TECHEON
MECHATRONICS AND WIRELESS

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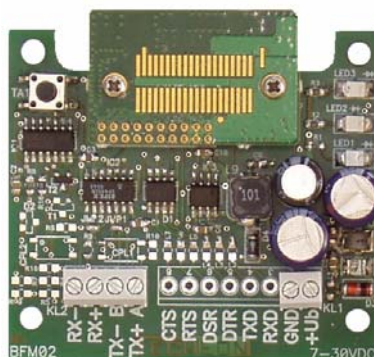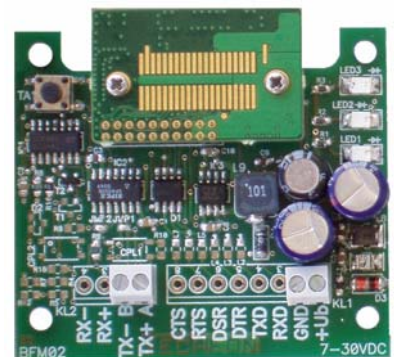
Bluetooth

Users Manual

Wireless Data Link - BFM02 Series

BFM02-1-0

BFM02-0-0	**BFM02-0-1** **BFM02-0-3**	**BFM02-0-3**
RS232	**RS422, TTY**	**RS485**

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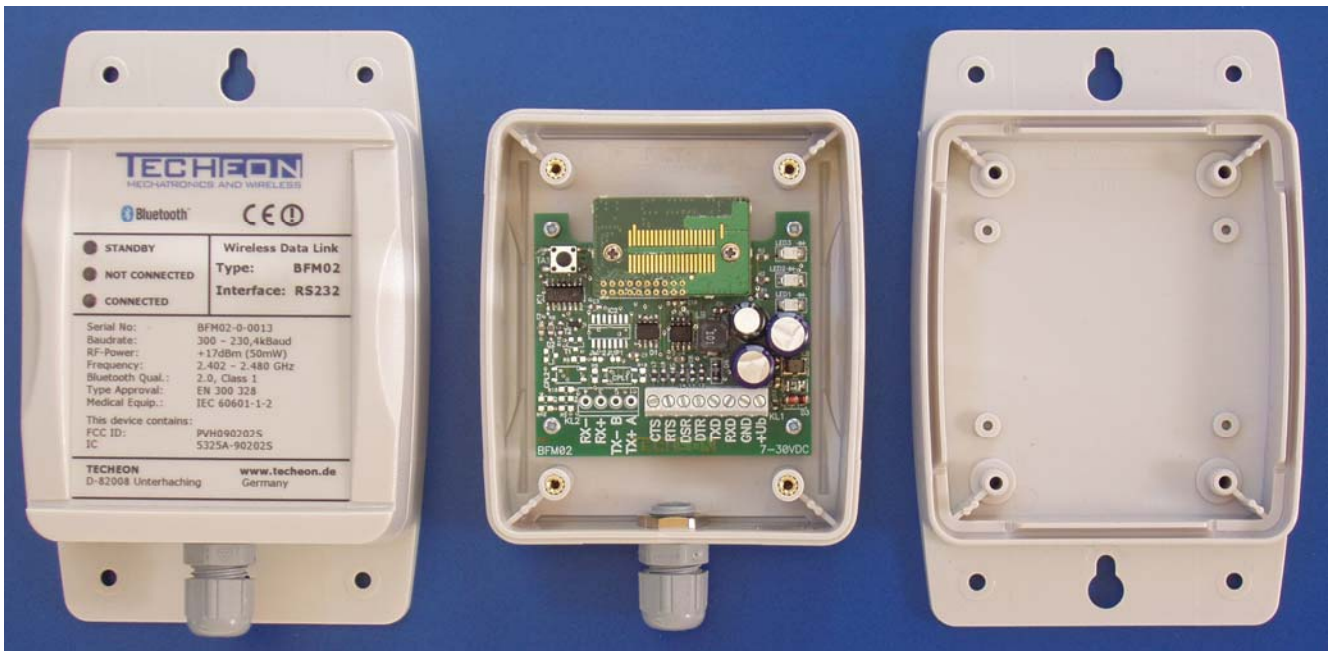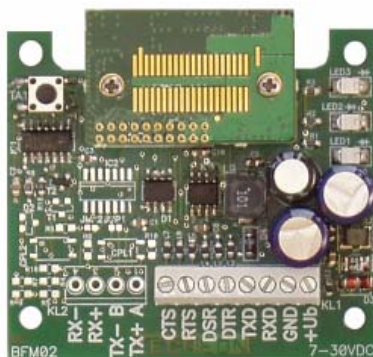
BFM02

