# PS18G Option H18

## 18 GHz E-Series Power Sensor User's and Service Guide Supplement

**Use this manual with the following document:**

PS18G Power Sensors Operating and Service Guide
Part Number: E9300-90016

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## SAFETY NOTES

The following safety notes are used throughout this document. Familiarize yourself with each of these notes and its meaning before performing any of the procedures in this document.

**WARNING** **Warning denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a warning note until the indicated conditions are fully understood and met.**

**CAUTION** Caution denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in damage to or destruction of the instrument. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.

## DEFINITIONS

• Specifications describe the performance of parameters covered by the product warranty (temperature –0 to 55 °C, unless otherwise noted.)

• Typical describes additional product performance information that is not covered by the product warranty. It is performance beyond specification that 80% of the units exhibit with a 95% confidence level over the temperature range 20 to 30 °C. Typical performance does not include measurement uncertainty.

• Nominal values indicate expected performance or describe product performance that is useful in the application of the product, but is not covered by the product warranty

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# General Information

## *DESCRIPTION*

The PS18G Option H18 modifies the standard PS18G power sensor by extending the upper frequency range to 18 GHz. This supplement documents the signal characteristic for this option. For complete information about connecting and using the PS18G Option H18, refer to the PS18G Power Sensors Operating and Service Guide.

## SPECIFICATIONS

All specifications for the PS18G Option H18 are identical to the PS18G with the following exceptions:

### Table 1

| FREQUENCY RANGE AND CONNECTOR TYPE | |
|---|---|
| Frequency Range | 9 kHz to 18 GHz |
| Power Range | 1 nW to 100 mW (−60 dBm to +20 dBm) |
| Connector | Type-N (m) |

### Table 2

| MAXIMUM SWR (25 °C ± 10 °C) | |
|---|---|
| **Frequency** | **SWR** |
| 9 kHz to 2 GHz | 1.13 |
| 2 GHz to 14 GHz | 1.19 |
| 14 GHz to 16 GHz | 1.22 |
| 16 GHz to 18 GHz | 1.26 |

### Table 3

| MAXIMUM SWR (0 °C TO +55 °C) | |
|---|---|
| **Frequency** | **SWR** |
| 9 kHz to 2 GHz | 1.15 |
| 2 GHz to 14 GHz | 1.20 |
| 14 GHz to 16 GHz | 1.23 |
| 16 GHz to 18 GHz | 1.27 |

**NOTE**

Maximum Calibration Factor uncertainties are shown in the following tables. The calibration report that is shipped with each power sensor indicates the Cal Factor uncertainty data for that specific sensor as measured at the factory. Refer to the PS18G Power Sensors Operating and Service Guide, page 51 for more information about Calibration Factor and Reflection Coefficient data.

## Table 4

| CAL FACTOR UNCERTAINTY (LOW POWER PATH, −60 DBM TO −10 DBM) | | |
|---|---|---|
| **Frequency** | **Uncertainty (25 °C ± 10 °C)** | **Uncertainty (0 °C to +50 °C)** |
| 9 kHz to 6 GHz | ± 1.7% | ± 2.0% |
| 6 GHz to 14 GHz | ± 1.8% | ± 2.0% |
| 14 GHz to 18 GHz | ± 2.0% | ± 2.2% |

## Table 5

| CAL FACTOR UNCERTAINTY (HIGH POWER PATH, -10 DBM TO +20 DBM) | | |
|---|---|---|
| **Frequency** | **Uncertainty (25 °C ± 10 °C)** | **Uncertainty (0 °C to +50 °C)** |
| 9 kHz to 500 MHz | ± 2.0% | ± 3.4% |
| 500 MHz to 1.2 GHz | ± 2.2% | ± 3.4% |
| 1.2 GHz to 6 GHz | ± 1.8% | ± 2.1% |
| 6 GHz to 14 GHz | ± 1.9% | ± 2.3% |
| 14 GHz to 18 GHz | ± 2.2% | ± 3.3% |

## Introduction

Review this product and related documentation to familiarize yourself with safety markings and instructions before you operate the instrument. This product has been designed and tested in accordance with international standards.

