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TECHNICAL COMPLIANCE

PRACTICAL GUIDE · 2026 EDITION

Measuring Instruments EAC and Metrological Approval

A comprehensive handbook for manufacturers, exporters and product managers



TYPE APPROVAL · VERIFICATION · CALIBRATION
TESTING · DOCUMENTATION · CHECKLISTS

As of 11 October 2026

ac-inorms.com

PRACTICAL GUIDE

How to use this handbook

Take measuring instruments from classification to reliable operation.

This handbook addresses manufacturers, exporters, importers, plant engineers and quality and metrology managers. It covers market access for measuring instruments and metrological requirements for their use in Russia, Kazakhstan, Belarus, Armenia and Kyrgyzstan. German and English editions share the same chapters and worksheets.

Three separate decisions

EAC conformity concerns applicable technical regulations. National type approval concerns a defined instrument type. Verification concerns an individual instrument and compliance with specified metrological requirements. A calibration certificate instead documents measurement relationships and uncertainty; it does not replace mandatory verification. This distinction runs throughout the guide.

Pages 4-11 explain the decision framework. Pages 12-17 cover countries and recognition. Responsibilities, procedures and records follow on pages 18-24. Pages 25-33 address product groups and testing. Marking, registers, lifecycle and costs appear on pages 34-40; the case study, FAQs and worksheets on pages 41-46. Sources and contact details conclude the handbook.

Edition 1.0 · As of 11 October 2026

Based on the AC Inorms sector page, regulations archive and official metrological sources. Includes EAEU Decision No. 83/2026 amending recognition rules. Country requirements are treated separately; explanations are not official translations.

Sources: [1]-[6]

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Navigate directly to chapters and linked original sources.

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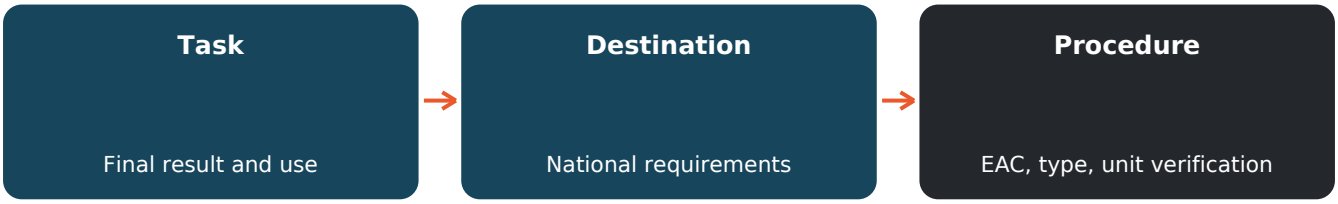
Suggested starting point

Start with a model list: measurand, range, accuracy specification, software, use and destination. Establish whether results support billing, health, safety or official purposes. Then plan EAC, type approval and individual verification separately.

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Quick start: seven project decisions

A precise project brief reduces clarification and unsuitable testing.



Start with actual use

Assessment area	Project implementation
01 · Instrument	Define type, variants, accessories and system boundaries.
02 · Measurement	State measurand, unit, range and permissible error.
03 · Use	Billing, safety, official measurement or internal control?
04 · Destination	Identify installation country, operator and national route.
05 · Supply	Record series, defined batch or individual measuring system.
06 · Evidence	Collect reports, approvals, calibration and software versions.
07 · Operation	Plan initial verification, periodic verification and service.

An HS code is customs information, not a complete metrological classification. The same pressure sensor may serve an internal test bench or a legally regulated measurement. Document which result triggers which decision and who uses it. Give each destination country its own requirements column. Separate factory testing, calibration and legally required assessment in the quotation.

In practice

An enquiry specifying the measurement task and destination is more useful than a generic request for an “EAC metrology certificate”.

Sources: [3], [4], [7]

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Three layers: EAC, type and individual instrument

Each document answers a different technical question.

EAC	Type approval	Verification
Applicable product requirements	Nationally approved type	Actual unit and result

Three separate releases · no automatic substitution

Assessment area	Project implementation
EAC conformity	Product safety and other requirements under applicable TRs.
Type approval	Approved type with metrological features, variants and conditions.
Verification	Confirmation of prescribed measurement requirements for a particular unit.
Calibration	Relationship between reference and indication, including uncertainty.
Operational release	Correct installation, valid evidence and authorised measurement task.

An EAC declaration does not automatically turn a process instrument into an approved billing instrument. Conversely, metrological approval does not automatically establish electrical safety or EMC compliance. The type dossier concerns the described type; the unit dossier records serial number, verification date, result and next due date. Connect both files for shipment. Instruments outside legal metrology may still face EAC requirements and contractual calibration duties.

In practice

Use a release matrix with three separate status fields. A green EAC status must not conceal an unresolved metrology status.

Sources: [3], [4], [7], [15]

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Five states, national instrument requirements

The common economic area and national metrology operate together.

Assessment area	Project implementation
Russia	Rosstandart; type and verification information in the federal information fund.
Kazakhstan	National rules; examine type approval, recognition or metrological attestation.
Belarus	Gosstandart/BelGIM; legal metrology and covered instrument categories.
Armenia	National Body for Standards and Metrology; separate type and unit information.
Kyrgyzstan	Kyrgyzstandart; resolve national procedures and competent verification providers.

All five states are members of the Eurasian Economic Union. Relevant EAEU rules govern harmonised product requirements. Legal use of measuring instruments is additionally governed nationally. Describe a document as valid throughout the EAEU only where that legal effect actually exists. A Russian registration number is useful commercially but does not replace assessment of use requirements in Kazakhstan or Belarus.

In practice

For each country record legal basis, route, competent organisation, register, language, unit verification and recognition decision.

Sources: [3]-[12]

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When is a measurement legally regulated?

Purpose and legal field determine the obligation.

Assessment area	Project implementation
Trade / utilities	Examine quantity and energy billing and contractual delivery measurement.
Health / veterinary	Identify results used for diagnosis, treatment or official control.
Safety / environment	Assess workplace, industrial and environmental measurements under national law.
Official tasks	Record surveying, mapping, supervision and other regulated tasks.
Internal process	Distinguish control or research from legally regulated results.

These examples are a screening tool, not a complete country list. In Russia, Article 1 of Law No. 102-FZ defines the regulated field; other states use their own boundaries. The actual measurement and applicable requirements are decisive. Operator ownership alone is insufficient: a private business may perform regulated measurements, while a public institution may use equipment outside such a task. For tenders also review the specific procurement conditions.

In practice

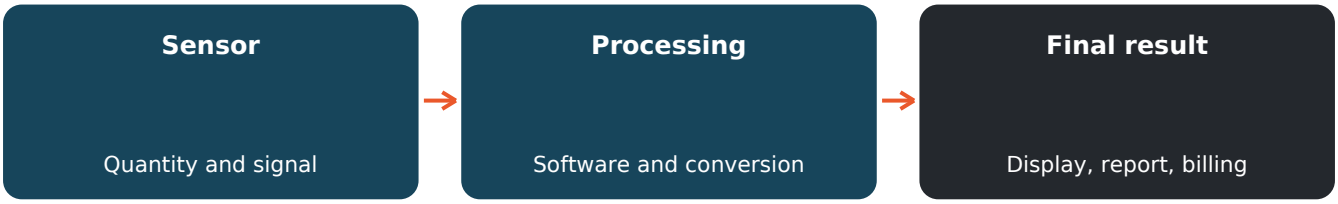
Ask the operator to identify in writing which results affect billing, release, health or official decisions.

Sources: [3], [7], [9], [12]

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Instrument, indicator or complete measuring system?

