Your Expert Partner for **Human Machine Interfaces**

Passenger Interface

Charge. Connect. Communicate.

www.eao.com/passenger-interface

The Connected Passenger

Charge. Connect. Communicate.

In our digital world the ability to connect people, *smart devices and machines is a prerequisite to flawlessly access information and services.*

Passenger Interface is a transformational technology innovation uniquely designed for public transport passengers. It will help your passengers' electronic devices to stay powered and connected providing opportunistic charging throughout their journey and beyond – remaining stress free with no low battery anxiety and without the need to carry cables and chargers.

Passengers' journey experience will be enhanced through the peace of mind and the convenience of their "own" secure phone charger.

The Passenger Interface is easy and intuitive to use. The innovative iBeacon technology can be integrated with the train operator's app to provide tailored passenger information, smart ticketing and on-board services personalised to the customer. The technology can be used to gain passenger insight and enhance the general passenger journey experience.

The Passenger Interface will broaden the role of public transport operators towards digital service technology providers to deliver additional value for their customers.

EAO, a leading supplier to the global rail industry, has continuously designed and supplied project solutions to train builders and operators since 1947. Reliable products, extended warranties and long-term spares availability make EAO your expert partner for HMI.

Further information is available at
http://eao.com/passenger-interface

Table top charger.

SliderFLEX chargers.

Passenger Interface

Charge, connect, communicate.

The fully railway certified Passenger Interface enables passengers to access additional services, charge their phones during the journey and enables train operators to provide them tailored content.

The connected passenger

Passengers use their mobile phones for entertainment, information and for their personal security. They value on-board charging as well as connectivity to the internet, their friends, family and colleagues as important factors in the quality of their passenger experience. Intensive use means that mobile phones will often lose charge on a journey and phone charger cables can be lost, get broken or simply forgotten and this can add to travellers' stress and cause low battery anxiety.

Every charger can incorporate the innovative iBeacon technology that transmits a unique ID to locate the vehicle and seat position for smart ticketing, on-board passenger information and for tailored marketing messages*.

The future is wireless

Modern phones can be wirelessly charged through the Qi inductive charging system for iOS and Android phones. The majority of new phones released after 2017 have built-in inductive wireless chargers. Like the disappearing headphone socket, phone companies are considering whether the charging socket could be removed entirely in the medium term – so wireless charging is key to future proof any new charging infrastructure installed in the carriage. The location of the small charger receiver within the phone is not standardised and until the release of EAO's multi-coil chargers they had needed to be precisely placed on the charging transmitter.

The Passenger Interface is a range of mobile phone charging products that can give every passenger access to convenient, reliable phone charging. The Passenger Interface includes both Qi wireless chargers and also a standard USB-A socket. The multi-coil charger overcomes issues with phone placement on the inductive charging transmitter.

The Passenger Interface comes in four standard variants; customised versions are also possible:

- Seatback mounted multi-coil charger in metal holster with secure soft-touch phone clamp and USB socket
- Seatback SliderFLEX version for portrait/landscape viewing with USB charging socket
- Table top, round single coil charger for mounting in a table with separate table edge USB socket (via a custom cable and mounting bracket)
- Rectangular multi-coil charger with USB socket for flexible design integration options

Wireless charging is perfectly safe

The Passenger Interface has been tested in accordance with EN62311:2008 Assessment of electronic and electrical equipment related to human exposure for electromagnetic fields and presents no health hazard, even to people with pacemakers, or other medical implants.

**Subject to app development and cloud based service fees for the operator.*

The iBeacon Concept

Know your customer, know their location.

The iBeacon technology in the Passenger Interface allows train operators to know the passenger's seat and carriage location during the journey.

It's all about the app

When a passenger uses Passenger Interface to wirelessly charge their phone, the Bluetooth Low Energy (BLE) iBeacon connects with the phone and starts sending its unique ID. The passenger's smartphone, recognises the iBeacon thanks to EAO's integrated API (*), and sends this ID to the Passenger Interface Cloud.

The Passenger Interface Cloud translates this information into the seat/coach/train ID where the Passenger Interface is located and sends back train, carriage and seat position ID to the train operator's cloud, no personal details about the phone or user are transmitted. At this point, the seat location of the passenger is made known to the train operator and the passenger will get a notification to open the train operator's app if it is installed on their smartphone. Communication with the passenger is established through the app installed on his smartphone.

Passengers using USB charging will need to touch their phones once onto the charger unit to activate the iBeacon.

Improve your customers journey experience

Get closer to your customers – develop your app and on-board systems to provide tailored passenger information, smart ticketing, trolley service requests, on-board services, and to deliver targeted marketing messages.

Get the edge, stay ahead

Passengers often have a choice between different train operators, and between travel modes. Keep them charged, keep then connected, keep them coming back!

*Subject to app development and cloud based service fees for the operator.

Benefits to the train operator.

