



Annual Monsoon Workshop

**Indian Meteorological Society, Pune Chapter
(IMSP)**

30 / 1993 - 2023
YEARS
OF EXPERIENCE IN METEOROLOGY
AND ENVIRONMENTAL MONITORING

30 YEARS OF EXPERIENCE IN WEATHER AND ENVIRONMENTAL MONITORING

4000+

...

*professional met
stations*

1000+

...

*completed
projects*

380+

...

*aviation weather
systems*

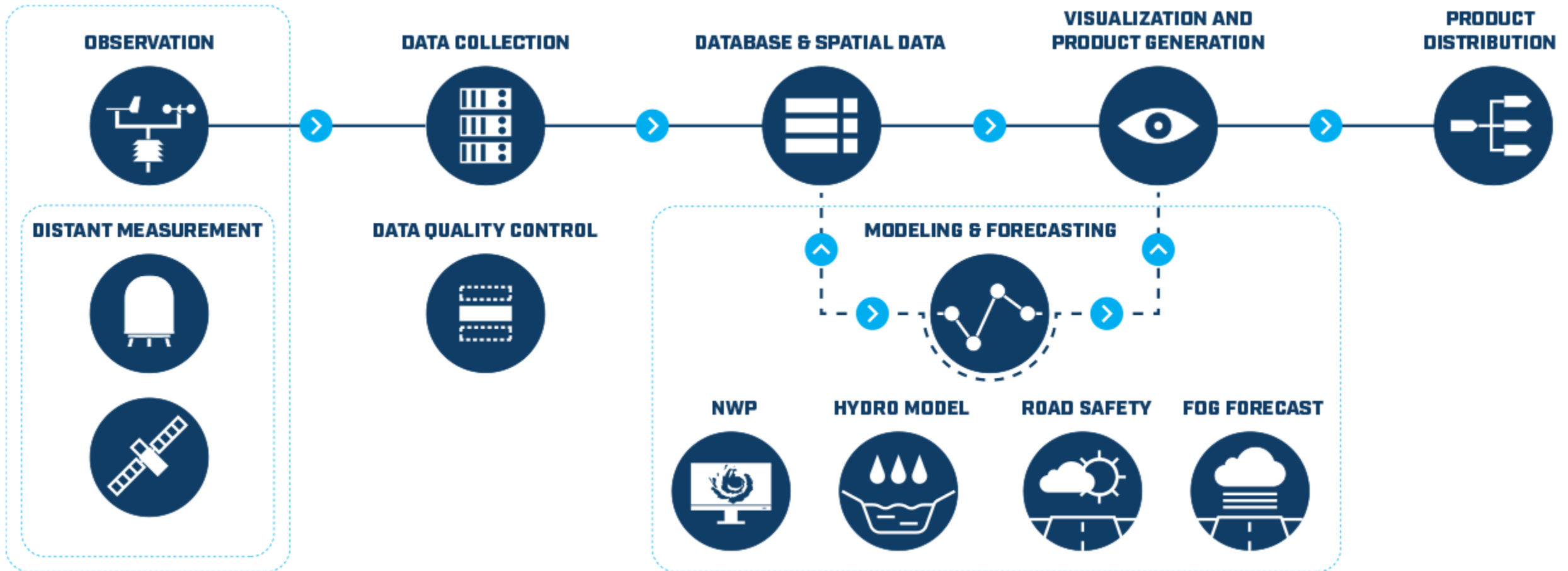
OUR PROJECTS WORLDWIDE



80+

*Supplied countries
worldwide*

COMPLEX SOLUTIONS FOR WEATHER AND ENVIRONMENTAL MONITORING



TOP REFERENCES

Flood and Flash Flood Warning System

Network of 215 meteo and hydrological stations, central system and hydrological modeling and forecasting system

Slovakia



National Network of more than 1000 Automated Weather Stations

The biggest project in terms of no. of delivered stations including central data collection and database system

Turkey



Met-ocean Monitoring System, Kuwait

The biggest and the most complex marine monitoring system in the region

Kuwait



PAGASA Unified Meteorological Information System

Integration of all weather data and customization on a high level

Philippines



TOP REFERENCES

Road Weather Information System

Early warning, sandstorm and fog modeling and forecasting contributing to safety on Dubai roads

United Arab Emirates



AWOS for Damman and Riyadh Airports

One of the first large-scale projects of the company, systems for ICAO CAT III category airports

Saudi Arabia



Volcanic Ash Trajectories and their Environmental Impacts

Large ash dispersion and impact research study and detailed weather modeling

Saudi Arabia



Automated Weather Observation System for 67 airbases

Meteorological system for Indian military airports (including high stations in altitude)

