User guide

Edge-30R+

Edge-30R-N+

With firmware version from 3.2.3

Review 13

http://www.acura.com.br

1 Products covered by this manual

This user guide belongs to the following product:

Reader	***Code***
UHF READER ACURA EDGE-30R+ Autoid	100.644
PCI INTERFACE EDGE-30R +	100.647
ANTENNA SUPPORT MTI BR 66MM	100.320
POE POWER SUPPLY 15.4W	501.248

1.1 Approval note

Edge-30R+ AUTOID and EDGE-30R-N+ Autoid readers were tested and approved under the Regulation for Certification and Homologation of Telecommunications Products, approved by Anatel Resolution No. 242 of November 30, 2000.
Types: Radio Frequency Identification Systems - Category II.
Service/Application: Restricted Radiation Radiocommunication.

Federal Communication Commission Interference Statement (FCC)

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 pro-vide reasonable protection against harmful interference when the equipment is operate din a commercial environment. This equipment generates, uses, and can radiate radiofrequency 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.

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

MPE Warning: Radiation Exposure Statement – This equipment complies with FCC 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. Contains FCCID: QV5MERCURY6E-M

Authorized Antenna

General Characteristics of the Antenna of Edge-30 R+.

Vendor	MTI Wireless
Model	MT-262024
Frequency Range (MHz)	902-928 MHz
Circular Gain (dBiC)	7,5 dBiC
Linear Gain (dBi)	6.0 dBi
Polarization	Circular (RHCP)
Type	Patch

1.2
Legal Notice

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1.3 About Acura

Since the end of the 1990s, ACURA has been the pioneer in the radio frequency identification (RFID) market in Brazil and Latin America, and has successfully explored, since the late 1990s, its large-scale adoption in the most diverse sectors of the economy, from mining to steel, agriculture to food processing, from logistics to retail, from transportation to the distribution chain, access control to asset management. Promoter of new technologies, innovative, agile, and focused on the feasibility of cutting-edge projects.

Technological Development and Commercial Office
Wall Street Business
Av. Antarctica, 381 - Jardim do Mar, São Bernardo do Campo - SP, 09726-150
(11)3028-4600

Factory and Service Center
Avenida Nicolau Cesarino, 4197 - Bairro Tenentes - Minas Gerais, ZIP Code: 37640-000
(11)3028-4600

2 Introduction

2.1 About this guide

This user guide provides detailed information about the readers and is divided into two large parts, Part 1 with information for the physical installation (mechanical) of the reader and Part 2 with information on the operation and operation of the reader, including programming and configuration.

2.2 Conventions used in this manual

This guide uses some typographic conventions:

NOTICE: **This type of warning shows the user that a particular action may cause damage to the reader or result in the operation of the reader that violates the regulatory requirements of the region.**

ATTENTION: **This type of warning indicates that the reader is susceptible to electrostatic discharges and appropriate precautions should be taken so that no damage to the equipment occurs.**

NOTE: **Important information and tips on the subject you are in.**

2.3 Target audience

This document is intended for technology professionals and rf equipment installation who will be responsible for installing the reader. Before installing, configuring, and operating the reader, you should be familiar with:

1. Data communication between devices, including ethernet and WiFi interface.
2. Definitions of configuration, positioning of Reader and RFID Antenna.
3. Basic knowledge about network configuration in Operating Systems.

3 Introduction to equipment

Edge-30R+ and Edge-30R-N+ readers are equipment with small and high-performance Radio Frequency Identification (UHF) RFID technology and high tag reading performance, with features and functionality useful for vehicular access control solutions that are described throughout this document. Below are the main features:

- Easy to use, do not require software or API/SDK, have automatic tag reading;
- They can be installed in an external area, have ip67 degree of protection, supports weather;
- Reading results are sent in real time to the PC/Controller;
- It has Wiegand communication (26/34b), Abatrack (10/14) and TCP/IP Ethernet;
- Settings via HTML page and ASCII messages via socket;
- Support up to two (2) simultaneous TCP/IP connections for receiving read data;
- Implement the "Secure Autoid System" of tag reading, where only end-user tags are read, without reading toll tags and/or tags from other locations;
- Edge-30R+ Autoid and Edge-30R-N+ Autoid have integrated antenna with 7.5 dBic gain and circular polarization, not being necessary rf cable installation;
- Two tag reading modes, Continuous Mode and Trigger Mode (with presence sensor);
- They have an opto-isolated digital input that accepts sensors with dry contact output, NPN and PNP to detect the vehicle and be used in Trigger reading mode;
- Option to use a digital output using the built-in pci-embedded radio (external 24VDC source usage required);
- They have reduced dimensions, not impacting on the aesthetics of the installation site;
- Contains tag signal level filter setting (RSSI), which helps filter unwanted tag readings.

The PCI Interface is a board that facilitates connections between the customer controller and the through an RJ45 communication cable. Below are the main features
of the PCI Interface.

- It has RJ45 connectors and post type;
- It has small dimensions and can be fixed on DIN rail.

4 Table of revisions

4.1 User guide table

Revision	Month/year date	Description
13	02/2021	• Update the information according to the Edge-30R+ Autoid and Edge-30R-N+ Autoid reader; • PcI change and information.
12	07/2021	• Updates regarding the latest firmware; • Update the preview procedure by Syslog.
11	01/2018	• Added information about the Edge-40R-N Autoid reader.
10	05/2017	• Correction of frequency band information for the Edge-30R-N; • Correction of power information for edge-30R-N.
9	04/2017	• Update of information regarding firmware 3.2.3; • Added information about the 1/2W reader of read power, Edge-30R-N.
8	02/2017	• Update of information regarding firmware 3.1.9; • Changed information about maximum reading distance due to new tags with better sensitivity and low energy consumption; • Added information about unwanted side readings.
7	09/2016	• Updated configuration information.
6	02/2016	• Added information about digital outputs; • Added configuration information via ASCII messages via socket; • Updated information of the reader configuration parameters; • Added chapter on Collecting information for diagnostics using Syslog messages.
5	10/2015	• Update the graphics of the measurements of the integrated antenna.
4	09/2015	• Updates with changes to parameters and functionality; • Updates with the format of the data string and Syslog protocol; • Deleted chapter on Collection of information for diagnostics, this version of the reader firmware (2.0.4) implements the Syslog protocol, which replaces the old status messages.
3	07/2015	• Fixed Hard Reset time from 4s to 30s; • Changes to the new html reader configuration pages; • Changes with the new instructions on TCP port, data format, and reader status.
2	05/2015	• Fixed linefeed hexadecimal value [LF]; • Updating information from the reader's characteristics table; • Added warning about power;

1	03/2015	• Creation of this document.

4.2 Readers firmware table

Revision	Month/year date	Description
3.4.7	04/2021	• Fixed ERROR in the safe mode tag verification algorithm when two readers with different security codes stood side by side, close to each other, improper readings occurred.
3.4.6	09/2020	• Fixed excessive memory consumption error when the reader was in Client mode. In this mode, after a period the reader no longer responded to the ASCII configuration commands.
3.4.5	07/2020	1. Added one more parameter "*" for the commands "OUTPUT0" and "OUTPUT1", whose function is to exchange the state of the specific output for a time(s) specified in "OUTPUT0PERIOD" and "OUTPUT1PERIOD"; 2. Added the commands "OUTPUT0PERIOD" and "OUTPUT1PERIOD" to determine pulse time when "*" is passed as a parameter in "OUTPUT0" and "OUTPUT1"; • Added the commands "OUTPUT0TAG" and "OUTPUT1TAG", whose function is to trigger a pulse in the respective outputs for each tag reading, obeying the time configured in "OUTPUT0PERIOD" and "OUTPUT1PERIOD".
3.4.4	10/2019	• Fixed algorithm ERROR at startup and RF driver scan.
3.4.2	04/2019	• Fixed ERROR in the javascript of the network configuration page, where an error message was generated in changing the value of the communication and configuration ports.
3.4.1	03/2019	• New Ethernet mode as client, it is now possible to choose the behavior of the reader, such as Server (legacy mode until then) and as Client mode where a server port and ip must be configured. • The connection attempt is every 3s in Client mode, the commands sent to the reader configuration port are interpreted by the same connection in Client mode. • Added 3 more commands "ETHMODE" "SVIPADDR" "SVPORT".
3.3.1	02/2019	• Added the option to set a fixed Site Code value for the Wiegand interface. • Two new commands accessible only via port 9090 have been created. • Created command "ENFXSC" and "VALFXSC", to enable and setar value, respectively.
3.2.8	07/2018	• Fixed ERROR in the filter algorithm when the read mode chosen was the hybrid.
3.2.5	05/2017	1. Changes aimed at improving the stability of the functioning of the

		reader; ● Fixed memory consumption ERROR in the RS232 serial sending function.
3.2.3	04/2017	• Fixed ERROR in the IPV4LL generation algorithm in the events of disconnecting and connecting a network cable; • Fixed ERROR in the formation of the reading command that uses the Select mask (ID Filter); • Small changes aimed at improving the stability of the reader's operation; • Added an RF time off with new Ascii command "TMRFOFF"; • Implemented logic to disable the reset button check, through a new Command Ascii "ENHRDRST"; • Fixed ERROR in the need check logic for rebooting in network settings; ● Fixed ERROR in Hybrid read mode where a secure tag was reported with the secure id and then followed by the normal id of the same secure tag. Only the secure id is now reported.
3.1.9	02/2017	• Fixed BUG in keepalive String generation timer after the reader exceeds 18 hours of operation; • In the temperature compensation logic, one more condition was included, if the temperature is greater than 81°C, it is idle for 5s. • Improved logic of RF duty cycle, rfon/rfoff; • Fixed ERROR in zero-value comparations in the Set commands of TMFTDB, FTSMTG, SELFTDG; • Changed delay scheme between tags in the transmission of id, now this delay is configurable by the command ascii DELAYTX from 0 to 500ms, is not on the html page, default of 100ms, before there was no delay in the RS232 interface which generated errors in some controllers when it was read but of a tag at the same time; • Changed to EEPROM memory all the reader settings, so if in future versions there is the addition of new variables, the firmware update will not cause the return of the factory values of the other configuration variables; • Implemented auto generation ip link local address IPV4LL, where the factory default IP is empty and the ASsigned IP is 169.254.MAC. mac with the last two decimal numbers of the MAC address; • Added keyword "ALIVE" in the data string and keepalive in order to send the reader uptime in seconds; • Removed popup from page html Security when changing the autoid security code, when changing and then clicking the Apply button, gave the false impression of having saved.
3.1.5	09/2016	● The RS232 interface now only works with LOGIC OR other Wiegand and Abatrack interfaces, so if you're using Wiegand or Aba, the RS232 TX won't work; ● Implementado o modo Híbrido de funcionamento, onde hora le tag Normal hora le tag Seguro; ● You no longer need to restart the reader after changing Autoid Mode; ● One more keyword "TYPE" is included in the data string that sends the letter "S" when the tag is secure and "N" when it is normal; ● Changed the reading htm page to show all configs if the modo seja Híbrido;

		● Changed the feedback patterns of the status and link LEDs; ● Security Change, there is now a default password acura@autoid , it is no longer allowed to be without any password, changed the page hmtl Security, the password can have up to 16 chars; ● Included Duty Cycle RF (RFon/RFoff) compensation logic according to the reader's temperature increase; ● Improvements in internal error treatments.
3.0.1	02/2016	● Implemented in a single firmware, the two Systems Autoid, Normal and Safe; ● Added English language for html pages; ● Some time parameters have changed to have drive in seconds; ● The maximum trigger read time value was changed to 600s before was 65s; ● Implemented configuration protocol through ASCII messages; ● Fixed a bug in the keepalive sending algorithm; ● Removed delay of 100ms between Wiegand or Aba transmissions when the chosen communication interface is "None".
2.0.4	09/2015	● Implemented Syslog protocol (RFC 5424) for sending reader log messages; ● Eliminated the status ports that sent the log messages, now the protocol is Syslog; ● Implemented DNS protocol for name resolution; ● Implemented automatic name of the reader; ● The Read Result String is now the same as the one sent via TCP/IP and ; ● Added key words to the Data String and keepalive; ● Taken from the end-of-line settings for the Data String and keepalive, control characters can now be placed in strings by the keywords.
2.0.3	06/2015	● Restructuring of html configuration pages; ● Immediate execution of parameter changes without the need for reader reboot; ● The Ethernet communication port number for the read results and reader status are now configurable; ● Accepts two simultaneous TCP/IP connections on the port configured to receive read data; ● The read result string that is sent via TCP/IP can now be customized using keywords; ● Included a number of receive buffers for the TCP/IP sockets of the reader to avoid the "Zero Window" events in the TCP/IP Ethernet protocol.
2.0.2	03/2015	● Creation and release of the firmware.

4.3 Readers hardware table

Revision	Month/year date	Description
V1	03/2015	• Creation and launch of the Edge-30R reader.

5 Installation notes and important warnings

NOTICE:

The maximum[1] reading distance of passive tags per reader is up to 6m for the Edge-30R+, 4m for the Edge-30R-N+. The effective reading distance of passive tags varies according to each installation and environment, and may change according to:

- **Material on which the tag is installed;**
- **Tag placement;**
- **Reader targeting in relation to the tag;**
- **Electromagnetic interference caused by other equipment installed nearby.**

NOTE: **It is recommended that reading tests are performed before the reader is installed at the place where the reader is to be installed.**

NOTE: **Reader models have the same Irradiated Effective Power (ERP) of no more than 36dBm (4W), but the maximum power value configured on the reader is 30 dBm for the Edge-30R+ and 27 dBm for the Edge-30R-N+**

[1] Distance obtained with the use of acutag UHF T5-C, T5-U And T7-C properly installed and in interference-free conditions of shielded/metallized glass or other nearby devices (e.g. Non-Stop or ConectCar). However, the reading distance may vary depending on the tag model, usage mode, and the environment.

Part 1 - Overview and installation

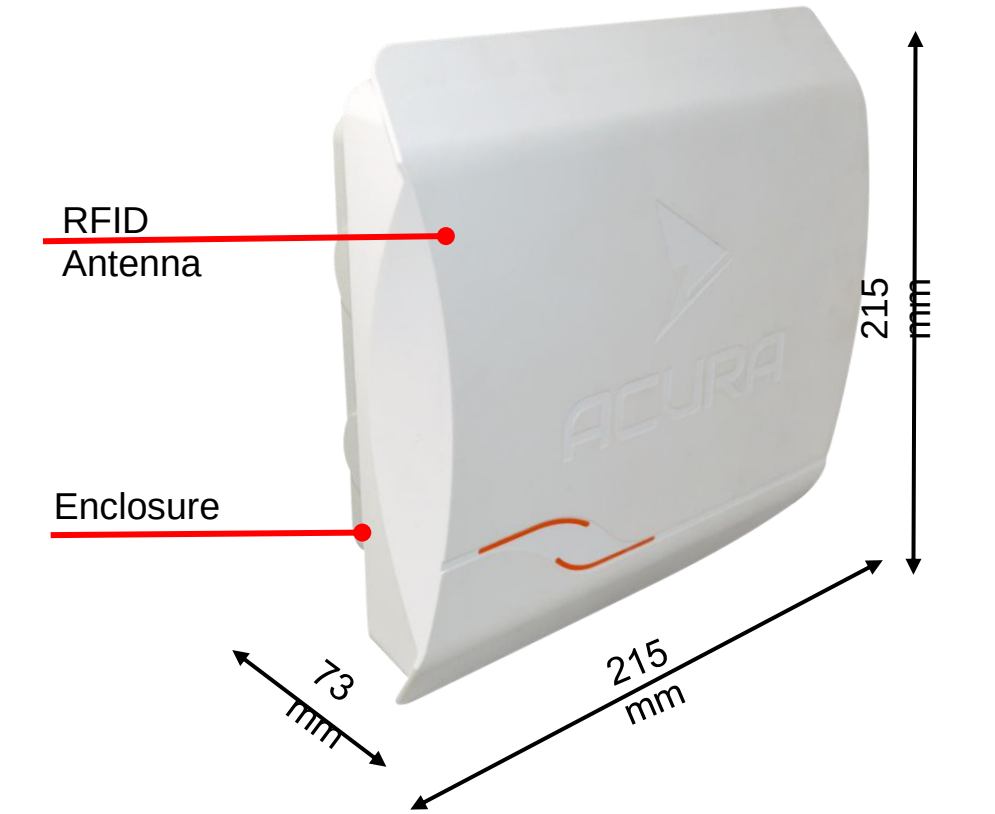
Equipment overview

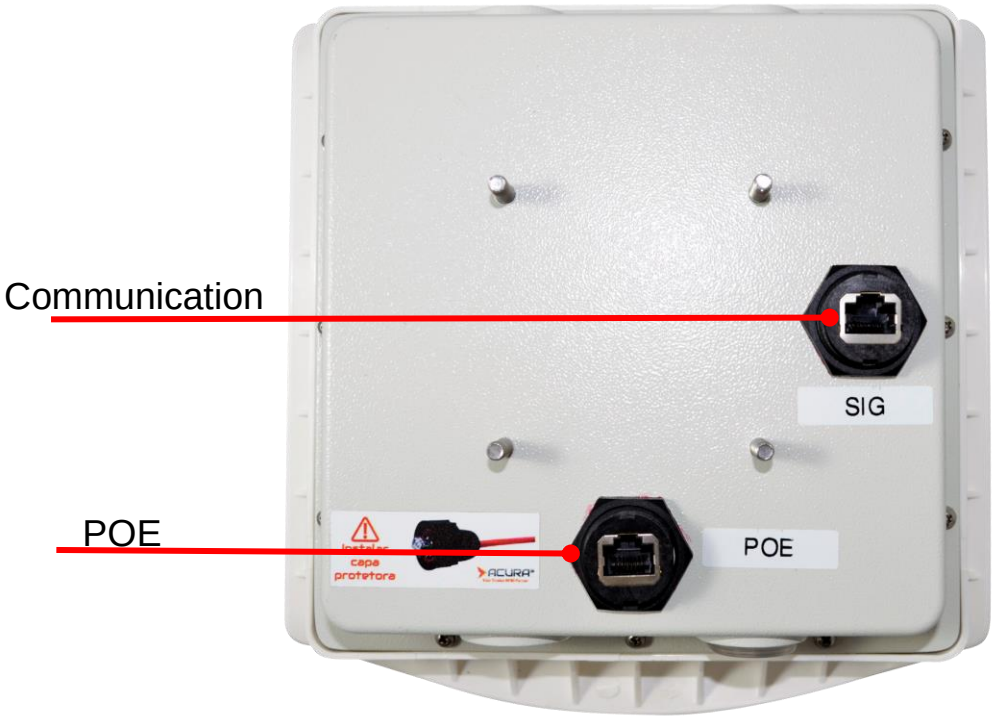
Mechanical Installation

Wiring

6 Equipment overview

6.1 Hardware - Edge-30R+ and Edge-30R-N+ Readers





6.2 General reader characteristics

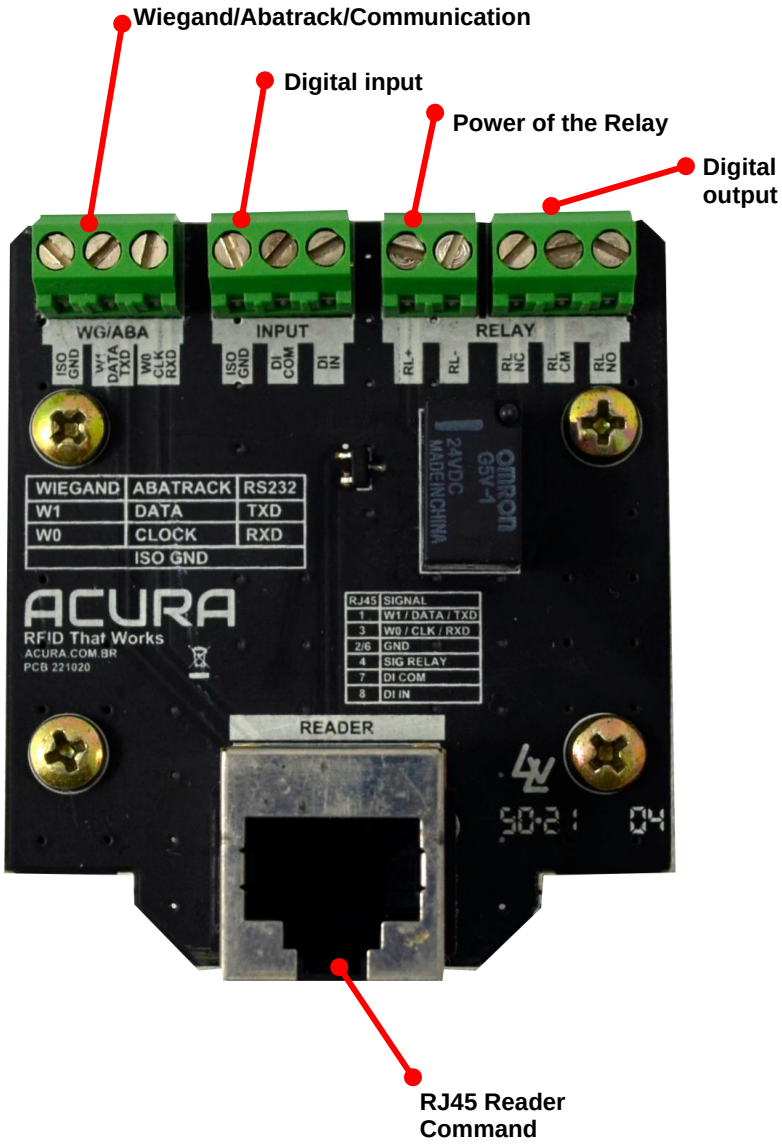
Transponder Protocols	
Protocole	ISO 18000-6C (Gen2)
Interface RF	
RF output power	*Edge-30R+:* from 0 to 30dBm with 0.5dBm increment *Edge-30R-N+*: from 0 to 27dBm with an increment of 0.5dBm
Regulation	ANATEL (BR) 902 - 907 MHz e 915 - 928 MHz
Mode	Frequency Hopping
Modulation / RF Coding	PR-ASK / MIller4 (M4)
Backscatter Link Frequency (BLF)	250KHz
Performance	
Maximum reading distance[2]	*Edge-30R+*: 6m w/ integrated antenna 7.5dBic (36dBm EIRP) *Edge-30R-N+*: 4m w/ integrated antenna 7.5dBic (33dBm EIRP)
Dados / Interface de Controle	
Connectors	**Communication and power:** RJ45 connector
Communication Interface	**Ethernet:** Communication speed 10/100Mbps Galvanic insulation of 1.5KVCA **Wiegand/Abatrack (not using GPIO digital outputs):** Wiegand 26 and 34 bit / Abatrack 10 and 14 digits Galvanic insulation of 1.0KVrms, current limitation 100mA (TBU)

[2] The reading distance may vary depending on the tag used and the reader's usage environment.

Data / Control Interface (continued)	
GPIO	**1x Opto-isolated Digital Input:** 1KV RMS insulation Supports Dry Contact, NPN (Sinking) and PNP circuit (Sourcing). Minimum pulse width: 100ms High Level (3.0 to 24.0VCC), Low Level (0 to 2.0VCC) **1x Digital output opto-insulated by relin:** High Level 24VCC RL_NC (Normal Contact Closed) RL_CM (Common Contact) RL_NO (Open Normal Contact)
Programming	Does not require SDK/API, the reader works automatically by sending the reading result via Ethernet.
Energy	
Energy	Compatible with IEEE802.3af standard (15.4W) 10/100/1000M PoE Injector
Consumption	Maximum 15W With maximum power and high duty cycle.
Physical characteristics	
Degree of protection of the reader	IP67 **(Considering the RJ45 PLUG properly connected)**
Integrated antenna	*Edge-30R+*: 7.5 dBic gain, RHCP Circular Polarization *Edge-30R-N+*: 7.5 dBic gain, RHCP Circular Polarization
Dimensions	*Edge-30R+*: 215x215x83 mm [LxAxP] *Edge-30R-N*: 190x190x77mm [LxAxP]
Operating temperature	-10°C a + 65°C
Storage temperature	-10°C a + 70°C
Relative humidity of the air	95%
Fixation	With support on the back for poles (Ø 1" to 1.75" and 1.75" to 3") or flat surfaces (wall)

6.3 Hardware - PCI interface

The PCI Interface should be used in conjunction with the Edge-30R+ Autoid and Edge-30R-N+ Autoid readers with the function of facilitating the installation of the readers. It has RJ45 type connector and terminals for a quick and easy connection between the readers and the client controller.



