User Manual

Revision 2.400
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
www.adfweb.com?Product=HD67180
www.adfweb.com?Product=HD67181
www.adfweb.com?Product=HD67182

For Price information:
www.adfweb.com?Price=HD67117
www.adfweb.com?Price=HD67180
www.adfweb.com?Price=HD67181
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)
- Temperature range: -40°C/+85°C (-40°F/+185°F)

For others Repeaters:

Optic Fibres Repeaters

See also the following links:

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

Do you have an your customer protocol?
See the following links:
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

INDEX:

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/ and search for the corresponding code on the page. Click on the proper "Document Code" and download the updates.

REVISION LIST:

Revision	Date	Author	Chapter	Description
2.301	15/02/2013	Nt	All	Added new chapters
2.302	22/01/2025	Ln	All	New hardware version
2.400	08/07/2025	Mdb	All	New design

WARNING:

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TRADEMARKS:

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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 or give us a call if you need it.

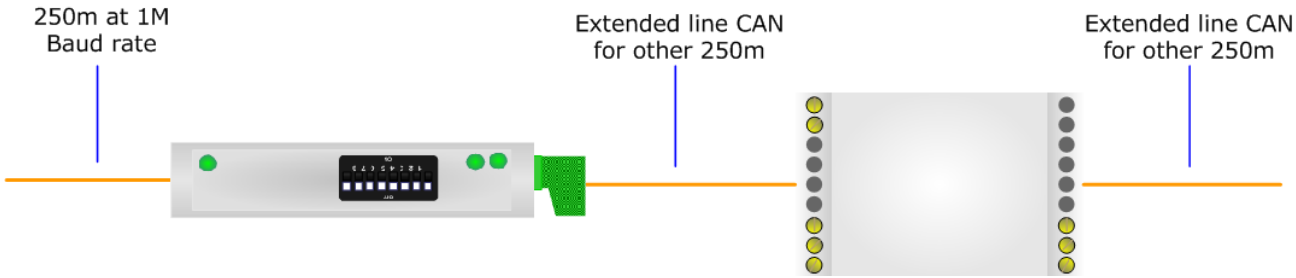
EXAMPLES:

Example Repeater use

DIFFERENT BAUD RATE ON BRANCHES CAN

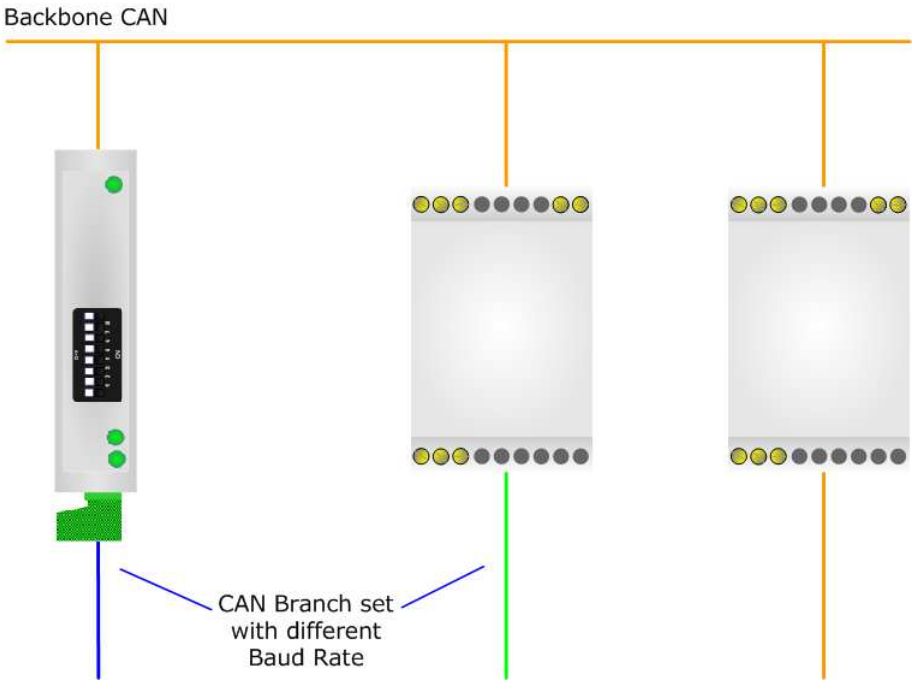
Examples Repeater use

EXTENDED LINE CAN



Example Repeater use

BACKBONE



CONNECTION SCHEMES:

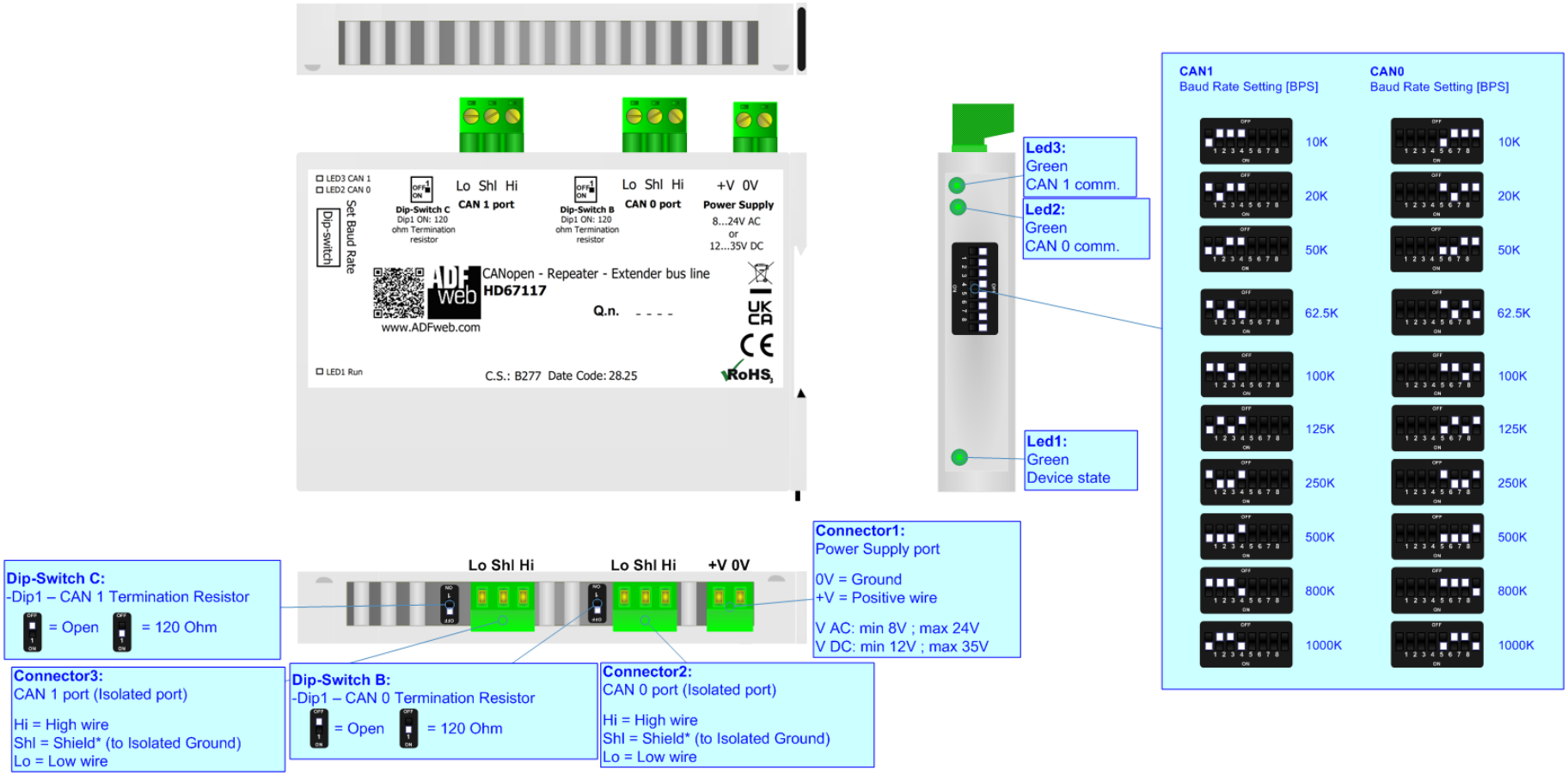


Figure 1a: Connection scheme for HD671xx

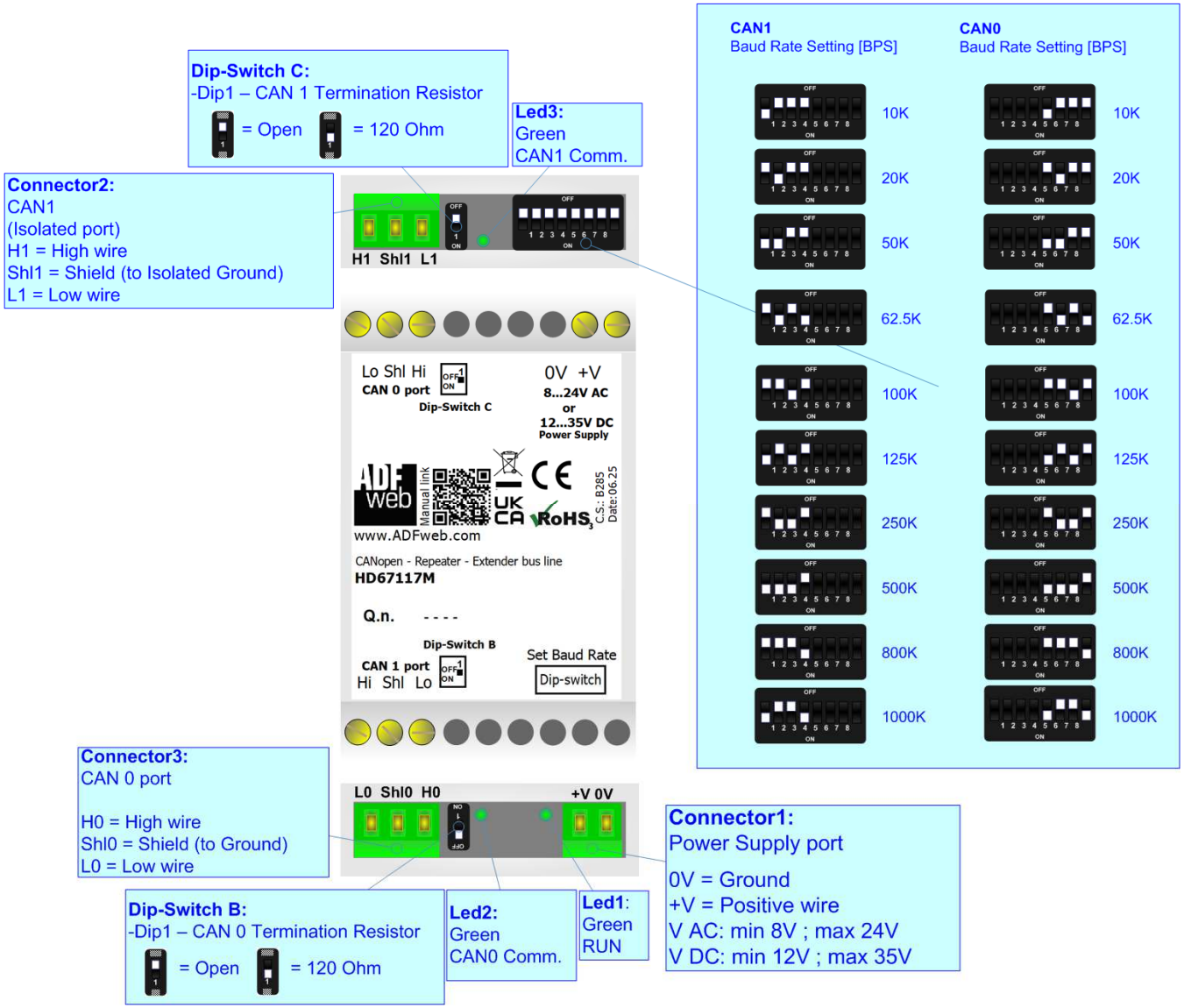


Figure 1b: Connection scheme for HD671xxM

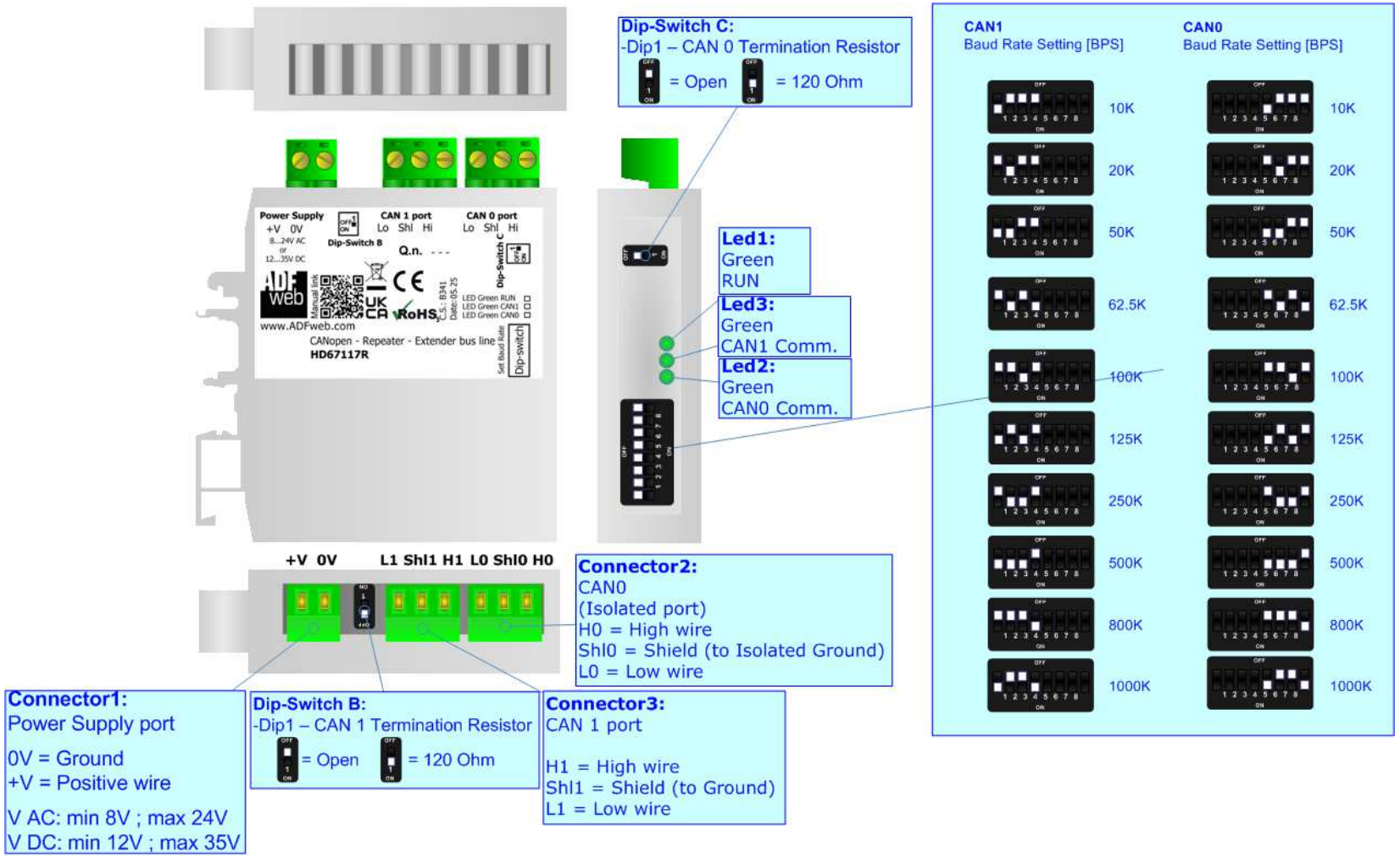