India



THE COMPANY'S KEY BUSINESS FIELDS



**Meteorology
and Climatology**



**Marine Monitoring
Systems**



**Radiation Monitoring
Systems**



**Modeling
and Forecasting**



**Weather Radar
Systems**



**Hydrology and Flood
Forecasting**



**Aviation Weather
Systems**



**Road Weather
Information Systems**



**Crisis and Early
Warning Systems**



**Calibration
Systems**

HARDWARE MANUFACTURE

- Sensors and Monitoring Devices
- Data Loggers
- Weather Radar
- Displays
- Accessories
 - Accessories for Aviation Systems
 - Calibration Accessories
 - Communication Devices
 - Meteorological Masts and Other Mechanical Components
 - Other Accessories
- Power Supplies and Chargers



SOFTWARE DEVELOPMENT

- Measurement and monitoring
- Data collection and acquisition
- Data storage, management, processing and analyzing
- Modeling and forecasting
- Data visualization and product generation

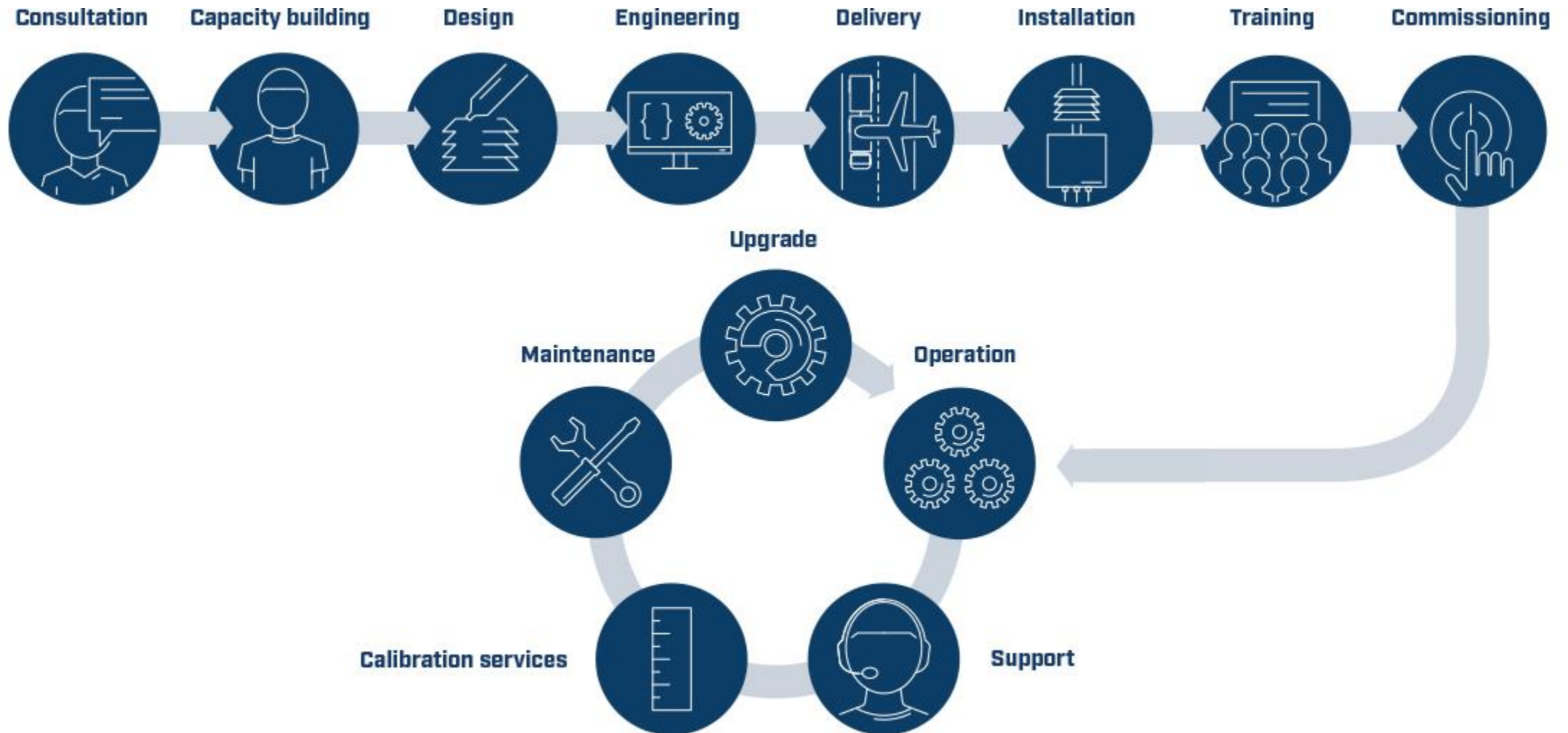


SOFTWARE DEVELOPMENT

- **Aviation:** AWOS, ARWIS, ATIS/VOLMET, LLWAS, Pilot Briefing, AWDSS, Airport Lightning Alert System, MetReporter, Remote Observer, RVR
- **Meteorology:** Forecasting Office / Weather Studio, Climatological Database, Modeling Suite (NWP, sandstorm, visibility), Radar and Satellite Data Processing
- **Hydrology:** Data Collection and Database System, Hydrological and Flash-flood Modeling
- **Marine:** Helideck Monitoring System, Data Collection and Database System, Marine Modeling
- **Radiation:** Data Collection and Database System, Dispersion Modeling



SERVICES AND SYSTEM LIFECYCLE



CERTIFICATIONS AND QUALIFICATIONS

ISO

