

# User Manual

Revision 2.301  
English

## CAN - Repeater - Extender bus line

(Order Codes: HD67117 – HD67117M – HD67117R – HD67117-A3 – HD67117-A4)

(Order Codes: HD67180 – HD67180M – HD67180R – HD67180-A3 – HD67180-A4)

(Order Codes: HD67181 – HD67181M – HD67181R – HD67181-A3 – HD67181-A4)

(Order Codes: HD67182 – HD67182M – HD67182R – HD67182-A3 – HD67182-A4)

for Website information:

- [www.adfweb.com?Product=HD67117](http://www.adfweb.com?Product=HD67117)
- [www.adfweb.com?Product=HD67180](http://www.adfweb.com?Product=HD67180)
- [www.adfweb.com?Product=HD67181](http://www.adfweb.com?Product=HD67181)
- [www.adfweb.com?Product=HD67182](http://www.adfweb.com?Product=HD67182)

for Price information:

- [www.adfweb.com?Price=HD67117](http://www.adfweb.com?Price=HD67117)
- [www.adfweb.com?Price=HD67180](http://www.adfweb.com?Price=HD67180)
- [www.adfweb.com?Price=HD67181](http://www.adfweb.com?Price=HD67181)
- [www.adfweb.com?Price=HD67182](http://www.adfweb.com?Price=HD67182)

### Benefits and Main Features:

- ▶ Electrical isolation of CAN branches
- ▶ Extension of nodes number
- ▶ Different baud rate of branches CAN
- ▶ Allows extension of a line segment (without lowering the Baud Rate)
- ▶ Industrial temperature range: -40°C / 85°C ( -40°F / 185°F )



HD67117  
HD67180  
HD67181  
HD67182

HD67117-A3  
HD67180-A3  
HD67181-A3  
HD67182-A3

HD67117-A4  
HD67180-A4  
HD67181-A4  
HD67182-A4

HD67117M  
HD67180M  
HD67181M  
HD67182M

HD67117R  
HD67180R  
HD67181R  
HD67182R

Similar Products



Benefits



For others Repeaters:

#### CAN Repeaters

See also the following links:

- [www.adfweb.com?Product=HD67180](http://www.adfweb.com?Product=HD67180) (For DeviceNet)
- [www.adfweb.com?Product=HD67181](http://www.adfweb.com?Product=HD67181) (For Generic Use)
- [www.adfweb.com?Product=HD67182](http://www.adfweb.com?Product=HD67182) (For J1939)

#### Optic Fibres Repeaters

See also the following links:

- [www.adfweb.com?Product=HD67117F](http://www.adfweb.com?Product=HD67117F) (For CANopen)
- [www.adfweb.com?Product=HD67117FS](http://www.adfweb.com?Product=HD67117FS) (For CANopen)
- [www.adfweb.com?Product=HD67180F](http://www.adfweb.com?Product=HD67180F) (For DeviceNet)
- [www.adfweb.com?Product=HD67180FS](http://www.adfweb.com?Product=HD67180FS) (For DeviceNet)
- [www.adfweb.com?Product=HD67181F](http://www.adfweb.com?Product=HD67181F) (For CAN 2.0A & 2.0B)
- [www.adfweb.com?Product=HD67181FS](http://www.adfweb.com?Product=HD67181FS) (For CAN 2.0A & 2.0B)
- [www.adfweb.com?Product=HD67182F](http://www.adfweb.com?Product=HD67182F) (For J1939)
- [www.adfweb.com?Product=HD67182FS](http://www.adfweb.com?Product=HD67182FS) (For J1939)
- [www.adfweb.com?Product=HD67221F](http://www.adfweb.com?Product=HD67221F) (Copper Bridge)
- [www.adfweb.com?Product=HD67221FS](http://www.adfweb.com?Product=HD67221FS) (Copper Bridge)

Do you have an your customer protocol?

See the following links:

- [www.adfweb.com?Product=HD67003](http://www.adfweb.com?Product=HD67003)

Do you need to choose a device? do you want help?

Ask it to the following link:

- [www.adfweb.com?Cmd=helpme](http://www.adfweb.com?Cmd=helpme)

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**UPDATED DOCUMENTATION:**

Dear customer, we thank you for your attention and we remind you that you need to check that the following document is:

- Updated
- Related to the product you own

To obtain the most recently updated document, note the “document code” that appears at the top right-hand corner of each page of this document.

With this “Document Code” go to web page [www.adfweb.com/download/](http://www.adfweb.com/download/) and search for the corresponding code on the page. Click on the proper “Document Code” and download the updates.

To obtain the updated documentation for the product that you own, note the “Document Code” (Abbreviated written “Doc. Code” on the label on the product) and download the updated from our web site [www.adfweb.com/download/](http://www.adfweb.com/download/)

**REVISION LIST:**

Revision	Date	Author	Chapter	Description
2.000	06/07/2007	Av	All	New document format
2.100	03/11/2008	Fl	All	Type M12
2.101	19/01/2009	Fl	All	Revision
2.200	20/04/2009	Fl	All	Type R
2.201	27/07/2009	Ml	All	Revision
2.202	21/01/2010	Fl	All	Changes fig. 1,2,3,4,5,6,7,8
2.300	28/04/2010	Dp	All	Add A3 and A4
2.301	15/02/2013	Nt	All	Added new chapters

**WARNING:**

ADFweb.com reserves the right to change information in this manual about our product without warning.

ADFweb.com is not responsible for any error this manual may contain.

**TRADEMARKS:**

All trademarks mentioned in this document belong to their respective owners.

**SECURITY ALERT:****GENERAL INFORMATION**

To ensure safe operation, the device must be operated according to the instructions in the manual. When using the device are required for each individual application, legal and safety regulation. The same applies also when using accessories.