The approved object must match the actual measurement chain.



Document system boundary and result use expressly

Assessment area	Project implementation
Measuring instrument	Defined measurement function and specified metrological characteristics.
Indicator	Status or trend only? Examine quantitative use and accuracy claims.
Transducer	Describe sensor, conversion, output and supply together.
Measuring system	Define field instrument, computer, software and result generation.
Assembly	A machine may contain several independent measurement tasks.

“Only a sensor” is not a reliable exemption. A transducer with a digital output may possess essential metrological characteristics. A calculated result from several inputs may also represent a relevant measurement. A scale combines load receptor, electronics, software and permitted configurations. In a flow system, temperature, pressure, density and volume conversion may influence the final result. State explicitly which elements belong to the approval scope.

In practice

Draw the measurement chain through to the displayed or billed result. Mark every adjustable factor.

Sources: [3], [7], [15]

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Type approval: the defined instrument type

Approval scope is defined through design and documentation.

Assessment area	Project implementation
Type identity	Identify manufacturer, designation, models and manufacturing sites.
Metrological features	Describe ranges, error limits, resolution and use conditions.
Variants	Maintain a matrix of relevant hardware, sensors and options.
Software	Define identification and protection of metrologically relevant functions.
Verification	Associate suitable verification procedure and, where applicable, interval.

Type approval is based on the type assessed through the national procedure. Instruments subsequently supplied must conform to that approved version. Marketing names alone do not define a family. Shared electronics may support grouping; different measurement principles, ranges or algorithms may need additional assessment. A European MID or OIML document can provide technical evidence but does not automatically establish national approval in an EAEU destination.

In practice

Compare the order, type description, verification procedure and planned serial-number list before production release.

Sources: [3], [4], [7], [9]

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Poverka: verification of the individual instrument

Initial and periodic verification concern the actual unit.



Type approval is not a verification record for every unit

Assessment area	Project implementation
Initial verification	Determine the nationally required stage before regulated use.
Identification	Match serial number, type, range, software and configuration.
Assessment scope	Apply the verification procedure associated with the type.
Result	Record suitability, restrictions, date and registry information.
Repeat assessment	Include interval and repair/change consequences in the operating plan.

In this context, poverka means legal metrological verification. The German analogy “Eichung” may help understanding but does not describe an identical German procedure. The expression “initial calibration” must not lead to ordering the wrong service. A factory inspection report alone is not verification by an authorised provider. In Russia, recording the result in the federal information fund has central legal effect; treat paper documentation separately.

In practice

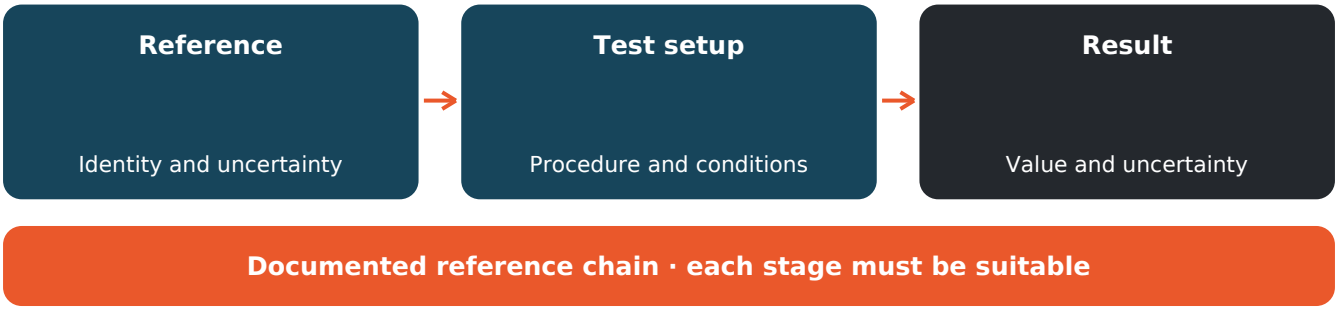
Order verification expressly under the approved procedure for named serial numbers, including required registration of results.

Sources: [3], [12], [14]

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Calibration, traceability and voluntary evidence

Assess technical quality and legal acceptability separately.



Documented reference chain · each stage must be suitable

Assessment area	Project implementation
Calibration	Relate reference values and indications under defined conditions.
Traceability	Establish a documented chain to suitable references with uncertainties.
Adjustment	Adjust the instrument; preserve separate before/after results.
Voluntary assessment	Assess quality or contractual features under a named programme.
Legal effect	Mandatory approval or verification is not universally replaced.

A traceable calibration certificate supports testing, process capability and maintenance. It identifies the instrument, procedure, conditions, results and uncertainties. Accreditation must cover the quantity and range. International recognition of laboratory services facilitates technical acceptance but does not automatically establish national use rights. Calibration or voluntary type assessment may be useful outside regulated measurement; describe the required statement precisely in the order.

In practice

A favourable calibration result does not automatically include a conformity decision. Agree limits and a decision rule for such a statement.

Sources: [12], [15], [16]

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Russia: type approval, verification and Arshin

Maintain Russian instrument records for the actual intended use.

Assessment area	Project implementation
Legal basis	Law No. 102-FZ of 26 June 2008 on uniformity of measurements.
Type procedure	Distinguish type testing from the Rosstandart approval decision.
Procedure rules	Use Order No. 2905/2020 including amendment No. 3334/2026.
Unit verification	Authorised providers, approved procedure and actual unit.
Information fund	Check type details and unit results in their respective registry sections.

For regulated measurement assess type status together with individual verification. An eligible provider performs type testing; the state approval decision is separate. Arshin provides information from the federal information fund. A type entry is not a positive verification record for every serial number. Distinguish manufacturer, approval holder and authorisation. Special areas such as defence or nuclear energy require additional examination of specific rules.

In practice

Archive type description, verification procedure and unit result when checking registers. A certificate copy alone can conceal unresolved conditions.

Sources: [3], [4], [13], [14]

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Kazakhstan: examine approval and attestation

Use in Kazakhstan requires its own procedural decision.

Assessment area	Project implementation
Legal framework	Law No. 53-II of 7 June 2000, as amended.
Series / batch	Assess applicable type approval and national registration.
Individual unit	Metrological attestation may be relevant under national law.
Recognition	Examine existing foreign approval and eligible recognition route.
Use	Determine unit verification, measurement methods and operator duties separately.

Kazakh law distinguishes instrument types from instruments placed on the market individually. Article 17 addresses type approval and metrological attestation; Article 19 addresses verification. Do not treat Russian approval of a German-made series as Kazakh approval without assessment. The government services portal provides a type-approval recognition procedure; establish its current documents and conditions for the project.

In practice

Name the intended outcome in the order: national type approval, recognition or attestation. Add language, registration and unit verification.

Sources: [7], [8]

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Belarus: legal metrology and categories

Assess the measurement task and covered instrument category together.

Assessment area	Project implementation
Legal framework	Law No. 3848-XII of 5 September 1995, as amended.
Scope assessment	Match legal metrology scope and the instrument-category list.
Type decision	Gosstandart decides under the national metrological procedure.
Type description	Confirm approved variants and verification procedure.
Registry / unit	Check the type register and required unit assessment separately.

BelGIM explains type approval for instruments used in legal metrology and included in the category list. Approval scope, including the type description, is therefore essential to the enquiry. Changes may concern models, design, verification procedure or manufacturer particulars and require assessment. A registry entry establishes type status; prescribed metrological assessment is additional for the individual unit.

In practice

Do not specify Belarusian verification using Russian intervals or forms. Use the national records applicable to the actual type.

Sources: [9], [10]

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Armenia: type and unit information

Agree the national interface early with the importer.

