Installation type test summary – Application guide

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Creation date | Description | Authors |
| *1.0* | *xx-xx-2025* | *Draft* | *Eress Cross Acceptance Working Group\** |

This application guide gives explanation on how the *Installation type test summary - Report* should get completed.

This type test report contains all data required in Eress counties on type test of an EMS of a specific equipment type installed on a Traction Unit of a specific Traction Unit Type. It also contains all data needed as Masterdata for international trains (as defined in IRS 90930).

It is possible that the reverification requirements are introduced differently in the Maintenance Plan for some subseries of the same Energy Measurement System (EMS) equipment type on the same Traction Unit Type. Use a separate *Installation type test summary - Report* for each subseries having a different Maintenance Plan.

**Type test**

The first block deals with the type test itself. The EN 50463 requires type tests on the level of the devices used to create an EMS, on the integration of these devices to become an EMS and on the installation of the EMS of a specific equipment type on board of a Traction Unit of a specific Traction Unit Type.

The information requested in the Report is on the latest step. This is likely done by a Notified Body, but it is also possible to mention the entity that has performed the test. Deviations should only be used when there are deviations regarding the applied requirements. Also mention the deviations in accordance with LOC&PAS TSI:2023, clause 4.2.8.2.8.2 (6). This clause officially permits to keep existing sensors on which accuracy is not verified for low currents nor for other temperatures.

The Maintenance Plan shall include the requirements regarding the reverification of all the devices part of the EMS. The process of the Maintenance Plan shall guarantee that the validity periods of all sensors and of energy meter aren’t exceeded. Before end of validity period is reached, devices are replaced, reverified or recalibrated. A new validity period is allocate to the devices. If you reply yes, you should be able to explain the process, but you only have to report to the Infrastructure Manager responsible for the DCS collecting the data from the EMS, the date of the latest reverification activities and the new serial number of the EMS, EMF or ECF. When you don’t have a good process guaranteeing this, you shall deliver a report on each component replacement including the serial numbers of the replaced components.

**Contacts**

Mention for all roles the name of the company and a functional mail address. A field can remain empty when some roles aren’t yet allocated. A leasing company will likely know the Vehicle Keeper and the Entity in Charge of Maintenance, but might not know the Railway Undertaking that will use the Traction Units.

**EMS of specific equipment type**

The following two pages of the report deal with the EMS of a specific equipment type. First report the manufacturer and the product family name and version given by the manufacturer.

Reverification is mentioned on EMS level but also on the different devices that might have different reverification requirements (sensors and meter).

* Information applicable to the full EMS, should be mentioned on that level. Information only applicable to one device, should be given on device level.
* Mention the duration of validity (e.g. 6 years) and the strategy or process to verify the compliance with accuracy requirements at the end of that period.
* It might be that components are replaced and verified in a laboratory. Under which conditions can they be reused? What will be the duration of validity after such a reverification?
* It is also possible that a statistical approach is applied. How many devices will be tested? Who coordinates to have a sufficiently big sample?
* Or it might be that a recalibration is done on site. How should this be done to ensure the device remains accurate? What will be the duration of validity after such a recalibration?

Obviously only sensors present on the EMS shall be mentioned. If EMS is only verified for AC, no data on DC sensors should be given.

For each sensor mention manufacturer, product family name and if applicable version. Always mention accuracy class. If in accordance with another standard than EN 50463-2, add also the applied standard (EN or IEC). If there are deviations to the EN 50463-2, mention them under deviations. If measuring method is known, indicate this. This element is optional. Rated primary current(s) and voltage(s) permit to verify the sensors are suitable for the Traction Unit and all of its intended electric traction power supply systems. This element is optional.

The meter is the device holding the ECF. Deviations are only permitted on sensors. So it should be possible to give an accuracy class in accordance with EN 50463-2.

When DHS and ECF are integrated in one device, the same manufacturer, product family name and version will be mentioned on meter and on DHS. The DHS can be able to transmit multiple data structures to a DCS. Mention all available data structures.

**Traction Unit Type**

The EMS of the type test report is intended to be installed on Traction Units of the described Traction Unit Type.

Mention train builder and official product family name. When already known local class-names that will be used in different countries for Traction Units of this Traction Unit Type, can be given.