**INTENDED USE**

Machines and systems must be designed so the faulty conditions do not lead to a dangerous situation for the operator (i.e. independent limit switches, mechanical interlocks, etc.).

**QUALIFIED PERSONNEL**

The device can be used only by qualified personnel, strictly in accordance with the specifications.

Qualified personnel are persons who are familiar with the installation, assembly, commissioning and operation of this equipment and who have appropriate qualifications for their job.

**RESIDUAL RISKS**

The device is state of the art and is safe. The instrument can represent a potential hazard if they are inappropriately installed and operated by personnel untrained. These instructions refer to residual risks with the following symbol:

 This symbol indicates that non-observance of the safety instructions is danger for people to serious injury or death and / or the possibility of damage.

**CE CONFORMITY**

The declaration is made by us. You can send an email to [support@adfweb.com](mailto:support@adfweb.com) or give us a call if you need it.

**CHARACTERISTICS:**

- Resolved your extension line problems;
- Ideal for galvanized isolation;
- Two-sided programmable baudrate;
- Adapted for use in motors and devices with electro-magnetic disturbances;
- Adapted as repeaters for the following lines: **CANopen, DeviceNet, J1939, CAN bus 2.0A, CAN bus 2.0B** and generic **ISO 11898** standard.

The CAN Repeater has 4 order code: **HD67117, HD67180, HD67181, HD67182**. So they are more proper to a protocol rather than to another.

**The CAN Repeater (for all the order code):**

- Electrical isolation of two branches of a CAN Line (ISO 11898-1);
- Allows extension of a line segment without lowering the Baud rate;
- Interconnects two branches of different speeds;
- Uses a microprocessor for the organization of data;
- Independent Protocol;
- Possible different baud rate setting (into different branches);
- Mountable on Rail DIN;
- Power Supply 12...24 VDC 200mA; 12...18 VAC 50/60Hz; 200mA;
- Temperature range -40°C to 85°C;
- EMS EN 61000-6-2.

**EXAMPLES:**

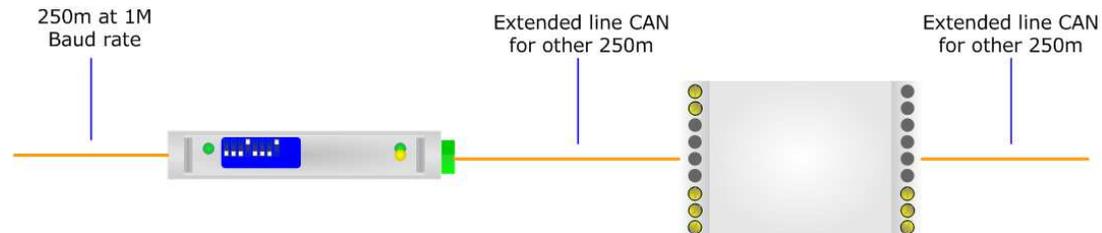
**Example Repeater use**

**DIFFERENT BAUD RATE ON BRANCHES CAN**



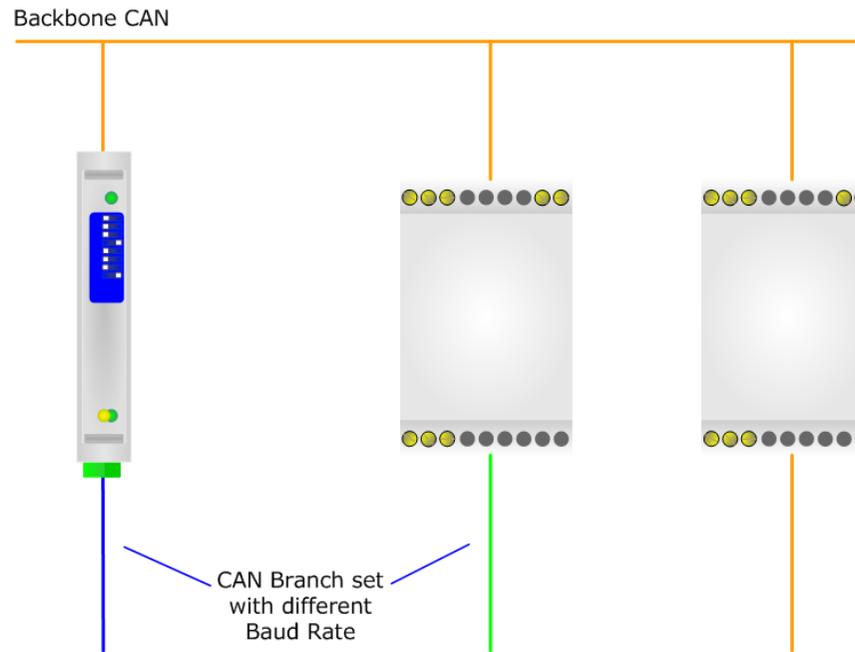
**Examples Repeater use**

**EXTENDED LINE CAN**



### Example Repeater use

#### BACKBONE



**SET SWITCH BAUD RATE:**

The switches for setting the CAN0 Baud Rate and CAN1 on the front panel of the device:

**Dip n° 1, 2, 3, 4 CAN1 setting;**

**Dip n° 5, 6, 7, 8 CAN0 setting.**

Speed CAN1 BPS	Dip 1	Dip 2	Dip 3	Dip 4
Speed CAN0 BPS	Dip 5	Dip 6	Dip 7	Dip 8
10K	ON	OFF	OFF	OFF
20K	OFF	ON	OFF	OFF
50K	ON	ON	OFF	OFF
(*) 62.5K	OFF	ON	OFF	ON
100K	OFF	OFF	ON	OFF
125K	ON	OFF	ON	OFF
250K	OFF	ON	ON	OFF
500K	ON	ON	ON	OFF
800K	OFF	OFF	OFF	ON
1000K	ON	OFF	OFF	ON

(\*) Feature, not available in old devices ( before March 15th 2007).

