ACURA
part of HID

EDGE-35R

Hardware Install Guide

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Contacts

For technical support, please contact: acura.support@hidglobal.com.

Section 01

Introduction

1.1 Introduction

The EDGE-35 is a compact Ultra High Frequency (UHF) RFID reader that offers high-performance tag reading. The reader has a range of features and functionalities that are ideal for vehicle identification, including:

- Ethernet TCP/IP communication for seamless connectivity.
- Isolated serial interface, Wiegand/Clock-and-Data (Abatrack II) or RS-232.
- Outdoor installation.
- Easy configuration through the user-friendly HTML page interface.
- Integrated antenna with 7,5 dBic gain eliminates the need for RF cables.
- Powered via Power over Ethernet (PoE) via POE Switch or POE injector.
- Compact size that does not compromise the aesthetic appeal of the installation site.
- Easy to use, has automatic tag reading, does not require software development using API/SDK.

1.2 Products covered by this document

Model	Code
EDGE-35R TCP/IP	Please contact us.
EDGE-35R TCP/IP WIFI	Please contact us
INTERFACE BOARD EDGE-35	100.699

1.3 Approval notes

1.3.1 Anatel (Brazil)

EDGE-35 was 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.

1.3.2 FCC (USA)

Federal Communication Commission Interference Statement (FCC):

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operating in 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. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
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 20cm between the radiator & your body.

1.3.3 Authorized antenna

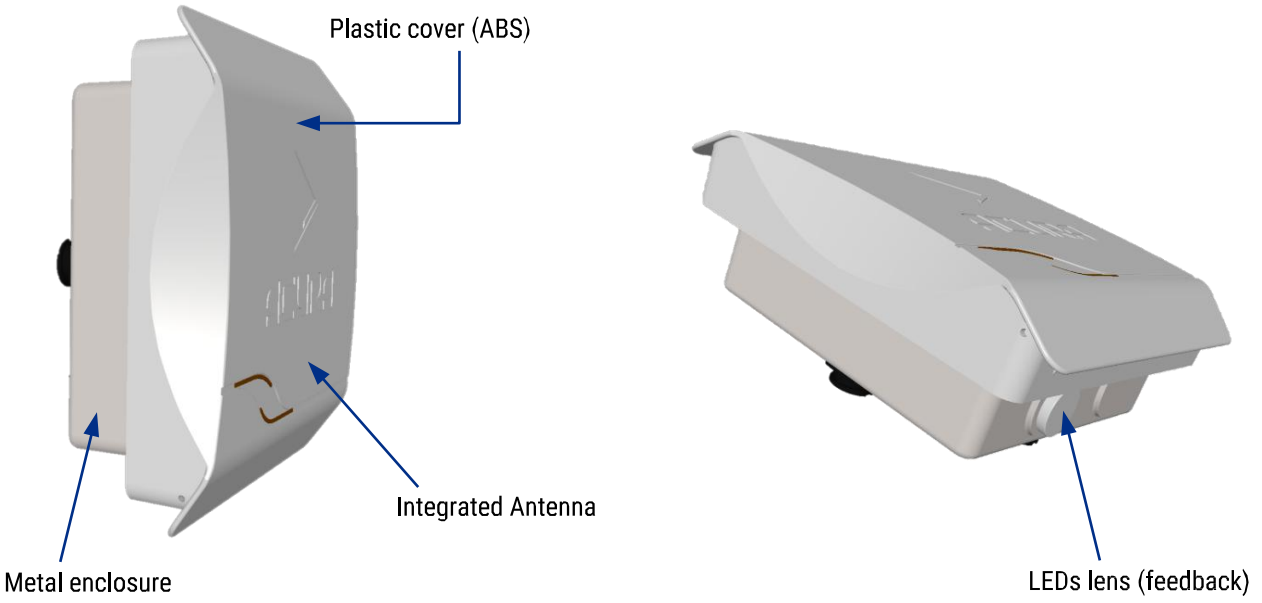
Vendor	Acura
Model	Far Field PCB 150122 (Embedded antenna)
Frequency Range (MHz)	902-928 MHz
Antenna Gain (dBi)	6 dBi
Polarization	Circular (RHCP)
Type	Patch