6.4 General features of pci interface

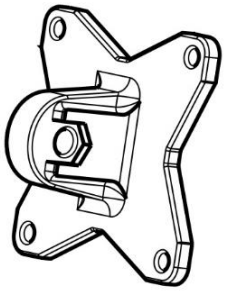
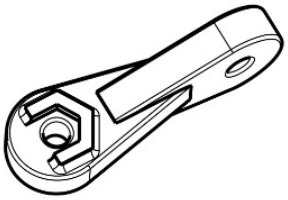
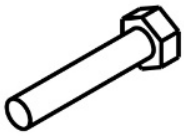
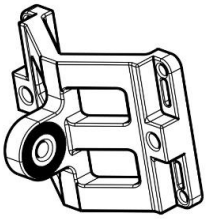
Data / Control Interface	
Connectors	**Reader Communication:** RJ45 connector **Communication/Digital Input/Digital** Output Terminal type Removable terminal for cables/wires 12-24 AWG [WG/ABA, INPUT, RELAY]
Physical Characteristics	
Degree of protection	Internal use only
Dimensions	58x51x36mm [LxAxP]
Weight	32g (Out of box)
Operating temperature	-10°C a + 65°C
Storage temperature	-10°C a + 70°C
Fixation	Compatible with DIN TS35 rail (35x7.5mm)

7 Mechanical installation

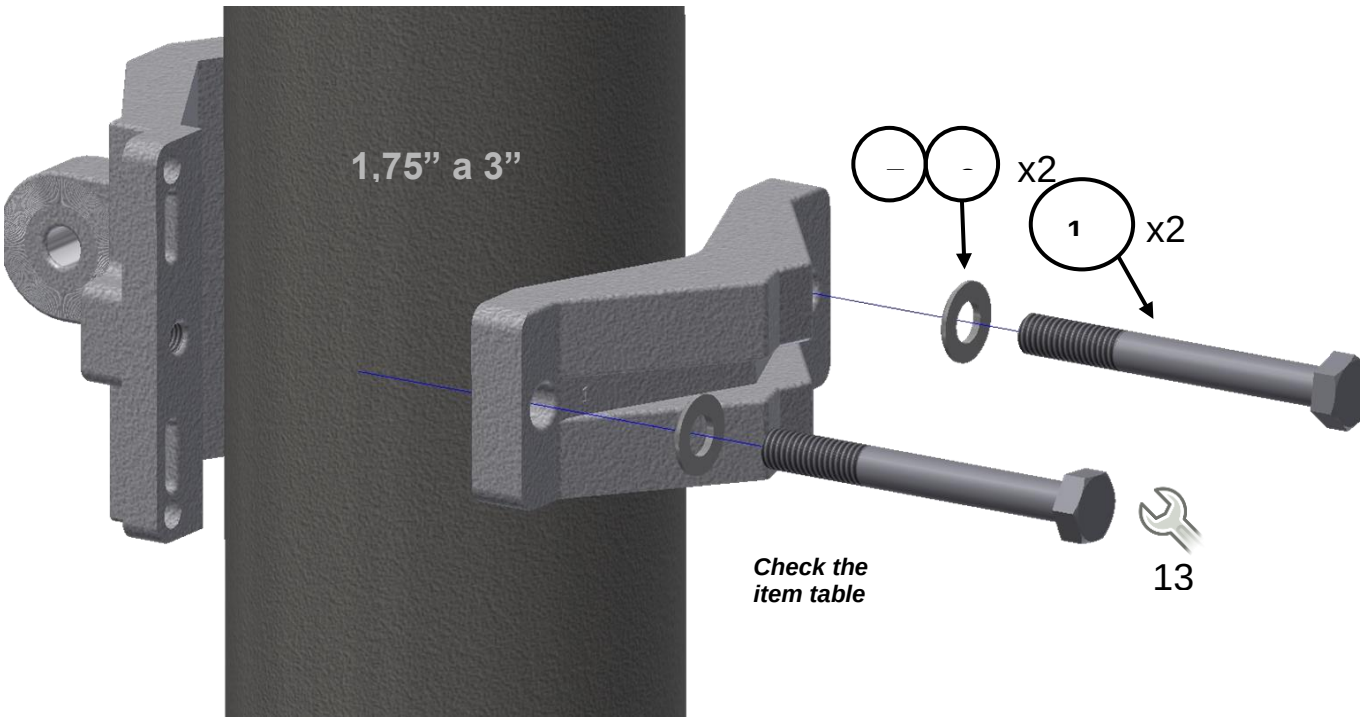
7.1 Reader attachment support

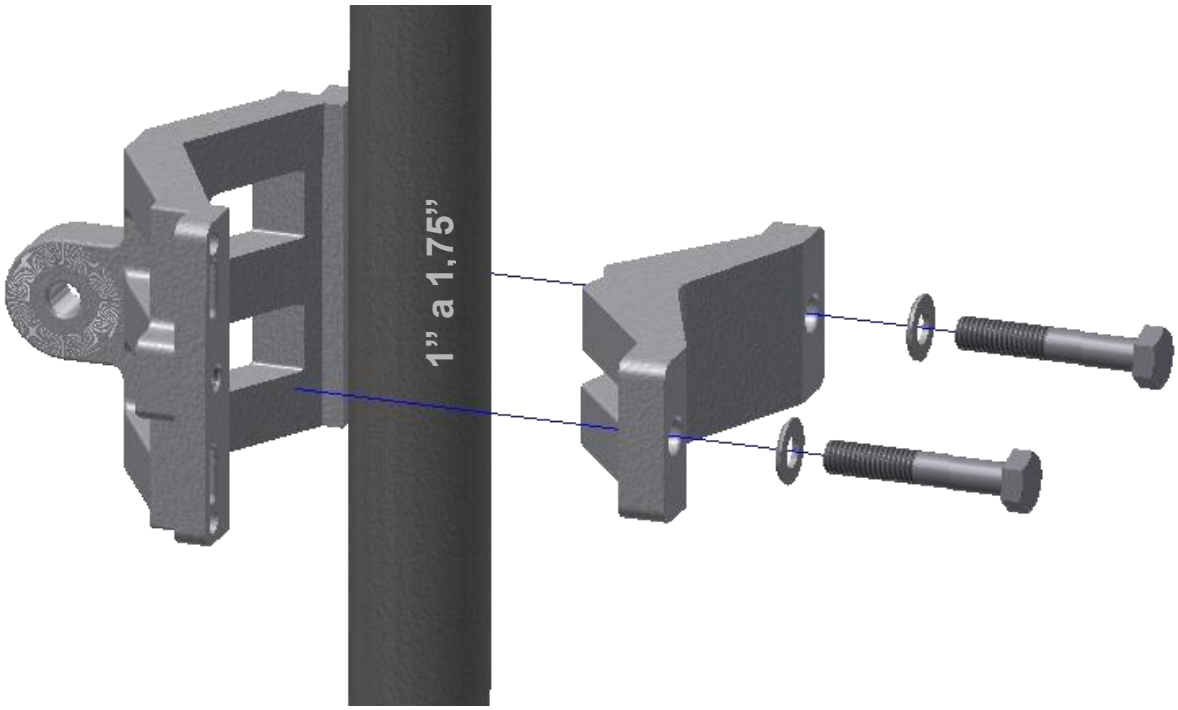
Readers together with the fixing bracket can be fixed on poles with a diameter variation from 1" to 1.75" or 1.75" to 3", can also be fixed on flat surfaces such as walls.

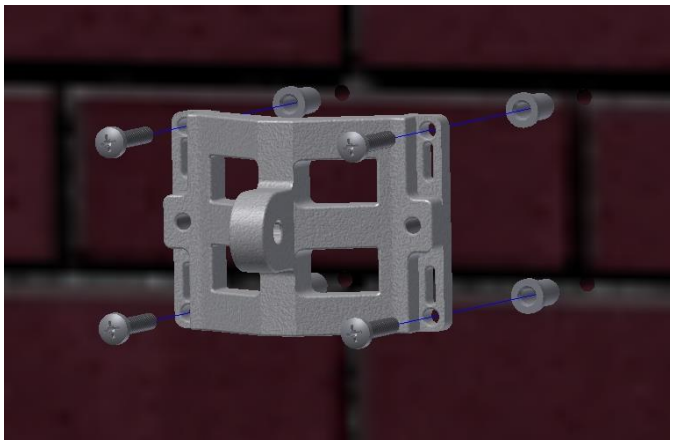
7.1.1 Fixing bracket items

Item 1 - Qt 1 Base of the bracket on the reader 	**Item 2 - Qt 4** M5 flat washer **Item 3 - Qt 4** Pressure washer M5 **Item 7 - Qt 4** M8 flat washer **Item 8 - Qt 4** Pressure washer M8 	**Item 4 - Qt 4** Nut M5 **Item 9 - Qt 2** Nut M8 	**Item 5 - Qt 1** Bracket arm 
Item 6 - Qt 4 Screw M8x40 **Item 12 - Qt 2** Screw M8x70 **Item 13 - Qt 4** Screw M5x16 	**Item 10 - Qt 1** Pole/wall base 	**Item 11 - Qt 1** Fixing part 	

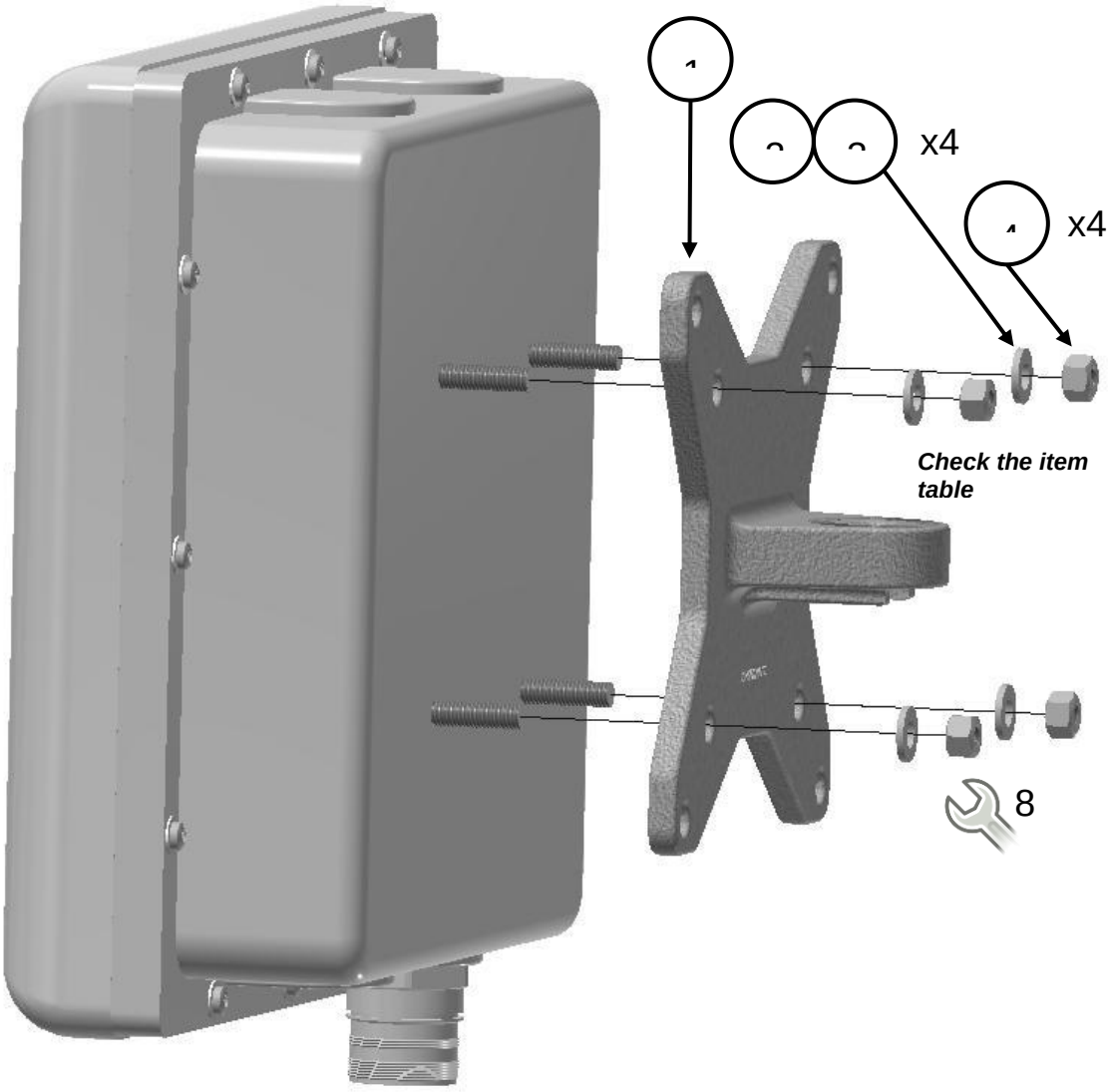
7.1.2 Fixing the pole base 1" to 1.75" or 1.75" to 3" diameter and wall



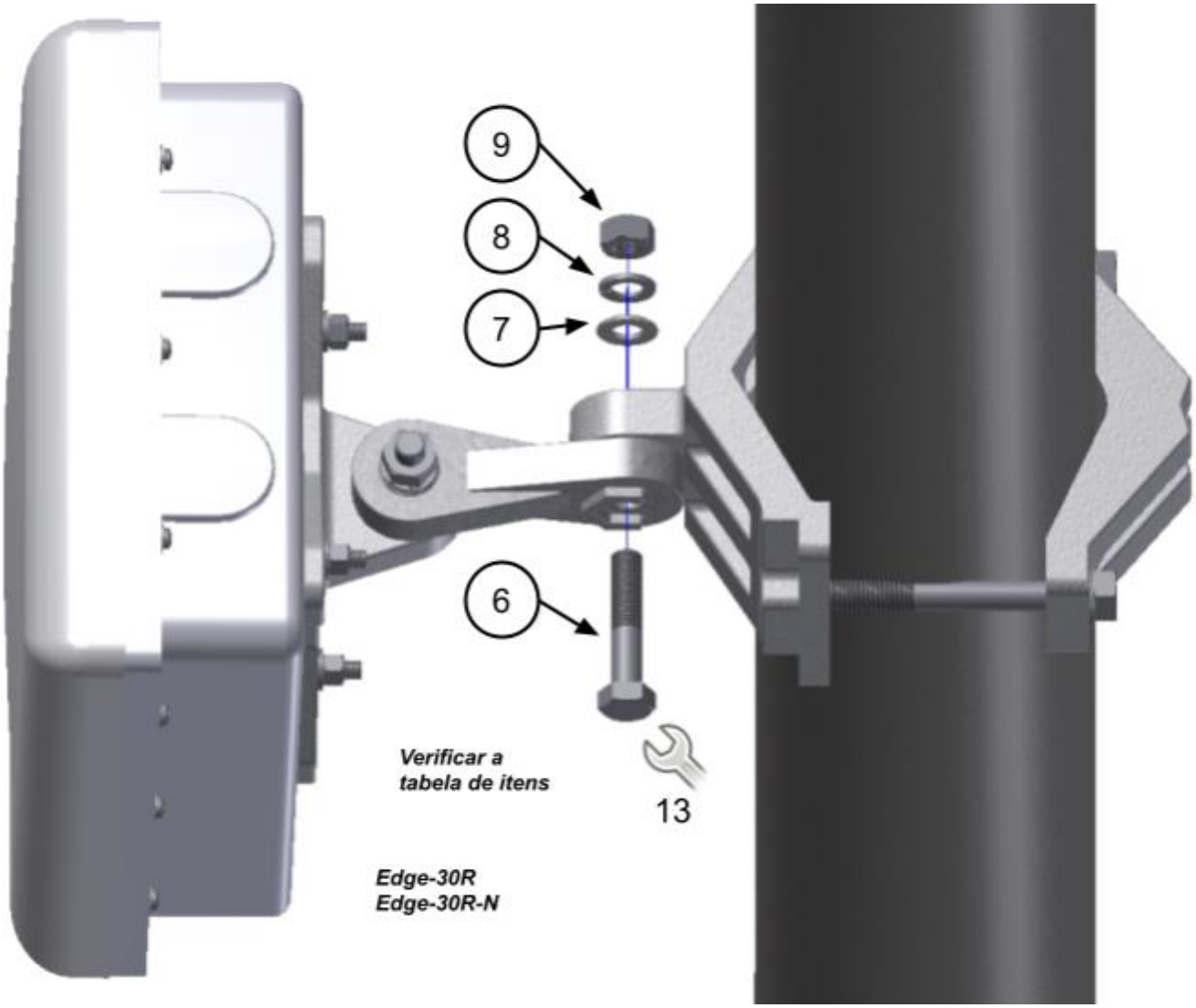




7.1.3 Fixing the support base on edge-30R+ and Edge-30R-N+ readers

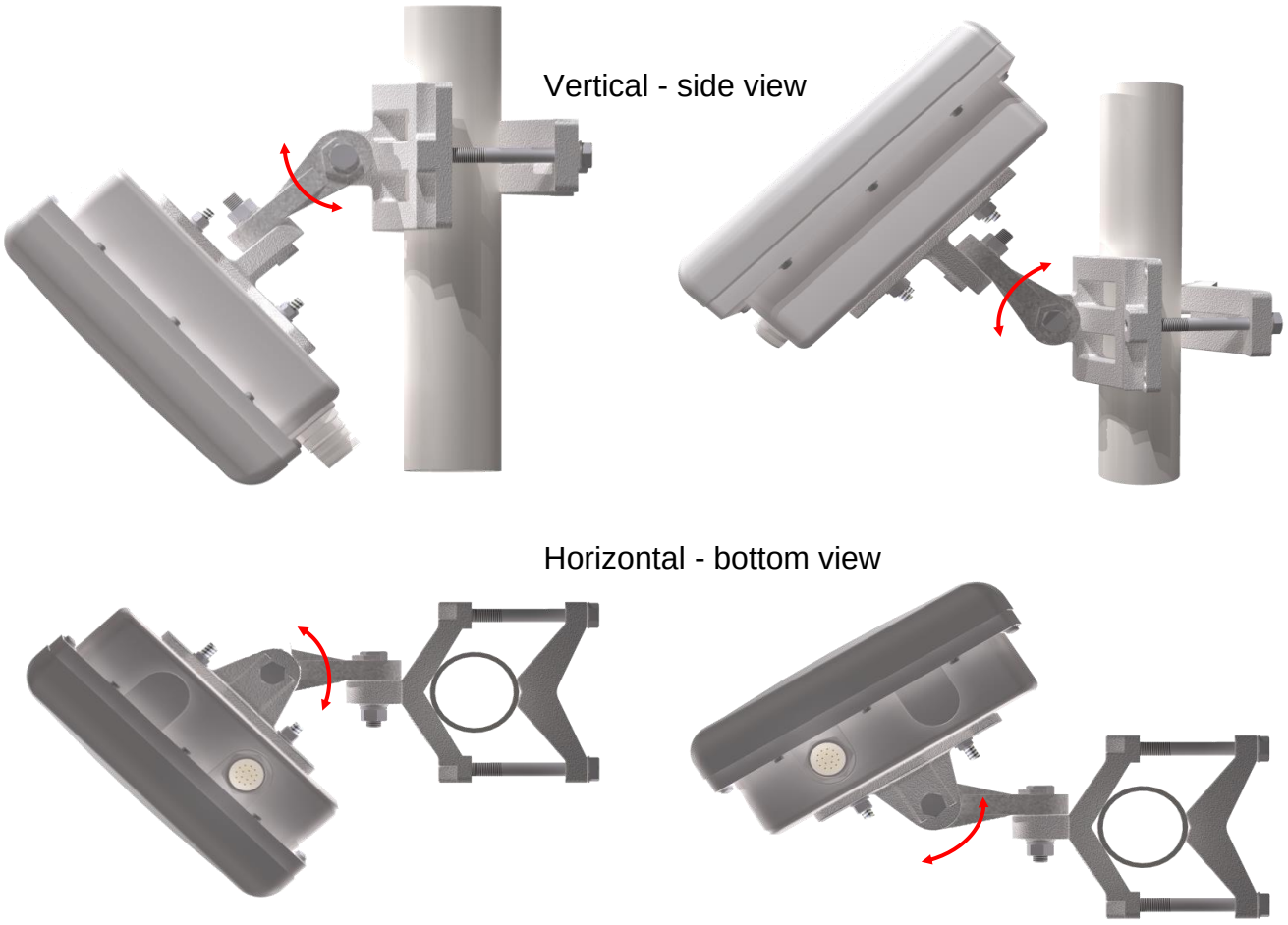


7.1.4 Fixing the bracket arm at the base of the pole/wall



NOTE:	**Readers can be mounted with the cable facing the top side or on the sides, as it is easier for installation, as the integrated antenna has circular polarization, the position in which the reader is installed relative to the output of its cable will not influence the performance of reading tags.**

7.1.5 Degrees of freedom of mechanical support



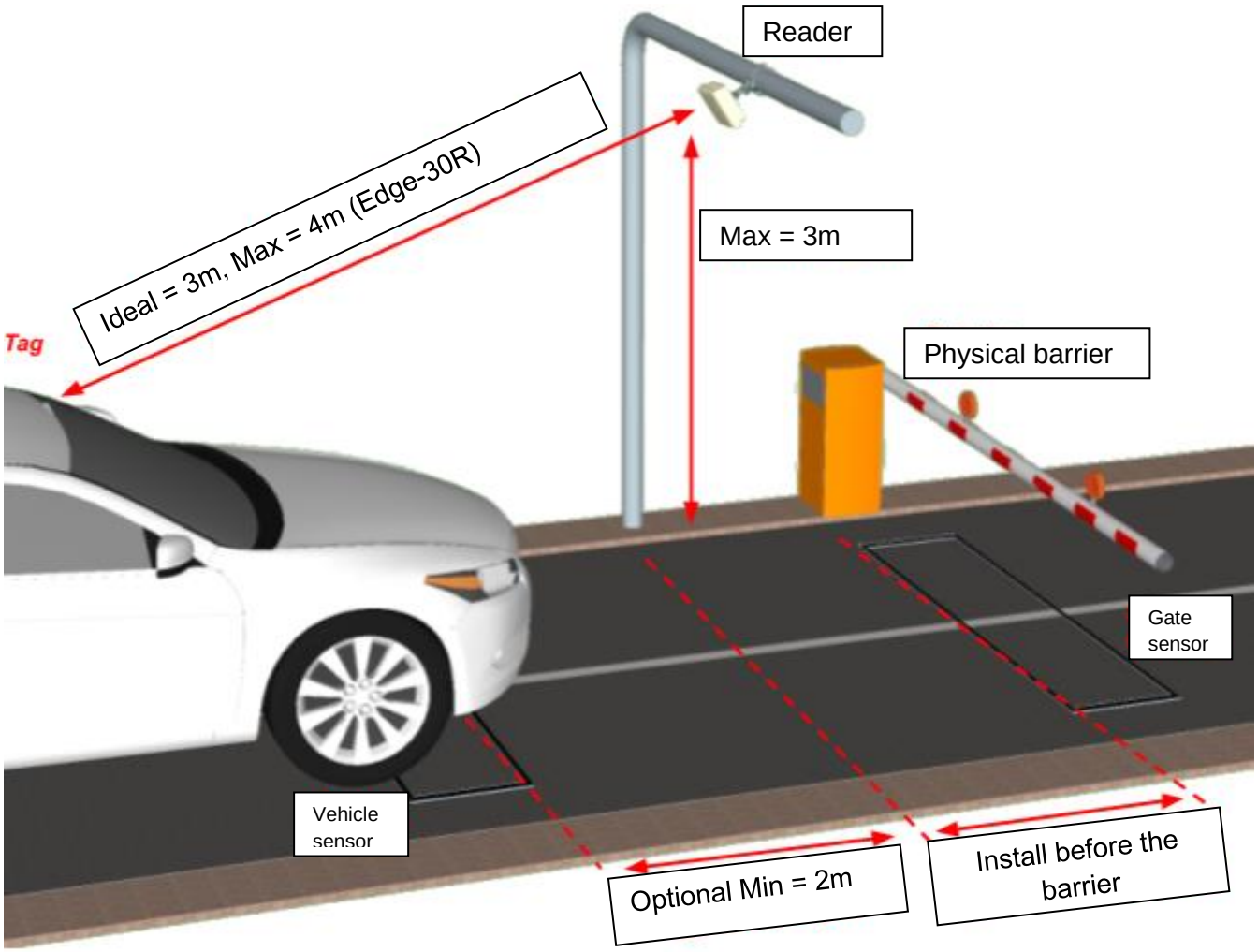
7.2 Positioning of readers

NOTE:	**The measurements and illustrations described in this section are *recommendations* for the best performance of reading the passive tag in the vehicle. It is important to follow the reader's maximum installation height recommendations so that the effective distance *between the reader and the installed tag does not exceed the optimal reading distance of the passive tag*. To avoid reading failures, the ideal distance between *the reader and tag installed in the vehicle* is 3m (three meters).**

7.2.1 Side of the track

The **angle of the reader** depends on the height of installation, the face of the antenna of the reader should be pointed to where the vehicle tag will be at the ideal reading distance of 3m between the reader and tag. You can measure 3m from the center of the antenna (installed) to an average height of 1.5m from the floor where the tags will be, the reader should be pointed to this location, where the tag should be.