This sophisticated system is conceived as a cost effective wireless data link for the transmission of serial data, using the Bluetooth Standard. It can be configured by the manufacturer in various kinds of connection topologies. The BFM01 transceivers can not be adopted by third or other Bluetooth devices, excepted if a third device is paired by using the available configuration software. The BFM02 devices are offering a high grade of data security. Due to the application of 79 transmission channels in the frequency hopping mode with 1600 channel alternations per second, the systems offers a high grade of immunity against interferences. No influences by W-LAN devices according to IEEE 802.11b/g. The high radio frequency output power of +17dBm (50mWatts) is representing a good range performance.

The high RF output power utilizes a high grade performance. The units operate within the 2.4GHz ISM-Band, what means that those units can be used licence free and free of charge. All Bluetooth Software Stacks are already integrated and certified.

The installation housing (BFM02-1 series) has mounting holes for a fixation on walls or other subjects and consists of the robust and weatherproof material of polycarbonate. It offers the insulation class **IP56** and is suited for outdoor use. Modules without the housing are offered as well (BFM02-0 series).

Block Diagram:
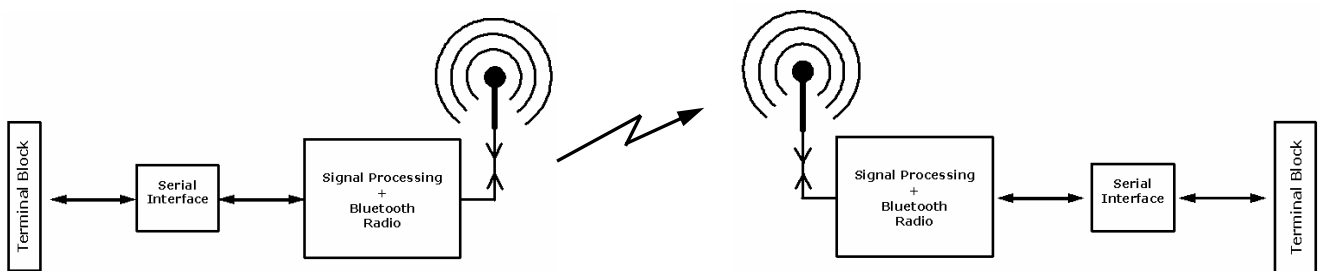
2. Installation

To get the highest possible performance of this system, the antenna respectively the unit must be mounted in an exposed position. Metal parts and reinforced concrete decrease the range of the system; high data rates, also. Electrical disturbances and other devices using carrier frequencies within the 2.4GHz ISM-Band can lead to block each other, in rare cases.

3. Power Supply

Ensure, that the power supply is uninterruptible and within the range of 7 to 30 Volts DC. A gap in the power supply leads to a loss of data. The power consumption depends on the data traffic. The max. power consumption is approx. 0.8 Watts.
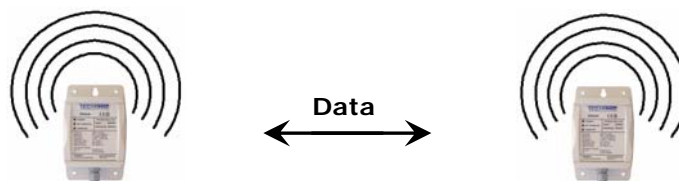
4. Synchronising

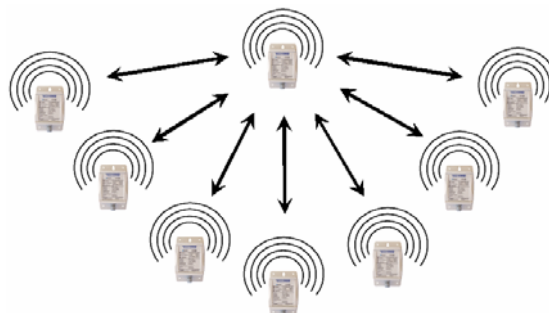

LED "standby"