Figure 1c: Connection scheme for HD671xxR

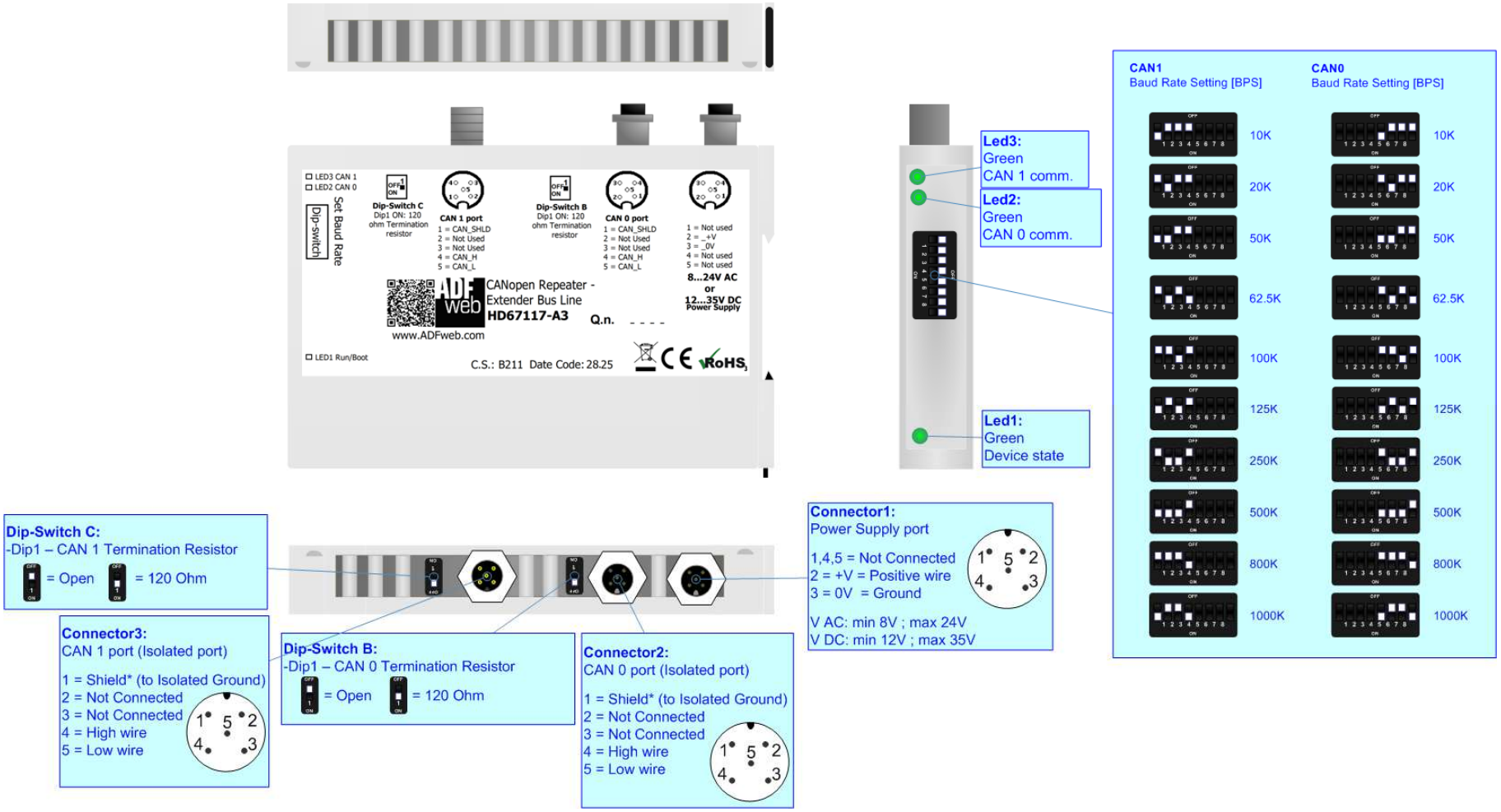


Figure 1d: Connection scheme for HD671xx-A3

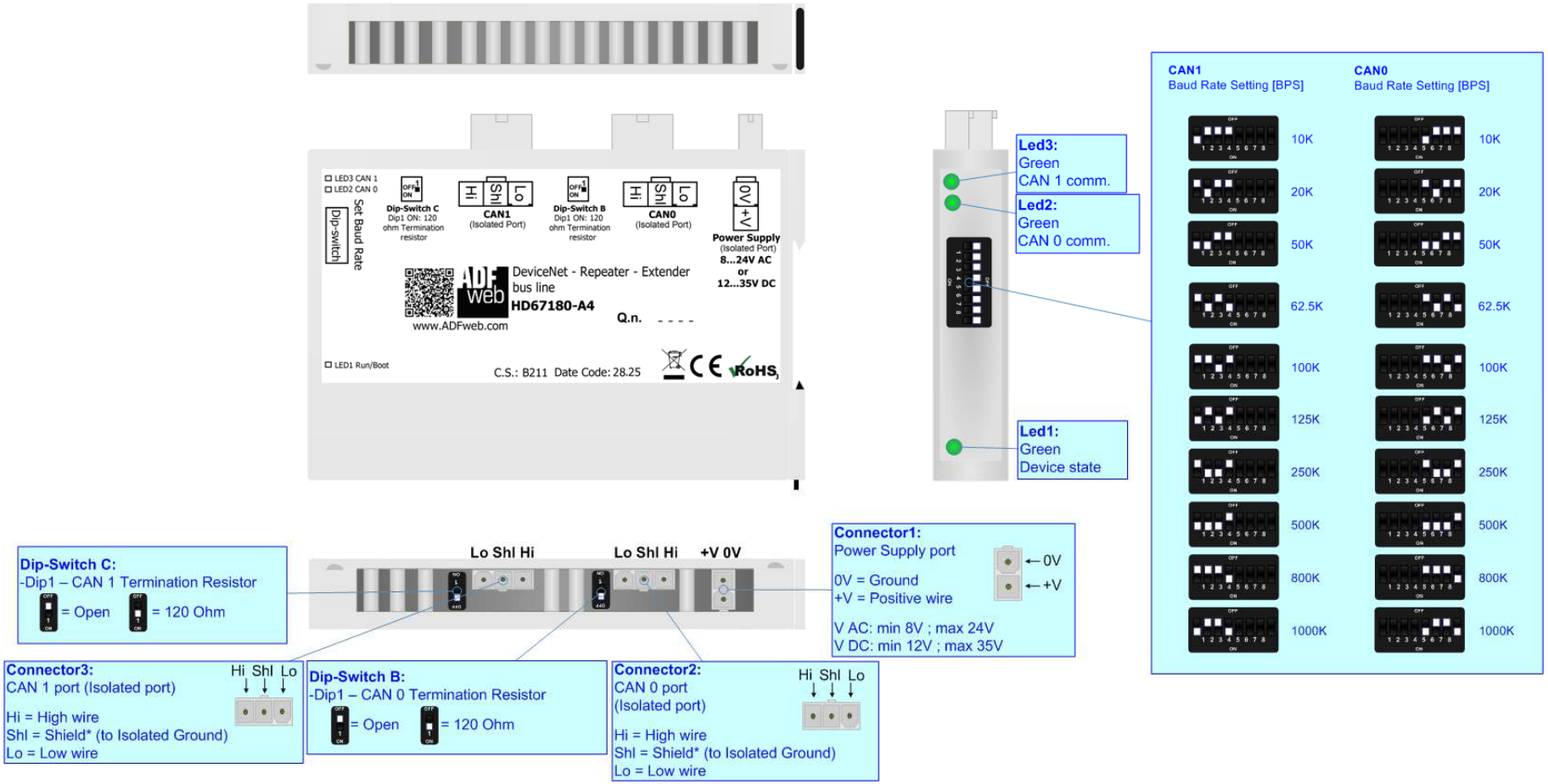


Figure 1e: Connection scheme for HD671xx-A4

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 Baudrate;
- 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;
- Wide power supply input range: 8…24V AC or 12…35V DC;
- Wide temperature range: -40°C / +85°C [-40°F / +185°F];
- EMS EN 61000-6-2.