- **ISO/IEC 9001: 2015** Quality Management System
- **ISO/IEC 10006: 2017** Quality Management System in Projects
- **ISO/IEC 14001: 2015** Environmental Management System
- **ISO/IEC 27001: 2013** Information Security Management System
- **ISO/IEC 17025: 2017** General Requirements for the competence of testing and calibration laboratories



SNAS

CERTIFIED RESEARCH-BASED ORGANIZATION



We actively contribute to a number of research projects and activities, results of which are being published and implemented in our production processes.

ONGOING SCIENTIFIC PROJECTS

TWIGA

Transforming water, weather and climate information through in-situ observations for geoservices in Africa

*H2020 agreement
no.776691*

Zlin

Nowcasting of convective precipitation and severe weather phenomena over a regional territorial unit on the basis of an X-band meteorological radar

ICONTROL

Intelligent Cloud Workflow Management for Dynamic Metric-Optimized Application Deployment

APVV-20-0571

AI4EOSC

Artificial Intelligence for the European Open Science Cloud

PARTICIPATING IN SESAR | WAVE 2

Pj02-W2 AART | Airport Airside & Runway Throughput

Solution 25 Safety support tools for
avoiding runway excursions

Pj04-W2 TAM | Total Airport Management

Solution 29.2 "MET Performance
Management



MicroStep -MIS

Your friends in every weather



**SYSTEMS AND
DEVICES**

CALIBRATION LABORATORY

ALL-IN-ONE Calibration Systems of

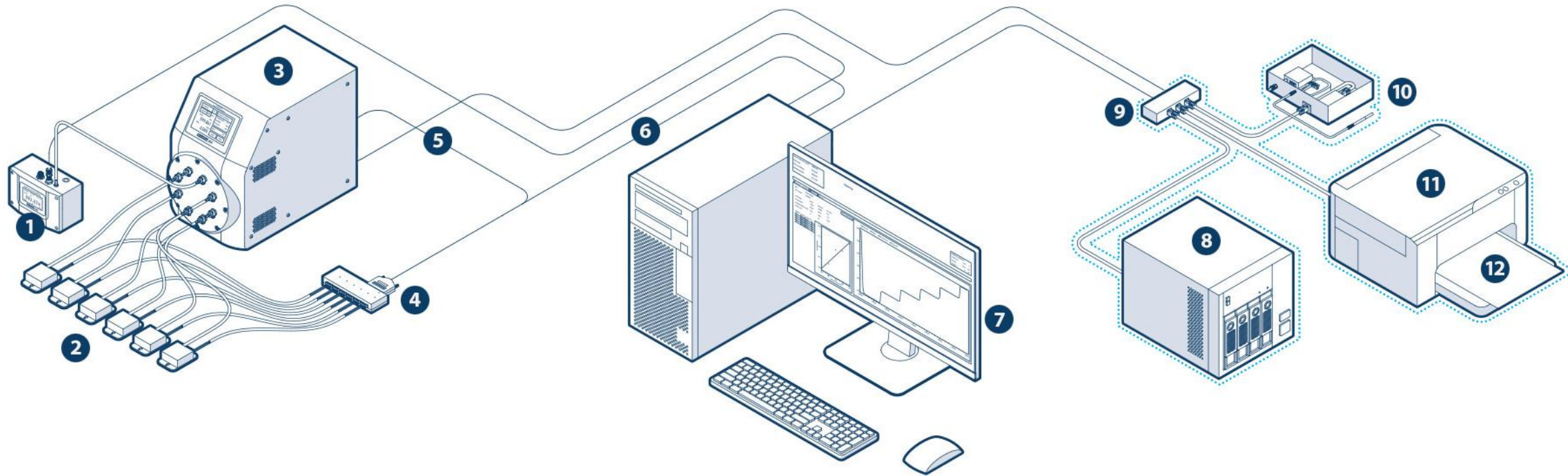
- Atmospheric pressure sensors
- Temperature and relative humidity sensors
- Precipitation sensors
- Distance sensors
- Wind speed and direction sensors
- Water level sensors

