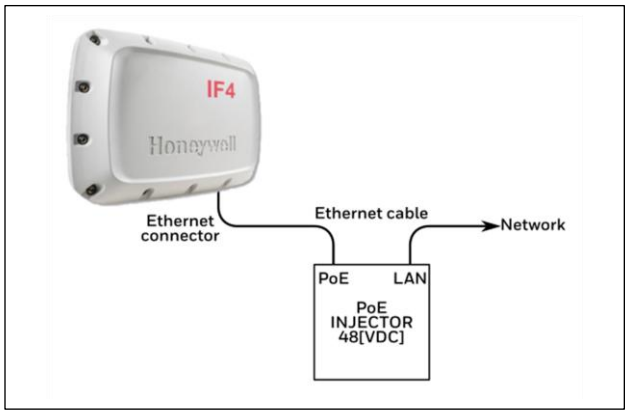


Fig. 5 – Powering IF4 with PoE injector.

PoE injector characteristics	
Param	Description
PoE Standard	802.3af type 1 class 0
	802.3af type 1 class 3
	802.3at type 1 class 0
	802.3at type 1 class 3
	802.3at type 2 class 4
Voltage [V_{DC}]	48
Power [W]	30 (min)

IF4 ethernet connector pinout – 4 pair	
Pin	Function
4,5	DC+
7,8	DC-
1,2	DC+ (shared)
3,6	DC- (shared)

IS STRONGLY RECOMMENDED TO USE SHIELDED CABLES FOR ETHERNET, SERIAL RS232 AND GPIO CONNECTIONS.

PROFESSIONAL INSTALLATION REQUIRED!
It must be installed only by a trained professional.
CAUTION: SHOCK RISK!

b) Powering with external DC power supply.

You can use a power supply (**10 to 30 [VDC] x 20[W] min**).

The GPIO Connector/Board is optional.

Fig. 6 – Powering IF4 with external DC power supply.

IF4 GPIO connector pinout – DC Input	
Pin	Function
4,5	DC- (GND no isolated)
6,7	DC+

The IF4 reader is ready to operate after the boot.

The powering with external DC power supply is available only for models with the GPIO board/connector (DB15).

IS STRONGLY RECOMMENDED TO USE SHIELDED CABLES FOR THE POWER CONNECTIONS.

PROFESSIONAL INSTALLATION REQUIRED!
It must be installed only by a trained professional.
CAUTION: SHOCK RISK!

1.6) READER CONNECTION – ETHERNET

By default, the IF4 fixed RFID reader has the following network basic configurations:

DHCP – disabled.

IP – 192.168.10.10

These settings can be changed via the web browser interface.

a) Power the IF4 reader.
b) Connect the ethernet cable to the reader.
c) Open your web browser on **192.168.10.10** (default IP).
d) Use the default username and password as follows:

Username: **admin**

Default Password: **honeywell**

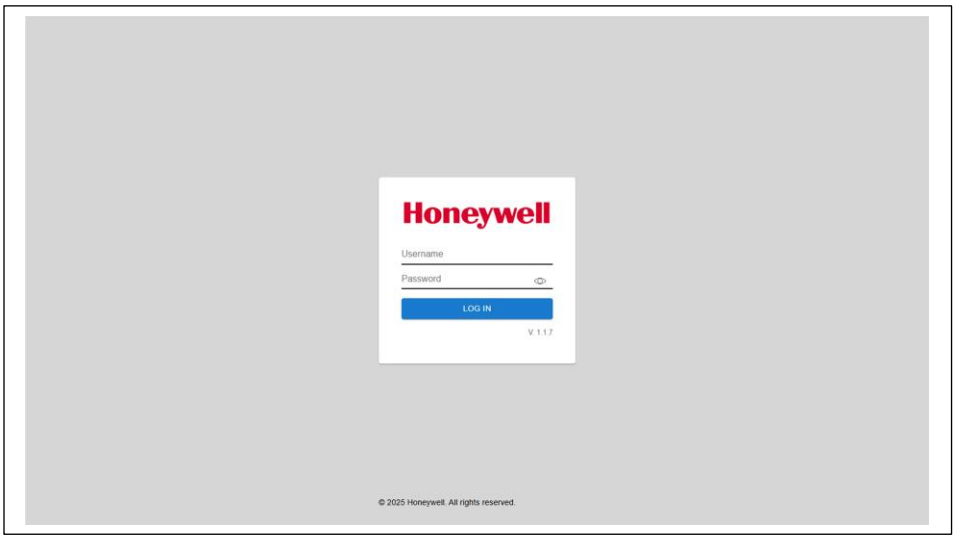


Fig. 7 – IF4 – Login screen.

1.7) READER CONNECTION – USB

The USB connections allow you to configure the network settings, if necessary.

To connect the IF4 reader via USB follow the steps:

a) Power the IF4 reader via Ethernet POE as explained.
b) Connect the USB cable from the reader to your PC.

The figure below shows this connection

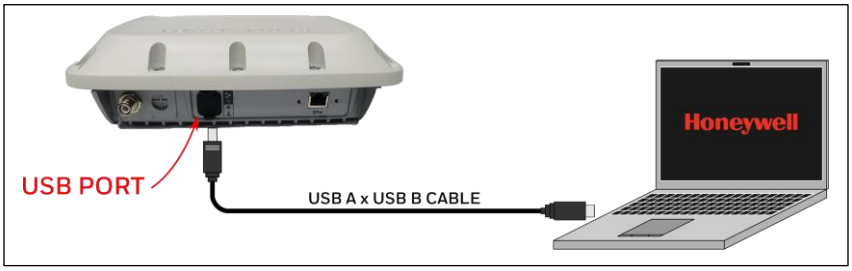


Fig. 8 – USB connection / COM PORT.

c) Wait for automatic driver installation (Windows 7 or higher). Your PC needs an internet connection for this driver's installation.

d) Locate a COM PORT created by the OS and open a serial connection with settings:

Field	Value	Unit
Baud rate	115200	[bps]
Data bits	8	[bits]
Stop bits	1	[bit]
Parity	None	-
Flow control	None	-

Fig. 9 – IF4 – Serial connection – Login.

Default login: config

Default password: config

ATTENTION!
If the password is entered incorrectly 3 times in a row, the device will be restored to factory settings.

e) Choose the settings.

The menu shows the options for initial settings.

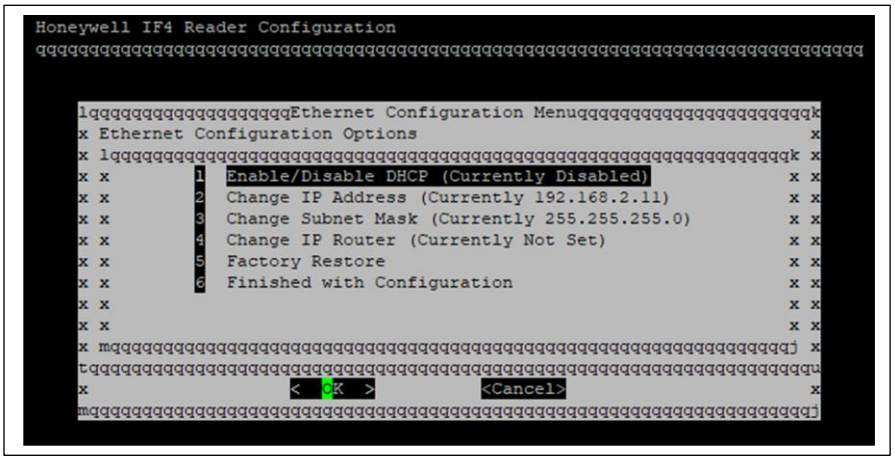


Fig. 10 – IF4 – Config settings menu.

The USB/Serial connection is used for IF4 configurations only.

PROFESSIONAL INSTALLATION REQUIRED!
It must be performed only by a trained professional.

ATTENTION:
The factory restore operation is **IRREVERSIBLE**.
All passwords (Web/USB) will be restored to default.

1.8) READER CONNECTION RS232

The RS232 is available in the GPIO connector – optional.

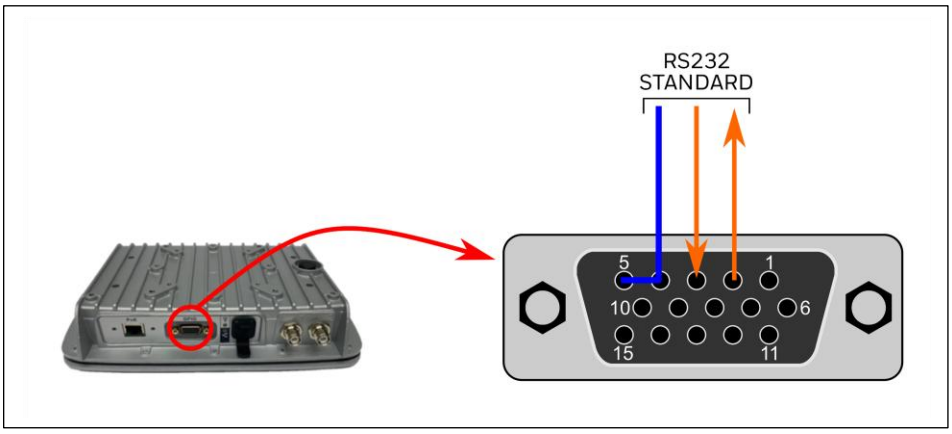


Fig. 11 - RS232 Connection.

