



Verify CS110 Calibration in the Field

Eliminate cost and downtime of factory recalibration

Overview

The CS110FV In-Field Verifier (Verifier) is used to verify a CS110 factory calibration. Housed in a rugged Pelican™ case, the Verifier includes a test cover that fits over the CS110 stator, a 12 Vdc alkaline battery pack, a GPS sensor to record the location

of the CS110, and a CD100 keyboard display. A custom menu simplifies entering variables, initiating verification, monitoring the verification progress, and viewing the results.

Benefits and Features

- › Tests CS110s in the field with an accuracy of $\pm 3\%$
- › Includes a rugged, portable case
- › Takes less than 10 minutes for the setup and verification process

Detailed Description

To test a CS110 in the field, the Verifier determines a CS110 MPARALLELPLATE calibration factor with an accuracy of 3%. This is done by applying measured dc voltages to a metal charge plate mounted close to the CS110 sense electrode and regressing the CS110 measured electric field against the Verifier applied electric field. If the test calibration factor differs from the original factory calibration factor ($\pm 1\%$) by more than

4%, the CS110 should be cleaned and retested. If, after cleaning, the difference is still greater than 4%, switch to the new test calibration factor ($\pm 3\%$) or return the CS110 for a factory calibration ($\pm 1\%$).

Each CS110FV has a unique factory calibration factor due to small mechanical variations in the Verifier test cover.

Specifications

Factory Calibration Uncertainty	$\pm 0.78\%$ (at a 95% confidence level)
In-Field Test Accuracy	$\pm 3\%$

The CS110FV factory calibrated uncertainty is 0.78%, corresponding to a confidence level of 95%. Therefore, when the CS110FV temperature is between

0 to 40°C, the CS110FV test accuracy is 3%, assuming a standard test uncertainty ratio (TUR) of 4:1.

In-Field Test Repeatability	±0.06%
Electric Field Verification Points	<ul style="list-style-type: none"> › ±750 V m⁻¹ › 0 V m⁻¹ › ±1500 V m⁻¹ › ±2300 V m⁻¹ › ±2000 V m⁻¹
Operating Temperature Range	-25° to +50° C
Power Supply Voltage	9.6 to 16 Vdc
External Batteries	12 Vdc nominal alkaline (Power connection is reverse polarity protected.)
Current Drain	<ul style="list-style-type: none"> › 225 mA (idle with display on) › 425 mA (during verification with GPS sensor on) › < 25 mA (idle with display timed out)

Internal Battery	1200 mAh lithium battery for clock and SRAM backup (Typically provides three years of backup.)
RS-232 Ports	DCE 9-pin (not electrically isolated) for connecting a computer
Application of Council Directive(s)	<ul style="list-style-type: none"> › 2014/30/EU: Electromagnetic Compatibility Directive (EMC) › 2011/65/EU: Restrictions of Substances Directive (RoHS 2)
Standards to Which Conformity Is Declared	<ul style="list-style-type: none"> › EN 50581:2012: Technical documentation for the assessment of electrical and electronic product with respect to the restriction of hazardous substances › EN 61326-1:2013: Electrical equipment for measurement, control and laboratory use—EMC requirements—for use in industrial locations
Dimensions	43 x 33 x 18 cm (17 x 13 x 7 in.)
Shipping Dimensions	51 x 41 x 31 cm (20 x 16 x 12 in.)
Weight	8.2 kg (18 lb)
Shipping Weight	10.9 kg (24 lb)

For comprehensive details, visit: www.campbellsci.com/cs110fv 



Campbell Scientific, Inc. | 815 W 1800 N | Logan, UT 84321-1784 | (435) 227-9120 | www.campbellsci.com
 AUSTRALIA | BRAZIL | CANADA | CHINA | COSTA RICA | FRANCE | GERMANY | THAILAND | SOUTH AFRICA | SPAIN | UK | [USA](#)

© 2019 Campbell Scientific, Inc. | 08/16/2019