



By **MMS** group

Beyond
the measure

A blue circular graphic containing a computer monitor and a tablet, both displaying data charts. To the right of the graphic, the text 'EMS* Solution' is in a bold, white, sans-serif font, followed by 'JRI MySirius' in a larger, bold, white, sans-serif font. Below this, the text '*Environmental Monitoring System' is in a smaller, white, sans-serif font.

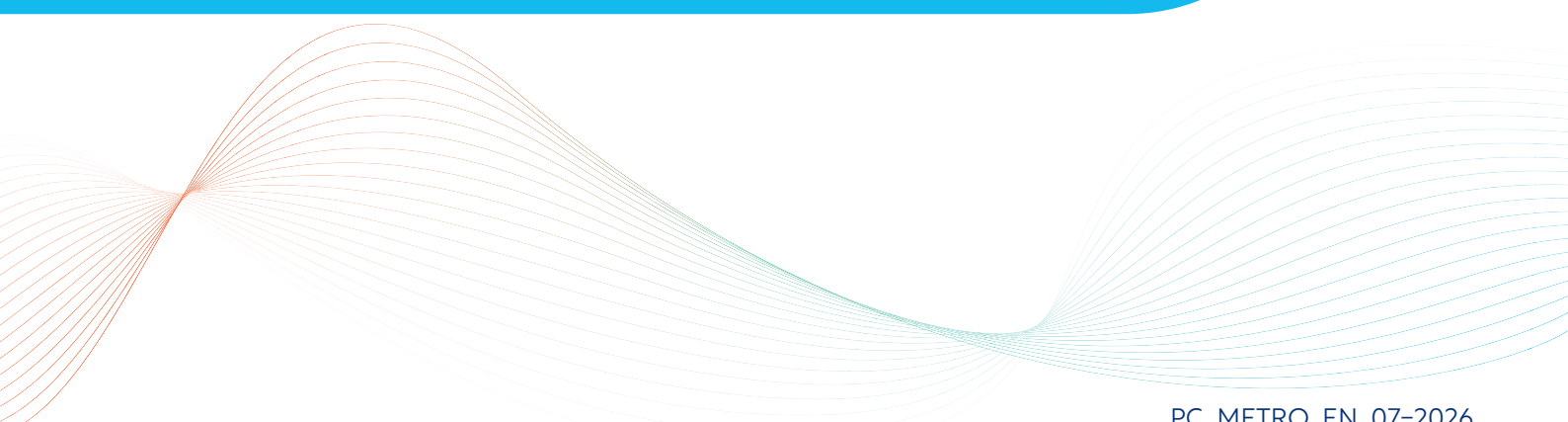
EMS* Solution
JRI MySirius
*Environmental Monitoring System



Calibration, Mapping Services and Tools

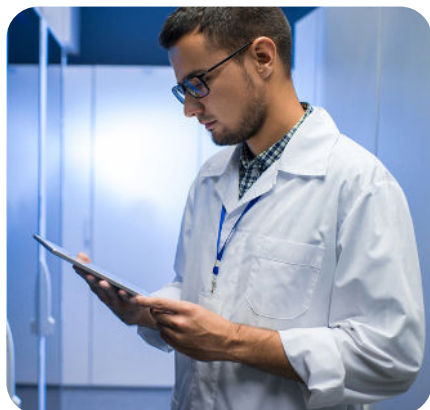


Integrated metrology solutions with JRI-MySirius



Training and Support

Our On-Site Metrology Service Days



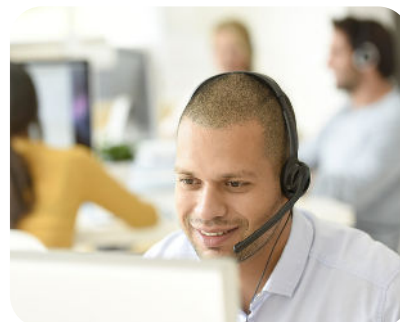
Depending on the number of measurement points in your monitoring system, we recommend an appropriate number of support days during which a JRI technician works on your premises to deliver **services tailored to your needs**:

- **Calibration and verification** of your measurement chains, and chamber mappings
- **Metrological management** of your equipment fleet and calibration schedules
- **Continuous chamber monitoring** during the calibration of your digital probes
- **Adjustment of your measurement chains** in the event of drift beyond your MPE (Maximum Permissible Errors)
- **Automatic data upload and alarm threshold adjustment** based on updated measurement data

Our Metrology Training Programs

We offer metrology training programs designed to support professionals at every stage — from introductory learning to advanced skill development — in calibration and mapping techniques for standard laboratory equipment (ovens, incubators, cold rooms, freezers, environmental chambers, etc.).