RS232 configuration – default

Field	Value	Unit
Baud rate (default)	115200	[bps]
Data bits	8	[bits]
Stop bits	1	[bit]
Parity	None	-
Flow control	None	-

PROFESSIONAL INSTALLATION REQUIRED!
It must be performed only by a trained professional.

1.9) QUICK START

To operate the IF4 reader just follow the steps below:

a) Mount the reader.

Install the reader and the RFID antennas in the location.

b) Connect ethernet/PoE.

Connect the ethernet cable and the PoE injector.

c) Open browser 192.168.10.10

d) Login as administrator/change password

To change the reader settings, you need to be logged as an administrator.

e) Configure the RFID settings

Configure the RFID parameters according to your needs.

f) Enable BRI TCP ports

The BRI TCP ports are disabled by default. They must be enabled to use them.

g) Perform readings

Perform a test read using a reliable TAG.

ATTENTION:
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EACH COUNTRY HAS ITS OWN REGULATORY REQUIREMENTS.
CHECK LOCAL RULES AND LIMITS BEFORE SETTING UP/OPERATING THE EQUIPMENT.

2) WEB USER INTERFACE

These settings can be changed via the web browser interface.

a) Power the IF4 reader.
b) Connect the ethernet cable to the reader.
c) Open your web browser on **192.168.10.10** (default).
d) Use the default username and password as follows:

Default login access:

Privilege	Username	Password	Access
Administrator	admin	honeywell	Full access
Operator	operator	operator	Read Only access

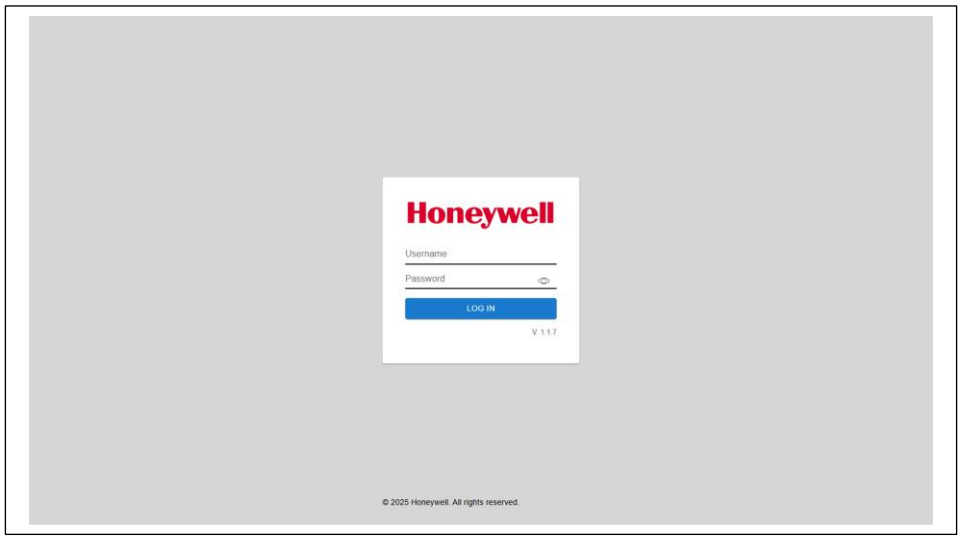


Fig. 12 – IF4 – Login page.

The APIPA* mode can be used. Connect the reader with your computer peer-to-peer and use link local IP address (169.254.1.1).

PROFESSIONAL OPERATION REQUIRED!
It must be performed only by a trained professional.

* APIPA = Automatic Private IP Addressing.

2.1) MAIN

The main page displays information about RFID reader status and parameters.

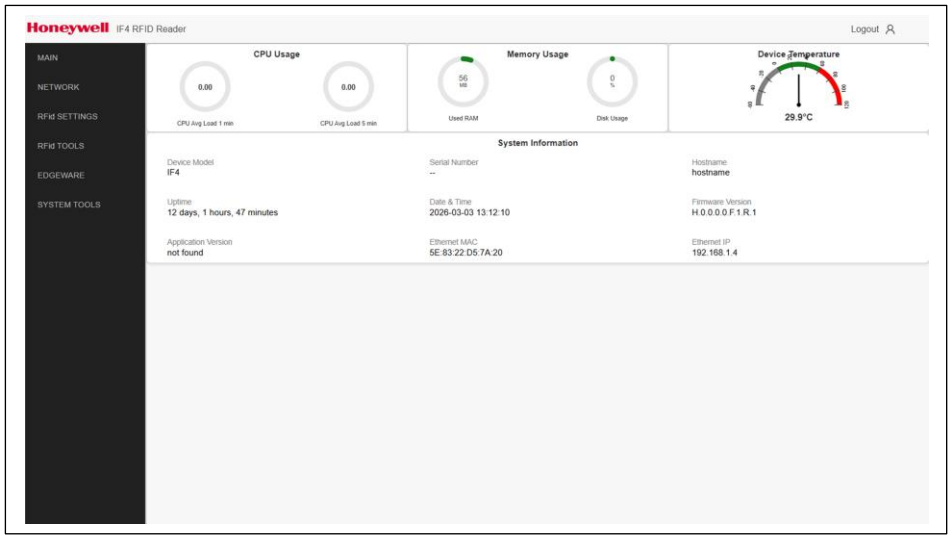


Fig. 13 – IF4 – Main page.

Parameter	Description
CPU Usage 1 minutes	CPU load during last 1 minute
CPU Usage 5 minutes	CPU load during last 5 minutes
Memory Usage RAM	Memory used – RAM
Memory Usage Disk	Memory used – Disk
Temperature	Module temperature
Device Model	Device model identification
Serial Number	Serial number
Host Name	Host name – Reader name
Uptime	Uptime in minutes
Date & Time	Current date & time
Firmware version	Firmware installed version
Application version	Application installed version
Ethernet MAC address	MAC address – ethernet adapter
Ethernet IP address	IP address – ethernet adapter

2.2) NETWORK CONFIGURATIONS

To use IF4 RFID fixed reader, you need to configure its parameters as follows.

2.2.1) ETHERNET IPv4 / IPv6

- Choose Network Configuration - Ethernet.

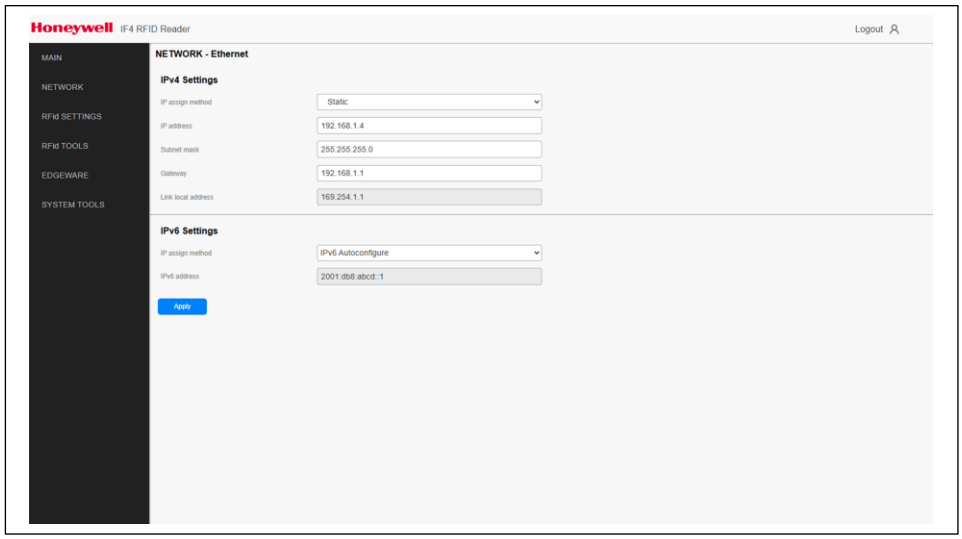


Fig. 14 – Network Configuration – Ethernet.

After configuring, click on "**Apply**" button.

ATTENTION: After configurations, the connection may be lost.
Your computer and IF4 reader must be on the same network.

Note: If DHCP is enabled, you may not need to configure Ethernet settings. For more information, contact your network administrator.

Network Configuration – Ethernet Settings

Setting	Description
Enable DHCP	Select this field if you want the reader to get its IP address from a DHCP server. If this field is not selected, you need to specify the IP address, subnet mask, and IP router for your network. Default is disabled.
IP Address	The IP address of the reader. The IP address has the form *XXX.XXX.XXX.XXX*, were *XXX* is a number from 0 to 255. The default MAC address is on the label on the side of the reader. If DHCP is enabled, the currently assigned IP address appears in this field. If DHCP is disabled, specify the IP address in the entry field. Default is 192.168.10.10
Subnet Mask	The subnet mask for this network. The subnet mask has the form *XXX.XXX.XXX.XXX*, where *XXX* is a number from 0 to 255. If DHCP is enabled, the currently assigned subnet mask appears in this field. If DHCP is disabled, specify the subnet mask in the entry field. Default is 255.255.255.0
IP Router (Gateway)	The IP address of the router. The IP address has the form *XXX.XXX.XXX.XXX*, were *XXX* is a number from 0 to 255. If DHCP is enabled, the currently assigned router address appears in this field. If DHCP is disabled, specify the router address in the entry field.
Link Local IP Address	The IP address of the reader is only routable on the local IP subnet. The reader auto-negotiates with other devices on its Ethernet segment to obtain a unique address, so no user configuration of the Link Local IP Address is necessary. The reader always has a Link Local IP Address, even if another address is assigned through DHCP or statically via user configuration.
IPv6 Autoconfigure	Enables IPv6 automatic configuration. Auto-configuration is enabled by default. If you disable auto-configuration, you need to specify an IPv6 address, subnet mask, and router.
IPv6 Address	128 [bit] IPv6 address for the reader.
IPv6 Subnet Mask	Value of IPv6 Subnet Mask from 0 to 128.
IPv6 Router (Gateway)	128 [bit] address for the IPv6 router.