Assessment area	Project implementation
Contact point	National Body for Standards and Metrology (NBSM).
Type assessment	Resolve approval needs for the instrument and use nationally.
Type registry	Match manufacturer, models and approved scope.
Verification	Plan unit verification under the applicable national route.
Documentation	Agree languages, representative, samples and local service capability.

The NBSM website provides type-approval and verification services and separate registry sections. Connect those records to the actual use in your project. Assess recognition conditions for approval from another EAEU state. National approval is especially important for instruments manufactured in third countries. Avoid promising validity or verification intervals until the actual Armenian type and procedural scope has been confirmed.

In practice

Include a milestone for Armenian use approval and required unit verification in the delivery plan.

Sources: [5], [6], [11]

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Kyrgyzstan: verification and calibration

Determine the national route by measurement task and instrument.

Assessment area	Project implementation
Contact point	Kyrgyzstandart and competent regional organisations.
Regulated use	Determine required metrological assessment for the actual measurement.
Type status	Confirm national approval or eligible recognition.
Verification	Confirm compliance with mandatory metrological requirements.
Calibration	Determine actual metrological characteristics; track its purpose separately.

Kyrgyzstandart expressly distinguishes verification as a prerequisite for regulated use from calibration to determine metrological characteristics. Preserve that distinction in the quotation and unit dossier. Establish the eligible provider, its scope and recognition of existing results. For installed systems include access, measuring equipment, references and any production outage in the plan.

In practice

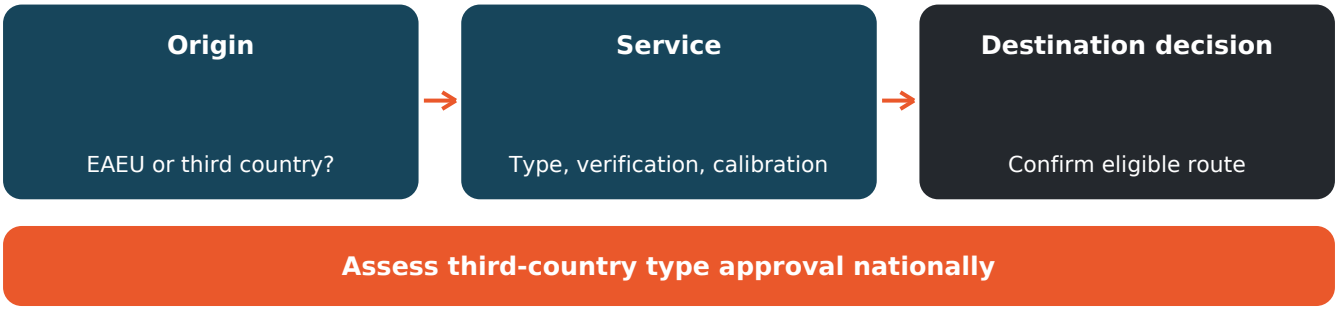
Before shipment confirm whether assessment is required for the instrument, the installed system or both.

Sources: [5], [6], [12]

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Recognition within the EAEU: 2026 status

Manufacturing origin and type of service determine the route.



Assessment area	Project implementation
Baseline	Decision No. 145 of 18 October 2016 on mutual recognition.
Amendment	No. 83 of 9 July 2026; effective since 13 September 2026.
Type / verification	Assess recognition by eligible provider, procedure and conditions.
Calibration	New paragraph 2¹ addresses interacting parties under national law.
Third-country instruments	Type approval for instruments manufactured outside the EAEU remains national.

Paragraph 5 is crucial for European manufacturers: the specified recognition framework for type approval, verification and now also calibration concerns instruments manufactured within member states. Type approval for third-country instruments follows member-state law. A German manufacturer holding Russian approval therefore does not automatically obtain Union-wide type approval. Examine other applicable agreements and national recognition routes separately.

In practice

The recognition file records manufacturing origin, service type, eligible issuer, destination and documented decision.

Sources: [5], [6], Abs. 2¹, 3, 5

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Responsibilities and eligible organisations

Assign contracts, technical assessment and state decisions clearly.

Assessment area	Project implementation
Manufacturer	Own technical identity, manufacture, software and change information.
Importer / representative	Resolve national role, authority, application and access to records.
Type-testing provider	Check eligibility for instrument, measurand, range and procedure.
Approval authority	Decision and registry effect in the relevant state.
Verification provider	Eligibility for actual unit verification and submission of results.
Operator	Ensure installation, permitted use, due dates and service access.

The EAEU representative used for EAC is not automatically the eligible applicant in every national metrology procedure. The contract identifies route, applicant, approval holder and access to the type dossier. Check accreditation or authorisation scope against current registry information; a general laboratory title is insufficient. The manufacturer must be able to contact responsible parties promptly for changes. A change of importer must not lose registry details, authorisations or original reports.

In practice

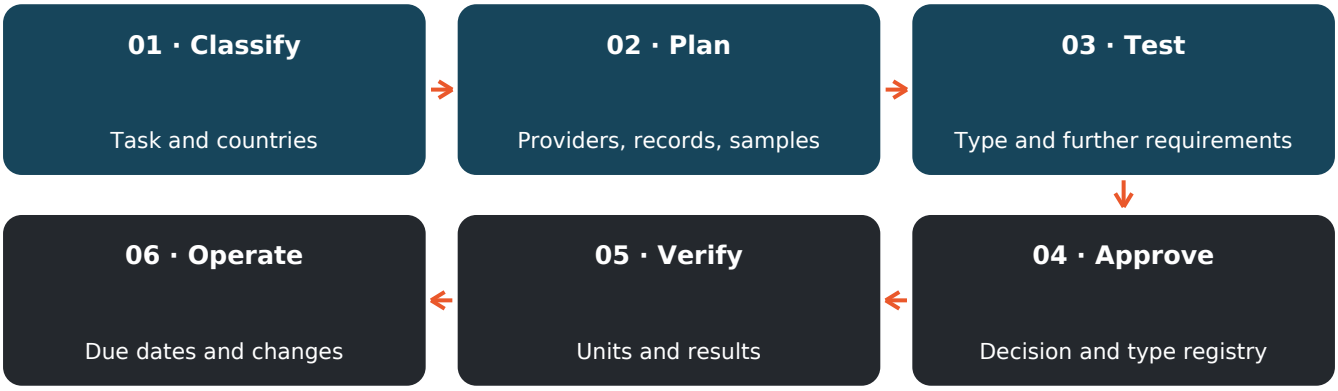
Before placing the order agree who receives originals and who can later apply for extension or amendment.

Sources: [3]-[14]

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Project workflow: six steps to operation

Coordinate EAC and metrology while releasing them separately.



Assessment area	Project implementation
01 · Classify	Resolve task, type boundary, manufacturing origin and countries.
02 · Plan	Agree routes, organisations, records, samples and schedule.
03 · Test	Perform type testing and any EAC assessments.
04 · Approve	Secure decision, type description, procedures and registration.
05 · Verify	Verify individual units and register results.
06 · Operate	Release installation and maintain verification/change management.

Parallel assessments can shorten schedules if they evaluate the same approved configuration. Type testing with old firmware and shipment with a new algorithm do not create consistent evidence. For every step specify input records, owner, output and release criterion. Plan sample logistics and national unit verification early. Acceptance of a complete plant additionally checks installed measurement chains and their actual operating conditions.

In practice

Release shipment after reconciling product version, EAC status, national type status and required unit verification.

Sources: [3], [4], [7], [14]

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The complete project dossier

Distinguish core records from procedure-specific evidence.

