TA-RFS-20W RF Sensor

RF Power Monitoring Unit

User Manual

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PREFACE

This document describes the installation, configuration and operation of TASC Systems' *RF Sensor* product.

Hardware and software described in this document is subject to ongoing development and improvement. Consequently there may be minor discrepancies between the information in this document and the performance and design of the hardware and software.

Before connecting any equipment to any RF Sensor product, the user is advised to read the Installation & Calibration section of this document in its entirety. Application of voltages in excess of the built-in protection could seriously damage the RF Sensor and the equipment it is being connected to.

1. PRODUCT DESCRIPTION

The TA-RFS-20W power sensor by TASC Systems is an RF power sensor designed for detecting and monitoring RF power levels on a transmission line. The TA-RFS-20W is intended to interface easily with remote monitoring panels such as the TASC sitePORTAL Lite (sPL) for accurate alarm and monitoring functionality. The TA-RFS-20W can accommodate any modulation scheme and can be used over a large bandwidth. Its robust design, rugged construction and reliable parts ensure years of trouble-free use.

The TA-RFS-20W is based on two core technologies. The 20 dB stripline coupler ensures a low loss, low Passive Intermodulation (PIM), connection through the transmission line of the measured radio system. The logarithmic sensor enables accurate measurement results throughout a 30 dB dynamic range.

Connection to the TA-RFS-20W is via N type connectors. A male connector is provided as the input from the radio and an N female connector is the attachment to the antenna system. A permanently attached, 3-conductor cable supplies power to the TA-RFS-20W and provides an analog voltage based on the RF amplitude inserted to the input. The TA-RFS-20W will operate over a wide input voltage range of 7 – 28 VDC. The TA-RFS-20W is rated for 25 Watts average power max.

2. INSTALLATION & CALIBRATION

2.1. DC Input

The TA-RFS-20W can handle an input voltage range of 7-28 VDC. The input voltage should be applied to the **red (positive**) and **black (ground)** wires.

2.2. Analog Output

The **white** wire provides an output voltage between 0.2 – 2 VDC, which corresponds to an RF input power of 8 – 43 dBm. When interfacing to the TASC Systems sitePORTAL, the configuration utility (SPCU) provides a conversion from the analog voltage level to dBm power level. This conversion is an approximation and has an accuracy of +/- 3 dB (See calibration section below).

2.3. Calibration

Uniquely calibrating the TA-RFS-20W will provide an accuracy of better than 0.5 dB across the entire dynamic range of the device. To calibrate the TA-RFS-20W, inject a known signal source and note the DC output voltage from the TA-RFS-20W. As the source level is changed, the output will change correspondingly in a linear fashion (in dBm). To increase the accuracy of the calibration, be sure to calibrate the TA-RFS-20W using the same modulation scheme of the system into which it will be installed. Then, take calibration readings across the frequency range that the unit will be measuring.

2.4. RF Input/Output

The TA-RFS-20W can sense power from 8 to 43 dBm. The input and output connectors are N Type designed to interface to a 50 Ohm system.

3. SPECIFICATIONS

General	
Bandwidth:	700 MHz – 2.5 GHz (other variants available upon request)
RF Input Power:	20 Watts average power, 40 Watts maximum (no damage). Other variants available upon request
Insertion loss:	0.2 dB max.
VSWR input/output:	1.3:1 max.
Dynamic range:	30 dB minimum
Passive Intermodulation Distortion:	< -135 dBm (2 x 10 Watts)
Mechanical	
Dimensions:	130 X 50 X 27 mm
Weight:	0.5 kg (includes 8 foot attached cable)
Material:	Milled Aluminum (iridite finish)