

DATASHEET

F45-140 2.5kW SUBSEA USB



Primary – TX art nr. **BB7133**-art.no.



Secondary – RX art nr. **BB8029**-art.no.

Electrical characteristics

General description

The flat Gen2 2.5kW Subsea USB is an advanced wireless power system that has 2.5 kW power transfer with high-speed data communication. The system is made for subsea use and can also be used for industrial applications.

Applications

Subsea AUV, ROV, Tool change.
Fish farm
Autonomous products
Mobility

Main features

- API 17F Qualified
- DC to DC Wireless power transfer
- High efficiency - up to 92%
- Up to 2.5 kW load
- Condition logging and configuration management
- Firmware upgrade
- Overload, short circuit (at startup) & temperature protection
- Ethernet data link
- MK3 PBOF Hose interface

Additional features on request

- Homing sensor package
- Customized battery charging

Flat 2.5kW

Technology of:



All parameter not mentioned are measured with axial distance= 2mm (air), Ta=25°C and Vin= 400VDC unless otherwise noted.

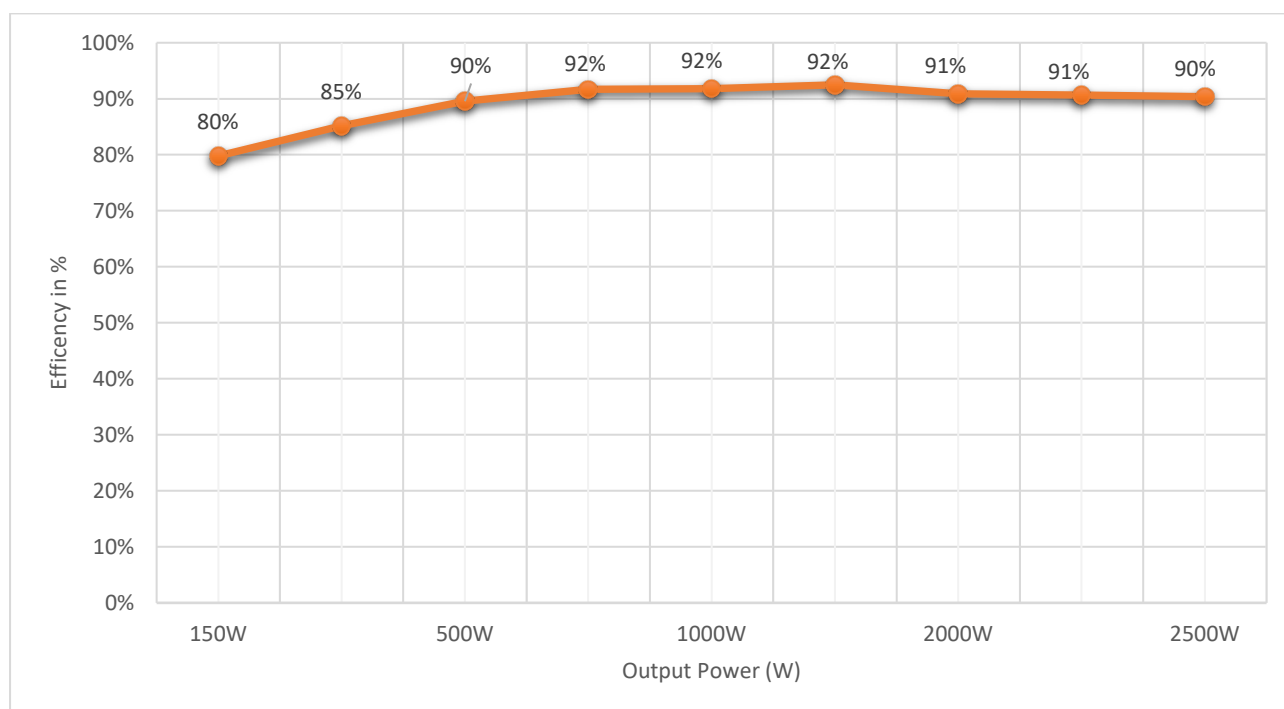
Parameter	Min	Typ	Max	Unit	Comment
Input voltage	360	400	440	VDC	
Output voltage	310	325	340	VDC	Fixed output voltage
Connector Type					
Output power	0		2.5	kW	
Output current	0		7.7	A	
Output current limit at overload**		8.5		A	
Max load step from 0W load		2.5		kW	Rise time > 20ms*
Max load drop from 2.5kW load		2.5		kW	Fall time > 20ms*
Load at startup	0		1	A	
Cap at startup	0		1	mF	Max 20A inrush current
Max 100Hz ripple on DC input voltage			5	%	
Power draw no load, Axial distance=0mm		25		W	
Efficiency 1kW		92		%	
Efficiency 2.5kW		90		%	
Startup time power		12		sec	
Startup time Ethernet		90		sec	
Data rate Ethernet***		80		Mbps	See note***