Section 02

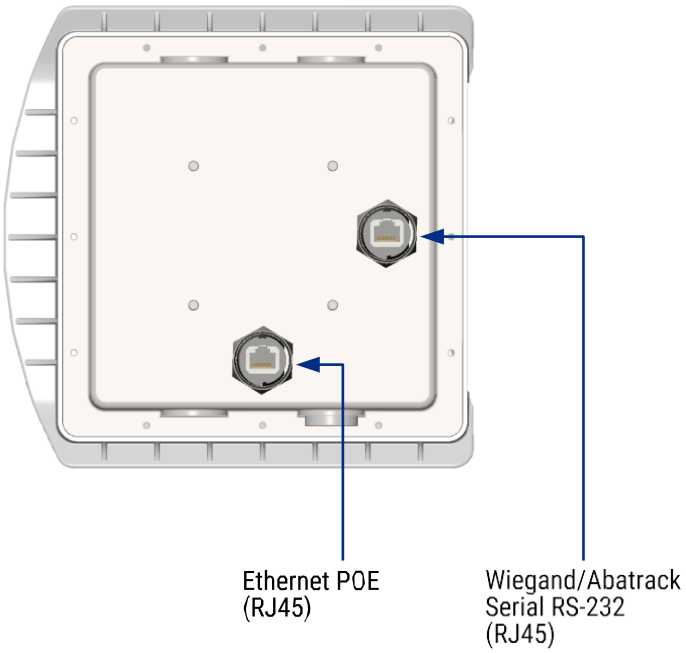
Specifications

2.1 EDGE-35 unit

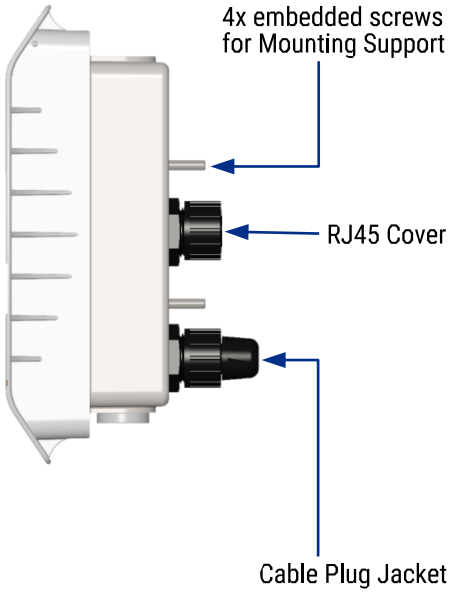
Perspective view



Rear view

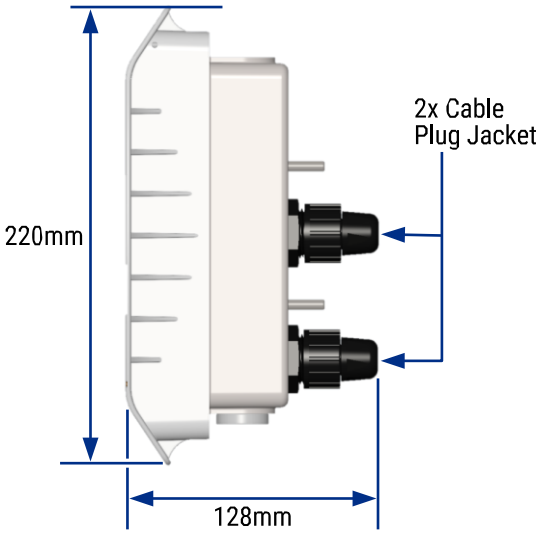


Side view

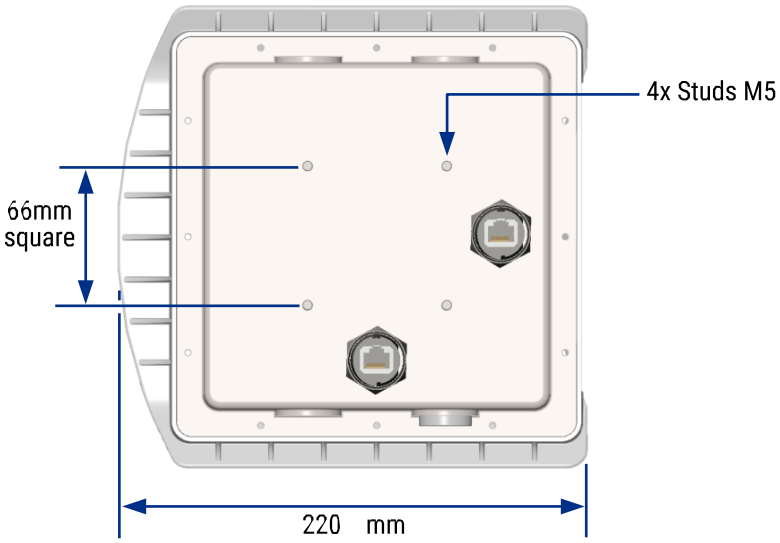


2.1.1 Dimensions

Side view



Rear view



2.1.2 Specification (EDGE-35)

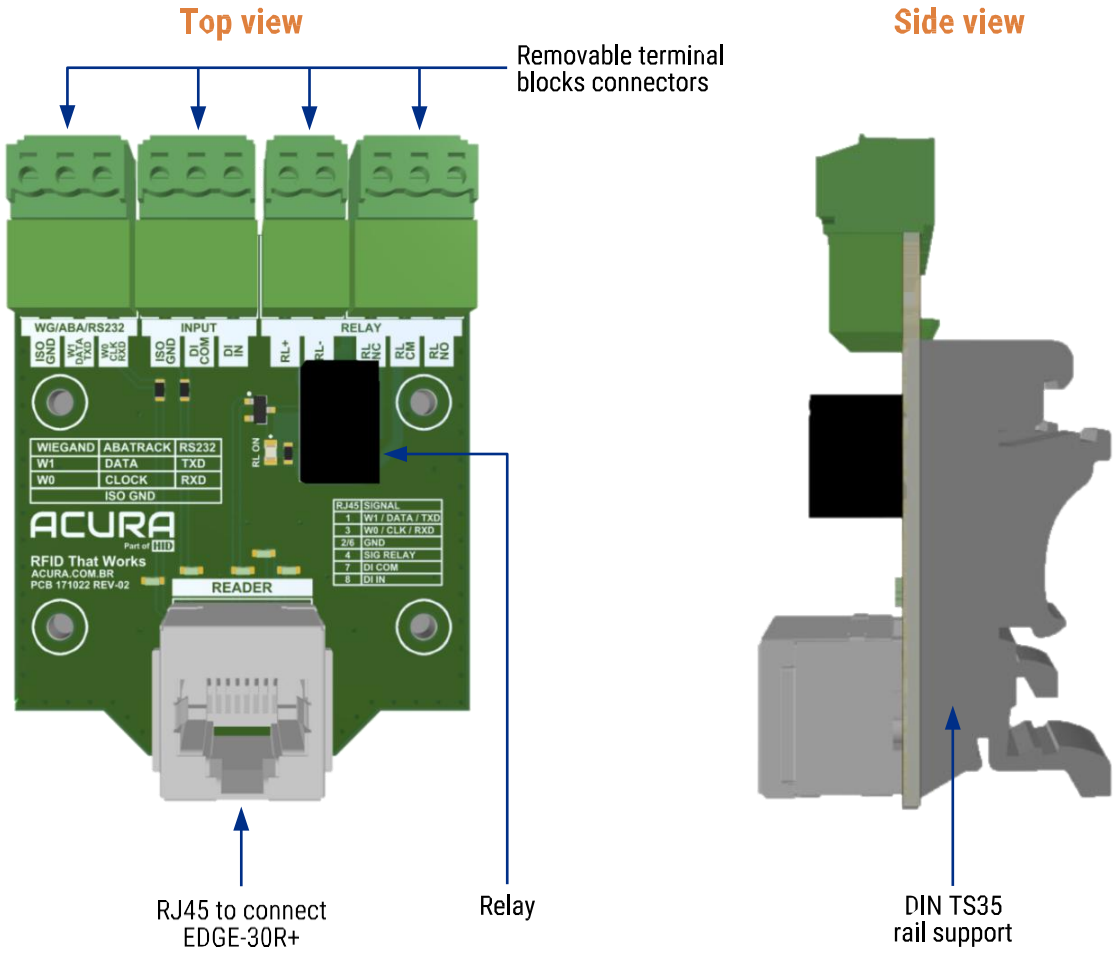
Transponder Protocol	
Protocol	ISO 18000-6C (EPC Gen2)
Interface RF	
RF Output power	From 0 to 30 dBm with 0.5 dBm increment
Regulation	ANATEL (Brazil) 902 – 907MHz and 915 – 928MHz FCC (USA) 902 – 928MHz
Mode	Frequency Hopping
Modulation/RF Coding	PR-ASK / Miller4 (M4)
Backscatter Link Frequency (BLF)	250KHz
Performance	
Reading distance (the reading distance can vary depending on the tag model, usage mode, and environment)	6 meters
Data/Control Interface	
	POE connector: • Ethernet 10/100 Mbps (1.5KV RMS insulation) • POE (IEEE 802.3af standard) • POE modes supported: - Mode A (mixed DC & data) - Mode B (DC on spares)
	SIG connector: • 1x Optically isolated Digital Input: - 1KV RMS insulation. - Supports Dry Contact, NPN (Sinking), and PNP circuit (Sourcing). Minimum pulse width: 100ms. - High Level (3.0 to 24.0 VDC), Low Level (0 to 2.0 VDC). • 1x optically isolated Digital Output: - 1KV RMS insulation. - Controlled by tag reading or/and ASCII commands. - High Level (5.0 VDC), Low Level (0 VDC)
Programming	Does not require software development using API/SDK. With a simple Socket connection, the tag read results can be processed.

