User Manual

Revision 1.001
English

GSM/GPRS Modem

(Order Codes: HD67300-001-A4, HD67300-001-A5, HD67300-011-A4, HD67300-011-A5, HD67300-021-A4, HD67300-021-A5, HD67300-101-A4, HD67300-101-A5, HD67300-111-A4, HD67300-111-A5, HD67300-121-A4, HD67300-121-A5, HD67300-011-B6, HD67300-021-B6, HD67300-101-B6)

for Website information:
www.adfweb.com?Product=HD67300

for Price information:
www.adfweb.com?Price=HD67300-001-A4
www.adfweb.com?Price=HD67300-001-A5
www.adfweb.com?Price=HD67300-011-A4
www.adfweb.com?Price=HD67300-011-A5
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www.adfweb.com?Price=HD67300-011-B6
www.adfweb.com?Price=HD67300-021-B6
www.adfweb.com?Price=HD67300-101-B6

Benefits and Main Features:

- Galvanic isolation
- Industrial temperature range: -30°C / 70°C (-22°F / 158°F)

Analyzer / Scanner /Sniffer, M-Bus
www.adfweb.com?Product=HD67031

Multi-Drop Converter RS232/RS485 to Optic Fiber
www.adfweb.com?Product=HD67033M (RS232, SL)
www.adfweb.com?Product=HD67034M (RS232, DL)
www.adfweb.com?Product=HD67035M (RS485, SL)
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Isolator & Repeater, RS485
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GSM I/O and Alarms Modem
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CAN, CANopen, J1939, DeviceNet, NMEA2000 Analyzer
www.adfweb.com?Product=HD67316

CAN, CANopen, J1939, DeviceNet, NMEA2000 from/to USB
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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:

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REVISION LIST:

Revision	Date	Author	Chapter	Description
1.000	29/04/2011	FI	All	First release version
1.001	18/07/2011	FI	All	Revision

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CONNECTION SCHEME:

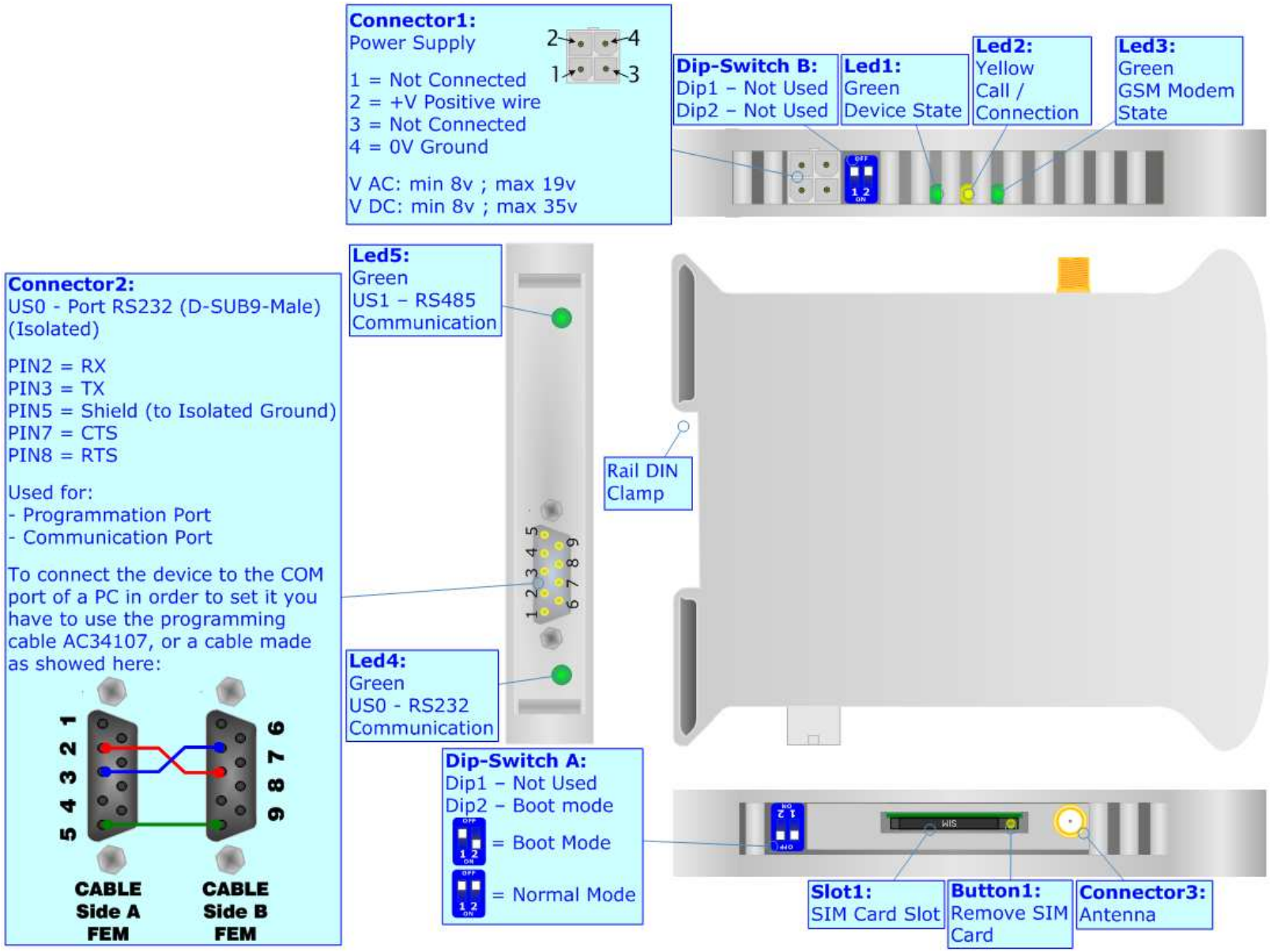


Figure 1: Connection scheme for HD67300-001-A4

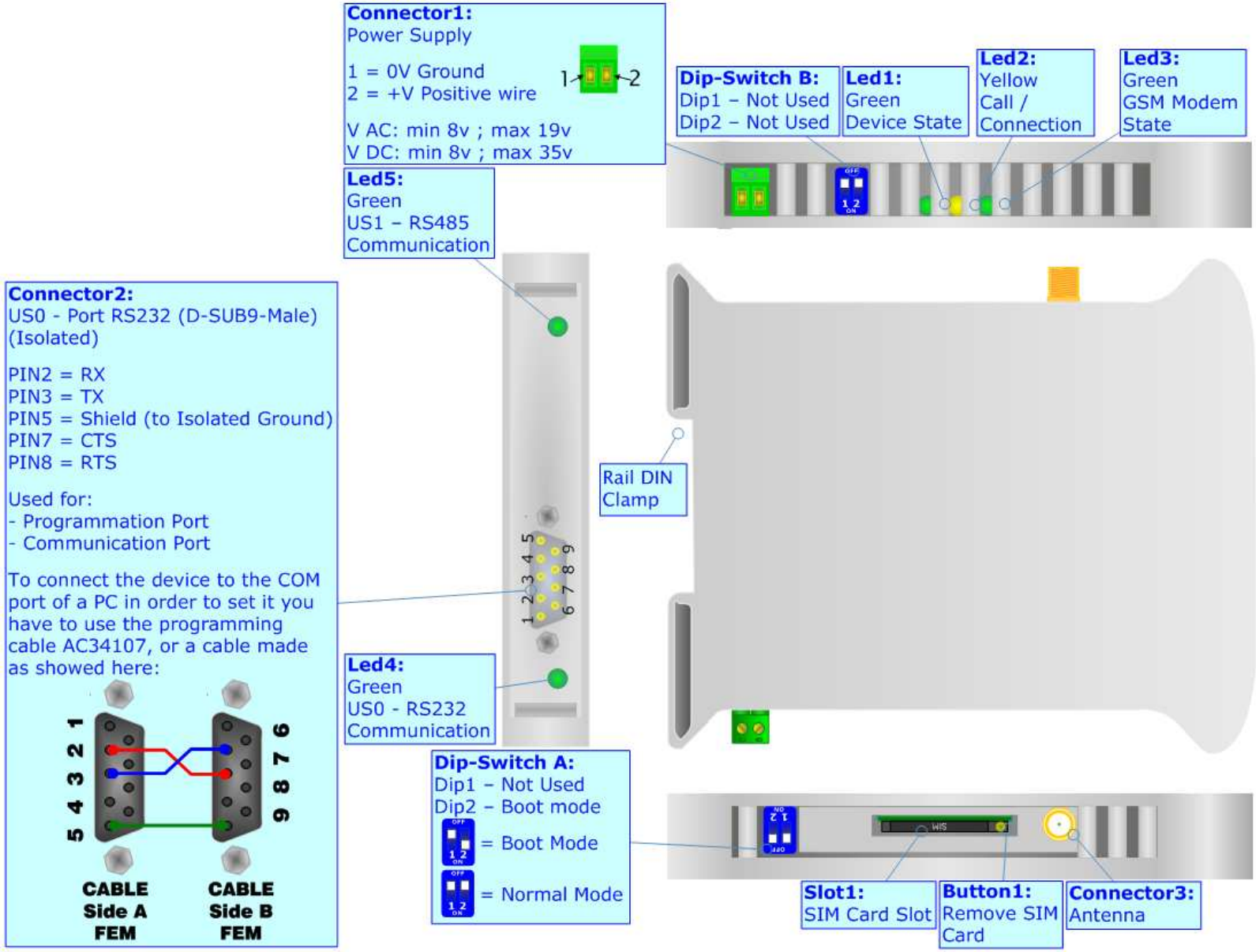


Figure 2: Connection scheme for HD67300-001-A5

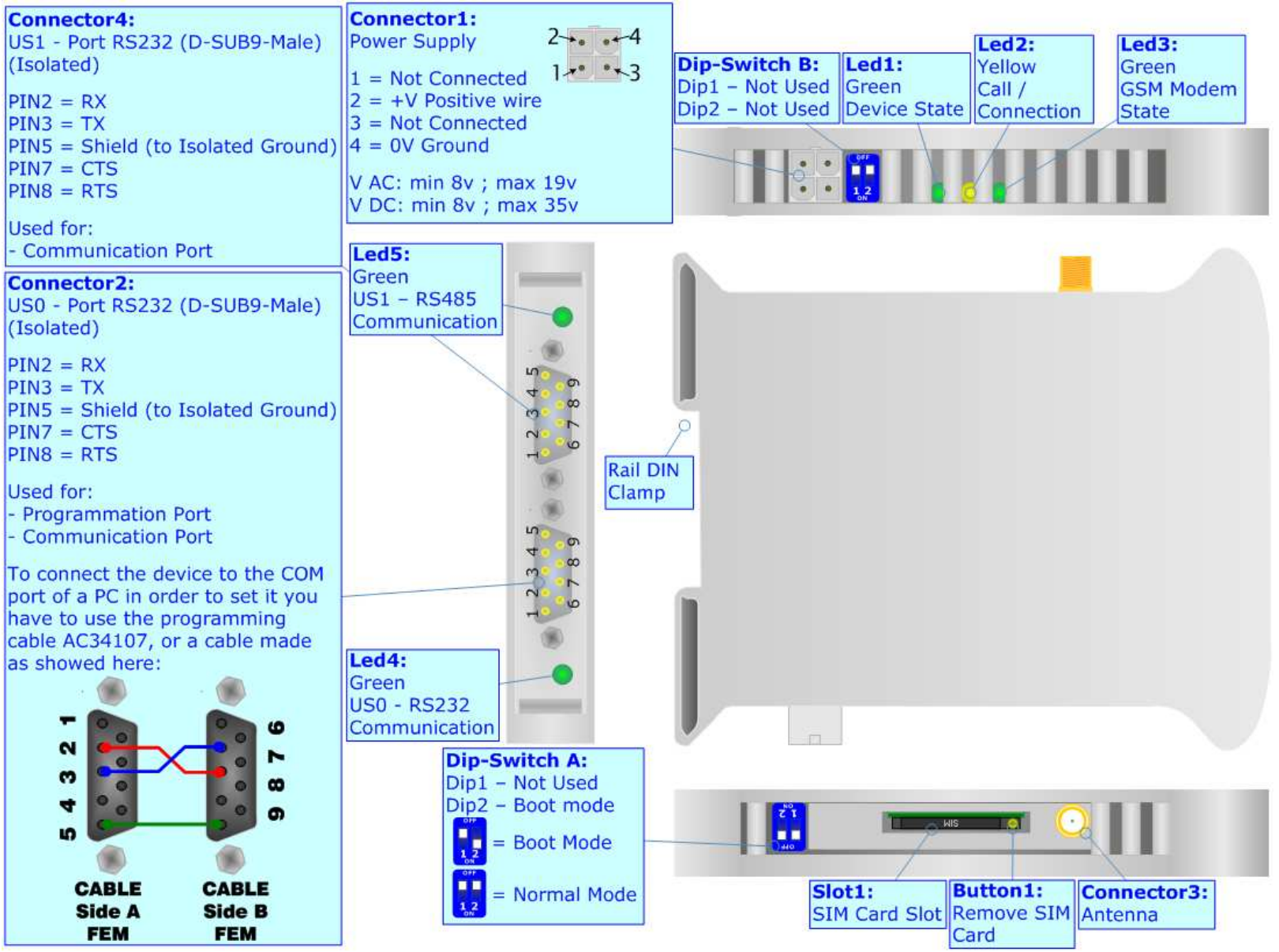


Figure 3: Connection scheme for HD67300-011-A4

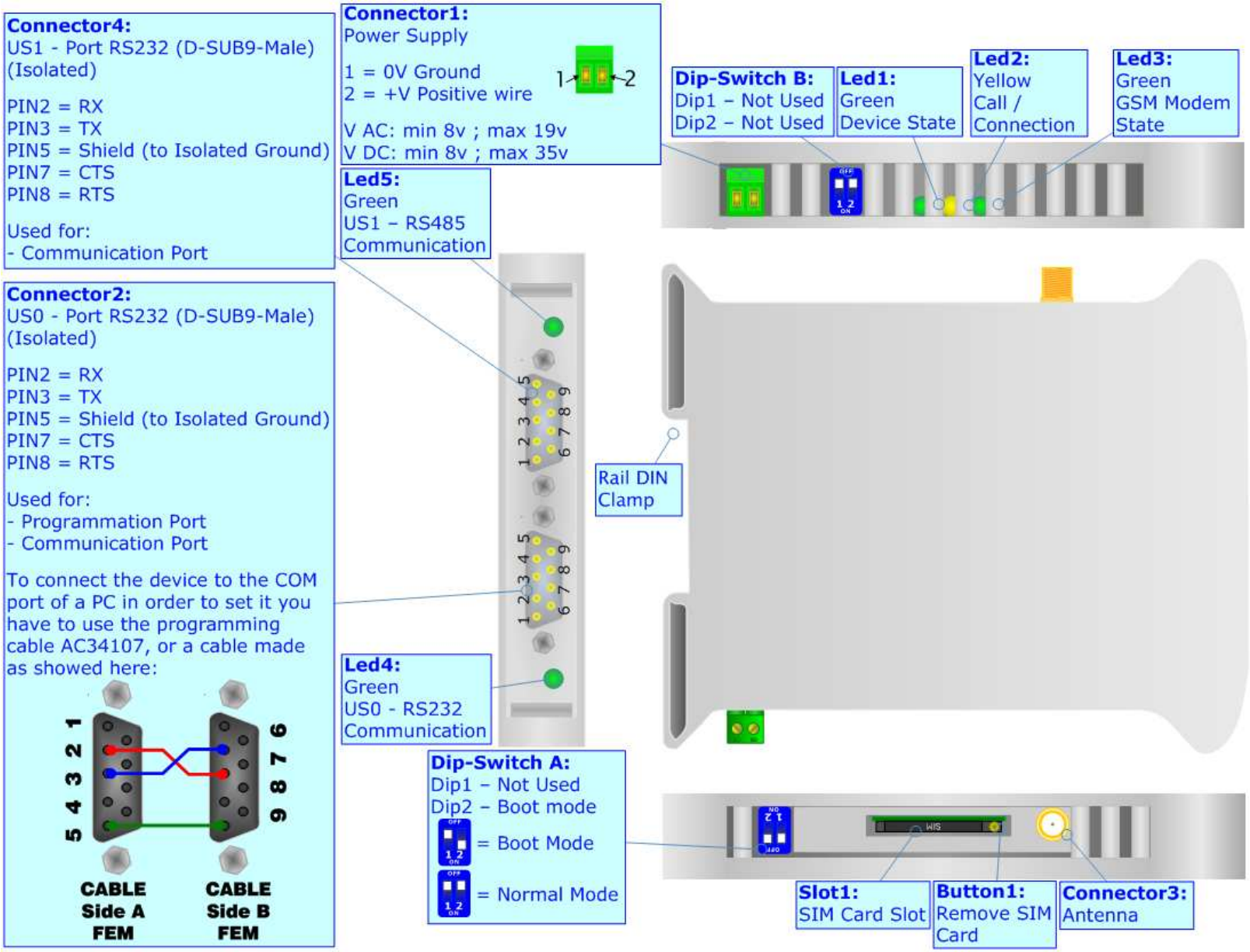


Figure 4: Connection scheme for HD67300-011-A5