* Output voltage can be outside limit with lower rise/fall time

** Current above this limit will result in voltage drop and shut down

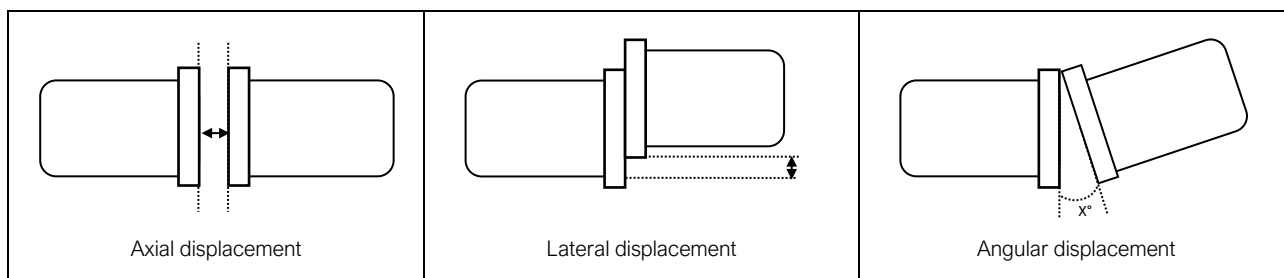
*** Typical values for ordinary TCP/IP traffic test setup. Real-life data rate is dependent on system setup, protocols used and external devices. Link is semi-transparent with layer-2 processing. Testing should be performed to verify support for Ethertypes/protocols other than standard ARP and IP.

Extreme load above limit or short circuit during normal operation can destroy the unit



Displacement

Mechanical displacement parameters are defined as:



Displacement parameters

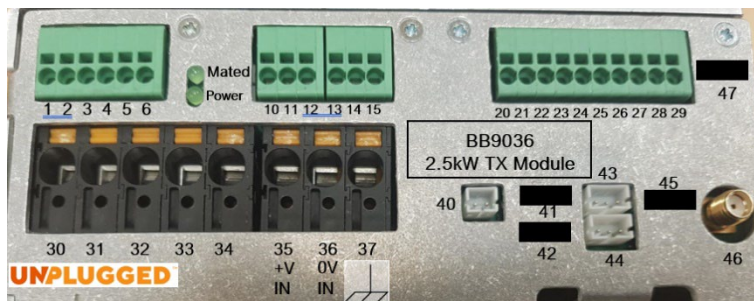
Parameter	Min	Typ	Max	Unit	Comment
Axial distance tolerance	0		8	mm	
Lateral displacement	0		10	mm	Displacement from center alignment.
Lateral displacement with 4mm axial distance	0		5	mm	
Angle	0		3	°	No lateral displacement.
Rotation during operation	0		360	°	

Environmental characteristics

Parameter	Min	Typ	Max	Unit	Comment
Depth rating		3000		m	
Ambient temperature	-18		+40	°C	See max continuous on time with max load
Max continuous operation with 2.5kW load. In air 0mm axial distance	20			min	20°C Air.
Max continuous operation with 2.5kW load. In water 0mm axial distance		∞		min	20°C Water.
Overheat protection		55		°C	Internal casing temperature

Pin description: BB9036

BB9036 - 2,5kW Gen2 Modul TX
 Assembly (Primary Side)