Energy	
Power	IEEE 802.3af Powered Device (PD) PD Power Class: Class 3, 12.95W Operating PoE Voltage: 37VDC to 57VDC
Consumption	Max. 15W. With maximum power and high duty cycle
Physical characteristics	
IP rating	IP65 (RJ45 ingress protection cover and cable plug jacket included)
Integrated antenna	Patch circular polarized antenna with 7.5 dBic of gain (RHCP)
Dimensions	220 x 220 x 128 mm (HxWxD) with Cable Plug Jacket
Weight	1.4Kg (3.08lb)
Operation temperature	-10ºC to 65ºC (14°F to 149°F)
Storage temperature	-10ºC to 70ºC (14°F to 158°F)
Humidity	95%
Mounting type	With mounting support on the back side for poles (Ø 1" to 1.75" and 1.75" to 3") or flat surfaces (wall)
Integrated antenna	
Frequency range	902 - 928MHz
Gain	6 dBi
VSWR	1.3:1 (max.)
-3dB Beamwidth (Elevation)	66° ±4°
-3dB Beamwidth (Azimuth)	62° ±2°
Polarization	Circular (RHCP)

2.2 Hardware interface board

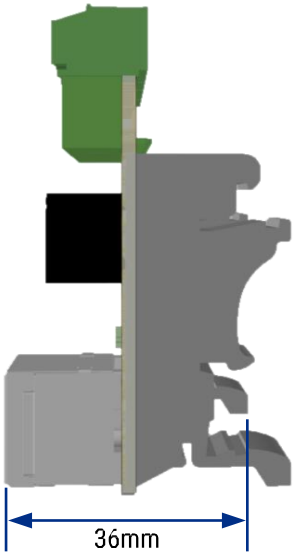
The hardware interface board is a passive printed circuit board design to help the interconnection between the EDGE-30R+ and other devices, for example: Access Control Controllers, Sensors, and Gate Controllers.

The board was designed to be compact, occupying a minimum of panel space, and has removable terminal blocks installed for wire connections and an RJ45 for EDGE-35 connection.

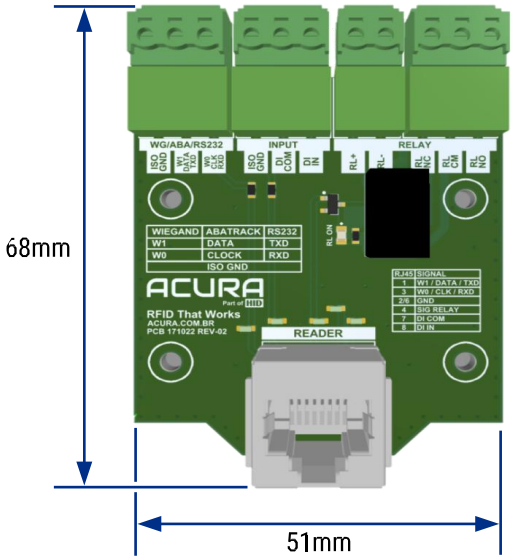


2.2.1 Dimensions

Side view



Rear view



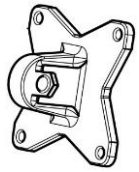
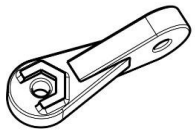
2.2.2 Specification (hardware interface board)

Physical characteristics	
IP rating	Internal use only
Connectors	Removable Terminal Block Plug for wires 16-30 AWG
Relay	Coil: 24VDC, 10mA Contact rating: 1 A, 30 VDC at 40°C / 0.3 A, 110 VDC at 40°C
Dimensions	68 x 51 x 36 mm (HxWxD) with Terminal Block Plug connected
Weight	38g (0.084lb)
Operation temperature	-10ºC to 65ºC (14°F to 149°F)
Storage temperature	-10ºC to 70ºC (14°F to 158°F)
Humidity	95%
Mounting type	Compatible with DIN TS35 rail (35x7.5mm)