2.3) RFID SETTINGS

The RFID settings set the BRI sessions and RFID protocol attributes.

BRI Sessions – Basic Reader Interface attributes.

RFID Settings – RFID protocol attributes.

2.3.1) BRI SESSIONS

Configure the BRI Sessions to handle communication between your application and IF4 reader.

- Choose the RFID Settings – BRI Sessions.

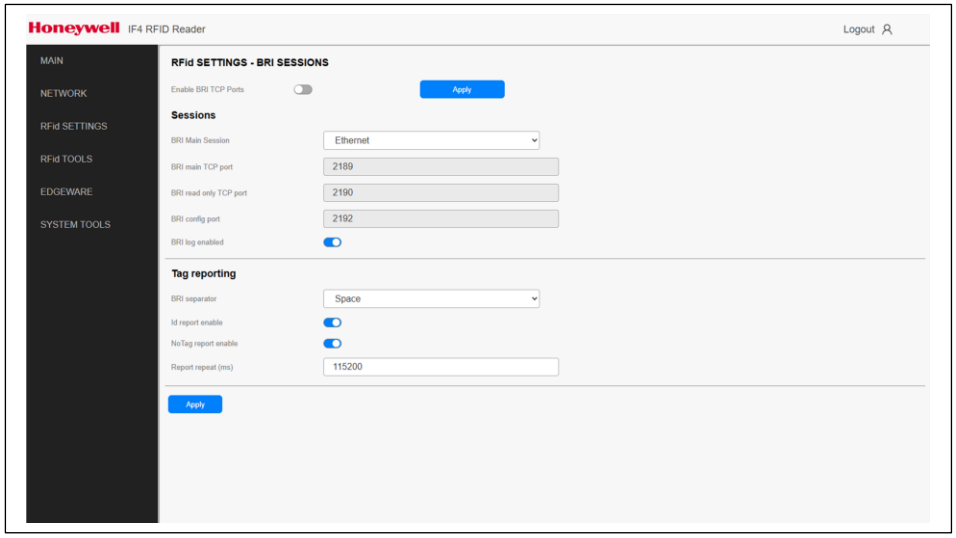


Fig. 15 – RFID Settings – BRI Sessions.

After configuring, click on "**Apply**" button.

Parameter	Description
BRI MAIN TCP Port	Specifies the TCP port used for incoming connections to the BRI server. This port must be unique for all TCP services running on the reader. The BRI MAIN port can perform configuration and RFID readings. Default is 2189.
BRI READ ONLY TCP Port	Specifies the TCP port used for readings only. This port does not accept attribute commands. Default is 2190.
BRI CONFIG TCP Port	Specifies the TCP port used for configuration only. Default is 2192.
Field Separator	The character used for separating fields in tag data. Choose from space ( ), comma (,), colon (:), semicolon (;), tab, caret (^), or tilde (~). Default is space ( ). This setting is equivalent to the FIELDSEP BRI attribute.
ID Report Enable	Enables tag ID reporting after a Read, Write, or Lock command is executed: • For ISO tags, the tag identifier corresponds to TAGID. • For EPC tags, the identifier corresponds to EPCID. Default is enabled. This setting is equivalent to the IDREPORT BRI attribute.
No TAG Report	Enables a NOTAG message, which is sent when no tags are found during execution of a Read, Write, or Lock command. Default is

	enabled. This setting is equivalent to the NOTAGRPT BRI attribute.
Report Repeat Timeout	The timeout (in ms) for delays in tag reporting when the RFID reader is in continuous read mode. Valid range is 0 to 65534. Default is 0. This setting is equivalent to the RPTTIMEOUT BRI attribute.
BRI Enable Logging	Enables logging of BRI server events. Default is disable.

2.3.2) RFID ATTRIBUTES

The RFID attributes control how the reader operates and reads RFID TAGs.

- Choose the RFID Settings – RFID Attributes.

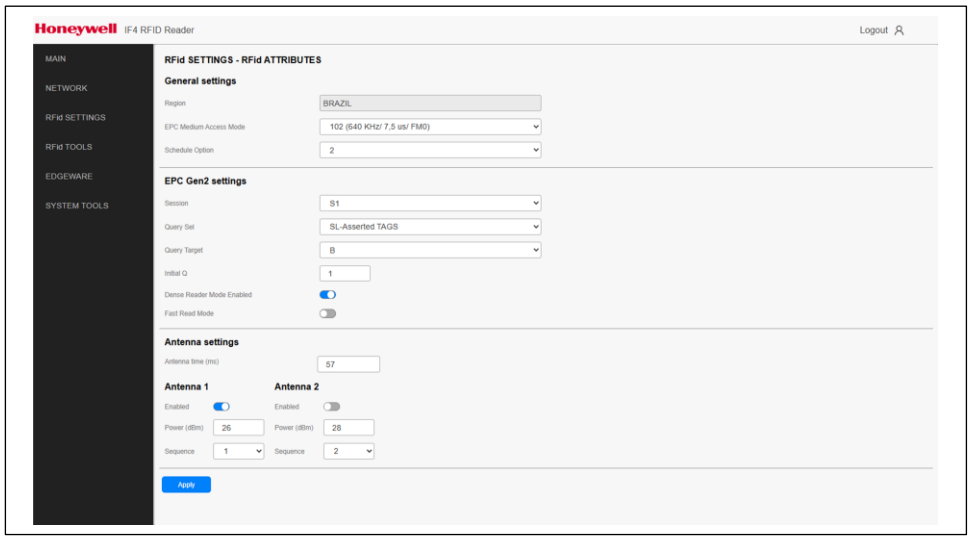


Fig. 16 – RFID Settings – RFID Attributes.

After configuring, click on "**Apply**" button.

Setting		Description
Region		Indicates the operation Region (factory defined). The user cannot change this parameter.
EPCC1G2 Medium Access Mode		Defines the Backscatter Link Frequency (BLF), Codding, Tari and PIE settings. Default is 16 (320 KHz, FM0, 6.25us,1.5).
Schedule Option		Determines how antennas are switched during the inventory process: 0 – Legacy BRI operations – Operates the antenna for the defined time. Complete the inventory round. 1 – Perform one inventory round. If there are no readings, switches to the next antenna – if there is one. This setting is equivalent to the SCHEDULEOPT BRI attribute. Default is 0.
TAG Singulation	Session	EPCGlobal protocol - chooses a session for the inventory round. Valid range is 0 to 3. Default is 2 -> S2. This setting is equivalent to the SESSION BRI attribute.
	Query Sel	EPCGlobal protocol - chooses which Tags respond to the Query command. Default is all.
	Query Target	EPCGlobal protocol - Selects whether Tags whose inventoried flag is *A* or *B* participate in the inventory round. Default is A.

Setting		Description
	Initial Q	EPCGlobal protocol - Sets the number of slots in the round. Valid range is 1 to 15. Default is 1. This setting is equivalent to the INITIALQ BRI attribute.
Medium Access Options	Dense Reader Mode	Enables/Disables the dense reader mode operation. This setting is equivalent to the DENSEREADERMODE BRI attribute. Default is disabled.
	Fast Read Mode	Enables/Disables the FAST read mode operation. Default is disabled.
Antenna Settings	Enable	Enable/Disable Antenna. Default is enabled for antenna 1, others disabled.
	Field Strength	The RF power level (in [dBm]) for antenna. The valid range is 1 to 30. Default is 30. This setting is equivalent to the FIELDSTRENGTH BRI attribute.
	Sequence	Antenna operation sequence. Default is the number of the antenna.
	Time	The antenna operation time (ms). The valid range is 10 to 10000 (ms). Default is 50.

After configuring, click on "**Apply**" button.

EPC Class 1 Gen 2 Parameter Set - EPCC1G2 Medium Access Mode.

ID	Application	BLF [KHz]	CODING	TARI [µs]	PIE	MODULATION
103	FCC Read Rate	640	FM0	6.25	1.5	DSB-ASK
102	ETSI UB+*	640	FM0	7.5	2	PR-ASK
120	FCC	640	M2	6.25	1.5	DSB-ASK
203	Japan Read Rate	426	FM0	12.5	1.5	PR-ASK
124	ETSI UB+ Hybrid*	640	M2	7.5	2	PR-ASK
226	Japan Hybrid	426	M2	12.5	1.5	PR-ASK
202	ETSI LB Read Rate	426	FM0	15	2	PR-ASK
225	ETSI LB Hybrid	426	M2	15	2	PR-ASK
148	ETSI UB Hybrid*	640	M4	7.5	1.5	PR-ASK
147	ETSI UB DRM*	640	M4	7.5	2	PR-ASK
125	ETSI LB Hybrid	320	M2	15	2	PR-ASK
123	ETSI LB+	320	M2	20	2	PR-ASK
141	ETSI LB+	320	M4	20	2	PR-ASK
146	ETSI LB+	250	M4	20	2	PR-ASK
185	ETSI LB+	160	M8	20	2	PR-ASK
104	FCC Read Rate	320	FM0	6.25	1.5	DSB-ASK

ATTENTION:
DO NOT OPERATE THE EQUIPMENT OUTSIDE THE CONFIGURED REGION.
EACH COUNTRY HAS ITS OWN REGULATORY REQUIREMENTS.
CHECK LOCAL RULES AND LIMITS BEFORE SETTING UP/OPERATING THE EQUIPMENT.

