JOFRACAL
Temperature and Pressure Calibration Software

Multiple possibilities
Can be used with all JOFRA temperature, pressure and signal calibrators equipped with an RS232 interface

Easy to use
Various screens provide easy-to-read information and instructions

Multiple sensor input
Combined with JOFRA ASM signal multi-scanners, JOFRACAL enables calibration of up to 24 sensors at the same time

Clear view of calibration
Graphical presentation allows quick overview of calibration results. Both online and on certificates

User-friendly database
Calibration procedures and results are stored in a user-friendly database structured like Explorer including searching and sorting facilities

Flexible temperature calibration
Choose between different temperature sources, such as dry-block calibrators, liquid baths, and ovens

Reduce calibration time
Control two dry-blocks simultaneously and reduce the overall calibration time significantly

Scheduler feature
Plan future calibrations with the scheduler function; list the tag, location, and calibration due date for the instrument

PRODUCT DESCRIPTION
JOFRACAL calibration software ensures easy calibration of RTD’s, thermocouples, transmitters, thermoswitches, pressure gauges and pressure switches.

JOFRACAL software may be used with the well-known JOFRA temperature calibrators as well as with JOFRA pressure and signal calibrators. Furthermore JOFRACAL functions as a stand-alone product.

Features
JOFRACAL software provides an entirely automatic calibration of sensors and a semi-automatic calibration of the complete process loop by means of a PC. The software handles the comparison between the process readout value and the reference value; a measurement typically required within ISO9000, GMP, or HACCP systems. Additionally, this evaluation may be performed on-site without electrical interruption of the loop.

A variety of screens presents the user with information in an easy-to-read format. This provides the technician with an optimal overview to allow for setting up calibration procedures and performing calibrations. Furthermore, JOFRACAL also includes facilities for generating and printing of detailed certificates.

This feature even comprises tools, which allow the user to customize the certificate content and format to comply with accepted norms and standards including: company-specific information, numbering, and terminology. We have also designed functions to incorporate specific requirements from the ISO program to make documentation a direct part of existing quality systems.
JOFRA INSTRUMENT COMBINATIONS

JOFRACAL calibration software supports all JOFRA temperature, pressure and signal calibrators equipped with an RS232 interface, including JOFRA DTI reference thermometers.

JOFRACAL calibration software may also be used for manual calibrations, as it can be set up to accept manual entry of calibration data together with other liquid baths, ice points or dry-block heat sources.
**STANDARD DELIVERY**

JOFRACAL calibration software is supplied as standard with the following calibrators:

**Temperature:**
- JOFRA ATC series (Advanced Temperature Calibrator)
- JOFRA ITC series (Industrial Temperature Calibrator)
- JOFRA CTC series (Compact Temperature Calibrator)
- JOFRA MTC series (Marine Temperature Calibrator)
- JOFRA ETC series (Easy Temperature Calibrator)
- JOFRA DTI-1000 (Digital Temperature Indicator)
- JOFRA DTI050 (Digital Temperature Indicator)

**Pressure:**
- JOFRA DPC-500 series (Documenting Pressure Calibrator)
- JOFRA APC series (Advanced Pressure Calibrator)
- JOFRA CPC series (Compact Pressure Calibrator)

**Signal**
- JOFRA ASM series (Advanced Signal Multi-scanner)

**JOFRACAL calibration software is optional for the following calibrators:**
- JOFRA IPI (Industrial Pressure Indicator)
- JOFRA AMC900 (Advanced Multi-purpose Calibrator)
- JOFRA ASC300 (Advanced Signal Calibrator)
- JOFRA calibrators without RS232

Set-up with JOFRA ATC-140 B, DTI-1000 and ASM-803 connected to a PC with JOFRACAL.

Set-up with JOFRA ITC-650 A, DTI-1000 and ASC300 connected to a PC with JOFRACAL.
**Easy calibration set-up**

The key to an easy set-up of a calibration task is the unique “Icon bar”. The “Icon bar” tells the current status of the calibration process, starting with selection of the sensor to be calibrated and ending with the performance of the calibration. The diagram shows the basic steps needed to set up a calibration.

