

**JOFRA™**

## Model CSC100

# Compact Signal Calibrator

**Input and Output**

Current: 0 to 24 mA  
 Voltage: 0 to 200 mVDC  
           0 to 20 VDC (source)  
           0 to 28 VDC (read)

**High level of protection**

Fuse-less protection for internal circuitry  
 - a common cause of failure in other units  
 without this protection

**Auto-stepping**

Auto-step feature for simulation or sourcing  
 for easy performance of repeated test or  
 validation steps

**Easy to use**

User-friendly controls with knob and  
 keypad allow for function specific  
 operations and adjustable values

**High accuracy**

Accuracy up to  $\pm 0.015\%$  of reading  $\pm 2$   
 units - with ranges including mA, mV, and  
 VDC

**Large display**

Including large numbers for unit reading, a  
 percentage display, and dedicated icons  
 for calibrator status

**HART resistor**

Built-in 250 resistor for HART device  
 communications - place for resistor in  
 circuit as needed

**Complete marine program**

Part of a complete program of marine  
 approved temperature, pressure and signal  
 calibrators; including temperature sensors

**PRODUCT DESCRIPTION**

The JOFRA CSC100 is your solution to loop calibration. This handheld calibrator offers you an easy to operate interface including a knob for precise and rapid adjustment. With features including a large display and an auto stepping signal, the CSC100 makes troubleshooting and calibration of your process equipment a snap.

**Features**

The CSC line of signal calibrators are dedicated units designed to make your calibration and maintenance tasks easier to perform. The JOFRA CSC100 is engineered for instrument loop calibrations and is specifically manufactured for 4 to 20 mA loops; however this versatile instrument offers much more than that.

This calibrator can source and read current and voltage; including millivolts. It can also be used as a signal simulator to test your transmitters without the need for actual operation.

The CSC100 also offers features such as an auto-stepping function and fuse-less protection. These handy time savers are combined in a package offering an easy-to-read, two line display, and an intuitive keypad with a knob for fine adjustments.

This calibrator is more than a simple tool but it is as straightforward as any device that you have in the toolbox. The CSC100 signal calibrator offers the accuracy and features needed in a convenient, compact, and easy-to-use package.

### Clear dual line display

The CSC100 features a large two-line display. The upper line shows the measured or sourced voltage or current value. The second line is available in the mA modes to show the percentage of 4 to 20 mA. The display also features several icons to allow for quick recognition of the status of the unit.

### V/mA

Selects between the voltage and current functions.

### ON / OFF

Auto shut-off to extend battery life (user programmable).

### LOOP PWR

Turns on 24 VDC loop power when the calibrator is in the mA measure mode. Icon on the display indicates when this mode is active.

### Left / Right arrows

Move the cursor left or right to allow for adjustment of the desired decade.

### Electrical connections

Inputs for current and voltage measurement and sourcing.



### Mode

Select the input or output mode.

### 25%

Steps the output in mA source or simulate mode in increments of 25% (4 mA).

### AUTO

Enables automatic step functions. Perform tests using stored test points. Icon on display indicates when this mode is active. User can select between fast or slow ramping.

### Adjustment knob

Allows for easy adjustment of values. Combined with the Arrow Keys, reaching the desired value is easy.

### Overview

The CSC100 is a signal loop calibrator; it is designed to source and read voltage and current for loop signal calibration. This unit is a handy calibrator that can meet applications such as simulating a transmitter in a loop, measuring voltage, and checking output mA or mV levels.

The CSC100 is not simply a calibrator but an effective troubleshooting and test device. This versatile instrument is dedicated to loop calibration but that does not mean that this instrument is made to do only one thing.

### Voltage modes

The CSC100 offers the ability to source and read voltage. There is a VDC and mVDC scale to meet multiple applications. This allows the unit to function as a source to indicators and to other functions that are driven by voltage signals. The CSC100 can be used to drive a meter to specific setpoints for validation of operation without the need for other equipment. It is also possible to take a quick voltage measurement.

### Current modes

The CSC100 offers four different functions in the current mode. It can source current to inject a signal into a loop or simulate current and it may act as the transmitter in the loop to drive other functions or remote indications. The unit can simply be used to measure current. Additionally the CSC100 can power and read the instrument at the same time; providing that the unit under test is removed from the loop while under test or is removed from the system.