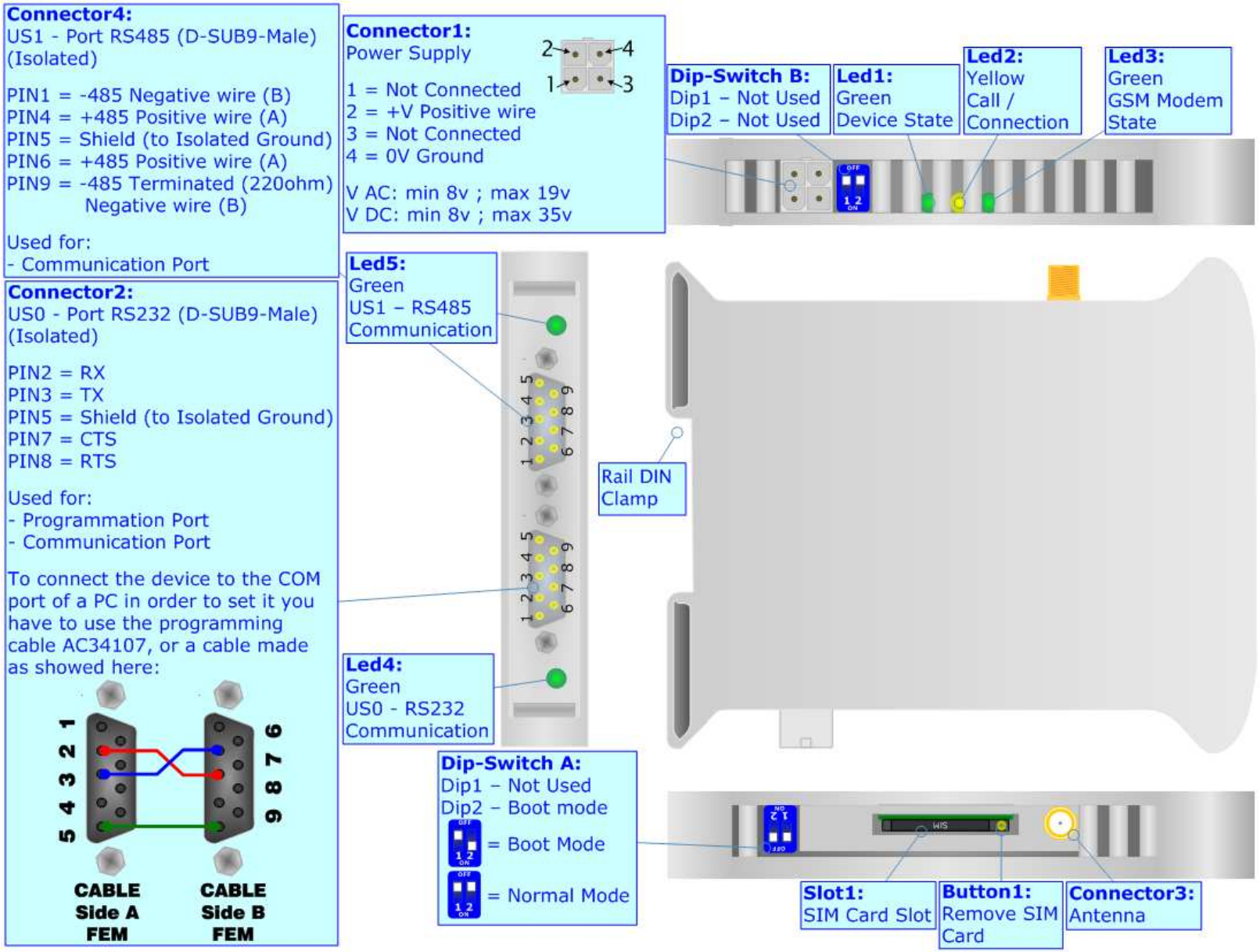


Figure 5: Connection scheme for HD67300-021-A4

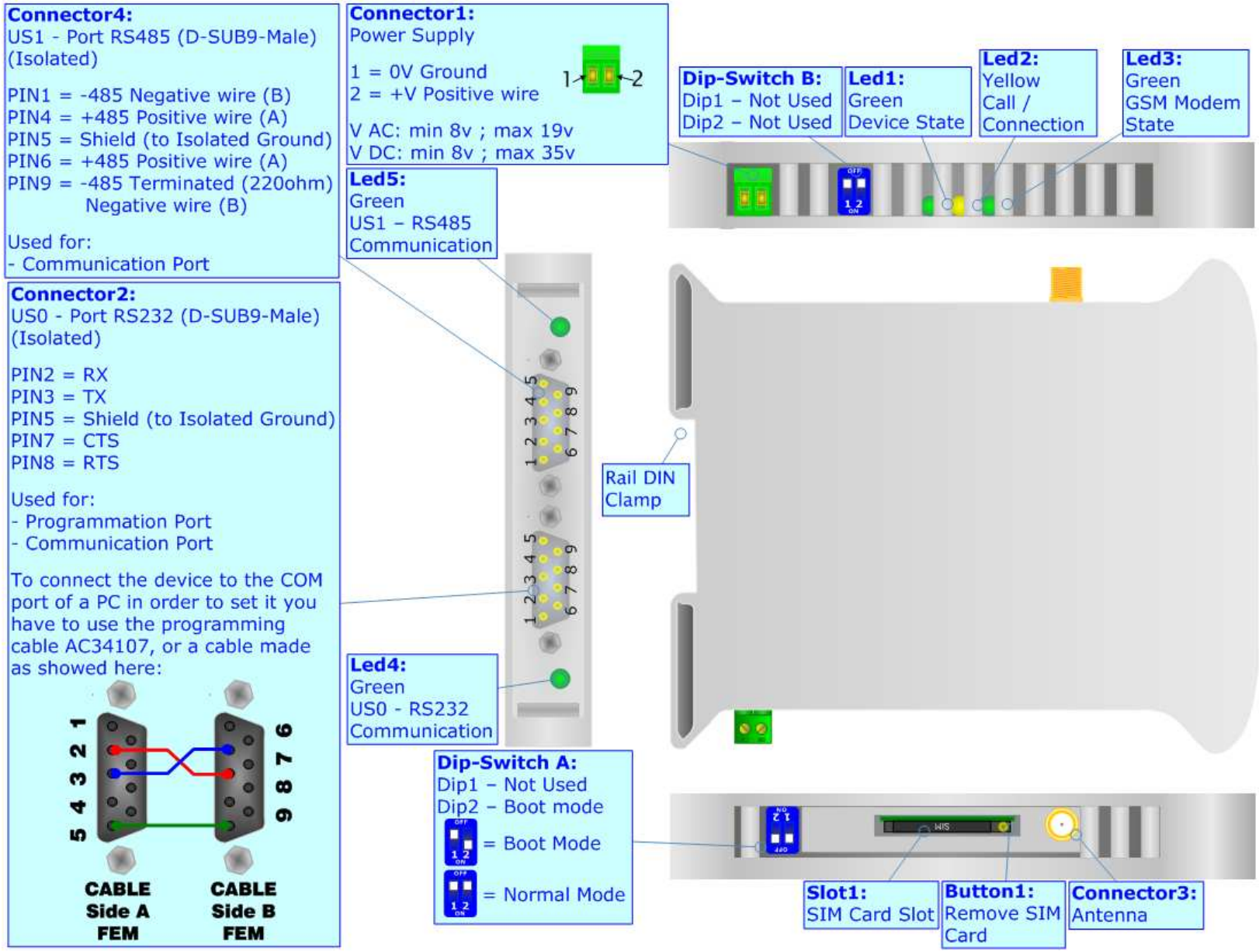


Figure 6: Connection scheme for HD67300-021-A5

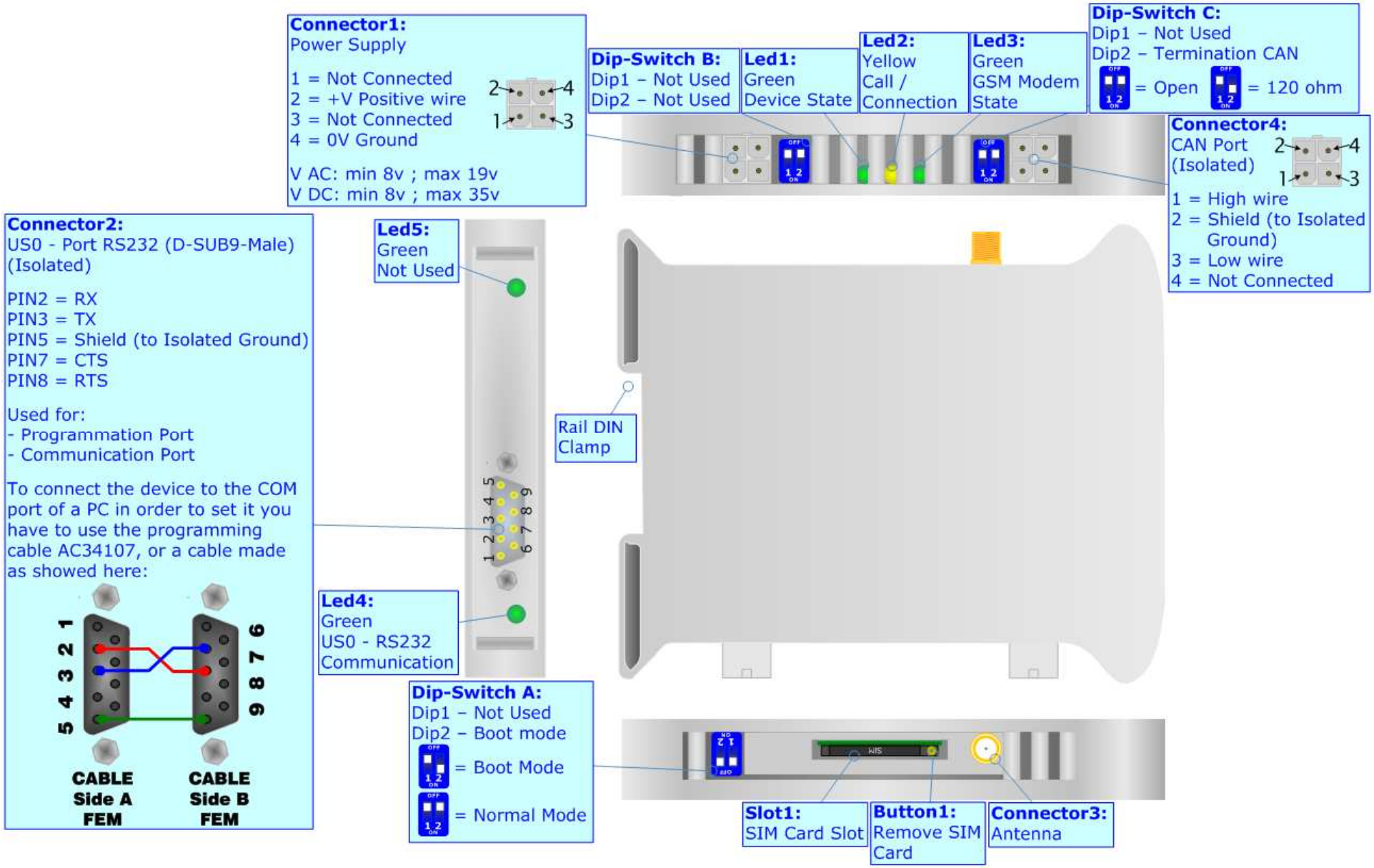


Figure 7: Connection scheme for HD67300-101-A4

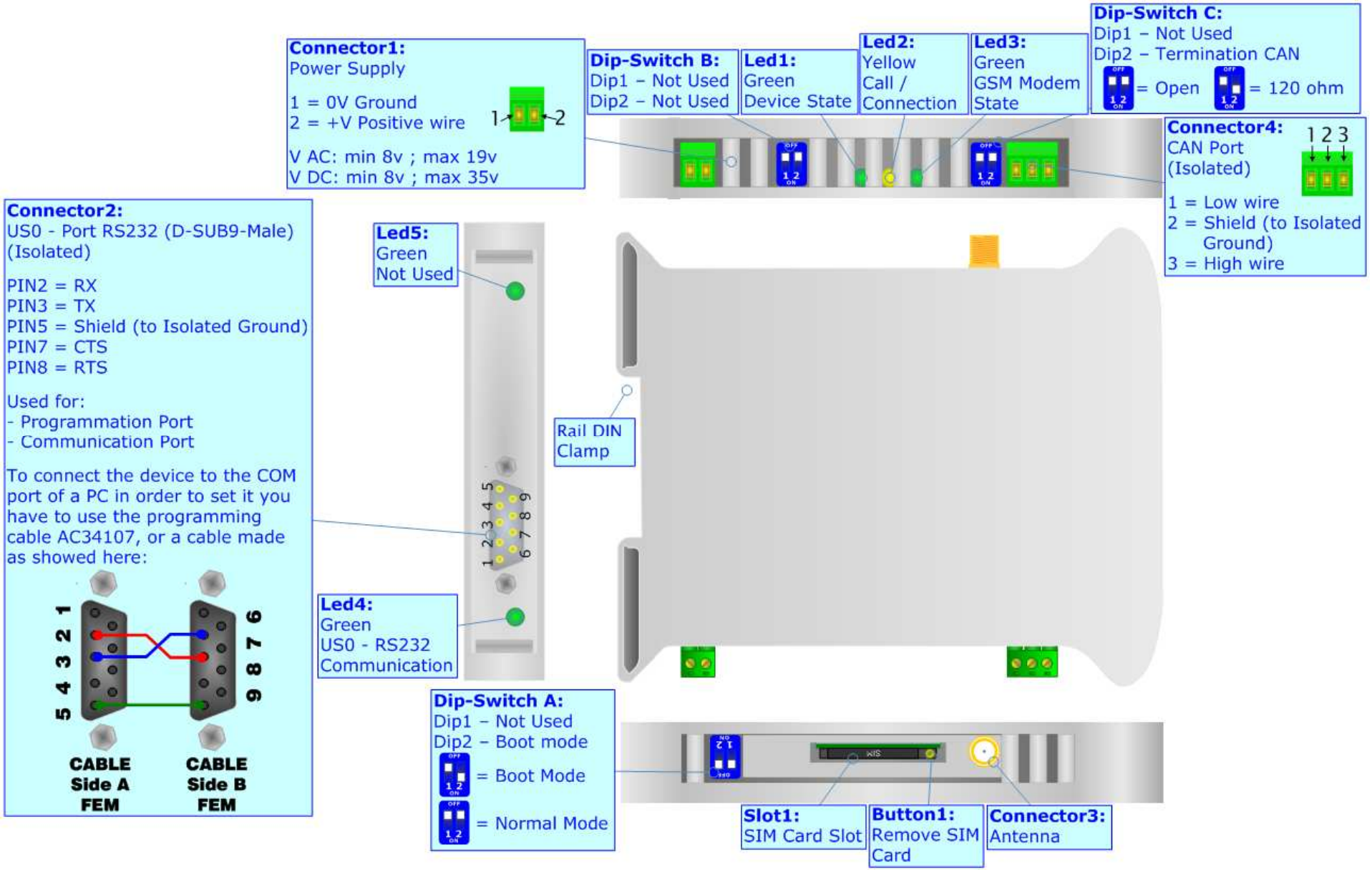