**Initial set-up**

Calibrating the sensors for the first time, the initial set-up in the grey boxes has to be followed. Firstly, enter the specifics for the sensor(s) to be calibrated. Secondly, carry out the set-up and calibration procedures.

When the set-up is finished, the calibration is ready to run (red boxes).

**Day-to-day calibration**

In the future, it is not necessary to setup the sensor data again as set-ups and calibration procedures are memorized from earlier calibrations. Just follow the red boxes, selecting the sensor(s) to be calibrated.

This is easy and ensures that calibrations are done in exactly the same way every time.
CALIBRATION
During calibration, various screens provide the user with information about the calibration in an easy-to-read format. It also procure an overview of the calibration history and makes it possible to plan and document the calibration.

Device maintenance
To ensure the best possible work flow and calibration, JOFRACAL will split calibration devices into temperature and pressure devices.

This is done to reflect the differences between temperature and pressure calibrations. All these efforts are made to keep the leading position of JOFRACAL as a true temperature calibration software, and at the same time implement the relevant functionality to pressure calibration, to make JOFRACAL a true pressure calibration software as well!

Device history
In the device history function it is possible to see the calibration history of the device-under-test. Calibration points are selected and the graph clearly shows deviations at each temperature step.

Scheduler
An important feature of the JOFRACAL is the scheduler function. This feature not only lists the last calibration time, but it also has the capability to plan and schedule future calibrations. The device list, which is printable, simply shows when the device is due for calibration and where in the process the device is located, making it easy to plan efficiently.

Easy documentation
After saving the certificate, it is possible to print directly and/or save it as a PDF document. It is therefore very easy to provide verification and documentation of completed calibrations. All measurements and procedures are stored in a built-in database under a user-defined name.

Common procedures are easily found and results are presented in a true certificate format complying with quality standards such as ISO 9000, BMP, HACCP, etc. When a certificate is required, it may be printed in the chosen language. Just click on the calibration name and start the printout.

Set-up with JOFRA APC system B connected to a PC with JOFRACAL
TEMPERATURE CALIBRATION

In the "Calibration set-up" function, instruments can be combined in almost any required configurations. Simply select the desired method of performing the calibration and the software will show the scenario and take care of the rest. Calibration procedures and results are stored in a built-in identification / tag no. database.

Manual temperature calibration
Calibrations are not only limited to equipment with an RS232 communication port. The JOFRACAL software can be set up to accept manual entry of calibration data. It is also possible to perform on-site calibrations with the instruments and key in the data when returning to the workshop. Just select "manual reading" in the scenario. This feature provides the same look and data storage for all temperature calibrations. It is also possible to run the dry-block calibrator online and key in the sensor-under-test data manually as shown below.

Fully automatic temperature calibration
To illustrate the flexibility of JOFRACAL, this scenario uses a JOFRA DTI-1000 as reference instrument, a JOFRA ATC as heat source, and a JOFRA ASM for the sensor-under-test reading. A set-up like this enables calibration of up to 24 sensors simultaneously.

Fully automatic stand-alone temperature calibration
When using a JOFRA ATC as the heating/cooling source, a complete calibration procedure can be downloaded to the dry-block. The measurement data can be uploaded to a PC after the test is performed for review, storage, and/or printing of certificates.

Calibrations are collected and stored as "Work orders" in a file and downloaded to the calibrator from a personal computer using a standard RS232 interface cable. The ATC calibrator stores the calibration procedure and may be carried out to the process site without bringing a PC. This allows the ATC calibrator to:

- Operate as a stand-alone instrument, using advanced calibration routines without the assistance of a PC on-site.
- Prevent unauthorized changes to a calibration routine. Personnel who are not authorized to alter a calibration routine can be systematically prevented from doing so.

Once all calibrations are completed, the data may be uploaded to the JOFRACAL software and saved as certificates. Calibration data collected on the PC may be viewed or analyzed later.