Assessment area	Project implementation
Product / use	Data sheet, task, HS code, models and destinations.
Technical records	Drawings, circuits, principle, components and software.
Operating records	Instructions, technical passport and relevant safety documents.
Metrology package	Type description, test programme, verification procedure and reports.
Parties / contracts	Manufacturer, factories, applicant, importer and authorisations.
Existing evidence	CE, MID, OIML, EAC, calibration and other complete reports.

The sector page lists extensive starting documents. Translate them into an agreed records list for the actual order. ISO certification, personnel qualifications and component certificates are not identical universal requirements in every procedure. Their relevance depends on the route and the evidence claimed. Save each file with language, revision, date, owner and model reference. A signed data sheet with an unclear type boundary does not replace a complete technical description.

In practice

The dossier index tracks available, technically reviewed, translated, approved and submitted status.

Sources: [1], [3], [4]

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Type description and variant matrix

Trace the approved type through to the ordered configuration.

Type description

Models, ranges, limits

Supplied unit

Hardware and software

Assessment file

Sample, procedure, report

All records must describe the same approved version

Assessment area	Project implementation
Measurement principle	Explain physical relationship and signal processing.
Ranges / classes	Associate range, subranges, error limits and conditions.
Variants	Compare sensor, connection, electronics, materials and options.
Identification	Model code, serial numbers, firmware and permitted combinations.
Interfaces	Describe communication, settings, protection and result export.
Testing link	Which samples cover which variant and limit?

The variant matrix exposes common and differing features. Separate cosmetic options from influences on result generation and protection. A longer measuring path, another sensor or new temperature compensation may alter metrological assessment. For every approved variant the customer must be able to identify the supplied range and use limits. For renaming determine whether only the commercial designation or the actual type has changed.

In practice

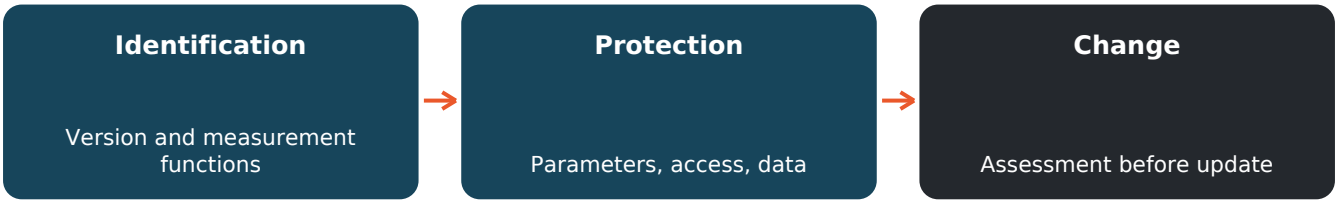
A type description must not claim options that remain technically unassessed or outside approval scope.

Sources: [3], [4], [9]

PRACTICAL GUIDE

Software, firmware and data integrity

Identify and protect metrologically relevant functions.



Maintain traceability of result generation and protected functions

Assessment area	Project implementation
Identification	Make version, checksum or other specified identifier available.
Separation	Separate result generation from display, convenience and service functions.
Parameters	Control calibration factors, units, limits and compensation.
Access	Permissions, sealing or other prescribed safeguards.
Change	Assess update effects, version history and approval consequences in advance.
Data flow	Document timestamps, transfer, storage and calculation path.

A software change can alter results without new hardware. Rounding, filtering, temperature correction or a new conversion factor may change the reported value. Approved software identification must be reproducible in delivery and service. A cloud display may sit outside the metrological core or itself form a legally relevant final result; architecture determines this. Distribute updates after technical assessment and any required procedural approval.

In practice

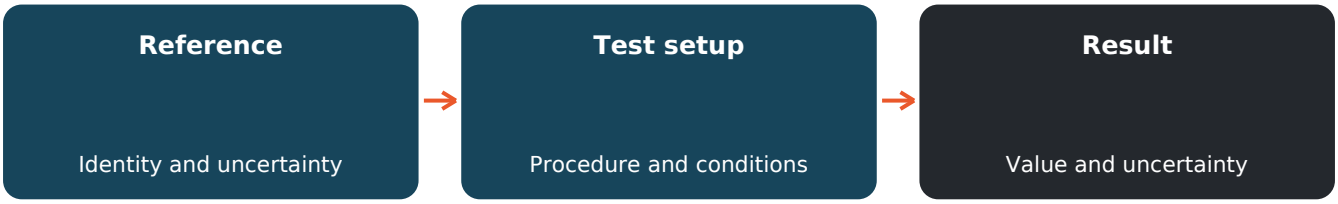
Prepare a software annex with version identifier, parameters, protection, update route and return to the approved version.

Sources: [3], [4], [17]

PRACTICAL GUIDE

Test procedures, references and traceability

The procedure must actually cover instrument, range and conditions.



Documented reference chain · each stage must be suitable

Assessment area	Project implementation
Procedure reference	Record approved or prescribed procedure and edition.
Test points	Plan range, directions, repetitions and influence quantities.
References	Provide suitable standards, gases, weights or other references.
Uncertainty	Demonstrate suitability of the setup for the required decision.
Measurement method	Separate instrument verification from any measurement-method attestation.
Operating conditions	Consider installation, medium, temperature and supply in the test plan.

A good reference alone does not create a good measurement. Resolution, repeatability, installation and ambient conditions also contribute uncertainty. Record reference identity, calibration status, validity and use. Indirect measurements may require recognised or attested measurement methodology; an approved component does not automatically replace that assessment. State whether the order evaluates the type, individual instrument or measurement method.

In practice

Confirm test equipment and procedure before sending samples. Unavailable flow facilities or reference gases can determine the schedule.

Sources: [3]-[7], [15], [16]

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Samples, type testing and production assessment

Samples and production conditions must match the proposed type.

Assessment area	Project implementation
Selection	Select representative variants under the agreed test programme.
Sample version	Record serial number, drawings, firmware and settings.
Testing	Assess characteristics, influences and protection under the national programme.
Logistics	Arrange import, packing, accessories, references and return shipment.
Production	Resolve consistency, final inspection and required production assessment.
Deviation	Record failure, correct its cause and establish reassessment.

Not every option automatically needs full separate testing, but coverage must be substantiated. The provider confirms grouping, sample quantity and influence tests. Do not assume that an audit required by an EAC scheme is automatically a metrology obligation. Scope and form of production assessment follow the actual national procedure. Renaming a failed sample does not establish compliance; maintain traceability of correction, product version and reassessment.

In practice

Agree the sample list and production assessment in writing. Define reusable evidence and additional testing requirements.

Sources: [3], [4], [18]

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Additional EAC requirements for instruments

Select technical regulations for the actual product.

EAC	Type approval	Verification
Applicable product requirements	Nationally approved type	Actual unit and result

Three separate releases · no automatic substitution

Assessment area	Project implementation
TR CU 004/2011	Low voltage: assess rated voltage and exclusions.
TR CU 020/2011	EMC: assess electrical function, emissions and immunity.
TR EAEU 037/2016	Hazardous-substance restrictions for covered electrical/electronic products.
TR CU 010/2011	Assess scope where machinery or installation functions are involved.
Further procedures	Ex, pressure, medical or radio requirements when actually applicable.

TR 004 generally concerns equipment rated 50–1,000 V AC or 75–1,500 V DC within its scope. A 24 V transducer therefore does not fall under TR 004 merely because it is electrical; its power supply or complete equipment may require a different assessment. Assess TR 020 independently. The applicable regulation and category determine certification or declaration. Metrological registration does not replace this assessment.

In practice

For each TR the EAC matrix records applicability, document form, models, reports and responsible EAEU applicant.

Sources: [2], [18]-[20]

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Pressure equipment, explosion protection and process plants

Assess measurement and additional hazards independently.