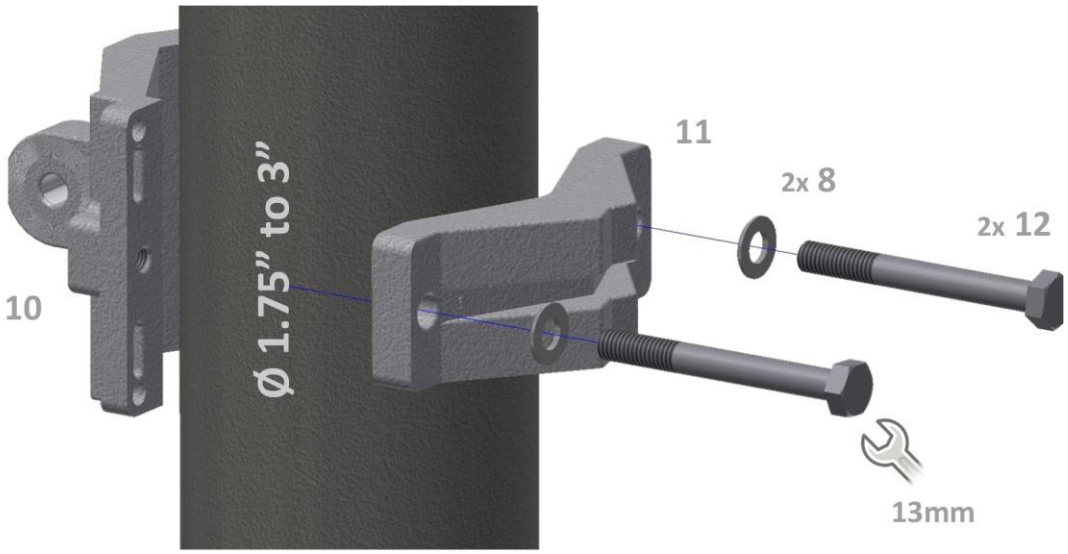
Section 03

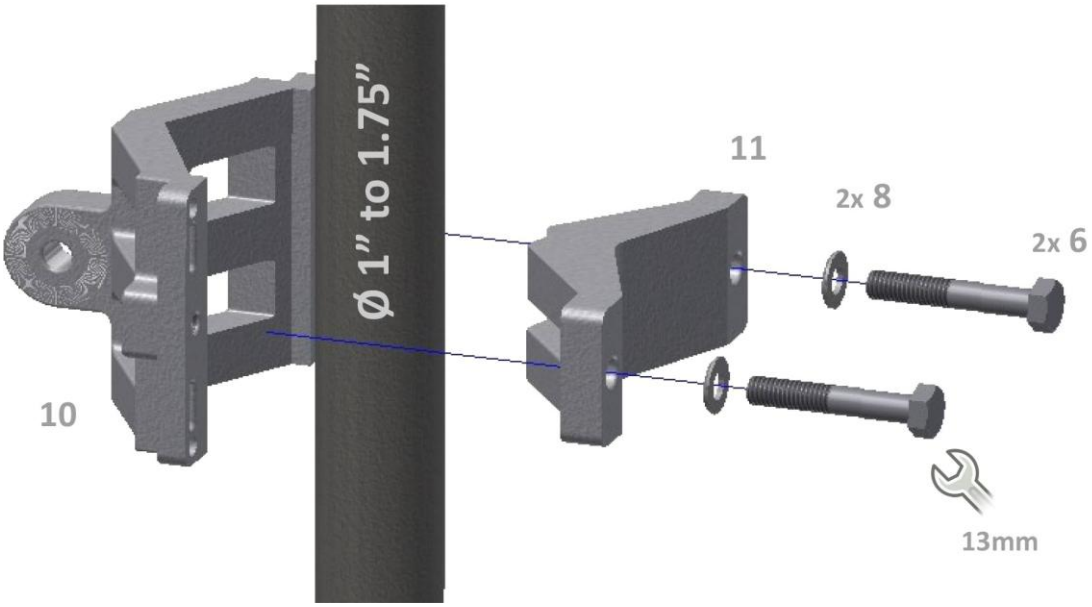
Installation

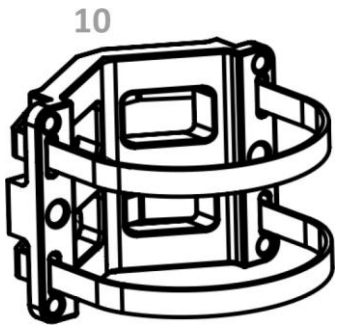
3.1 Mounting kit components

Component number	Quantity	Component image
1. Reader base bracket	1	
2. Flat washer M5	4	
3. Spring washer M5	4	
4. Nut M5	4	
5. Bracket arm	1	
6. Bolt M8x40	4	
7. Flat washer M8	4	
8. Spring washer M8	4	
9. Nut M8	2	
10. Pole/wall bracket	1	
11. Clamping bracket	1	
12. Bolt M8x70	2	
13. Screw M5x16	4	

3.1.1 Mounting kit assembly

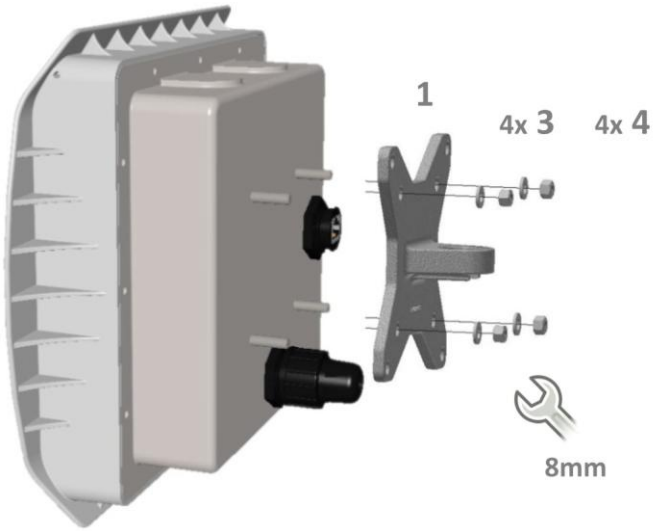


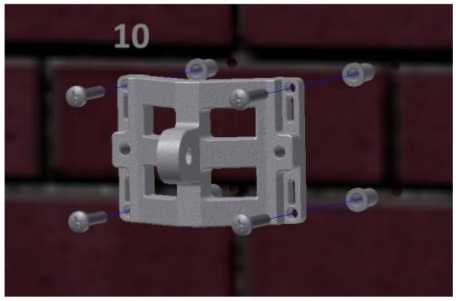




Note: If fastening the pole/wall bracket to a pole or tube with a diameter exceeding 3", it is recommended that two appropriately sized screw hose clamps (not supplied) are used. Items 11, 6, 8 and 7 are not required if mounting the pole/wall bracket using this method.