2.4) RFID TOOLS

The RFID tools allow you to:

- Send BRI command to the reader.
- Auto-start BRI ARTEFATO reading.
- Perform RFID readings.

The RFID tools all use the same internal BRI session. You can only use one of these resources at a time.

2.4.1) BRI TOOLS

a) Send BRI command.

This option allows you to execute a BRI command and get the response.

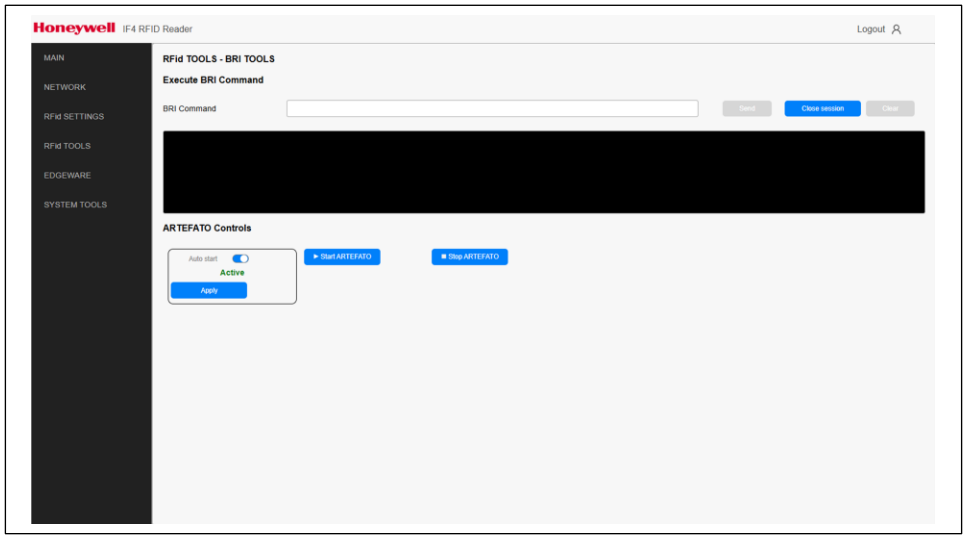


Fig. 17 – Send BRI command.

Enter the BRI command at the field.
Click “SEND” button -> Opens Internal BRI session.
The results are displayed on the textbox.
Click “STOP” button -> Close internal BRI session.
Click “CLEAR” button -> Clear the response list.

b) ARTEFATO protocol control.

This option allows you to run the ARTEFATO protocol reading command in the continuous mode (REPORT=EVENTALL).

- Click on the “RUN ARTEFATO” button.

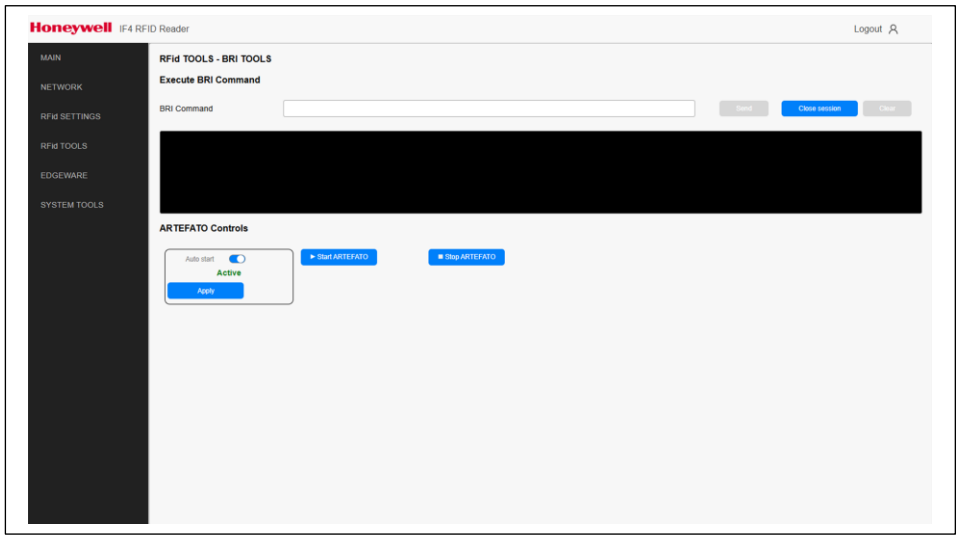


Fig. 18 – Upload BRI Script File.

The BRI legacy equivalent ARTEFATO readings:
SINIAV SJ5511AUTH RSSI CHAN ANT REPORT=EVENTALL

Auto Start -> Start the ARTEFATO readings automatically – after boot.

To Stop the ARTEFATO readings, when running:

Click “STOP ARTEFATO” button.

After configuring, click on “**Apply**” button.

2.4.2) RFID READINGS

This page allows you to perform RFID readings for simple verification. The protocol is EPC-GEN2.

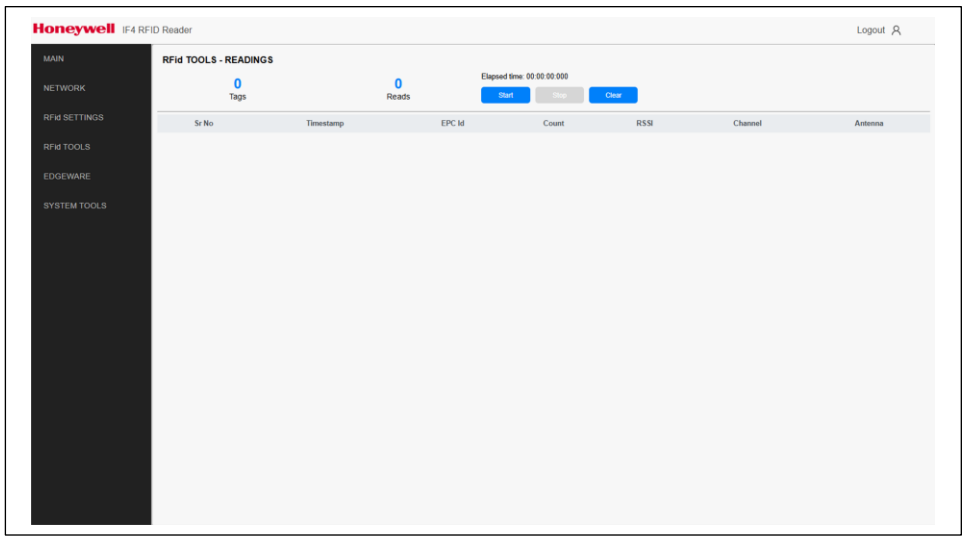


Fig. 19 – RFID Readings.

Start button – Starts readings.
Stop button – Stop readings.
Clear button

Note: The BRI command and RFID readings all use the same internal BRI session. You can only use one of these resources at a time.

2.5) EDGEWARE

The edgeware feature makes it possible to run an application on the reader.

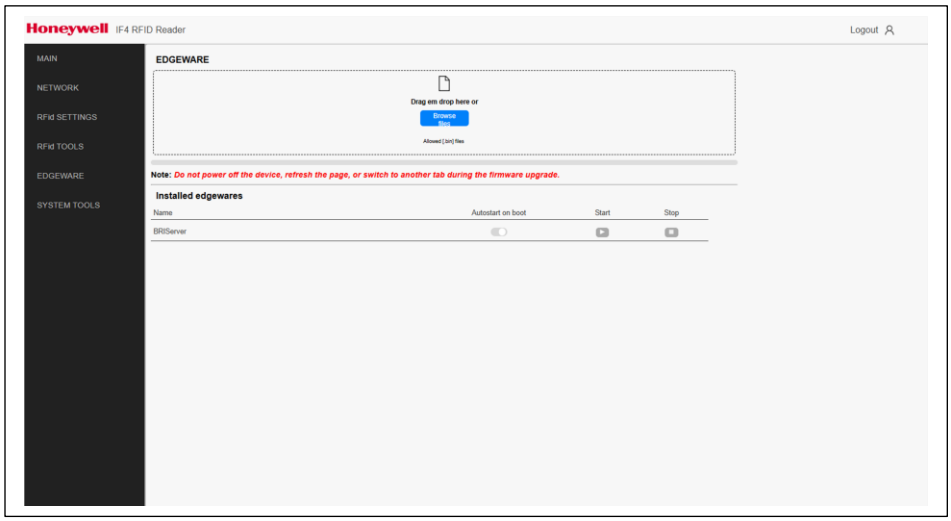


Fig. 20 – Edgeware.

To install an application:

a) Click on browse files.
b) Select file you want to install.