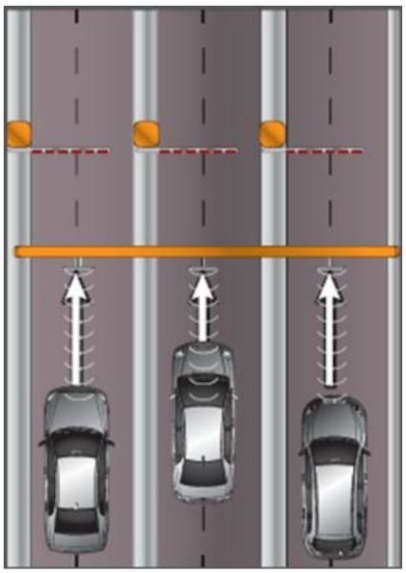
7.2.2 Track center



The **angle of the reader** depends on the height of installation, the face of the antenna of the reader should be pointed to where the tag in the vehicle will be at the ideal reading distance of 3m between the reader and tag. You can measure 3m from the center of the antenna (installed) to an average height of 1.5m from the floor where the tags will be, the reader should be pointed to this location, where the tag should be.

7.3 Reading problems

When there are adjacent lanes near each other, tag readings may occur on unwanted tracks or locations near the reader's installation point. Below are some examples of multi-lane installations.



To minimize the occurrence of unwanted reads as much as possible, some actions can be performed:

1. Filter of unwanted side/adjacent readings. You must enable the "Filter by tag signal level" on the Read page or via the Ascii command "FTRSSI";
    1. What is the value of the cut-off RSSI?
       The best way to determine the cutoff value of the trail ing tag sign (RSSI) is by reading (on the side track) that informs rssi at the installation site by placing the keyword "RSSI" on the Data String on the Communications page or via the Ascii command "STRDT". To view the readings via TCP/IP you can use the "Putty Terminal Software". It is important to log readings of various types of cars to find a great cut value.
1. Adjusting the reading power combined with the reading filter by rssi. In many cases the reading power can be decreased without compromising tag readings on the correct track. Decreasing reading power helps a lot in eliminating unwanted side readings.
2. Mechanical adjustment of the reader (bring the tag/vehicle reader closer together) to be able to decrease the reading power.

NOTE: For the actions mentioned above, the tags must be properly installed in the vehicle (Glass, headlight, etc.), if the tags are shown in the hand or improperly the actions may not result in improved reading performance.

7.4 Food and Communication

To facilitate the installation of the reader, the power is made from a POE Injector via RJ45 cable, not requiring the PCI to be energized. If wiegand/abatrack communication is used, or the use of the input and logical output, it is necessary to use the PCI, which in turn, this communication is made by an RJ45 cable connected directly to the Interface Card of the reader.

Características	
PoE Injector	PoE Standards IEEE 802.3af (15.4W) - 10/100/1000M
Cable	RJ45 T568A ou T568B
Dimensions	53 x 33 x 119mm [LxAxP]
Weight	138g (Outside the box)

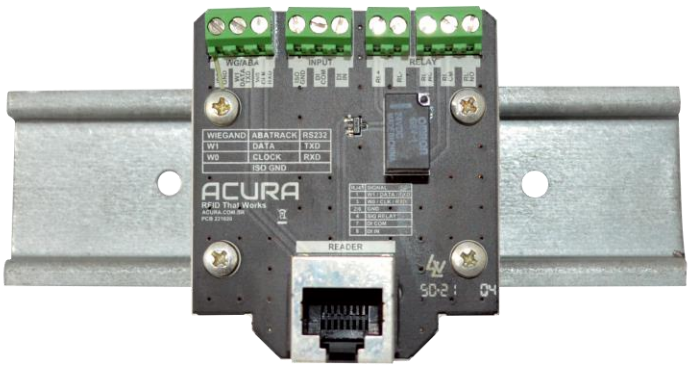
The figure below demonstrates a POE injector model

NOTICE: **The network cable with RJ45 connectors for power and communication It is NOT provided by ACURA. It is the customer's responsibility to acquire.**

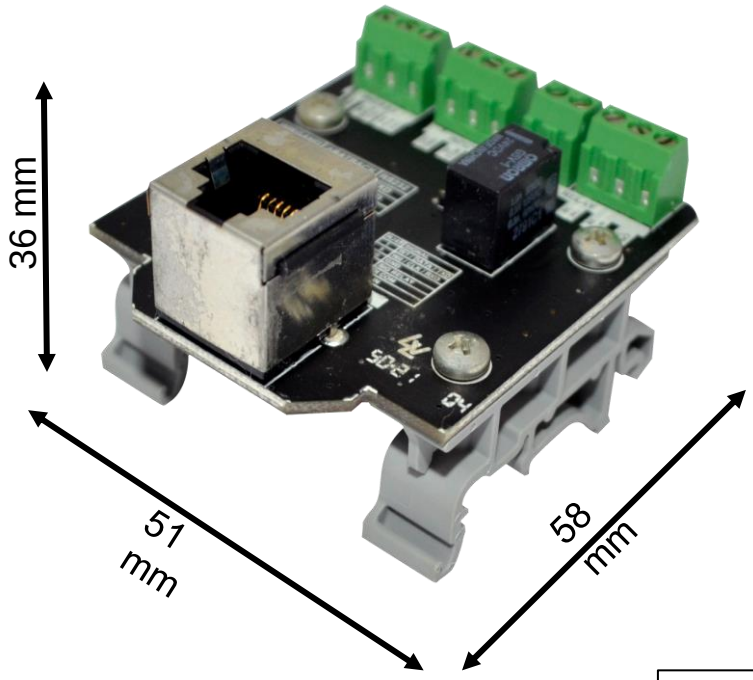
NOTE: **We provide as an optional purchase of the PoE Injector (501.238).**

7.5 Mechanical installation of pci interface

The interface plate must be fixed on a DIN TS35 rail (35 x 7.5mm).



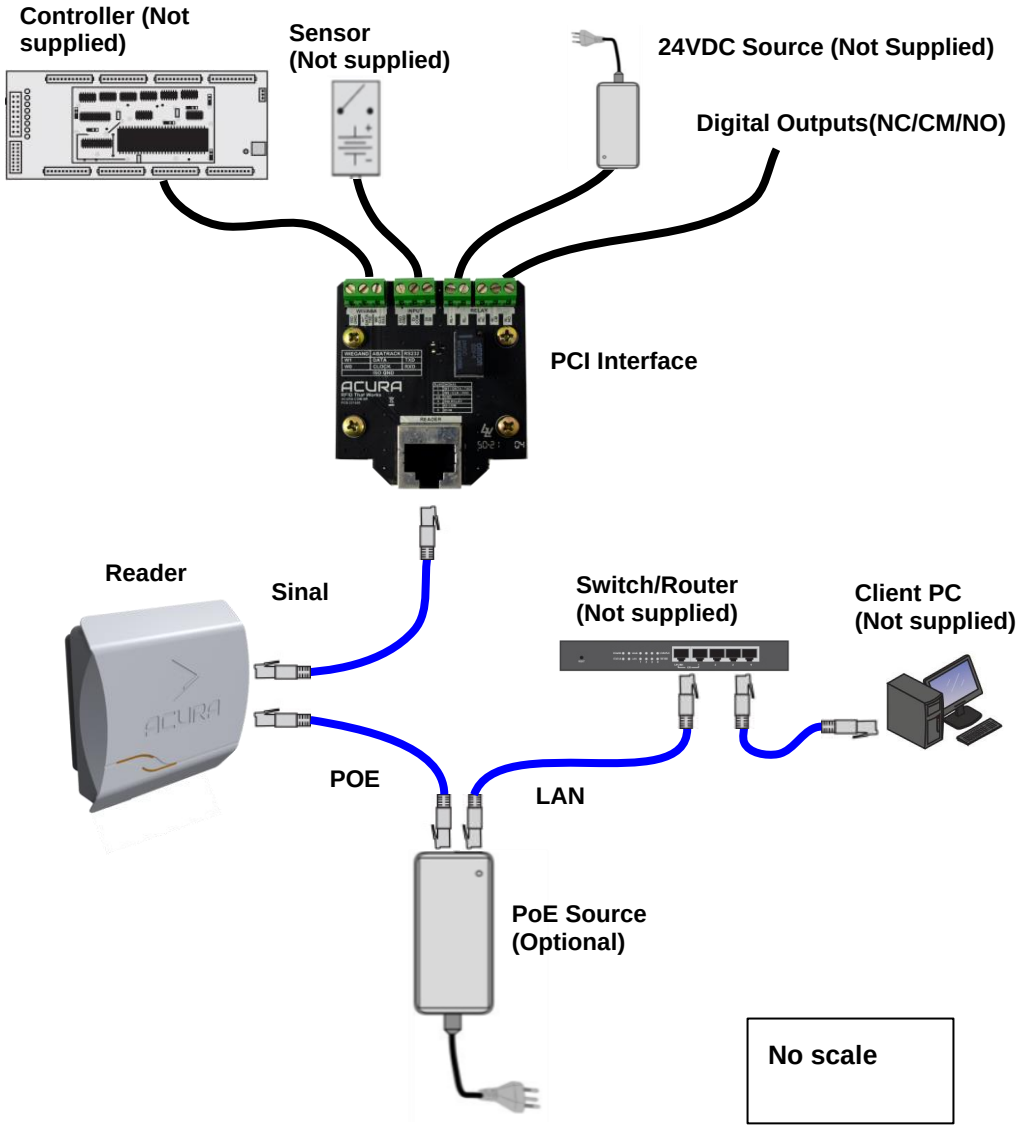
7.6 Dimensions of PCI interface



No scale

8 Eletrical Intallation

8.1 General diagram of electrical connections

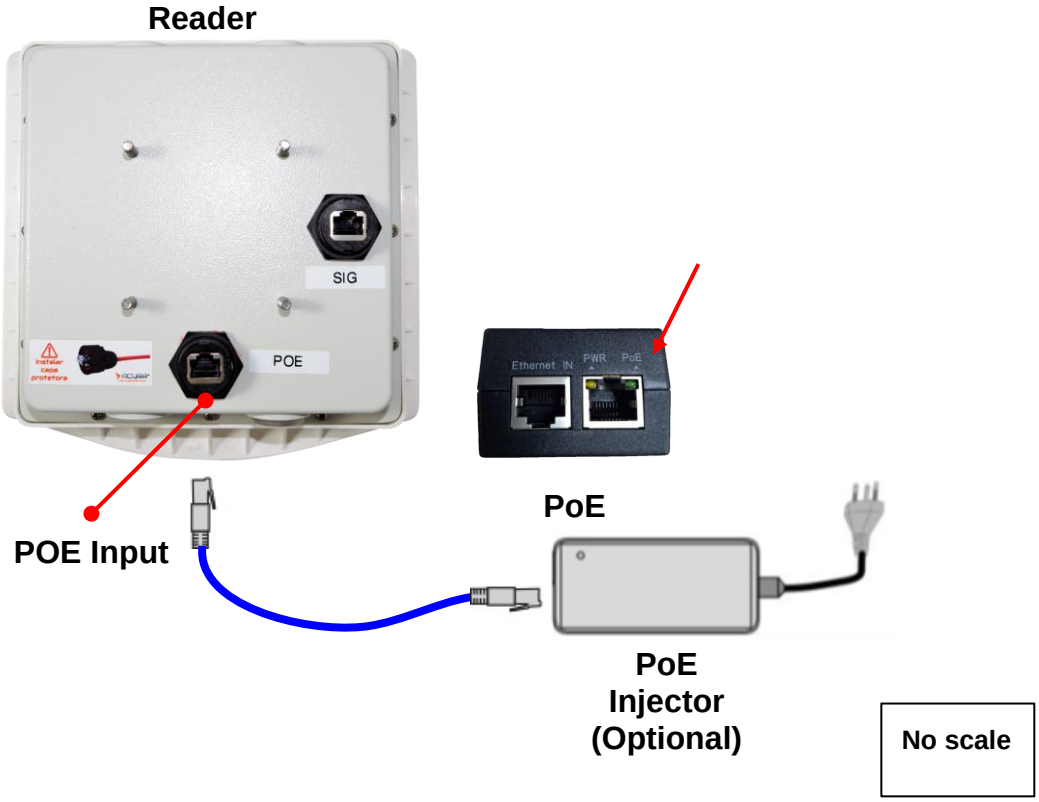


ATTENTIO N: **The antenna port of the readers are susceptible to damage from electrostatic discharges (ESD). If electrostatic discharges occur on the antenna, the result may be equipment failure.**

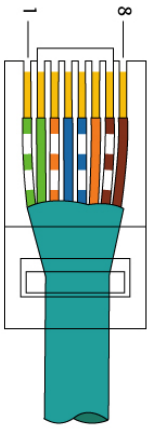
NOTE: In the case of the use of the reader, ACURA may optionally offer the

8.2 Electrical connections - Reader

The figure below describes the reader's connection to the POE Injector.



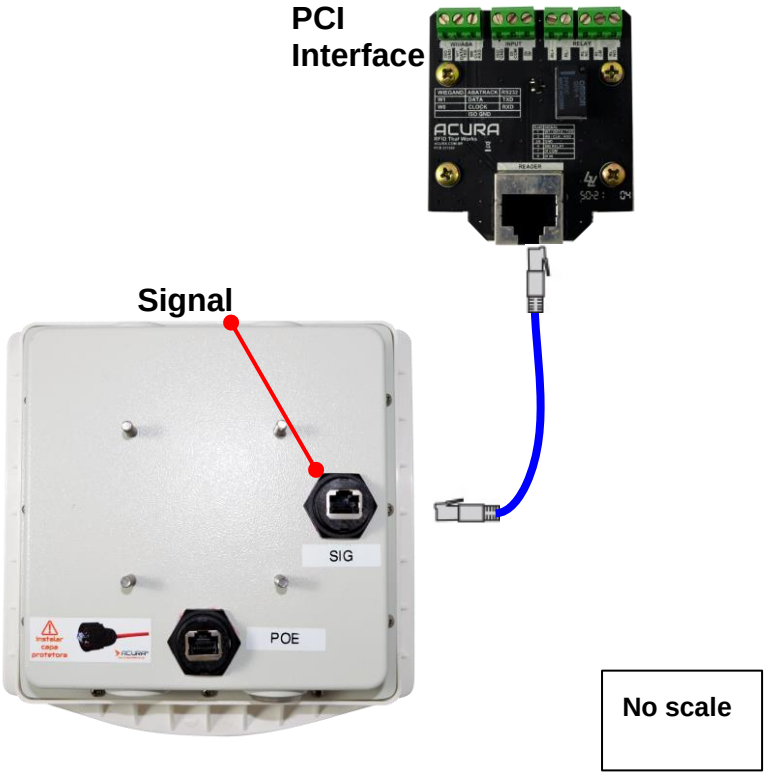
The table below describes the pins and colors of the RJ45 cable that will be used to connect the POE injector with the reader.

Injector Connector	RJ45	Standard color T568A	Position RJ45
HOST ETHERNET/POWER	1	Light Green	
	2	Green	
	3	White	
	4	Blue	
	5	Light Blue	
	6	Orange	
	7	Light Brown	
	8	Brown	

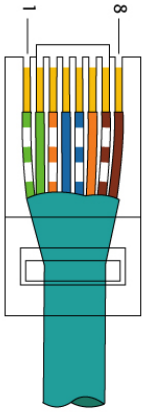
NOTE: A standard T568A or T568B network cable can be used to connect the Injector to the Reader.

8.3 Electrical connections - PCI

The figure below describes the reader's connection to the PCI.



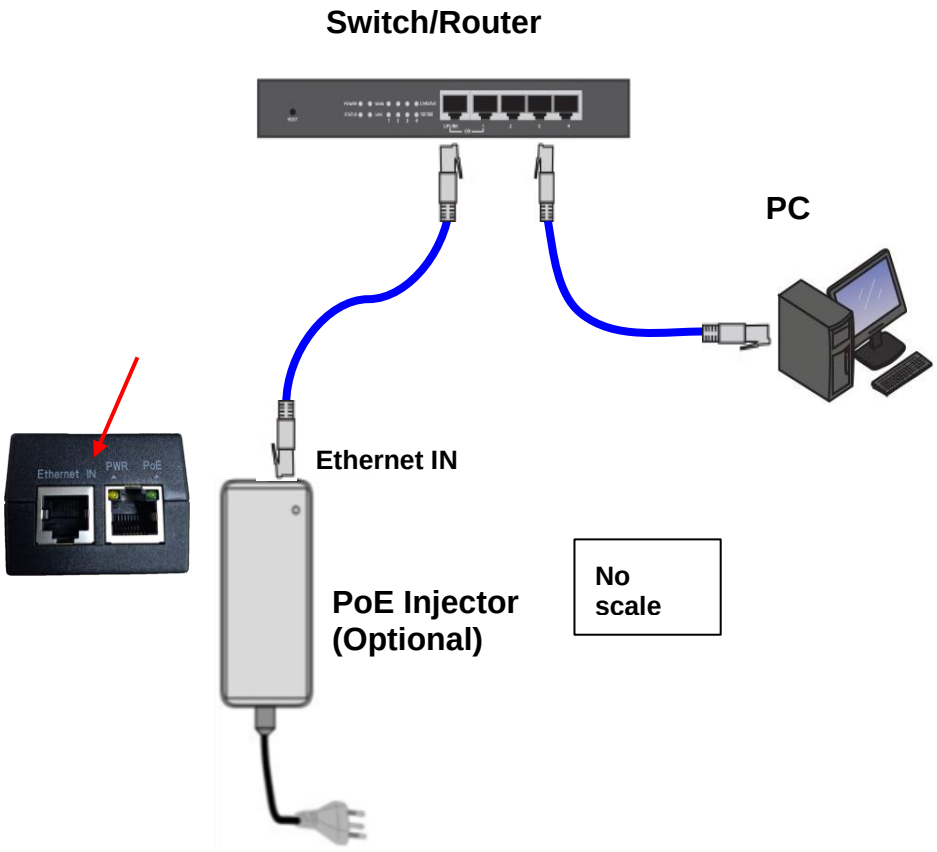
The table below describes the pins and colors of the RJ45 cable that will be used to connect the PCI Interface with the reader.

PCI Connector	RJ45	Standard color T568A	Position RJ45
SIGNAL	1	Light Green	
	2	Green	
	3	White	
	4	Blue (SIG RELAY)	
	5	Light Blue	
	6	Orange (GND)	
	7	Light Brown (DI COM)	
	8	Brown (DI IN)	

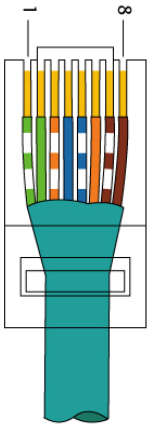
NOTE: A standard T568A or T568B network cable can be used to connect the Injector to the Reader.

8.4 Electrical connections - Ethernet LAN

The figure below describes the connection of the reader's POE injector to the local Ethernet network of the client.



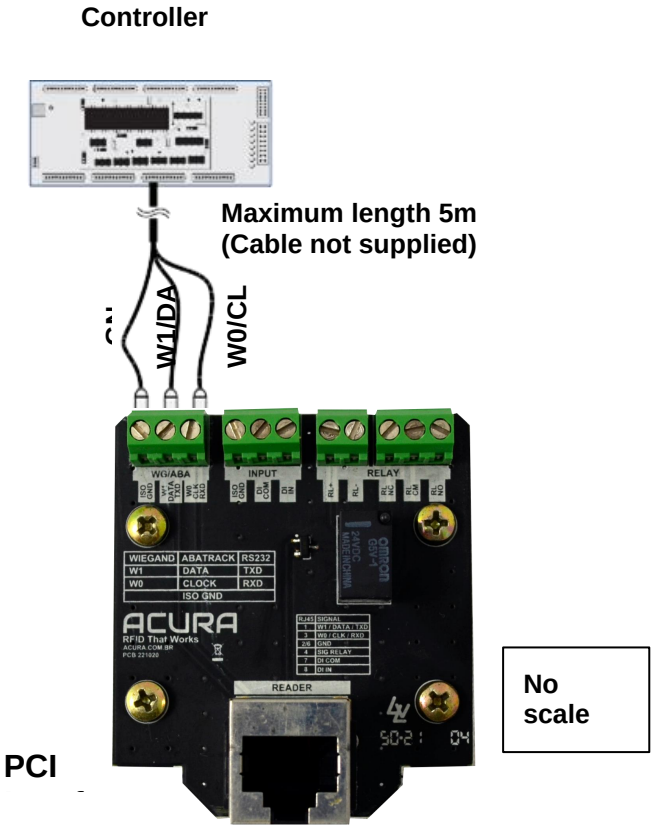
The table below describes the pins and colors of the network cable that will be used to connect the POE/Reader injector to the local Ethernet network.

Injector Connector	RJ45	Standard color T568A	Position RJ45
HOST ETHERNET	1	Light Green	
	2	Green	
	3	White	
	4	Blue	
	5	Light Blue	
	6	Orange	
	7	Light Brown	

	8	Brown (MR/MR CL)

NOTA: A standard T568A or T568B network cable can be used to connect the Injector to the.

The figure below describes the electrical connections of the Wiegand/Abatrack communication interface, which can be done with a customer's computer or with the client's controller board.



The table below describes the Wiegand/Abatrack connection pins.

PCI Connector	Pine	Function	PCI Connector
WIEG/ABA	ISO_GND	Wiegand/Aba Reference	**WG/ABA**
	W1/DATA	Signal W1 or Data1 (Wiegand) or Date Signal (Abatrack)	
	W0/CLK	Signal W0 or Data0 (Wiegand) or Clock Signal (Abatrack)	

NOTE: **The reader's Wiegand/Aba interface features galvanic insulation of 1.0KVrms, protecting it from power surges and other electrical disturbances.**

NOTICE: **To avoid noise and external interference that may hinder communication between the reader and the controller/PC, avoid passing the Wiegand communication cable/flap near sources, lamp reactors, electrical power cables, or other electromagnetic noise sources.**

8.6 Electrical connections - Digital input (Sensor)

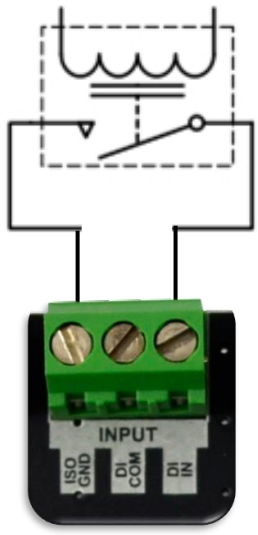
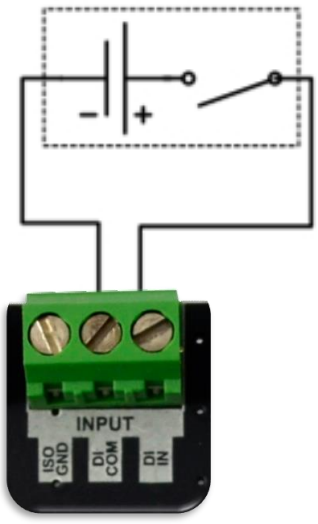
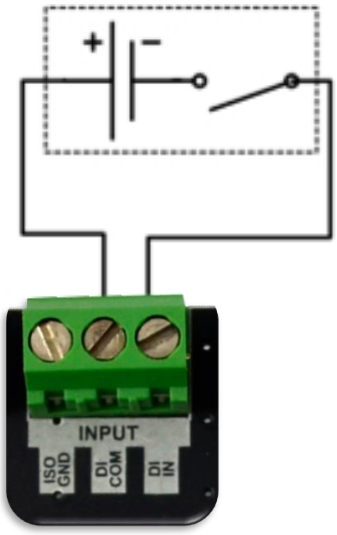
The digital input of the reader has the following electrical characteristics:

- 1KV RMS Opto-Isolated Input;
- Supports dry contact circuit, NPN and PNP;
- Minimum pulse width: 100ms;
- High Level (3,0 a 24,0VCC);
- Low Level (0 a 2,0VCC);
- Maximum voltage in NPN and PNP: 24VCC;

The digital input can be accessed via the "SENSOR INPUT" connector of the PCI card Interface, below follows the descriptions of the signals of the digital inputs.

