# Giga-tronics

# Technical Publication Change Instructions

Updated replacement pages and/or drawings are attached to these Change Instructions. Please remove and discard the corresponding pages and/or drawings, and replace them with the attached pages and/or drawings. Failure to make these replacements may result in loss of product efficiency and possible failure.

Page numbers no longer have an alpha suffix, the revision level will now have a numerical suffix denoting its difference. Specific changes are identified by change bars in corresponding margins. A replacement page with no suffix has not been changed but is included only because it is part of the changed page.

Replacement pages will become standard pages without a suffix in the next printing of this manual and the Front Matter, Table of Contents, Preface and Index will be updated at that point. For record purposes, you are encouraged to retain these change instructions as a permanent part of the manual. Record new changes in your manual section entitled "Record of Changes".

| **Product:** | 58542 | **Manual:** | MODEL 58542 VXIBUS UNIVERSAL POWER METER OPERATION & MAINTENANCE MANUAL |
|---|---|---|---|
| **Errata Issued:** | August 9, 2001 | **Errata #:** | 21555-D3 |

| **Manual P/N:** | **Manual Revision:** | **Print Date:** | **New Manual Revision:** | **Errata Print Date:** |
|---|---|---|---|---|
| 21555 | D | June 1999 | D3 | August 2001 |

Update your product technical manual. Replace the page(s) indicated below with their new revision level:

| **ECO(s):** | **Replace and/or Add Page(s):** | **Remark(s):** |
|---|---|---|
| 7945 | 1-3 thru 1-4 | 8035XA Series Sensors Temperature Coefficient of Linearity added to section 1.2.2 on page 1-4. |
| | 2-59 thru 2-60 | Note added to section 2.5.27 on page 2-59. |

If corresponding with the factory or the local Giga-tronics sales office regarding product return, please refer to the full model number and serial number. If the instrument is being shipped for repair, be sure to enclose all available pertinent data regarding the problem that has been found.

☛ **NOTE:** If you are returning an instrument to Giga-tronics for service, first contact Customer Service at **(800) 444-2878** or Fax at **(925) 328-4702** so that a return authorization number can be assigned. You can also contact Customer Service over their e-mail address *repairs@gigatronics.com*

## 1.2    Performance Specifications

Performance specifications describe the Model 58542 warranted performance, and apply when using the Series 80300A Power Sensors. Typical performance (shown in italics) is non-warranted.

### 1.2.1    Range

| | |
|---|---|
| Frequency Range | 10 MHz to 40 GHz[1] |
| Power Range | -70 dBm to +47 dBm (100 pW to 50 Watt)[1] |
| Single Sensor Dynamic Range: | CW Sensors: 90 dB[1]<br>Peak Power Sensors: 40 dB, Peak<br>50 dB, CW[1] |

### 1.2.2    Accuracy

| | |
|---|---|
| Calibrator: | Power Sweep calibration signal to dynamically linearize the sensors |
| Frequency: | 50 MHz nominal |
| Settability: | The 1 mW (0.0 dBm) level in the Power Sweep Calibrator is factory set to ± 0.7% traceable to the National Institute of Standards and Technology (NIST). Measure within 15 seconds of setting calibrator to 0.0 dBm. |
| Accuracy: | ±1.2% worst case for one year, over temperature range of 5 °C to 35 °C |
| Connector: | Type N(f) connector, 50 Ω |
| VSWR: | <1.05 dB (Return Loss >33 dB) |
| System Linearity (at 50 MHz for Standard CW Sensors): | ±0.02 dB over any 20 dB range from -70 to +16 dBm<br>±0.02 dB + (0 dB, -0.05 dB/dB) from +16 to +20 dBm<br>±0.04 dB from -70 to +16 dBm |
| Temperature Coefficient of Linearity: | <0.1%/ °C temperature change following Power Sweep Calibration, 24-hour warm-up required.<br><br><0.3%/ °C temperature change following Power Sweep Calibration, 24-hour warm-up required (8035XA Series Sensors). |

### 1.2.3    Zeroing Accuracy (Standard CW Sensors)

| | |
|---|---|
| Zero Set: | *<±50 pW*[2] |
| Zero Drift: | *<±100 pW* during 1 hour[2] |
| Noise: | *<±50 pW* measured over any 1 minute interval[2] |
| Averaging: | Auto-averaging or user-selectable averaging from 1 to 512 readings per measurement |

*Notes:*
[1]  Depending on sensor used.
[2]  Specified performance applies with maximum averaging and 24-hour warm-up at constant temperature.