Parameter	Description
Autostart on boot	The edgeware application will run automatically after reader boot.
Start	Starts edgeware – if not running.
Stop	Stops edgeware – if running.

2.6) SYSTEM TOOLS

The system tools and settings allow you to configure, monitor and operate:

- GPIO – digital inputs and outputs status and control.
- System LOG – operational system LOGs.
- Firmware upgrade.
- System configuration.
- Reader identification.
- Reboot.
- Password settings.
- Restore factory defaults.

2.6.1) GPIO TOOLS

GPIO is an optional feature and allows it to:

- Check the digital input status – GPI (Activated / Deactivated).
- Set and check the digital output status – GPO (Activate / Deactivate).

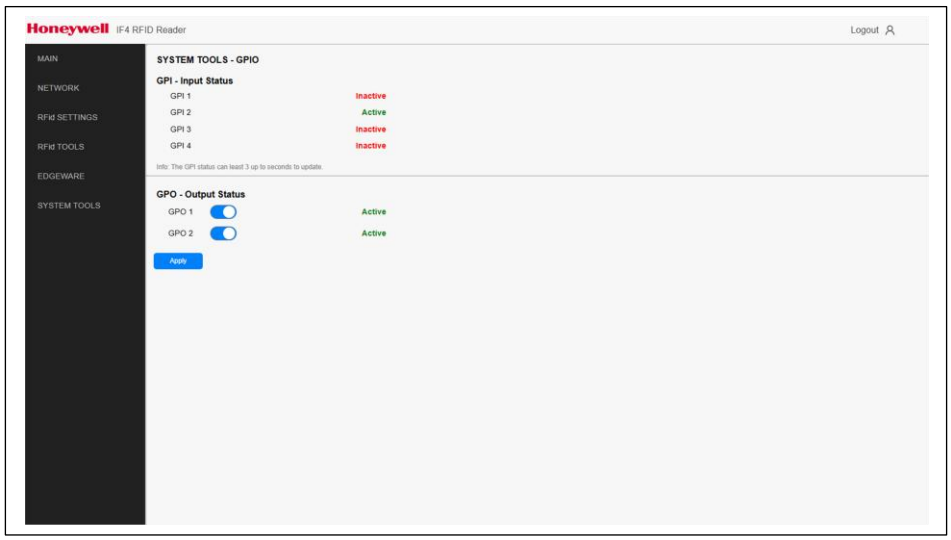


Fig. 21 – GPIO.

The status of each input is updated/displayed in real time.

After selecting the Output status click on "**Apply**" button to make the changes effective.

Note: The digital outputs are open collector type. When the output is activated the output pin is connected to the common.

2.6.2) SYSTEM LOG

The system LOG presents the internal system LOGs.

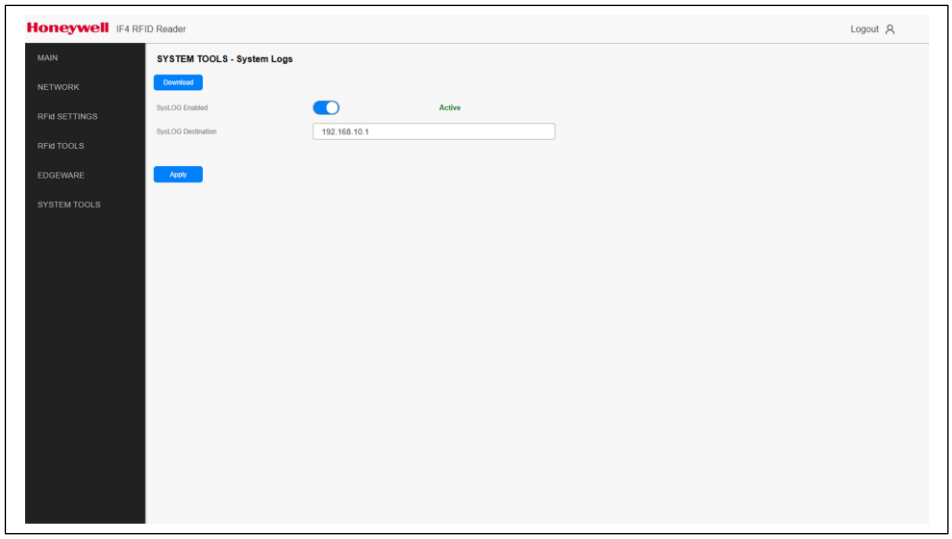


Fig. 22- System LOGs.

Download button -> Downloads the LOG file (txt format).

Setting	Description
Syslog Enabled	Send the LOGs registers to an external syslog server. Default is disabled.
Syslog destination address	Defines the IP address of the external syslog server. Syslog port: 514.

After configuring, click on "**Apply**" button.

2.6.3) FIRMWARE UPGRADE

The firmware upgrade allows the entire system firmware upgrade.

a) Select the firmware file.
b) Click “UPGRADE” button.
c) Wait for upgrade process.

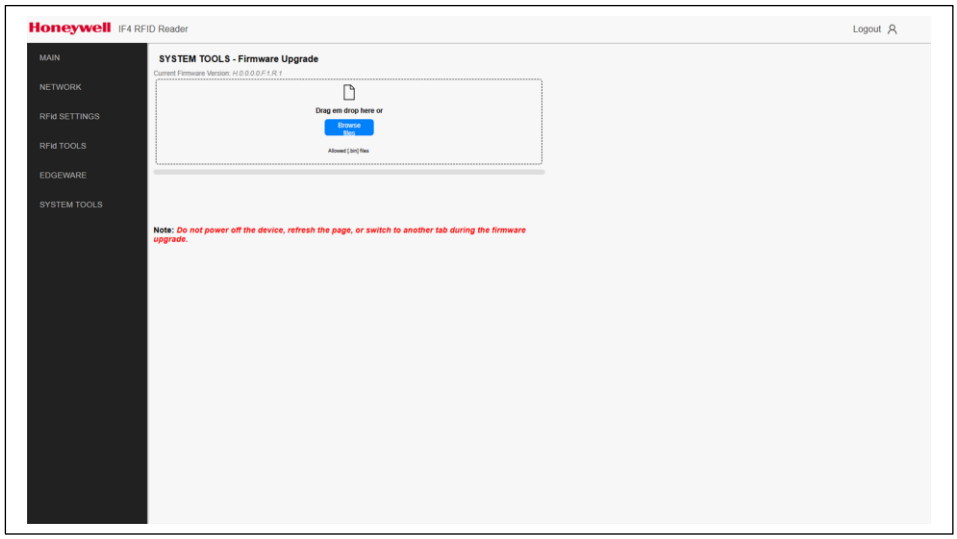


Fig. 23 – Firmware Upgrade.

PROFESSIONAL OPERATION REQUIRED!
It must be performed only by a trained professional.
Do not power off or disconnect the equipment while the firmware upgrade process is running.

2.6.4) SYSTEM CONFIGURATION

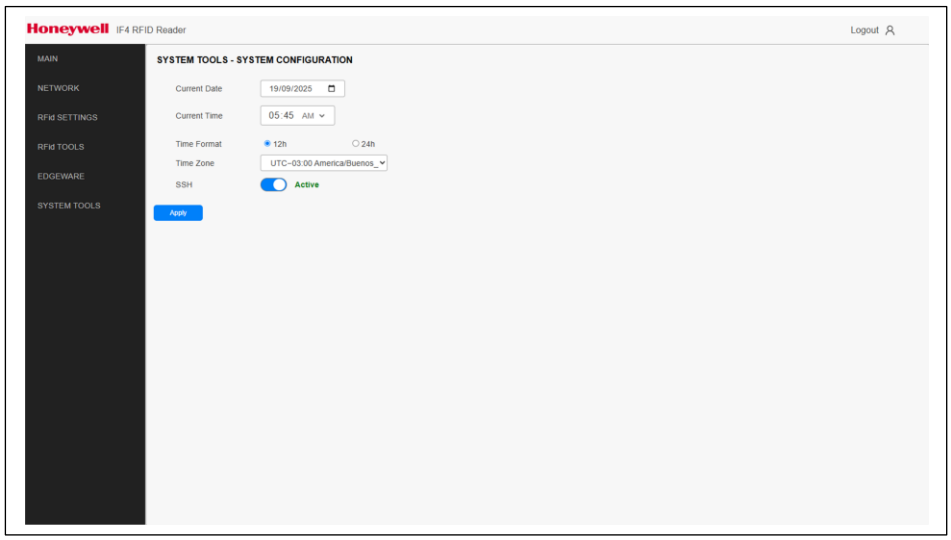


Fig. 24 – System Configuration.

Parameter	Description
Current Date	Displays the current reader system date
Current Time	Displays the current reader system time
Time Format	Time Format (12H/24H). Default is 24H.
Time Zone	Time Zone. Default is Brazil time.
SSH Enable/Disable	SSH service enable/disable. Default is disabled.

After changes click “Apply” button.