- Clear enhancement to the passenger experience and the operator's image
- Can be retrofitted during refurbishment or as a separate upgrade
- The SliderFLEX and holster accept most modern smart phones
- Can be branded with the service operator's or sponsor's logo
- Additional revenues through tailored passenger services

Improve passenger experience while generating revenue
The iBeacon links the seat position to the individual passenger through the operator's app. Realise opportunities for smart ticketing, trolley services, tailored passenger information and targeted marketing messages to generate revenue and drive customer loyalty.

Refurbish and retrofit
With both a seatback (holster or SliderFLEX version) and a table top version EAO can work with seat and table partners to produce interface plates and tailor the product design to fit and match to the train operators seats and tables. The holster can also be fitted to grab poles and partitions for high density commuter applications.

Gather data – gain insight
Analyse passenger behaviour, monitor trends and drive service improvements through better customer knowledge.

A comprehensive product range
Seatback chargers can give passengers, even those in airline style seating, access to device charging. The holster and SliderFLEX securely hold the phone during inductive charging and also allow charging through the USB socket.

The table mounted round chargers are either fitted to the bottom of the table, or from the top using the Top Loading Charger Assembly or the Surface Mount Adaptor. The latest fast charge 10 W versions can charge at up to 2 A inductive or 2 A USB or charge two devices each at 1 A. Whilst the 5 W chargers produce a maximum charging current of 1 A to USB and 1 A inductive.

Accessories
Rail industry approved AC / DC or DC / DC power supplies with IP40 or IP65 sealing and two or four 5 V outputs for 5 W charger, or 12 V outputs are 10 W chargers. All connection cables are available for easy integration of the charging system.

Seatback holster version
Aluminium housing with secure, nylon spring clip holder

Seatback SliderFLEX
Aluminium housing with sliding clamp

Table top single coil version

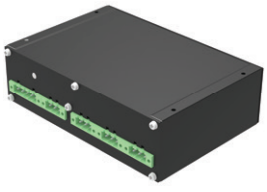
Rectangular multi-coil version

Top Loading Charger Assembly

Surface Mount Adapter

Two USB Output Power Supply

Four USB Output Power Supply



Benefits to the passenger.

- Charge phone without inconvenience of carrying plugs and cables
- Opportunistic charging to avoid ‘low battery anxiety’
- Access to additional on-board services during journey
- Profit from tailored promotional offers during and after the journey

Passenger information and trolley services
Using the operator's app, passengers can get travel updates, request food and drink trolley services and profit from targeted marketing messages about added value services.

Convenient, reliable, available
The Passenger Interface offers convenient charging with, or without a USB cable, providing a charging service wherever the passenger is seated. The seatback holster and SliderFLEX gently, but securely hold the phone in place whilst still showing up to 90 % of the screen area.

Ticketing
The iBeacon can link the passenger’s phone to their seat position in the train operator's app, so that with smart ticketing there is no need to present their ticket.*

Charge it and use it
No need to conserve power, passengers can continue to use their phones whilst they are provided with opportunistic charging. A second device can be charged simultaneously via USB. They can stay in touch and keep entertained without low battery anxiety.

** Subject to app development and cloud based service fees for the operator.*

Smart ticketing
Your phone is your ticket

Journey planning

Connect to the train operators app

Specifications and dimensions
Seatback SliderFLEX version.

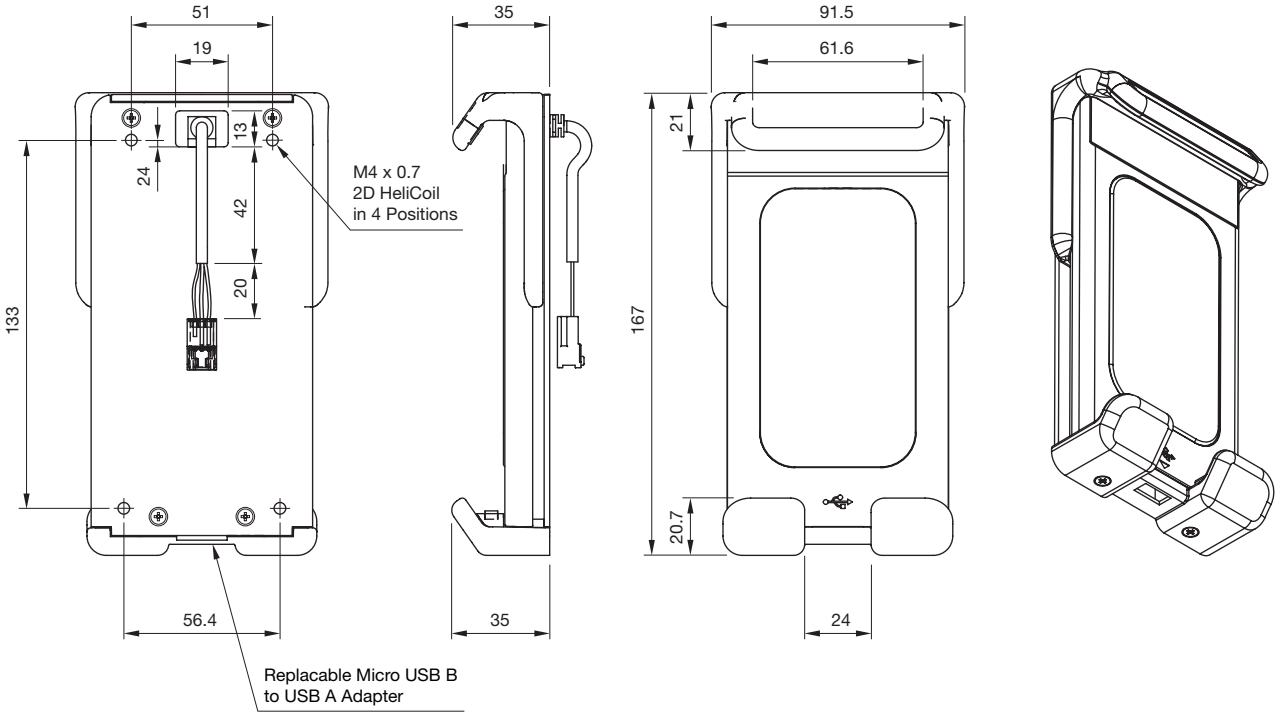
Mechanical characteristics
- Durable powder coated standard RAL 9006 white aluminium (silver) or custom coloured housing
- Soft-touch, multi-coil charger
- Sliding cushioned phone clamp
- Micro USB-B power input and USB-A power output socket