**CONNECTION SCHEMES:**

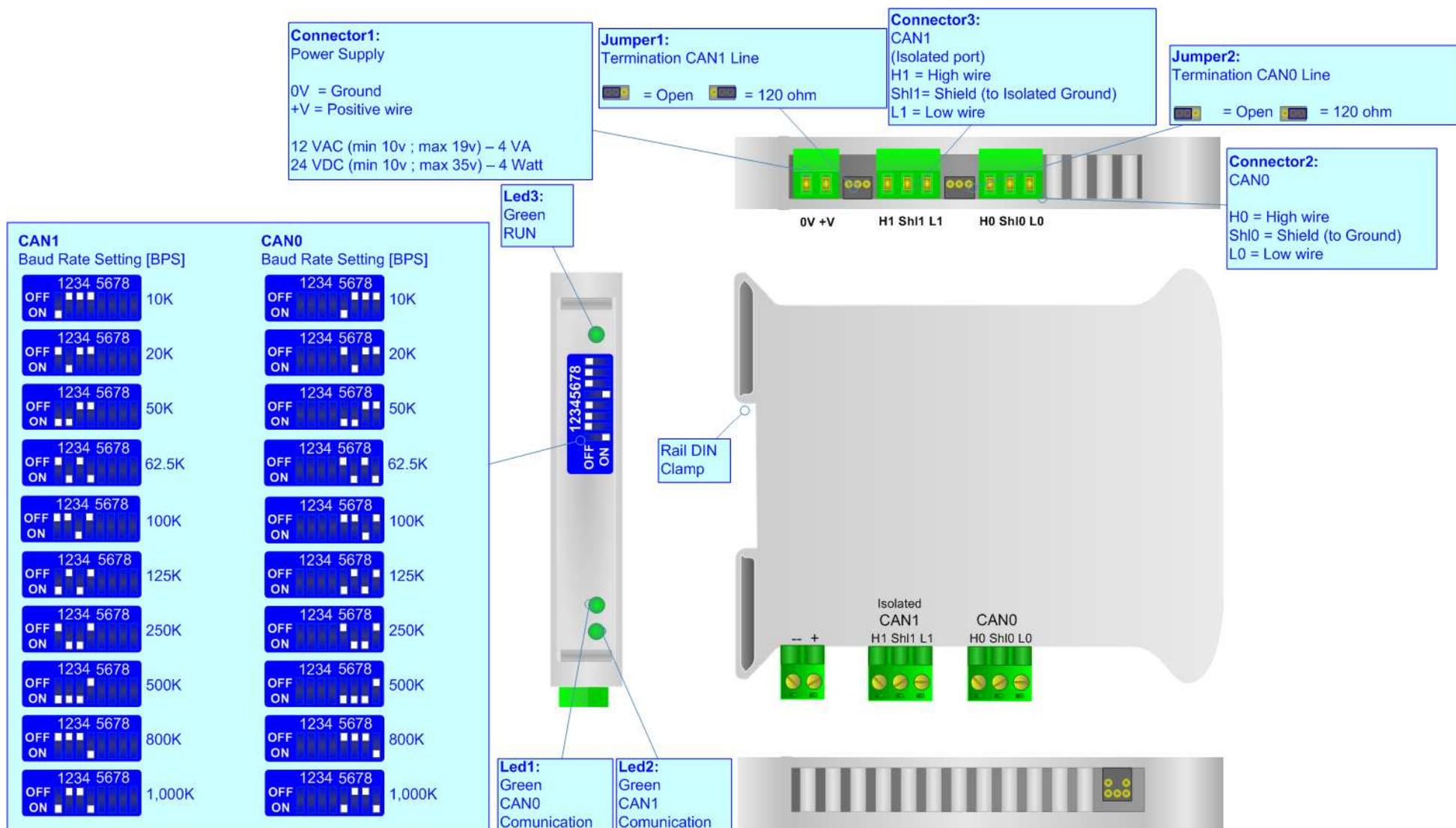


Figure 1: Connection scheme for HD67117

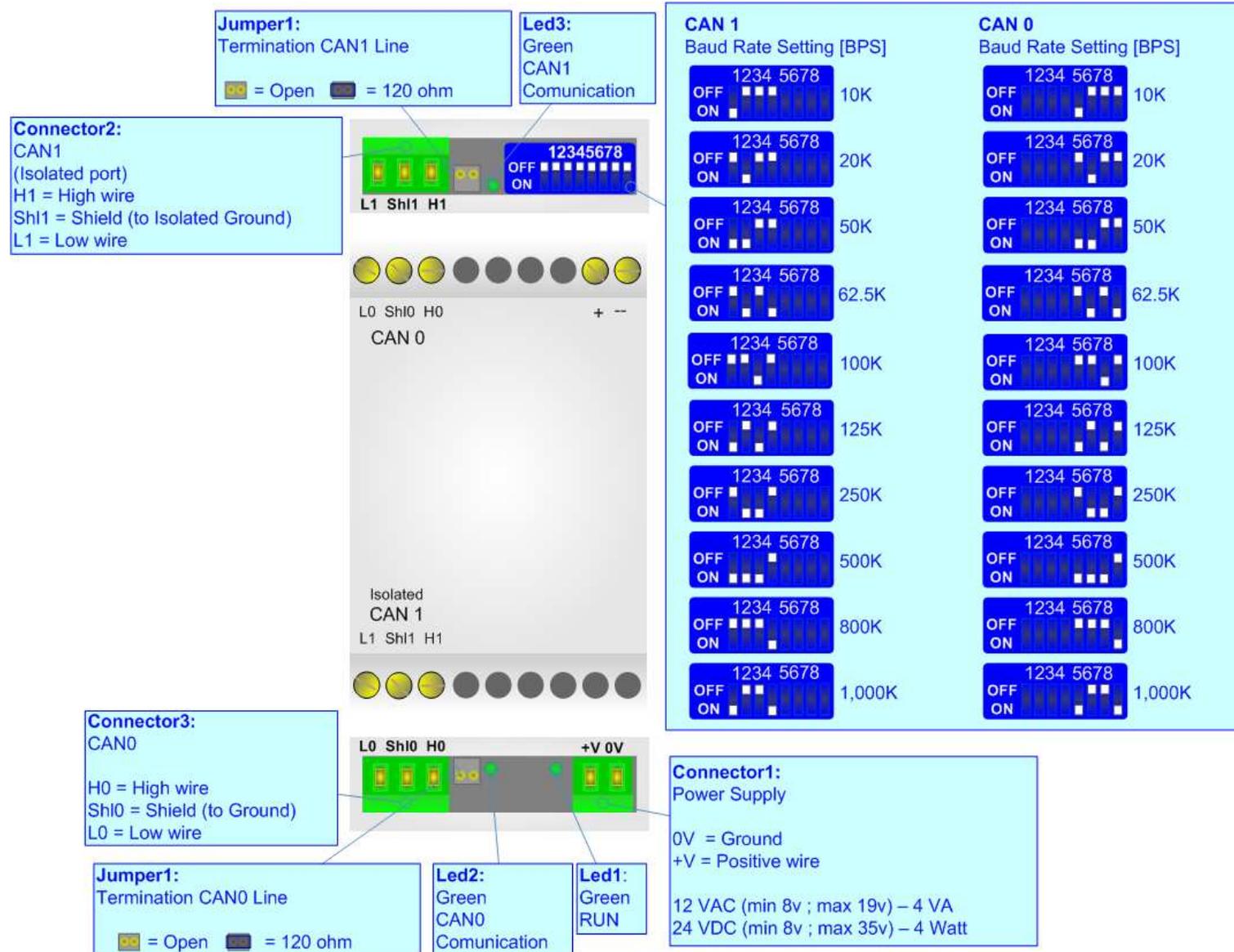


Figure 2: Connection scheme for HD67117M

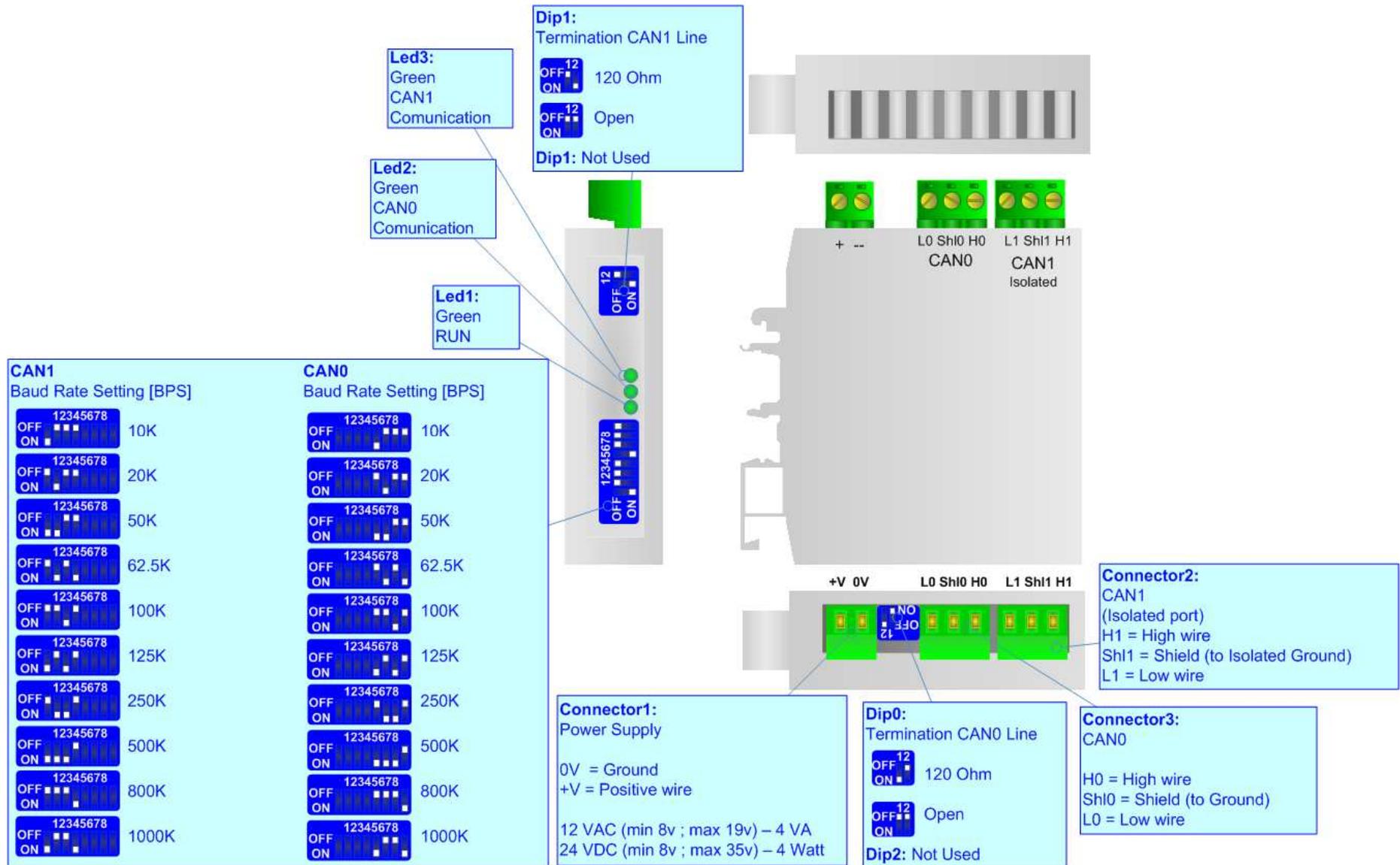


Figure 3: Connection scheme for HD67117R

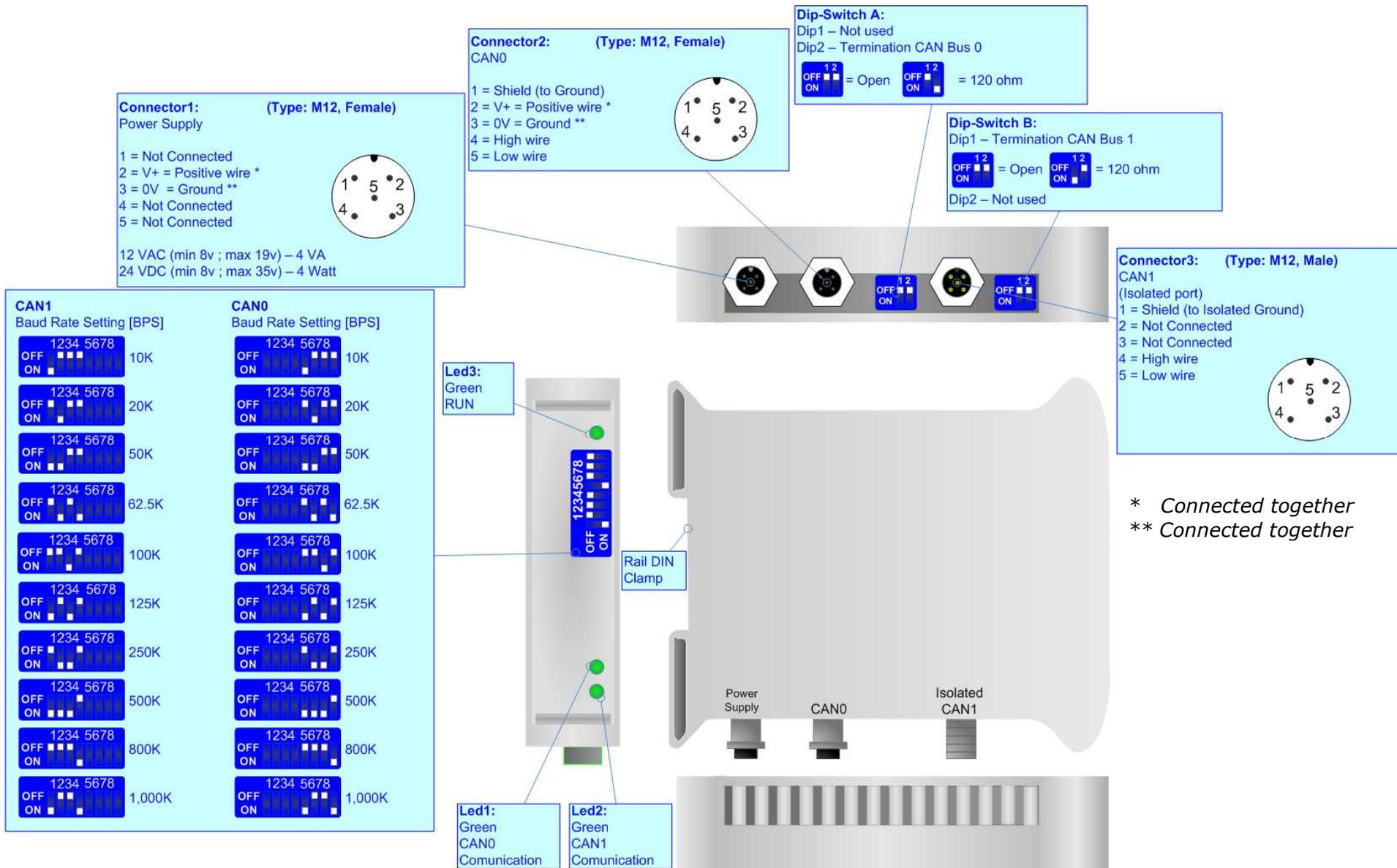


Figure 4: Connection scheme for HD67117-A3