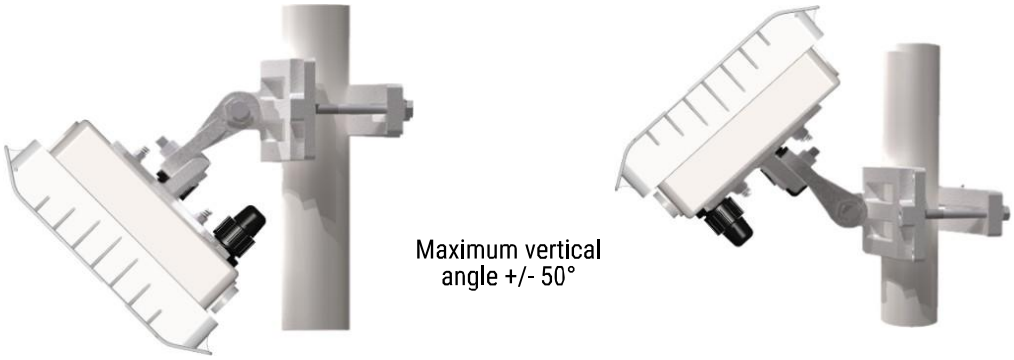
3.1.2 Mounting the EDGE-35





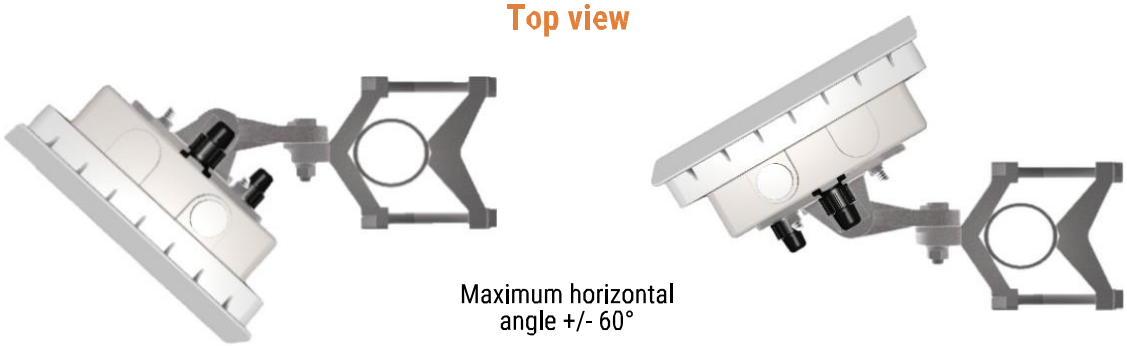
3.1.3 Mounting kit operational angles

Side view



Maximum vertical angle +/- 50°

Top view



Maximum horizontal angle +/- 60°

3.1.4 Unused connector cover

> **Important: A cover must be installed on all RJ45 ports to protect against the ingress of water, dust, and debris. If any ports are left exposed to the elements with no cover installed, your product warranty will be void.**

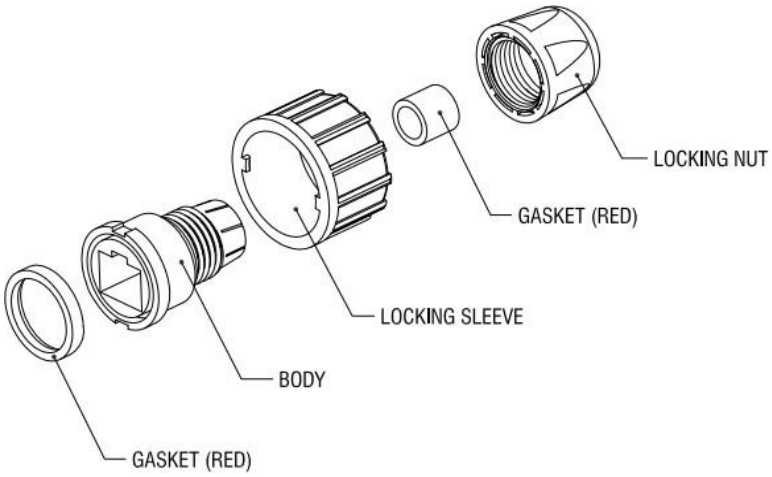
The unused connector cover must be installed to protect unused ports from the ingress of water, dust, and debris.

3.1.5 RJ45 Cable plug jacket

The RJ45 cable plug jacket must be used when installing RJ45 cables.

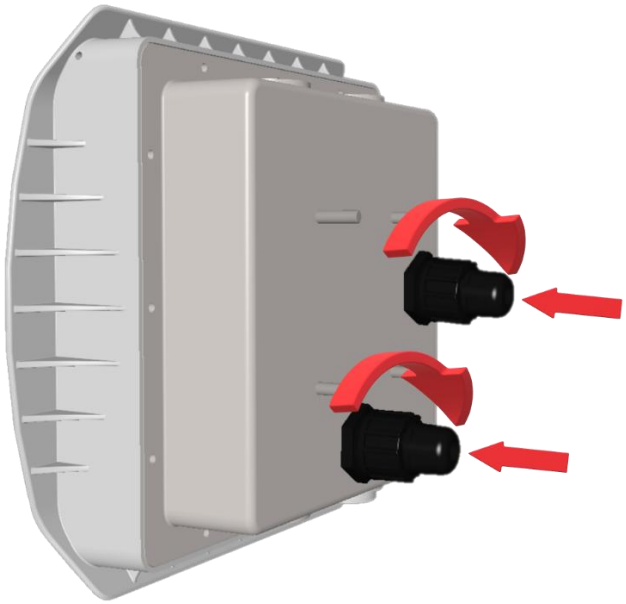
The jacket protects the units port, and installed cable from the ingress of water, dust, and debris.

Assembly



Installing the RJ45 cable plug jacket

- Ensure the RJ45 connector release tab is in the correct orientation before inserting it into the port.
- Insert the RJ45 cable into the port, ensuring it is fully pressed in.
- Rotate the plug jackets locking sleve half a turn, to fully lock the sleve into place.
- Tighten the locking nut.