Graphic presentation
JOFRACAL features a useful and valuable graphic presentation mode. During calibration, it is possible to press the [Graf] button to see the calibration being performed.

With one quick look at the screen, the user can check if the calibration is running as expected. If anything should be wrong, the calibration may be stopped. Corrections and adjustments can be made and the calibration may be restarted. This feature prevents waste of time and money on flawed tests.
PRESSURE CALIBRATION

In the “Calibration set-up” function, instruments can be combined in almost any required configurations. Simply select the desired method of performing the calibration and the software will show the scenario and take care of the rest. Calibration procedures and results are stored in a built-in identification / tag no. database.

Manual pressure calibration
Calibrations are not only limited to equipment with an RS232 communication port. The JOFRACAL software can be set up to accept manual entry of calibration and reference data. This feature provides the same look and data storage for all pressure calibrations.

Analogue pressure gauges
Calibration of analogue pressure gauges is made easy in JOFRACAL; simply just pressurize the system to the “scale points” decided in the procedure in JOFRACAL. The reference pressure is recorded automatically and error percentage and pass / fail are calculated as setup on the device card.

Digital pressure gauges
Apply pressure, aim for the set point, type in the actual reading of the device to be calibrated, go on to next calibration point. Reference pressure is recorded automatically, and error calculations are done in accordance with the set-up on the device card.

Pressure transmitters & transducers
Apply pressure, aim for the set point, approve by pressing the space bar, and go to next calibration point. Output from the device to be calibrated and the reference pressure are recorded automatically, and error calculations are done in accordance with the set-up on the device card.

Pressure switches
Apply pressure, slowly and smoothly pressure raises, until the switch state switches. Then the system slows down. The switch state of the device to be calibrated and the according pressure reference pressure are recorded automatically, and open / close & hysterises are stored for certificate printing and history.

JOFRACAL DPC-500
Calibrations are collected and stored as “Work orders” in a file and downloaded to the calibrator from a PC using the equipped RS232 interface cable. The DPC-500 calibrator stores the calibration procedure and may be brought to the process site without bringing a PC. This allows the DPC-500 calibrator to operate as a stand-alone instrument, using advanced calibration routines without the assistance of a personal computer on-site. Once the calibrations are completed, the data may be uploaded to the JOFRACAL software and saved as certificates. The calibration data collected on the PC may be viewed, printed or analyzed later.

Semiautomatic pressure calibration
To illustrate the flexibility of JOFRACAL, this scenario uses a JOFRA APC with an APM pressure module as reference instrument, a JOFRA system B pump as pressure source, and a JOFRA ASM for the sensor-under-test reading. A set-up like this enables calibrations of up to 24 sensors simultaneously.

Set-up with JOFRA DPC-500 system D and DPC-J reference sensor connected to a PC with JOFRACAL
ACCESSORIES

Part no. Description

125002 Edgeport converter with 4 RS232 ports. Connected and powered by the USB connection to the PC. Tested with JOFRA calibrators.

A raising number of PC’s are delivered without RS232 ports, especially Laptops are hard to find with built-in RS232 ports. The solution is to use a USB to RS232 converter. These converters are supplied from a number of suppliers all over the world. Some are good and some are not! As a part of the “ready-to-use” concept, AMETEK offers a USB to RS232 ports converter, tested with ALL JOFRA units! The converter has 4 RS232 ports, to enable the unique JOFRACAL feature of combining more JOFRA calibrators into a complete calibration system.

REQUIREMENTS JOFRACAL

Minimum hardware requirements:
- Intel® Pentium® II 1.4 GHz processor.
- 64MB RAM (128MB recommended)
- 80MB free disk space on hard disk (120MB recommended) prior to installation
- Standard VGA (800x600, 256 colours). 1024x768 recommended.
- CD-ROM drive for installation of program
- 1 or 2 free RS-232 serial ports, depending on configuration

Minimum software requirements:
- System fonts: MS SansSerif and Arial

...because calibration is a matter of confidence