+ **FULLY AUTOMATED** calibration software IMS4 CalibLab





CUSTOMIZED CALIBRATION SYSTEMS



- | | | | |
|---------------------------------|--------------------------------|---------------------------------------|-------------------------------------|
| 1 Reference | 4 Extention card/MATRIX | 7 PC with calibration software | 10 Ambient condition station |
| 2 Devices under the test | 5 Extention card | 8 Data storage | 11 Printer |
| 3 Integrated calibrator | 6 MATRIX | 9 Internal ethernet switch | 12 Calibration certificate |

CALIBRATION SYSTEM FOR RELATIVE HUMIDITY PROBES

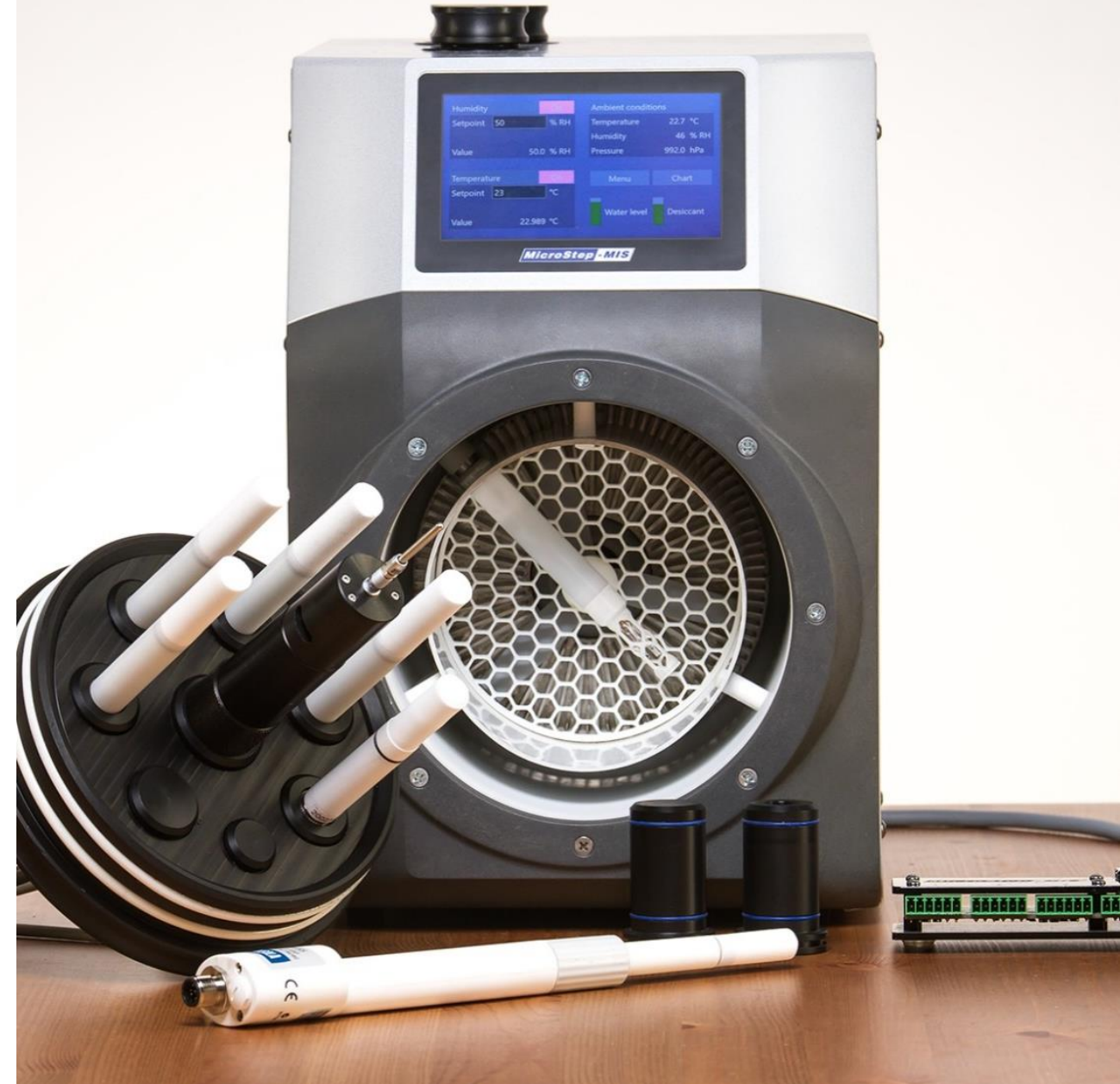
- Using humidity generator and chilled mirror
- The best solution for calibration of humidity probes
- High accuracy for a reasonable price
- Complete solution with reference, readout and software
- Very easy to operate
- Calibrates 6 probes at once
- Automatic calibration process
- Calibration software collects measured data and generates calibration certificate