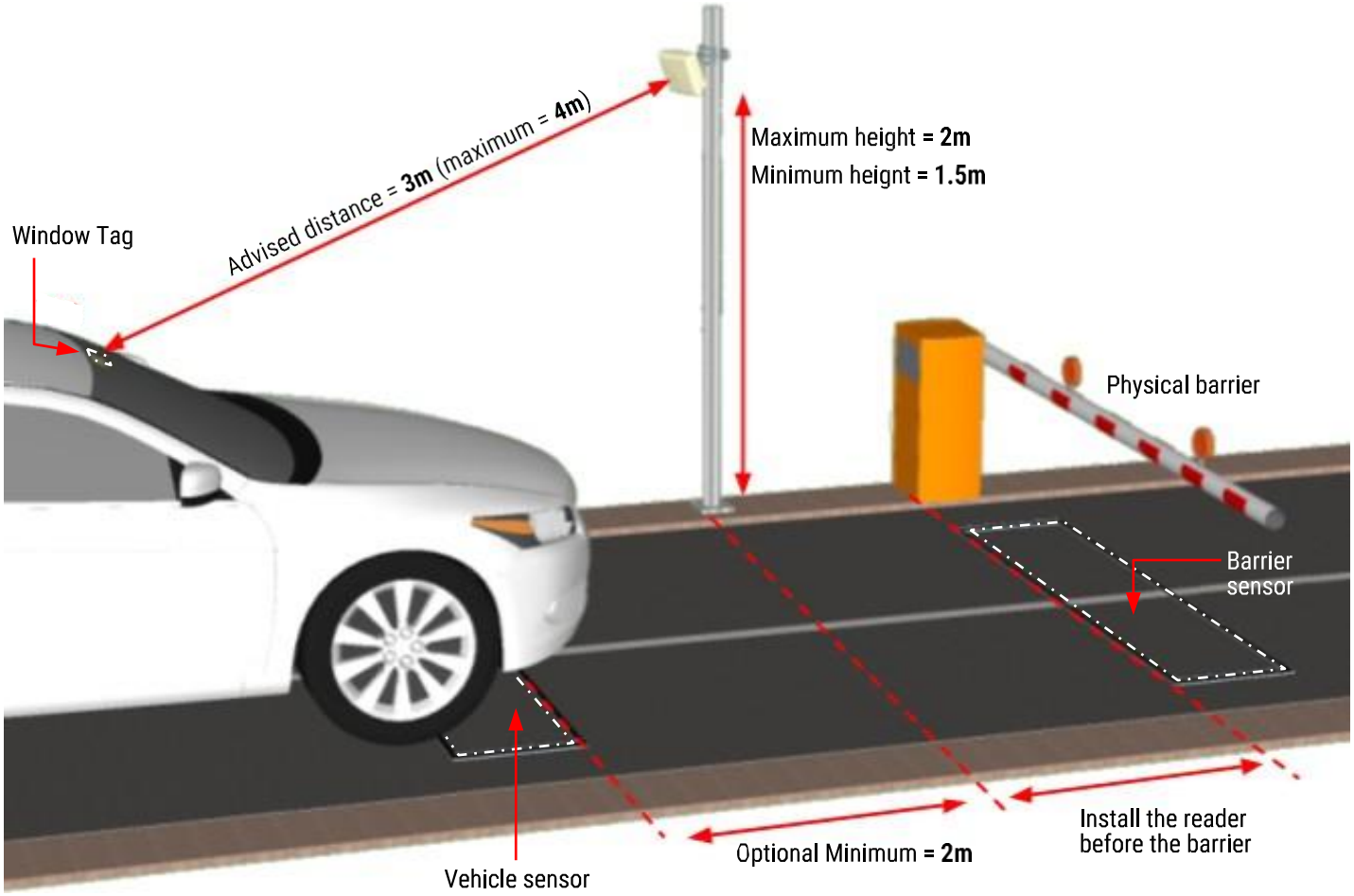


3.2 EDGE-35 recommended installation positions

> **Note:** To achieve the optimum reading performance of a passive UHF tag installed on a vehicles windshield, the following specified measurements should be implemented.

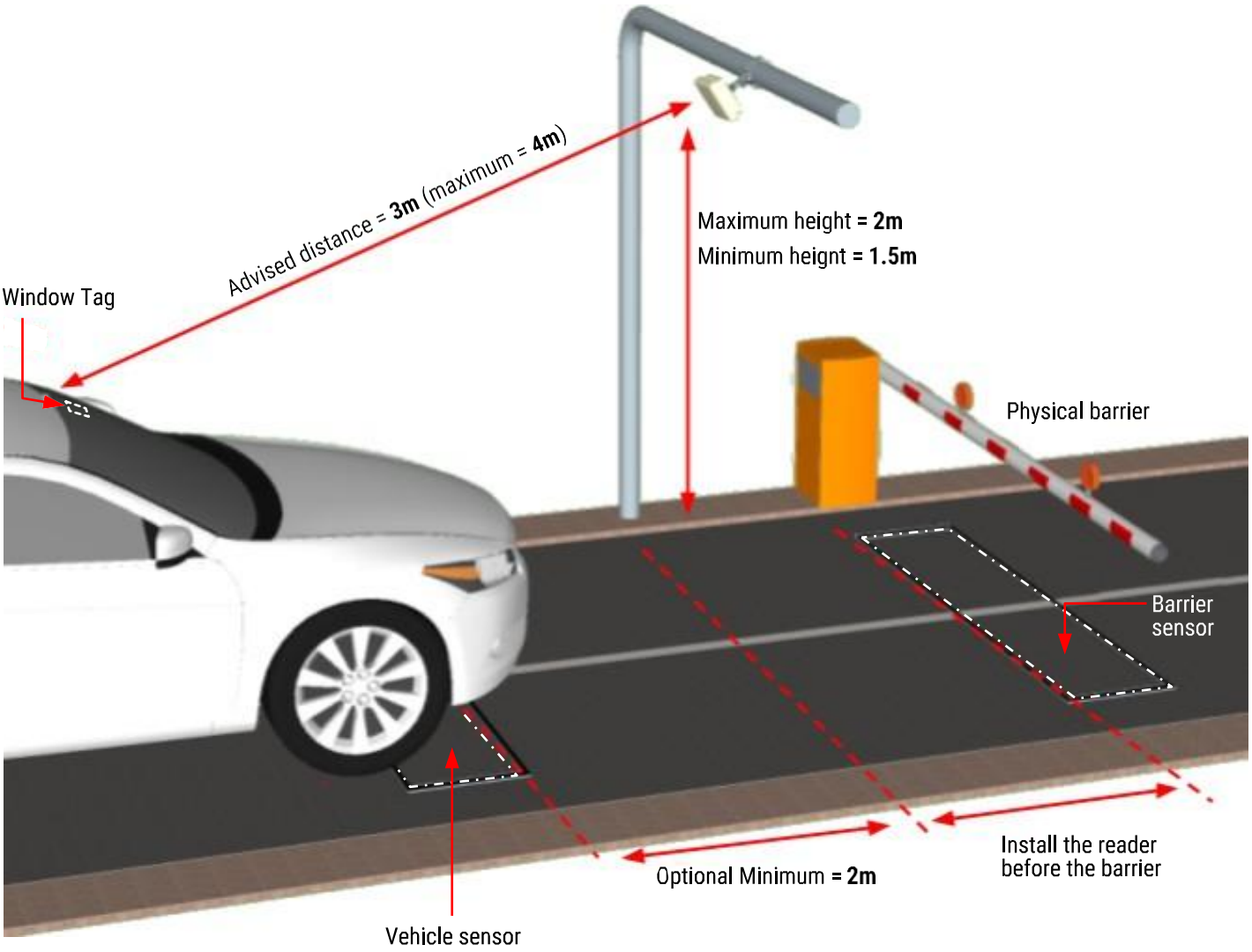
3.2.1 EDGE-35 located at the side of the lane

The angle of the reader will depend on the installation height. The front side of the reader should be pointed to where the tag will be at the ideal reading distance of 3m, as shown. You can measure 3m from the center of the installed reader 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.