Figure 8: Connection scheme for HD67300-101-A5

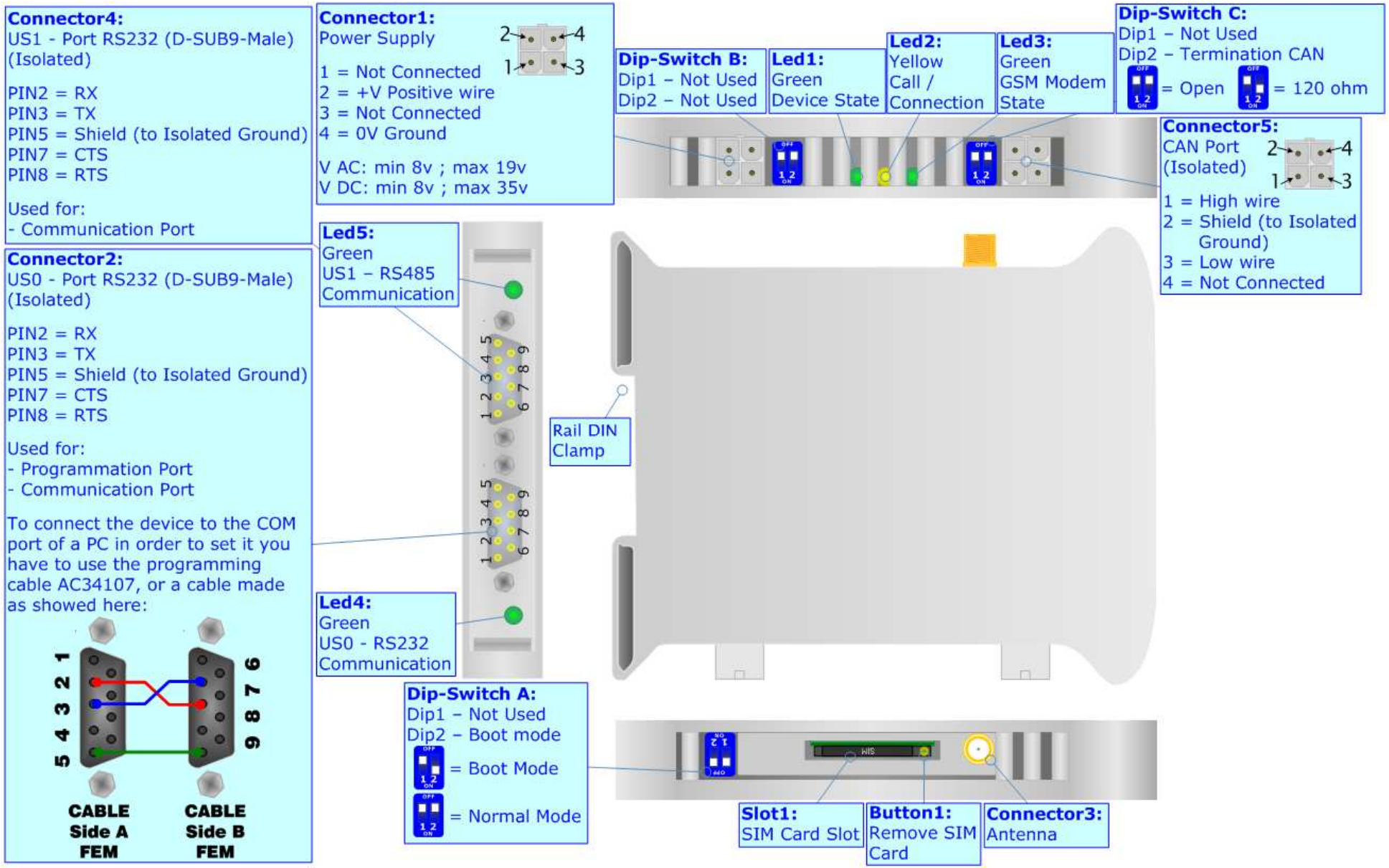


Figure 9: Connection scheme for HD67300-111-A4

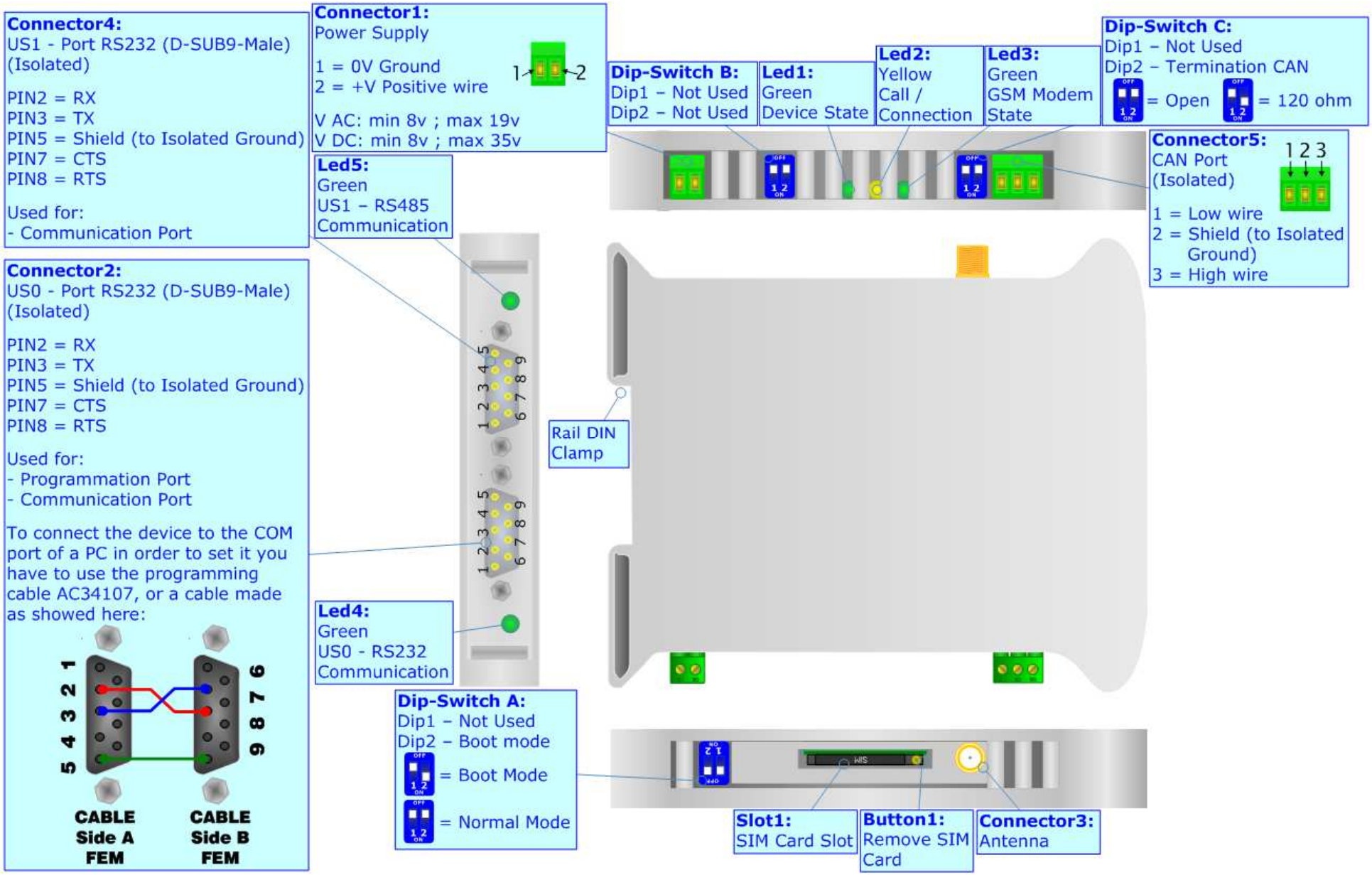


Figure 10: Connection scheme for HD67300-111-A5

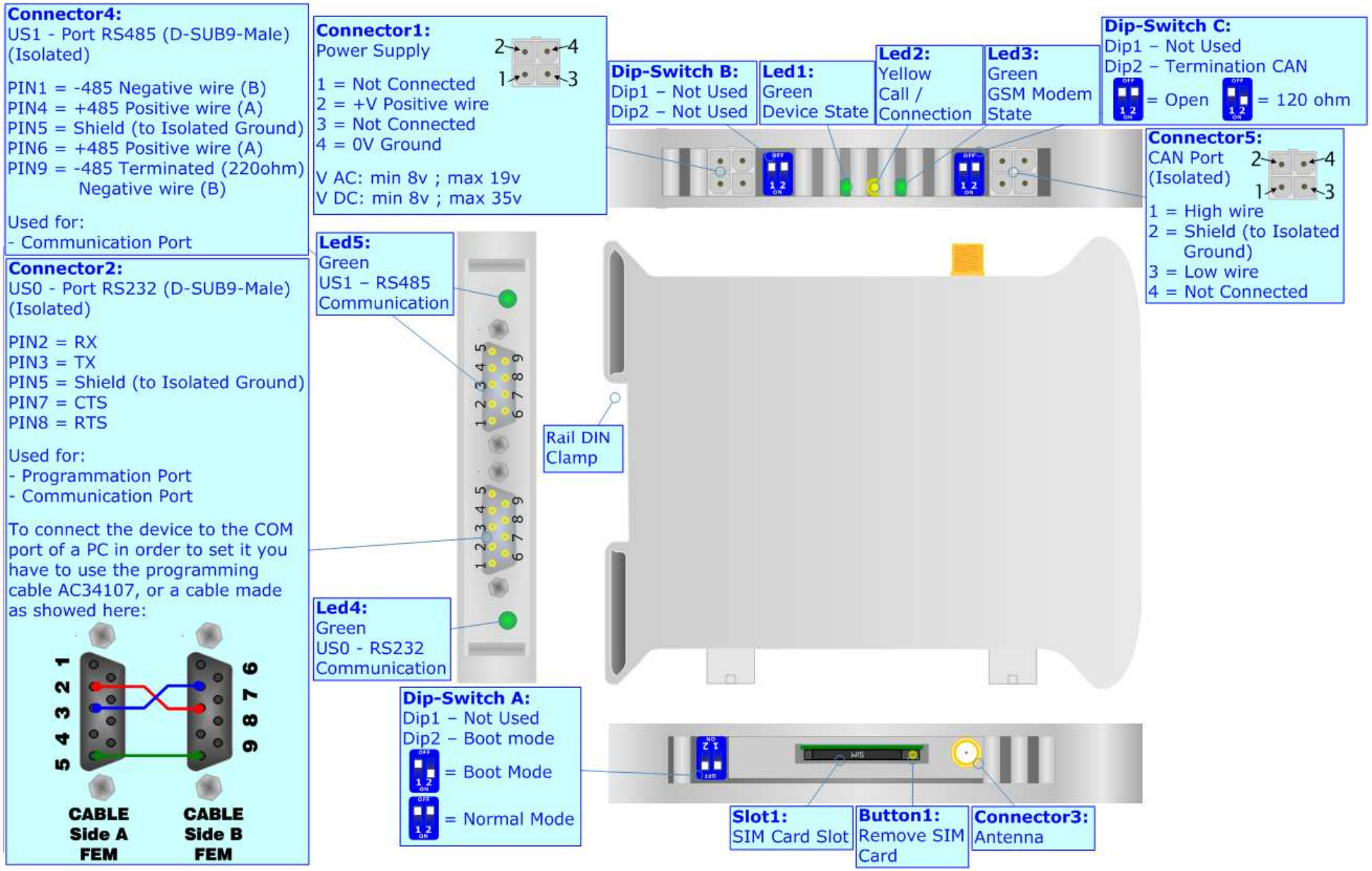


Figure 11: Connection scheme for HD67300-121-A4

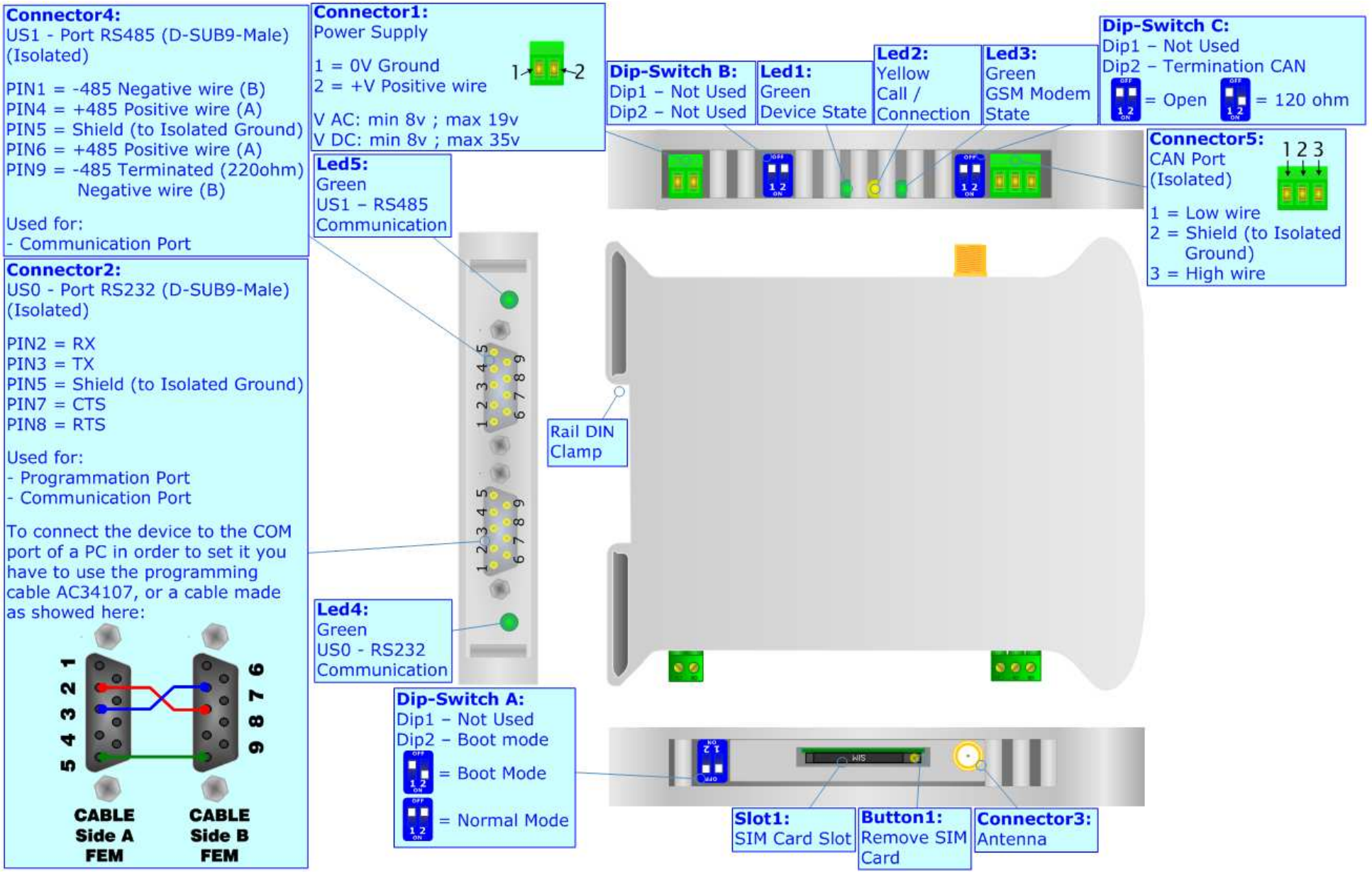