CALIBRATION SYSTEM FOR RELATIVE HUMIDITY PROBES

Humiwell / Relative Humidity Calibrator

- Compact and portable, small form factor
- Excellent stability and homogeneity
- Wide range
 - Relative humidity range 5 to 95 %RH
 - Temperature range **-10** to 60 °C
- Compatible with 3rd party sensors (automatic adjustment)
- Ready for automated calibration with IMS4 CalibLab



CALIBRATION SYSTEM FOR ATMOSPHERIC PRESSURE

Climatic Chamber

- Complete solution for calibration of all humidity measuring instruments such as thermos hygrometers, hair hygrometers, thermographs, hygrographs, psychrometers, etc.
- A dew point mirror used as a reference
- The system handles up to 45 instruments at a time using the Matrix channel switch
- Automated calibration process with IMS4 CalibLab
- Several Chamber sizes available



CALIBRATION SYSTEM FOR ATMOSPHERIC PRESSURE

- Using atmospheric pressure generator
- The best solution for calibration of your barometers
- Complete solution with reference, readout and software
- Very easy to operate
- Calibrates 6 or more barometers at once
- Automatic calibration and adjustment process
- Calibration software collects measured data and generates calibration certificate



CALIBRATION SYSTEM FOR ATMOSPHERIC PRESSURE

Pressurewell / Integrated Pressure Calibrator

- Built-in reference sensor
- Built-in compressor and vacuum pump – no auxiliary devices required
- Long life, high reliability, low cost of ownership
- Fast response, no overshoot
- High stability - below 1 Pa
- Range from 300 hPa up to 1200 hPa (on request from 100 hPa)



CALIBRATION SYSTEM FOR THERMOMETERS

- Calibrates
 - platinum resistance thermometers (PRT)
 - thermistors
 - liquid-in-glass thermometers (LIG)
- Calibration by comparison with a **reference thermometer**
- Complete solution for calibration
- Automatic calibration process; Calibration software collects measured data and generates calibration certificate
- Covers whole meteorological temperature range
- Thanks to the Matrix system can handle up to 45 resistance thermometers at a time



CALIBRATION SYSTEM FOR THERMOMETERS

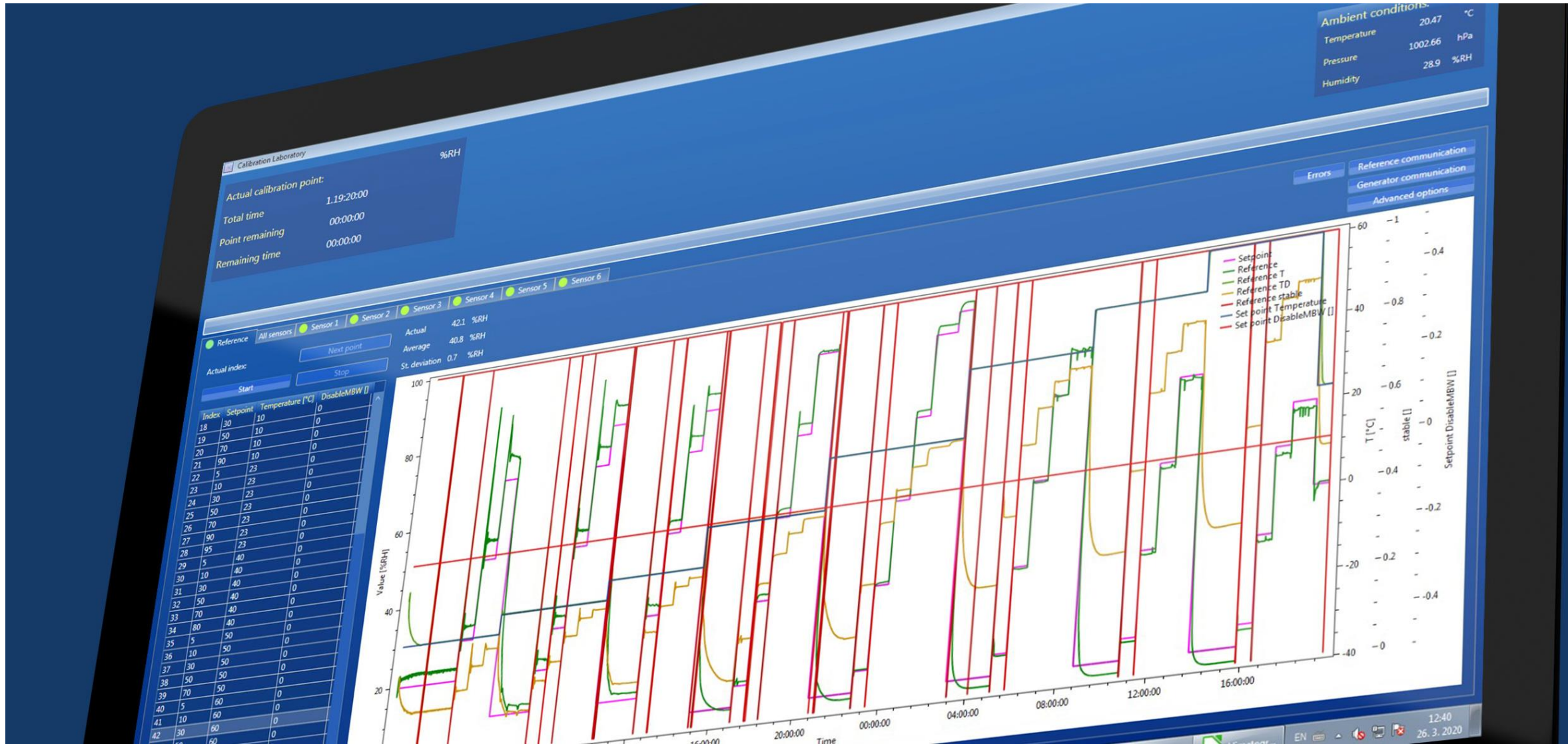
Thermostatic / Liquid Bath/ Temperature Well