2.6.5) CERTIFICATES

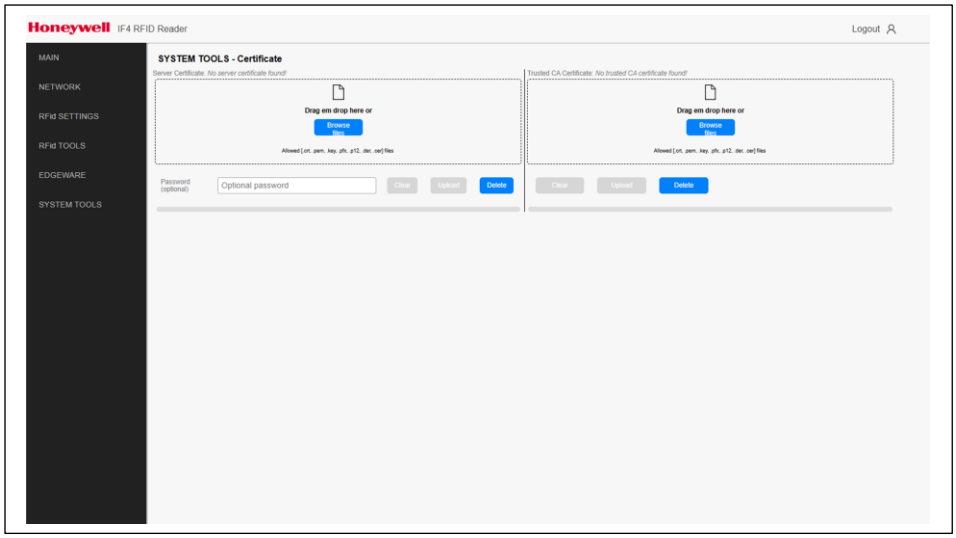


Fig. 25 – Install Certificates.

After selecting the certificate file click Upload Button to install.

File format allowed: .crt .pem .key .p12 .der . cer.

To delete the installed certificate click Delete button.

2.6.6) READER IDENTIFICATION

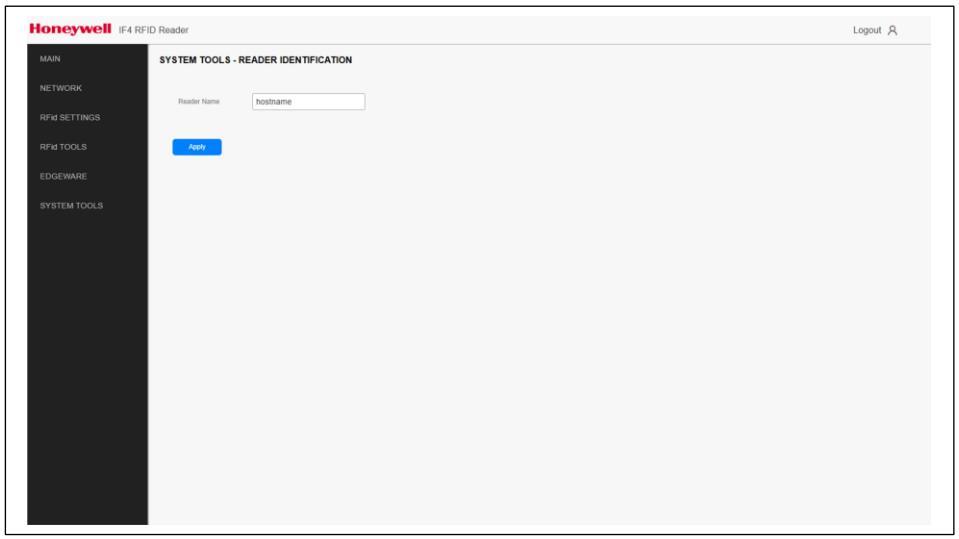


Fig. 26 – Reader Identification.

Parameter	Description
Reader name	Reader Identification.

After changes click “Apply” button.

2.6.7) REBOOT

Fig. 27 – Reboot.

After clicking "**Apply**" button you need to confirm.

Note: During startup, the reader does not work

2.6.8) PASSWORDS

- Administrator password – the administrator can change any parameters of the reader.
- Operator password – The operator has read only access. It cannot modify parameters and settings.

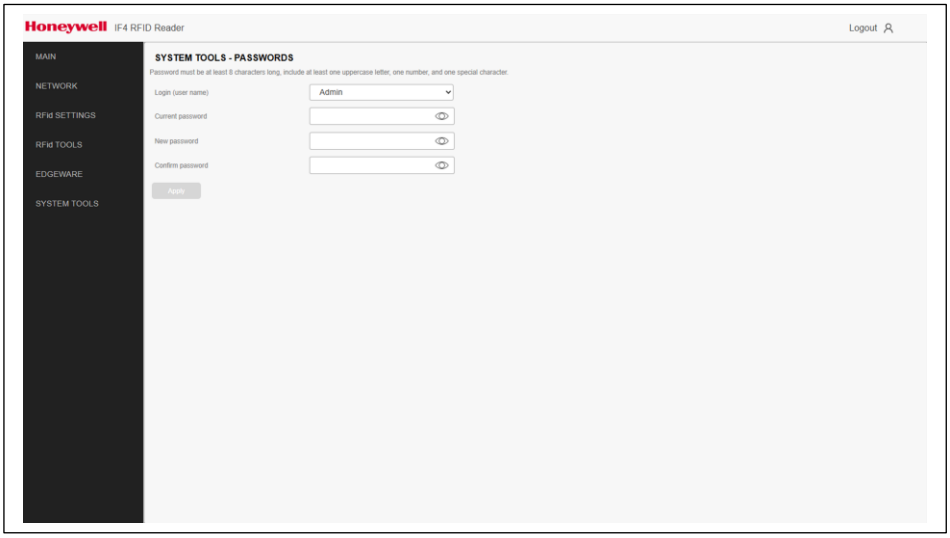


Fig. 28 – Passwords.

Note:
You need to set the hard password.
Password must be at least 8 characters long, include at least one uppercase letter, one number, and one special character.

ATTENTION: Setting the password is a secure and IRREVERSIBLE operation.
Do not forget the password you set.

2.6.9) RESTORE FACTORY DEFAULTS

Via Web page

Fig. 29 – Restore to factory defaults.

After clicking "**Apply**" button you need to confirm.

You can restore to factory defaults by USB/COM port.
Follow the instructions:

a) Connect the reader USB port to computer.
b) Locate and open the COMPORT related (Putty or equivalent).
c) Login (default login = config/config).
d) Change the password (if default).
e) Factory Restore Option (5).
f) Confirm the operation (Yes).

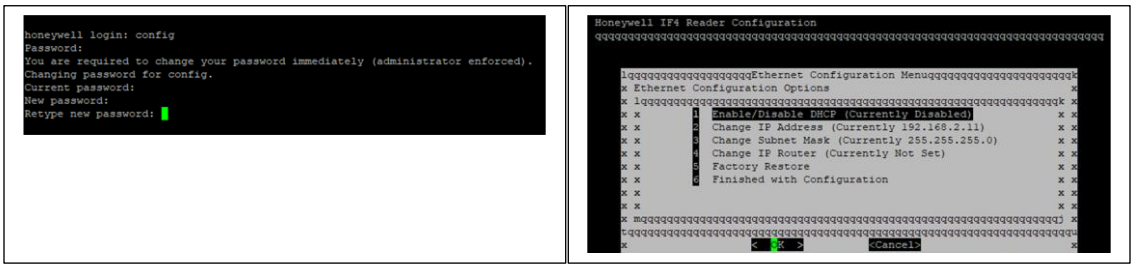


Fig. 30 – Factory Restore – USB/COMPORT.

ATTENTION:
The factory restore operation is **IRREVERSIBLE**.
All passwords (Web/USB) will be restored to default.

3) GPIO PORTS.

The reader has four general purpose input and two output (GPIO) digital interfaces.
You connect external controls such as motion sensors or indicator lamps to the GPIO interfaces, which can then trigger reader operations.
Each interface is electrically isolated from the reader and designed for low voltage
DC loads. The IF4 reader can also supply 12 [V_{DC}] at 0.20 [A] to external devices.
How the inputs and outputs are used depends on the RFID application software being used in the system. You need to coordinate input and output control wiring with the software developer. The GPIO is an optional board.
The GPIO inputs and outputs are available on the DB-15 connector of the IF4 RFID fixed reader. This is an optional connector, which depends on the reader model.

Pin	Description	Direction/Function
1	+12 [VDC] output – not isolated (200 [mA] Max).	OUTPUT
2	RS232 TX not isolated	OUTPUT
3	RS232 RX not isolated	INPUT
4	GND not isolated	GND
5	GND not isolated	
6	+ VCC POWER not isolated	POWER VCC 10 to 30 VDC
7	+ VCC POWER not isolated	
8	GPIO COMMON isolated	COMMON isolated
9	GPO OUT 1 isolated	Open Collector OUTPUTS isolated
10	GPO OUT 2 isolated	
11	GPI INPUT 1 isolated	GPI INPUTS isolated
12	GPI INPUT 2 isolated	
13	GPI INPUT 3 isolated	
14	GPI INPUT 4 isolated	
15	GPO pullup - isolated	OUT pull up isolated

Pins 4 and 5 (GND) are internally shorted.

Pins 6 and 7 (+PWR) are internally shorted.