### 2.5.26 Saving & Recalling Configurations

**\*RCL**
**\*SAV**

The 58542 has 21 instrument state memory registers. Registers 1 through 20 are available for store and recall. Register 0 contains the previous state of the instrument and can be used to toggle between two different instrument configuration states.

Instrument configuration can be saved to registers 1 through 20. CAUTION: Any configuration items which are not listed under the \*RST or PRESet conditions are not savable. Make sure all aspects of your configuration are savable. For example, sensor power sweep calibration curves can not be saved in the configuration memory registers. Sensors must be calibrated to the 58542 power meter each time a new sensor is attached.

> **\*RCL***space***<memory location number, 0 to 20>**
>    **OUTPUT @Pwr_mtr;\*RCL 19**                    ! Recall 58542 register 19

*Description*

Recalls instrument configuration. 0 is the PRESet configuration.

> **\*SAVe***space***<memory location number, 1 to 20>**
>    **OUTPUT @Pwr_mtr;\*SAV 20**                    ! Save at 58542 register 20

*Description*

Saves current configuration to memory. You cannot save a configuration to memory position 0.

### 2.5.27 Halting Operation

**ABORt**

> **OUTPUT @Pwr_mtr;ABOR**                    ! Halts measurement & triggering

*Description*

This command stops operation, but it does not interrupt the completion of the current action. For example, sensor calibration is not interrupted. Burst mode data collection is not interrupted.

> ☞ *NOTE:* When using the 8035XA Peak Sensor, if a Time-Out occurs due to the sensor not triggering (i.e., Level too low) then send "Abort" to clear the meter.

## 2.5.28   Preset Configuration

**\*RST**
**STATus:PRESet**
**SYSTem:PRESet**

**\*RST**

        **OUTPUT @Pwr_mtr;\*RST**               ! Reset 58542 configuration

*Description*

This command resets the 58542 configuration to a known condition (see Table 2-4). These are not the power ON conditions. The 58542 has an internal battery which powers a non-volatile memory chip to retain configuration information. The only configuration that will change between power OFF and power ON is noted at the end of the table.

**STATus:PRESet**

        **OUTPUT @Pwr_mtr;STAT:PRES**        ! Clears all the status register value

*Description*

This command resets the 58542 configuration to a known condition. See Table 2-4. Note that these are not the power ON conditions.

**SYSTem:PRESet**

        **OUTPUT @Pwr_mtr;SYST:PRES**        ! Reset 58542 configuration

*Description*

This command resets the 58542 Status information buffers. SYST:PRES is identical in function to \*RST.

*Table 2-4.   Reset and Power On Default Commands*

| Command | Default | Minimum | Maximum |
|---|---|---|---|
| CALCulate1[:CHANnel]:<br>CALCulate2[:CHANnel]: | POWer 1<br>POWer 2 | | |
| CALCulate1-2:<br>  LIMit<br>    STATe<br>    UPPer<br>    LOWer<br>    FAIL?<br>    FCOunt?<br>  MAXimum:<br>    STATe<br>    [MAGnitude]<br>  MINimum:<br>    STATe<br>    [MAGnitude]<br>  MODE<br>  REFerence:<br>    STATe<br>    [MAGnitude]<br>  STATe<br>  UNIT | <br><br>OFF<br>299.999<br>-299.999<br>0<br>0<br><br>OFF<br>299.999<br><br>OFF<br>-299.99<br>NORmal<br><br>OFF<br>0<br>ON<br>DBM | <br><br><br>-299.999<br>-299.999<br><br><br><br><br>-299.999<br><br><br>-29.999<br><br><br>-299.99 | <br><br><br>299.999<br>299.999<br><br><br><br><br>299.999<br><br><br>29.99<br><br><br>299.99 |
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