



Signature Series™

DIGITAL POWER METER CALIBRATION CCF L828/829

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Siemens Airfield Solutions

*The innovative
approach*

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Warranties

Products of Siemens Airfield Solutions manufacture are guaranteed against mechanical, electrical, and physical defects (excluding lamps) for a period of one year from the date of installation or a maximum of two years from the date of shipment and are guaranteed to be merchantable and fit for the ordinary purposes for which such products are made.

Siemens Airfield Solutions will correct by repair or replacement, at its option, equipment or parts which fail because of mechanical, electrical or physical defects, provided that the goods have been properly handled and stored prior to installation, properly installed and properly operated after installation, and provided further that Buyer gives Siemens Airfield Solutions written notice of such defects after delivery of the goods to Buyer.

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Disclaimers

This manual could contain technical inaccuracies or typographical errors. Siemens Airfield Solutions reserves the right to revise this manual from time to time in the contents thereof without obligation of Siemens Airfield Solutions to notify any person of such revision or change.

Details and values given in this manual are average values and have been compiled with care. They are not binding, however, and Siemens Airfield Solutions disclaims any liability for damages or detriments suffered as a result of reliance on the information given herein or the use of products, processes or equipment to which this manual refers. No warranty is made that the use of the information or of the products, processes or equipment to which this manual refers will not infringe any third party's patents or rights. The information given does not release the buyer from making their own experiments and tests.

DIGITAL POWER METER CALIBRATION

1. Safety

This section contains general safety instructions for using your Siemens Airfield Solutions equipment. Some safety instructions may not apply to the equipment in this manual. Task and equipment specific warnings are included in other sections of this manual where appropriate. Note all warnings and follow all instructions carefully. Failure to do so may result in personal injury, death, or property damage.

To use this equipment safely,

- refer to the FAA Advisory Circular AC 150/5340-26, *Maintenance of Airport Visual Aids Facilities*, for instructions on safety precautions.
- observe all safety regulations. To avoid injuries, always remove power prior to making any wire connections and touching any parts. Refer to FAA Advisory Circular AC 150/5340-26.
- read and become familiar with the general safety instructions provided in this section of the manual before installing, operating, maintaining, or repairing this equipment.
- read and carefully follow the instructions given throughout this manual for performing specific tasks and working with specific equipment.
- store this manual within easy reach of personnel installing, operating, maintaining, or repairing this equipment.
- follow all applicable safety procedures required by your company, industry standards, and government or other regulatory agencies.
- obtain and read Material Safety Data Sheets (MSDS) for all materials used.

Safety Symbols

Become familiar with the safety symbols presented in this section. These symbols will alert you to safety hazards and conditions that may result in personal injury, death, or property and equipment damage.



WARNING: Risk of electrical shock. Failure to observe this warning may result in personal injury, death, or equipment damage.



WARNING: Failure to follow procedures can result in personal injury, death, or damage to equipment.

Qualified Personnel

The term *qualified personnel* is defined here as individuals who thoroughly understand the equipment and its safe operation, maintenance, and repair. Qualified personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations and have been trained to safely install, operate, maintain, and repair the equipment. It is the responsibility of the company operating this equipment to see that its personnel meet these requirements.

Intended Use



WARNING: Use of this equipment in ways other than described in this manual may result in personal injury, death, or property and equipment damage. Use this equipment only as described in this manual.

Siemens Airfield Solutions cannot be responsible for injuries or damages resulting from nonstandard, unintended applications of its equipment. This equipment is designed and intended only for the purpose described in this manual. Uses not described in this manual are considered unintended uses and may result in serious personal injury, death, or property damage. Unintended uses may result from taking the following actions:

- making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine Siemens Airfield Solutions replacement parts
- failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards
- using materials or auxiliary equipment that are inappropriate or incompatible with your Siemens Airfield Solutions equipment
- allowing unqualified personnel to perform any task

Installation

The Digital Power Meter is installed at the factory and is functional when the regulator is powered. See instruction manual shipped with the regulator for wiring schematic. A thorough understanding of system components and their requirements will help you operate the system safely and efficiently.



WARNING: Failure to follow these safety procedures can result in personal injury or death.

- Allow only qualified personnel to install Siemens Airfield Solutions and auxiliary equipment. Use only approved equipment. Using unapproved equipment in an approved system may void agency approvals.
- Make sure all equipment is rated and approved for the environment in which you are using it. Follow all instructions for installing components and accessories.
- Install all electrical connections to local code. Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.
- Protect components from damage, wear, and harsh environment conditions. Allow ample room for maintenance, panel accessibility, and cover removal.
- Protect equipment with safety devices as specified by applicable safety regulations. If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning.