3.2.2 EDGE-35 located in the center of the lane

The angle of the reader will depend on the installation height. The front side of the reader should be pointed to where the tag will be at the ideal reading distance of 3m, as shown. You can measure 3m from the center of the installed reader 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.



3.3 Troubleshooting - tag reading

When there is a multi-lane highway that require tags to be read in each lane, tag readings may inadvertently be taken from vehicles in other lanes.

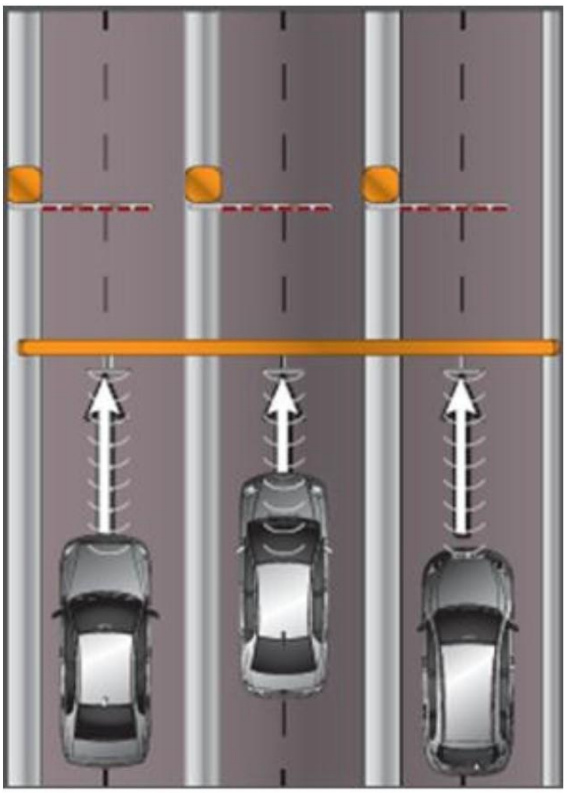
To minimize the occurrence of unwanted tag reads as much as possible, the following may be performed:

1. Filter unwanted side/adjacent readings, by using the **Filter by tag signal level** RSSI parameter.
2. Adjusting the reading power combined with the **RSSI** filter. In many cases the reading power can be decreased without compromise tag reading on the correct lane or position.
3. Adjusting the installation angle of the reader.

> **Note:** All tag reading tests must be performed with the tag correctly installed in the vehicle, for example, on the windshield or headlight lens.

> **Important: Tags developed for windshields should not be tested outside a windshield. If they are, the test results will be different from the final application results.**

Examples of multi-lane installations



3.4 Reader operation - visual feedback

Located on the bottom side of the reader case, there is an operating status lens containing a green and red LED.

The LED lens will display one of four different status messages, using either the green or red LED:

Green LED illumination status message

	LED is illuminated solid green: Indicates tag reading
	LED is illuminated green and flashing at a consistent interval: Indicates continuous reading mode.
	LED is solid green, gives one flash, then repeats sequence (solid, flash, solid, flash): Indicates trigger reading mode.

Red LED illumination status message

	LED is illuminated red and flashing at a consistent interval: Indicates an internal error.

3.5 Installation check list

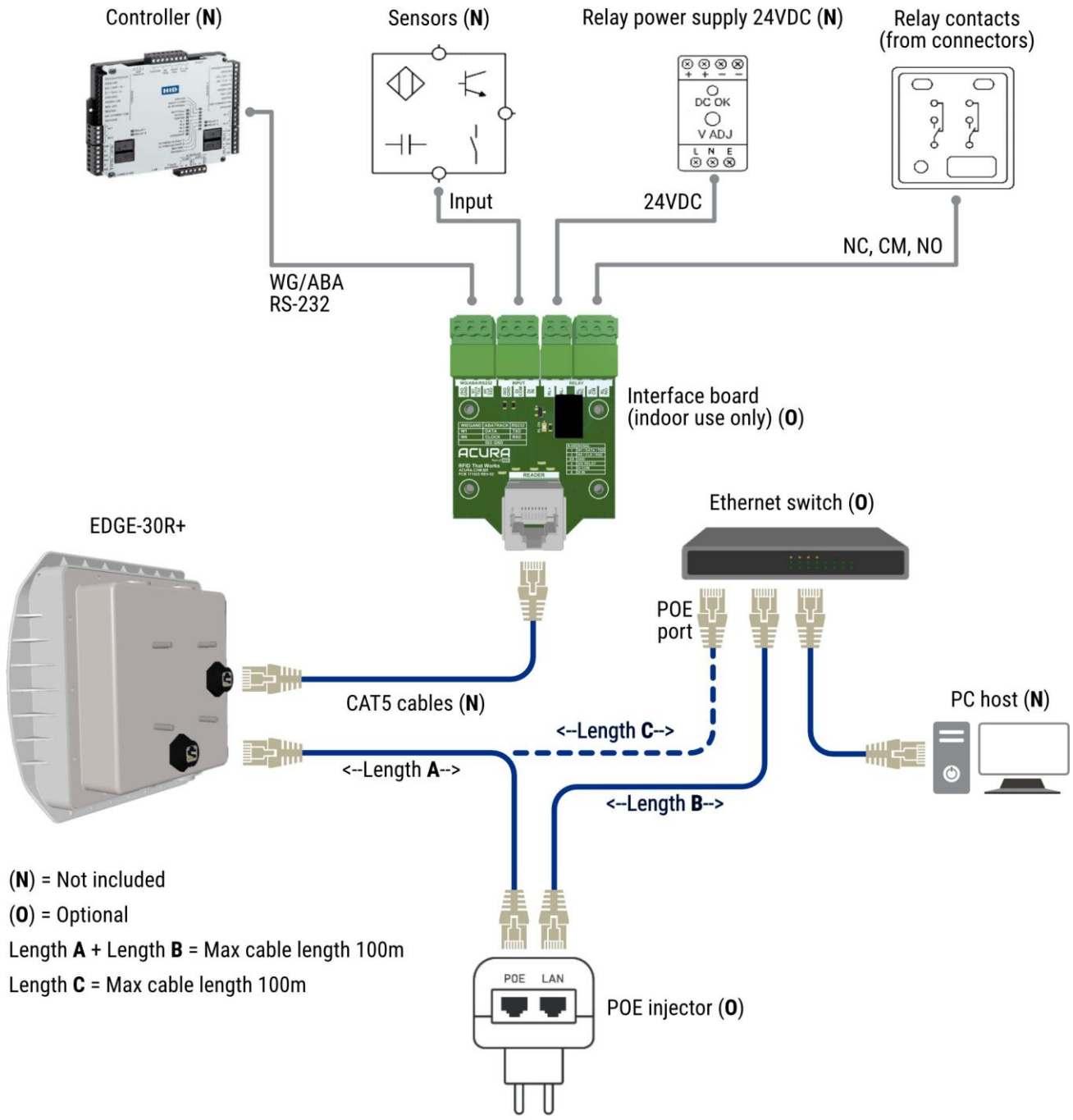
- [ ] Check the Ethernet cable pinout, both sides, according to the chosen standard, and the RJ45 crimp quality, as in **Port pinout** section.
- [ ] If using the Serial interface (Wiegand/Clock-and-Data or RS-232) check the electrical connections between reader and your Controller board [W0 <-> W0, W1 <-> W1, TXD <-> RX, RXD <-> TX…] and so on.
- [ ] Check if all Cable Plug Jacket or RJ45 Cover are well connected and locked, as in **RJ45 Cable plug jacket** section.
- [ ] Check on the back of the Cable Plug Jacket if the locking nut is fastened.
- [ ] Take note or a photo of the side label of the reader that contains the MAC address and serial number.
- [ ] Make sure all screws are tight, following the **Mounting kit assembly** section.