- Creates a homogeneous temperature field
- Various media can be used (water, alcohol silicone oil, galden etc.)
- Maximum number of sensors depends on their size and the size of the bath





SOFTWARE



IMS4 CALIBLAB

Software

- One software for all calibration systems
- Very easy to use
- Supports 3rd party sensors
- Online uncertainty analysis
- Automatic calibration process
- Possibility to adjust sensors automatically
- Generates calibration certificates
- Full user editable template for certificate
- Implementation of third-party sensors

Database

- PostgreSQL database
- All calibration results on 1 place
- Search
- Filtering
- Plotting
- Data export
- Research
- Sensor calibration history

IMS4 CALIBLAB | INTUITIVE USER GUIDANCE

What would you like to do?

Calibrate Adjust

- Submit manual calibration data
- Print certificates
- Backup/Restore
- Change Settings

Next

How many sensors do you want to calibrate?

Count

Channel 1

Channel 2

Channel 3

IMS4 CalibLab is user-friendly and provides a wizard guide with description or pictures.

IMS4 CALIBLAB | CERTIFICATE PRINTING

Select certificates to print

Year: 2020, Type: RH, Group: None, Filter mode: Serial Number, Chart type: Points only, Chart Y range: 0, Selected: 3

Certificate number	Sensor type	Serial Number	Measured by	Approved by	Comment	Date
424	RHT175	30U2003NN1854	Patricia Horváthová	Gordon Vitko	733	30. 6. 2020 1
423	RHT175	30U2003NN1888	Patricia Horváthová	Gordon Vitko	733	30. 6. 2020 1
422	RHT175	30U2003NN1897	Patricia Horváthová	Gordon Vitko	733	30. 6. 2020 1
421	RHT175	30U2003NN1881	Patricia Horváthová	Gordon Vitko	733	30. 6. 2020 7
420	RHT175	30U2003NN1821	Patricia Horváthová	Gordon Vitko	733	30. 6. 2020 7
419	RHT175	30U2003NN1882	Patricia Horváthová	Gordon Vitko	733	30. 6. 2020 7
418	RHT175	30U2003NN1736	Patricia Horváthová	Gordon Vitko	733	30. 6. 2020 7
417	RHT175	30U2003NN1859	Patricia Horváthová	Gordon Vitko	733	30. 6. 2020 7
416	RHT175	30U2003NN1734	Patricia Horváthová	Gordon Vitko	733	29. 6. 2020 7
415	RHT175	30U2003NN1816	Patricia Horváthová	Gordon Vitko	733	29. 6. 2020 7
414	RHT175	30U2003NN1832	Patricia Horváthová	Gordon Vitko	733	29. 6. 2020 7
413	RHT175					29. 6. 2020 7
412	RHT175					29. 6. 2020 7
411	RHT175					26. 6. 2020 1
410	RHT175					26. 6. 2020 1
409	RHT175					26. 6. 2020 1
408	RHT175					26. 6. 2020 1
407	RHT175					26. 6. 2020 1
406	RHT175					26. 6. 2020 6
405	RHT175					26. 6. 2020 6
404	RHT175					26. 6. 2020 6
403	RHT175					26. 6. 2020 6
402	RHT175	30U2003NN1738	Patricia Horváthová	Gordon Vitko	733	26. 6. 2020 6
396	Testo 175H1	44610621	Patricia Horváthová	Gordon Vitko	MLPM pre KZSR	25. 6. 2020 1