These training courses aim to make you fully autonomous in implementing, monitoring, and managing your metrology operations, while ensuring your equipment remains compliant with regulatory requirements and applicable standards



During these sessions, you will learn how to use our tools to perform your operations. The program includes:

- Fundamentals of metrology
- Training in the use of the calibration module and/or the mapping module
- Hands-on practice with your own equipment

JRI also provides **customized training programs**. Based on your support needs, we adapt the objectives and content of each session.

	Metrology Fundamentals Training	JRI-MySirius Calibration Module Training	JRI-MySirius Mapping Module Training
Remote training	1 day	3h or 1 day	3h or 1 day
On-site training	1 day	1 day	1 day

Our training courses are available in **French** and **English**. For further information or to schedule a session, please contact your sales representative

Our Metrology Services



COFRAC accreditation (www.cofrac.fr) certifies the reliability and technical competence of testing, analysis, and calibration laboratories that hold this certification.

As requirements for controlling measurement uncertainty across measurement systems continue to increase, the use of ILAC recognised laboratories has become essential to ensure reliable, objective, and traceable measurements.

Drawing on many years of expertise in measurement quality control, we operate an in-house COFRAC-accredited metrology laboratory for:

- **Temperature calibration and verification from -90°C to $+200^{\circ}\text{C}$ and at the -196°C point,** (accreditation No. 2-1943, scope available at www.cofrac.fr)



- **Humidity calibration and verification,** (accreditation No. 2-7385, scope available at www.cofrac.fr)



- **Mapping and verification testing of temperature-controlled chambers in accordance with standards FDX 15-140, NF EN 60068-3-5 and 60068-3-11 over a temperature range of -196°C to $+140^{\circ}\text{C}$, as well as FD V 08-601, and water baths over a temperature range of -90°C to $+140^{\circ}\text{C}$,** (accreditation No. 1-2471, scope available at www.cofrac.fr)



		Measurement range	Best achievable uncertainties
In the laboratory	In a calibration bath	-40°C to $+140^{\circ}\text{C}$	$\pm 0,037^{\circ}\text{C}$
		$+140^{\circ}\text{C}$ to $+200^{\circ}\text{C}$	$\pm 0,050^{\circ}\text{C}$
		-90°C	$\pm 0,10^{\circ}\text{C}$
		-80°C to -40°C	$\pm 0,055^{\circ}\text{C}$
		-196°C	$\pm 0,09^{\circ}\text{C}$
	Environmental chamber	-40°C to -20°C	$\pm 0,20^{\circ}\text{C}$
		-20°C to 0°C	$\pm 0,20^{\circ}\text{C}$
		0°C to $+60^{\circ}\text{C}$	$\pm 0,15^{\circ}\text{C}$
		$+60^{\circ}\text{C}$ to $+80^{\circ}\text{C}$	$\pm 0,30^{\circ}\text{C}$
On-site	Liquid bath and dry-block calibration	-90°C to -20°C	$\pm 0,20^{\circ}\text{C}$
		-20°C to $+140^{\circ}\text{C}$	$\pm 0,08^{\circ}\text{C}$

Temperature ($^{\circ}\text{C}$)	RH (%)							
	20	30	40	50	60	75	80	90
5		1,6	1,7	1,3	1,5	1,3	1,4	1,6
10		1,0	1,2	0,9	1,1	1,3	1,4	1,5
15	1,4	1,0	0,7	0,9	1,0	1,2	1,3	1,4
23	0,9	0,5	0,7	0,8	1,0	1,2	1,2	1,4
30	0,4	0,5	0,7	0,8	0,9	1,1	1,2	1,3
40	0,4	0,5	0,6	0,7	0,9	1,0	1,1	1,2
50	0,4	0,5	0,6	0,7	0,8	1,0	1,0	1,1
60	0,3	0,4	0,5	0,7	0,8	0,9	1,0	1,0

The expertise of our metrology engineers, the equipment they use, and the procedures implemented within our laboratory are periodically audited by the French Accreditation Committee (COFRAC).