Figure 12: Connection scheme for HD67300-121-A5

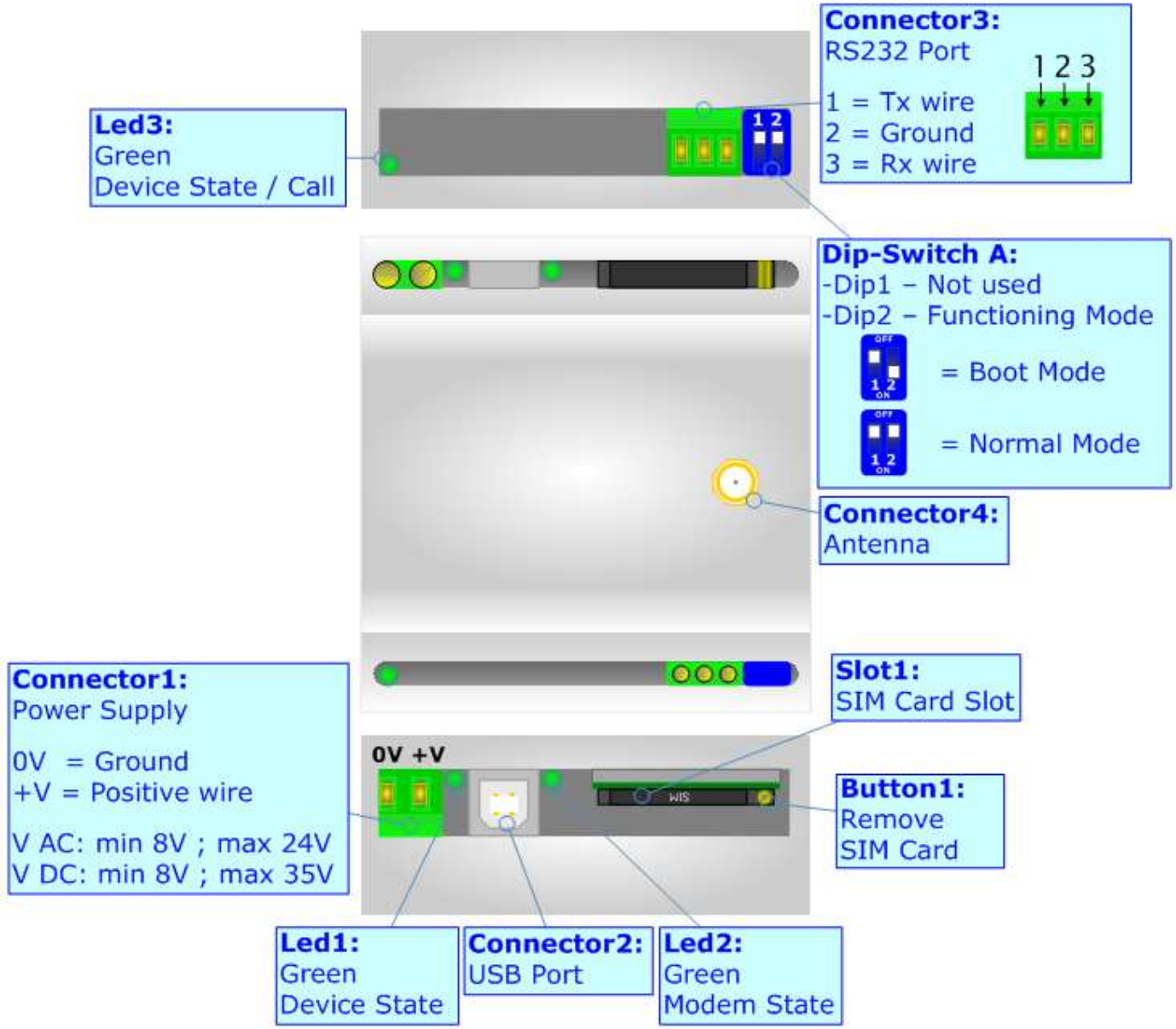


Figure 13: Connection scheme for HD67300-011-B6

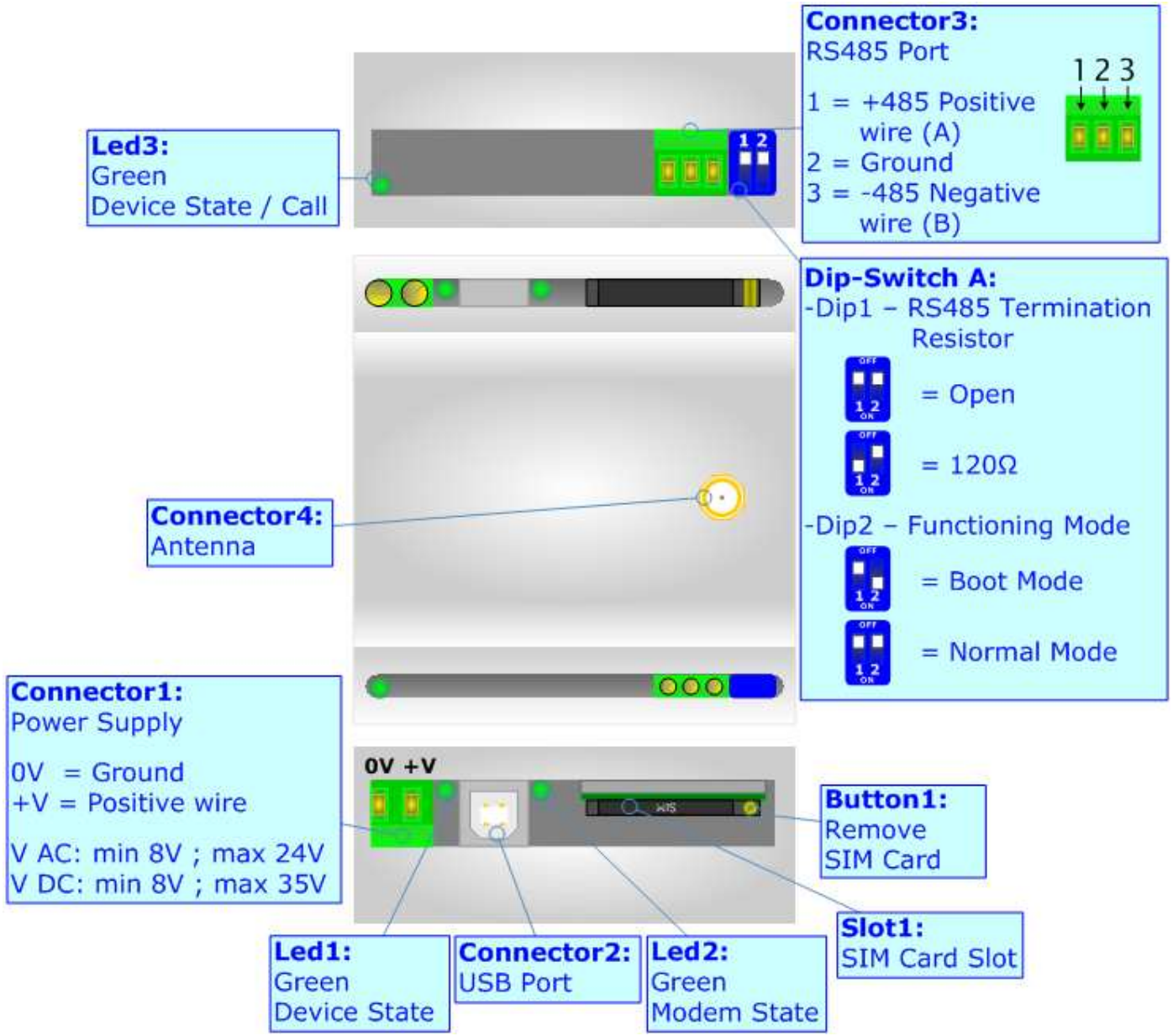


Figure 14: Connection scheme for HD67300-021-B6

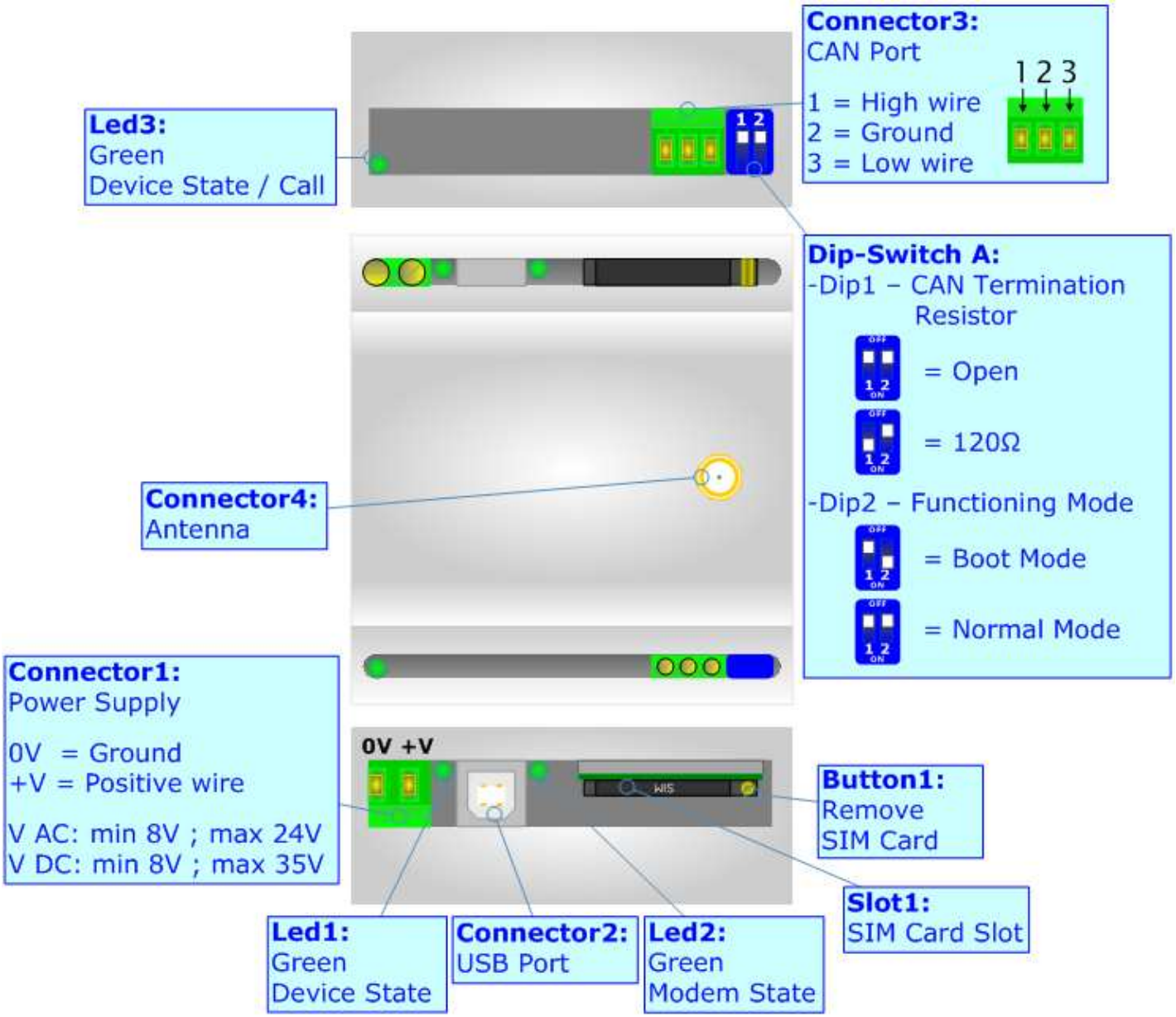
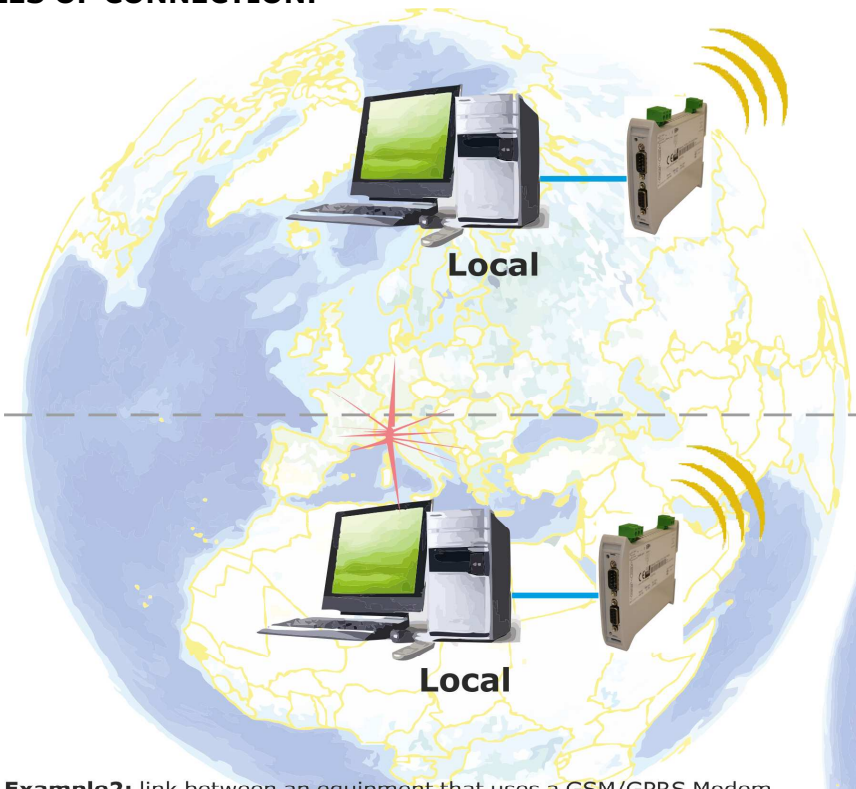
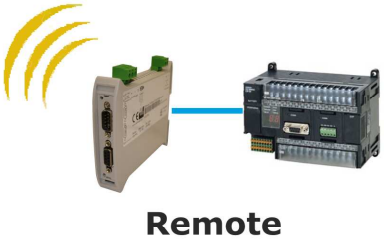