Name	Part No.
Seatback SliderFLEX iBeacon 5 W	PIF-0SF-005-iB
Seatback SliderFLEX 5 W	PIF-0SF-005
Seatback SliderFLEX iBeacon 10 W	PIF-0SF-010-iB
Seatback SliderFLEX 10 W	PIF-0SF-010

Electrical characteristics
- Power consumption 5 W – 10 W
- Input voltage 5 W version 5 V ±0,25 V
- Input voltage 10 W versions 12 V +0.5/-0.3 V
- Maximum output current (via Micro USB-B) 5 W versions 1.0 A, 10 W versions 2.0 A
- Maximum inductive charging current 5 W versions current 1.0 A, 10 W versions 2.0 A

Standards and certifications
- Qi Certified
- EN 50121-3-2 Railway Apparatus and EN 62311 Human exposure EMC compliant,
- EN 61373 Rail vehicle vibration tested
- EN 45545-2 Fire protection of railway vehicle – Part 2

Dimensions (mm)



Specifications and dimensions
Seatback holster version.

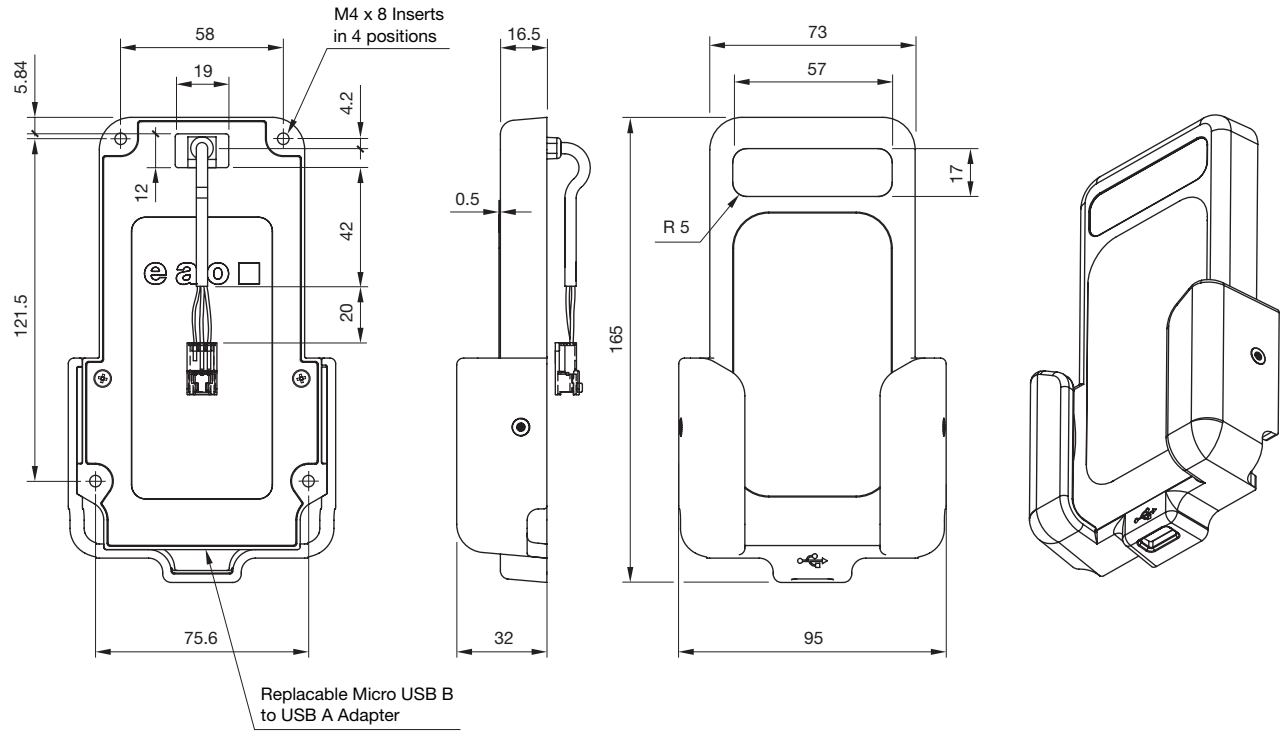
Mechanical characteristics
- Durable powder coated standard RAL 9006 white aluminium (silver) or custom coloured housing
- Soft-touch, multi-coil charger
- Soft-touch nylon spring clip phone holder
- Micro USB-B power input and USB-A power output socket