PCI Connector	Pino	Função
SENSOR INPUT	ISO_GND	Reference (common) for sensors with dry contact output
	DI_COM	Reference (common) for sensors with NPN or PNP output
	DI_IN	Isolated digital input #1

Below are examples of sensor connections in the digital input of the reader.

Sensor with dry contact output (lens)	Sensor with PNP output (Sourcing)	Sensor with PNP (Sinking) output
		
Pinos ISO GND e ISO IN	Pinos ISO COM e ISO IN	

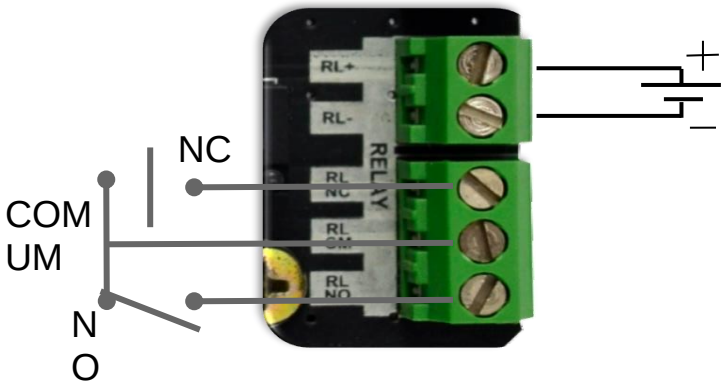
NOTICE: **For digital input, use the "ISO_GND" pin for sensors with Dry Contact output and use the "ISO_COM" pin for sensors with wet contact output in any polarity.**

8.7 Electrical connections - Relé

Built into the PCI, the reader itself can send a digital signal through the handover. To use the digital outputs, the relay is required to power with an external 24 VDC source (not supplied, but may be the same as that used in the Edge-30R Autoid).
A saída digital do leitor possui as seguintes características elétricas:

- 1KV RMS Opto-Isolated Output;
- High Level (24V), triggered via ethernet command, example "$ SET OUTPUT0=1<cr>";
- Low Level (0VDC), triggered via ethernet command, example "$ SET OUTPUT0=0<cr>";

The digital outputs can be accessed through the "RELAY" connector of the PCI Interface card, below follows the descriptions of the signals of the digital outputs.
Below is image informing the Contacts of the Relé on PCI.



PCI Connector	Pino	Function
	RL+	Power Relay
	RL-	GND Relay
Relay	RL_NC	Normal Contact Closed
	RL_CM	Common Contact
	RL_NO	Open Normal Contact

NOTA: It is necessary to use an external 24VDC source (not supplied). Can be the same as used in EDGE 30R Autoid

8.8 Reader visual indicators

The reader has an operating status LED on the antenna.

8.8.1 STATUS visual indicator

<table>
<tr><td rowspan="3">  </td><td> 

Blinks once fast (flashs) loop

Indicates that the reader is in Continuous Read Mode.</td></tr>
<tr><td> 

Lit during flash

Indicates that a Tag Read occurred while the reader was in read mode. During tag reading the reader sends the tag data through the communication interfaces.</td></tr>
<tr><td> 

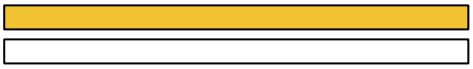
Long lit - blinks once fast

Indicates that the reader is in Trigger and Standby Reading Mode (not performing readers) until a trigger signal is generated and the LED starts blinking constantly as in continuous reading.</td></tr>
</table>

8.9 POE Injector Visual Indicators

The injector has two status LEDs for operation.

Below, here is a table stating what each behavior of the LEDs located on the injector means

	 **Yellow LED lit continuously and green LED off** Indicates that the injector is being powered but is not connected to the reader
	 **Yellow and green LEDs lit continuously** Indicates that the injector is being powered and connected to the readear

Parte 2 - Operation and operation

Modes of operation of the reader

Setting the Reader

Data communication

Reader log messages - Syslog

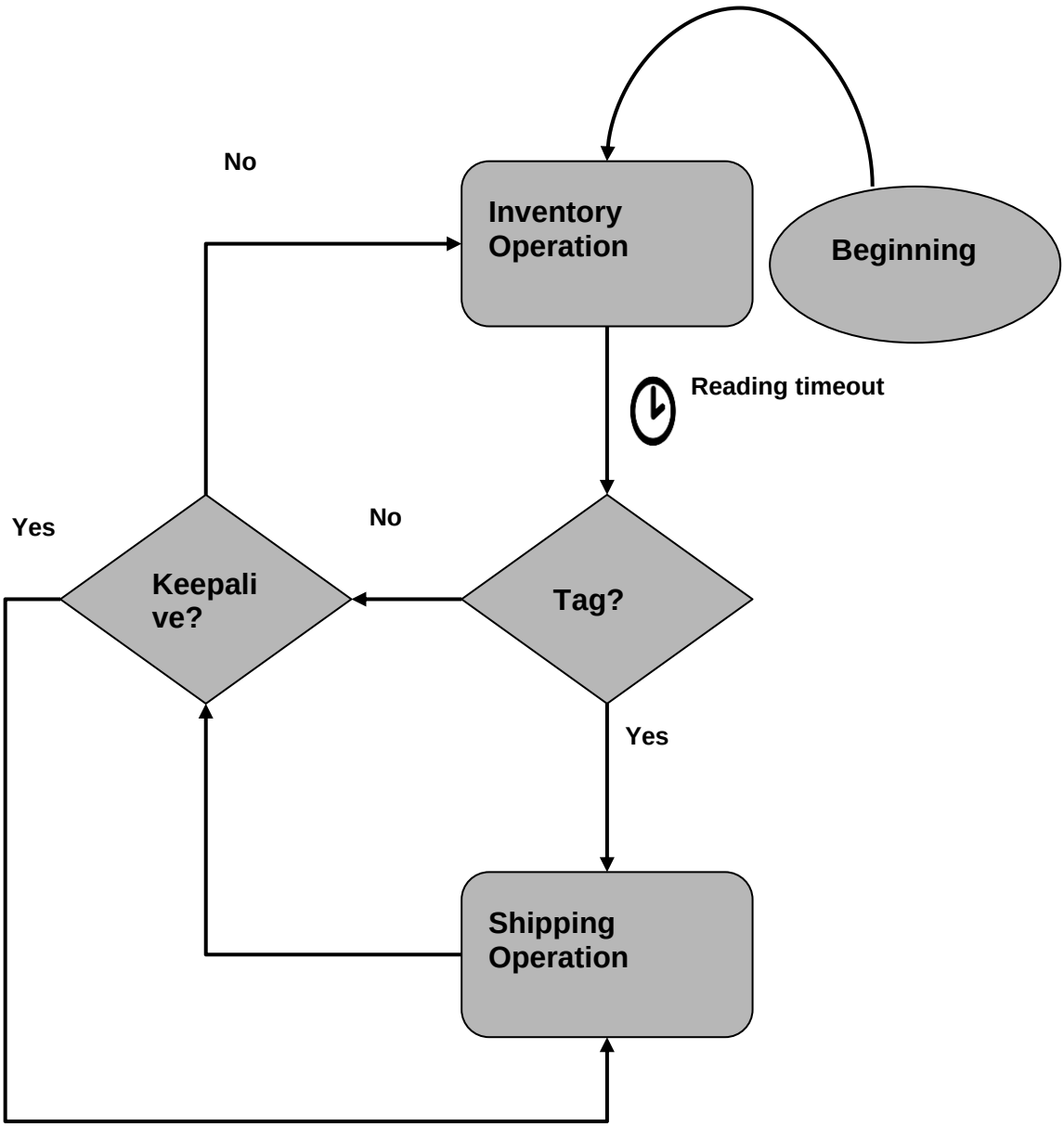
Regional Regulations

Solutions to common problems

9 Modes of operation of the reader

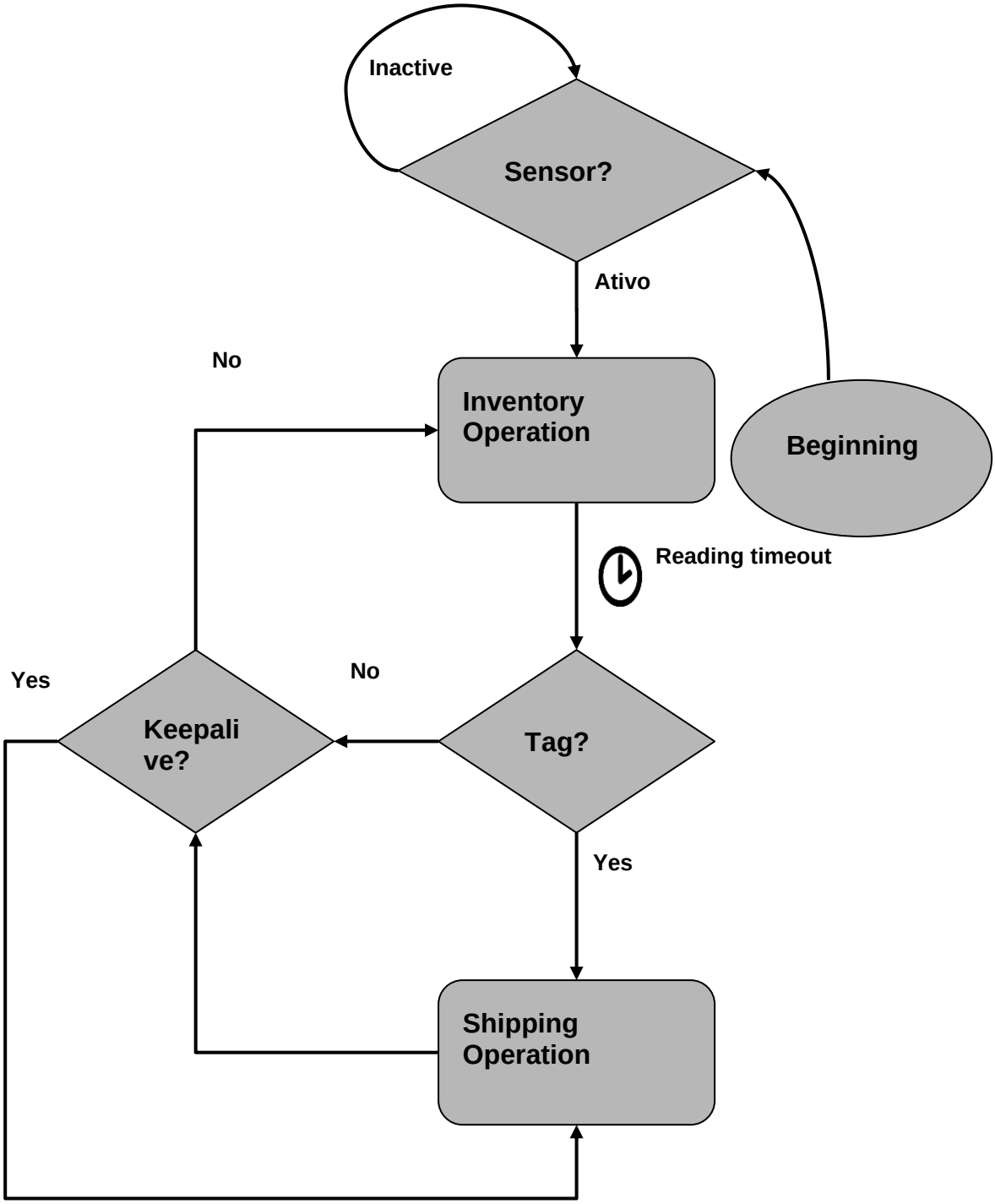
9.1 Continuous reading mode

In this read mode, the reader performs read operations continuously, in other words, the reader is placed in a loop where it first performs the inventory operation and then sends the obtained results. This way, whenever a tag enters the reader's reading field, it will be read and its data sent through the communication ports. When there are no tags in the read field, the reader sends the Keepalive String at each Keepalive time interval by the Ethernet interface, both configurable on the reader's html page.



9.2 Trigger read mode

In this reading mode, the reader performs read operations only when it receives a signal from a connected sensor in its digital input, which can be accessed by the "SENSOR INPUT" connector of the PCI Interface. Thus, in this cycle of operation there is, in addition to the inventory and send operation, a state in which the reader waits for a shot on its digital input. Even without receiving any trigger signal, the reader keeps sending the Keepalive configured by the Ethernet interface.



10 Configuring the Readear

10.1 Reader IP address

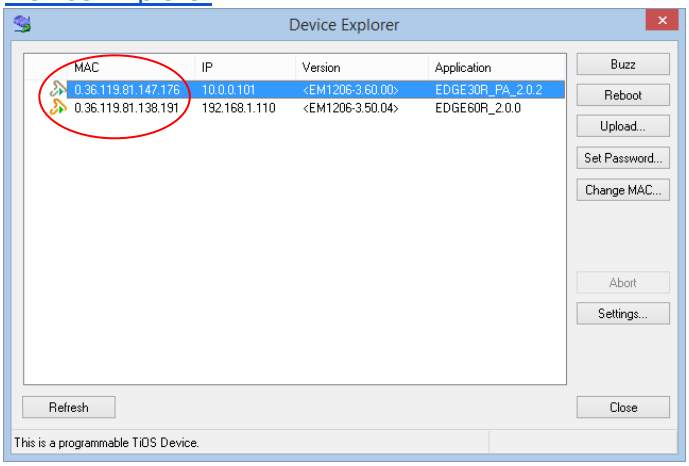
Readers (firmware 2.1.6 or above) with factory settings automatically generates their IP address using the default Range of Local Link Address IPV4 169.254.0.0/16.
Readers use the following logic for generating their IP when they have factory settings:
IP = 169,254. **xx**. **xx** where **xx** are the last two decimal digits of the reader's MAC address, for example, MAC = 0.36.119.82. **Five, five** of them. **38** your generated IP will be 169,254. **Five, five** of them. **38**, if this same IP exists on the same local network as the reader, the fixed IP 10.0.0.101 will be used by the reader (very low probability).
Ways to get the READER MAC address:

1. External label on the side of the reader

NOTE: Due to the weather the label on the side of the reader may become unreadable, it is recommended to write this data right at the beginning of the installation.

2. Software Device Explorer (Windows)

Download: Device Explorer



Click Refresh to see all readers on the local network.

NOTE: UDP 65535 port must be released in operating system firewall rules.

NOTE: **After the user has set up a static IP, the reader no longer generates the IPV4LL, only if a Hard reset is performed.**

10.2 Configuring the reader via web browser

The reader settings are made by accessing the reader through LAN or WAN networks, placing its IP address in an internet browser (Web Browser). In reader access, a login page is shown before the settings page.
The factory settings (default) of the reader are

- IP address: **169.254.xxx.yyy** (xxx and yyy are the last decimal numbers of the MAC)
- Network mask: **none**
- Gateway address: **none**
- Login password: **acura@autoid**

You can make the following settings:

- Change password access to reader settings;
- Change the network parameters of the reader
- Change tag read parameters;
- Change IOs settings;
- View reader information/status;

With THE IP and PC Mask compatible with the current reader settings, follow the steps below to access the reader settings.

1. Initialize a web browser, enter the reader's IP in the address bar and press Enter. The reader's login page will open, as shown in the figures below:

2. The password of the Login page is of the user's choice, the reader leaves the factory with the login **password acura@autoid**, please refer to "Reader Parameters" for the complete list of the initial settings of the reader. After login, the settings page will be shown.
3. After modifying the desired fields, click "Apply" and after the page reloads, the modifications have already been made if the restart warning is shown click "Restart" so that the new saved settings are used by the reader.

NOTE:	**Only one user is able to connect to the reader configuration page. Login to the setup page expires after 3 (three) minutes. Thus, if another user wants to connect, they must wait for the first user to log out or pass the expiration time without any update on the page.**
NOTE:	**Network segment 169.254.0.0/16 must be configured on the network interface computer.**

NOTE:	**Always write down the settings saved in the reader, such as the IP and login password for access to the reader.**

10.2.1 Checking the status of the reader

After login, the configuration home page with the equipment status parameters will be displayed.

Below are the descriptions of the reader configuration parameters that can be checked and/or changed via browser and also using ASCII commands.

10.2.1.1 Status Parameters

Parameter	*Description*
RFID Firmware	Firmware version running on the RFID module of the reader.
RFID Bootloader	Bootloader version running on reader RFID module.

RFID Hardware	Hardware version of the RF module of the reader.
AutoID Version	Firmware version of the reader's internal controller.

Status parameters (Continued):

Parameter	***Description***
MAC Address	Physical address of the Ethernet interface, consisting of 6 bytes, is shown in decimal and hexadecimal format.
Ethernet Mode	Indicates whether the reader is configured as Client or Server.
TCP Connection # Communication	The reader accepts up to 2 simultaneous TCP/IP connections on the port configured on "TCP Port Data Communication" to receive tag read data.
Reader description	Alphanumeric characters of a maximum of 30 digits that describe the reader, for example its installation location.
Reader name	Name generated automatically by the reader, EDGE-30R + the last six digits of the MAC.
Reader Status	Shows the last state of the reader.
Region	Shows which region (frequencies allowed) the reader is using.
Reader Date and Time	Shows the current date and time of the reader.
Last SNTP sync	Shows whether the reader was able to synchronize with the configured SNTP servers.
Reader uptime	Displays how long the reader is running without serious errors or without being rebooted.
Internal reader temperature	Shows the temperature of the RF module internal to the reader, the body temperature of the reader is usually 15 to 20°C lower.

10.2.2 Security Settings

1. After login, click the Security **option**.

2. Change the settings.
3. Click Apply to make the changes.
4. If the Restart message is shown, click Restart.

Security page parameters:

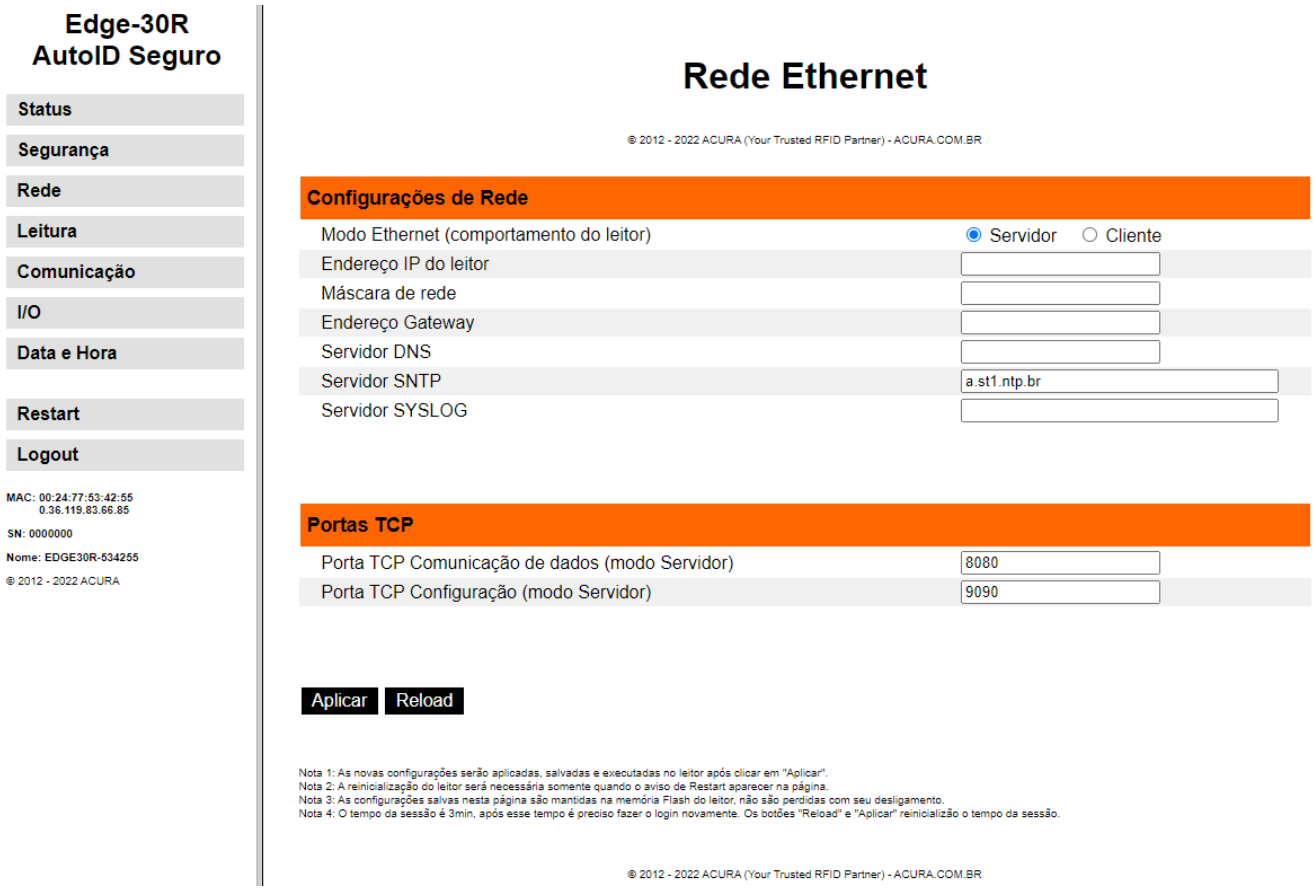
Parameter	***Description***
Login Password	Alphanumeric characters of a maximum of six digits that can be written to the reader to form the password that will give access to the settings page. **Factory configuration: No password, empty**
Reader description	Alphanumeric characters of a maximum of 30 digits that describe the reader, for example its installation location. **Factory configuration: None, empty**
Enables reader configuration by TCP configuration port	If selected, configuration commands will be accepted by the reader on the TCP configuration port. **Factory configuration: Enabled, selected**

Security page parameters (Continued):

Parameter	***Description***
Autoid system type	Type of reading algorithm that the reader will run. **Normal:** The reader does not check any kind of security in reading the tags, it reads any standard ISO-18000-6C tag (UHF Gen2) in its reading field and reports on its communication interfaces. **Secure:** The reader verifies that the standard ISO-18000-6C tag (UHF Gen2) has a previously recorded "Autoid Security Code" and reports on its communication interfaces only the tags validated with this security code, which is unique to each end user of the System. **Hybrid:** The reader performs the two modes mentioned above. **Factory setup: Secure**
Autoid security code	Six-digit numeric security code linked to tags written with that same code. Only tags with the same security code will be read by the reader. Note: Parameter used only when the "Autoid System Type" is "Safe" **Factory setup: 900001**

10.2.3 Setting up the network

1. After logging in to the html page, click **Network**.



2. Change settings as needed by the network.
3. Click **Apply** to make the changes.
4. If the Restart message appears, click **Restart**.

Parâmetros de Rede:

Parameter	***Description***
Ethernet Mode	Defines the behavior of the reader on the network, and can act as server or client. **Factory configuration: Server**
IP address	Fixed IP address of the reader, this version of the reader does not support DHCP. **Factory configuration: 169.254.xx.xx (Local Address Link, last two of the MAC)**
Network mask	IP address of the subnet mask, devices on the same subnet can communicate locally without routing. **Factory configuration: empty**
Gateway Address	IP address of the gateway to the local network, is usually the address of the router. **Factory configuration: empty**
DNS Server	IP address of the DNS server, will be the server queried to resolve names. **Factory configuration: empty**
SNTP Server	Name or IP of the SNTP server, will be the server queried to synchronize the internal clock. **Factory setup: a.st1.ntp.br**
SYSLOG Server	Name the IP of the SYSLOG server that will receive the log messages from the reader. **Factory configuration: empty**
TCP Data Communication Port	Number of the port where up to two concurrent connections are accepted for receiving the Read String. **Factory configuration: 8080**
TCP Port Configuration	Port number where a connection is accepted for ascii message configuration. **Factory configuration: 9090**

10.2.4 Setting Up Reading

1. After login, click **Read**.

1. Change the parameters.
2. Click **Apply** to save the changes.
3. If you see the message prompting you to restart the reader, click **Restart**.