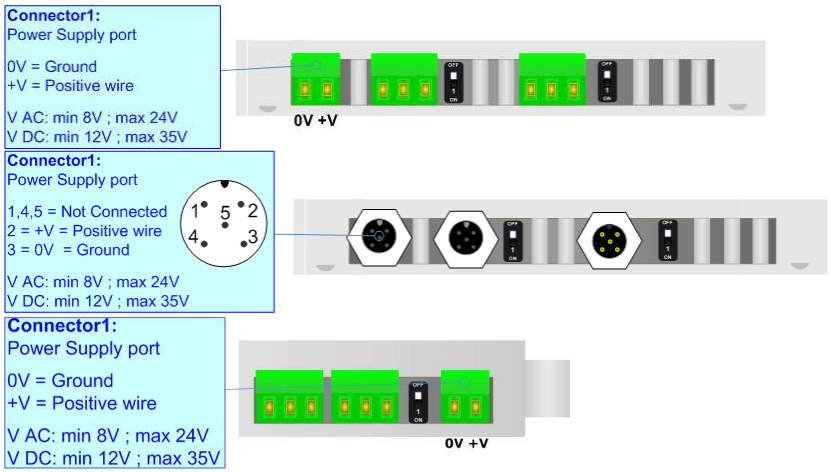
POWER SUPPLY:

The devices can be powered at 8…24V AC and 12…35V DC. For more details see the two tables below.

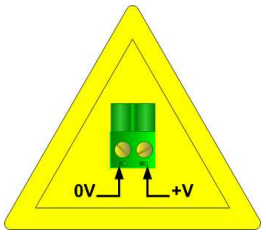
VAC ~		VDC ⎓	
Vmin	**Vmax**	**Vmin**	**Vmax**
8V	**24V**	**12V**	**35V**

Consumption at 24V DC:

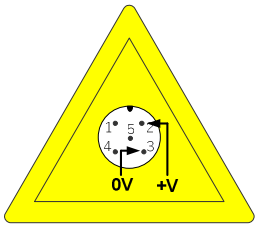
Device	Consumption [W/VA]
HD67xxx	3.5
HD67xxxR	3.5
HD67xxxM	3.5
HD67xxx-A3	3.5
HD67xxx-A4	3.5



Caution: Not reverse the polarity power



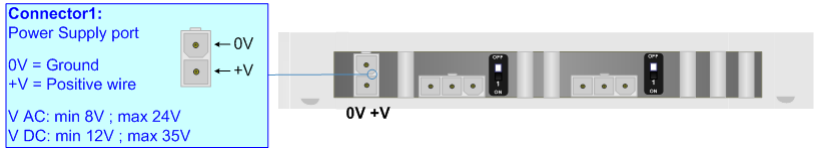
HD67xxx
HD67xxxR



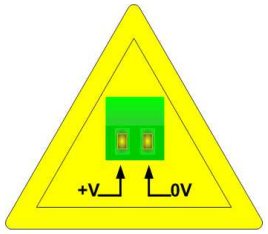
HD67xxx-A3

Connector1:
Power Supply port

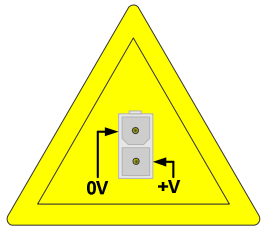
0V = Ground
+V = Positive wire
V AC: min 8V ; max 24V
V DC: min 12V ; max 35V



Caution: Not reverse the polarity power



HD67xxxM



HD67xxx-A4

SET SWITCH BAUDRATE:

The switches for setting the CAN0 BaudRate 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 Speed CAN0 BPS	Dip 1 Dip 5	Dip 2 Dip 6	Dip 3 Dip 7	Dip 4 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).

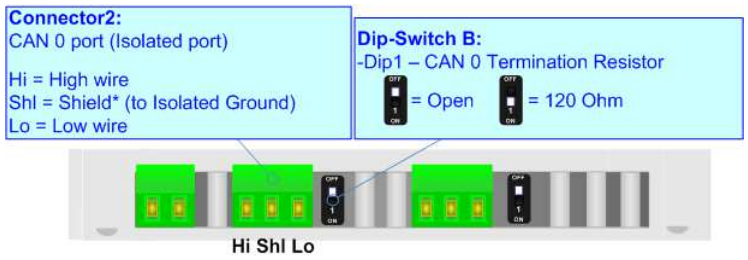
LEDS:

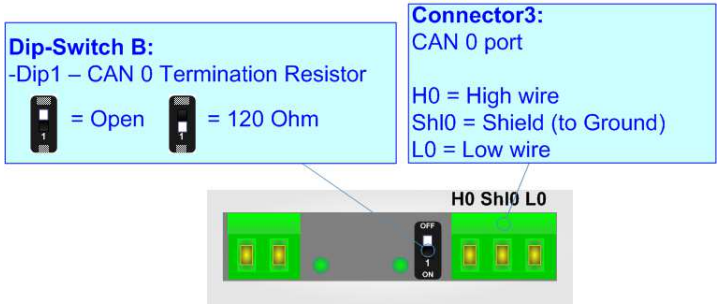
The device has got three LEDs that are used to give information of the functioning status.
The various meanings of the LEDs are described in the table below.

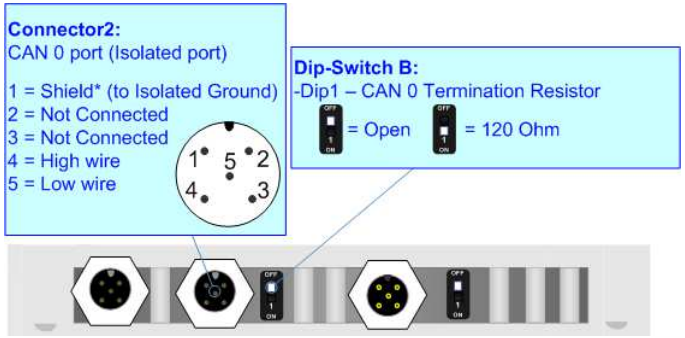
LED	Normal Mode	Boot Mode
1: Device state	Blinks slowly (~1Hz)	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
2: CAN 0 comm.	Blinks when a CAN 0 frame is received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
3: CAN 1 comm.	Blinks when a CAN 1 frame is received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress

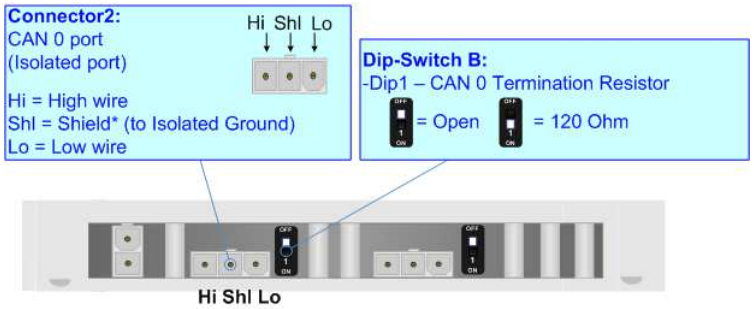
CAN:

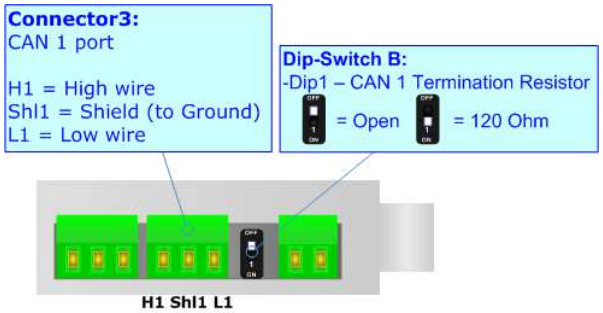
For terminate the CAN line with a 120Ω resistor it is necessary that the Dip1 of 'Dip-Switch B' and 'Dip-Switch C' is at ON position.











Cable characteristics:

DC parameter:		Impedance	70 Ohm/m

AC parameters:		Impedance	120 Ohm/m
		Delay	5 ns/m

Length		**Baud Rate [bps]**	**Length MAX [m]**
		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

CONNECTORS TYPE M12 AND MINIFIT :

MORE INFO ABOUT M12 CONNECTORS:

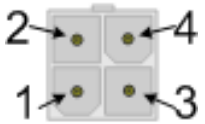
www.adfweb.com/download/filefold/M12_femmina_pcb.pdf

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

www.adfweb.com/download/filefold/mini-fit_4poli_femmina_volante.pdf



MECHANICAL DIMENSIONS:

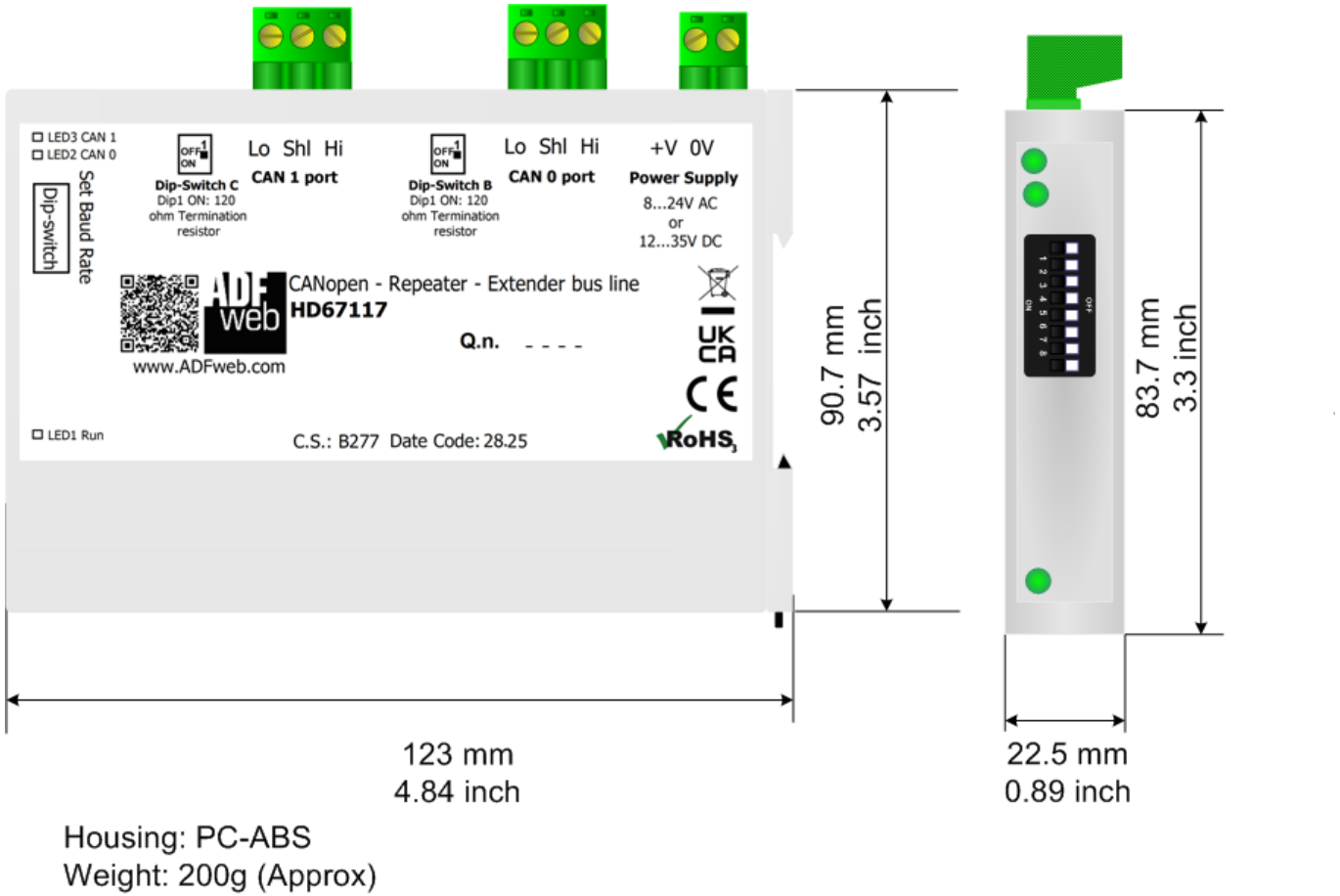


Figure 2a: Mechanical dimensions scheme for HD671xx

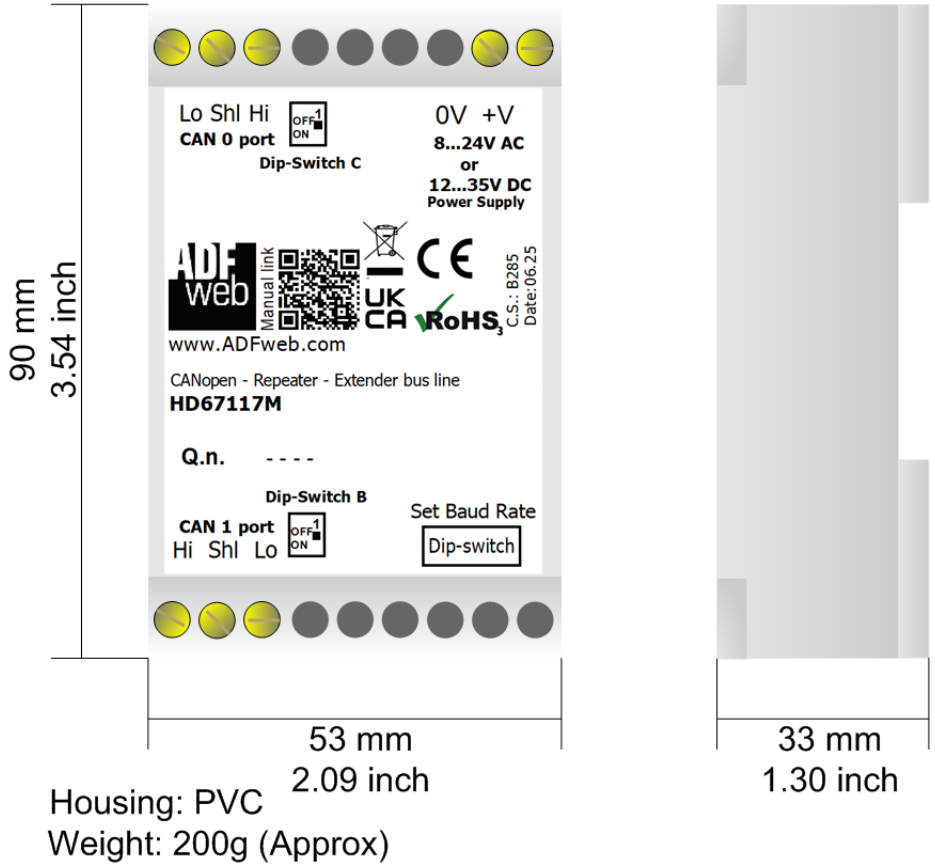


Figure 2b: Mechanical dimensions scheme for HD671xxM

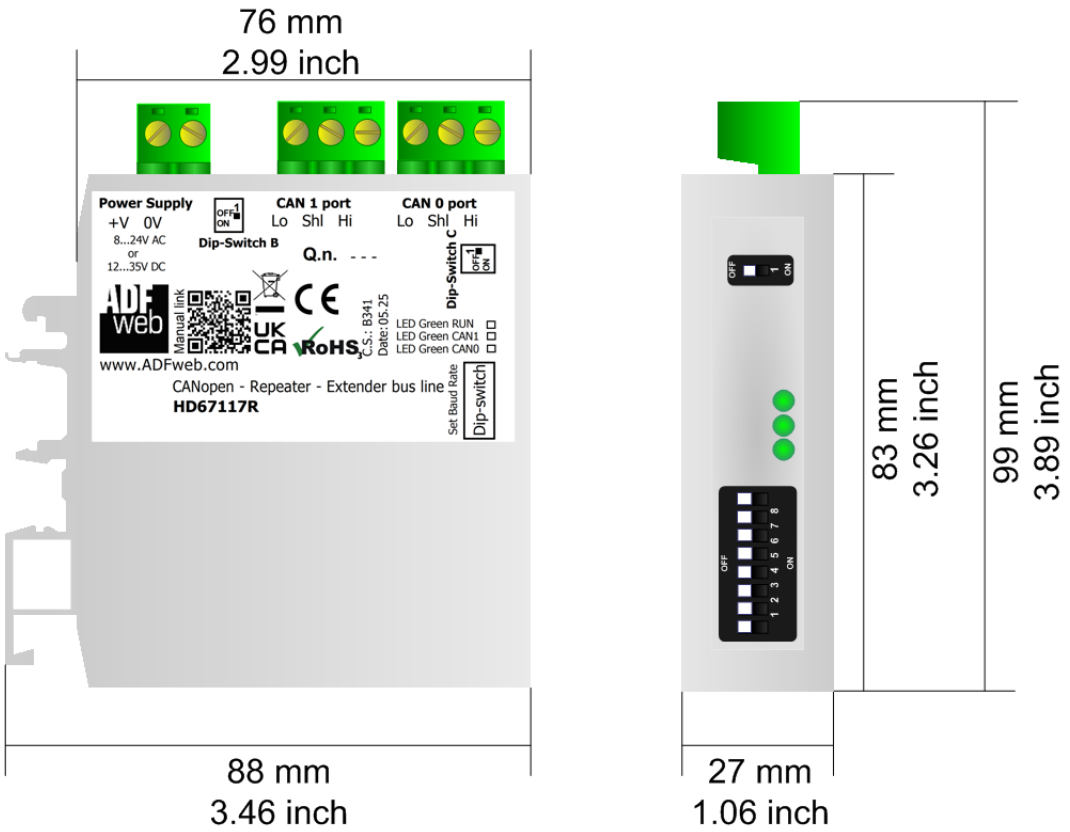


Figure 2c: Mechanical dimensions scheme for HD671xxR

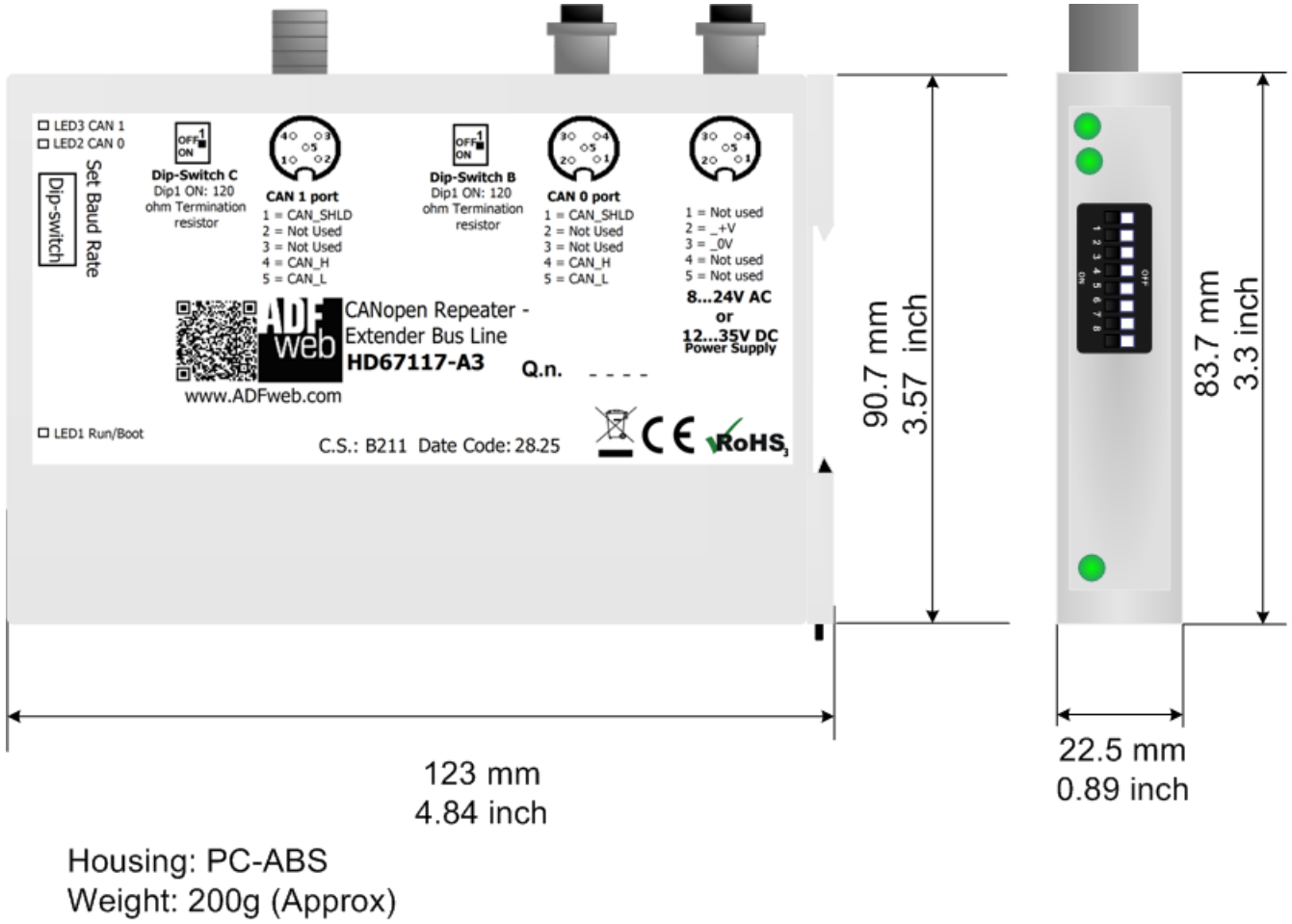