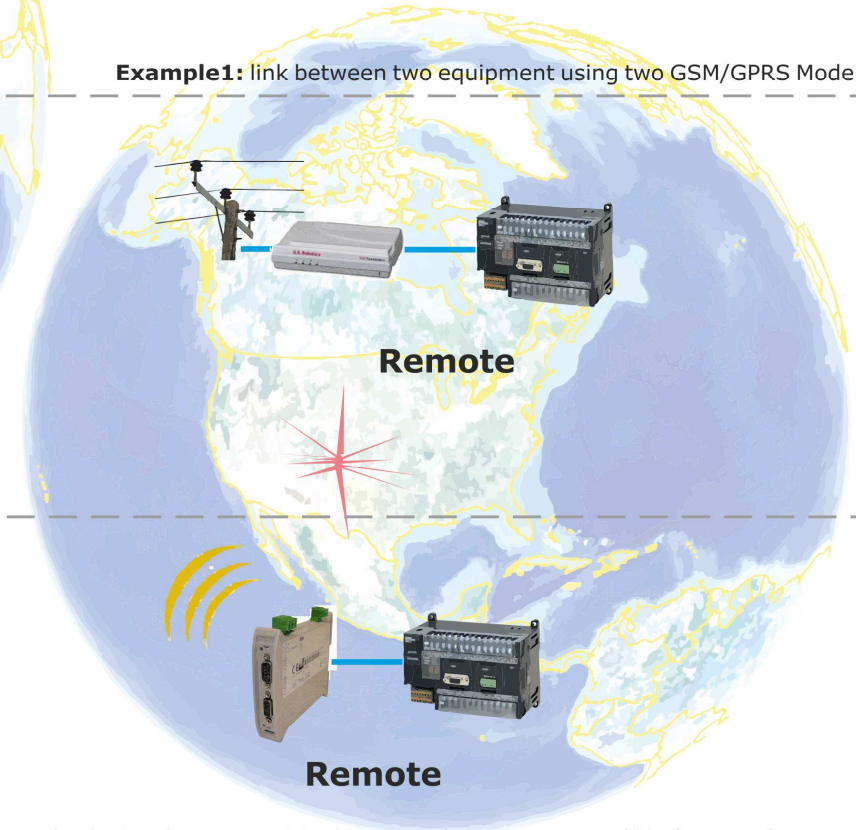
Figure 15: Connection scheme for HD67300-101-B6

EXAMPLES OF CONNECTION:





Example1: link between two equipment using two GSM/GPRS Modem



Example2: link between an equipment that uses a GSM/GPRS Modem programmed like 'Local' and another device that uses an Analog Modem

Example3: link between an equipment that uses an Analog Modem and a device that uses a GSM/GPRS Modem programmed like 'Remote'

It is possible to create a link between two equipment using two GSM Modem (see Example1), or with a GSM Modem programmed like "Local" (see Example2) or with a GSM Modem programmed like "Remote" (see Example3). With the last two modes there is the necessity to use a third part modem to the other side.

CHARACTERISTICS

The HD67300-xxx-xx series of GSM/GPRS Modem are designed to transmit and receive data over GSM/GPRS networks. The modem can be used for increase the efficiency of maintenance and communication. The devices can be mounted on a DIN-Rail and the wide power supply input range make them suitable for use with a variety of field power sources. The interfaces that can be connected to the various codes of the series are RS232 devices, RS485 devices and CAN based devices (CAN 2.0A, CAN2.0B, CANopen, J1939, DeviceNet). The device is furnished with an antenna but it is possible to use remote antennas with SMA connectors.

These devices allow the following characteristics:

- Modem Control by AT commands
- Quad-band EGSM 850/900/1800/1900 MHz;
- Isolation between Power Supply and RS232/RS485/CAN bus;
- Free software for selecting the type (Local/Remote)
- 35mm DIN Rail mounting
- Industrial temperature range: -30°C / 70°C (-22°F / 158°F)

The "GSM Modem" device can work also with other Modems but for a sure compatibility is recommended to use two "GSM Modem".

With some Sim Operators it is necessary to have a specific type of contract.

POWER SUPPLY:

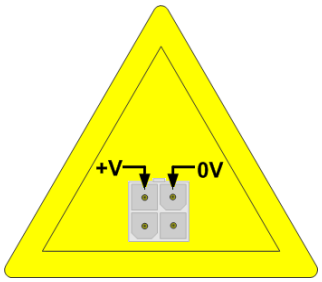
The devices can be powered between a wide range of tensions. For more details see the two tables below.

	VAC ~		VDC ⎓	
	Vmin	**Vmax**	**Vmin**	**Vmax**
HD67300-xxx-Ax	**8V**	**19V**	**8V**	**35V**
HD67300-xxx-B6	**8V**	**24V**	**8V**	**35V**

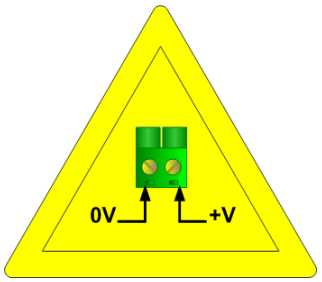
Consumption at 24V DC:

Device	W/VA
HD67300-001-A4, HD67300-001-A5, HD67300-011-A4, HD67300-011-A5, HD67300-021-A4, HD67300-021-A5, HD67300-101-A4, HD67300-101-A5, HD67300-111-A4, HD67300-111-A5, HD67300-121-A4, HD67300-121-A5, HD67300-011-B6, HD67300-021-B6, HD67300-101-B6	4

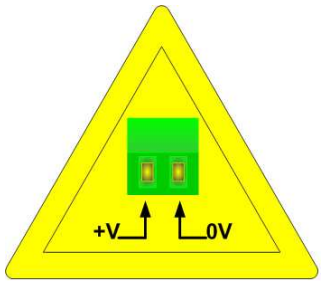
Caution: Not reverse the polarity power



HD67300-xxx-A4



HD67300-xxx-A5



HD67300-xxx-B6

Note: The HD67300-xxx-B6 device cannot be fed only by the USB port (Connector2), it is necessary to use an external power supply on 'Connector1'.

FUNCTION MODES:

The device has got two functions mode depending of the position of the Dip2 of 'Dip-Switch A':

- The first, with Dip2 in Off position (factory setting), is used for the normal working of the device.
- The second, with Dip2 in On position, is used for upload the Firmware.

To put the device on Normal or Boot Mode you must turn Off the device, positioning the Dip-Switch and then turn On the device.

For the operations to follow for the updating (see 'USE OF SW67300' section).

According to the functioning mode, the LEDs will have specifics functions (see 'LEDS' section).

Dip-Switch A:
-Dip1 – Termination Resistor
-Dip2 – Functioning Mode

= Boot Mode

= Normal Mode

Dip-Switch A:
Dip1 – Not Used
Dip2 – Boot mode

= Boot Mode

= Normal Mode

LEDS HD67300-xxx-Ax:

The device has got five 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	Blink slowly	Blink quickly
2: Call / Connection	**On:** Ready for a connection. **Blink slowly:** Modem Connected **Blink quickly (only for Remote):** Call in progress	Off
3: GSM Modem State	**Regular flashing:** Initializing **3 second On, ½ second Off:** Initialized and connected to the phone cell **Off:** In communication (connected)	Off
4: US0 Communication	**Blink slowly:** Run **Blink quickly:** Something is transmitted by the serial	On
5: US1 Communication	Off	On

LEDS HD67300-xxx-Bx:

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.

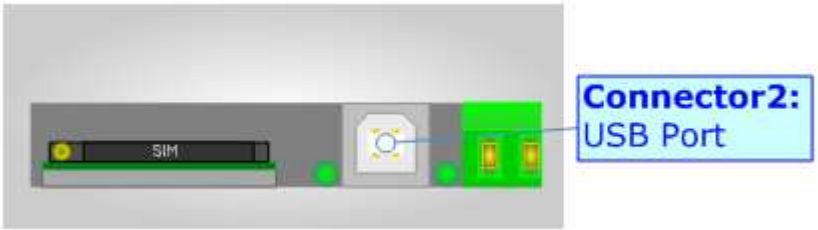
LED	Normal Mode	Boot Mode
1: Device State	Blink slowly	Blink quickly
2: Modem State	**Regular flashing:** Initializing **3 second On, ½ second Off:** Initialized and connected to the phone cell **Off:** In communication (connected)	Off
3: Device State / Call	Blink slowly **Blink quickly (only for Remote):** Call in progress	Blink quickly

SIM:

For remove the SIM card from the housing you must push the 'Button1' and extract the SIM-holder.

USB:

The USB connector (Connector2) of HD67300-xxx-B6 is a Type-B Female. So the cable must be a Type-B Male.



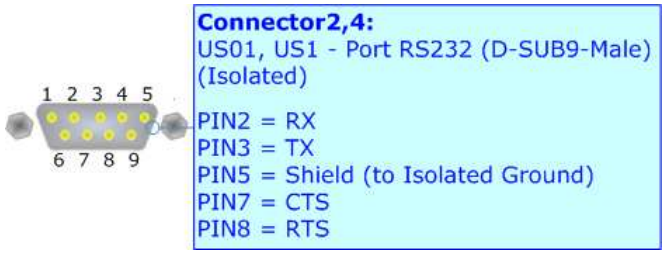
ANTENNA:

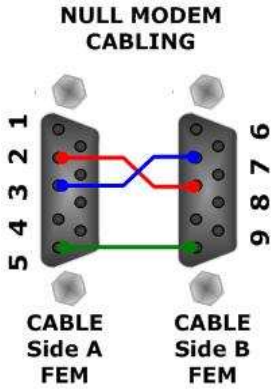
The Antenna connector is a SMA Female ('Female Outer Shell' and 'Female Receptacle') so the Antenna must have a SMA Male connector.

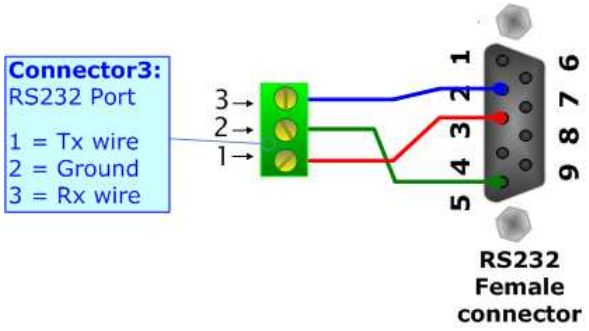
SMA Female connector
on the board

RS232:

The connection from RS232 socket to a serial port (example one from a personal computer) must be made with a Null Modem cable (a serial cable where the pins 2 and 3 are crossed).
It is recommended that the RS232C Cable not exceed 15 meters.

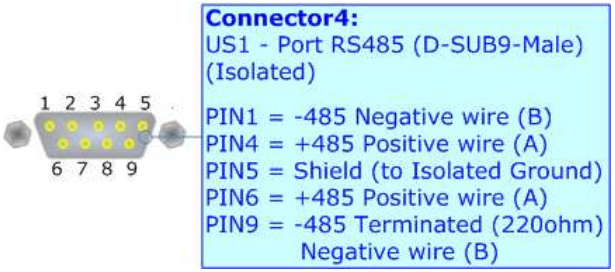






RS485:

The connection of the RS485 in the HD670300-xxx-Ax device must be made with a DB9 Female connector. The pinout of Male DB9 connector of the board is the follow:



If the RS485 needs to be terminated with the 220Ω resistor, PIN6 and PIN9 must be used, otherwise you have to use PIN1 and PIN4.

The termination of RS485 line in the HD67300-xxx-Bx is made by closing Dip1 of 'Dip-Switch A'.

