

Calibration for imc measurement devices

imc possesses certification in accordance with [DIN EN ISO 9001](#) since 1995. As a manufacturer of devices, imc does not have an accredited laboratory, however it fully complies with section 7.1.5.3.2 of the IATF16949 requirements, "External Calibration Laboratory Requirements ". The set of test reports with the manufacturer's calibration certificate and logs of measurement values, as well as the list of test equipment used, meet the requirements of DIN EN ISO 17025.

imc Calibration

The calibration process does not include technical intervention in the device's workings. Calibration serves the purposes of detecting and documenting a measurement device's measurement deviation. The reference applied is another measurement device ("standard"), having a higher position on the traceability chain to national standards, as well as higher precision under specified conditions.

What variables can be calibrated in an imc calibration depend on the device's technical configuration.

imc Adjustment

In contrast to calibration, this always requires intervention in, and in consequence, persisting alteration of, the device's workings.

An imc Adjustment is performed as follows for each measurement amplifier: On the basis of the first calibration, a correction value is determined and saved in the device memory upon subsequent adjustment. Next, a second calibration is performed in order to verify whether the adjustment successfully constrains the values measured to within the tolerance range as per the manufacturer's specifications.

Standards and Traceability

imc tests and calibrates devices belonging to imc's production program.

The goods and services delivered are described in outline in the QM-manual, on the website and in the Services (System-Inspection, imc Maintenance) spec sheets. Specifically, the technical specification for the product, imc's Inspection Plan for the product, and the documentation on the respective calibration procedure are applicable.

imc does not offer universal calibration services.

As a DIN EN ISO 9001-certified firm, we subject all of our test equipment to the pertinent measurement and test equipment control management system. Thus, the equipment is reliably monitored and possesses traceability to standards according to the DAkkS (D)-calibration chain. This makes it possible to order a "DAkkS (D) -Traceability Certificate" for the calibration of the imc device at no extra charge. Calibration is then performed exclusively by test equipment having DAkkS (D) traceability.

The process by which a measurement instrument is calibrated using a higher-level instrument ("standard"), which in turn is calibrated by means of an even higher-level standard, is referred to as the calibration chain. The purpose of this calibration chain is to provide seamless traceability of measurement equipment to the applicable National Standards.

Calibration Certificate

imc always supplies a manufacturer's calibration certificate conforming to ISO 9001. The set of test reports with the manufacturer's calibration certificate and logs of measurement values, as well as the list of test equipment used, meet the requirements of DIN EN ISO 17025. The test reports list all target and actual values with pass/fail evaluation of every calibration performed.

The test reports are (electronically) archived at imc for 10 years.

Error tolerances

In its spec sheets, imc provides in detail the individual error margins (e.g. temperature deviations), from which the total tolerances are derived.

In the measurement value reports, the fail/pass evaluation refers to the entire permitted total tolerance.

These intervention boundaries can be modified individually.

Accredited calibration and calibration certificate

imc offers the option of obtaining accredited calibration conforming to the requirements of IATF 16949 clause 7.1.5.3.2 and ISO 17025. The accredited calibration, e.g. DAkkS (D), is performed in cooperation with an accredited third-party laboratory.

Determining actual measurement readings in accordance with the device-specific inspection plan is performed by an accredited laboratory (e.g.: for CRFX/UNI2-8 with 5 voltage measurement points, 2 current measurement points, 5 Pt100 measurement points, 5 thermocouple measurement points).

In the calibration procedure, for each channel and in each measurement range, a calibrator's target value is compared with the system's actual measurement reading. What variables are to be calibrated in each device depends on how the devices are configured. The standard inspection plan is available for perusal upon request, or a custom inspection plan is designed in conjunction with the customer.

Optionally, an accredited **incoming calibration** and accredited **outgoing calibration** can be ordered.

Calibration interval

In order to ensure performance of correct measurement over the long term, the test equipment used must be subjected to routine monitoring/calibration at a reliable calibration interval. Calibration intervals depend on various factors, including:

The measurement variable's permissible tolerance range, wearing of the measurement instrument, the results of previous calibrations, the measurement precision required and, not least, the equipment owning company's quality assurance system requirements.