Operation

Only qualified personnel, physically capable of operating the equipment and with no impairments in their judgment or reaction times, should operate this equipment.

Read all system component manuals before operating this equipment. A thorough understanding of system components and their operation will help you operate the system safely and efficiently.

Operation *(contd.)*

- Before starting this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects or pneumatic valves.
- Never operate equipment with a known malfunction.
- Do not attempt to operate or service electrical equipment if standing water is present.
- Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments. Never touch exposed electrical connections on equipment while the power is ON.

Action in the Event of a System or Component Malfunction

Do not operate a system that contains malfunctioning components. If a component malfunctions, turn the system OFF immediately.

- Disconnect and lock out electrical power.
- Allow only qualified personnel to make repairs. Repair or replace the malfunctioning component according to instructions provided in its manual.

Maintenance and Repair

Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks. Only persons who are properly trained and familiar with Siemens Airfield Solutions equipment are permitted to service this equipment.

- Always use safety devices when working on this equipment. Follow the recommended maintenance procedures in your equipment manuals. Do not service or adjust any equipment unless another person trained in first aid and CPR is present.
- Connect all disconnected equipment ground cables and wires after servicing equipment. Ground all conductive equipment.
- Use only approved Siemens Airfield Solutions replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.
- Do not attempt to service electrical equipment if standing water is present. Use caution when servicing electrical equipment in a high-humidity environment.
- Use tools with insulated handles when working with electrical equipment.

2. Description

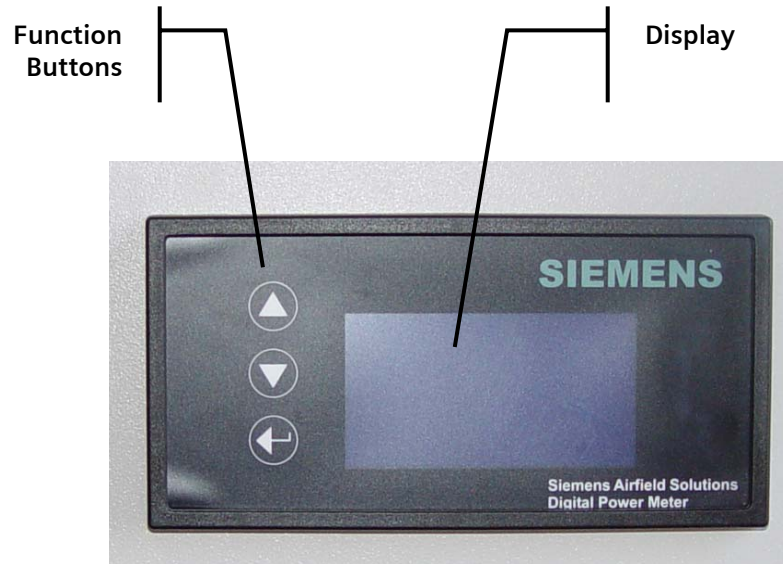
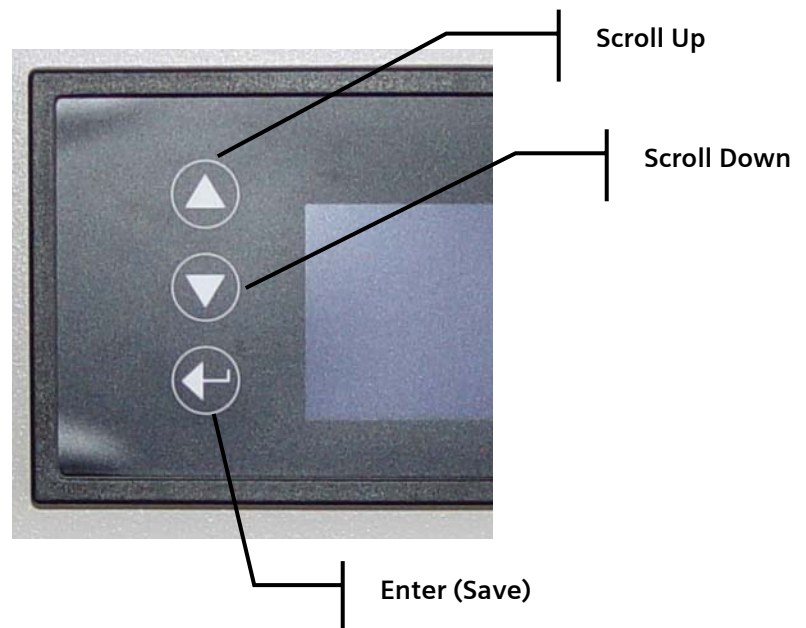


Figure 1. Digital Power Meter

3 Operation

Function Buttons



3 Operation (contd)

Displays



NOTE: Scroll through displays using the **Scroll Up** and **Scroll Down** buttons. After 30 seconds the display will revert to the default setting of **Arms**.

