

## **IntegraBus**

### **PCD-ACH-xxx**

**Setra dashboard compatible, hybrid USB type-A and USB type-C charger**



## **Datasheet Rev. 01**

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## 1. Product Overview

The PCD-ACH-xxx hybrid USB type-A and USB type-C charger module intended for use in buses/coaches. It allows two connected and charged device in same time.

The charger has a USB type-A port and a high-power USB type-C port. These ports can be used with most of the popular mobile devices.

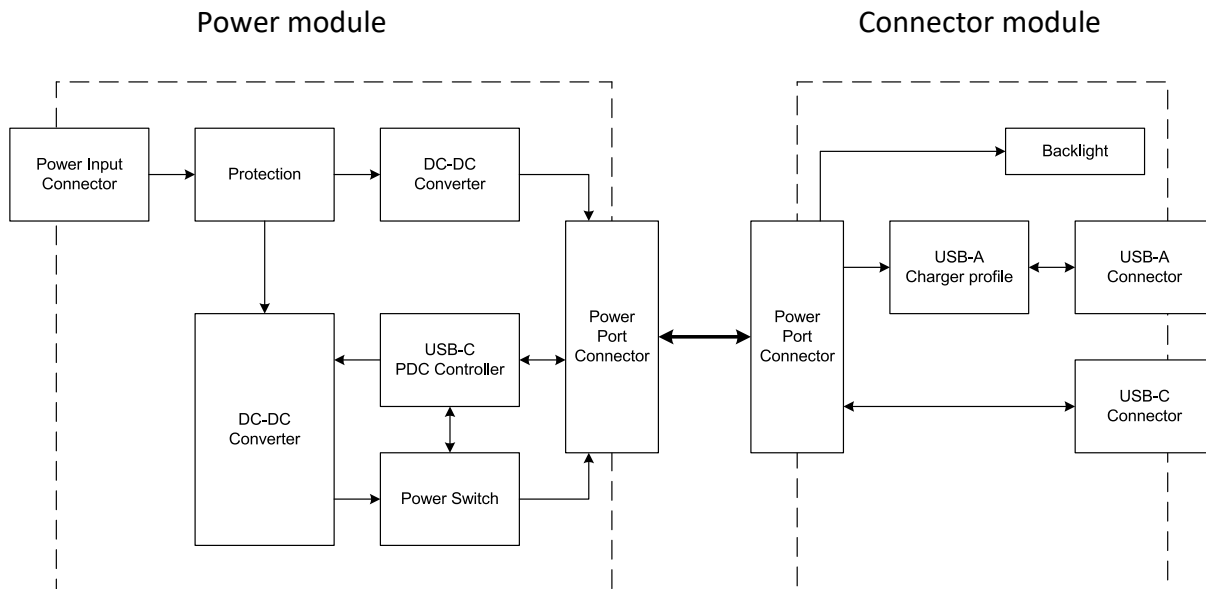
**The USB type-C port is designed especially for charging high power mobile devices like new generation notebooks.**

The mechanical design is perfectly fit into Setra dashboards.

## 2. Electrical Specification

		Min.	Norm.	Max	
1.	Supply Voltage	22	24	40	V
2.	Operating Temperature	-40		+85	°C
<b>USB type-A Port</b>					
3.	Output Voltage	4.75	5	5.25	V
4.	Output Current (@ 5V output voltage)			2.5	A
5.	Efficiency of USB-A port	87			%
6.	Output Power			12.5	W
<b>USB type-C Port</b>					
7.	Output Voltage	4.75	5	5.25	V
		8.50	9	9.50	
		11.4	12	12.6	
		14.2	15	15.8	
		18.8	20	21.2	
8.	Output Current at 5V output voltage at 9V output voltage at 12V output voltage at 15V output voltage at 20V output voltage			3.0	A
				3.0	
				3.0	
				3.0	
				3.0	
9.	Efficiency of USB-C port	92			%
10.	Output Power			60	W
11.	Backlight		Red		