Name	Part No.
Seatback holster iBeacon 5 W	PIF-01H-005-iB
Seatback holster 5 W	PIF-01H-005
Seatback holster iBeacon 10 W	PIF-01H-010-iB
Seatback holster 10 W	PIF-01H-010

Electrical characteristics
- Power consumption 5 W – 10 W
- Input voltage 5 W version 5 V ±0,25 V
- Input voltage 10 W versions 12 V +0.5/-0.3 V
- Maximum output current (via Micro USB-B) 5 W versions 1.0 A, 10 W versions 2.0 A
- Maximum inductive charging current 5 W versions current 1.0 A, 10 W versions 2.0 A

Standards and certifications
- Qi Certified
- EN 50121-3-2 Railway Apparatus and EN 62311 Human exposure EMC compliant,
- EN 61373 Rail vehicle vibration tested
- EN 45545-2 Fire protection of railway vehicle – Part 2

Dimensions (mm)



Specifications and dimensions
Round table top single coil version.

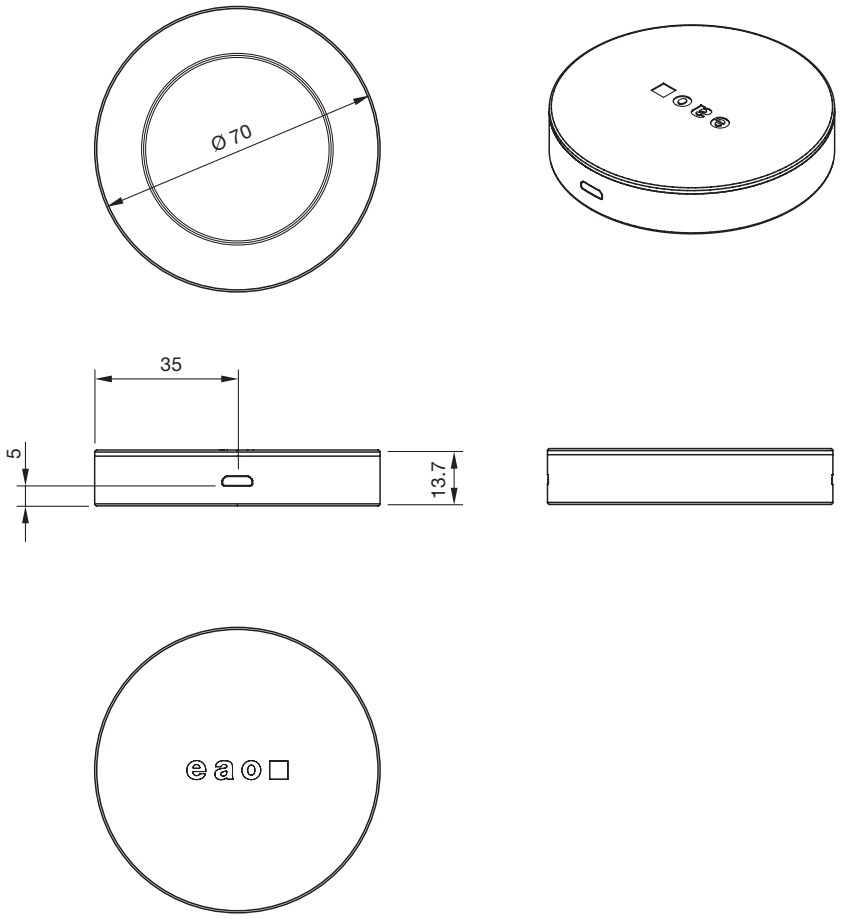
Mechanical characteristics
- Soft-touch rubber coated single coil charger
- Micro USB-B power input and output socket

Electrical characteristics
- Power consumption 5 W – 10 W
- Input voltage 5 W version 5 V ±0,25 V
- Input voltage 10 W versions 12 V +0.5/-0.3 V
- Maximum output current (via Micro USB-B)
  5 W versions 1.0 A, 10 W versions 2.0 A
- Maximum inductive charging current
  5 W versions current 1.0 A, 10 W versions 2.0 A

Standards and certifications
- Qi Certified
- EN 50121-3-2 Railway Apparatus and EN 62311
  Human exposure EMC compliant,
- EN 61373 Rail vehicle vibration tested
- EN 45545-2 Fire protection of railway vehicle – Part 2

Name	Part No.
Round table top single coil iBeacon 5 W	PIF-02T-005-iB
Round table top single coil 5 W	PIF-02T-005
Round table top single coil iBeacon 10 W	PIF-02T-010-iB
Round table top single coil 10 W	PIF-02T-010

Dimensions (mm)



Specifications and dimensions
Rectangular multi-coil version.