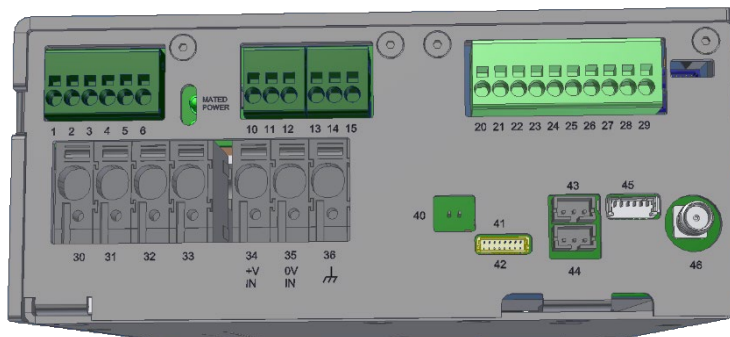


ID	Pin Description BB9036 (SIS L3)	ID	
1	RS232 EXT COM TX	30	Coil 1
2	RS232 EXT COM GND	31	Coil 1
3	RS232 EXT COM RX	32	NC
4	Not in use	33	Coil 2
5	HW Shutdown	34	Coil 2
6	HW Shutdown GND	35	+ 400VDC – From filter module
		36	0 VDC – From filter module
10	Antenna Int Com (strip)	37	Chassis – From filter module
11	Antenna GND (solid)		
12	Antenna GND (solid)	40	12V
13	Antenna Int com Sec (strip)	41	IO, 12V
14	Coil Temp	42	RS232 Ext com, Level2 config (uart), 12V
15	Coil Temp GND	43	RS485 Module BUS
		44	RS485 Module BUS
20	Not in use	45	SPI, 12V
21	L3-G Eth1 TX+ Config.	46	WIFI Antenna
22	L3-H Eth1 TX- Config.	47	JTAG Level 2
23	L3-K Eth1 RX+ Config.		
24	L3-L Eth1 RX- Config.		
25	Not in use		
26	<i>L3-E Eth2 TX+ Transparent</i>		
27	<i>L3-F Eth2 TX- Transparent</i>		
28	<i>L3-I Eth2 RX+ Transparent</i>		
29	<i>L3-J Eth2 RX- Transparent</i>		

Table 1 Pin Description for BB9036. *Green italic* for external connection. Grey for internal use only.

Pin description: BB9037

BB9037 2,5kW Gen2 Modul RX
Assembly (Secondary Side)

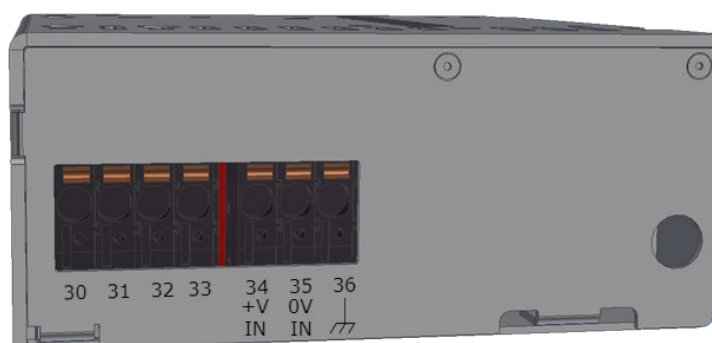


ID	Pin Description BB9037 (SIS L3)	ID	
1	RS232 EXT COM TX	30	Coil 1
2	RS232 EXT COM GND	31	NC
3	RS232 EXT COM RX	32	Coil 2
4	Not in use	33	Coil 2
5	HW Shutdown	34	+325VDC OUT
6	HW Shutdown GND	35	GND – 325VDC (0V)
		36	Chassis
10	Antenna Int Com (strip)		
11	Antenna GND (solid)		
12	Antenna GND (solid)	40	12V
13	Antenna Int com Sec (strip)	41	IO, 12V
14	Coil Temp	42	RS232 Ext com, Level2 config (uart), 12V
15	Coil Temp GND	43	RS485 Module BUS
		44	RS485 Module BUS
20	RS232 EXT COM GND	45	SPI, 12V
21	RS232 EXT COM TX	46	WIFI Antenna
22	RS232 EXT COM RX	47	JTAG Level 2
23	RS232 Config GND		
24	RS232 Config TX		
25	RS232 Config RX		
26	L3-E Eth2 TX+ Transparent		
27	L3-F Eth2 TX- Transparent		
28	L3-I Eth2 RX+ Transparent		
29	L3-J Eth2 RX- Transparent		

Table 2 Pin Description for BB9037. **Green** is for external connection. Grey for internal use only.