### 3. System Diagram



### 4. Functional Description

- Two mobile devices can be charged simultaneously,
- Standard USB type-A and USB type-C connector outputs
- USB type-A output can supply 2.5A current maximum at 5V output voltage,
- USB type-C output can supply 30W power maximum at 20V output voltage,
- Easy to install,
- Supported mobile devices:
  - o iPod, iPhone, iPad
  - o Android phones and tabs
  - o Notebooks with USB type-C charging capability
- Supported Charge Profiles on USB type-A connector:
  - o Divider 1 DCP, (required to apply 2 V and 2.7 V on D+ Line on the D+ and D- Lines)
  - o Divider 2 DCP, required to apply 2.7 V and 2 V on the D+ and D- Lines
  - o Divider 3 DCP, required to apply 2.7 V and 2.7 V on the D+ and D- Lines
  - o BC1.2 DCP, required to short the D+ Line to the D- Line
  - o Chinese Telecom Standard YD/T 1591-2009 Shorted Mode, required to short the + Line to the D- Line
  - o 1.2 V on both D+ and D- Lines
- Standard USB type-C Power Delivery (PD) compatibility

- Available charging powers on USB type-C connector:
  - o 15W at 5V output voltage
  - o 27W at 9V output voltage
  - o 36W at 12V output voltage
  - o 45W at 15V output voltage
  - o 60W at 20V output voltage
- Automotive environment compatible design
- Overcurrent protection, overvoltage protection, thermal protection

## 5. Certification

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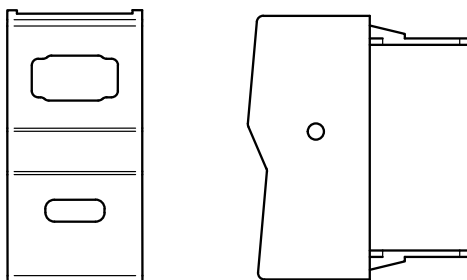
<b>ECE R10 certification:</b>	E-24 10R-041054
<b>ECE R118 certification:</b>	The Plastic housing weight is less than 15 g, application of R118 is not necessary on housing, Power cable is R118 certified.

## 6. Mechanical Specification

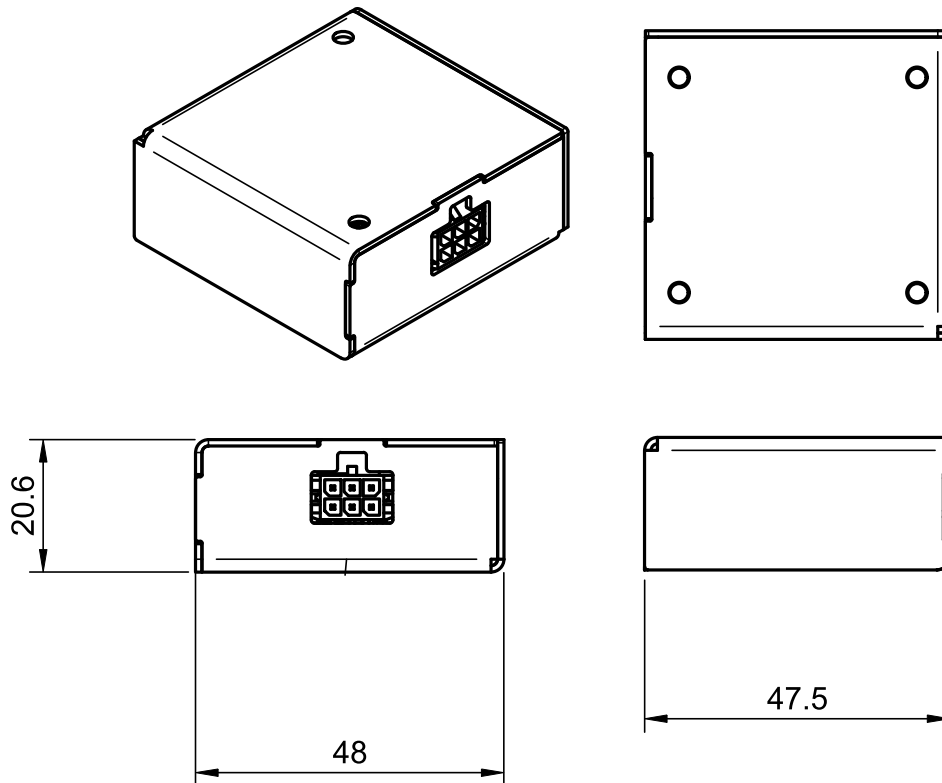
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### Connector module

