

Technical Bulletin

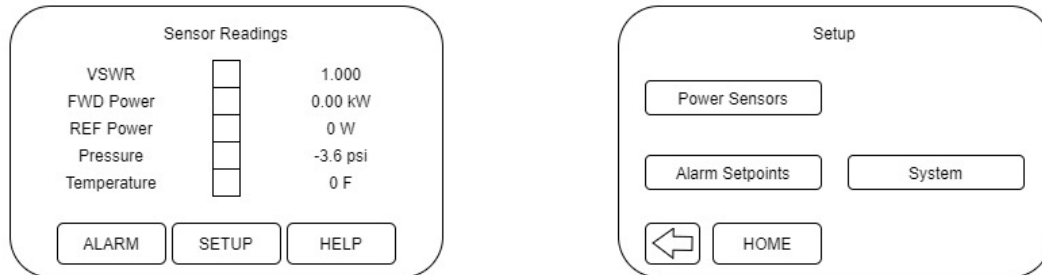
RF Scout Plus Calibration for PRF-1 Precision RF Sensors

Scope

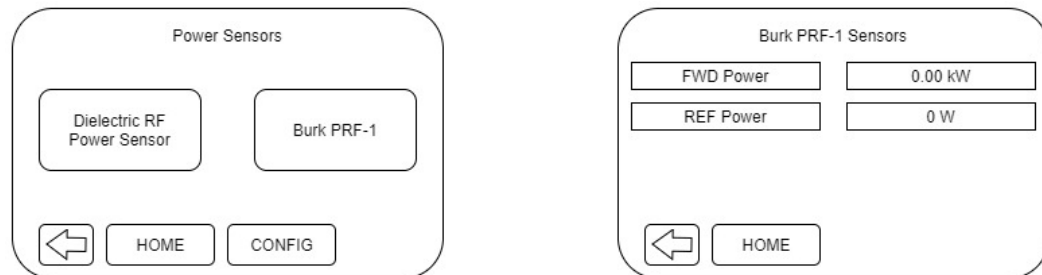
This document defines the procedures for calibrating meter channels on the RF Scout Plus for use with Burk Technology PRF-1 Precision RF Sensors. Please refer to the Dielectric RF Scout Plus manual if using Dielectric RF sensors. For this procedure it is recommended to have available a 50-ohm load with a type-N connector and a set of type-N attenuators with values of 20 dB, 10 dB and 5 dB. A spreadsheet to assist with calibration can be downloaded from the RF Scout Plus support page located here: www.burk.com/downloads.

Calibration Process for Reflected Power

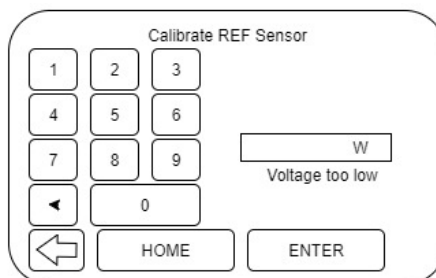
- 1) From the front panel home screen press SETUP then press Power Sensors.



- 2) On the Power Sensors screen press Burk PRF-1 and then press CONFIG to bring up the Burk PRF-1 Sensors screen.



- 3) Next press REF Power to bring up the calibration screen for the reflected power sensor. The message "Voltage too low" will appear if the voltage sample on the sensor is below 100 mV and not allow calibration of the sensor.



- 4) Connect the PRF-1 sensor to the REF input on the rear panel of the RF Scout Plus. Connect the sensor power supply to the sensor. If you are using the supplied cable that came with the PRF-1, an external power supply is not needed. The sensor will get its power from the RF Scout and voltage converter attached to the supplied cable.
- 5) Use the CalculateReflectedPower Sensor V1.4 excel spread sheet to assist in calibration of the reflected power sensor by filling in the fields highlighted in green. The fields include VSWR Threshold, Current Forward Power, Forward Directional Coupler Loss, Reflected Directional Coupler Loss and Actual attenuation. Start by entering the data in the first 4 fields. The spreadsheet will calculate the Needed Attenuation to properly calibrate the reflected power.

VSWR Threshold	1.3	Start by entering values in the first 4 green cells		
Current Forward Power	20000 W			
Forward Directional Coupler Loss	50 dB			
Reflected Directional Coupler Loss	40 dB			
Reflected Power at Threshold	340 W			
Forward Power	73.0 dBm			
Reflected Power	55.3 dBm			
Power Difference	17.7 dB			
Coupler Difference	-10 dB			
Needed Attenuation	7.7 dB			
Actual Attenuation	10 dB	Select an actual attenuator value as close as possible to the needed value. Attach the Reflected Power Sensor to the Forward Power port with this attenuator value.		

- 6) Attach attenuator(s) close to the value indicated by the Needed Attenuation Field and enter in the actual attenuation value attached to the reflected power sensor in the field marked Actual Attenuation.
- 7) Attach the reflected power sensor along with the attached attenuators to the forward power coupler and be sure the transmitter is powered on at the power level you specified on the spreadsheet for Current Forward Power.

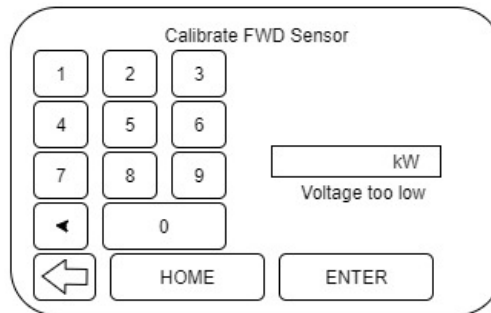
Attenuation Difference	2.3 dB			
LED	8	Rotate the rotary switch until this LED is on.		
Calibration Power Value	53.0 dBm			
Calibration Power Value	200 W	Calibrate the Reflected Power reading to:	200 W	

- 8) Set the rotary gain switch on the reflected power sensor so that the LED lit equals that indicated by the spreadsheet in the LED field.
- 9) Calibrate the reflected power sensor to the valued indicated by the Calibration Power Value field by entering the value and pressing enter on the Calibrate REF Sensor screen.
- 10) Remove the reflected power sensor from the forward power coupler, remove the attenuator(s) attached to the sensor in step 6 and attach it to the reflected power coupler.

Calibration Process for Forward Power

- 1) Connect the PRF-1 sensor to the FWD input on the rear panel of the RF Scout Plus. Connect the sensor power supply to the sensor unless you are using the supplied cable for the PRF-1 as mentioned in step 4 of the previous section.
- 2) Attach the PRF-1 sensor to the forward power coupler and apply a known RF power level. For best results, the power should be close to the expected nominal power level for the measurement point.
- 3) Set the rotary gain switch on the reflected power sensor so that the 8th LED is lit.
- 4) Follow steps 1 and 2 from the Calibration Process for Reflected Power.

5) Press FWD Power to bring up the Calibrate FWD Sensor screen.



6) Enter the level of the applied RF Power and click the ENTER button.

We are committed to providing you with the best possible service and support for your Burk Technology product. If you should have any concerns or questions, please call us at 978-486-3711.

Thank you,

Burk Technology Technical Support Team

www.burk.com

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