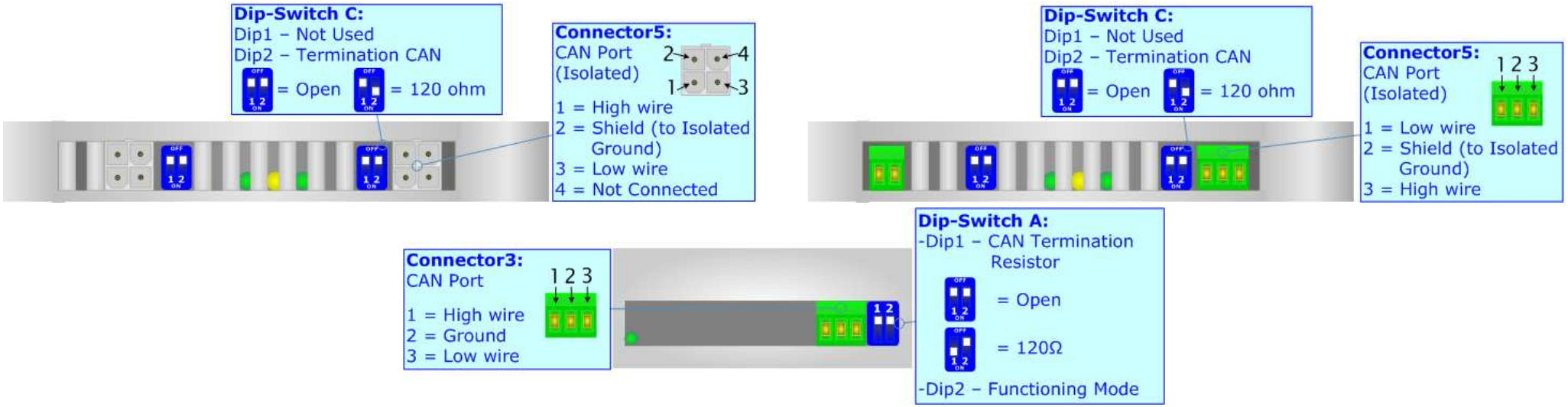
The maximum length of the cable should be 1200m (4000 feet).

Here some codes of cables:

- Belden: p/n 8132 – 2x 28AWG stranded twisted pairs conductor + foil shield + braid shield;
- Belden p/n 82842 – 2x 24AWG stranded twisted pairs conductor + foil shield + braid shield;
- Tasker: p/n C521 - 1x 24AWG twisted pair conductor + foil shield + braid shield;
- Tasker: p/n C522 - 2x 24AWG twisted pairs conductor + foil shield + braid shield.

CAN:

The connection of the CAN in the HD670300-xxx-Ax device must be made with a MiniFit or a 3.5mm Removable Terminal Block Female connector. The termination resistor, for all type of boards, is made by closing a Dip-Switch.



COMMANDS:

The GSM Modem allow to transmit/receive by a GSM connection the data of a serial or a CAN bus.
At the power on the device use as default the **US0** (see Fig. 1…15) with Baudrate **9600** bps, **NONE** Party**,** **1** Stop Bit.
You have to send the commands using a terminal like "Hyper terminal", "Tera Term" or a self-developed software for setting the parameters or sends the others commands.

Before start sending commands check that the yellow LED2 of HD67300-xxx-Bx or the LED3 of HD67300-xxx-Ax is on, it means that the GSM/GPRS Modem is initialized and connected to the phone cell

This is the list of commands and their description that you can send to the GSM Modem:

COMMAND	DESCRIPTION	RESPONSE
AT	Used to check the communication between the serial port and the GSM modem, if the communication is correct the response is OK.	**OK**
ATD NNNNNNN	Used to make a call to another device to start the GSM communication. Instead of NNNNN you have to insert the number to call.	**NO CARRIER:** **BUSY:** The number called is busy. **CONNECT 9600:** The communication is started at 9600 baud.
+++	ONLY after this sequence the device will accept the command to stop the communication.	**OK**
ATH	Used to stop the GSM communication.	**NO CARRIER**
#$#US0;BBBB;P;S;*	Used to set the port and the parameter of Remote device. This command can be sent only when the connection between two modems is established: ➢ **US0:** Port; ➢ **BBBB:** Baudrate of communication; ➢ **P:** Parity ➢ **S:** Number of Stop-Bit	**Param Error:** Errors in the string. **Param Error TO:** You take over 30 seconds to write the commands. **Param OK:** The parameters is setted.
$#$US0;BBBB;P;S;*	Used to set the port and the parameter of Local device: ➢ **US0:** Port; ➢ **BBBB:** Baudrate of communication; ➢ **P:** Parity ➢ **S:** Number of Stop-Bit	**Param Error:** Errors in the string. **Param Error TO:** You take over 30 seconds to write the commands. **Param OK:** The parameters is setted.

Port	Baudrate				Parity	Stop-Bit
US0 US1 CAN	300 600 1200 2400 4800 9600 19200 38400 57600 115200	US0/US1	20 50 100 125 250 500 800 1000	CAN	N →None E →Even O → Odd	1 2

Table of values of parameters that compose the command #$# and $#$

In the case of CAN the Parity and Stop-Bit should not be used; so the Commands are: #$#CAN;500;* and : $#$CAN;250;*

EXAMPLES:

- If we want that the remote device uses the serial port **US0** at a speed of **38400** bps, using **Even** parity, and **2** stop bits; we have to write in the terminal: **#$#US0;38400;E;2;***
- If we want that the local device uses the **CAN** port at a speed of **1000** bps; we have to write in the terminal: **$#$CAN;1000;***

LOCAL OR REMOTE:
The device can be used in two different mode, LOCAL or REMOTE. This selection is being made when the Update Device is performed (see 'USE OF SW67300' section).

- **Local** mode: In this mode the device is able to call other device and remotely change the port and the parameter of the called device.

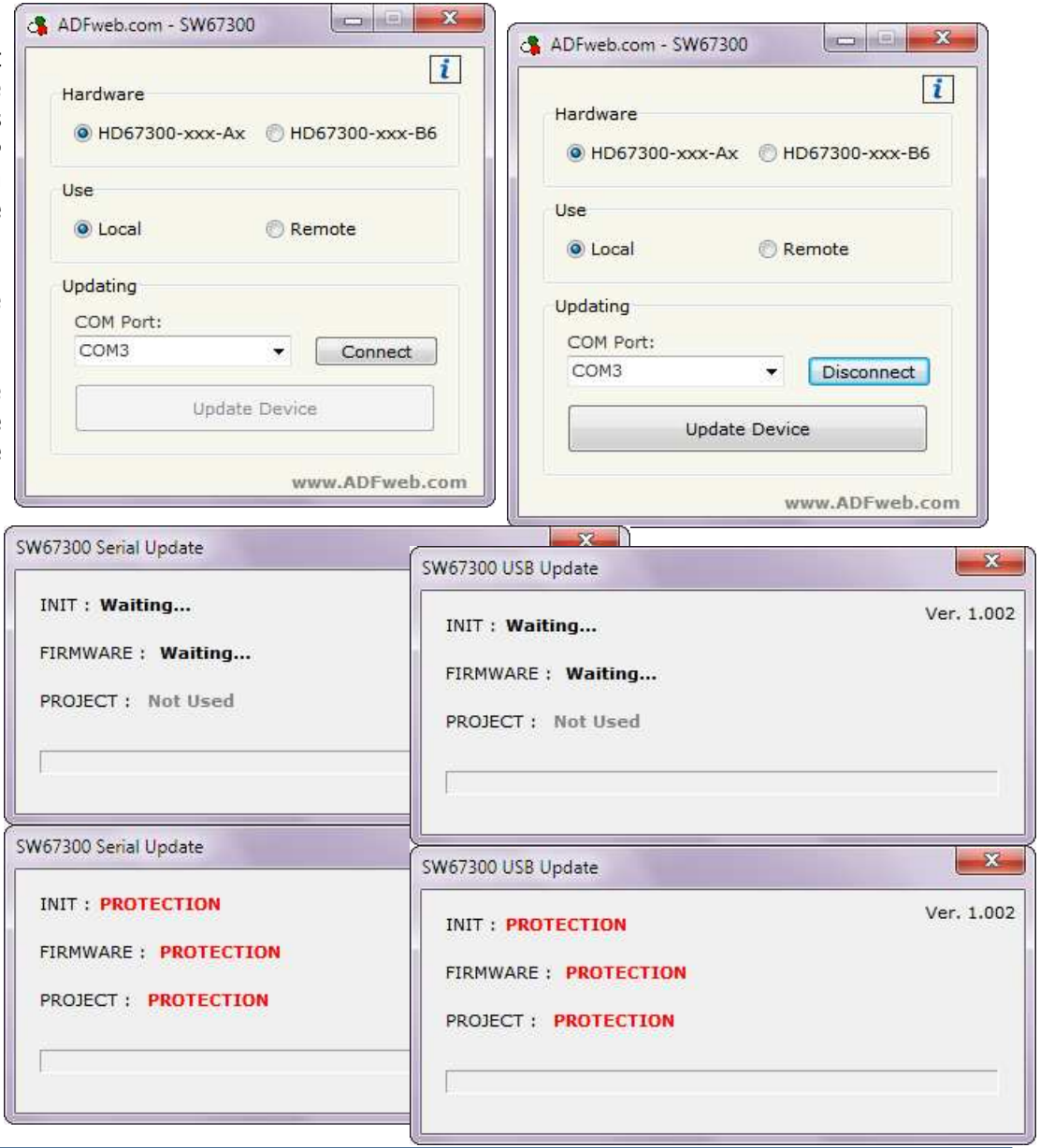
- **Remote** mode: In this mode the device can't change by remote the port and the parameter of other device. Another Modem that is connected to him can change the parameters of ports.

USE OF SW67300:

To configure the GSM Modem, use the available software that runs with Windows, called SW67300. It is downloadable on the site www.adfweb.com and its operation is described in this document. *(This manual is referenced to the last version of the software present on our web site)*. The software works with MSWindows (MS 2000, XP, Vista, Seven). When launching the SW67300 the right window appears.

For updating the device functioning, the GSM Modem must be on Boot Mode.

After selecting the Hardware, the Use of GSM Modem and the COM Port used for the update you have to press the "**Connect**" button for connecting to the device and the "**Update Device**" button for starting the update.
When the update is completed you must turn Off the device, put the Dip-Switch to Normal Mode and turn On again the device. At this point the firmware of the device is correctly updated.



Warning:
If the ""PROTECTION" window appears when you try to do the Update before require assistance try these points:

- Check if the serial COM port selected is the correct one;
- Check if the serial is connected between the PC and the device;
- Try to repeat the operations for the updating;
- If you are using a dongle try with a native COM port or change the dongle;
- Try with another PC;
- Try to restart the PC.

MECHANICAL DIMENSIONS:

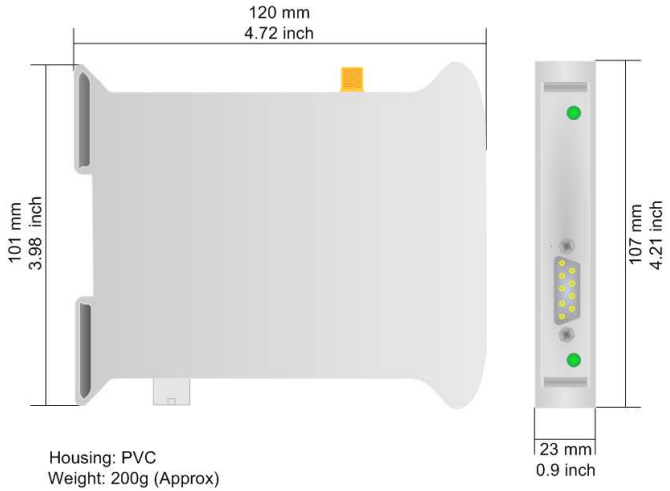


Figure 5: Mechanical dimensions scheme for HD67300-001-A4

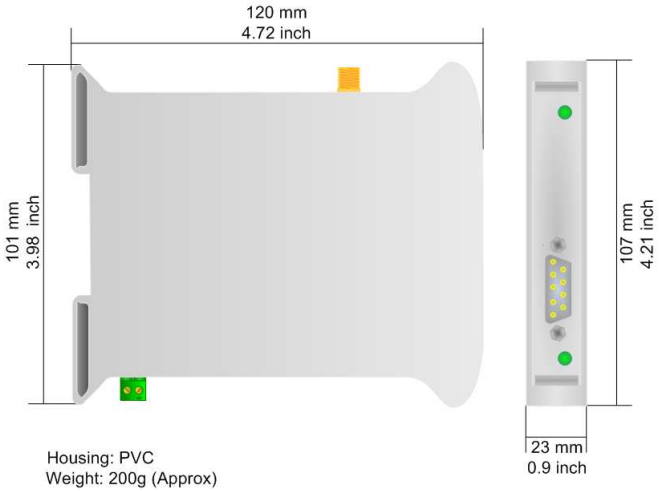


Figure 6: Mechanical dimensions scheme for HD67300-001-A5

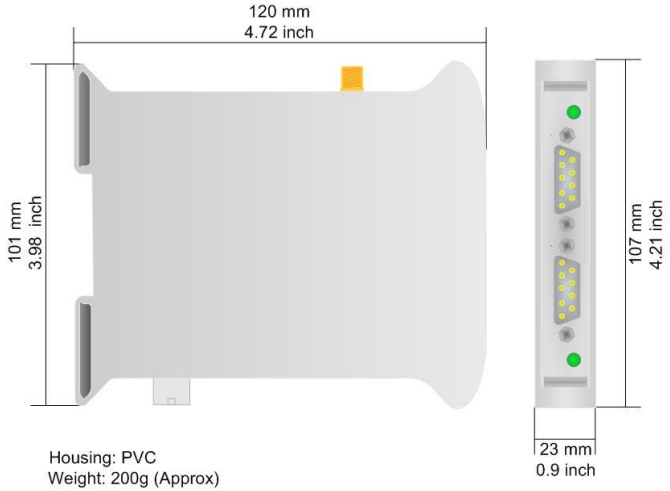


Figure 7: Mechanical dimensions scheme for HD67300-011-A4, HD67300-021-A4

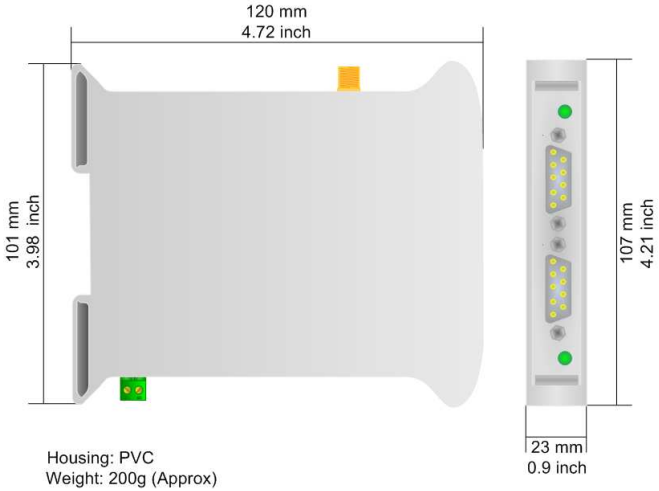


Figure 8: Mechanical dimensions scheme for HD67300-011-A5, HD67300-021-A5

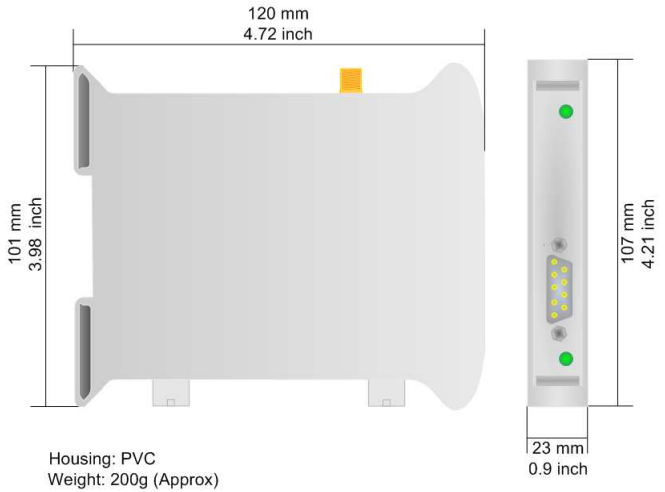


Figure 5: Mechanical dimensions scheme for HD67300-101-A4

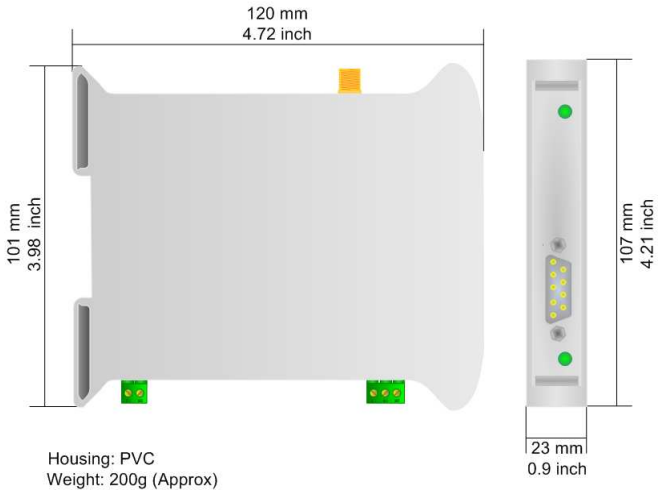


Figure 6: Mechanical dimensions scheme for HD67300-101-A5

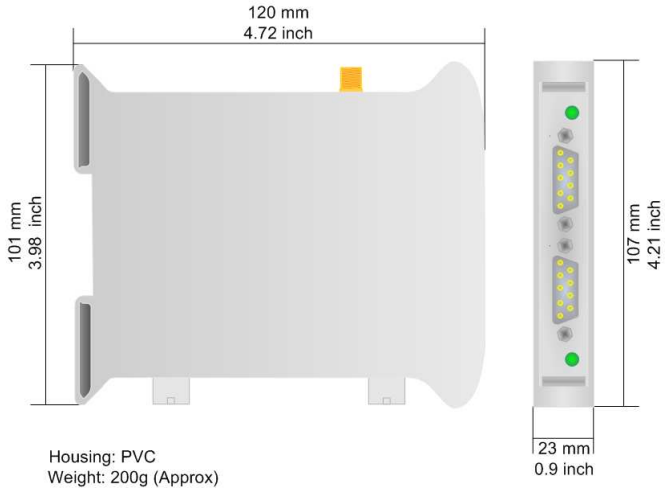


Figure 7: Mechanical dimensions scheme for HD67300-111-A4, HD67300-121-A4

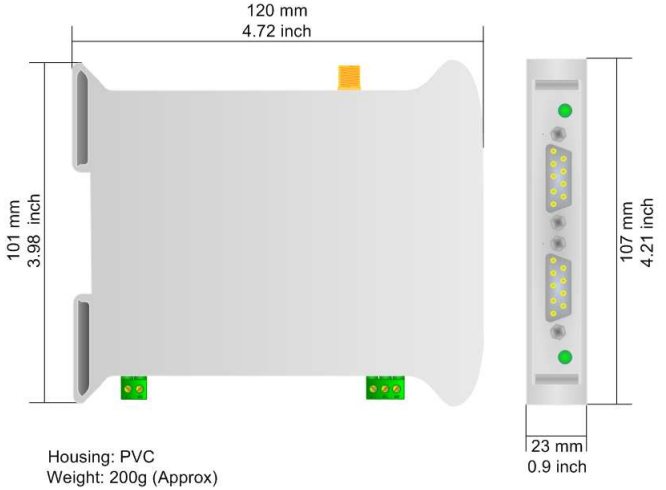


Figure 8: Mechanical dimensions scheme for HD67300-111-A5, HD67300-121-A5

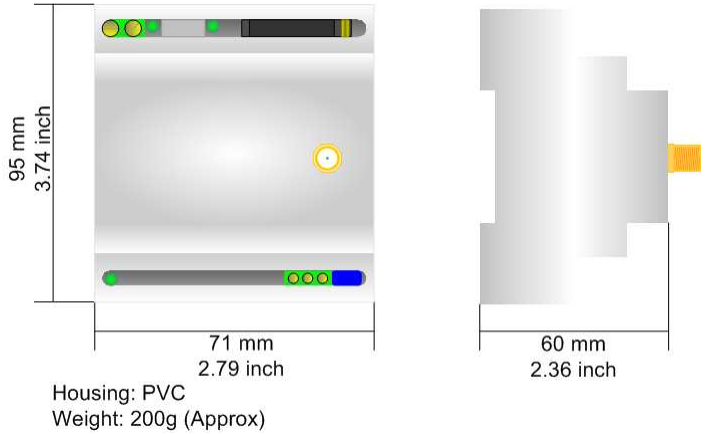


Figure 8: Mechanical dimensions scheme for HD67300-011-B6, HD67300-021-B6, HD67300-101-B6

ACCESSORIES:

Order Code: **AC34107** **-** Null Modem Cable Fem/Fem DSub 9 Pin 1,5 m

Order Code: **AC34114** - Null Modem Cable Fem/Fem DSub 9 Pin 5 m

Order Code: **AC34001** **-** Rail DIN - Power Supply 220/240V AC 50/60Hz – 12 V AC

Order Code: **AC34002** **-** Rail DIN - Power Supply 110V AC 50/60Hz – 12 V AC

ORDERING INFORMATIONS:

The ordering part number is formed by a valid combination of the following:

HD67300 – x y z – s d

Connectors Type
4 = MiniFit
5 = 3.5mm Removable Screw Terminal
6 = 3.5mm Fixed Screw Terminal

Enclosure Type
A = 1M DIN Rail mounting
B = 4M DIN Rail mounting

US0 (with Enclosure Type A), US1 (with Enclosure Type B)
0 = Absent
1 = Present, RS232 with Enclosure type A or USB with Enclosure Type B

US1 (with Enclosure Type A), US0 (with Enclosure Type B)
0 = Absent
1 = Present, RS232
2 = Present, RS485

CAN
0 = Absent
1 = Present

Device Family
HD67300 = GSM Modem

Order Code:	**HD67300-001-A4**	**-**	GSM Modem with Serial RS232, MiniFit Connector, 1M Din Rail enclosure
Order Code:	**HD67300-001-A5**	**-**	GSM Modem with Serial RS232, 3.5mm Removable Screw Terminal Connector, 1M Din Rail Enclosure

Order Code:	**HD67300-011-A4**	-	GSM Modem with two RS232 Serials, MiniFit Connector, 1M Din Rail enclosure
Order Code:	**HD67300-011-A5**	-	GSM Modem with two RS232 Serials, 3.5mm Removable Screw Terminal Connector, 1M Din Rail enclosure
Order Code:	**HD67300-021-A4**	-	GSM Modem with Serial RS232, RS485, MiniFit Connector, 1M Din Rail enclosure
Order Code:	**HD67300-021-A5**	-	GSM Modem with Serial RS232, RS485, 3.5mm Removable Screw Terminal Connector, 1M Din Rail enclosure
Order Code:	**HD67300-101-A4**	-	GSM Modem with Serial RS232, CAN (2.0A & 2.0B), MiniFit Connector, 1M Din Rail enclosure
Order Code:	**HD67300-101-A5**	-	GSM Modem with Serial RS232, CAN (2.0A & 2.0B), 3.5mm Removable Screw Terminal Connector, 1M Din Rail Enclosure
Order Code:	**HD67300-111-A4**	-	GSM Modem with two RS232 Serials, CAN (2.0A & 2.0B), MiniFit Connector, 1M Din Rail enclosure
Order Code:	**HD67300-111-A5**	-	GSM Modem with two RS232 Serials, CAN (2.0A & 2.0B), 3.5mm Removable Screw Terminal Connector, 1M Din Rail enclosure
Order Code:	**HD67300-121-A4**	-	GSM Modem with Serial RS232, RS485, CAN (2.0A & 2.0B), MiniFit Connector, 1M Din Rail enclosure
Order Code:	**HD67300-121-A5**	-	GSM Modem with Serial RS232, RS485, CAN (2.0A & 2.0B), 3.5mm Removable Screw Terminal Connector, 1M Din Rail enclosure
Order Code:	**HD67300-011-B6**	-	GSM Modem with Serial RS232, 3.5mm Fixed Screw Terminal Connector, 4M Din Rail enclosure
Order Code:	**HD67300-021-B6**	-	GSM Modem with RS485, 3.5mm Fixed Screw Terminal Connector, 4M Din Rail enclosure
Order Code:	**HD67300-101-B6**	-	GSM Modem with CAN (2.0A & 2.0B), 3.5mm Fixed Screw Terminal Connector, 4M Din Rail enclosure

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:

Part	Description	URL
HD67031	Analyzer / Scanner / Sniffer M-Bus	www.adfweb.com?product=HD67031
HD67117	CAN bus Repeater	www.adfweb.com?product=HD67117
HD67119	Converter USB 2.0 to RS485 Isolated	www.adfweb.com?product=HD67119
HD67302	GSM I/O and Alarms Modem	www.adfweb.com?Product=HD67302
HD67316	CAN, CANopen, J1939, DeviceNet, NMEA2000 Analyzer	www.adfweb.com?Product=HD67316