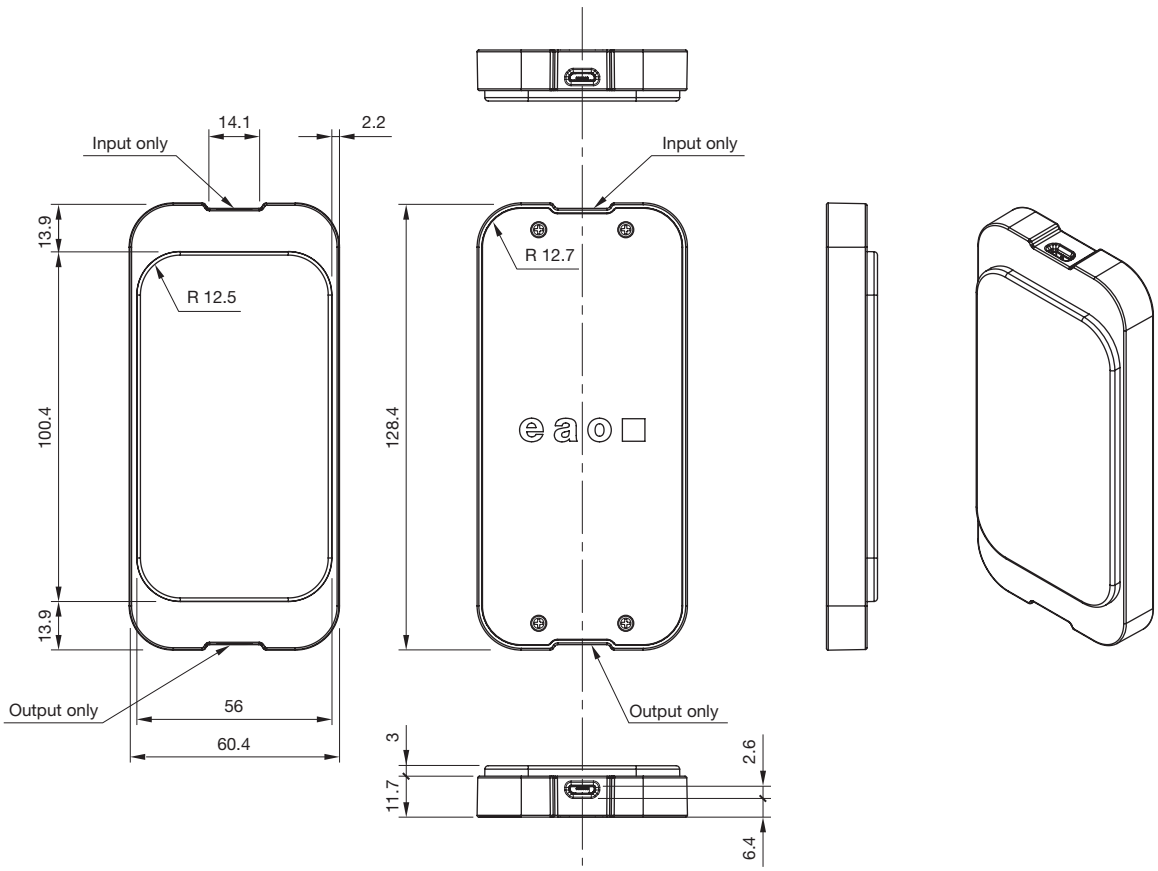
Mechanical characteristics
- Soft-touch multi-coil charger
- Micro USB-B power input and output socket

Electrical characteristics
- Power consumption 5 W – 10 W
- Input voltage 5 W version 5 V ±0,25 V
- Input voltage 10 W versions 12 V +0.5/-0.3 V
- Maximum output current (via Micro USB-B)
  5 W versions 1.0 A, 10 W versions 2.0 A
- Maximum inductive charging current
  5 W versions current 1.0 A, 10 W versions 2.0 A

Standards and certifications
- Qi Certified
- EN 50121-3-2 Railway Apparatus and EN 62311
  Human exposure EMC compliant
- EN 61373 Rail vehicle vibration tested
- EN 45545-2 Fire protection of railway vehicle – Part 2

Name	Part No.
Seat rectangular multi-coil iBeacon 5W	PIF-03S-005-iB
Seat rectangular multi-coil 5W	PIF-03S-005
Seat rectangular multi-coil iBeacon 10W	PIF-03S-010-iB
Seat rectangular multi-coil 10W	PIF-03S-010

Dimensions (mm)



Specifications and dimensions
Top loading charger assembly.