4. Calibration

Note: The following is needed to calibrate the DPM:

- Calibrated True RMS AC multimeter with current clamp.
- High Voltage probe capable of reading 5,000V true rms.
- Ability to apply a shorted load to CCR.
- Ability to apply a field load or equivalent resistive load to CCR.



WARNING: The CCR must be operating during calibration. Risk of electrical shock. Failure to observe this warning may result in personal injury, death, or equipment damage.

Proceed as follows to calibrate the DPM

1. Depress and hold the top **SCROLL** button and the bottom **ENTER** button **simultaneously** for 3 seconds (See Function Buttons on page 5) to enter the calibration menu.



Figure 2 DPM Calibration Menu

The **SCROLL Buttons** are used to select items on the calibration menu. Scroll to the desired selection and then press the **ENTER button**. See the following steps to calibrate the DPM and explanation of menu items.

2. Current Calibration

During calibration you will be asked to wait until displayed “cnt” values settle. These “cnt” values are internal A/D values as measured by the power meter’s microprocessor. These values will always vary slightly while the meter is measuring voltage and current. They are displayed to give feedback that the load has settled and the meter is obtaining a steady reading.

TIP: At each calibration step, wait until the thousands digit has settled before proceeding.

A. Irms – High Step (6.6 amps)

Using the **SCROLL** buttons, select Irms and follow the prompts to calibrate the Irms.

- Short the CCR output and then turn the CCR to the highest step.
- Measure the CCR output current with a True RMS current meter and adjust the current value on the meter display to match.

NOTE: If the CCR output needs to be adjusted follow procedure in the CCR manual.

- Wait until the Icmt and Vcnt values settle and select the ENTER button



Figure 3 Irms – High Step Calibration

B. Irms Low Step (2.8 amps)

Repeat the previous steps and follow the prompts for the Low CCR step. Press ENTER button to save.



Figure 4 Irms – Low Step Calibration

3. Voltage Calibration

At the calibration screen, scroll to Vrms on the menu and press the ENTER button. The next screen (Fig 5) shows the last calibration voltage set points and internal A/D numbers. **Select Y** (yes) to enter the Vrms calibration.

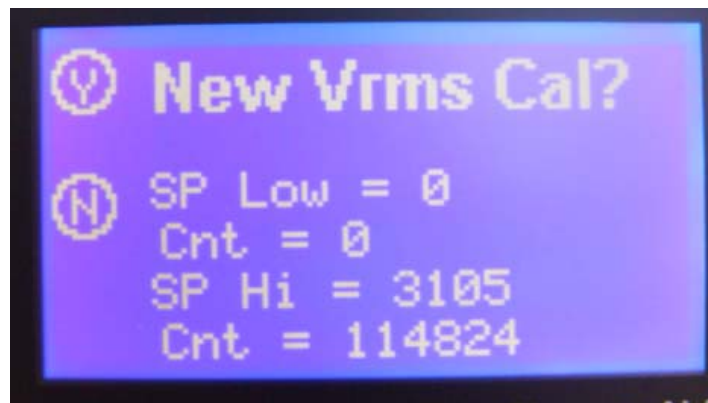


Figure 5 Vrms Calibration

A. Vrms – High Step Loaded

Following screen prompts, apply the field load or equivalent resistive load to the CCR at the high step. Measure the Vrms across the CCR output terminals with the High Voltage probe.



WARNING: Use proper safety procedures when adjusting the meter display.

Adjust the meter display to match the measured voltage. Wait for the CNT number to settle (this may take a couple minutes while the load heats up) and then press the ENTER button.