Reading Parameters:

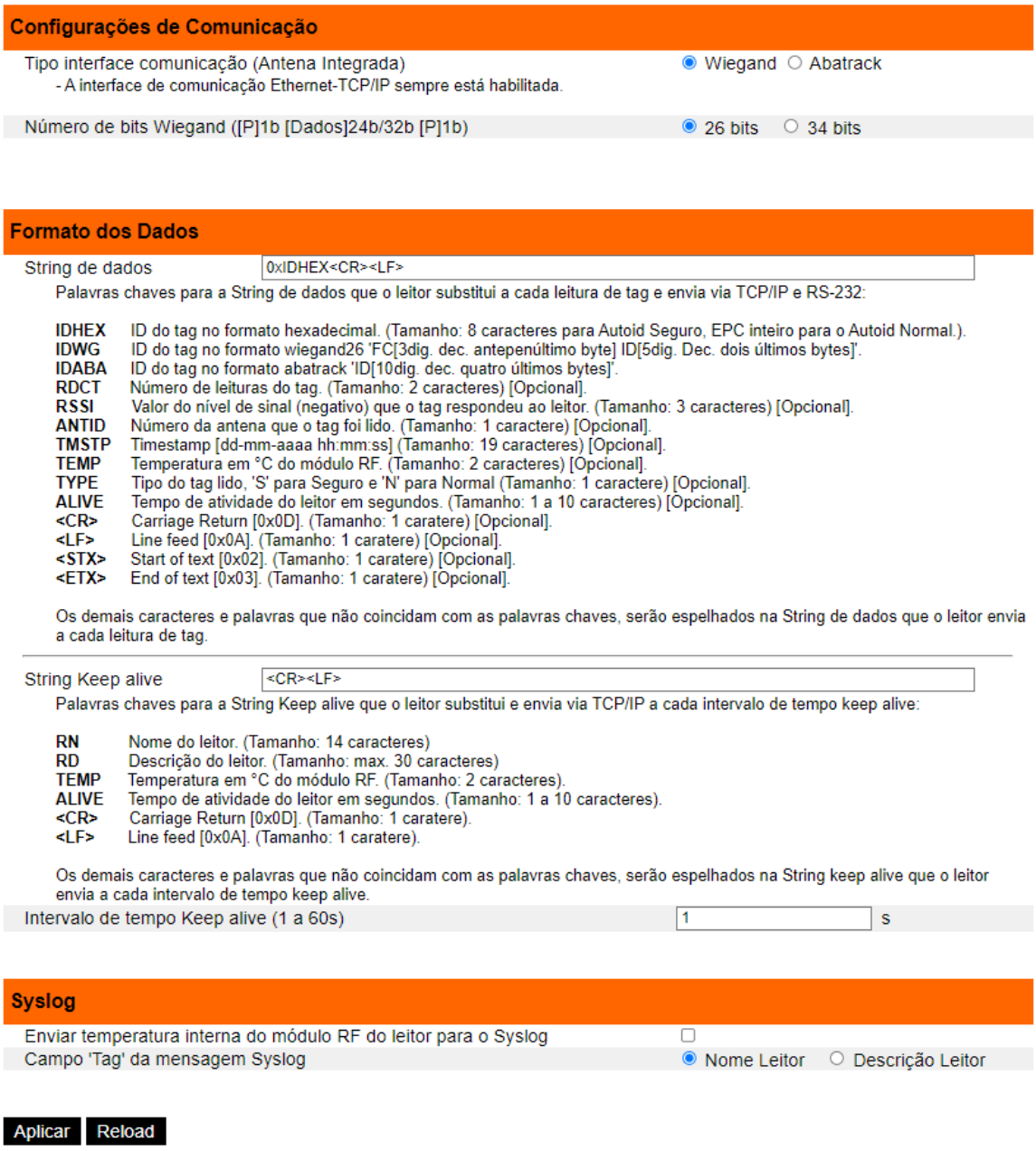
Parâmetro	***Descrição***
Reading Mode	Read operation mode that will be performed by the reader. **Continuous mode**: Operation mode where the reader performs read operations continuously. **Trigger mode**: Operation mode where the reader performs read operations only when it receives a signal from a sensor through its digital input. **Factory Setup: Continuous Mode**
Trigger reading time	It is the time in seconds that after a trigger signal on the digital input (ISO IN), the reader performs an inventory operation (tag reading). Note: Parameter used only when "Read mode" is "Trigger Mode". **Factory configuration: 1s | Values: 1 to 600s.**
Filter time of the same tag	Is the time in seconds of the read filter of the same tag, that is, the tag id is sent to the PC/Controller on the first read and resent only after the time configured in this field. **Factory configuration: 1s | Values: 0 to 600s.**

Read parameters (continued):

Parameter	***Description***
Reading power	Power in centidBm (dBm / 100) referring to tag reading. The read power can be adjusted to change the read region of tags at the installation location. **Factory configuration: 3000dBm | Values: 500 to 3000 centidBm (5 to 30 dBm).**
Filter by tag signal level	The signal level of the tag indicates whether the tag is near or away from the antenna, when closer to the antenna, the stronger the RSSI (closer to zero) and vice versa. If a value is specified for the filter, only tags with RSSI equal to or greater than that specified will be reported by the reader. The signal level of the tag is measured in dBm and is a negative value, the power in Watts is always less than 1mW. Note: To disable the filter, simply leave the field empty. Note: The specified value should not contain the minus sign. **Factory setting: Empty (filter disabled) | Values: 20 to 99|dBm| (-20 to -99dBm).**
Filter by reading tags that contain on your id the mask	Is the mask value that the tag id must contain to be read, if this field contains some value, the reader will read only tags that contain this mask from the given digit. Note: Parameter used only when the "Autoid System Type" is "Normal or Hybrid". **Factory configuration: empty, unfiltered | Values: hexadecimals max. 24 digits.**
Initial digit of the mask in tag ID	Is the starting digit in which the mask provided above starts in the tag id. Note: Parameter used only when the "Autoid System Type" is "Normal or Hybrid". **Factory configuration: 0 | Values: 0 to 24.**

10.2.4 Configurando a Comunicação

1. After login, click **Communication**.



1. Change the parameters.
2. Click **Apply** to save the changes.
3. If you see the message prompting you to restart the reader, click **Restart**.

Communication Parameters:

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>Type communication interface</td><td>Reading results are made available through the Wiegand or Abatrack communication interfaces, and simultaneously through tcp/IP Ethernet interfaces.
You can use the two signal lines (W0/CLK) and (W1/DATA) as digital outputs, selected None(GPO), thereby disabling Wiegand and Abatrack communications.
Note: TCPIP communications are always active, in parallel to the interface chosen here.
Factory setup: Wiegand.</td></tr>
<tr><td>Number of wiegand bits</td><td>Number of bits of the entire packet transmitted in Wiegand format.
26 bits: Format: Parity[1bit] + Data[24bits] + Parity[1bit].
34 bits: Format: Parity[1bit] + Data[32bits] + Parity[1bit].
Note: Parameter used only when the "Communication interface type" is "Wiegand".
Factory configuration: 26 bits.</td></tr>
<tr><td>Number of abatrack digits</td><td>Number of digits in decimal in Abatrack format.
10 dig. : The reader sends 10 digits in decimal on the Abatrack interface.
14 dig. : The reader sends 14 digits in decimal on the Abatrack interface.
Note: Parameter used only when the "Communication interface type" is "Abatrack".
Factory configuration: 10 dig.</td></tr>
<tr><td>Data String</td><td>It is the string that the reader will transmit only through the Ethernet interface at each tag reading. The keywords below will be replaced by their respective values:
<table>
<tr><th>Keyword</th><th>Description</th><th>Size characters</th></tr>
<tr><td>IDHEX</td><td>Tag ID in hexadecimal format.
* Variable size for Normal Autoid and 8-character size for Autoid Insurance.</td><td>*</td></tr>
<tr><td>IDWG</td><td>Tag ID in Wiegand26 format "FC[3dig.] ID[5dig.]".</td><td>08</td></tr>
<tr><td>IDABA</td><td>Tag ID in abatrack (decimal) format "ID[10dig.]".</td><td>10</td></tr>
<tr><td>RDCT</td><td>Number of tag reads for each inventory.</td><td>02</td></tr>
<tr><td>RSSI</td><td>Value of the signal level (negative) that the tag reported.</td><td>03</td></tr>
<tr><td>ANTID</td><td>Number of the antenna on which the tag was read.</td><td>01</td></tr>
<tr><td>TMSTP</td><td>Timestamp [dd-mm-aaaa hh:mm:ss] of reading.</td><td>19</td></tr>
</table>
</td></tr>
</table>

Communication parameters (Continued):

Parameter	*Description*

Data string (Continued)

Keyword	Description	Size [characters]
TEMP	Temperature in °C of internal RF module.	02
TYPE	Tag type read, 'S' for Safe and 'N' for Normal	01
ALIVE	Reader uptime in seconds	1 a 10
<CR>	Caractere control ASCII Carriage Return [0x0D].	01
<LF>	ASCII Line feed control character [0x0A].	01
<STX>	Caractere de controle ASCII Start of text [0x02].	01
<ETX>	Caractere de controle ASCII End of text [0x03].	01

Note: Other characters or words that do not match the words keys will be mirrored in the Data String that the reader transmits to each tag read through the Ethernet interface.
Factory configuration: 0xIDHEX<CR><LF>

String Keepalive

It is the String that the reader will transmit only through the Ethernet interface at each "Keepalive time interval". The key words below are replaced by their respective values:

Keyword	Description	Size [characters]
RN	Reader name, automatically generated.	14
RD	Reader description, configured by user.	30 máx.
TEMP	Temperature in ºC of the RF module.	02
ALIVE	Reader uptime in seconds.	1 a 10
<CR>	Caractere control ASCII Carriage Return [0x0D].	01
<LF>	ASCII Line feed control character [0x0A].	01

	Note: Other characters or words that do not match the words keys will be mirrored in the keepalive string that the reader transmits at each keepalive time interval. **Factory configuration: <CR><LF>**

Communication parameters (Continuation):

Parameter	***Description***
Keepalive time interval	Is the time interval in seconds for sending the Keepalive String. **Factory configuration: 1s | Values: 1 to 60s.**
Send internal temperature of the reader's RF module to Syslog	If selected, the temperature in °C of the RF module will be sent to the Syslog server with each degree change. **Factory setup: Send (Selected).**
Syslog message tag field	What should be sent in the 'tag' field of the Syslog messages generated by the reader. **Factory configuration: Reader name.**

10.2.6 Configuring IO

1. After login, click **IO**.

2. Change the parameters.
3. Click **Apply** to save changes.
4. If you see the message prompting you to restart the reader, click **Restart**.

IO parameters:

Parameter	***Description***
Lógica invertida do sinal de entrada trigger	Reverses the trigger signal trigger ing logic (the NF contact of the lens can be used for example). **Factory configuration: not selected (normal logic).**

IO (Relé) parameters: ***Parameter***	***Description***
Pulse Duration	
Set pot tag reading	When the reader is initialized, in which logical state the digital outputs should be configured. Note: Parameter used only when the "Communication interface type" is "None(GPO)". **Factory setting: Low level (0V).**

10.2.7 Setting Date and Time

1. After login click Date **and Time**.

2. Change the parameters.
3. Click **Apply** to save the changes.
4. If you see the message prompting you to restart the reader, click **Restart**.

Date and **Time parameters**:

Parameter	*Description*
Adjust date and time manually	If an SNTP server cannot be used for clock timing there is the possibility of manual adjustment of the watch. Note: When loading the page, the date and time fields are updated with the data from the reader's internal clock.
Daylight saving time	If selected, it will adjust the reader's internal clock to daylight saving time. **Factory configuration: Not selected.**
Fuso horário	Time zone (UTC) from where the reader is installed. **Factory configuration: (UTC -03:00).**

10.3 Configuring reader via ASCII messages

The reader can be configured via a TCP connection on the configuration port using ASCII messages, this configuration template can be used in applications where a Software will configure the reader or to debug and field adjustments after installing the reader.

The ascii message reader configuration is disabled with the reader's factory settings, to enable, simply change the parameter "Enable reader configuration by TCP port setting" via web browser on the Security page.

The default configuration port where the reader expects a TCP connection is 9090 and can be changed by the user on the Network page.

10.3.1 Operating logic

Setting up the READER via ASCII messages works with the Message/Response framework:

1. An external Host sends a message to the reader.
2. The reader interprets and executes the function and command inserted into the received message.
3. The reader responds to the external Host.

Messages and replies to use ASCII characters with a prefix and a terminator. The prefix is the sequence **"$ "** (dollar sign followed by space). The terminator is the carriage return **<CR>**.

10.3.2 Syntax of messages and replies

Below is the syntax of messages from Host to Reader:

$ SET COMANDO=VALOR<CR>
$ GET COMANDO<CR>

Below is the syntax of reader response messages to host:

$ OK<CR>
$ ERROR<CR>
$ CKERR<CR>
$ {Valor parâmetro}<CR>

Messages and replies must contain the prefix "$" (dollar sign followed by space) and the carriage return terminator <CR>

The "SET" and "GET" functions should be just after the prefix and before the command separated by a space character.

In the "SET" function, the command should be followed without space of the character "=" (equal) followed by the value of the parameter you want to change.

Messages sent to the reader may have upper and/or lower case letters.

The TCP connection to the configuration port has a 3-minute inactivity timeout, in which case after an established connection no data exchange occurs between the Host and the Reader for more than three minutes, the reader terminates the connection and the Host must reconnect with the Reader.

10.3.3 Checksum of messages

In ASCII message exchanges, you can use two checksum digits at the end of the message and before the terminator as a way of verifying the integrity of messages exchanged between the host and the reader. Checksum can be enabled to be used in messages that are transmitted and received from the reader. The checksum must be calculated and returned as two ASCII characters representing the hexadecimal value of the module of the sum of the ASCII codes of the message characters, without the prefix and terminator. Example, message "GET RDPOWER":

$ GET RDPOWER23<CR>	**Host → Reader - Host sends message with checksum.**
$ 2700C9<CR>	**Host ← Reader - Reader responds with parameter value and checksum**.

In this example, the sum of the message characters is 0x0323, the checksum of the message should be the least significant characters of the sum, in this case it is 23.
To disable checksum usage, use the message below:

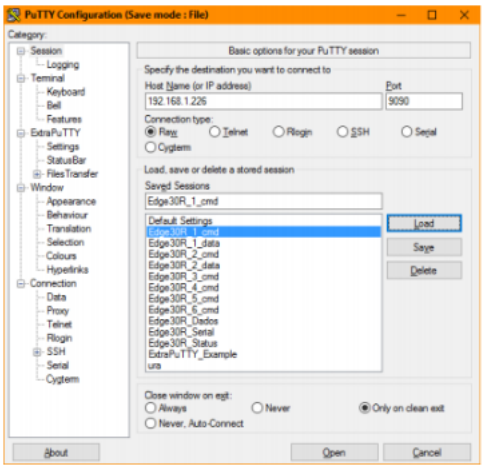
$ SET CHKSUM=OFFEF<CR>	**Host → Reader - Host sends the message with checksum.**

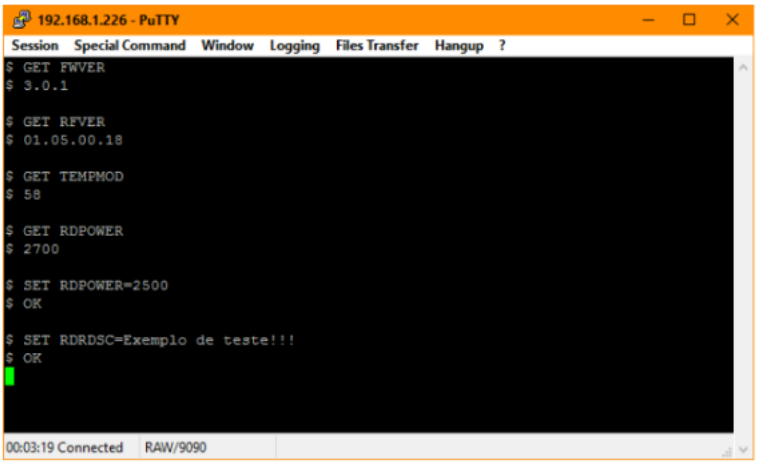
When checksum is enabled, the reader response will also contain the two ASCII characters representing the sum in case a checksum error is detected in a message received by the reader, the error message "CKERR" is sent to the host. Example, with checksum enabled:

$ GET RDPOWER<CR>	**Host → Reader - Host sends message without checksum.**
$ CKERR<CR>	**Host ← Reader - Reader responds with checksum error**.

10.3.4 Example of use

Terminal emulator software, such as Putty or TeraTerm, should be used when a user wants to check or change reader parameters via ASCII messages.





10.3.5 Checking the status of the reader

Command	*Function*	*Description*
RFVER	*GET*	Version of rf module built into reader, is RFID firmware. ***Example:*** / ***Direction*** / ***Description*** $ GET RFVER<CR> — **Host → Reader** — Host sends message. $ 01.07.03.25<CR> — **Host ← Reader** — Reader responds with the value of version.
FWVER	*GET*	Firmware version of the reader is the firmware of the Autoid System. ***Example:*** / ***Direction*** / ***Description*** $ GET FWVER<CR> — **Host → Reader** — Host sends message. $ 3.0.1<CR> — **Host ← Reader** — Reader responds with the valu the version.
RDRNAME	*GET*	Reader name automatically generated. ***Example:*** / ***Direction*** / ***Description*** $ GET RDRNAME<CR> — **Host → Reader** — Host sends message. $ EDGE30R-010101<CR> — **Host ← Reader** — Reader responds with the value of the name
RDRSN	*GET*	Reader serial number. ***Example:*** / ***Direction*** / ***Description*** $ GET RDRSN<CR> — **Host → Reader** — Host sends message. $ 3338646<CR> — **Host ← Reader** — Reader responds with your nu serial.

STATCONN1 *STATCONN2*	*GET*	Checks the connection status of the data communication port.		
		Example:	***Direction***	***Description***
		$ GET STATCONN1<CR>	**Host → Reader**	Host sends the message.
		$ DISCONNECTED<CR>	**Host ← Reader**	Disconnected port.
		$ GET STATCONN2<CR>	**Host → Reader**	Host envied a message.
		$ CONNECTED 192.168.0.84:63344<CR>	**Host ← Reader**	Connected to IP:PORT.
RFSTAT	*GET*	Checks at the time of command execution what the status of the reader's RF channel is, whether it is transmitting [ON] or idle [OFF].		
		Example:	***Direction***	***Description***
		$ GET RFSTAT<CR>	**Host → Reader**	Host sends the message.
		$ ON<CR>	**Host ← Reader**	O canal RF está transmitindo
		$ GET RFSTAT<CR>	**Host → Reader**	Host sends message.
		$ OFF<CR>	**Host ← Reader**	The RF channel is idle.

Checking the status of the reader (continued):

TGPRSNT	*GET*	Checks for the presence of a tag being read by the reader, [ON] there is a tag present, and [OFF] there is no tag present.		
		Example:	***Direction***	***Description***
		$ GET TGPRSNT<CR>	**Host → Reader**	Host sends the message.
		$ ON<CR>	**Host → Reader**	There is a tag present, being read.
		$ GET TGPRSNT<CR>	**Host → Reader**	Host sends the message.
		$ OFF<CR>	**Host ← Reader**	No tag present.
NTPSYNC	*GET*	Checks the last status of the internal bed clock synchronization attempt with the SNTP server, returns [OK] for success, and [FAILED] for error in automatic adjusting the reader clock.		
		Example:	***Direction***	***Description***
		$ GET NTPSYNC<CR>	**Host → Reader**	Host sends the message.
		$ OK<CR>	**Host ← Reader**	The clock has been successfully synchronized.
TEMPMOD	*GET*	Verifica a temperatura interna do leitor.		
		Example:	***Direction***	***Description***
		$ GET TEMPMOD<CR>	**Host → Reader**	Host envia a mensagem.
		$ 44<CR>	**Host ← Reader**	Internal temperature 44°C.

TMALIVE *TMALIVEFMT*	*GET*	Verifica o status da conexão da porta de comunicação de dados.		
		Example:	***Direction***	***Description***
		$ GET TMALIVE<CR>	**Host → Reader**	Host sends the message.
		$ 80577<CR>	**Host ← Reader**	80577 seconds without rebooting.
		$ GET TMALIVEFMT<CR>	**Host → Reader**	Host sends message.
		$ 0d 22:23:00<CR>	**Host ← Reader**	Time in days min hours. Mon.

10.3.6 Configuring Security

RDRDSC	*SET/GET*	Changes or verifies the reader description, which must be a maximum of 30 characters. *Note: You do not need to reboot the reader.*		
		Example:	***Direction***	***Description***
		$ SET RDRDSC=Entrada Frontal<CR>	**Host → Reader**	Host sends the message to change parameters.
		$ OK<CR>	**Host → Reader**	Reader responds with OK, that is, parameter changed successfully.
		$ GET RDRDSC<CR>	**Host → Reader**	Host envia a mensagem.
		$ Entrada Frontal<CR>	**Host ← Reader**	Leitor responde com valor do parâmetro

CODSEC	*SET/GET*	Altera ou verifica o código de segurança Autoid, que deve possuir valor numérico de seis dígitos. *Nota: não necessita reinicializar o leitor.*		
		Example:	***Direction***	***Description***
		$ SET CODSEC=FF0102<CR>	**Host → Reader**	Host sends the message to change the Autoid security code.
		$ ERROR<CR>	**Host ← Reader**	The reader returns error because the code must be numeric
		$ SET CODSEC=900167<CR>	**Host → Reader**	Host sends the message to change the Autoid security code.
		$ OK<CR>	**Host ← Reader**	The reader returns OK, that is, the parameter has changed.

AUTOID	*SET/GET*	Changes or checks the type of Autoid System that the reader will perform to do tag readings. [NORMAL] values for Autoid Normal,[SECURE] for Autoid Safe and [HYBRID] for Autoid Hybrid. *Note: You do not need to reboot the reader.*

		Exemplo:	*Direction*	*Description*
		$ GET AUTOID<CR>	**Host → Reader**	Host sends message to check which Autoid System is running.
		$ NORMAL<CR>	**Host ← Reader**	Reader replies that it is Autoid Normal.
		$ SET AUTOID=SECURE<CR>	**Host → Reader**	Host sends message to change the Autoid System to Safe mode.
		$ OK<CR>	**Host ← Reader**	Reader responds with OK.

10.3.7 Setting Up Network

IPADDR *MKADDR* *GWADDR*	*SET/GET*	Changes or verifies the IP address of the reader [IPadDR], the network mask [MKADDR] and the gateway address [GWADDR], the addresses must be in IPv4 format. *Note: You must reset the reader after changing these parameters by sending the message with the restart command "$ RSTRDR<CR>".*		
		Example:	***Direction***	***Description***
		$ GET MKADDR<CR>	**Host → Reader**	Host sends the message to check the network mask.
		$ 255.255.255.0<CR>	**Host ← Reader**	Reader responds with the mask value.
		$ SET IPADDR=192.168.1.100<CR>	**Host → Reader**	Host sends the message to change the IP address.
		$ OK<CR>	**Host ← Reader**	Reader responds OK, address changed.
		$ SET GWADDR=192.168.1.2<CR>	**Host → Reader**	Host sends the message to change the address of the gateway.
		$ OK<CR>	**Host ← Reader**	Reader responds with OK, address changed.
		$ RSTRDR<CR>	**Host → Reader**	Host envia a mensagem para reinicializar o leitor para que as alterações.
		$ OK<CR>	**Host ← Reader**	Reader responds with OK.
DNS1ADDR	*SET/GET*	Changes or verifies the IP address of the DNS server that will be queried by the reader to resolve names. *Note: You do not need to reboot the reader.*		

		Example:	Direction	Description
		$ GET DNS1ADDR<CR>	Host → Leitor	Host sends the message to verify the address of the DNS server.
		$<CR>	Host ← Reader	Reader responds with the value of the address; in this case it is empty.
		$ SET DNS1ADDR=192.168.0.15<CR>	Host → Reader	Host envia a mensagem para alterar o endereço IP do servidor DNS.
		$ OK<CR>	Host ← Reader	Reader responds OK.