As a manufacturer of temperature and humidity probes, and through strict compliance with COFRAC metrology requirements within our laboratory, we deliver **high-quality metrology services for measurement systems of all brands.**

In Our Fixed Laboratory

Our COFRAC-accredited metrology laboratory issues nearly 1,500 temperature calibration certificates each month. This level of activity makes it one of the leading COFRAC-accredited calibration laboratories in France.

Calibration

Measuring instruments must be calibrated regularly to ensure compliance with the applicable standards and regulatory requirements.

We perform COFRAC-accredited temperature and humidity calibrations on measurement systems of all brands, achieving the best achievable uncertainties. Our metrologists also provide calibration services for humidity, CO₂, and pressure sensors.

Key strengths:

- Multipoint calibration and simultaneous calibration of multiple measurement chains
- Decontamination process for measurement chains to prevent cross-contamination in our calibration baths
- Ability to calibrate at specific measurement points according to your requirements



Verification (Calibration and Compliance)



We also offer verification services. This process consists of comparing calibration results to the MPE (Maximum Permissible Error)* to ensure that your measurement system meets the defined specifications - either the manufacturer's specifications or those you have defined.

Key strengths:

- Control and management of measurement drift
- Accuracy verification of your measurement chains (new or serviced)
- Automatic upload of measurement results to the JRI-MySirius software

*MPE (Maximum Permissible Error): the largest allowable error for a given measuring instrument or measurement, according to a standard or specification.

Our Exclusive Features

- Development of low-drift digital probes with internal memory to store metrological information, including calibration coefficients, serial numbers, certificate numbers, etc
- Provision of probe rotation services to ensure periodic COFRAC calibration without interrupting the monitoring of your equipment.
- Automatic upload of calibration report numbers (CE or CV), calibration dates, measurement errors, and resulting uncertainties. This information can be automatically integrated into alarm thresholds and modeling within MySirius when probes are connected to digital devices (Nova SPY Digital, Nano SPY Digital, LoRa SPY Digital).



On-Site at the client's facility

The Mobile Metrology Laboratory



Lab Express

The Lab Express offers increased flexibility for on-site interventions, including in restricted-access areas, while maintaining JRI's high standards of quality and measurement accuracy.

Each intervention is carried out by a qualified metrologist and a JRI technician, fully autonomously and without disrupting your operations.

During a single intervention, our teams can simultaneously perform:

- COFRAC-accredited calibration of probes from all brands (-90°C to $+140^{\circ}\text{C}$)
- Mapping and verification of thermostatic chambers, cold rooms, and baths (-80°C to $+140^{\circ}\text{C}$, and down to -196°C for certain products)
- Operational maintenance of your JRI monitoring systems



Temperature Calibration
Accreditations n°2-1943

Humidity Calibration
Accreditations n°2-7385

Environmental Chamber Mapping and Testing
Accreditation n°1-2471

Scope available at:
www.cofrac.fr

Key strengths:

- Increased efficiency and measurement accuracy, as services are performed on-site under the same conditions as in the laboratory
- Reduced equipment downtime and optimized service costs
- Delivery of calibration reports within 5 business days
- Adjustment through modeling
- Triggering of alerts based on updated uncertainties

Continuous monitoring (optional service): To provide a complete service offering, JRI ensures the operational readiness of your JRI-MySirius monitoring system (included when calibrating a digital JR measurement chain), alongside on-site metrology services, using replacement probes during the calibration process.

Environmental Chamber Mapping According to FD X15-140

To ensure compliance with regulatory requirements, we perform on-site chamber mapping.



We can also map very large volumes (e.g., storage warehouses) across an unlimited number of measurement points.