Assessment area	Project implementation
Pressure	Identify pressure-bearing parts, fluid, volume/nominal size and function.
TR CU 032/2013	Determine applicability and category for the actual design.
Explosion protection	Record protection, atmosphere, use limits and connections.
TR CU 012/2011	Assess separate EAC Ex evidence for covered equipment.
Integration	Confirm installation limits, piping, circuit and process conditions.

An Ex flowmeter may require metrological approval, EAC Ex and further evidence concurrently. A pressure connection does not automatically produce the same pressure category for every sensor variant. Safety assessment concerns hazards; metrological assessment concerns permitted measurement performance. Explosion-protection testing is not accuracy testing. Assess the delivered plant configuration: an approved instrument gives covered results only under its specified installation and fluid conditions.

In practice

Keep measurement, pressure and Ex limits in separate columns of the installation matrix.

Sources: [2], [21], [22]

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Electrical measurement, energy and smart meters

The billing chain extends beyond the visible meter enclosure.

Assessment area	Project implementation
Quantities	Specify voltage, current, power, energy and frequency.
Transformers	Record current/voltage transformers and permitted combinations.
Time / tariffs	Document time base, tariff switching and register generation.
Communication	Match local result and transferred billing value.
Tamper protection	Define access, settings, seals and event records.
System	Assess meter, concentrator and evaluation as a possible chain.

An approved meter does not automatically approve every remote billing architecture. Check conversion factors, signs, time synchronisation and lost data. Relate accuracy claims to loading range and influence conditions. For new communication modules assess effects on result generation, protection or EMC. Operational records identify transformers, software and configuration. Changes to billing systems need the same technical review as relevant instrument changes.

In practice

Test complete result transfer against a known reference and archive the configuration.

Sources: [3], [4], [17]-[20]

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Mass, flow, volume and trade measurements

Record measurement conditions and commercial use together.

Assessment area	Project implementation
Weighing	Distinguish load range, division, accuracy class and mode of use.
Flow	Specify fluid, flow, pressure, temperature and installation lengths.
Volume / quantity	Document operating/reference conditions and conversion.
Billing	Identify final value, rounding and data transfer.
References	Provide weights, test vessels or suitable flow references.
Installation	Ensure permitted combinations and on-site verifiability.

Relate error specifications to the intended range and reference quantity. “0.5%” without stating reading, full scale or conditions is insufficient for assessment. For gas or liquid the billed result may combine several measurements. Dynamic weighing involves operating sequence and conveyor conditions. Before ordering tests establish whether the procedure covers the individual instrument or the complete commercial measurement chain.

In practice

Disclose typical, minimum and maximum operating conditions and the result used commercially.

Sources: [3], [4], [7], [15]

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Temperature, pressure, humidity and process sensing

Sensor, transmitter and installation define the technical task.

Assessment area	Project implementation
Temperature	Sensor type, range, immersion depth, response and wiring.
Pressure	Absolute, gauge or differential pressure and overload limits.
Humidity	Reference quantity, temperature dependence and permitted medium.
Signal	Analogue/digital output, scaling and result filtering.
Installation	Thermowell, mounting, wiring and ambient conditions.
Assessment	Plan test points, hysteresis, repeatability and influences.

A laboratory result under reference conditions is not automatically the performance of the installed point. Heat conduction, vibration or an unsuitable pressure line may alter the result. Approved features must match the supplied variant. A 4–20 mA output has defined scaling; changes in the control system can display a correct sensor result incorrectly. Safety-related measurements additionally require examination of functional use and applicable installation requirements.

In practice

At acceptance check sensor range, output scaling and control-system indication together.

Sources: [3], [4], [15], [16]

PRACTICAL GUIDE

Gas analysis, environment and workplace safety

Sampling and evaluation can determine the measurement result.

Assessment area	Project implementation
Analyte	Define substance, concentration, unit and measurement principle.
Cross-sensitivity	Record interferents, matrix, humidity and temperature.
Sampling	Consider lines, filters, conditioning, flow and losses.
Reference	Use suitable traceable reference gases/materials.
Protective function	Define alarm, limit, response time and protective action.
Environmental report	Assess measurement-method and official-reporting requirements.

Type approval of an analyser does not describe every possible sampling plant. Moisture removal, adsorption or longer lines may change the measured substance. Reference gases must match concentration, matrix and required statement. Gas detectors may involve metrology, Ex and other safety requirements. Official emissions or environmental measurements additionally require method and evaluation review. A functional gas check is not automatically complete legal verification.

In practice

Include substances, matrix, concentration ranges, sampling diagram and purpose of the reported result in the enquiry.

Sources: [3], [4], [7], [21]

PRACTICAL GUIDE

Laboratory instruments, healthcare and voluntary quality

Assess medical purpose, legal measurement duties and quality separately.

Assessment area	Project implementation
Laboratory	Measurand, sample, method, uncertainty and use of results.
Medical device	Assess intended purpose and separate registration framework.
Metrology	Identify nationally regulated task and required unit verification.
Quality	Plan calibration, control samples and evidence of suitability.
Research	Specify contractual features and voluntary assessment programmes.
Procurement	Compare actual tender requirements with legal duties.

Not every laboratory instrument is a medical device, and medical devices do not all share the same metrological obligations. Intended purpose determines the assessment route. Voluntary evidence can support customer requirements but does not replace mandatory procedures. Review type approval, verification and other requested documents expressly for tenders. Distinguish calibration intervals under a quality system from legal verification intervals.

In practice

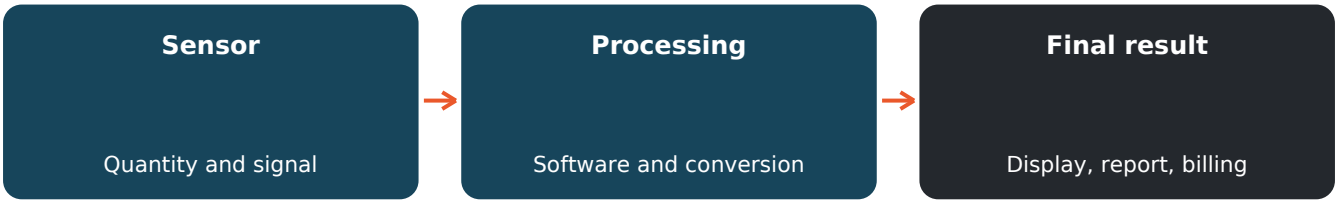
Describe result use precisely: internal research, patient decision, official finding or product release.

Sources: [3], [7], [15], [23]

PRACTICAL GUIDE

Measuring systems within machinery and plants

Integration can create an additional assessment object.



Document system boundary and result use expressly

Assessment area	Project implementation
Boundary	Define instruments, channels, processing and final result.
Configuration	Record sensors, units, factors and software versions.
Interfaces	Check signal loss, conversion, synchronisation and data assignment.
Acceptance	Compare installation with type description, instructions and procedure.
Verifiability	Ensure access, reference connections, bypass and outage planning.
Operator file	Maintain channel list, registry details, due dates and service history.

A plant with ten approved sensors is not automatically an approved complete measuring system. The legally used final result and approved boundary are decisive. A new computing function may turn process data into a billing result. The plant builder records the supplied combination; the operator confirms actual use and site conditions. Review result generation and approval scope before implementing control-system changes.

In practice

Add measurement channel, approval reference, verification and used final value to the plant diagram.

Sources: [3], [4], [7], [18]

PRACTICAL GUIDE

Test results, error limits and uncertainty

A decision needs results, limits and an appropriate rule.