Select calibration due

Select calibration due

(none) Certificate template: SNAS-EN-SK-GENERA

1 year

2 years

OK Cancel

- The calibration certificate and label sticker are printed just by pressing a button.
- The database is automatically backed up and saved
- Possible to monitor long-term stability of devices.
- access data from any authorized computer.

IMS4 CALIBLAB | CERTIFICATE PRINTING

Sultanate Of Oman
Public Authority For Civil Aviation
D.G. of Meteorology & Air Navigation
Muscat



سلطنة عمان
الهيئة العامة للطيران المدني
المديرية العامة للأرصاد والملاحة الجوية
مسقط

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مسقط

Oman Meteorological Lab

Calibration certificate No.	0016/RH/2013	رقم شهادة المعايرة
Sensor	RHT175 relative humidity and temperature sensor	الحساس
Type	RHT175	النوع
Manufacturer	MicroStep-MIS	الشركة المصنعة
Serial number	rht175	الرقم التسلسلي
Customer		الزبون
Address		العنوان
Phone No.		رقم الهاتف
Number of pages	2	عدد الصفحات
Date of calibration	12-08-2013	تاريخ المعايرة
Calibration due		تاريخ المعايرة التالية

Seal ختم	Date تاريخ 12-08-2013	Measured by المقاسم adam	Approved by أحمد بولسا csaba
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Calibration process:
Immediate comparison of the calibrated instrument with Oman-Met-Cal-Lab standard Michell Instruments Opt-Cal dewpoint sensor serial No.141248 and temperature probe serial No. 141576 – traceable to the UKAS Lab, Code 0179 to NPL.
Calibrated instrument and humidity standard has been measured in the humidity calibrator Opt-Cal. The minimum stabilisation time is 10 minutes after reaching 95 % of the setpoint value. The calibration has been done according to the Method of Calibration **CM 06/2013**.

This calibration certificate may not be reproduced without the full consent of the issuing laboratory. Calibration certificate information and data is the only.


Page 1

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801 04 Bratislava

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Calibration certificate 0208/RH/2020

Process of calibration: Immediate comparison of the object of calibration with standard of MicroStep-MIS, certificate number 75558/BV2019 calibrated in accredited calibration laboratory.
Calibration process according to the method PP-KL-03.

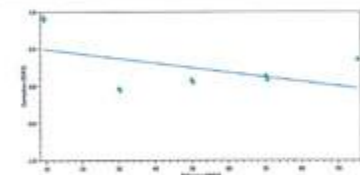
Standards used: Dew Point Mirror – MW 473-PP2
Standard serial n.: 15-0910_2760

Measurement conditions: temperature: (21.3 to 23.2) °C
relative humidity: (23 to 28) % RH

Measurement results:

Table legend:
 U_{ref} Relative humidity of air measured by the reference
 U_{obj} Relative humidity of air measured by the object of calibration
 U Expanded uncertainty

U_{ref} (%RH)	U_{obj} (%RH)	$U_{ref} - U_{obj}$ (%RH)	U (%RH)
10.29	9.40	0.89	0.89
30.34	30.45	-0.08	0.89
50.3	50.3	0.0	1.0
70.7	70.6	0.1	1.0
90.7	90.3	0.4	1.2
70.3	70.2	0.1	1.0
50.0	49.9	0.1	1.0
30.06	30.10	-0.04	0.89
10.22	9.30	0.92	0.89



Uncertainty:
The reported uncertainty is expanded uncertainty of measurement corresponding to the measurement result. It is stated as the standard uncertainty multiplied by the coverage factor $k = 2$. It was assigned according to EA-402:2013. Usually the true value is located in the corresponding interval with a probability of 95 %. Uncertainty value does not include the long-term stability of the calibrated instrument.