LED "not connected"
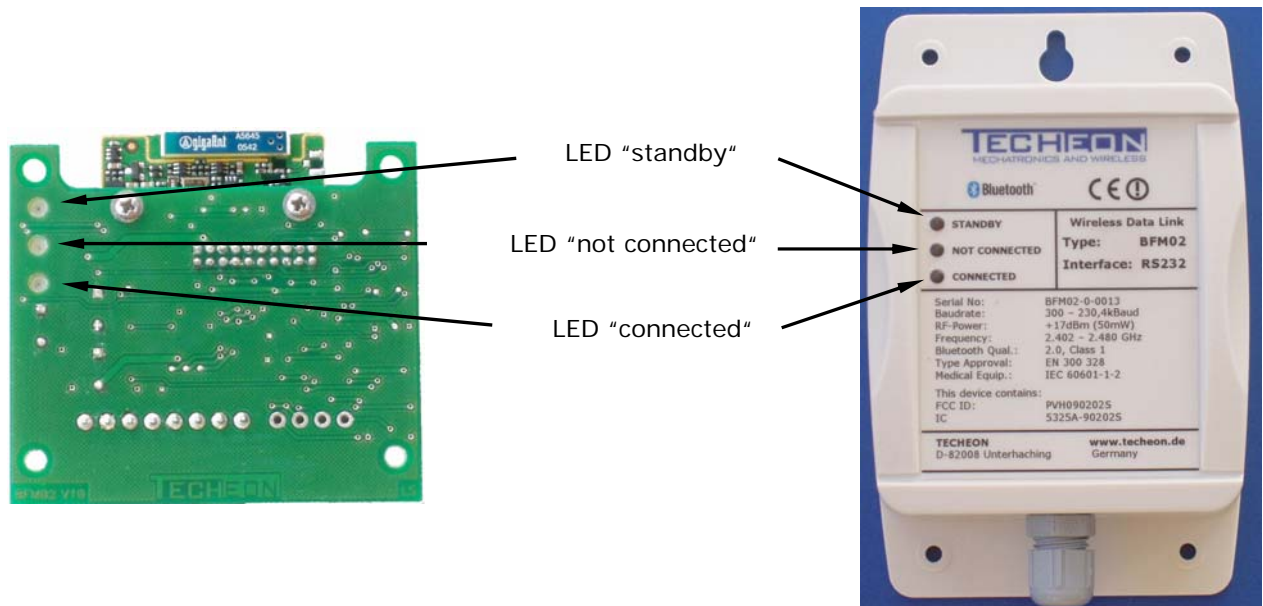
LED "connected"

Right after supplying power, the units start to synchronise to each other. This process can take up to 30 seconds. During synchronising, the LED "not connected" shines red. After a successful synchronising, the LED "connected" shines green. If no subscriber is available, the unit changes into the standby modus, what is displayed by the orange LED "standby".
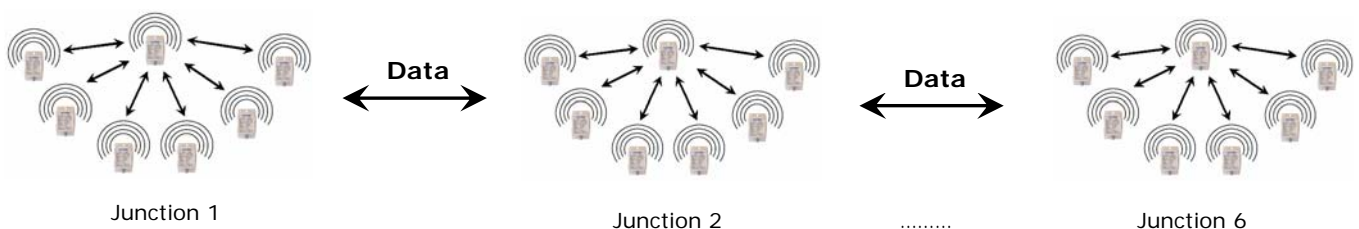
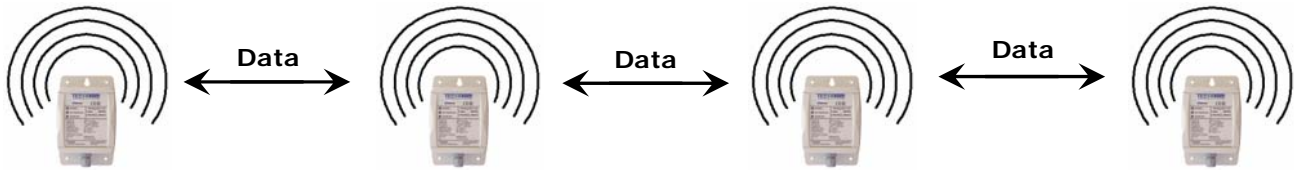## 5. Topology examples