Feature	Meaning
Measurement error	Difference between measured value and suitable reference value.
Error limit	Permitted error under prescribed conditions.
Uncertainty	Quantified dispersion of values attributed to the measurement.
Decision rule	Defined treatment of uncertainty for the conformity statement.
Test report	Instrument, procedure, conditions, results and traceable decision.

Illustrative example: an error of +0.8 units with a limit of ±1.0 units initially appears acceptable. Expanded uncertainty of 0.3 units shows why comparing central values alone does not fully describe the decision. The prescribed procedure or agreed decision rule determines the statement. This example is not an official verification rule and establishes no universal guard band.

Review the report before release

Check type, serial number, software, range, units, references and conditions. The report must match the submitted sample and intended variant. Do not extrapolate beyond the assessed range unless the procedure permits it. Retain failures, corrective work and repeat tests in the history. Translate claims such as “high precision” into measurable features.

Documented decision

Apply the prescribed procedure for legal verification. For voluntary calibration with a conformity statement agree limits and the decision rule expressly.

Sources: [15], [16], [24]

PRACTICAL GUIDE

Marking: three separate layers

Keep EAC, type-approval marking and verification evidence distinct.

EAC mark

Product conformity

Type mark

National type reference

Verification evidence

Unit and result

Distinguish marking layers · not official artwork

Assessment area	Project implementation
EAC mark	Based on the required applicable EAC conformity procedures.
Type-approval mark	Nationally prescribed mark with approved scope and placement.
Verification	Result, any required mark/seal and registry information.
Nameplate	Manufacturer, model, serial number and relevant technical particulars.
Accompanying file	Track approval reference, software, procedure and units.
Artwork release	Match product, approved type description and national rules.

The national type mark mentioned on the sector page must not be treated as the EAC mark or a universal verification mark for all five states. An approved type and a positively verified individual unit are different facts. Use official marks under applicable national rules; the handbook diagrams are not artwork templates. An existing type mark does not prove current verification of the serial number. A sticker likewise does not replace required registry recording.

In practice

Approve mark, wording, dimensions, location, visibility and link to the actual variant.

Sources: [3], [4], [14], [25]

PRACTICAL GUIDE

Instructions, technical passport and translation

Operation and verification must use consistent instrument details.

Assessment area	Project implementation
Instructions	Purpose, installation, operation, maintenance, faults and limits.
Measurement details	Present range, unit, error limits and conditions fully.
Technical passport	Identity, equipment, verification information and history as required.
Verification access	Describe reference connection, settings, seals and safe assessment.
Software	Explain identifier, permitted parameters, protection and update limits.
Language	Determine destination, procedure and operator requirements.

Technical translation needs a controlled glossary. Translate poverka as verification; give calibration, adjustment and type approval distinct terms. Check numbers, decimal notation, units and reference quantities. Russian documents alone do not automatically fulfil every destination’s language duties. Translation identifies the same models and software as the type description and test report. For plants explain actual installation without expanding approved limits through new instructions.

In practice

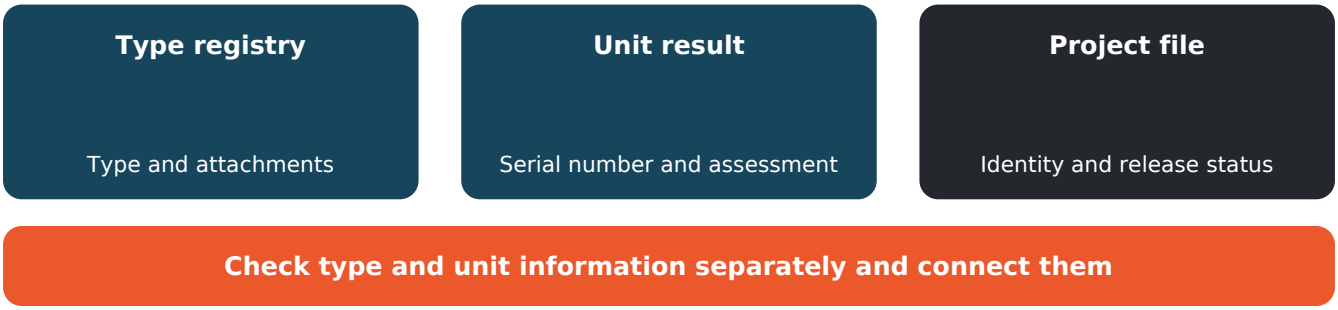
Provide the operator with approved language records, type reference, serial number and required verification details.

Sources: [1], [3], [4], [26]

PRACTICAL GUIDE

Registry checks: type and unit result

Search the two records separately and connect them.



Assessment area	Project implementation
Type record	Search manufacturer, type, registry ID and approval scope.
Attachments	Check type description, variants, procedure and software.
Unit record	Match serial number, date, provider and result.
Validity	Check restrictions, interval and next due date.
Evidence	Archive location, access date and relevant record.
Discrepancy	Resolve unclear identifiers or missing results before release.

Russia provides type and verification information in the federal information fund. Use the official portal; third-party search services can help orientation but are not authoritative. Spelling, leading zeros and model suffixes must match the delivered unit. A similar model name is insufficient. Contact the responsible verification provider for a missing record; do not claim positive status while unresolved.

In practice

The unit dossier connects type registration and result identifiers to the same serial number and configuration.

Sources: [3], [13], [14]

PRACTICAL GUIDE

Type validity and extension

Distinguish the series period from effect for existing instruments.

Assessment area	Project implementation
Russian series	The approved manufacturing period is generally five years.
Covered units	Assess conforming instruments manufactured within the covered period separately.
Individual production	The decision concerns expressly identified units without a series period.
Extension	Plan a separate application with required statements and documents.
Unit verification	Verification and its interval run independently of the series period.
Other states	Confirm duration, recognition and extension route nationally.

Order No. 2905, Annex 2, paragraph 7 distinguishes the Russian five-year series manufacturing period from continuing effect for covered, conforming units. Expiry therefore does not automatically require instruments lawfully manufactured within scope to be withdrawn from use. New production after the approved period needs appropriate approval status. Extension is treated as a validity amendment; paragraph 13 provides another five years from the previous period’s end.

In practice

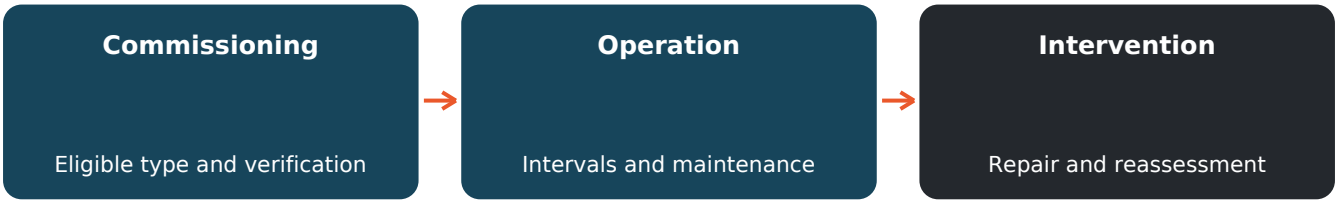
Plan extension several months ahead as project contingency. This recommendation is not a uniform Union-wide statutory three-month deadline.

Sources: [4], Anlage 2, Abs. 7, 12, 13; [9]

PRACTICAL GUIDE

Verification in service and after repair

Maintain a traceable verification calendar for each unit.



Plan verification, calibration and maintenance separately

Assessment area	Project implementation
Interval	Use the verification interval applicable to type and state.
Due date	Track date, owner and preparation time in the plant schedule.
Repair	Assess effects on characteristics, protection and required re-verification.
Withdrawal from use	Handle the regulated task appropriately if status is unacceptable.
Service	Prepare access, references, replacement and outage.
Result dossier	Archive new result, registry reference and configuration.