Figure 2d: Mechanical dimensions scheme for HD671xx-A3

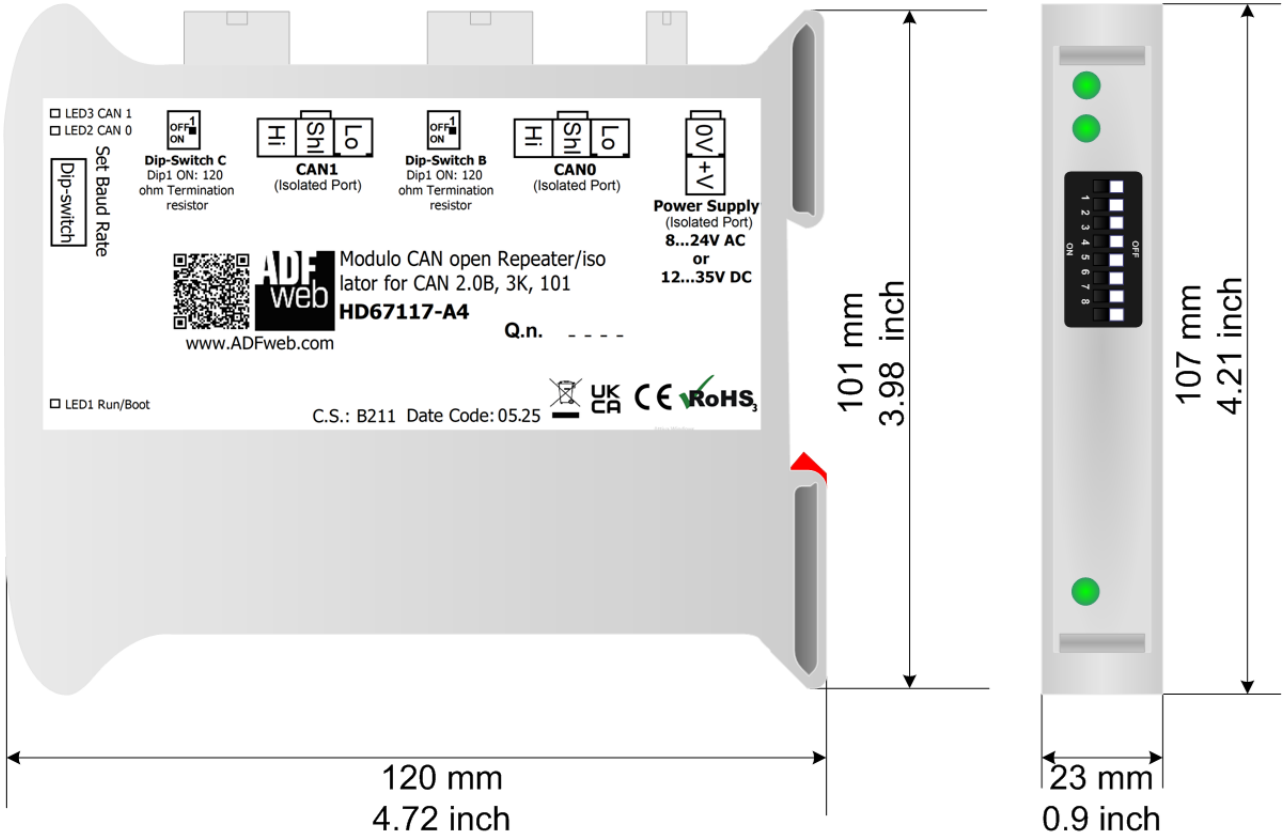


Figure 2e: Mechanical dimensions scheme for HD671xx-A4

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.
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. 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.

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