Fundamentally, the calibration interval must be designed to achieve balance between risks and costs.

This means that the distance in time between successive calibrations ultimately depends on the user, who is thus responsible for specifying and monitoring the interval. To support our customers in determining the appropriate interval, we offer consultations with our staff.

In our technical specifications, we recommend a calibration interval of 1 year.

Notes

imc recommends a system inspection along with each calibration. The imc System Inspection ensures that the customer obtains a device having comprehensive functional testing. The functions test is performed according to the manufacturer's inspection plan and is performed by experienced specialists and with regard to the specific device's history.

Article description/order options illustrated by the example of imc CRFX/UNI2-8

1. imc Calibration illustrated for CRFX/UNI2-8

1.a) Order code: CRFX/CAL-A

Calibration of one analog imc CRONOSflex measurement amplifier unit

Flat charge for: input calibration and manufacturer's calibration certificate (pdf) in accordance with DIN EN ISO 9001 and test report set (pdf) with manufacturer's calibration certificate and individual measurement values as well as list of test equipment used. Meets requirements of DIN EN ISO 17025.

or

1.b) Order code: CRFX/ADJ

Adjustment of one analog imc CRONOSflex measurement amplifier unit; incoming and outgoing calibration

Flat charge for: incoming calibration, adjustment, outgoing calibration and manufacturer's calibration certificate (pdf) per DIN EN ISO 9001 and test report set (pdf) with manufacturer's calibration certificate and individual measurement values as well as list of test equipment used. Meets requirements of DIN EN ISO 17025

Optional:

2.) Order code: CRFX/CAL-P (for service prior to 01.02.2020)

Calibration report set for one analog imc CRONOSflex measurement amplifier unit

Flat charge for: Report set (pdf) with manufacturer's calibration certificate and individual measurement values as well as list of test equipment used. Meets requirements of DIN EN ISO 17025.

3.) Order code: SUP/CAL-DEV-CERT

DAkKS-Traceability Certification as PDF

Upon order of the item, calibration is performed exclusively with test equipment having DAkKS (D) traceability. The delivery contents include the DAkKS reports on the test equipment used.

Only available at no extra charge in conjunction with calibration or adjustment.

4.a) Order code: CRFX/INSP

System inspection for the imc CRONOSflex Base unit (recommended by imc)

Flat charge for: complete system inspection, function check, service report supplemental to calibration or adjustment

or

4.b) Order code: CRFX/INSP-MODULE

System inspection for one imc CRONOSflex module

Flat charge for: complete system inspection, function check, service report supplemental to calibration or adjustment

2. Accredited calibration, illustrated by example of CRFX/UNI2-8

1.) Order code: SUP/CAL-LAB-EXT

Accredited calibration for one analog imc CRONOS*flex* measurement amplifier unit

Flat charge for: incoming or outgoing calibration in accordance with imc inspection plan in an accredited laboratory and calibration certificate; imc Adjustment included

Delivery contents: Calibration certificate (pdf) from external laboratory, laboratory report set (pdf) with manufacturer's calibration certificate and individual measurement readings as well as list of test equipment used. Meets requirements of DIN EN ISO 17025.

Optional:

2.) Order code: SUP/CAL-DEV-CERT

DAkKS-Traceability Certification as PDF

Upon order of the item, calibration is performed exclusively with test equipment having DAkKS (D) traceability. The delivery contents include the DAkKS reports on the test equipment used.

Available at no extra charge however only in conjunction with calibration or adjustment.

3.a) Order code: CRFX/INSP

System inspection for the imc CRONOS*flex* Base unit (recommended by imc)

Flat charge for: complete system inspection, function check, service report supplemental to calibration or adjustment

or

3.b) Order code: CRFX/INSP-MODULE

System inspection for one imc CRONOS*flex* module (recommended by imc)

Flat charge for: complete system inspection, function check, service report. Supplemental to calibration or adjustment.

Note: Service items are not available with rebates