There is no universal annual verification interval for every instrument. Use the interval specified in the relevant records. Calibration between statutory checks may be useful but does not alter their deadline without a legal basis. A replaced sensor, adjustment or broken protective seal may trigger reassessment. The repair record describes the intervention and resulting instrument/software version. An extended internal maintenance release does not replace missing verification.

In practice

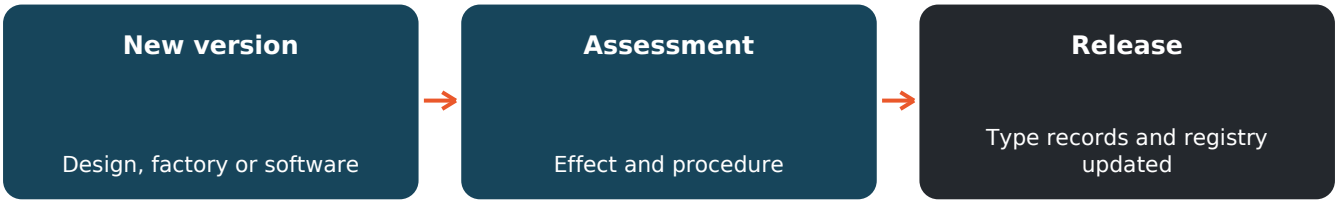
Track verification, calibration and maintenance dates as separate calendar fields.

Sources: [3], [12], [14]

PRACTICAL GUIDE

Changes to type, factory and software

Check approval scope before supplying a change.



Approve technical and procedural consequences before shipment

Assessment area	Project implementation
Design	Assess sensor, principle, materials and electronics.
Software	Review algorithm, firmware identifier, settings and protection.
Manufacture	Update site, process, final inspection and responsibility.
Name / holder	Track renaming, approval holder and authorised applicant.
Procedure	Handle procedure or interval amendments under the applicable route.
Release	Obtain decision on additional testing, registry amendment or new procedure.

Even a replacement described as “equivalent” can alter performance or tamper protection. The amendment request explains previous and proposed versions and possible effects. Annex 2 of Russian Order No. 2905 provides amendment routes including technical features, parties, verification and manufacturing location. An existing registration number does not permit arbitrary family expansion. Update the product matrix after approval; retain historical traceability of superseded or suspended documents.

In practice

Do not supply a metrologically relevant change without documented assessment of required procedural consequences.

Sources: [4], [9], [17]

PRACTICAL GUIDE

Costs, timing and reliable quotations

Assessment scope and destination count determine actual effort.

Assessment area	Project implementation
Website indication	EUR 7,000–9,000 and several months as the site’s indication.
No fixed package	Not a binding total for every country, instrument and additional procedure.
Testing effort	Variants, references, influence testing and plant integration.
Further items	Translation, sample transport, representation, EAC and unit verification.
Russian decision phase	Annex 2, paragraph 7: decision including fund entry within 30 working days.
Contingency	Allow for document correction, repeat assessment and recognition.

The sector page’s range is a provider indication, not a guaranteed current all-inclusive price. Separate type testing, state procedure, EAC and unit services in the quotation. The Russian decision period starts on registration of the relevant application; it is not a total-duration promise from first data sheet to commissioning. Sample preparation, facilities, clarification and system integration may determine the critical path. Extension and periodic unit verification need separate budget lines.

In practice

A reliable quotation identifies assumptions, excluded variants, countries, additional services and events requiring re-pricing.

Sources: [1], [4], Anlage 2, Abs. 7

PRACTICAL GUIDE

Case study: flow system for two countries

Fictional project illustrating the decision framework.

EAC	Type approval	Verification
Applicable product requirements	Nationally approved type	Actual unit and result

Three separate releases · no automatic substitution

Assessment area	Project implementation
Starting point	German manufacturer; liquid measurement system for Russia and Kazakhstan.
Task	Flow and compensated quantity support delivery billing.
System boundary	Measuring tube, temperature probe, computer, software and result export.
Parallel routes	EAC applicability, Russian type approval and Kazakh procedure.
Units	Serial numbers, software and required verification by destination.
Operation	Installation review, protection, due dates and controlled service.

The team first resolves whether the approved task belongs to the complete system or individual instruments. Manufacture in Germany prevents assuming automatic EAEU type recognition. Define Russian approval scope technically; agree the Kazakh national approval or recognition route separately. Assess any low-voltage, EMC, pressure and Ex requirements in parallel. Before shipment match type description, software, series units and verification records.

In practice

Outcome: two national release routes, one controlled technical system dossier and separate unit verification. The case study makes no guaranteed timing or price promise.

Sources: [4]-[8], [18]-[22]

PRACTICAL GUIDE

Common mistakes and practical corrections

Resolve incorrect assumptions before testing and shipment.

Assessment area	Project implementation
“EAC is sufficient”	Release EAC and national instrument use separately.
“Russia covers all states”	Document destination, origin and recognition route.
“Calibration is poverka”	Order calibration or verification expressly.
“Type entry = unit verification”	Check the actual result for the same serial number.
“Software is irrelevant”	Link firmware, algorithm and parameters to the approved type.
“Expiry invalidates old units”	Check covered manufacturing period and current verification separately.

Further mistakes include overly broad model lists, unclear accuracy claims, missing installation limits and lost original reports. A verification document for another serial number does not cover the supplied unit. Decimal notation or unit differences can alter interpretation. Trace the new version after repair. On changing importers revisit record access, authorisations and eligible procedural roles. A complete model and serial-number matrix before shipment provides a useful cross-check.

In practice

Assign unresolved points to an owner and due date. A sales note alone is not technical release.

Sources: [3]-[17]

PRACTICAL GUIDE

FAQs: answers for manufacturers and operators

Common questions about EAC and metrology procedures.

Does every instrument need type approval?

No. Destination, task, national categories and use determine the answer. EAC requirements may still apply when mandatory type approval does not.

Can CE, MID or OIML replace the national route?

Not automatically. Existing records can support planning and assessment; legal recognition must rest on an applicable route.

Is initial verification a factory calibration?

No. Verification confirms prescribed requirements under a national procedure. Calibration determines measurement relationships and uncertainty. Include the eligible provider and result registration in the order.

How long are approval and verification valid?

Answer separately: type/series period by country and route; verification interval by type and unit assessment. Russia generally provides five years for series manufacture; existing covered units need separate consideration.

What happens after failure or a change?

Document cause and affected scope, agree correction and perform required reassessment or approval amendment. Then release the appropriate status.

Does Russian approval also apply in Kazakhstan?

Assess this separately. In particular, do not assume automatic Union-wide type approval for instruments manufactured in Germany.

Sources: [3]-[17]

PRACTICAL GUIDE

Project and shipment release checklist

Worksheet · print and complete with the project dossier.

Check	Status / evidence
Task and commercially/legally used final result identified	_____
Destinations, operator and actual installation site confirmed	_____
Manufacturer, origin, factories and applicant resolved	_____
Type boundary, variants, ranges and error limits documented	_____
Software identifier, parameters and protection approved	_____
EAC applicability and required evidence completed	_____
National type status/recognition route confirmed for each country	_____
Type description and verification procedure available	_____
Serial numbers matched to required unit verification	_____
Registration of results and next due date checked	_____
Marking, passport and language editions released	_____
Installation, access, maintenance and changes planned	_____

Project: _____ Date: _____
Completed by: _____ Release: _____

Resolve open items explicitly

Assign each open item an owner, date and release criterion. Substantiate “not applicable” technically or legally. This worksheet supports project control and is not an official approval decision.