Setting Up Network (continued):

NTP1ADDR	*SET/GET*	Changes or verifies the name or IP address of the SNTP server for synchronization of the reader's internal clock. *Note: You do not need to reboot the reader.* *Note: If a name is used in this parameter, the DNS server must be configured correctly.*		
		Example:	***Direction***	***Description***
		$ GET NTP1ADDR<CR>	Host → Reader	Host sends the message to change the Autoid security code.
		$ a.st1.ntp.br<CR>	Host ← Reader	The reader returns with the name to change the name of the SNTP server.
		$ SET NTP1ADDR=b.st1.ntp.br<CR>	Host → Reader	Host sends the message to change the name of the SNTP server.
		$ OK<CR>	Host ← Reader	Reader responds with OK.
SYSLGADDR	*SET/GET*	Changes or verifies the name or IP address of the SYSLOG server to receive log messages from the reader. *Note: You do not need to reboot the reader.* *Note: If a name is used in this parameter, the DNS server must be configured correctly.*		
		Example:	***Direction***	***Description***
		$ GET SYSLGADDR<CR>	Host → Reader	Host sends the message to check the Syslog server.
		$ <CR>	Host ← Reader	Reader returns with the Syslog address, in this case empty, there is no servidor cadastrado.

		$ SET SYSLGADDR=192..168.0.84<CR>	**Host → Reader**	Host sends the message to change the IP address of the Syslog server.
		$ ERROR<CR>	**Host ← Reader**	Reader responds with error because the address format was incorrect.
		$ SET SYSLGADDR=192.168.0.84<CR>	**Host → Reader**	Host sends the message to change the IP address of the Syslog server.
		$ OK<CR>	**Host ← Reader**	Leitor responde com OK.

Network Configuration (continued):

Changes or verifies the tcp communication port number [DTPORT] and the configuration TCP port number [CFPORT]. Values from 1000 to 65535.
Note: You do not need to reboot the reader.
Note: If there is already a connection established at the time of changing tcp ports, the new value will only be used by the reader on the next connection attempt, the existing connection will not be affected.

		Example:	***Direction***	***Description***
DTPORT CFPORT	*SET/GET*	$ GET DTPORT<CR>	**Host → Reader**	Host sends the message to check the value of the TCP communication port of the tag read results.
		$ 8080<CR>	**Host ← Reader**	Reader responds with the value of the TCP port.
		$ SET DTPORT=8888<CR>	**Host → Reader**	Host sends the message to change the value of the TCP communication port.
		$ OK<CR>	**Host ← Reader**	Reader replies that the change was successful.
		$ GET PORT<CR>	**Host → Reader**	Host sends the message to read the value of the TCP port configuration.
		$ 9090<CR>	**Host ← Reader**	Reader returns the value of the TCP port.

MACDEC MECHEX	*GET*	Checks the physical address of the reader's Ethernet interface in two formats, decimal "MACDEC" and hexadecimal "MACHEX".		
		Example:	***Direction***	***Description***
		$ GET MACDEC<CR>	**Host → Reader**	Host sends the message to read the MAC in decimal.
		$ 0.36.119.81.147.94<CR>	**Host ← Reader**	Reader responds with the decimal value.
		$ GET MACHEX<CR>	**Host → Reader**	Host sends message to read MAC in hexadecimal.
		$ 00:24:77:51:93:5E<CR>	**Host ← Reader**	Reader responds with the value in hexa.

10.3.8 Setting Up Reading

RDMD	*SET/GET*	Changes or checks the read mode that will be used by the reader. [AUTO] values for continuous read mode and [TRIGGER] for read-only trigger mode in vehicle detection. *Note: You do not need to reboot the reader.*		
		Example:	***Direction***	***Description***
		$ GET RDMD<CR>	**Host → Reader**	Host sends the message to check which read mode is running by the reader.
		$ AUTO<CR>	**Host ← Reader**	Reader responds with continuous reading mode.
		$ SET TDMD=TRIGGER<CR>	**Host → Reader**	Host sends the message to change the read mode to Trigger.
		$ OK<CR>	**Host ← Reader**	Reader responds OK, successful change.

RDTMTRG	*SET/GET*	Changes or checks the time, in seconds, of the read trigger. Values from 1 to 600s are allowed. *Note: You do not need to reboot the reader.* *Note: Parameter used only when read mode is Trigger.*		
		Example:	***Direction***	***Description***
		$ SET RDTMTRG=10<CR>	**Host → Reader**	Host sends the message to change the value to read 10s after the trigger signal.
		$ OK<CR>	**Host ← Reader**	The reader returns OK.
		$ SET RDTMTRG=0<CR>	**Host → Reader**	Host sends the message to change the value to 0s.
		$ ERROR<CR>	**Host ← Reader**	The reader returns Error because the past value is outside the allowed range.
FTSMTG	*SET/GET*	Changes or checks the time, in seconds, filtering the same tag. Values from 0 to 600s are allowed. *Note: You do not need to reboot the reader.*		
		Example:	***Direction***	***Description***
		$ GET FTSMTG<CR>	**Host → Reader**	Host sends the message to read the time value of the same tag filter.
		$ 1<CR>	**Host ← Reader**	Reader replies that the value is 1s.
		$ SET FTSMTG=0<CR>	**Host → Reader**	Host sends the message to change the value to 0s, that is, no filter.
		$ OK<CR>	**Host ← Reader**	Reader responds with OK.

Setting Reading (continued):

RDPOWER	*SET/GET*	Changes or checks the value of the reading power in centidBm. Values from 500 to 3000 centidBm are allowed. *Note: You do not need to reboot the reader.* .		
		Example:	***Direction***	***Description***
		$ GET RDPOWER<CR>	**Host → Reader**	Host sends the message to read the read power value.
		$ 3000<CR>	**Host ← Reader**	Reader responds that the value is 30dBm.
		$ SET RDPOWER=1000<CR>	**Host → Reader**	Host sends the message to change the value of 10dBm.
		$ OK<CR>	**Host ← Reader**	Leitor responde com OK.

FTRSSI *SET/GET*

Changes or checks the filter value by signal level (RSSI). Values from 20 to 99 dbm are allowed, leaving the value empty disables the filter.
Note: You do not need to reboot the reader.

Example:	*Direction*	*Description*
$ GET FTRSSI<CR>	**Host → Reader**	Host sends the message to read the rssi filter value.
$ 50<CR>	**Host ← Reader**	Reader replies that the value is -50dBm.
$ SET FTRSSI=<CR>	**Host → Reader**	Host sends the message to change the value to empty, disabling the filter by RSSI.
$ OK<CR>	**Host ← Reader**	Reader responds with OK.

DELAYTX *SET/GET*

Time between transmission of ids read at the same time.
Note: You do not need to reboot the reader.
Note: Time used only when more than one tag is read at the same time.

Example:	*Direction*	*Description*
$ GET DELAYTX<CR>	**Host → Reader**	Host sends the message to read the broadcast value of ids.
$ 200<CR>	**Host ← Leitor**	Reader responds that the value is 200.
$ SET DELAYTX=200<CR>	**Host → Reader**	Host sends the message to change the transmission value of read ids to 200.
$ OK<CR>	**Host ← Reader**	Leitor responde com OK.

Setting Reading (continued):

SNDOPT *SET/GET*

Changes or verifies which Id should be sent by the communication interface when a vehicular tag associated with a personal tag is identified and approved. [VEHICLE] values to send vehicle tag Id, [DRIVER] to send Driver Tag Id, and [BOTH] to send the two Ids, first from the vehicle and then from the driver.
Note: You do not need to reboot the reader.
Note: Parameter used only when the autoid system type is secure.

Example:	*Direction*	*Description*
$ GET SNDOPT<CR>	**Host → Reader**	Host sends the message to check which id should be sent in case of membership.
$ VEHICLE<CR>	**Host ← Reader**	Reader responds with the vehicular tag id.

		$ SET SNDOPT=DRIVER<CR>	**Host → Reader**	Host sends the message to change the parameter.
		$ OK<CR>	**Host ← Reader**	Reader responds with OK.

IDERR	*SET/GET*	Changes or verifies the id that will be sent when an associated vehicular tag is identified by the reader, and the driver tag associated with the car tag has not been identified. The Id value must be a maximum of 8 characters and in hexadecimal format. *Note: You do not need to reboot the reader.* *Note: Parameter used only when the autoid system type is secure.*		
		Example:	***Direction***	***Description***
		$ GET IDERR=99999999<CR>	**Host → Reader**	Host sends the message to change the value of the binding error id.
		$ OK<CR>	**Host ← Reader**	Reader responds with OK.

IDERRTM	*SET/GET*	Changes or checks the wait time in seconds to send the error id configured in "IDERR". Values allowed from 3 to 60s. *Note: You do not need to reboot the reader.* *Note: Parameter used only when autoid system type is safe.*		
		Example:	***Direction***	***Description***
		$ GET IDERRTM<CR>	**Host → Reader**	Host sends the message to read the time value.
		$ 3<CR>	**Host ← Reader**	Reader replies that the value is 3s.
		$ SET IDERRTM=10<CR>	**Host → Reader**	Host sends the message to change the value to 10s, that is, when an associated vehicular tag is identified, the reader will try for 10s to read the driver tag associated with the car tag.
		$ OK<CR>	**Host ← Reader**	Reader responds with OK.

Setting Reading (continued):

SELFTMSK *SET/GET*

Changes or checks the value of the mask that the Id must contain to be read. Values allowed hexadecimal characters of a maximum of 24 digits.
Note: You do not need to reboot the reader.
Note: Parameter used only when autoid system type is Normal.

Example:	***Direction***	***Description***
$ GET SELFTMSK<CR>	**Host → Reader**	Host sends the message to read the mask value.
$ 123456789ABC<CR>	**Host ← Reader**	Reader replies that the value is 3s.
$ SET SELFTMSK=00AABB<CR>	**Host → Reader**	Host sends the message to change the value of the mask, that is, only tags with this mask value starting in the digit configured in SELFTDG will be read by the reader.
$ OK<CR>	**Host ← Reader**	Reader responds with OK.

SELFTDG *SET/GET*

Changes or checks the value of the initial digit at which the mask provided above starts in tag Id. Values allowed 0 to 24.
Note: You do not need to reboot the reader.
Note: Time used only when more than one tag is read at the same time.

Example:	***Direction***	***Description***
$ GET SELFTDG<CR>	**Host → Reader**	Host sends the message to read the mask value.
$ 0<CR>	**Host ← Reader**	Reader replies that the value is 0.
$ SET SELFTDG=5<CR>	**Host → Reader**	Host sends the message to change the digit value to 5, that is, only tags with that mask value starting at digit 5 will be read by the reader.
$ OK<CR>	**Host ← Reader**	Reader responds with OK.

10.3.9 Configurando Comunicação

INTFPRTCL *SET/GET*

Changes or verifies which communication interface the reader should use. Values [WIEGAND, WG, ABATRACK, ABA, GPO]. .
Note: None (GPO) to use w1/DATA and W0/CLK signals as digital outputs triggered via ASCII messages.

Example:	***Direction***	***Description***
$ GET INTFPRTCL<CR>	**Host → Reader**	Host sends the message to check which interface it is using.
$ WIEGAND<CR>	**Host ← Leitor**	Reader responds.
$ SET INTFPRTCL=WIEGAND<CR>	**Host → Reader**	Host sends the message to change the parameter.
$ OK<CR>	**Host ← Reader**	Reader responds with OK.

WGBILTEN *SET/GET*

Changes or checks the number of bits of Wiegand communication. Values [26, 34].
Note: Parameter used only when the communication interface type is Wiegand.

Example:	***Direction***	***Description***
$ SET WGBILTEN=26<CR>	**Host → Reader**	Host sends the message to change the number of bits to 26..
$ OK<CR>	**Host ← Reader**	Reader responds with OK, successful change.

ABADIGLEN *SET/GET*

Changes or checks the number of digits of the Abatrack interface (CLOCK/DATA). Values [10, 14].
Note: Parameter used only when the communication interface type is Abatrack.

Example:	***Direction***	***Description***
$ SET ABADIGLEN=14<CR>	**Host → Reader**	Host sends the message to change th number of digits to 14.
$ OK<CR>	**Host ← Reader**	Reader responds with OK, successful change.

STRDT *SET/GET*

Changes or checks the Data String that the reader sends over the Ethernet interface at each data reading. Data String uses keywords that are replaced by read results.

Example:	***Direction***	***Description***
$ SET STRDT=id do tag:IDWG<CR>	**Host → Reader**	Host sends the message to change t data string.
$ OK<CR>	**Host ← Reader**	Reader responds with OK.

Configuring Communication (continued):

Change or check the Keepalive String, maximum 15 characters, for more details see section 10.1.
Note: You do not need to reboot the reader.

STRKP *SET/GET*

Example:	***Example:***	***Example:***
$ SET STRKP=RN<CR>	**Host → Reader**	Host sends the message to char the keepalive string.
$ OK<CR>	**Host ← Reader**	Reader responds with OK.

Changes or checks the time in seconds of the Keepalive String send interval. Values from 1 to 60s.
Note: You do not need to reboot the reader.

TMKP *SET/GET*

Example:	***Direction***	***Description***
$ SET TMKP=10<CR>	**Host → Reader**	Host sends the message to chan the range to 10s.
$ OK<CR>	**Host ← Reader**	Reader responds with OK.

Changes or checks the sending of the internal temperature in °C from the rf module of the reader to the Syslog. Values [ON, OFF].
Note: You do not need to reboot the reader.

SYSLGTEMP *SET/GET*

Example:	***Direction***	***Description***
$ SET SYSLGTEMP=ON<CR>	**Host → Reader**	Host sends the message to enable the sending of the temperature to Syslog.
$ OK<CR>	**Host ← Reader**	Reader responds with OK.

Changes or verifies what should be sent in the 'tag' field of reader-generated Syslog messages. [NAME] values to send the reader's name and [DESC] to send the reader description.
Note: You do not need to reboot the reader.

SYSLGTAG *SET/GET*

Example:	***Direction***	***Description***
$ SET SYSLGTAG=DESC<CR>	**Host → Reader**	Host sends the message to send reader description in the 'tag' field syslog messages.
$ OK<CR>	**Host ← Reader**	Reader responds with OK.

10.3.10 Configuring GPIO

TMFTDB	*SET/GET*	Changes or checks the time in milliseconds when the reader's digital input signal must remain enabled for the read operation to fire in trigger mode. Values from 0 to 1000ms. *Note: You do not need to reboot the reader.*		
		Example:	***Direction***	***Description***
		$ SET TMFTDB=500<CR>	**Host → Reader**	Host sends the message to change the debouncing time to 500ms.
		$ OK<CR>	**Host ← Reader**	Reader responds with OK, successful change.

Configuring GPIO (continued):

INVINPT	*SET/GET*	Changes or checks the option to reverse the trigger signal trigger trigger logic. Values [ON, OFF]. *Note: You do not need to reboot the reader.*		
		Example:	***Direction***	***Description***
		$ SET INVINPT=ON<CR>	**Host → Reader**	Host sends the message to reverse th logic of triggering the reader's digital ir
		$ OK<CR>	**Host ← Reader**	Reader responds with OK.
INPUT0	*GET*	Checks the logical state of the reader's digital input (ISO IN). Values [0 and 1]. *Note: You do not need to reboot the reader.*		
		Example:	***Direction***	***Description***
		$ GET INPUT0<CR>	**Host → Reader**	Host sends the message to check the logical state of the digital input.
		$ 0<CR>	**Host ← Reader**	Reader responds with 0, low level.
OUTPUT0 *OUTPUT1*	*SET/GET*	Changes or checks output output from the OUTPUT0. Values [0 or 1] high or low level, [~] to reverse the logical state of the output and [*] to trigger the pulse of the laser. *Note: Parameter used only when the communication interface type is None.*		
		Example:	***Direction***	***Description***
		$ SET OUTPUT0=0<CR>	**Host → Reader**	Host sends the message to configure the OUT0 output to turn off ther andlé.
		$ OK<CR>	**Host ← Reader**	Reader responds with OK.
		$ SET OUTPUT0=1<CR>	**Host → Reader**	Host sends message to set out out0 output to turn on the reins.
		$ OK<CR>	**Host ← Reader**	Reader responds with OK.

$ SET OUTPUT0=~<CR>	**Host → Reader**	Host sends the message to reverse the logical state of the I.A.
$ OK<CR>	**Host ← Reader**	Reader responds with OK.
$ SET OUTPUT0=*<CR>	**Host → Reader**	Host sends the message to trigger the laser's pulse.
$ OK<CR>	**Host ← Reader**	Reader responds with OK.

Configuring GPIO (continued):

INITOUTPUT0
INITOUTPUT1

SET/GET

Individually changes or checks the initial logical state of OUTPUT0 to (W0/CLK) and OUTPUT1 to (W1/DATA). Values [0 or 1].
Note: Note: You do not need to reboot the reader.

Note: The initial logical state refers to the output state at reader startup.

Example:	***Direction***	***Description***
$ SET INITOUTPUT0=1<CR>	**Host → Reader**	Host sends the message to configure t initial logical state of the OUT0 output.
$ OK<CR>	**Host ← Reader**	Reader responds with OK.

10.3.11 Miscellaneous settings

RSTRDR

Command to reboot the reader, some settings require the reader to restart.

Example:	***Direction***	***Description***
$ RSTRDR<CR>	**Host → Reader**	Host sends the message to restart the reader.
$ OK<CR>	**Host ← Reader**	Reader responds with OK and then reboots.

REGION

GET

Checks the region of operation (frequencies and regulations) that was recorded at the factory for the operation of the reader.

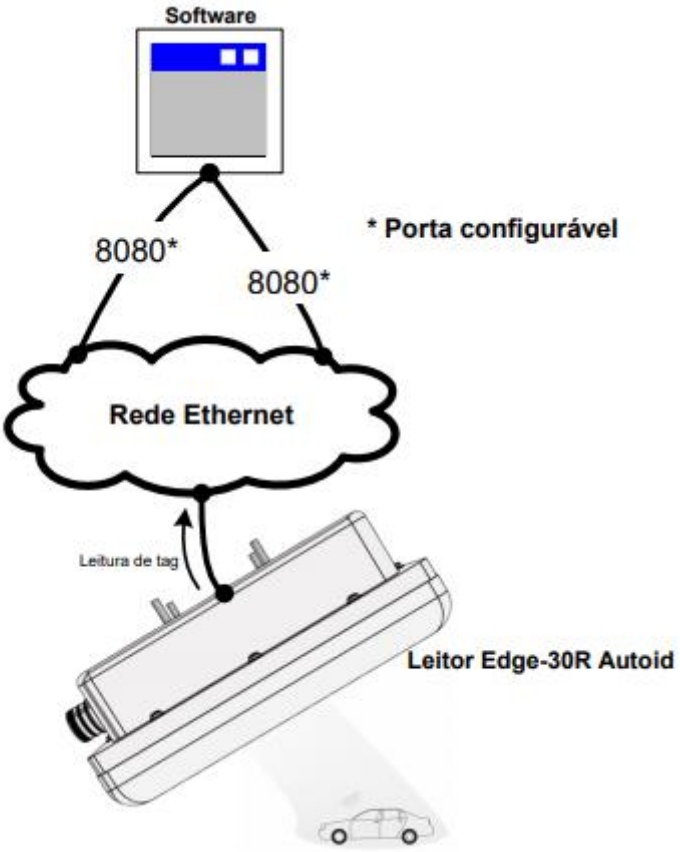
Example:	***Direction***	***Description***
$ GET REGION<CR>	**Host → Reader**	Host sends the message to check what the operation region is. Reader responds with the Region of Brazil and Anatel regulations are being used.
$ BR (ANATEL)<CR>	**Host ← Reader**	Reader responds with the Region of Brazil and Anatel regulations are being used.

DLSV	*SET/GET*	Changes or checks the use of daylight-saving time on the reader's internal clock. Values [ON, OFF]. *Note: You do not need to reboot the reader.*		
		Example:	***Direction***	***Description***
		$ SET DLSV<CR>	**Host → Reader**	Host sends the message to disable daylight saving time on the reader's internal clock.
		$ OK<CR>	**Host ← Reader**	Reader responds with OK.
CHKSUM	*SET/GET*	Changes or checksthe use of checksum in messages. Values [ON, OFF].		
		Example:	***Direction***	***Description***
		$ SET CHKSUM=ON<CR>	**Host → Reader**	Host sends the message to enable checksum usage in messages.
		$ OK9A<CR>	**Host ← Reader**	Reader responds with ok and checksum.
		$ SET CHKSUM=OFFEF<CR>	**Host → Reader**	Host sends the message to disable the use of checksum in messages.
		$ OK<CR>	**Host ← Reader**	Reader responds with OK.

11 Data communication

11.1 TCP/IP connections to receive tag readings

The Edge-30R(-N)+ Autoid reader has the behavior of a Server and is capable of providing up to 2 (two) simultaneous TCP/IP connections for communication of the tag read data, in addition to the Serial Interfaces RS232 and Wiegand/Abatrack, that is, up to two different software (processes) that are on the same Ethernet network of the reader, can connect to it to receive the tag reading results. The TCP/IP port number is configurable on the "Network" html page or via ascii command "DTPORT".



NOTE: Some Anti-Virus and Firewalls may block the communication ports mentioned in the illustration above, and it is not possible to send and receive data. To solve the problem, add exceptions to the IP used by the reader.

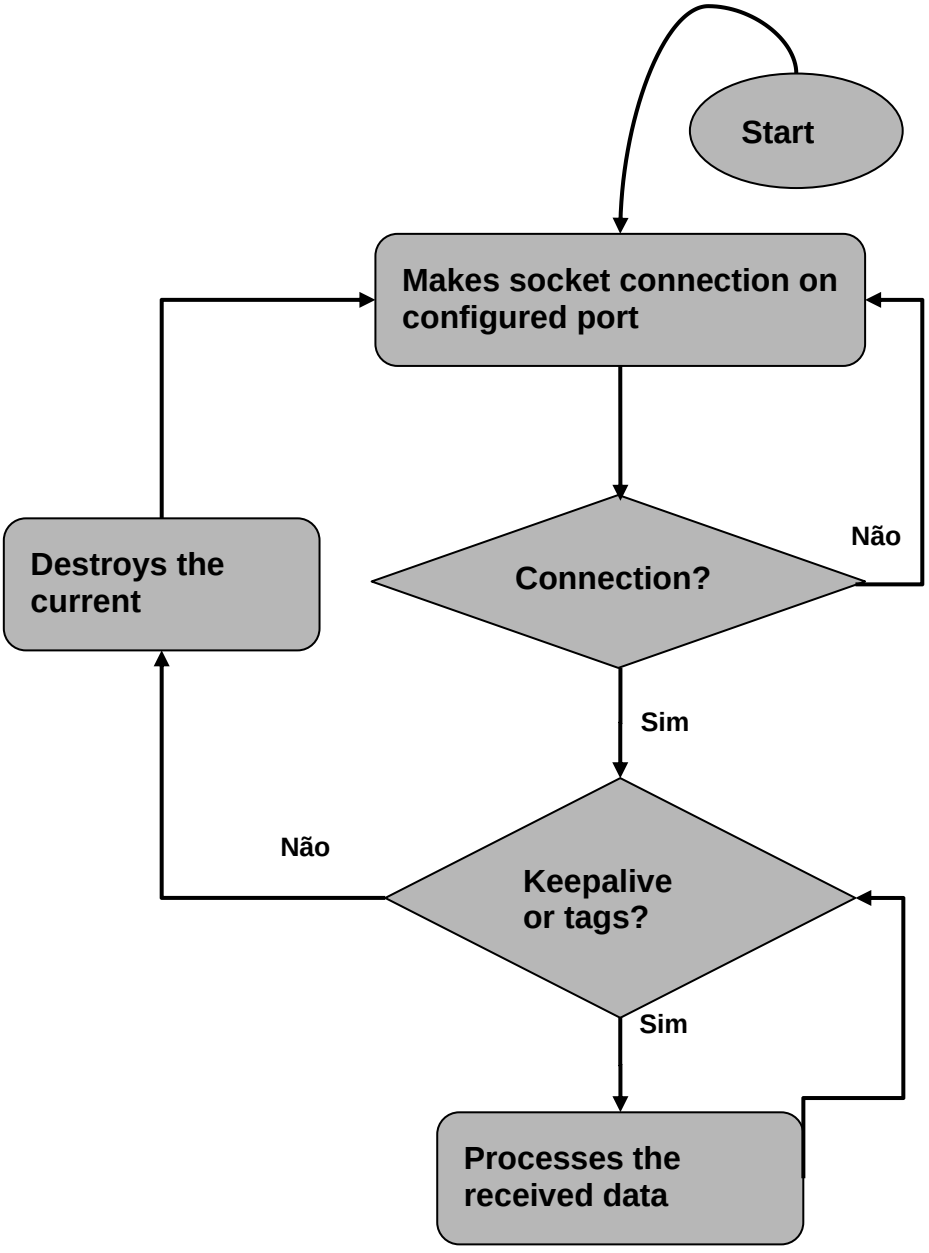
NOTE: TCP/IP port available for data receipt can be configured on the html page and by SLT software.

