IMS4 CalibLab

Calibration Laboratory

IMS4 CalibLab is a complex, intuitive, easy to use, and flexible calibration laboratory software, which can be easily installed in any meteorological, aviation, meteorological, or industry institute.

Intuitive user guidance

Supports sensors from other brands

Automatic calibration, uncertainty calculation, certificate generation

Unified architecture for all calibrations

"Valid observational data can be obtained only when a comprehensive quality assurance programme is applied to the instruments and the network. Calibration and testing are inherent elements of a quality assurance programme." [WMO GUIDE TO METEOROLOGICAL INSTRUMENTS AND METHODS OF OBSERVATION (the CIMO Guide)].

To achieve the most accurate and professional measurement, it is necessary to employ a regular calibration and adjustment of the meteorological sensors.

MicroStep-MIS offers a comprehensive solution for calibration laboratory hydrometeorological services which include:

- Laboratory equipment and standards for the required quantities
- Validated calibration methods for the required quantities
- IMS4 CalibLab software allows automation of calibration
- Staff training
- Preparing laboratory for accreditation and assistance during the accreditation process

MicroStep-MIS has prepared equipment and measurement standards for laboratories prepared to comply with the special customer´s requirements for:

- Temperature
- Relative Humidity
- Atmospheric Pressure
- Wind Speed and Direction
- Precipitation
- Solar radiation
- Electrical Quantities (Voltage and Resistance) with optional expansion for other quantities.

Automatic adjustment

Calibration itself does not make your measurement results better. In order to keep the accuracy of the network over time, it is also necessary to adjust the sensors to remove the long-term drift effect. Fortunately, with many existing digital sensors the adjustment can be done automatically.

IMS4 CalibLab can currently automatically adjust the following sensors:

Producer: Vaisala

Barometers: PTB330, PTB220 relative humidity

Probe: HMP155

Producer: Rotronic
Relative humidity probe: Hygroclip HC2

Producer: MicroStep-MIS
Relative humidity probe: RH175
Barometers: MSB780, MSB181
Temperature probe: PT100D

Traceability

Each calibration service provider must maintain an effective traceability chain. MicroStep-MIS ensures consistency of standards delivered through:

- National Metrological Institute – Slovak Institute of Metrology
- Regional Instrument Centre WMO Bratislava

System description

MicroStep-MIS introduces the IMS4 CalibLab, a complex, intuitive, easy to use, and flexible calibration laboratory software, which can be easily installed in any meteorological, aviation, metrological, or industry institute.

IMS4 CalibLab brings the possibility to calibrate relative humidity, barometric pressure, temperature, wind sensors, and much more, using a unified and modular software, supporting multiple calibration chambers and devices, enabling calibration of almost any sensor on the market automatically, quickly, and reliably.

Automation

Reading of the instrument values and data processing is fully automatic. Thanks to this fact, it is possible to read more values and minimize the measurement uncertainty. The measurement process does not require any attention after setup. End of the calibration process or possible error is announced by a sound signal. The progress of the calibration process may be controlled remotely via computer network.

Intuitive user guidance

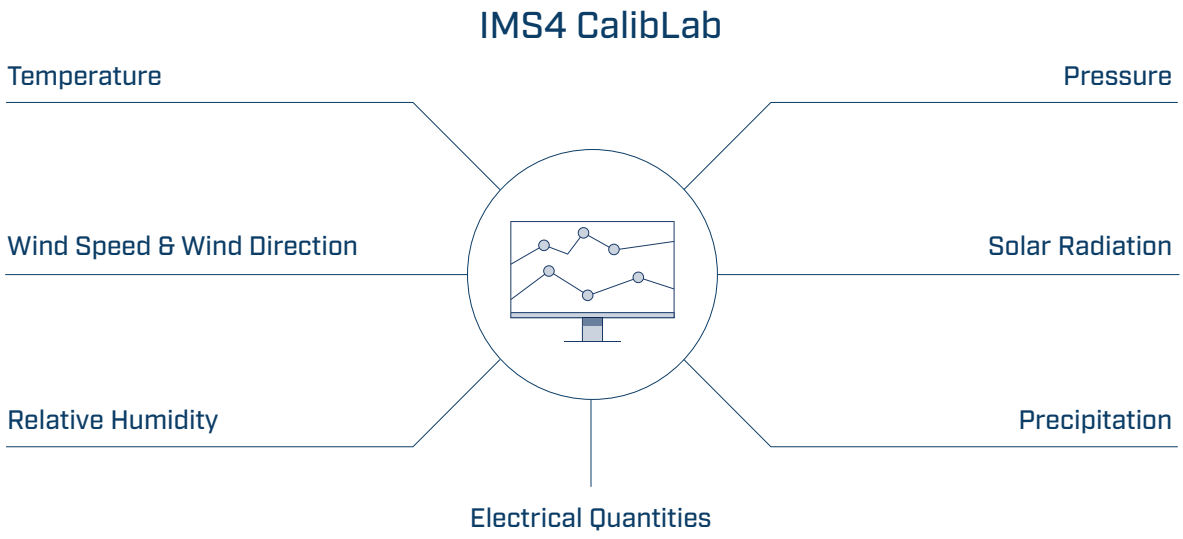
IMS4 CalibLab is user-friendly and provides wizard guide with pictures of how to connect calibrated sensors to the system and setup of the calibration equipment.

Sensors with digital output often provide possibility of reading-out their serial number. After finishing the calibration process the calibration results are stored in a database. The calibration certificate and label sticker are printed just by pressing a button. Laboratory conditions like temperature, relative humidity and pressure, are automatically recorded.

IMS4 CalibLab calculates measurement uncertainty according to the Guide to the Expression of Uncertainty in Measurement (GUM). The calculation is fully configurable.

IMS4 CalibLab is capable of automatic adjustment of the sensors. Adjustment is done in several predefined calibration points, two ways of entering of the corrections are supported (on the fly, or at once after the whole process).

Results of the adjustment can be automatically verified by ongoing calibration, which is also documented by a calibration certificate.



IMS4 CLDB – Climatological Database System

MicroStep-MIS database system is addressing the needs of the meteorological institutes to store the high volume long-term meteorological, climatological and environmental data.

IMS4 CLDB features a module for tracking history of measuring instruments including maintenance, calibration and adjusting events.

Training

Not only the calibration equipment and standards must be of high quality, but the engineers and technicians of a calibration laboratory must be well trained in basic metrology and in the use of calibration devices and measurement standards. MicroStep-MIS provides training engineers and technicians in basic metrology and in the use of calibration devices and measurement standards.

Training for:

- Head of the Laboratory
- Technical Director
- Quality Manager
- Technician

Research and Training Partners

- Meteorological authorities and research centers in Slovakia and RA VI REGIONAL INSTRUMENT CENTRE WMO
- Slovak Institute of Metrology
- Institute of automation, measurement and applied informatics
- Slovak University of Technology
- Faculty of Mathematics, Physics and Informatics, Comenius University
- Slovak National Accreditation Service