Sources: [3]-[26]

PRACTICAL GUIDE

Enquiry form for your instrument project

Worksheet · for a technically reliable initial review.

Item	Your project information
Company / contact	_____
Manufacturer / factory / country of origin	_____
Models / product family	_____
Measurand / unit / principle	_____
Ranges / error limits / conditions	_____
Software / firmware / parameters	_____
Task / use of results	_____
Destinations / importer / operator	_____
Series / batch / unit / quantity	_____
Installation / fluid / pressure / Ex	_____
Existing approvals / test reports	_____
Samples / references / site access	_____
EAC status / required translations	_____
Target date / shipment date	_____

Attach data sheet, model matrix, instructions, complete existing reports, software description and any measuring-system diagram. State expressly whether you request EAC, national type approval, verification or calibration.

Enquire with AC Inorms

Email: inbox@ac-inorms.com
Telephone: +49 2161 990 497 0

Sources: [1]

PRACTICAL GUIDE

Product and country matrix template

One record per type, destination and approved configuration.

Field	Illustration · fictional	Your entry
Product / type	Flowmeter FM-100	_____
Manufacturer / origin	Manufacturer A / Germany	_____
Destination / operator	Russia / Plant B	_____
Task	Delivery quantity billing	_____
Range / limits	Approved data sheet	_____
Variants / options	Sensor S1 + computer R1	_____
Software / protection	Version 1.2 / protection plan	_____
EAC regulations	Assess applicability separately	_____
Type status / registry	National type dossier	_____
Verification procedure	Approved procedure / edition	_____
Serial number / result	SN 0001 / unit dossier	_____
Next assessment	Prescribed interval	_____
Language / installation	Approved records	_____
Change / owner	Version / person / date	_____

Create a separate record for Kazakhstan or another destination. Do not copy Russian type status into national release status unless the eligible route is documented. Fictional model names and software values are not real registry entries.

Sources: [3]-[14]

PRACTICAL GUIDE

Regulations archive and key terminology

Use technical regulations alongside national metrology sources.

Archive document	Relevance to instruments
TR CU 004/2011	Low voltage: rated voltage and scope.
TR CU 020/2011	Electromagnetic compatibility.
TR EAEU 037/2016	Hazardous substances in covered electrical/electronic products.
TR CU 010/2011	Machinery and installations by product function.
TR CU 012/2011	Equipment for explosive atmospheres.
TR CU 032/2013	Pressure equipment by actual design and category.

Archive texts provide a starting point. Check current amendments, standards lists and procedures against official sources. Russian Law No. 102-FZ is a national metrology basis, not an EAC regulation for all five states.

Term	Meaning
EAC	Conformity mark for applicable EAEU product requirements.
MPA / PAC	Common terms for pattern/type approval or its certificate.
Poverka	Legal verification against prescribed metrological requirements.
Arshin	Russian system for federal metrology information fund records.
Calibration / adjustment	Determine measurement relationship / adjust instrument.
Traceability	Documented reference chain including uncertainties.

Sources: [2]-[4], [13]-[22]

PRACTICAL GUIDE

Sources: sector pages and national metrology

Numbered references for the chapter source notes.

[1] AC Inorms · instrument sector page
ac-inorms.com · Open original source

[2] AC Inorms · regulations archive
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[3] Law 102-FZ · official-hosted 2020 version
82.mchs.gov.ru · Open original source

[4] Order 2905 · MChS, download with 2026 amendments
mchs.gov.ru · Open original source

[5] EAEU · Decision 145/2016, recognition rules
docs.eaeunion.org · Open original source

[6] EAEU · Decision 83/2026, recognition amendment
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[7] Kazakhstan · Law 53-II, updated official version
old.adilet.zan.kz · Open original source

[8] Kazakhstan · government type-approval recognition service
www.gov.kz · Open original source

[9] BelGIM · type approval in Belarus
belgim.by · Open original source

[10] BelGIM · national instrument register
belgim.by · Open original source

[11] Armenia · National Body for Standards and Metrology
www.armstandard.am · Open original source

[12] Kyrgyzstandart · metrological services
nism.gov.kg · Open original source

[13] Rosstandart · type-approval service and official interface
www.rst.gov.ru · Open original source

Source date and versions

Accessed 11 October 2026. Source 3 is an older official-hosted law version, not a complete current consolidation. Practical Russian procedures rely particularly on Order 2905 supplied with 2026 amendments (source 4) and amending Order 3334 (source 25).

Sources: [1]-[13], [25]

PRACTICAL GUIDE

Further sources and image credits

Connect official rules, terminology and technical evidence.

[14] Arshin · official verification-results portal
fgis.gost.ru · Open original source

[15] BIPM · JCGM 200:2012, VIM terminology
www.bipm.org · Open original source

[16] ILAC · P10, metrological traceability
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[17] OIML · D 31:2023, instrument software
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[18] AC Inorms · TR CU 010/2011, machinery
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[19] AC Inorms · TR CU 004/2011, low voltage
ac-inorms.com · Open original source

[20] AC Inorms · TR CU 020/2011, EMC
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[21] AC Inorms · TR CU 012/2011, explosion protection
ac-inorms.com · Open original source

[22] AC Inorms · TR CU 032/2013, pressure equipment
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[23] AC Inorms · medical equipment and registration
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[25] Russia · Order 3334/2026, amendment to 2905
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[26] AC Inorms · instructions and technical records
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Images and graphics

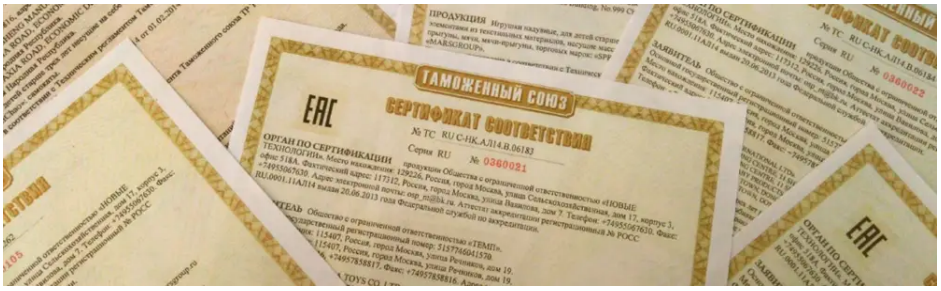
Cover: pressure-gauge photograph from the AC Inorms sector page (source 1). Document photo on page 50: general EAC page. Workflow, measurement-chain, recognition, software, marking and lifecycle graphics were created for this handbook. They are schematic explanations, not official marks or approval documents.

Sources: [14]-[26]

PRACTICAL GUIDE

Your instrument project with AC Inorms

From the initial measurement task to coordinated project records.



EAC documentation · image source: ac-inorms.com/eac-zertifikat

AC Inorms supports manufacturers and exporters in preparing and coordinating instrument projects. Start with product, measurement task, destination and existing technical records. Establish boundaries between EAC requirements, national type procedures and unit assessment. Competent eligible organisations make the respective assessment and approval decisions. Include extension, service, software and registry maintenance in project planning.

Service	Project contribution
Classification	Structure task, type boundary and country requirements.
Documentation	Prepare dossier, variant matrix and language records.
Coordination	Agree eligible providers, samples, testing and procedures.
Maintenance	Plan changes, extension, unit assessment and record management.

Contact · AC Inorms GmbH

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Email: inbox@ac-inorms.com
Web: ac-inorms.com · instruments and metrology

Send the enquiry form with model list, task, software description and complete existing reports. State manufacturing sites, destinations, supply model and target commissioning date.

Sources: [1], [2]