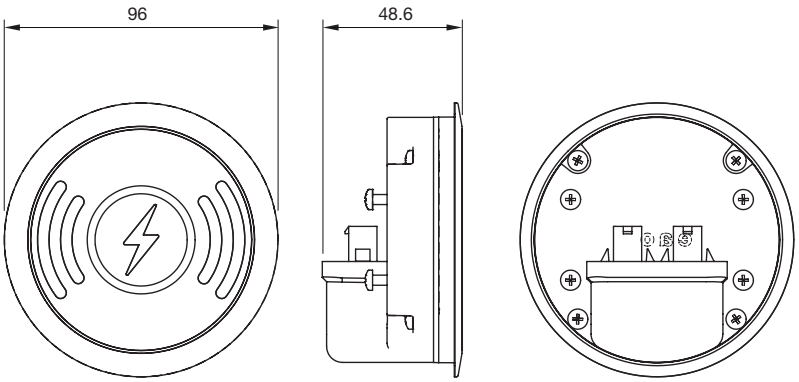
Mechanical characteristics
- Plastic body charger housing
- Integrated 5 W or 10 W USB and inductive charger
- Mate-N-Lock 172159-1 input and output power sockets

Electrical characteristics
- Power consumption 5 W – 10 W, input voltage 5 V ± 0.25 V
- Input voltage 5 W versions 5 V ± 0.25 V
- Input voltage 10 W versions 12 V + 0.5 / -0.3
- Maximum output current 5 W versions 1.0 A
- Maximum output current 10 W versions 2.0 A
- Maximum inductive charging current 5 W versions 1.0 A
- Maximum inductive charging current 10 W versions 2.0 A

Standards and certifications
- Qi Certified
- EN 50121-3-2 Railway Apparatus and EN 62311 Human exposure EMC compliant
- EN 61373 Rail vehicle vibration tested
- EN 45545-2 Fire protection of railway vehicle – Part 2

Name	Part No.
Top loading adaptor iBeacon 5 W	PIF-TLA-005-iB
Top loading adaptor 5 W	PIF-TLA-005
Top loading adaptor iBeacon 10 W	PIF-TLA-010-iB
Top loading adaptor 10 W	PIF-TLA-010

Dimensions (mm)



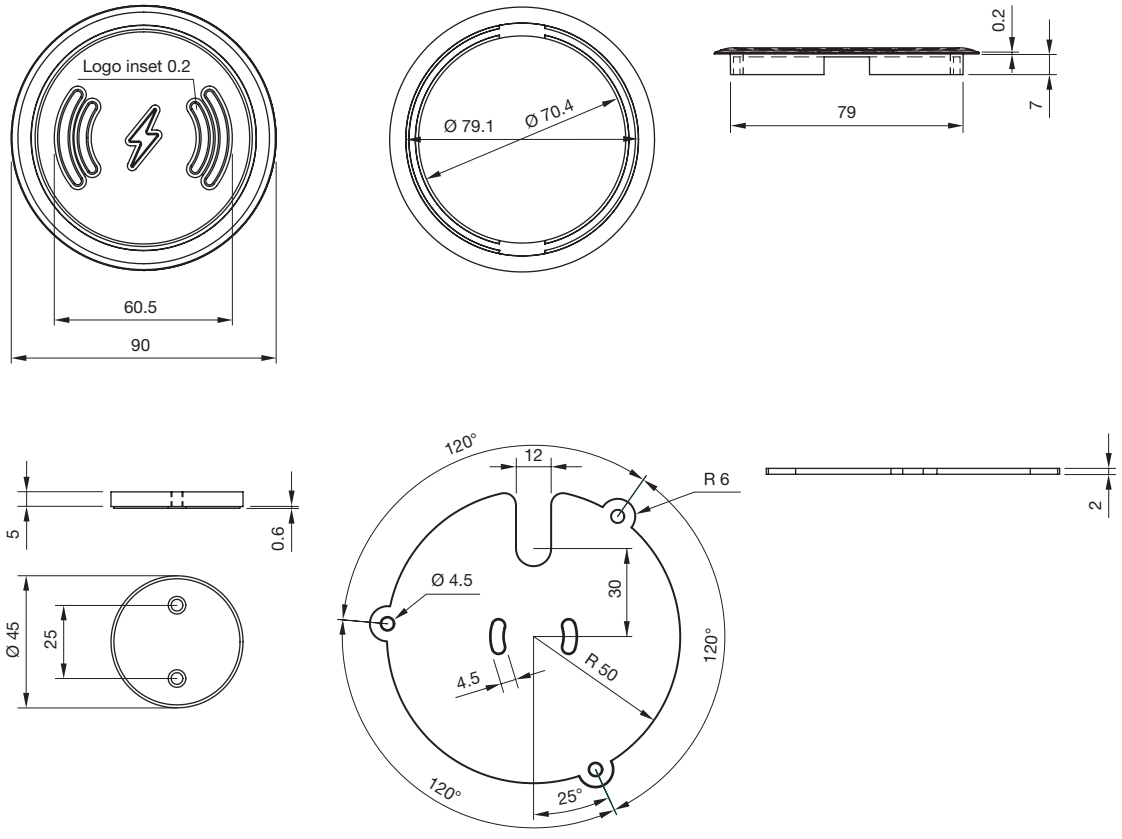
Specifications and dimensions
Surface mount charger adaptor.