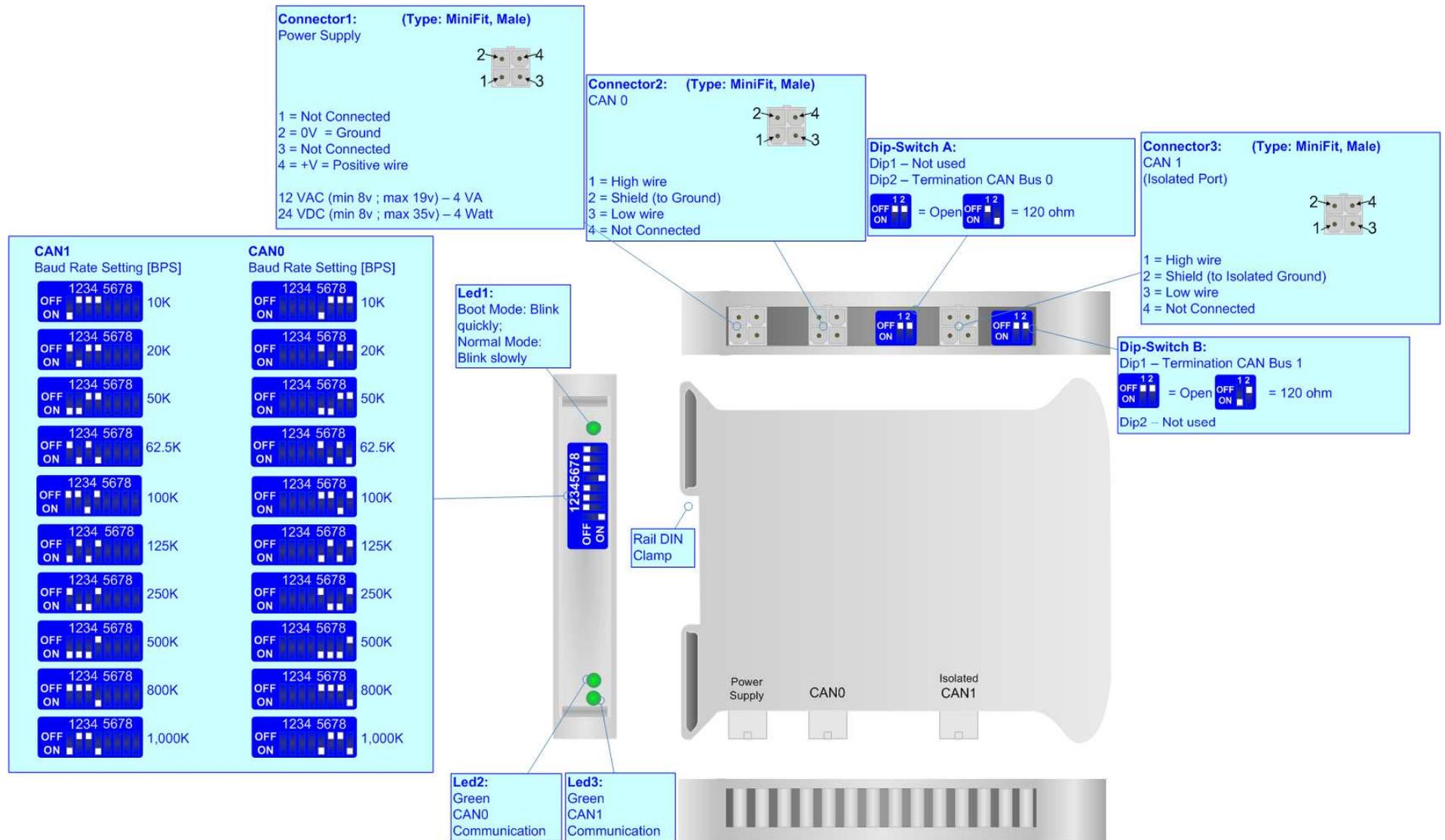


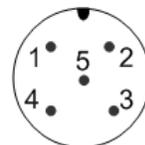
Figure 5: Connection scheme for HD67117-A4

**CONNECTORS TYPE M12 AND MINIFIT :**

MORE INFO ABOUT M12 CONNECTORS:

[www.adfweb.com/download/filefold/M12\\_femmina\\_pcb.pdf](http://www.adfweb.com/download/filefold/M12_femmina_pcb.pdf)

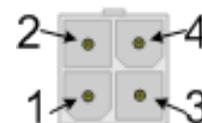
[www.adfweb.com/download/filefold/M12\\_maschio\\_pcb.pdf](http://www.adfweb.com/download/filefold/M12_maschio_pcb.pdf)



MORE INFO ABOUT MiniFit CONNECTORS:

[www.adfweb.com/download/filefold/mini-fit\\_4poli\\_maschio\\_pcb.pdf](http://www.adfweb.com/download/filefold/mini-fit_4poli_maschio_pcb.pdf)

[www.adfweb.com/download/filefold/mini-fit\\_4poli\\_femmina\\_volante.pdf](http://www.adfweb.com/download/filefold/mini-fit_4poli_femmina_volante.pdf)



**CAN BUS CABLE CHARACTERISTICS:**

<b>DC parameter:</b>	Impedance	70 ohm/m
<b>AC parameters:</b>	Impedance	120 ohm/m
	Delay	5 ns/m
<b>Length</b>	<b>Baud Rate [bps]</b>	<b>Length MAX [m]</b>
	10 K	5000
	20 K	2500
	50 K	1000
	100 K	650
	125 K	500
	250 K	250
	500 K	100
	800 K	50
	1000 K	25