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info@microstep-mis.com

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ISO 9001:2015
EN ISO 17025:2017
ACCREDITED

ISO 9001:2015
EN ISO 17025:2017
ACCREDITED

Агентство по гидрометеорологии при МЧС
Кыргызской Республики



Агентство по гидрометеорологии при МЧС
Кыргызской Республики

СВИДЕТЕЛЬСТВО О КАЛИБРОВКЕ №0364/P/2020

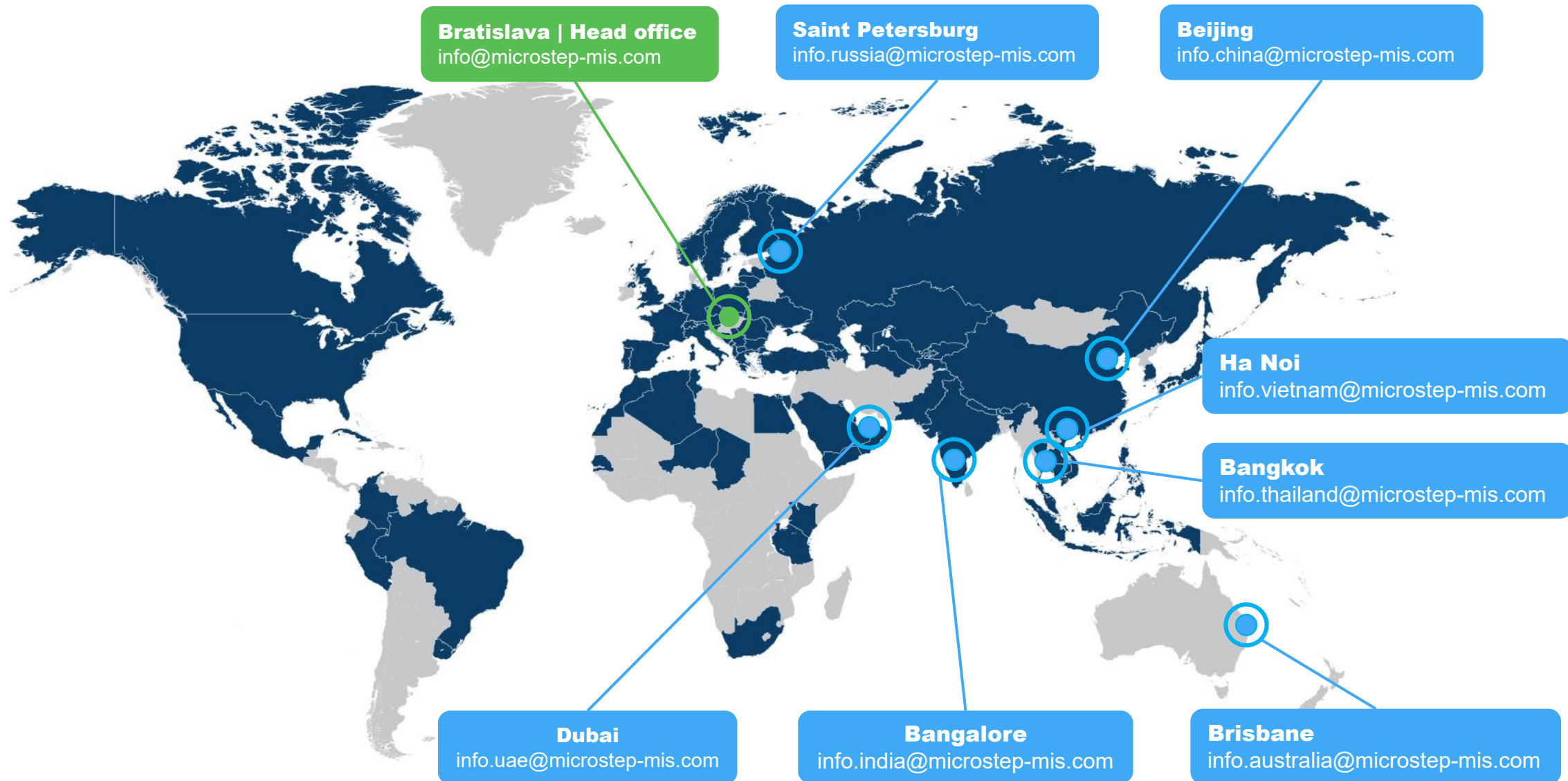
Сенсор: Absolute pressure sensor
Производитель: MicroStep-MIS
Тип: MSB 181
Серийный номер: 2004-1265
Стандия:
Количество страниц: 2
Дата калибровки: 2020-09-11
Действительно до:

Измерил
Patricia Horváthová
Подтвердил
Gordon Vitko

Данный сертификат калибровки документирует прослеживаемость по национальным стандартам, которые реализуют единичные измерения в соответствии с Международной системой единиц (СИ).
Пользователь несет ответственность за то, чтобы датчик был откалиброван с соответствующими интервалами.

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Thank You for your Attention