Section 04

Electrical

4.1 Connection diagram

Note: The POE Injector can be replaced by an Ethernet Switch with POE port supporting IEE 802.3af standard. The 24VDC power supply is only required if the Relay will be used.



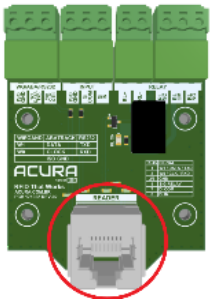
4.2 Port pinout

4.2.1 POE port pinout

POE port	Pins	T568A color	T568B color	10/100 mode B DC on spares		10/100 mode A mixed DC and data	
	Pin 1	White/green stripe	White/orange stripe	RX+		RX+	DC+
	Pin 2	Green solid	Orange solid	RX-		RX-	DC+
	Pin 3	White/orange stripe	White/green stripe	TX+		TX+	DC-
	Pin 4	Blue solid	Blue solid		DC+	Unused	
	Pin 5	White/blue stripe	White/blue stripe		DC+	Unused	
	Pin 6	Orange solid	Green solid	TX-		TX-	DC-
	Pin 7	White/brown stripe	White/brown stripe		DC-	Unused	
	Pin 8	Brown solid	Brown solid		DC-	Unused	

Note: All pins are electrically isolated. Either T568A or T568B standard can be used.

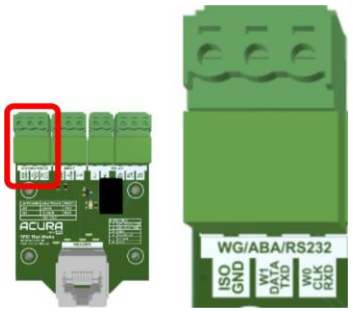
4.2.2 SIG port pinout

SIG port	Pins	T568A color	T568B color	Wiegand	Abatrack	RS-232
 	Pin 1	White/green stripe	White/orange stripe	W1	DATA	TXD
	Pin 2	Green solid	Orange solid	ISO GND		
	Pin 3	White/orange stripe	White/green stripe	W0	CLK	RXD
	Pin 4	Blue solid	Blue solid	DIG OUT RELAY		
	Pin 5	White/blue stripe	White/blue stripe	Not used		
	Pin 6	Orange solid	Green solid	ISO GND		
	Pin 7	White/brown stripe	White/brown stripe	DI COM		
	Pin 8	Brown solid	Brown solid	DI IN		

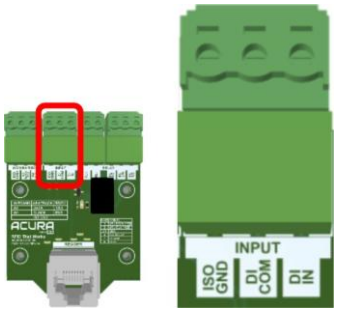
Note: All pins are electrically isolated. Either T568A or T568B standard can be used.

4.3 Interface board connections

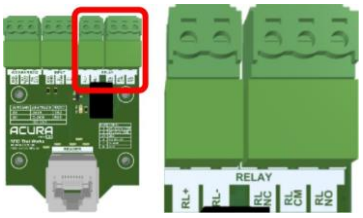
4.3.1 Wiegand/Abatrack/RS-232

Interface board	WIEGAND pins	Clock-and-Data pins	RS-232 pins
	W1 (output)	DATA (output)	TXD (output)
	W0 (output)	CLOCK (output)	RXD (input)
	ISO GND (reference)		
	To avoid noise coupling that may compromise the communication integrity between the reader and the Controller/PC, avoid passing the cable near power supply, lamp reactors, electrical power cables or other electromagnetic noise sources.		
	Maximum cable length 15m.		

4.3.2 Digital input (sensors)

Interface board	Dry Contact output sensor	NPN output sensor	PNP output sensor
	ISO GND	DI COM	DI COM
	DI IN	DI IN	DI IN
	Minimum pulse width: 100ms.		
	High Level (+3.0 to +24.0VDC)		
	Low Level (0 to +2.0VDC)		
	Maximum voltage in NPN and PNP is +24VDC		
	The input signal debouncing is fixed in 500ms.		
	Maximum recommended cable length 30m.		

4.3.3 Output (Relay)

Interface board	Pins	Description
	RL+	Positive from external 24VDC power supply
	RL-	GND from external 24VDC power supply
	RL NC	Relay Normally Closed pin
	RL CM	Relay Common pin
	RL NO	Relay Normally Open pin
	To use the on-board relay, an external +24VDC power supply is required.	
	Maximum recommended cable length 30m.	

Revision history

Date	Description	Revision
October 2025	Minor updates to specifications.	A.2
October 2025	Document renamed to EDGE-35 Hardware Install Guide.	A.1
October 2025	Initial release.	A.0

Tel.: 11 3028-4600 | E-mail: acura@acura.com.br | Site: www.ACURA.com.br

PLT-07365, Rev. A.3

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