Once mapping is completed, critical points within the chamber are identified, enabling optimal placement of monitoring probes.

Key strengths:

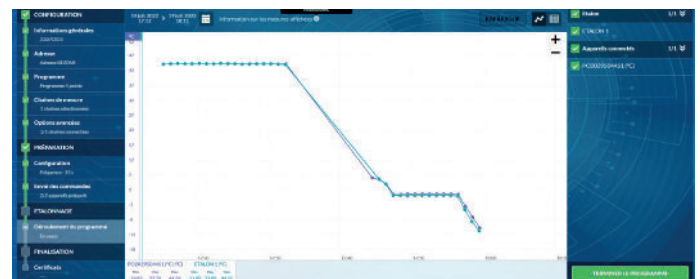
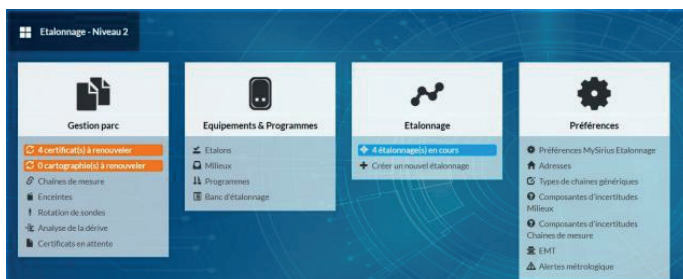
- Adaptation to a wide variety of volumes, temperature ranges, chamber types, and normative references
- Placement of JRI traceability probes by the Operations Service according to the test report and your directives
- Stress testing (door openings, power cuts, etc.)
- Tracking chamber drift over time to optimize mapping frequency
- Use of mapping kits compliant with FDX

Tools to Internalize Your Metrology

Calibration and Adjustment Solutions JRI-MySirius Calibration Module

This optional software module, compliant with CFR 21 PART 11, simplifies your calibration, verification, and adjustment processes while allowing you to fully manage the metrology of your measurement equipment independently.

- **JRI product ranges:** Nano SPY, LoRa SPY, Nova SPY and other JRI digital probes
- **Other ranges:** Labguard 3D and probes from other manufacturers
- **Main features:**
 - Declaration of measurement devices and creation of calibration programs via a guided interface
 - Calibration with modelling to reduce measurement errors
 - Metrological management of your measurement equipment fleet



Calibration benches

The benches allow simultaneous calibration of multiple JRI digital probes via the JRI-MySirius Calibration Module.

- Both benches communicate with JRI-MySirius (cloud or server) via RJ45 Ethernet port or Wi-Fi connection
- LED indicators for each measurement channel display operational status
- The Green Digital Sensor Standard can be directly connected to the bench



24 channel



96 channel

Calibration baths

Calib'Bath

This dry calibration bath provides a stable and precise temperature plateau. It can be used with the JRI-MySirius Calibration Module, or automatically perform verification checks remotely managed by our metrologists via the JRI-MySirius self-calibration procedure



Calib'Bath Connect

This calibration bath can be directly controlled from the JRI-MySirius Calibration Module.

It allows you to carry out your metrology operations by creating programs with multiple temperature plateaus.

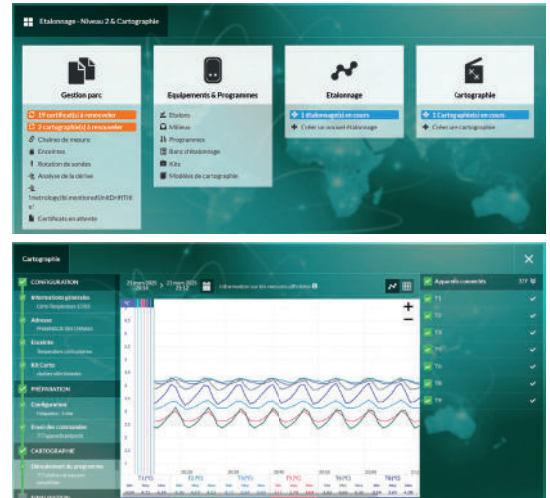


Environmental Chamber Mapping

Mapping Solutions

JRI-MySirius Mapping Module

- Optional module of the JRI-MySirius application enabling temperature and RH% mapping of chambers at 5, 9, 15, or custom points
- Generated mapping reports are linked to the chambers and made directly available in JRI-MySirius
- Periodic reminders to optimize mapping campaigns
- Drift tracking of the chamber / reference sensor pair to optimize the frequency of mapping
- Integration of stress tests, such as door openings, power outages, etc.
- Easy import of mapping kit configurations including all metrological information