**MECHANICAL DIMENSIONS:**

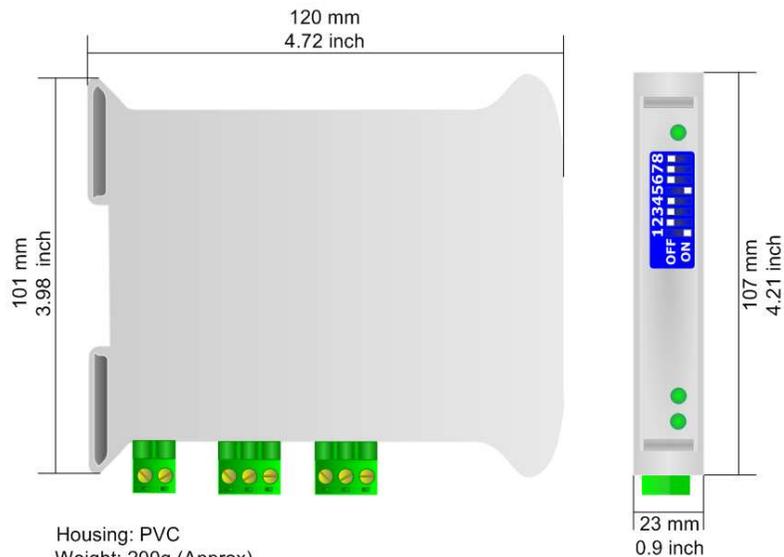


Figure 5: Mechanical dimensions scheme for HD67117

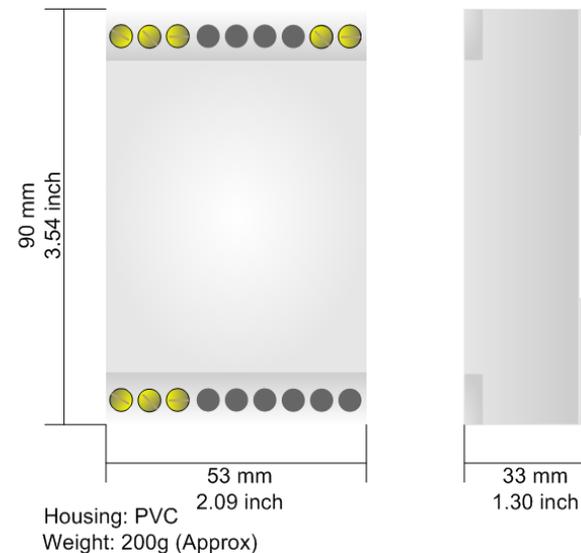


Figure 6: Mechanical dimensions scheme for HD67117M

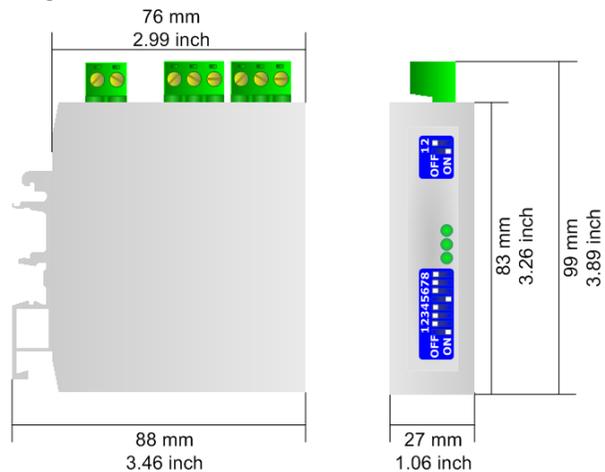


Figure 7: Mechanical dimensions scheme for HD67117R

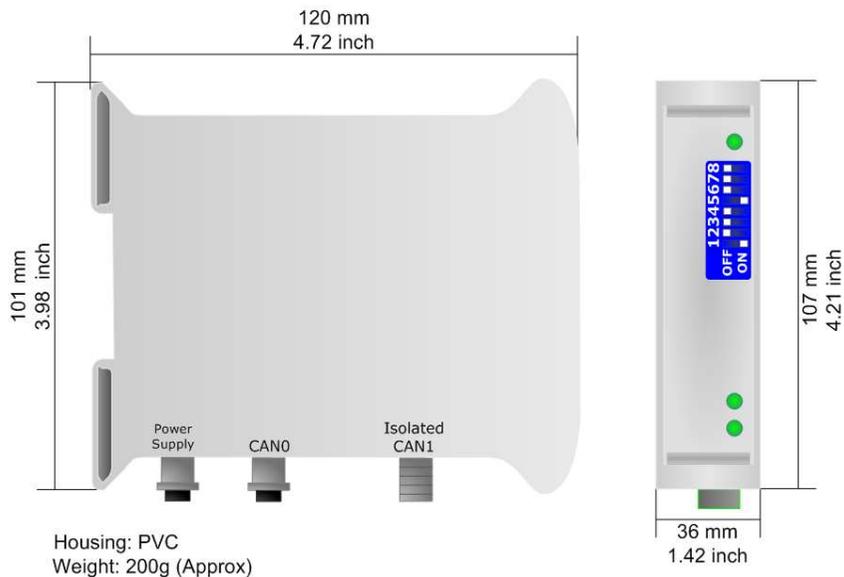


Figure 8: Mechanical dimensions scheme for HD67117-A3

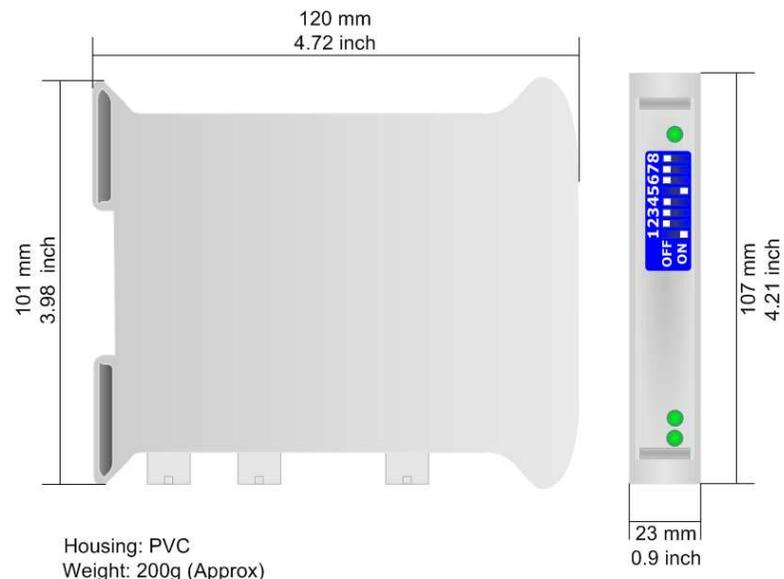


Figure 9: Mechanical dimensions scheme for HD67117-A4

**ORDER CODES:**

- HD67117** - CANopen – Repeater – Extender bus line ( Housing type: A, Terminal Blocks Connectors )
- HD67117M** - CANopen – Repeater – Extender bus line ( Housing type: Small Size, Terminal Blocks Connetors )
- HD67117R** - CANopen – Repeater – Extender bus line ( Housing type: R, Terminal Blocks Connectors, Galvanic Isolation: 3KV )
- HD67117-A3** - CANopen – Repeater – Extender bus line ( Housing type: A, M12 Connectors, Galvanic Isolation: 3KV )
- HD67117-A4** - CANopen – Repeater – Extender bus line ( Housing type: A, Mini-Fit Connectors, Galvanic Isolation: 3KV )
  
- HD67180** - DeviceNet – Repeater – Extender bus line ( Housing type: A, Terminal Blocks Connectors )
- HD67180M** - DeviceNet – Repeater – Extender bus line ( Housing type: Small Size, Terminal Blocks Connetors )
- HD67180R** - DeviceNet – Repeater – Extender bus line ( Housing type: R, Terminal Blocks Connectors, Galvanic Isolation: 3KV )
- HD67180-A3** - DeviceNet – Repeater – Extender bus line ( Housing type: A, M12 Connectors, Galvanic Isolation: 3KV )
- HD67180-A4** - DeviceNet – Repeater – Extender bus line ( Housing type: A, Mini-Fit Connectors, Galvanic Isolation: 3KV )
  
- HD67181** - CAN – Repeater – Extender bus line ( Housing type: A, Terminal Blocks Connectors )
- HD67181M** - CAN – Repeater – Extender bus line ( Housing type: Small Size, Terminal Blocks Connetors )
- HD67181R** - CAN – Repeater – Extender bus line ( Housing type: R, Terminal Blocks Connectors, Galvanic Isolation: 3KV )
- HD67181-A3** - CAN – Repeater – Extender bus line ( Housing type: A, M12 Connectors, Galvanic Isolation: 3KV )
- HD67181-A4** - CAN – Repeater – Extender bus line ( Housing type: A, Mini-Fit Connectors, Galvanic Isolation: 3KV )
  
- HD67182** - J1939 and NMEA 2000 – Repeater – Extender bus line ( Housing type: A, Terminal Blocks Connectors )
- HD67182M** - J1939 and NMEA 2000 – Repeater – Extender bus line ( Housing type: Small Size, Terminal Blocks Connetors )
- HD67182R** - J1939 and NMEA 2000 – Repeater – Extender bus line ( Housing type: R, Terminal Blocks Connectors, Galvanic Isolation: 3KV )
- HD67182-A3** - J1939 and NMEA 2000 – Repeater – Extender bus line ( Housing type: A, M12 Connectors, Galvanic Isolation: 3KV )