11.2 TCP/IP connection, disconnection, and reconnection logic

Readers have the behavior of a Server, that is, it accepts TCP/IP connections on the user-configured port. Below are some important points regarding the reader server behavior:

- The reader accepts up to six (6) simultaneous connections on the configured port;
- For reconnection in case of passive disconnection, the Keepalive time interval must be respected.
- If after an already established connection, the physical link of the network drops (LED LINK of the PCI Interface erased), that is, there is no more physical connection between the reader and the host, it is recommended an attempt to reconnect by the host.

For connection/disconnect/reconnection logic it is recommended to constantly check the Keepalive String + Keepalive end of line sent by the reader constantly even when there is no tag, so it is possible to check if a connection has been lost. The send interval of keepalive is configured in Keepalive time interval, it is recommended a timeout interval of receiving data by the host of a time value equal to or greater than the value configured in this parameter.
Below is a simple flowchart with the host logic of receiving the data sent by the reader.



11.3 Format of reading results via TCP/IP and RS232

The format in which data is sent via Ethernet can be *configured using the Data String parameter* that uses key words to combine the results of reading tags with other desirable characters in the final string that the reader must send.

With this type of configuration, it is possible to create a compatibility between the reader and Software Systems already developed.

Palavras chaves:

Palavra chave	*Descrição*	*Tamanho*	*Exemplo*
IDHEX	ID do tag no formato hexadecimal.	8 bytes	***3DAC0022***
IDWG	ID do tag no formato wiegand26 'FC[3dig.]ID[5dig.]'	8 bytes	***17200034***
IDABA	ID do tag no formato abatrack 'ID[10dig.]'	10 bytes	***1034682402***
RDCT	Número de leituras do tag.	1 byte	***8***
RSSI	Valor do nível de sinal (negativo) do tag lido.	3 bytes	***-64***
ANTID	Número da antena que o tag foi lido.	1 byte	***1***
TMSTP	Timestamp [dd-mm-aaaa hh:mm:ss].	19 bytes	***21-09-2015 14:58:23***
TYPE	Tipo do tag lido, 'S' p/ Seguro e 'N' p/ Normal	1 byte	***S***
ALIVE	Tempo de atividade do leitor em segundos	1~10 bytes	***67890***
<CR>	Caractere de controle Carriage Return [0x0D].	1 byte	
<LF>	Caractere de controle Line feed [0x0A].	1 byte	
<STX>	Caractere de controle Start of text [0x02].	1 byte	
<ETX>	Caractere de controle End of text [0x03].	1 byte	

Exemplos:

1. String de dados configurada na página html:
   Tag ID: 0xIDHEX, Qt leitura: RDCT, Antena: ANTID, Sinal tag: RSSI;<CR><LF>
   String enviada pelo leitor após ler um tag 6 vezes com ID= 3DAC337A e RSSI= -65dBm na antena integrada:
   Tag ID: 0x3DAC337A, Qt leitura: 06, Antena: 1, Sinal tag: -65;<CR><LF>
2. String de dados configurada na página html:
   0xIDHEX IDWG – Exemplo de leitura de tag... :)
   String enviada pelo leitor após ler um tag com ID= 3DAC337A:
   0x3DAC337A 17213178 – Exemplo de leitura de tag... :)
3. String de dados configurada na página html:
   IDABa IDABA idaba IDHexa :)
   String enviada pelo leitor após ler um tag com ID= 3DAC337A:
   IDABa 1034695546 idaba IDHexa :)

Regras de formato da String de dados:

1. Somente pode haver duplicidade dos caracteres de controle <CR> <LF> <STX> <ETX>, as demais palavras chaves não podem ser duplicadas;
2. A String de dados deve conter ao menos uma das palavras chaves IDHEX, IDWG ou IDABA;
3. As palavras chaves são diferenciadas de maiúsculo e minúsculo;
4. O tamanho máximo da String de dados enviada pelo leitor é de 115 caracteres;

11.4 Syslog

O leitor implementa o protocolo Syslog (RFC 5424) para enviar mensagens de log e status de seu funcionamento, o Servidor Syslog deve ser configurado no padrão UDP porta 514.

Formato das mensagens do leitor no padrão Syslog:

Facility	***Código***	***Descrição***
Local 1	17	O leitor sempre usará esse facility para as mensagens de Syslog.

Severity/Level	***Código***	***Descrição***
Alert	01	Indica um estado de alerta do leitor, uma ação deve ser tomada.
Error	03	Indica uma ocorrência de erro interno do leitor.
Warning	04	Indica uma ocorrência que requer atenção.
Informational	06	Indica ocorrências normais de funcionamento do leitor

Timestamp	***Exemplo***
Mmm dd hh:mm:ss	Jul 31 16:08:50

Tag	***Exemplo (nome do leitor)***
Nome do leitor ou Descrição do leitor	EDGE30R-5194EC

Origin / Hostname	***Descrição***
Endereço IP do leitor	Neste campo da mensagem, é enviado o endereço IP do leitor

Message	*Category*	*Description*
Messages are divided into categories	BOOT	Messages about the firmware boot of the reader.
	CLOCK	Messages related to the internal clock process.
	DNS	Messages related to the DNS name resolution process of the SNTP and Syslog servers.
	HMTL	Messages from the reader's internal Web server.
	INIT	Readear startup messages, before firmware boot.
	INPUT	Messages related to the digital input of the reader.
	MRF	Messages from the reader's main process.
	NET	Messages related to the reader's Ethernet interface.
	PARAM	Messages related to settings parameters.
	RST	Messages on pci interface reset button.
	SNTP	Messages related to the timing process of the reader's internal clock with SNTP server.
	TRIGGER	Messages related to Trigger read mode.
	SYS	Messages generated by the Syslog process.

Features of reader Syslog:

- Reader log/status messages are not stored in non-volatile memory by the messages are generated and sent in real time;
- The frequency of sending Syslog messages by the reader is 2Hz, i.e. every 500ms the reader's internal process consumes the message buffer and sends it to the Syslog Server;
- If the 'Send internal temperature of the reader's RF module to Syslog' parameter is enabled, a message is generated with each temperature degree change;
- Messages in the PARAM category show at the end of the message, between [ ], the current value modified of the parameter in question;

12 Mensagens de Log do leitor - Syslog

Collecting syslog messages from the reader is very important to make a diagnosis of how the reader is behaving in its operating environment. It is recommended to collect messages even if the reader is being used with Wiegand or Abatrack interface.

Reader Syslog messages have complete information about their behavior, from their temperature to parameter changes by the user, so to obtain a complete diagnosis for monitoring or analysis of reader errors is necessary to collect and store Syslog messages.

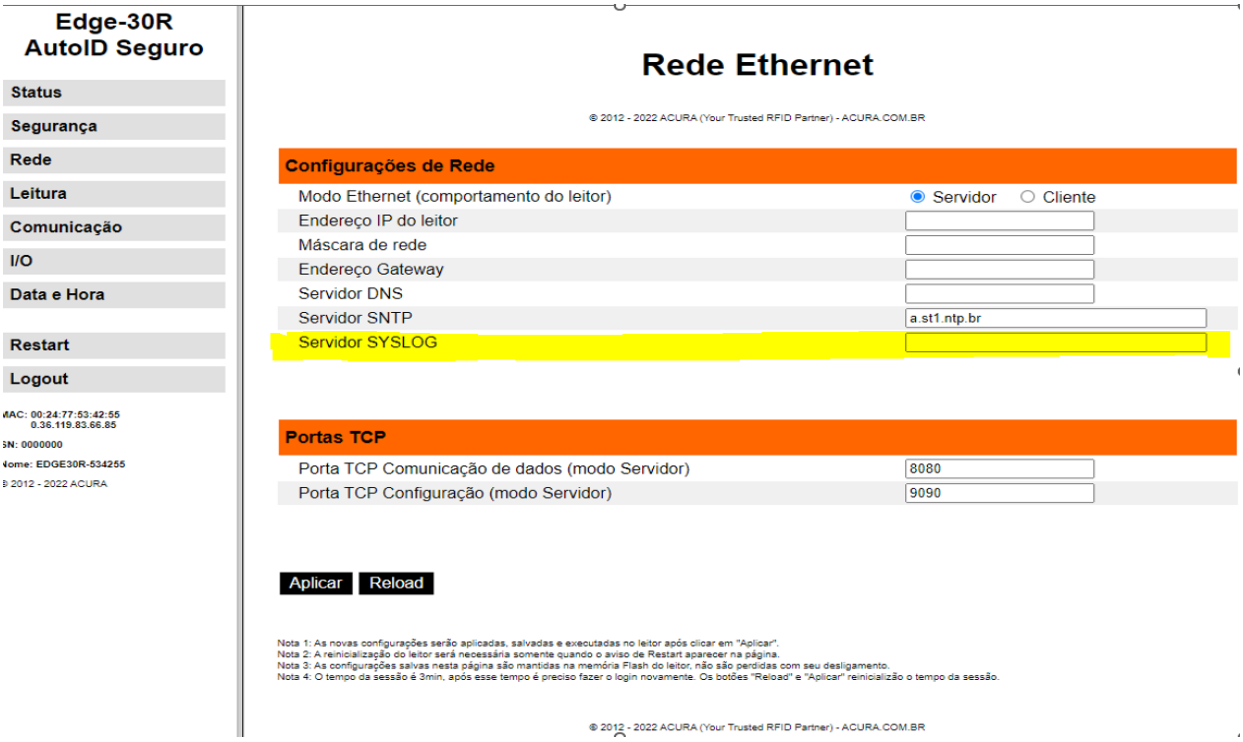
To collect the Syslog messages that the reader generates, you need software (Syslog Server) that will run on a Host on the same Ethernet network that the reader is on, this Software is responsible for receiving and storing the messages for further analysis.

The IP or hostname of the computer that will receive the messages must be properly configured on the reader, please refer to the Network Configuring.

Below is a recommendation for Syslog Server software:

Visual Syslog Server: https://visual-syslog-server.software.informer.com/1.6/

To perform access to the Visual Syslog Server, you must place the COMPUTER IP with the Software installed in this field:



After that, access the Visual Syslog Server and track the behavior of the reader.

13 Regional Regulations

13.1 Frequencies and operating region

When booting the Edge-30R Autoid reader, the operating frequencies (Hop-Table) are configured according to the pre-established region in the reader firmware. For the Brazil, the configured frequencies are:

ANATEL (Brazil) Edge-30R+ 902 to 907MHz and 915 to 928MHz
ANATEL (Brazil) Edge-30R-N 915 to 928MHz

13.2 RF reader power

For any combination of antenna and cable used with this readear, the maximum RF power issued by the reader must be determined by means of the following equation:

$$P_{max} = 36\ dbm^{3} - Antenna\ Gain^{4} + Cable\ Loss^{5}$$

The maximum configurable power on the reader is 30 dBm (for Edge-30R+) and 27 dBm (for Edge-30R-N+).

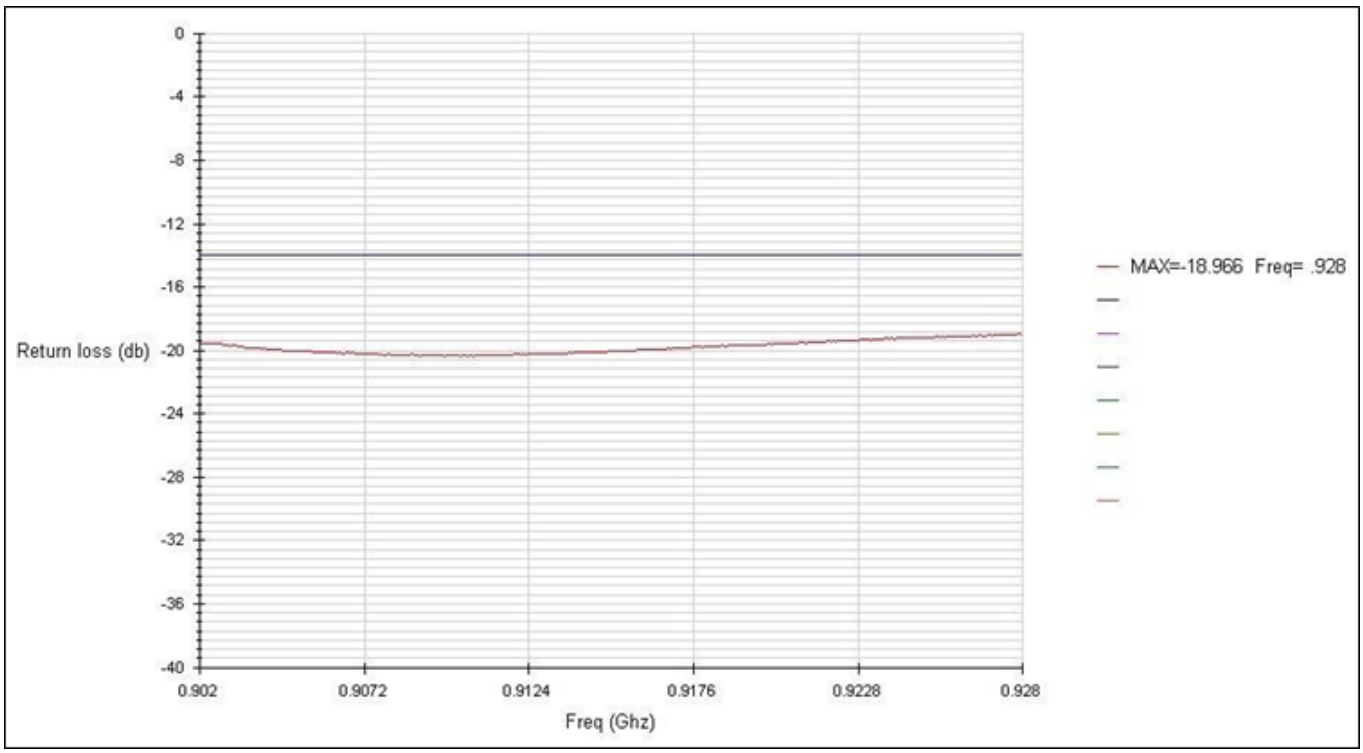
Thus, with the antenna and cable data, the power to be configured on the readear is calculated to its use, keeping in mind the maximums and minimums of the reader and respecting the standards regulations of the region in which the reader is being used.

Alert: It is the entire responsibility of the Edge 30R+ Autoid reader user to set the output RF power correctly to comply with regional RF emission standards.

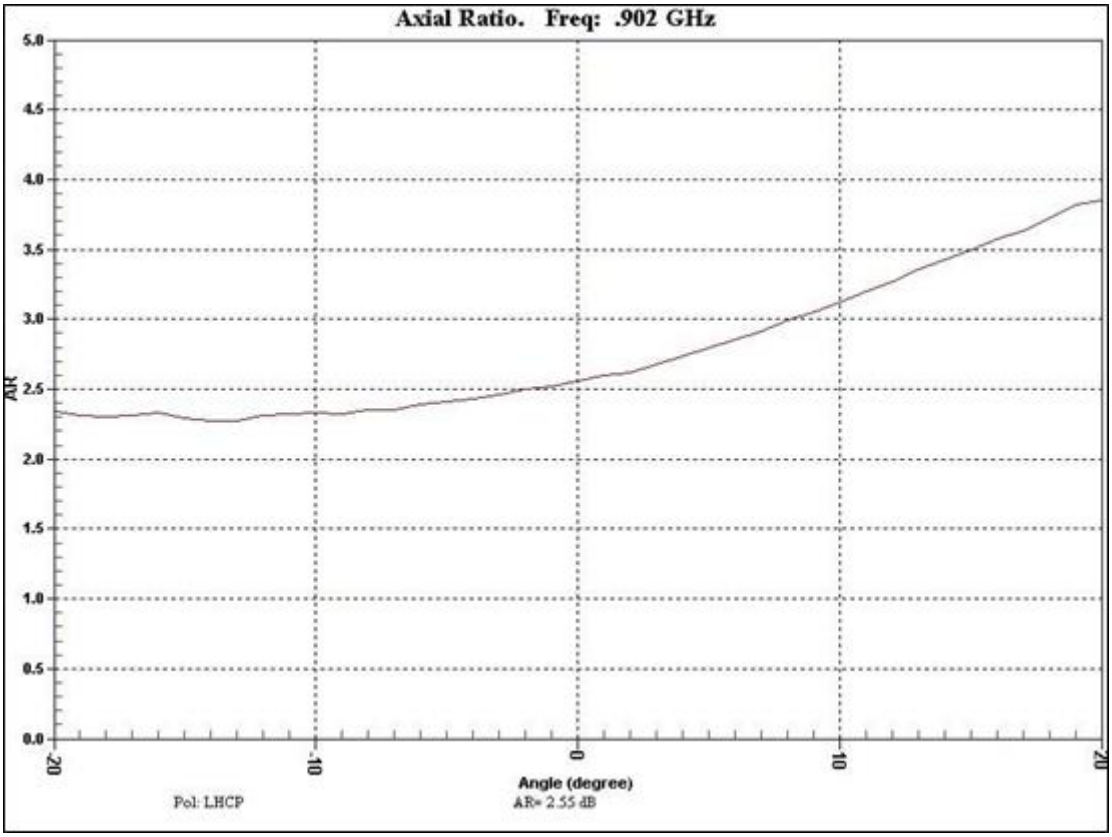
[3] Maximum effective power (EIRP) allowed by Anatel.
[4] Antenna gain in dBi, some specifications may provide gain in other units.
[5] Cable loss in dB.