Equipment

Chamber Mapping Kits

The mapping kits are designed to facilitate the mapping of thermostatic chambers in compliance with applicable standards.



KIT 15 NOVA SPY RED

- Rigid transport case
- 15 Nova SPY RED units (probes not included)
- 1 dedicated RED Ethernet Link
- 1 cellular router (optional) to provide connectivity if no Ethernet port with internet access is available on-site

KIT 15 NOVA SPY D

- Rigid transport case
- 15 Nova SPY D units (probes not included)

These kits can be used as needed with:

- **Short probes:** set of 15 Green Digital Sensor Reference short probes (5 cm, -40°C / $+80^{\circ}\text{C}$) + 15 flat cable extensions (3 m) + COFRAC calibration certificates with 5-point modeling (-40°C , 0°C , $+20^{\circ}\text{C}$, $+40^{\circ}\text{C}$, $+80^{\circ}\text{C}$)
- **Long probes:** set of 15 Green Digital Sensor Reference long probes (3 m, -90°C / -180°C) + COFRAC calibration certificates with 5-point modeling (-90°C , -50°C , 0°C , $+20^{\circ}\text{C}$, $+55^{\circ}\text{C}$)

Professionnal Standards

Green Digital Sensor Standard and Reference Probes

The Green Digital Sensor Reference and Standard temperature measurement chains are digital temperature standards with internal memory storing correction coefficients. The Green Digital Sensor Standard is a professional standard used for calibrating other probes via the JRI-MySirius Calibration Module, while the Green Digital Sensor Reference short and long probes are used for environmental chamber mapping.



Green Digital Sensor Standard
(-200°C to $+180^{\circ}\text{C}$)

Specifications:

- Measurement range: -200°C to $+180^{\circ}\text{C}$
- Accuracy: $\pm 0,15^{\circ}\text{C}$ from -40°C and $+80^{\circ}\text{C}$
- Specifications for the remainder of the range are provided via a 5-point COFRAC calibration with modeling
- Compatibility: Nova SPY Digital, Nano SPY Digital, LoRa SPY Digital and JRI Calibration bench



Green Digital Sensor Référence 3m
(-90°C to $+200^{\circ}\text{C}$)

Specifications:

- Measurement range: -90°C à $+200^{\circ}\text{C}$
- Accuracy: $\pm 0,15^{\circ}\text{C}$ from -40°C and $+80^{\circ}\text{C}$
- Specifications for the remainder of the range are provided via a 5-point COFRAC calibration with modeling
- Compatibility: Nova SPY Digital, Nano SPY Digital and LoRa SPY Digital



Green Digital Sensor Reference 3cm
(-40°C to $+80^{\circ}\text{C}$)

Specifications:

- Measurement range: -40°C to $+80^{\circ}\text{C}$
- Accuracy: $\pm 0,15^{\circ}\text{C}$ from -40°C to $+80^{\circ}\text{C}$
- Compatibility : Nova SPY Digital, Nano SPY Digital and LoRa SPY Digital

They trust us!



What about you?

Need more information?



www.jri-mms.com

MMS - Metrology & Monitoring Solutions



JRI, Simplified Joint Stock Company with a capital of 4 000 000 €

Logistics Center / 2 Rue de la Voivre / PA Technoland / BP 21 / 25490 FESCHES LE CHÂTEL / France

SIRET 380 332 858 00030 - Tel: +33 (0)3 81 30 68 04 / Fax: +33 (0)3 81 30 60 99 / sales@group-mms.com

Head Office: 16 rue Louis Rameau / CS 90050 / 95872 BEZONS Cedex / France / APE 2651B / VAT FR 02 380 332 858