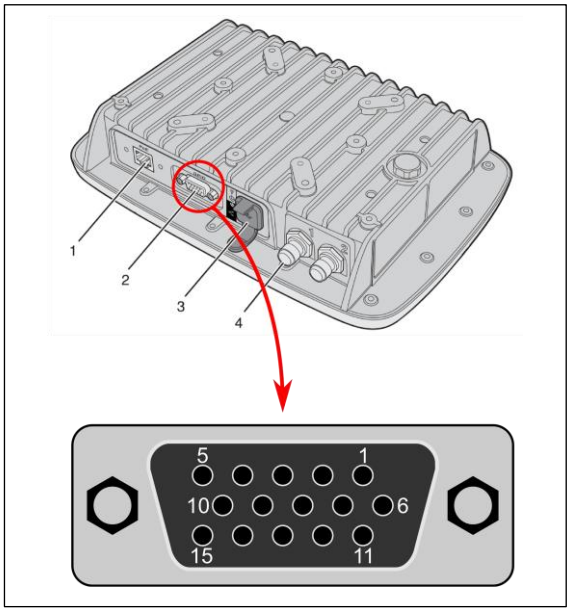


Fig. 31 – IF4 – GPIO Connector – front view.

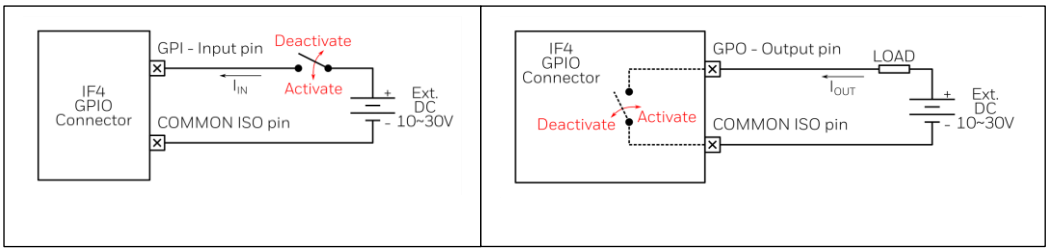


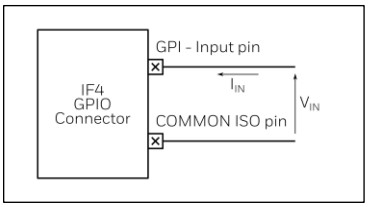
Fig. 32 - GPIO operation. a) Inputs. b) Outputs.

The digital outputs are OPEN COLLECTOR type.

GPIO electrical characteristics:

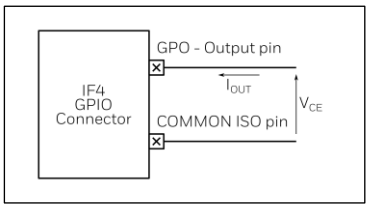
Digital Inputs – isolated

Parameter	Min.	Max.	Unit
I_{IN}	6.5 @ 10 [V]	20 @ 30 [V]	[mA]
V_{IN}	10	30	[V]
Isolation	-	4000	[V]



Digital Outputs – isolated

Parameter	Min.	Max.	Unit
I_{OUT}	-	50	[mA]
V_{CE}	-	30	[V]
V_{CESAT}	-	1.0 @ 50 [mA]	[V]
Isolation	-	3750	[V_{AC}]



Note: The GPIO is an optional board - depends on the reader model.

4) TROUBLESHOOT - BASIC.

This section includes lists of problems, their causes and possible solutions.

4.1) POWER PROBLEMS.

Power problems are related to the reader's power source and connections.

Problem	Cause (s)	Solution
Reader does not turn on – LEDs OFF	Lack of energy	Check the electrical installation.
	Intermittent power	Check the electrical installation.
	Power supply problem	Check the output voltage of power supply- must have 48 [V_{DC}].
	Connections of power supply	Check the power cables and connections between power supply and the reader – Power injector.

4.2) CONNECTIVITY PROBLEMS.

Connection problems are related to the reader's connection.

4.2.1) ETHERNET CONNECTION.

The reader is connected via the ethernet network.

Problem	Cause (s)	Solution
Connection failure – loop back OFF.	Ethernet connections	Check the ethernet cables and connections between the reader and the computer.
	Ethernet connections	Check the ethernet cables and connections of the Power Injection – POE.
You assigned a static IP address to the reader but cannot connect the reader over your network.	Network settings	Make sure that DHCP is disabled and that your network TCP/IP parameters are set correctly.
	Network settings	If you access the Internet through a proxy server, make sure you add the IP address of the reader to the Exceptions list.
You cannot connect to the reader using a web browser – Ping fail.	Incorrect IP/Mask settings	Verify that you have the correct IP address for the reader.
	Incorrect IP/Mask settings	Verify the ethernet and network settings in your computer.
The reader displays the message NOSESSIONS	Number of sessions limit reached	Close one or more BRI-Telnet session.
You cannot load a security certificate.	Secure browser connection	You must use a secure web browser connection to load certificates.
The reader does not respond to your RFID BRI application.	BRI application	If your application is running on a desktop PC, you need to enable external BRI connections to the reader.

4.2.2) SERIAL CONNECTION – RS232.

The reader is connected via Serial – RS232.

Problem	Cause (s)	Solution
Connection failure	Serial connections	Verify the RS232 cable and connectors.
	RS232 settings	Verify that your serial connection is configured to 115200, N, 8, 1, no flow control.
	Wrong COM PORT	Verify the port you use for this connection.

Note:
The baud rate – 115200 is the default value. It can be changed by the user.

4.2.3) SERIAL CONNECTION – USB.

The reader is connected via Serial – USB. In this case a COM PORT – Serial – is opened in your computer.

Problem	Cause (s)	Solution
You cannot connect to the reader through the USB port.	USB connections	Verify the USB cable and connectors.
	USB Driver	Make sure that the USB drivers for the reader have been installed correctly.
	Wrong COM PORT	Verify the port you use for this connection.
	Serial settings	Verify that your COM PORT is configured to 115200, N, 8, 1, no flow control.

4.3) READINGS PROBLEMS - RFID.

You can solve many problems you may encounter when working with your RFID system by carefully checking the RFID settings and changing them accordingly.

Problem	Cause (s)	Solution
The reader is unable to read RFID tags or seems to read TAGs slowly or inconsistently.	Antenna connections	Verify the antenna cables and connections.
	Antenna polarization	Verify the correct polarization of the antenna – linear H / V or circular.
	Antenna positioning	Adjust for the correct positioning of the RFID antenna.
	Damaged TAG	Check the TAG you are using.
	RFID settings	Make sure you selected the correct tag types and RFID settings for your application.
	Operation power	Adjust the RF power value (Field Strength).

Note:
For help, contact your RFID system consultant.

5) PRODUCT SPECIFICATIONS.

IF4 – fixed UHF RFID reader.	
ELECTRICAL	
Input Power PoE	802.3af/at – Power Over Ethernet
DC electrical rating PoE	48.0 [V_{DC}] x 0.300 [A] max
DC external input	10 ~ 30 [VDC] / 1.2 [A] max @ 12 [VDC] / 0.62 [A] max @ 24 [VDC]
Power consumption DC ext sup	15 [W] max @ DC ext. Supply
Power consumption PoE	15 [W] max @ PoE
Power Standby	5.0 [W] max
RADIO FREQUENCY	
Frequency ranges (UHF) Factory configured	865.0 ~ 867.0 [MHz]
	915.0 ~ 928.0 [MHz]
	902.0 ~ 928.0 [MHz]
	902.0 ~ 907.0 / 915.0 ~ 928 [MHz]
Transmit Power	Up to 30.0 [dBm] +- 1dBm – steps 0.5dBm
Reception Sensitivity	- 82.0 [dBm] max. @depending on the medium access mode
Read Rate	> 700 [reads/s]. @depending on the TAGs and environmental conditions
Antenna ports – External	1 – with integrated antenna models
	2 – without integrated antenna models
Antenna (RF) connector type	RP-TNC female connector
Integrated antenna options	Linear 7.5 [dBiL] FCC / ETSI
External Antenna supported specs	Liner/CP Antenna with 5.9(dBi) FCC / ETSI
RFID PROTOCOLS	
Air interface protocols	EPC Global UHF Class1 Gen2
	ISO 18000-63
	ARTEFATO SJ5511 PA (Brazil)
CONNECTIVITY	
Ethernet port – RJ45	10/100 BaseT
RS232 – DB15	Optional – depends on model
USB – Type B female	For configuration only
GPIO – DB15	4 inputs isolated
	2 outputs isolated
MECHANICAL	
Dimensions LxWxH	With integrated antenna: 265 x 186 x 75 [mm] (10.2 x 7.3 x 3.0 [in])
	Without integrated antenna: 265 x 186 x 59 [mm] (10.2 x 7.3 x 2.3 [in])
Weight	1.6 [Kg] (3.52 [lb])
ENVIRONMENTAL	
Environmental	With integrated antenna: IP65 – Using suitable connectors.
	Without integrated antenna: IP54
Operating Temperature	-25 ~ 65 [°C] (-13 ~ 149 [°F])
Storage Temperature	-30 ~ 75 [°C] (-22 ~ 167 [°F])
Humidity	10 ~ 95 [%] relative humidity, non-condensing
SOFTWARE	
Operating System	Linux embedded
Application interfaces	Basic Reader Interface (BRI)
PROCESSOR	
CPU	MCiMx7 – NXP @ 1GHz
RAM	DDR3 SDRAM 1 Gbyte
Flash	eMMC 8 GByte

Note:
Specifications listed may be different due to individual country regulations.

