User Manual
Revision 2.301
English

CAN - Repeater - Extender bus line


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)
- Industrial temperature range: -40°C / 85°C (-40°F / 185°F)

For others Repeaters:
CAN Repeaters
See also the following links:
www.adfweb.com?Product=HD67180 (For DeviceNet)
www.adfweb.com?Product=HD67181 (For Generic Use)
www.adfweb.com?Product=HD67182 (For J1939)

Optic Fibres Repeaters
See also the following links:
www.adfweb.com?Product=HD67117F (For CANopen)
www.adfweb.com?Product=HD67117FS (For DeviceNet)
www.adfweb.com?Product=HD67180F (For CANopen)
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:
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.


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/

REVISION LIST:

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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.
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

1M Baud rate

250K Baud rate

Examples Repeater use

EXTENDED LINE CAN

250m at 1M Baud rate

Extended line CAN for other 250m

Extended line CAN for other 250m
Example Repeater use

BACKBONE

CAN Branch set with different Baud Rate
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.

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<th>Speed CAN1 BPS</th>
<th>Dip 1</th>
<th>Dip 2</th>
<th>Dip 3</th>
<th>Dip 4</th>
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<td>Speed CAN0 BPS</td>
<td>Dip 5</td>
<td>Dip 6</td>
<td>Dip 7</td>
<td>Dip 8</td>
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<tr>
<td>10K</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>20K</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>50K</td>
<td>ON</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>(*) 62.5K</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>100K</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>125K</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>250K</td>
<td>OFF</td>
<td>ON</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>500K</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>800K</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>1000K</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
</tbody>
</table>

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

**Connector1:**
- Power Supply
- Ground 0V
- Positive wire +V
- 12 VAC (min 10V; max 19V) – 4 VA
- 24 VDC (min 10V; max 35V) – 4 Watt

**Jumper1:**
- Termination CAN1 Line
  - Open
  - 120 ohm

**Connector2:**
- CAN0
  - H0 = High wire
  - SH0 = Shield (to Ground)

**Connector3:**
- CAN1
  - Isolated port
  - H1 = High wire
  - SH1 = Shield (to Isolated Ground)
  - L1 = Low wire
  - 120 ohm

**Led3:**
- Green RUN

**Figure 1:** Connection scheme for HD67117
Figure 2: Connection scheme for HD67117M

Connector1:
- Power Supply
  - 0V = Ground
  - +V = Positive wire
  - 12 VAC (min 8 V; max 19 V) - 4 VA
  - 24 VDC (min 8 V; max 35 V) - 4 Watt

Connector2:
- CAN1 (Isolated port)
  - H1 = High wire
  - Sh1 = Shield (to Isolated Ground)
  - L1 = Low wire

Connector3:
- CAN0
  - H0 = High wire
  - Sh0 = Shield (to Ground)
  - LD = Low wire

Jumper1:
- Termination CAN0 Line
  - Open = 120 ohm

Led1:
- Green RUN

Led2:
- Green CAN0 Communication

Led3:
- Green CAN1 Communication

- CAN 1 Baud Rate Setting [BPS]
  - OFF ON: 10K
  - OFF ON: 20K
  - OFF ON: 50K
  - OFF ON: 62.5K
  - OFF ON: 100K
  - OFF ON: 125K
  - OFF ON: 250K
  - OFF ON: 500K
  - OFF ON: 800K
  - OFF ON: 1,000K

- CAN 0 Baud Rate Setting [BPS]
  - OFF ON: 10K
  - OFF ON: 20K
  - OFF ON: 50K
  - OFF ON: 62.5K
  - OFF ON: 100K
  - OFF ON: 125K
  - OFF ON: 250K
  - OFF ON: 500K
  - OFF ON: 800K
  - OFF ON: 1,000K
Figure 3: Connection scheme for HD67117R

**CAN1**
- Baud Rate Setting [BPS]
  - OFF: 10K
  - ON: 20K
  - OFF: 50K
  - ON: 62.5K
  - OFF: 100K
  - ON: 125K
  - OFF: 250K
  - ON: 500K
  - OFF: 800K
  - ON: 1000K

**CAN0**
- Baud Rate Setting [BPS]
  - OFF: 10K
  - ON: 20K
  - OFF: 50K
  - ON: 62.5K
  - OFF: 100K
  - ON: 125K
  - OFF: 250K
  - ON: 500K
  - OFF: 800K
  - ON: 1000K

**Led1:**
- Green CAN1 Communication
- ON: 120 Ohm
- OFF: Open
- Dip1: Not Used

**Led2:**
- Green CAN0 Communication

**Led3:**
- Termination CAN1 Line
- Dip1: Not Used
- Off: 120 Ohm
- ON: Open

**Connector1:**
- Power Supply
- 0V = Ground
- +V = Positive wire
- 12 VAC (min 8v : max 19v) – 4 VA
- 24 VDC (min 9v : max 35v) – 4 Watt

**Connector2:**
- CAN1 (Isolated port)
- H1 = High wire
- Sh1 = Shield (to Isolated Ground)
- L1 = Low wire

**Connector3:**
- CAN0
- H0 = High wire
- Sh0 = Shield (to Ground)
- L0 = Low wire

**Dip0:**
- Termination CAN0 Line
- OFF: 120 Ohm
- ON: Open
- Dip2: Not Used
Figure 4: Connection scheme for HD67117-A3

* Connected together
** Connected together
Figure 5: Connection scheme for HD67117-A4

**Connector 1:** (Type: MiniFit, Male)
- Power Supply
- 1 = Not Connected
- 2 = 0V = Ground
- 3 = Not Connected
- 4 = +V = Positive wire
- 12 VAC (min 8V; max 16V) ~ 4 VA
- 24 VDC (min 8V; max 35V) ~ 4 Watt

**Connector 2:** (Type: MiniFit, Male)
- CAN 0
- 1 = High wire
- 2 = Shield (to Ground)
- 3 = Low wire
- 4 = Not Connected

**Dip-Switch A:**
- Dip1 – Not used
- Dip2 – Termination CAN Bus 0
  - On = Open
  - Off = 120 ohm

**Connector 3:** (Type: MiniFit, Male)
- CAN 1 (Isolated Port)
- 1 = High wire
- 2 = Shield (to Isolated Ground)
- 3 = Low wire
- 4 = Not Connected

**Dip-Switch B:**
- Dip1 – Termination CAN Bus 1
  - On = Open
  - Off = 120 ohm
- Dip2 – Not used
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

CAN BUS CABLE CHARACTERISTICS:

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<td>AC parameters:</td>
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<td>Delay</td>
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<tr>
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<td>50 K</td>
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</tr>
<tr>
<td>1000 K</td>
<td>25</td>
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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 Connectors )
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 Connectors )
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 Connectors )
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 Connectors )
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**


**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.

PRODUCTS AND RELATED DOCUMENTS:

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