- HD67182-A4** - J1939 and NMEA 2000 – Repeater – Extender bus line ( Housing type: A, Mini-Fit Connectors, Galvanic Isolation: 3KV )

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## OTHER REGULATIONS AND STANDARDS

### WEEE INFORMATION



Disposal of old electrical and electronic equipment (as in the European Union and other European countries with separate collection systems).

— This symbol on the product or on its packaging indicates that this product may not be treated as household rubbish. Instead, it should be taken to an applicable collection point for the recycling of electrical and electronic equipment. If the product is disposed correctly, you will help prevent potential negative environmental factors and human health, which could otherwise be caused by inappropriate disposal. The recycling of materials will help to conserve natural resources. For more information about recycling this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

### RESTRICTION OF HAZARDOUS SUBSTANCES DIRECTIVE



The device respects the 2002/95/EC Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (commonly referred to as Restriction of Hazardous Substances Directive or RoHS).

### CE MARKING



The product conforms with the essential requirements of the applicable EC directives.

**WARRANTIES AND TECHNICAL SUPPORT:**

For fast and easy technical support for your ADFweb.com SRL products, consult our internet support at [www.adfweb.com](http://www.adfweb.com). Otherwise contact us at the address support@adfweb.com

**RETURN POLICY:**

If while using your product you have any problem and you wish to exchange or repair it, please do the following:

- 1) Obtain a Product Return Number (PRN) from our internet support at [www.adfweb.com](http://www.adfweb.com). Together with the request, you need to provide detailed information about the problem.
- 2) Send the product to the address provided with the PRN, having prepaid the shipping costs (shipment costs billed to us will not be accepted).

If the product is within the warranty of twelve months, it will be repaired or exchanged and returned within three weeks. If the product is no longer under warranty, you will receive a repair estimate.

**PRODUCTS AND RELATED DOCUMENTS:**

Part	Description	URL
HD67121	Gateway CANopen / Canopen	<a href="http://www.adfweb.com?Product=HD67121">www.adfweb.com?Product=HD67121</a>
HD67502	Gateway CANopen / Modbus - RTU	<a href="http://www.adfweb.com?Product=HD67502">www.adfweb.com?Product=HD67502</a>
HD67505	Gateway CANopen / Modbus – Ethernet TCP	<a href="http://www.adfweb.com?Product=HD67505">www.adfweb.com?Product=HD67505</a>
HD67134	Gateway CANopen / DeviceNet	<a href="http://www.adfweb.com?Product=HD67134">www.adfweb.com?Product=HD67134</a>
HD67216	CAN Analyzer	<a href="http://www.adfweb.com?Product=HD67216">www.adfweb.com?Product=HD67216</a>