### Setpoint operation

The CSC100 offers a one button feature that is missing on many other loop calibrators. When it is sourcing or simulating current, the 25% key can be used to step in increments through a test or calibration. The calibrator will output mA values corresponding to 25% steps for a 4 to 20 mA transmitter. Just connect the unit and set it for current simulation or sourcing and press the key, the value will be 8 mA or 25%. Then, continue to use the function to step up through to 100% of the reading. It is possible to have the manual control of the test, but the calibrator takes care of the calculation for your test points.

### Automatic operation

In addition to the manual stepping with the 25% key, the CSC100 takes functionality one step further and offers an automatic option. This is again a one button solution utilizing the AUTO key. Set the unit up to simulate or source current and then press the AUTO key. This will activate the auto stepping feature and the calibrator will step through 25, 50, 75, and 100% values for a 4 to 20 mA device. These steps occur once every 5 seconds. If a faster test is needed the AUTO key may be pressed again to activate fast ramping.

### Auto shutdown

The CSC100 offers an automatic shutdown feature. This power saving feature turns the calibrator off after it has been idle for a specified period of time. The time delay is factory set to 30 minutes, however the time may be adjusted.

### CSC100 in soft case

All JOFRA handheld calibrators are supplied in a handy soft case that allows for operation while in the case. The convenient internal storage pocket offers the space for test leads and accessories.



## FUNCTIONAL SPECIFICATIONS

### Ranges

mA input/output ..... 0 to 24 mA / -25 to 125 %  
mV input/output ..... 0 to 200 mV  
Volts input ..... 0 to 28 V  
Volts output ..... 0 to 20 V  
Max load ..... 1000 Ω  
Max load w/HART resistor: ..... 750 Ω

### Accuracy1

mA ..... ±0.015% of reading ±2 μA  
mV ..... ±0.02% of reading ±20 μV  
Volts ..... ±0.015% of reading ±2 mV

1) Specification at 23°C ±5°C / 73.4°F ±9°F including non-linearity, hysteresis, and repeatability.

### Display

LCD ..... Dual line plus icons  
Display resolution ..... 5 digits  
Display update ..... 4 times per second

### Temperature range

Operating ..... -10 to 50°C / 14 to 122°F  
Storage ..... -20 to 60°C / -4 to 140°F

### Power supply

Battery ..... 1 x 9 V Alkaline  
Battery life ..... Minimum 20 hours  
Low battery indicator ..... at 7 V

### Instrument dimensions

Indicator L x W x H .. 188 x 84 x 52 mm / 7.4 x 3.3 x 2.1 in  
Indicator weight (including battery) ..... 400 g / 14.1 oz  
Indicator L x W x H, shipping ..... 203 x 101 x 64 mm / 8.0 x 4.0 x 2.5 in  
Indicator weight (including battery) ..... 567 g / 20 oz

## ORDERING INFORMATION

Order no.	Description
CSC100	Handheld loop signal calibrator

### Certification

G	NIST traceable temperature certificate (standard)
H	Accredited calibration certificate

CSC100G	Sample order number
CSC100 calibrator with standard NIST traceable temperature certificate	

## STANDARD DELIVERY

- JOFRA CSC100 loop calibrator
- Traceable calibration certificate
- Reference manual
- Test leads
- Soft carrying case
- Shoulder strap

## ACCESSORIES

124717	1x 9 Volt rechargeable battery
124718	Charger for rechargeable batteries - 115/230 VAC



**AMETEK Calibration Instruments** is one of the world's leading manufacturers and developers of calibration instruments for temperature, pressure and process signals as well as for temperature sensors both from a commercial and a technological point of view.

**JOFRA Temperature Instruments**  
Portable precision thermometers. Dry-block and liquid bath calibrators: 4 series, with more than 25 models and temperature ranges from -90° to 1205°C / -130° to 2200°F. All featuring speed, portability, accuracy and advanced documenting functions with JOFRACAL calibration software.

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A complete range of calibration equipment for temperature, pressure and signal, approved for marine use.

**FP Temperature Sensors**  
A complete range of temperature sensors for industrial and marine use.

**M&G Pressure Testers**  
Pneumatic floating-ball or hydraulic piston dead weight testers with accuracies to 0.015% of reading.

**M&G Pumps**  
Pressure generators from small pneumatic "bicycle" style pumps to hydraulic pumps generating up to 1,000 bar (15,000 psi).

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a matter of confidence*

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