Pin description: BB9132

BB9132 2,5kW Gen 2 Filter Modul Main Assembly (Primary Side)

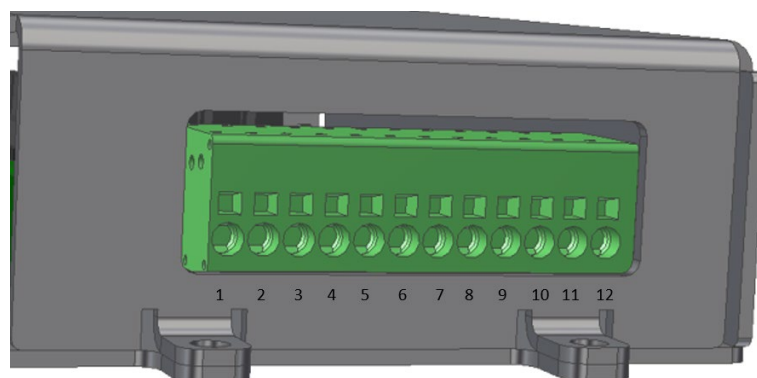


ID	Pin Description BB9132
30	+ 400 VDC Filter out – to BB9036
31	0 VDC Filter out – to BB9036
32	Chassis - – to BB9036
33	Not in use
34	+ 400 VDC Filter In
35	0 VDC Filter in
36	Chassis
40	Not in use

Table 3 Pin Description for BB9132. **Green italic** for external connection. Grey for internal use only.

Pin description: BB9507

BB9507 – M5 Level 3 Cart (IoT)

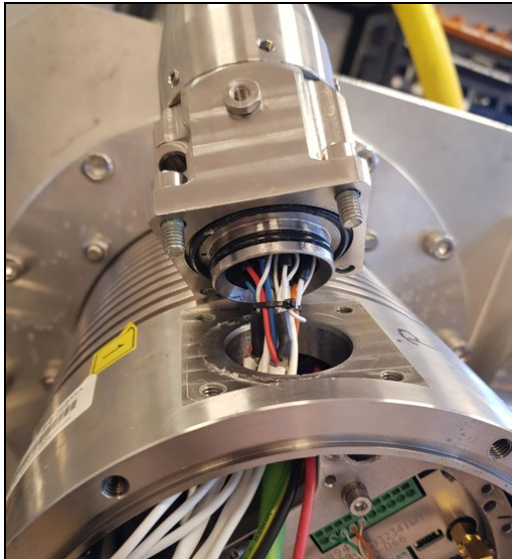


ID	Pin Description BB9507	Optional (Gigabit configuration)
1	<i>RS232/RS485 TX/A EXT COM</i>	
2	<i>RS232/RS485 RX/B EXT COM</i>	
3	<i>RS232/RS485 GND EXT COM</i>	
4	Not in use	
5	<i>L3-G Eth1 TX+ Config.</i>	<i>Eth PortT3- Config.</i>
6	<i>L3-H Eth1 TX- Config.</i>	<i>Eth PortT3+ Config.</i>
7	<i>L3-K Eth1 RX+ Config.</i>	<i>Eth PortT2- Config.</i>
8	<i>L3-L Eth1 RX- Config.</i>	<i>Eth PortT2+ Config.</i>
9	Not in use	<i>Eth PortT1- Config.</i>
10	Not in use	<i>Eth PortT1+ Config.</i>
11	Not in use	<i>Eth PortT0- Config.</i>
12	Not in use	<i>Eth PortT0+ Config.</i>

Table 4 Pin description for BB9507. *Green italic* for external connection. Grey for internal use only.

Flat 2.5kW

Technology of:

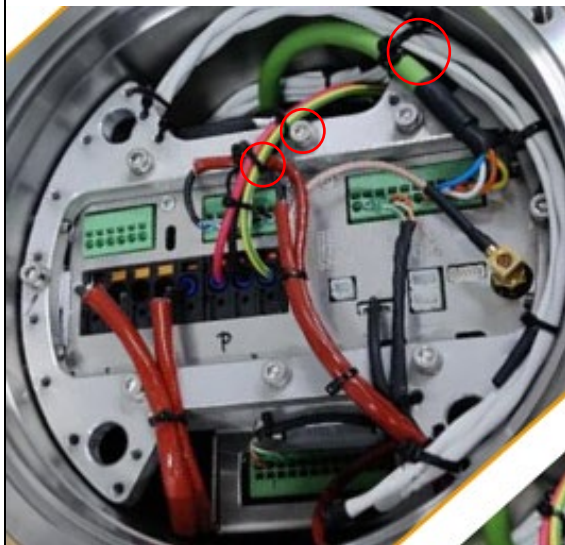


Gently guide the pig-tail end through flange hole.

Add Molykote silicone grease to the o-rings

Bolts to be tightened according to applicable ISO standard.

TX 2.5kW connector



Connect cables to their dedicated position.

Make sure to route wires according to picture. Correct routing is important to correct EMF



Flat 2.5kW

Technology of:



Connect cables to their dedicated position.

Make sure to route wires according to picture. Correct routing is important to correct EMF



Mechanical Details:

