

# JOFRA SIGNAL CALIBRATORS

## Product Selection Guide

J O F R A

s i g n a l

c a l i b r a t i o n

i n s t r u m e n t s



...because calibration is  
a matter of confidence

# ...because calibration is a matter of confidence

## JOFRA AMC900 Advanced Multi-purpose Calibrator

The JOFRA AMC900 is one of the finest benchtop precision calibrators offering temperature, signal and pressure features, which includes sourcing of current and voltage and measurement of millivolts, and resistance. This flexibility means that only one unit is needed for calibration or verification. This gives the confidence needed for testing instruments as well as for field calibrations.

- Accuracy to  $\pm 0.016^{\circ}\text{C}$  /  $0.029^{\circ}\text{F}$
- Output: 0-100 mA, 0-100 VDC, -10-100 mV, TCs (13 types), RTDs (14 types), 5-4000V
- Input: 0-100 mV, TCs (13 types), RTDs (14 types), 5-4000V
- External JOFRA APM pressure module capability
- JOFRA STS temperature reference sensor capability

Find more information in specification sheet SS-CP-2380 at [www.jofra.com](http://www.jofra.com)



## JOFRA CSC200 Compact Signal Calibrator

The JOFRA CSC200 signal calibrator is designed to make calibration and maintenance tasks easier to perform. The CSC200 is engineered for the calibration of temperature instruments offering the ability to measure and simulate several different types of RTDs and TCs. This instrument makes the job easy by utilizing a thermocouple plug for easy connection and it works with 2, 3, or 4-wire RTDs.

- Accuracy to  $\pm 0.2^{\circ}\text{C}$  /  $0.36^{\circ}\text{F}$
- TC and RTD input/output
- Reads and simulates temperature
- Fuseless protection on all inputs
- Part of a complete marine program
- Use the CSC200 in conjunction with JOFRA dry-block calibrators
- Use the CSC200 to read a JOFRA reference probe to ensure that the test points have the correct temperature

Find more information in specification sheet SS-CP-2332 at [www.jofra.com](http://www.jofra.com)



## JOFRA CSC100 Compact Signal Calibrator

The JOFRA CSC100 signal calibrator offers the features needed for specific calibration, testing, and troubleshooting tasks. The CSC100 is engineered for instrument loop calibrations and is specifically manufactured for 4 to 20 mA loops. This calibrator can source and read current and voltage, including millivolts. It can also be used as a signal simulator to test transmitters without the need for actual operation.

- Accuracy to  $\pm 0.015\%$  of reading
- mA and voltage input/output
- Sources and reads loop voltage and current
- Fuseless protection on all inputs
- Easy-to-read, two line display, and an intuitive keypad with a knob for fine adjustments
- Part of a complete marine program

Find more information in specification sheet SS-CP-2330 at [www.jofra.com](http://www.jofra.com)



## JOFRA mAcal Calibrator

The JOFRA mAcal calibrator is the economical answer to easy and accurate loop calibration. Test all 4-20 mA loops in the process with this handy calibrator that sources, reads, steps through test points, converts readings to percentages, and more.

- Accuracy to  $\pm 0.05\%$  F.S.
- Auto-stepping and ramping
- 24 VDC loop power
- Measures to  $\pm 45$  VDC and 24 mA
- Flow reading function
- Reads in mA, %, VDC, or sec
- Part of a complete marine program

Find more information in specification sheet SS-CP-2320 at [www.jofra.com](http://www.jofra.com)





## JOFRA ASM Advanced Signal Multi-scanner

The JOFRA ASM signal multi-scanner adds further flexibility and time-saving features to the calibration routines, as the ASM multi-scanner is delivered in 3 versions, enabling calibration of different kinds of sensors and calibration of up to 8 temperature sensors with one multi-scanner.

ASM-801 has 8 universal plugs. This is a fixed screw terminal solution for measuring RTD's, TC's, power, voltage, ohm, and transmitters.

ASM-802 has 8 small TC plugs for measurement of TC sensors.

ASM-803 has 8 LEMO plugs, which are primarily for measurement of RTD sensors. This solution of plugs also enables you to measure current, voltage and ohm.

The ASM is delivered in two different models: The ASM A model uses the measuring circuit of a connected measuring instrument such as an ASC300 or an ATC temperature dry-block B model. The ASM B model does not have to use the measuring instrument in the set-up, as the multi-scanner is able to perform the measurements itself. The most important advantage of the B model is its ability to perform several measurements each second.

Connecting three ASM multi-scanners makes it possible to perform automatic calibrations of up to 24 sensors at the same time using JOFRACAL calibration software.

- Accuracy to  $\pm 0.026^{\circ}\text{C}$  /  $0.047^{\circ}\text{F}$
- 6 different models
- Input: TCs (12 types), RTDs (13 types), 0-12 VDC, 0-24 mA, 0-4000V
- 24 V supply for transmitters
- RS232 interface and JOFRACAL calibration software
- 100% automatic calibration of up to 24 sensors
- JOFRA STS temperature reference sensor capability

Find more information in specification sheet SS-CP-2360 at [www.jofra.com](http://www.jofra.com)

## JOFRA ASC300 Advanced Signal Calibrator

The JOFRA ASC300 covers all needs for a process signal calibrator with superior accuracy and compact enough to fit into the tool box. The ASC300 measures and sources: TCs, RTDs, current, voltage, frequency, and pulse trains. This instrument is also designed to be compatible with the JOFRA APM pressure modules, thus offering true multi-function operability.

- Accuracy to  $\pm 0.2^{\circ}\text{C}$  /  $0.36^{\circ}\text{F}$
- Simultaneous input and output
- Input and output: TCs (13 types), RTDs (14 types), 0-20 VDC, 0-24 mA, 5-4000V, 0-10 kHz, and pulse trains
- Fuseless protection on all inputs
- Isolated read-back circuit with 24 VDC loop power
- APM pressure module input for pressure applications
- Part of a complete marine program

Find more information in specification sheet SS-CP-2350 at [www.jofra.com](http://www.jofra.com)



## JOFRA APM Advanced Pressure Module

The JOFRA APM pressure modules extend the usage of the JOFRA APC pressure calibrator as well as the ASC300 and AMC900 multi-function signal calibrators. The modules are available in a series of accuracies, ranges, units, and pressure references from vacuum to absolute pressure. All APM modules contain the calibration data. Just connect the modules to the instrument and perform the measurement.

- Accuracy to  $\pm 0.01\%$  F. S.
- Pressure range vacuum to 700 bar / 10,000 psi
- 62 different models
- Rugged and dependable for field or lab use
- Gauge, absolute, vacuum, differential, and combination modules
- Supplied with fittings for NPT and BSP threads

Find more information in specification sheet SS-CP-2190 at [www.jofra.com](http://www.jofra.com)



## Selection Guide

AMC900  
ASM800  
ASC300  
CSC200  
CSC100  
MACAL

### Accuracy

±(0.002% of reading + 0.002% F.S.)		X				
±(0.015% of reading + 0.01% F.S.)					X	
±(0.016% of reading + 0.01% F.S.)	X					
±(0.02% of reading + 0.01% F.S.)			X	X		
±0.05% F.S.						X

### Technology and features

CE compliant	X	X	X	X	X	X
Switch test input		X				
Simultaneous input and output			X			
Transmitter supply, 24 VDC	X	X	X		X	X
RTD measurement	X	X	X	X		
Thermocouple measurement	X	X	X	X		
mA reading	X	X	X		X	X
VDC reading	X	X	X		X	X
Auto shutdown			X		X	X
Auto-stepping			X	X	X	X
Serial interface	X	X	X			
External power input	X	X				X
Low battery indicator			X	X	X	X
External APM pressure modules capability	X		X			
Cold junction compensation	X	X	X	X		
Fuse-less protection			X	X		

### Documenting software JOFRACAL

RS232 and JOFRACAL calibration software		X	X			
Certificate printout via JOFRACAL		X	X			
Complete database via JOFRACAL		X	X			

### Design

Multi-information display	X		X	X	X	X
One-key-one-function operation	X		X	X	X	X
Aluminum carrying case	O	O				
Protective softcase			X	X	X	X
Traceable certificate	X	X	X	X	X	X
Accredited certificate	O	O	O	O	O	O
Rechargeable batteries and charger			O	O	O	O
DNV Marine Approval Certificate			X	X	X	X

**X = Delivered as standard**  
**O = Optional accessories**



**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.

**JOFRA Pressure Instruments**  
Convenient electronic systems ranging from -1 to 1000 bar (25 inHg to 14,500 psi) - multiple choices of pressure ranges, pumps and accuracies, fully temperature-compensated for problem-free and accurate field use.

**JOFRA Signal Instruments**  
Process signal measurement and simulation for easy control loop calibration and measurement tasks - from handheld field instruments to laboratory reference level bench top instruments.

**JOFRA / JF Marine Instruments**  
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).

*...because calibration is  
a matter of confidence*

**AMETEK®**  
CALIBRATION INSTRUMENTS

#### Headquarter:

**AMETEK Denmark A/S**  
Gydevang 32-34 • 3450 Allerød • Denmark  
Tel: +45 4816 8000 • ametek@ametek.dk

#### Sales & Service:

Europe, Asia, Africa, Middle East and South America

Information within this document is subject to change without notice.  
©2007, by AMETEK, Inc., www.ametek.com. All rights reserved.

Pub code P-CP-2005-US Issue 0708

www.ametekcalibration.com  
www.jofra.com

#### Sales & Service Offices:

**AMETEK Mansfield & Green (North America)**  
Tel: +1 800 527 9999 • cal.info@ametek.com

**AMETEK Singapore Pte. Ltd. (Singapore)**  
Tel: +65 6 484 2388 • aspl@ametek.com.sg

**AMETEK Inc. Beijing Rep. Office (China)**  
Tel: +86 10 8526 2111 • jofra@ametek.com.cn

**AMETEK GmbH (Germany)**  
Tel: +49 2159 91360 • info@ametek.de

**AMETEK Lloyd Instruments (UK)**  
Tel: +44 (0) 1489 486 404 • jofra@ametek.co.uk