Supported Regions

Region	Freq (KHz)	Spacing (KHz)	Channels	Max Power (dBm)
FCC Part. 15247	902750~927250	500	50	30
Australia*	920250~924750	500	10	30
Brazil	902750~907250 915250~927250	500	35	30
China*	920625~923625	250	4	30
ETSI Lower EU	865700~867500	200	4	30
ETSI Upper EU*	916300~918700	400	3	30
India*	865100~866900	200	4	30
Indonesia*	920750~922250	500	4	30
Israel*	916250	500	1	30
Japan2*	916800~920400	200	4	30
Korea*	917300~920300	600	6	30
Malaysia*	919250~922750	500	8	30
New Zealand*	922250~926750	500	10	30
Peru*	916250~927250	500	23	30
Philippines*	918250~919750	500	4	30
Singapore*	920250~924750	500	10	30
South Africa*	915600~918800	200	17	30
Taiwan*	920750~927250	500	14	30
Thailand*	920250~924750	500	10	30
Uruguay*	916250~927250	500	50	30
Vietnam*	918750~922250	500	8	30

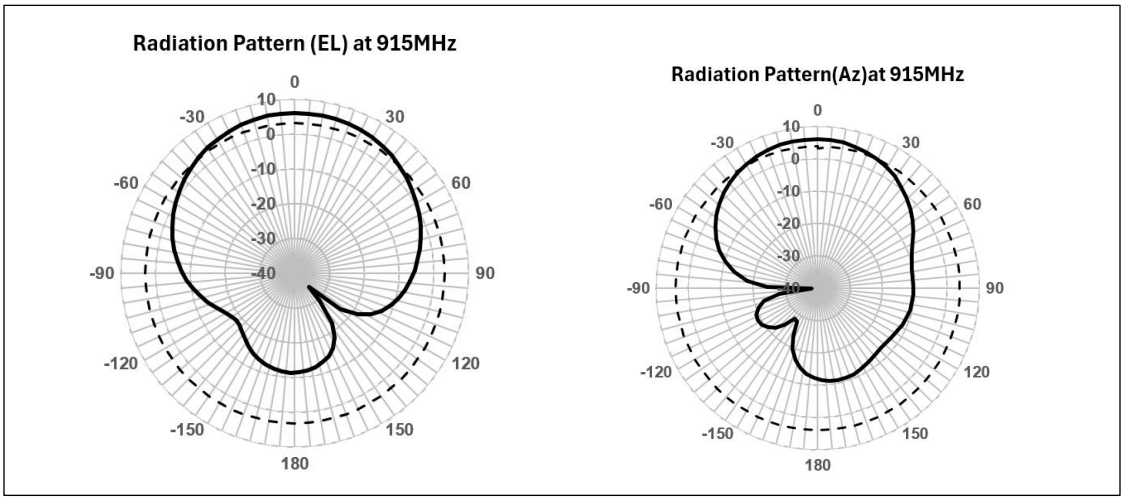
ETSI -> Countries of European Union – EU (865~867 MHz).

* Depends on local certification.

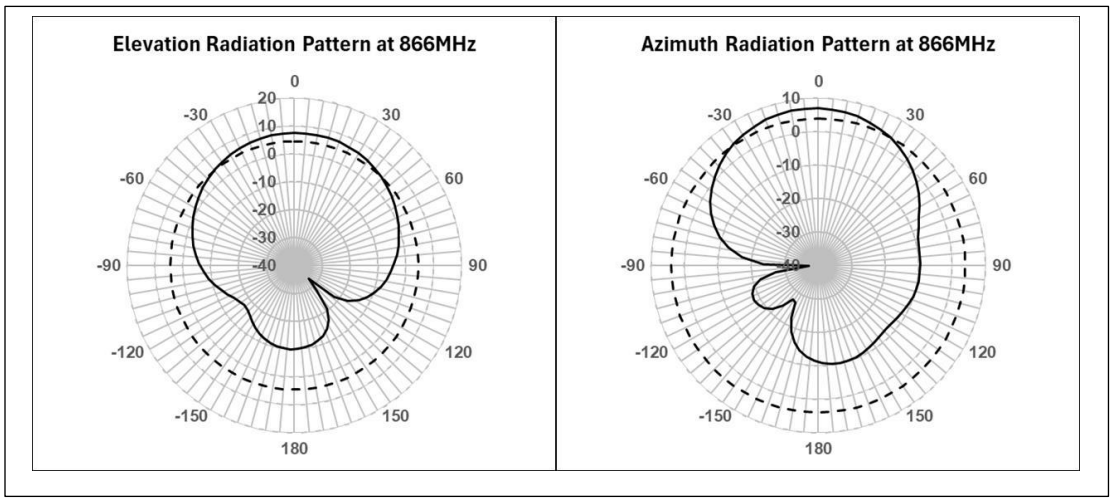
5.1) INTEGRATED ANTENNA PARAMETERS.

Parameter	FCC	ETSI	Unit
Frequency Range	902~928	865~867	MHz
Polarization	Linear	Linear	
Gain (typical)	6.15	6.15	dBi
VSWR	1.6 : 1	1.6 : 1	
-3dB EL Beamwidth	95	95	deg
-3dB AZ Beamwidth	65	65	deg

Radiation Pattern FCC



Radiation Pattern ETSI



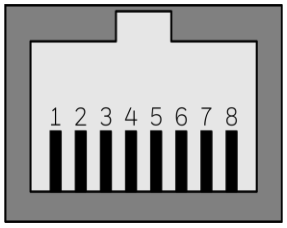
6) CONNECTIONS

The IF4 have the following external connections:

- Ethernet RJ45 (Network + PoE).
- GPIO connector DB-15.
- External antenna connector RP-TNC Female.
- USB port – configuration.

6.1) ETHERNET PORT.

The Ethernet port allows Ethernet communications and Power-Over-Ethernet. Use the illustration to understand the port pin of RJ45 female connector assignments.



Pin	Description
1	Ethernet TX+ / PoE+
2	Ethernet TX- / PoE+
3	Ethernet RX+ / PoE-
4	POE + 48 [V_{DC}]
5	POE + 48 [V_{DC}]
6	Ethernet RX- / PoE-
7	POE-
8	POE-

Fig. 33 – Ethernet port – RJ45.

6.2) GPIO PORT.

The GPIO port allows GPIO communications with your reader. The GPIO port is standard with two-antenna port options of the reader, and optional with the integrated antenna options of the reader.

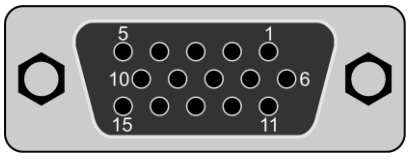


Fig. 34 – GPIO – 15 pin female connector.

Pin	Description	Direction/Function
1	+12 [VDC] output – not isolated (200 [mA] Max).	OUTPUT
2	RS232 TX not isolated	OUTPUT
3	RS232 RX not isolated	INPUT
4	GND not isolated	GND
5	GND not isolated	
6	+ VCC POWER not isolated	POWER VCC
7	+ VCC POWER not isolated	10 to 30 VDC
8	GPIO COMMON isolated	COMMON isolated
9	GPO OUT 1 isolated	Open Collector OUTPUTS isolated
10	GPO OUT 2 isolated	
11	GPI INPUT 1 isolated	GPI INPUTS isolated
12	GPI INPUT 2 isolated	
13	GPI INPUT 3 isolated	
14	GPI INPUT 4 isolated	
15	GPO pullup - isolated	OUT pull up isolated

6.3) ANTENNA PORTS.

The antenna ports allow to connect external antenna(s).

The connector type is RP-TNC female – 50[Ω].

Fig. 35 – External antenna Connector.

7) Agency Approvals

FCC Communications commission interface statement

Model: IF4

FCC ID: HD5-IF4

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.
2. This device must accept any interference received, including, an 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:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the users authority to operate this equipment

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radio exposure statement:

This equipment complies with FCC radiation exposure limits set fourth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 25cm between the radiator & your body.

Industry Canada

Model: IF4

IC: 1693B-IF4

This device complies with ISED's license-exempt RSSs. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme aux RSS exemptés de licence de l'ISED. L'opération est soumise aux deux conditions suivantes : (1) cet appareil peut ne pas causer d'interférences nocives, et (2) cet appareil doit accepter toute interférence, y compris les interférences qui peuvent provoquer un fonctionnement non désiré de l'appareil.

Radiation Exposure Statement:

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 25cm between the radiator & your body.

Déclaration sur l'exposition aux rayonnements :

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et actionné avec la distance minimale 25cm entre le radiateur et votre corps.

DETACHABLE ANTENNA USAGE

This radio transmitter (IC: 1693B-IF4 / Model:IF4) has been approved by ISED to operate with the antenna type listed below with maximum permissible gain 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's list

Antenna Type	Gain	Part number	Manufacturer
Patch (Internal)	6.15 dBi	145-649-001	Honeywell
Patch (External)	5.92dBi	HON-Gemini	Honeywell

Cet émetteur radio (IC : 1693B-IF4 / Modèle :IF4PRT) a été approuvé par l'ISED pour fonctionner avec le type d'antenne énuméré ci-dessous avec un gain maximal autorisé indiqué. Les types d'antennes non inclus dans cette liste, ayant un gain supérieur au gain maximum indiqué pour ce type, sont strictement interdits d'utilisation avec cet appareil.

Revision Notes:

Version	Date	OBS
1.0	2026 – Jul	Init Deploy

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