davicom
Site Monitoring Systems by Comlab

TECHNICAL BULLETIN
TB-034 (2017)

Installation & setup of the BPS1050/BPS5095 with a Davicom DV unit

This document describes the installation and setup procedure for the BPS1050 and the BPS5095 Power Sensors when they are used with Davicom RTUs. The BPS1050 and the BPS5095 will often be referred to as the "BPS" throughout the rest of this document.

General description

The BPS is an in-line bidirectional RF Power Sensor that provides output voltages which are proportional to the forward and reflected power passing through the unit. Figure 1 describes each connector and terminal.
All BPS1050 units are factory calibrated at 170MHz for coefficient parameters A=8.9053 B=4.4987 and C=0 while BPS5095 units are calibrated at 870MHz for coefficient parameters A=4.5311 B=3.0904 and C=0. However, if your transmitter operates at a different frequency, it may be better to recalibrate your power sensor in order to obtain the best precision it can provide.

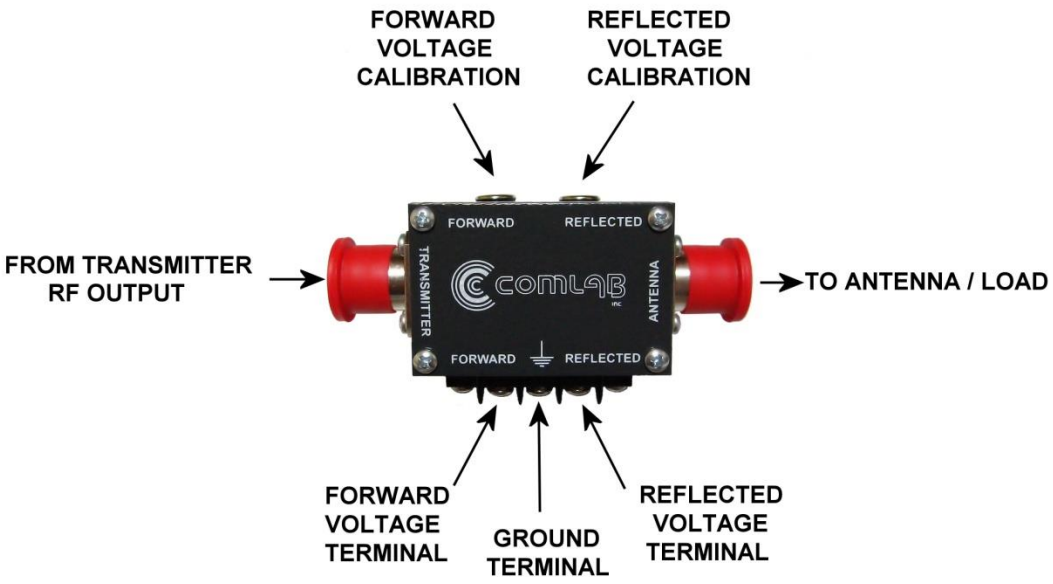

Figure 1: BPS connector and terminal descriptions

Installation and calibration procedure

1. **With the transmitter power turned off, connect the transmitter end of the BPS to the transmitter.**

2. **In order to measure the transmitter output power, insert an in-line power meter between the ANTENNA end of the BPS and the load. If the transmitter power is known with good precision, the load can be directly connected to the BPS.**

3. **Connect the BPS FORWARD and REFLECTED voltage terminals to two separate metering inputs (Axx) on your Davicom. Please refer to the corresponding examples shown in Figure 2.**