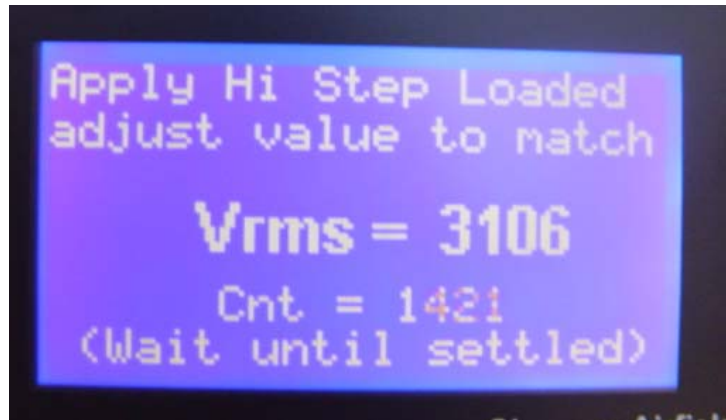


Figure 6 Vrms Hi-Step Loaded

B. Vrms - Off

Follow the prompts to turn off the CCR. When the CNT has settled press ENTER button. (CNT may not go to zero)

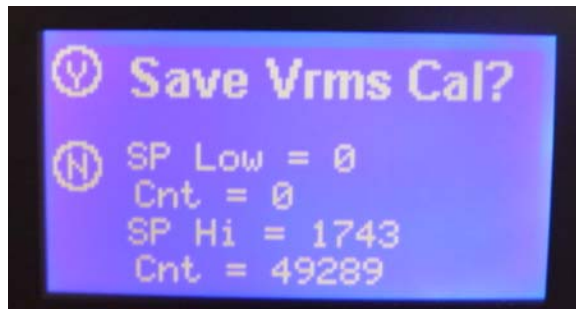


Figure 7 Save Vrms Calibration

4. ZAlarm Calibration (Low VA Calibration)

Note: The actual field circuit will be needed for the ZAlarm calibration.

CAUTION: Do not attempt to short out 100% of the load.

SCROLL to the ZAlarm and enter Y (yes) to start new ZAlarm calibration. Follow the prompts to select your CCR type.

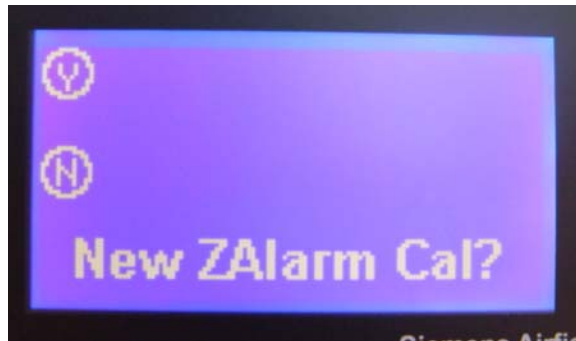


Figure 8 ZAlarm Calibration



Figure 9 ZAlarm Regulator Type Selection

Next, select the ZAlarm percentage (10 or 15%) at which the low VA alarm indication will be activated.

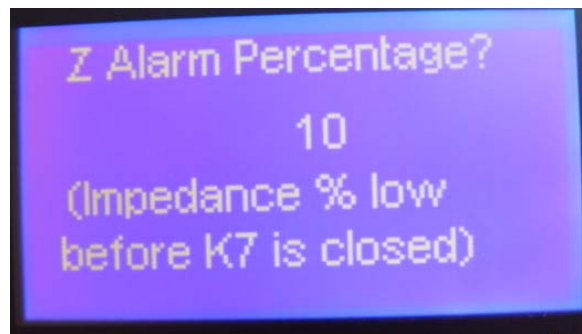


Figure 10 ZAlarm Percentage Selection

With the field load attached to the CCR, follow the prompts waiting for the I_{cnt} and the V_{cnt} numbers to settle at each step.

NOTE: Each step may take a couple of minutes to settle while the load heats up. A changing load may give false ZAlarm failures. The ZAlarm feature should not be used with

changing loads (such as L-804 or L-852G Runway Guard Lights).

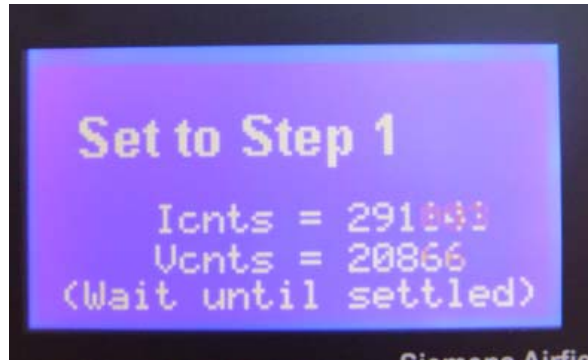


Figure 11 CCR Step

Enter Y (yes) to save the ZAlarm calibration.



Figure 12 Save ZAlarm

When the VA of any step drops below the percentage selected, the relay contact K7 will close and the Display will indicate LVA (Low VA) as shown below. **S1** indicates that the CCR is in Step 1.



Figure 13 LVA Notification