## Before Applying Power

Verify that the product is configured to match the available main power source. If this product is to be powered by autotransformer, make sure the common terminal is connected to the neutral (grounded) side of the ac power supply

## Service

The PS18G Option H18 has no field serviceable parts. If you need service or calibration for your power sensor, you must return it to The EMC Shop, LLC . A list of The EMC Shop sales and service offices can be found on **Page 9**.

## Shipping Instructions

You must always call the The EMC Shop, LLC Instrument Support Center to initiate service before retuning your instrument to a service office. See **“Contacting The EMC Shop” on page 9**. Always transport or ship the instrument using the original packaging if possible. If not, comparable packaging must be used. Attach a complete description of the failure
symptoms.

**WARNING** The WARNING notice denotes a hazard. It calls attention to a procedure, practice, or the like, which if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

## Warnings applicable to this instrument are:

**WARNING** If this instrument is not used as specified, the protection provided by the equipment could be impaired. This instrument must be used in a normal condition (in which all means for protection are intact) only.

**WARNING** For continued protection against fire hazard replace line fuse only with same type and rating:
• United States—F 3A/250V, Part Number 2110-0780
• Europe—F 3.15A/250V, Part Number 2110-0655
The use of other fuses or material is prohibited.

**WARNING** This is a Safety Class I product (provided with a protective earthing ground incorporated in the power cord). The mains plug shall be inserted only into a socket outlet provided with a protective earth contact. Any interruption of the protective conductor, inside or outside the instrument, is likely to make the instrument dangerous. Intentional interruption is prohibited.

**WARNING** The power cord is connected to internal capacitors that may retain dangerous electrical charges for 5 seconds after disconnecting the plug from its power supply.

**WARNING** These servicing instructions are for use by qualified personnel only. To avoid electrical shock, do not perform any servicing unless you are qualified to do so.

**WARNING** The opening of covers or removal of parts is likely to expose dangerous voltages. Disconnect the instrument from all voltage sources while it is being opened

**WARNING** This product is designed for use in Installation Category II and Pollution Degree 2 per IEC 1010 and 664 respectively.

**WARNING** No operator serviceable parts inside. Refer servicing to qualified personnel. To prevent electrical shock do not remove covers.

**WARNING** If this product is not used as specified, the protection provided by the equipment could be impaired. This product must be used in a normal condition (in which all means for protection are intact) only.

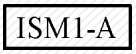
## *CAUTIONS*

**CAUTIONS** The CAUTION notice denotes a hazard. It calls attention to an operating procedure, practice, or the like, which if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

**CAUTIONS** This instrument has autoranging line voltage input; be sure the supply voltage is within the specified range.

**CAUTIONS** Ventilation Requirements: When installing the instrument in a cabinet, the convection into and out of the instrument must not be restricted. The ambient temperature (outside the cabinet) must be less than the maximum operating temperature of the instrument by 4 °C for every 100 watts dissipated in the cabinet. If the total power dissipated in the cabinet is greater than 800 watts, forced convection must be used.

# INSTRUMENT MARKINGS

| | |
|---|---|
|  | When you see this symbol on your instrument, you should refer to the instrument's instruction manual for important information. |
|  | This symbol indicates hazardous voltages. |
|  | The laser radiation symbol is marked on products that have a laser output. |
|  | This symbol indicates that the instrument requires alternating current (ac) input. |
|  | The CE mark is a registered trademark of the European Community. If it is accompanied by a year, it indicates the year the design was proven. |
|  | The CSA mark is a registered trademark of the Canadian Standards Association. |
|  | This text indicates that the instrument is an Industrial Scientific and Medical Group 1 Class A product (CISPR 11, Clause 4). |
|  | This symbol indicates that the power line switch is ON. |
|  | This symbol indicates that the power line switch is OFF or in STANDBY position. |
|  | This symbol indicates the product meets the Australian Standards. |
|  | Safety Earth Ground. This is a Safety Class I product (provided with a protective earthing terminal). An uninterruptible safety earth ground must be provided from the main power source to the product input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and secured against any unintended operation. |