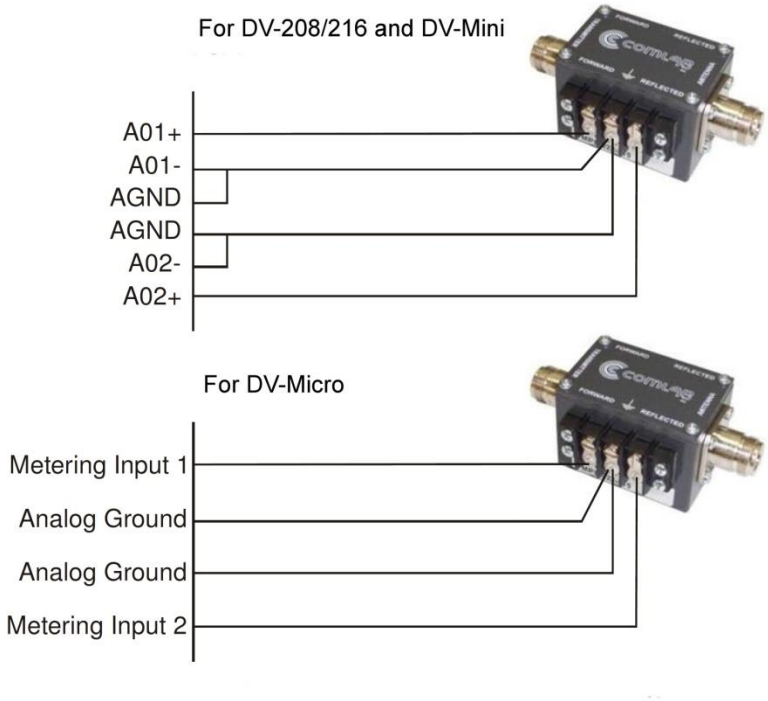

Figure 2: BPS connection to a Davicom unit

4. **If using a DV-208 or DV-216 (as opposed to DV-Mini or DV-Micro), ensure the Metering Input jumpers inside the unit are set to 10 V (factory default).**

5. **Using DavLink, connect to your Davicom unit. In the Configuration dialog box, click on the Metering Inputs button. Select the Metering input to which you connected the Forward Power input (A01 in this example) and enter the Description, Normal Value, Measurement unit, etc. Enter the coefficient parameters from Figure 3 (BPS1050) or Figure 4 (BPS5095) specific to your power and frequency range into both the DAVICOM's Metering Inputs**

associated with Forward and Reflected power. C and D should be 0 for the Output Power to read 0 when the transmitter is off.

6. **Turn on the RF power and adjust the BPS FORWARD VOLTAGE CALIBRATION trimmer until the Davicom metering input associated with the BPS Forward power reads the same power as the in-line power meter.**
7. **Turn off the RF power.**
8. **Reverse the BPS power sensor connections. The TRANSMITTER end should now be connected to the load and the ANTENNA end to the in-line power meter.**
9. **Turn on the RF power.**
10. **Adjust the REFLECTED VOLTAGE CALIBRATION trimmer until the Davicom metering input (A02 in this example) associated with the BPS Reflected power reads the same power as the in-line power meter.**
11. **Calibration is now complete. Turn off the RF power and reconnect the BPS in its normal orientation.**

Expected Maximum Power Range (Watt)	Applicable Frequency Range (MHz)	Coefficient parameters
500 to 1000	70 to 400	A=46.736 B=12.162 C=0
	30 to 70	A=137.29 B=56.395 C=0
200 to 500	70 to 500	A=22.951 B=8.0112 C=0
	40 to 70	A=66.622 B=33.267 C=0
100 to 200	150 to 500	A=8.9053 B=4.4987 C=0
	80 to 150	A=18.520 B=11.006 C=0
	40 to 80	A=66.500 B=33.138 C=0
50 to 100	150 to 500	A=7.1108 B=3.7087 C=0
	80 to 150	A=21.035 B=7.8964 C=0
	40 to 80	A=65.752 B=33.486 C=0
< 50	300 to 500	A=2.1412 B=1.4977 C=0
	150 to 300	A=10.260 B=4.4806 C=0
	80 to 150	A=20.615 B=11.409 C=0
	40 to 80	A=74.234 B=37.656 C=0
50 to 1000	30	A=125.02 B=86.540 C=0

Figure 3: BPS1050 calibration utility table

Expected Maximum Power Range (Watt)	Applicable Frequency Range (MHz)	Coefficient parameters
100 to 1000	500 to 950	A=45.736 B=17.014 C=0
50 to 100	500 to 950	A=4.2143 B=3.3060 C=0
< 50	500 to 950	A=4.5311 B=3.0904 C=0

Figure 4: BPS5095 calibration utility table