5.1 Point-To-Point:

Data

5.2 Wireless Mulitpoint:

5.3 Network with up to 6 junctions:

Data   Data

Junction 1   Junction 2   ....   Junction 6

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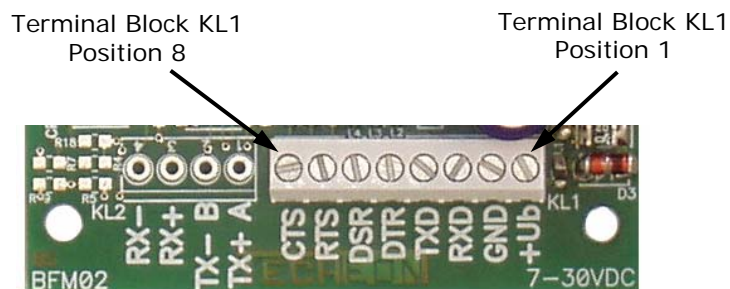## 5.4 Raising the range by employing a repeater:

5.5 Connecting to other Bluetooth devices (for e. g. PDA, USB-Stick):
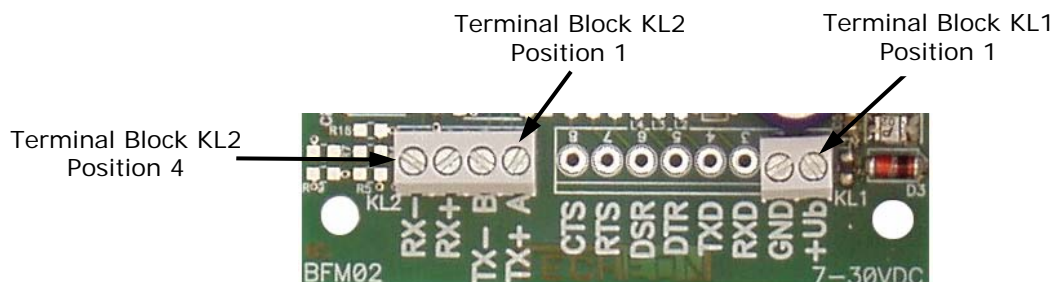

6. Terminals

6.1 Terminal Block KL1:

BFM02-0-0, BFM02-1-0 Interface = RS232

Terminal Block	Designation	Description	Input / Output	Level
KL1 Position 1	+Ub	Power Supply +		7 – 30V DC
KL1 Position 2	GND	Power Supply GND		GND
KL1 Position 3	RXD	Receiving Signal	In	+/- 12V
KL1 Position 4	TXD	Transmitting Signal	Out	+/- 12V
KL1 Position 5	DTR	Data Terminal Ready	Out	+/- 12V
KL1 Position 6	DSR	Data Set Ready	In	+/- 12V
KL1 Position 7	RTS	Request To Send	Out	+/- 12V
KL1 Position 8	CTS	Clear To Send	In	+/- 12V

6.2 Terminal Block KL2:

BFM02-0-1, BFM02-0-3, BFM02-1-1, BFM02-1-3   Interface = RS422 oder TTY

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Terminal Block	Designation	Description
KL1 Position 1	+Ub	Power Supply +7 – 30V DC
KL1 Position 2	GND	Power Supply GND
KL2 Position 1	TX+	RS422 / TTY
KL2 Position 2	TX-	RS422 / TTY
KL2 Position 3	RX+	RS422 / TTY
KL2 Position 4	RX-	RS422 / TTY

BFM02-0-2, BFM02-1-2   Interface = RS485
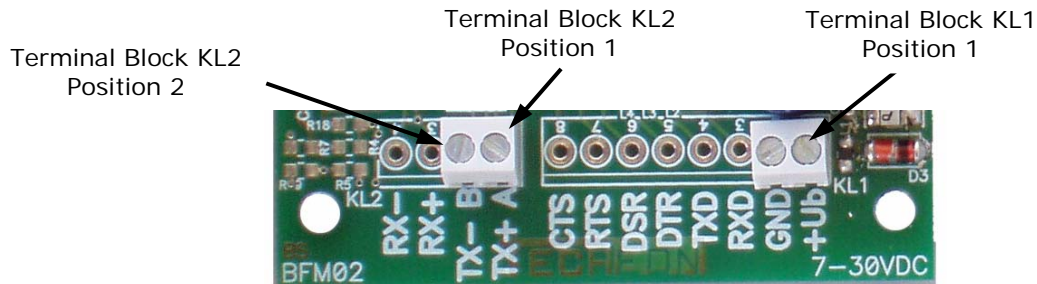
Terminal Block	Designation	Description
KL1 Position 1	+Ub	Power Supply +7 – 30V DC
KL1 Position 2	GND	Power Supply GND
KL2 Position 1	A	RS485
KL2 Position 2	B	RS485

7. Interface wiring scheme:

7.1 RS232:
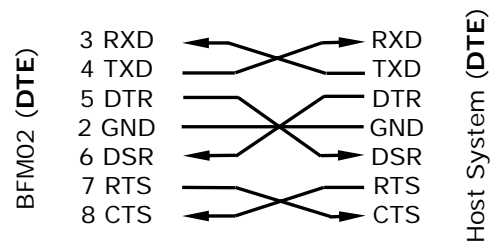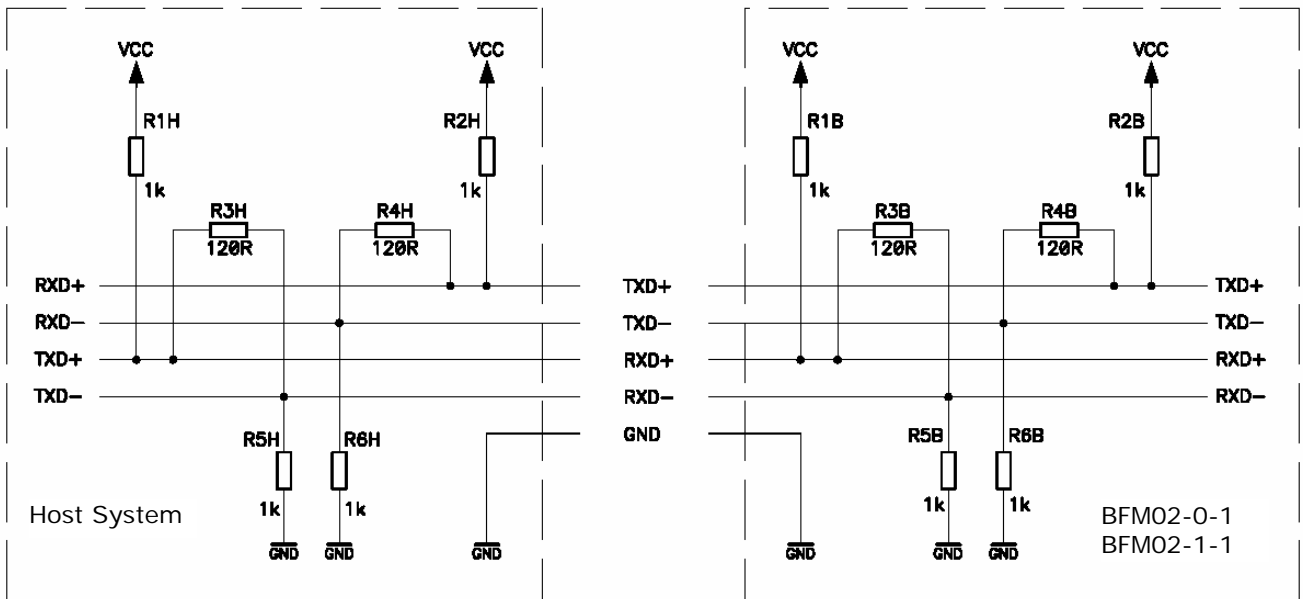

Asynchronous Connection:
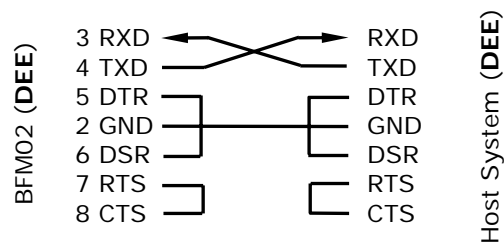