Mechanical characteristics
- Plastic charger cover matt black
- Threaded pressure plate steel with 3 m VHB tape
- Rear clamping plate steel
- Hole cut-out 80 mm diameter
- Charger to be ordered separately

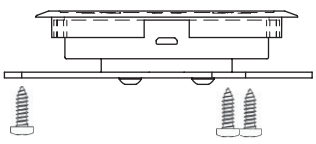
Standards and certifications
- EN 61373 Rail vehicle vibration tested
- EN 45545-2 Fire protection of railway vehicle – Part 2

Name	Part No.
Surface mount adaptor (no charger)	PIF-02T-SMC

Dimensions (mm)



Assembly view with optional clamping plate



Specifications and dimensions
Power supplies for chargers – 5 V output.

The EAO power supplies for the Passenger interface are a range of low power converters housed in a rugged IP40 enclosure for chassis mounting. They can be connected directly to the vehicle battery (DC input) or to an auxiliary 230 VAC or 120 VAC supply and provide either two or four independent 5 V outputs. They are compliant with international railway standards for shock, vibration, EMC voltage transients and fire protection.

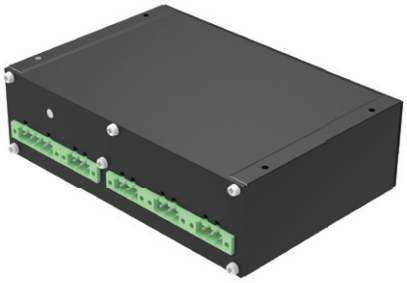
Mechanical characteristics
- Durable black anodised aluminium housing
- Protected to IP40 against dust (IP65 on request)
- Phoenix Contact connectors
- Connections: Phoenix MTSB: input 5 way, 3 way output

Electrical characteristics
- AC Input: 47 – 63 Hz, 90 – 253 AC
- DC Input: 16.8 – 50.4 VDC (24 V nominal input)
- DC Input: 50.4 – 137.5 VDC (72 V nominal input)
- DC Input: 15.8 – 137.5 VDC (24 – 110 V nominal input)
- Maximum output current (USB) 1.0 A (5 W), 2.0 A (10 W)
- Maximum inductive charging current 1.0 A (5 W), 2.0 A (10 W)
- Power output: 5.15 V, four way 40 W, two way 25 W

Standards and certifications
- EN50155 Electrical equipment for rolling stock
- EN 50121-3-2 Railway apparatus EMC compliant
- EN 61373 Rail vehicle vibration tested
- EN 45545-2 Fire protection of railway vehicle – Part 2
- EN 50153, EN 50124-1 Electrical safety

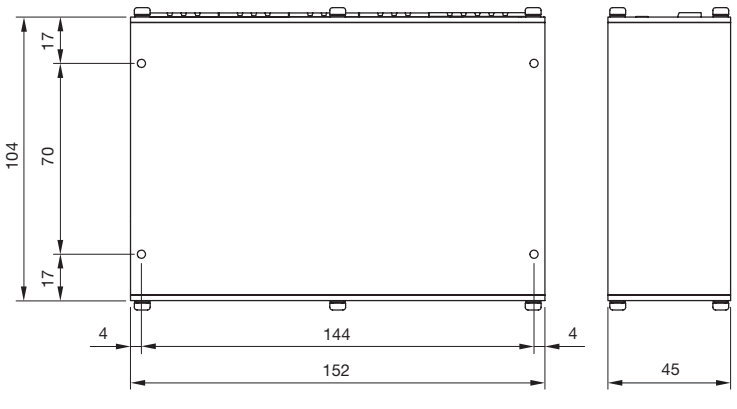
Name	Part No.
AC input 110 – 230 V, IP40 four outputs	PSU-110 – 230 AC-IP40-X4-5 V
DC input 24 – 36 V, IP40 four outputs	PSU-24 – 36 DC-IP40-X4-5 V
DC input 72 – 110 V, IP40, four outputs	PSU-72 – 110 DC-IP40-X4-5 V
AC input 110 – 230 V, IP40 two outputs	PSU-110 – 230 AC-IP40-X2-5 V
DC input 24 – 110 V, IP40 two outputs	PSU-24 – 110 DC-IP40-X2-5 V

Two outputs IP40 PSU.