- Standard Setra dashboard switch size



## Power module



## 7. Installation

The Connector module can be simple pushed into a standard blank hole on Setra dashboard.

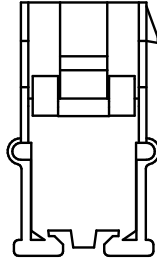
## 8. Ordering Codes

		<b>PCD - ACH -</b>
<b>PCD</b>	Procharge Dashboard charger	←
<b>ACH</b>	USB type-A + USB type-C charger, High power	←
<b>Connector options:</b>		←
<b>T</b>	Tyco connector	
<b>M</b>	Molex Microfit 3.0(TM) connector	
<b>F</b>	FF250 connector	
<b>X</b>	No connector	←
<b>Wire length options:</b>		←
<b>03</b>	300mm	
<b>08</b>	800mm	
<b>10</b>	1000mm	
<b>16</b>	1600mm	←
<b>Cable protection options:</b>		←
<b>S</b>	Shrinking tube	
<b>N</b>	Plastic protector tube	
<b>X</b>	No additional cable protection	

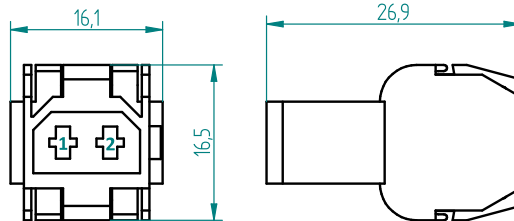
## 9. Connector Pinouts

### Connector option “ - T”:

Housing: Tyco 964586  
 Terminal: Tyco 964273-2

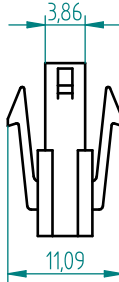


Pin	Wire	Function
1	RED	+12 – 24V Input
2	BLACK	GND Input

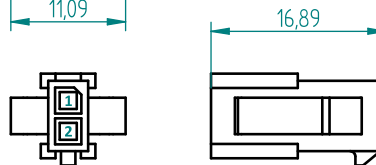


### Connector option “ - M”:

Housing: Molex 430200208  
 Terminal: Molex 43031

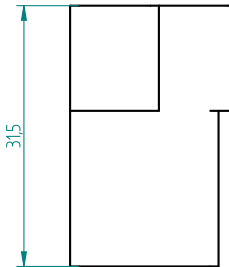


Pin	Wire	Function
1	RED	+12 – 24V Input
2	BLACK	GND Input

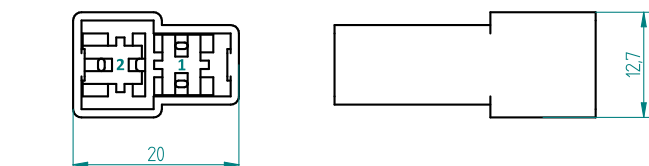


### Connector option “ - F”:

Housing: Tyco 180908  
 Terminal: Tyco 293041



Pin	Wire	Function
1	RED	+12 – 24V Input
2	BLACK	GND Input



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## 10.Document History

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rev	History	Date	Author
R01	First release	2023.10.01.	epapp