14 Integrated antenna measurements

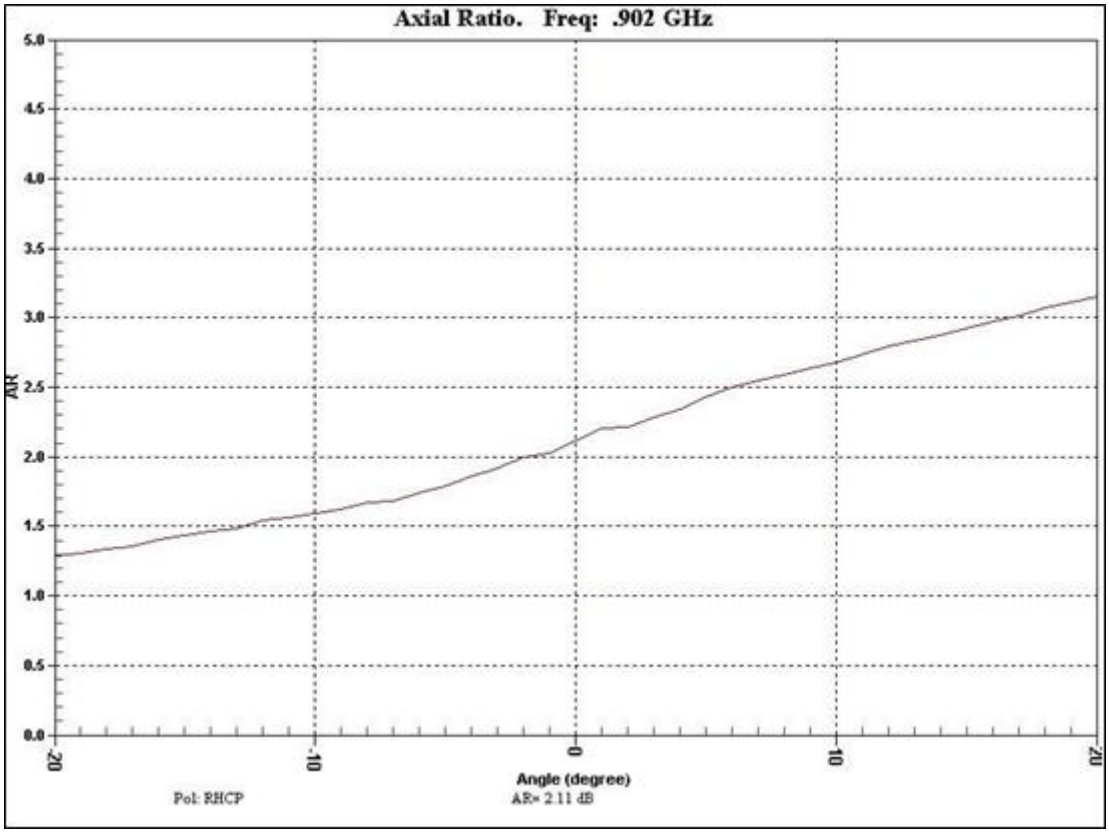
14.1 VSWR



14.2 Axial Ratio (±20° Azimuth) 902MHz

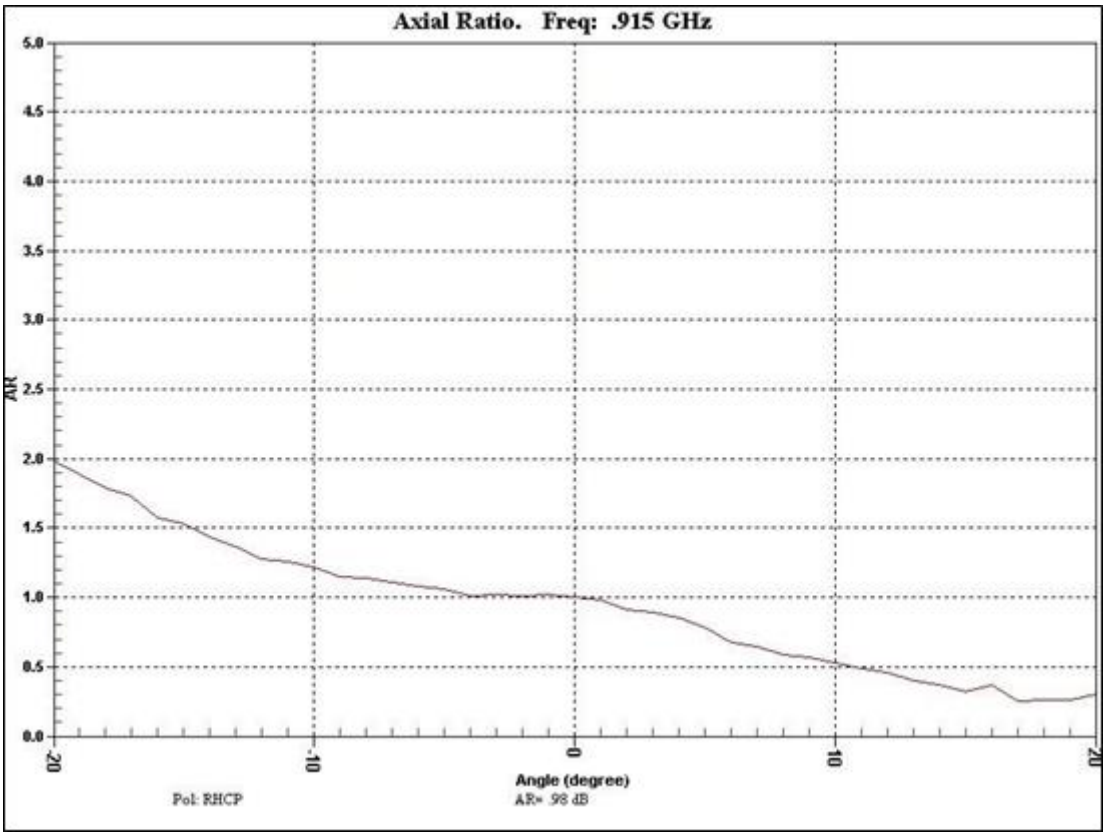


14.3 Axial ratio (±20° Elevation) 902MHz

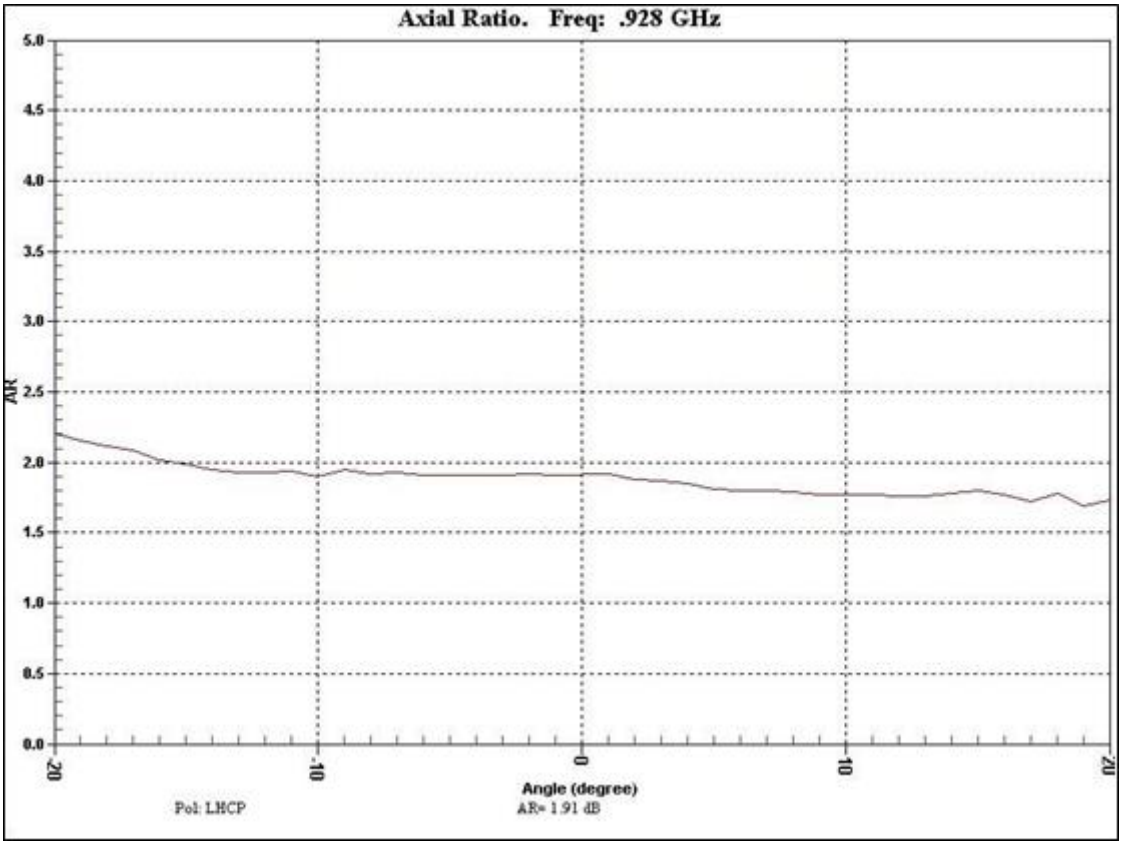


14.4 Axial ratio (±20° Azimuth) 915MHz

14.5 Axial ratio (±20° Elevation) 915MHz

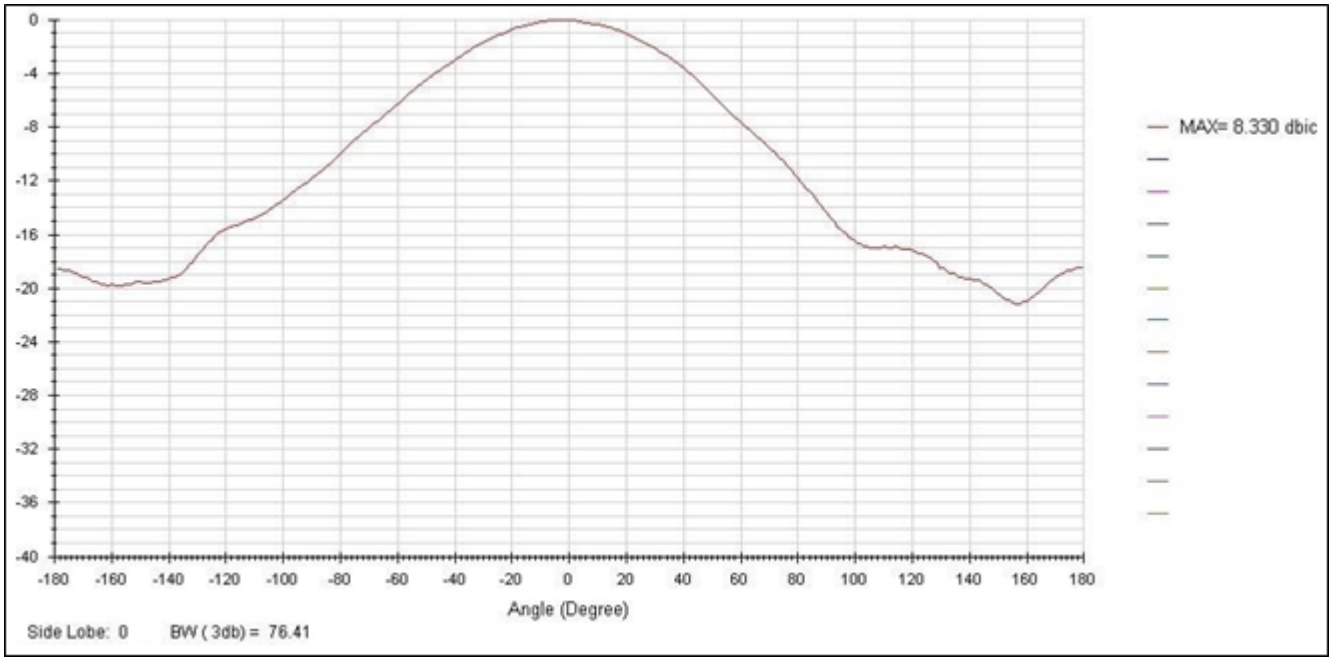


14.6 Axial ratio (±20° Azimuth) 928MHz

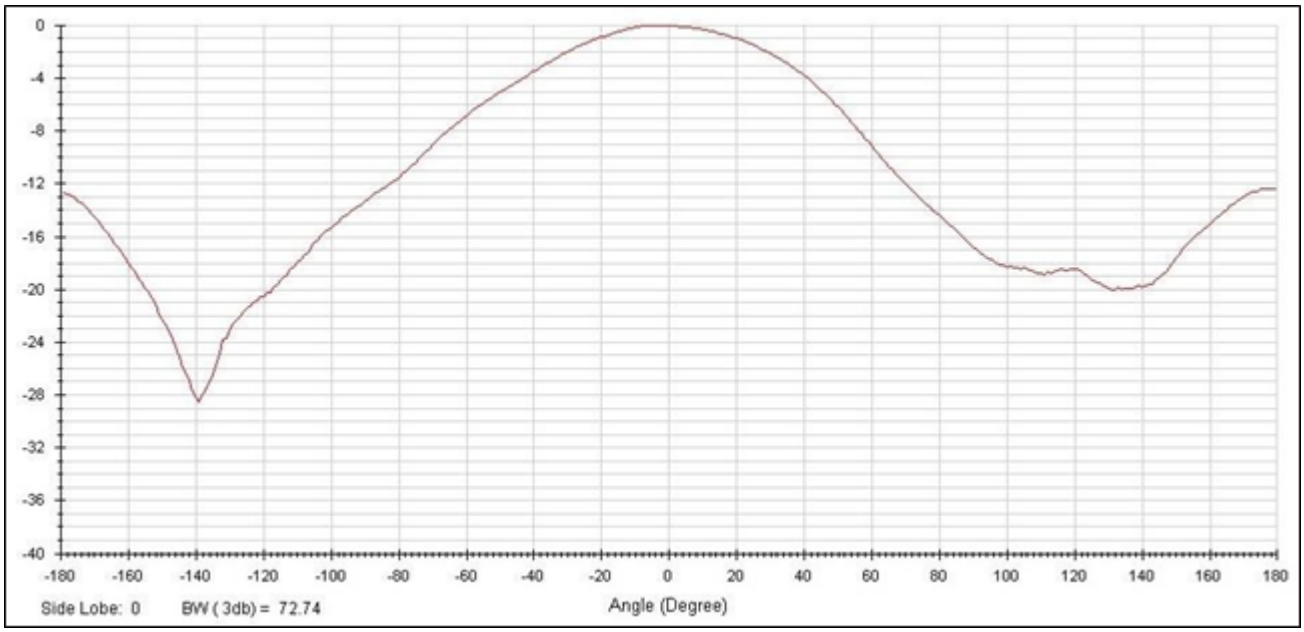


14.7 Axial ratio (±20° Elevation) 928MHz

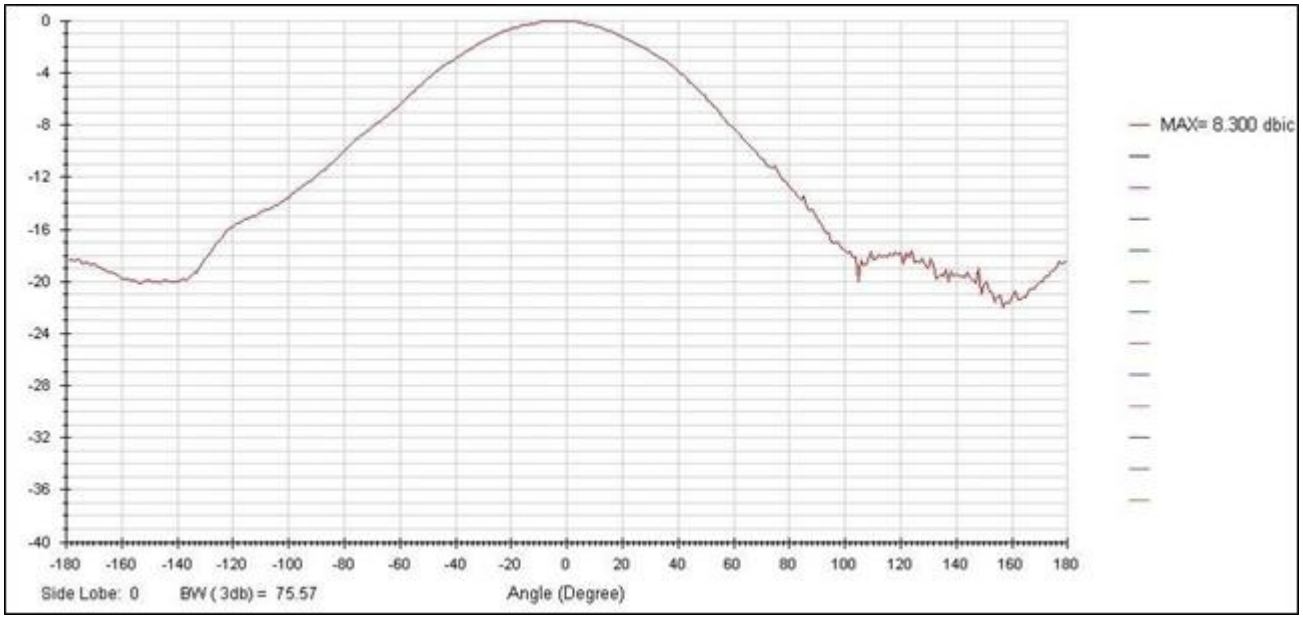
14.8 Radiation diagram (Azimuth) 902MHz



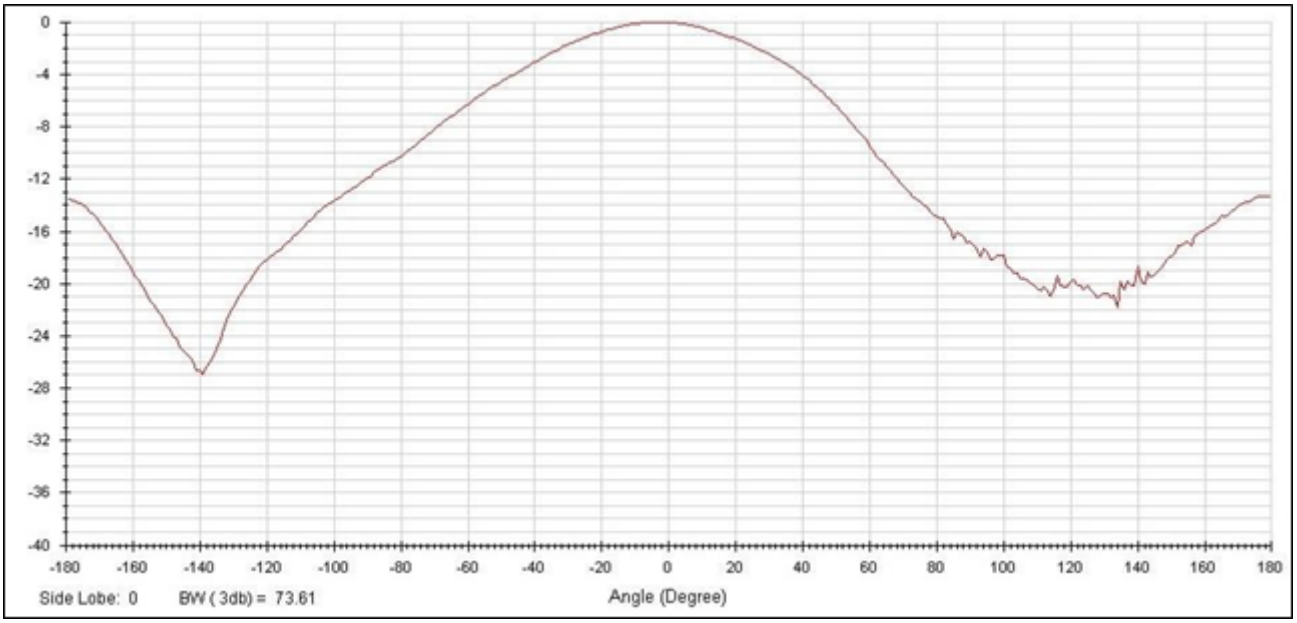
14.9 Radiation diagram (Elevation) 902MHz



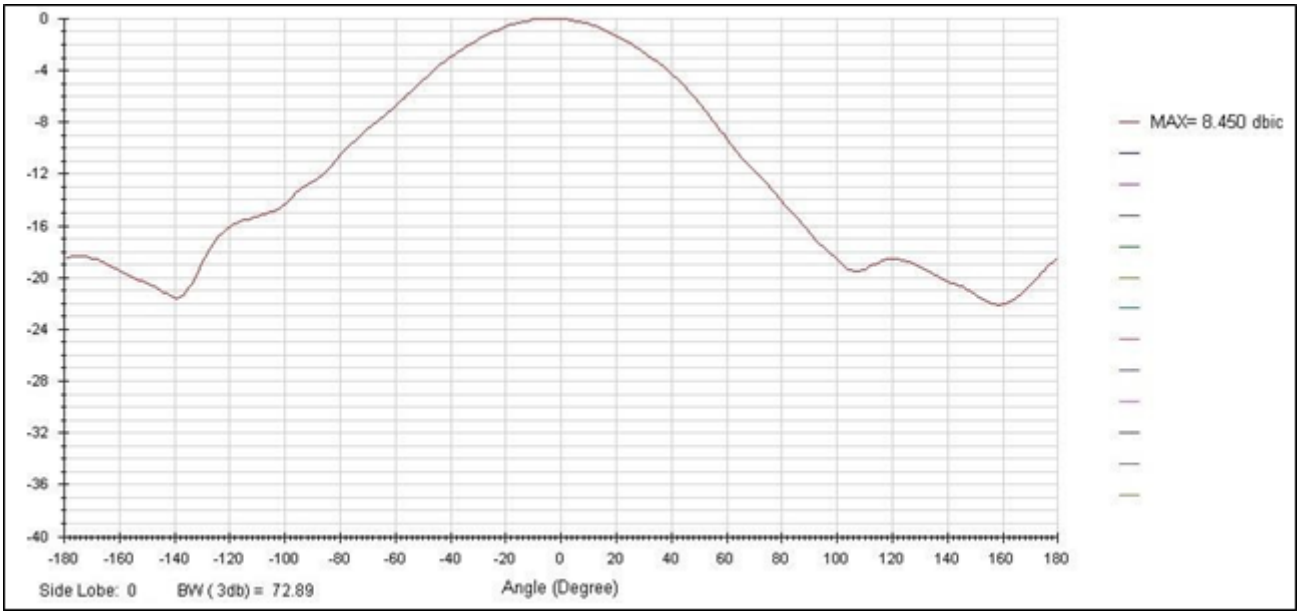
14.10 Radiation diagram (Azimuth) 915MHz



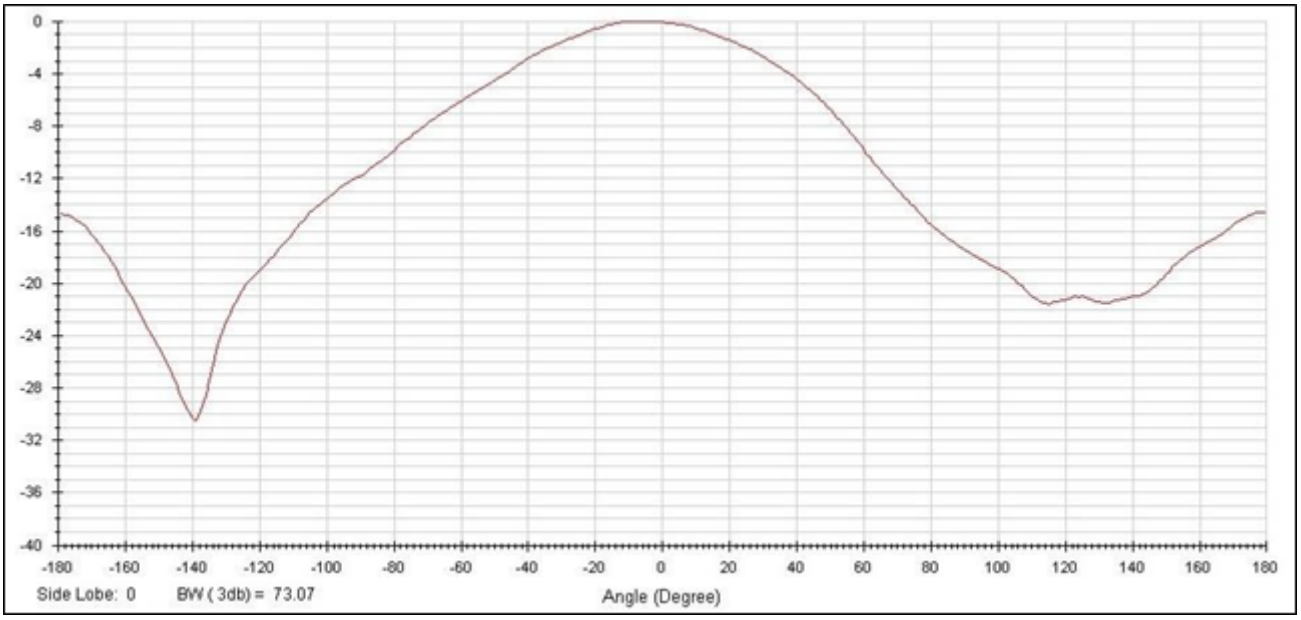
14.11 915MHz Radiation Diagram (Elevation)



14.12 Radiation diagram (Azimuth) 928MHz



14.13 928MHz Radiation Diagram (Elevation)



15 Solutions to common problems

15.1 I do not know the IP of the Reader

In this case there are two options.

1. You can use device explorer software (for Windows) to find readers that are on the same LAN network. The software shows readers and their IP and MAC addresses, with the MAC address can physically check the label on the reader's network cable. The figure below shows the device explorer software screen.

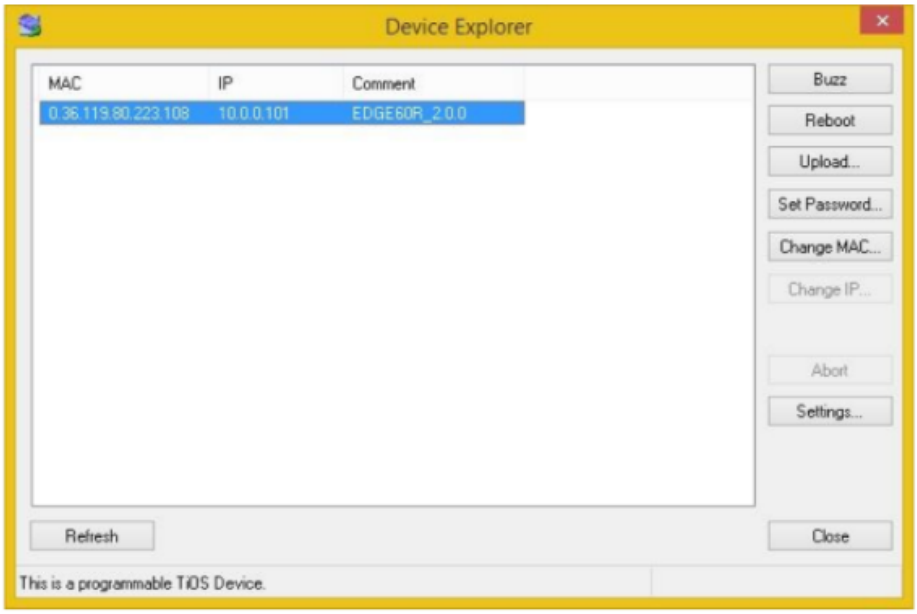


Figura 41-Tela Device Explorer

The software can be found at the link below:
https://drive.google.com/file/d/0B7DwMedDHj_ZZ0dBdi1ISjNsS2c/view?usp=sharing&resourcekey=0-crNiU87l49ZCUb2KipGOlQ

15.2 I do not know the password of the reader's page

You can restore factory settings via The Reader's Hard Reset, please refer to the to the Visual Indicators section of the reader.

15.3 Cannot connect to the Reader via Ethernet

1. Please check the "POWER" and "STATUS" LEDs of the PCI Interface, they must be lit and flashing respectively;
2. Check for a network cable connected to the PCI Interface 'HOST ETHERNET';
3. Make sure that the network cable connected to the "HOST ETHERNET" connector of the PCI Interface

is properly made according to the Electrical Connections - Ethernet Network;

4. Make sure that the two RJ45 connectors on the reader cable are connected to the PCI Interface and
   in the correct order, connector "COMMAND READER" - black cable and connector "READER ETHERNET" – blue cape;
5. Check that the "LINK" LED of the PCI Interface is lit, if it is off, check the
   network cable connection on switch/router/computer side;
6. Make sure that the computer you are trying to access the reader with has the same
   network ID that reader;

15.4 In trigger mode, the input signal is not being activated by the sensor

1. Check the datasheet of the sensor if it has output of type "dry contact" or "NPN" or
   "PNP" and whether the connections made to the reader correspond to the sensor output type. Please
   refer to Electrical Connections - Digital Input for further explanations about connections;
2. If the sensor output is "dry contact", connect it to "ISO GND" and "ISO IN";
3. If the sensor output is of type "NPN" or "PNP", connect it to "ISO COM" and "ISO IN" and
   check that the sensor follows the logical levels set by the reader, as described in
   Electrical connections - Digital Input;
4. Finally, check on the web page of the reader if the parameter time "Filter time deboucing
   trigger signal" is set correctly for the sensor used.

15.5 The Reader is not reading tags

1. Check the reader's web page for the chosen "Reading Mode";
2. Check the reader's web page to see if the value of the "Filter by tag signal level" is too
   the reader to filter all tag readings. To check that you are
   filtering at the time of reading, please check the Syslog messages.

ACURA Global is the pioneer in the Radio Frequency Identification (RFID) market in Brazil and Latin America, and has successfully explored, since the late 1990s, its large-scale adoption in the most diverse sectors of the economy, from mining to from agriculture to food processing, from logistics to retail, from transport to the distribution chain, from access control to asset management. Promoter of new technologies, innovative, agile and focused on the feasibility of vanguard.

Commercial and Development Office
Av. Antarctica, 381, 14th floor
Jardim do Mar - São Bernardo do Campo - SP
(11) 3028-4600

Factory and Service Center
Av. Nicolau Cesarino, 4197 - Extrema, MG
MOBILE: 37640-000
(35) 3435-1316

www.acura.com.br