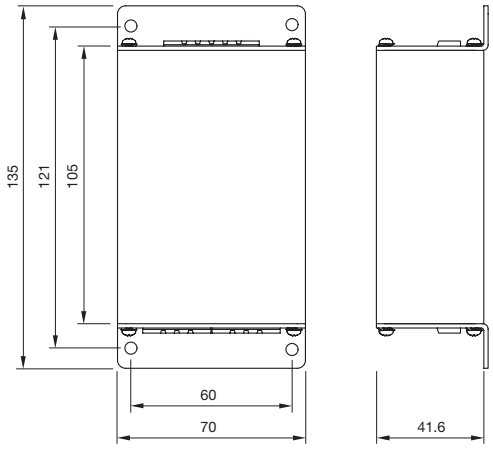


Four outputs IP40 PSU.

Dimensions (mm)



Four outputs PSU.



Two outputs PSU.

Specifications and dimensions
Power supplies for chargers – 12 V output.

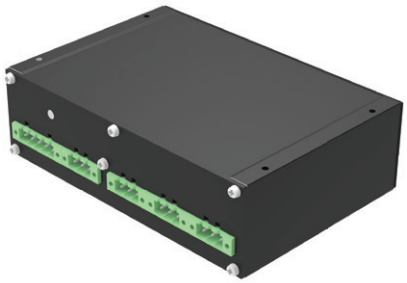
Mechanical characteristics
- Durable black anodised aluminium housing
- Protected to IP40 against dust (IP65 on request)
- Phoenix Contact connectors
- Connections: Phoenix MTSB: input 5 way, 3 way output

Electrical characteristics
- AC Input: 47 – 63 Hz, 90 – 253 AC
- DC Input: 16.8 – 50.4 VDC (24 V nominal input)
- DC Input: 50.4 – 137.5 VDC (72 V nominal input)
- DC Input: 15.8 – 137.5 VDC (24 – 110 V nominal input)
- DC Input: 66.0 – 137.5 VDC (110 V nominal input)
- Power output: 12.0 V, four way 40 W, two way 25 W
- Power output: 12.0 V, two way IP20 60 W

Standards and certifications
- EN 50155 Electrical equipment for rolling stock
- EN 50121-3-2 Railway apparatus EMC compliant
- EN 61373 Rail vehicle vibration tested
- EN 45545-2 Fire protection of railway vehicle – Part 2
- EN 50153, EN 50124-1 Electrical safety

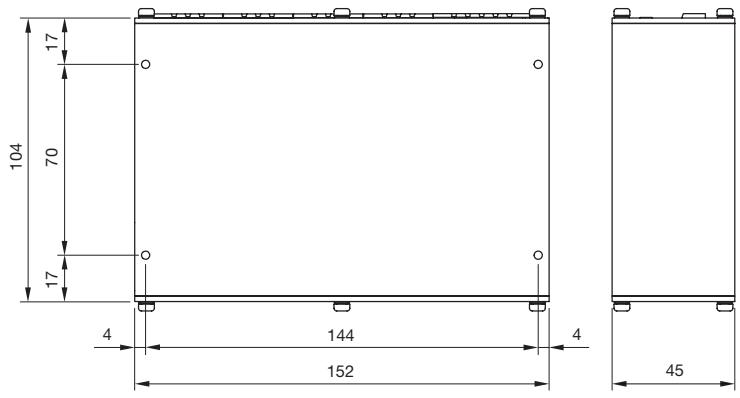
Name	Part No.
AC input 110 – 230 V, IP40 four outputs	PSU-110 – 230 AC-IP40-X4-12 V
DC input 24 – 36 V, IP40 four outputs	PSU-24 – 36 DC-IP40-X4-12 V
DC input 72 – 110 V, IP40, four outputs	PSU-72 – 110 DC-IP40-X4-12 V
AC input 110 – 230 V, IP40 two outputs	PSU-110 – 230 AC-IP40-X2-12 V
DC input 24 – 110 V, IP40 two outputs	PSU-24 – 110 DC-IP40-X2-12 V
DC input 110 VDC IP20, two outputs	PSU-110 VDC-IP20-X2-12 V

Two outputs IP40 PSU.

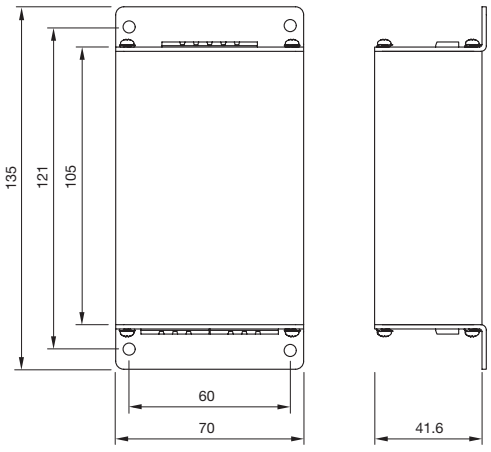


Four outputs IP40 PSU.

Dimensions (mm)



Four outputs PSU.



Two outputs PSU.

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