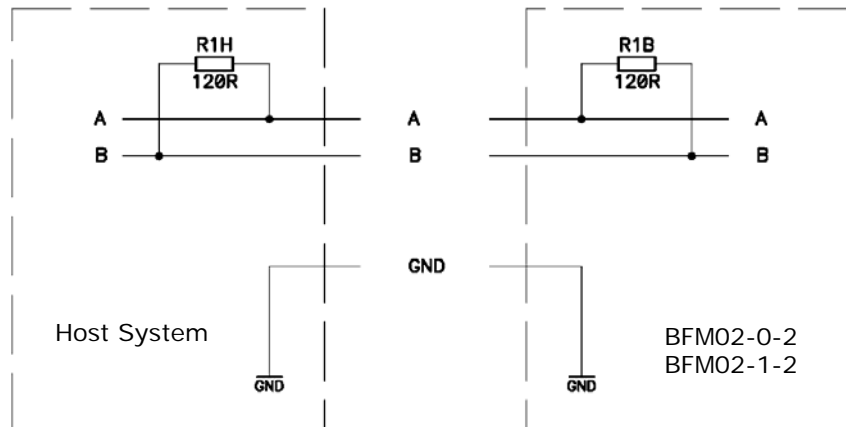## 7.2 RS422:   Terminal Block
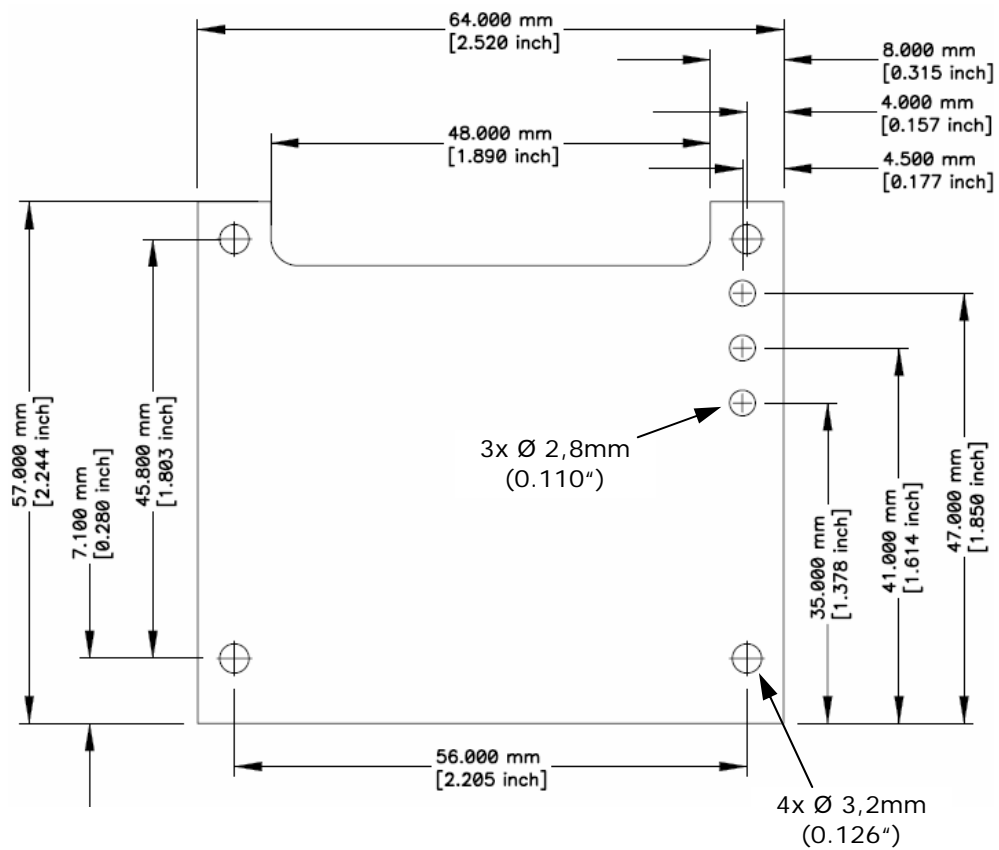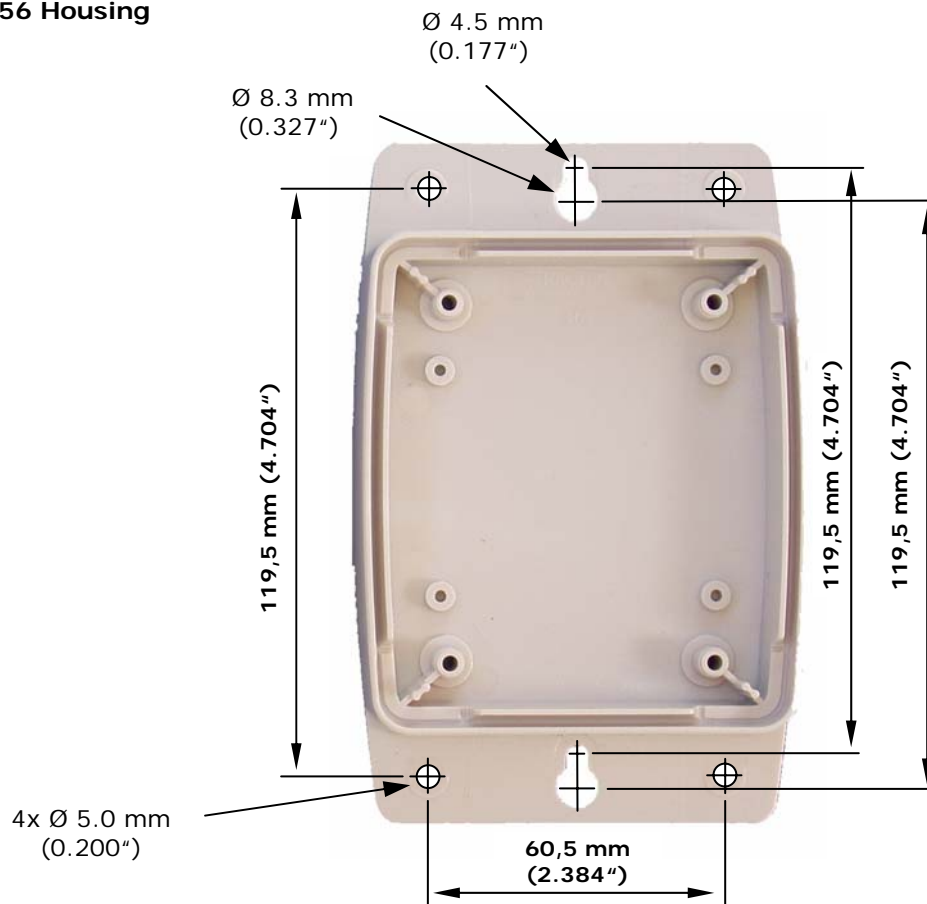

7.3 RS485:

7.4 TTY:
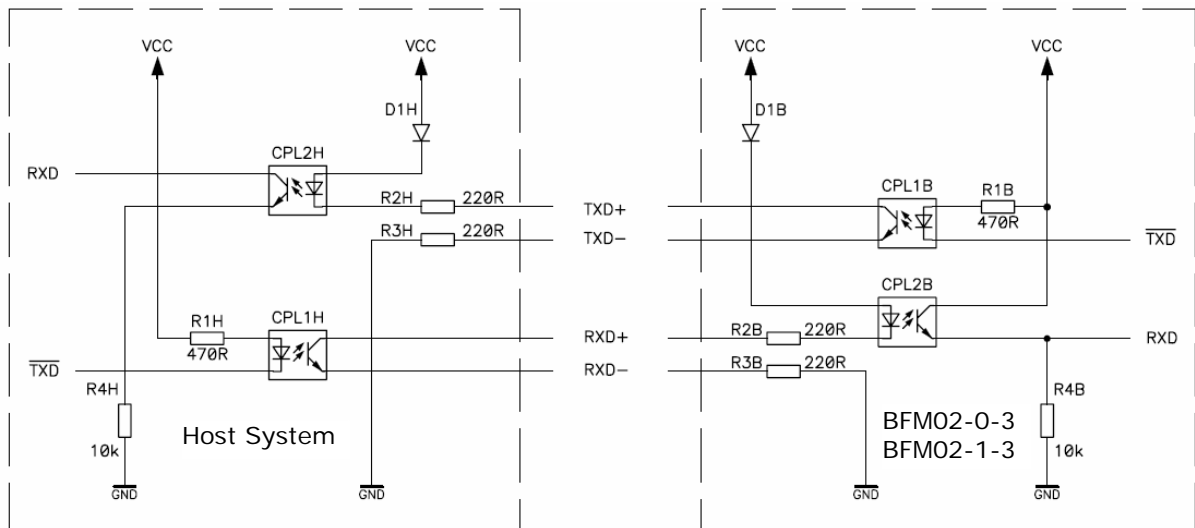
8. Mounting Holes

8.1 Module

8.2 IP56 Housing

9.0 Technical Data:

Technology:	Bluetooth Class 1, Qualification 2.0
Frequency:	2,402 – 2,480GHz, ISM-Band
RF-Channels:	79
Alternations per second:	1600
Max. Range:	approx. 200 meters in line of sight; also depending on data rate 30 – 50 meters (approx. 90 – 150 ft) inside of buildings. Depending on the wall construction
Available Interfaces:	RS232, RS422, RS485, TTY
Used Protocol:	7 or 8 Bit Transparent data mode or AT-commands
Baud rates:	300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115.2k, 230.4k, 460.8k Other Baud rates on request; Baud rates can be selected by a configuration software
Handshake:	DTE (Hardware handshake) or DCE (no Handshake)
Profiles:	Serial Port Profile (SPP), Dial-up Networking Profile (DUN GW, DUN DT), Generic Access Profile (GAP)
Wireless Multi drop:	up to 7 subscribers can build a network; more junctions by cascading possible
Interface Connector:	Terminal Blocks, max. 1,0mm² wires
Relief Fitting:	M12, max. cable cross-section 8,0mm
Power consumption:	max. 800mW
Voltage supply:	7 to 30V DC
Conformities:	EN 300 328-2 V1.1.1 EMC: EN 301 489 V1.3.1, EN 301 489 V17.1.1, EN 61000-6-2 Low Voltage Directive: EN 61131-2 Medical Electrical Equipment: IEC 60601-1-2
Type Approval:	ETS 300 328, ETS 300 826 FCC ID: PVH070201
RoHS:	Our products are conform to RoHS
WEEE-Registration No:	DE 64490879

Module BFM02-0

Dimensions:	64 x 60 x 17mm, 2.52" x 2.36" x 0.67" (W x L x H)
Weight:	35g
Operating Temperature Range:	-25°C - +55°C (-13°F - +131°F)
Storage Temperature Range:	-30°C - +85°C (-22°F - +185°F)
Humidity:	5 – 90%, not condensing

Housing Version BFM02-1

Dimensions:	141 x 91 x 42mm, 5.55" x 3.58" x 1.56" (W x L x H), without Relief fitting
Weight:	180g
Insulation Class:	IP56
Material of housing:	Polycarbonate
Operating Temperature Range:	-25°C - +55°C (-13°F - +131°F)
Storage Temperature Range:	-30°C - +85°C (-22°F - +185°F)
Humidity:	5 – 90%

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10 Ordering Information:

Purchase Orders: The units were delivered in configuration with the customers needs

Wireless Data Link Module BFM02-0-0, with RS232 Interface:	part No. 106.000.00
Wireless Data Link Module BFM02-0-1, with RS422 Interface:	part No. 106.000.10
Wireless Data Link Module BFM02-0-2, with RS485 Interface:	part No. 106.000.20
Wireless Data Link Module BFM02-0-3, with TTY Interface:	part No. 106.000.30

Wireless Data Link BFM02-1-0, IP56 housing, with RS232 Interface:	part No. 106.001.00
Wireless Data Link BFM02-1-1, IP56 housing, with RS422 Interface:	part No. 106.001.10
Wireless Data Link BFM02-1-2, IP56 housing, with RS485 Interface:	part No. 106.001.20
Wireless Data Link BFM02-1-3, IP56 housing, with TTY Interface:	part No. 106.001.30

Wall outlet power supply, 230V mains / 12V 250mA: part No. 100.003.00
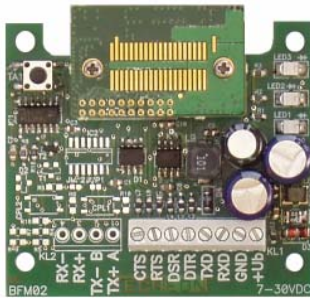
Module BFM02-0-x
(Other versions with different
component assembling)

BFM02-1-x
(IP56 Housing)

Pictures are not true to scale!

Technical changes reserved!