Exchange function validates on power and speed:

* Maximum Power (in kW) is the value at engine or at wheels. When both values are available, use the highest value.
* Use Additional Power (in kW) to report the power that can be used on the Traction Unit or can be delivered to the vehicles connected to the Traction Unit for hotel loads (heating, ventilation, air conditioning and low voltage supply), but also the power for traction losses of the maximum power that can be used to charge the on-board batteries. Use the highest possible value for this Additional Power.
* Use Maximum speed (in km/h) to indicate the maximum speed permitted for this Traction Unit Type. It might be your country applies lower value for this maximum speed. Don’t use these lower values. Otherwise data collected for traffic in other countries might get unintended a lower quality code for the location data collected by the EMS.

Other information:

* Electricity source indicates if the Traction Unit uses the Overhead Contact Line or is hybrid (able to use the Overhead Contact Line and to use an on-board source like diesel).
* Vehicle type defines if the Traction Unit is a locomotive, a multiple unit, a shunter or an on track machine.
* Under electricity type mention all the electric traction power supply systems that can be used on this Traction Unit Type.
* It Traction Units of the Traction Unit Type can be in a same train with Traction Units of another Traction Unit Type, this should be mentioned under possible combinations. This information can be used in settlement to validate given train composition messages. This element is optional.

**Delivered by**

This document is requested by an Infrastructure Manager or by an entity responsible for DCS, Exchange and Settlement in a country.

The first contact to an Infrastructure Manager is typically the Railway Undertaking. But is not the Railway Undertaking that requests an Installation Type Test.   
On new Traction Units this will be done by the train builder. In such a case some data will be delivered by the train builder partially based on reports received from Notified Body. But it is possible that subseries will have a different Vehicle Keeper and thus a different Entity in Charge of Maintenance. In such case there might be differences in how maintenance on the EMS will be done. In such cases different reports shall be introduced for each subseries having different procedures in the Maintenance Plan.   
On retrofitting this might be the Vehicle Keeper requesting this to e.g. an EMS supplier. The Vehicle Keeper can than ask a verification by a Notified Body. In this case only one Entity in Charge of Maintenance will be responsible for the execution of the Maintenance Plan.

It is possible to introduce different relevant contacts on the first page of this report.

On the last page the contacts of the person that delivered the report to an Infrastructure Manager or other entity responsible for DCS, Exchange and Settlement in a country, will be introduced.

In case the Installation type test summary – Report is digitally introduced, this report can be printed and signed manually or exported to a pdf and signed digitally.

* This document was created by the Eress Cross Acceptance Working Group: Dyre Marting Gulbrandsen, Gregor Hribar, Asad Javed, Adrian Pieter, Reidun Jorgensen, Dag Stabell Storhaug, Bart Van der Spiegel, Claudia Van Diermen and Daniel Widmer.

Example on Installation type test summary - Report

**Type test**

|  |  |
| --- | --- |
| Test entity / Notified Body | Certifer |
| Date | 29/04/2025 |
| Applied requirements LOC&PAS TSI:2014, 2018 or 2023, EN 50463:2012 or 2017 | LOC&PAS TSI:2023 |
| Deviations To be used if not fully compliant, e.g. higher errors possible at low currents | Reuse of existing transformers according to EN IEC 61869-1:2023, EN IEC 61869-2:2012 and EN IEC 61869-3:2011 |
| Maintenance Plan Does Maintenance Plan has a process that guarantees that the reverification timings are respected for all metrological components (sensors, energy meter)? | Yes Validity date is visible on DC CMF, DC VMF and ECF, verified each year and replace if needed. |

Conformity Assessment Certificate and Intermediate Statement of Verification are added on mail together with signed version of this Report.

**Contacts**

|  |  |
| --- | --- |
| EMS Installer | Hasler Rail |
| Vehicle Keeper | Alpha Trains |
| Entity in Charge of Maintenance | Bombardier in maintenance plant Antwerpen-Noord of SNCB |
| Railway Undertaking | Multiple freight RUs operating in BE, NL, DE, CH, IT and/or AT |
| DCS Admin Explain what DCS is intended to be used | Infrabel (Eress DCS) |
| Exchange Admin Explain which Infrastructure Manager will be responsible for allocating the consumptions to different Settlement Areas. | Infrabel (Erex Exchange) |

**EMS of a specific equipment type**

|  |  |  |
| --- | --- | --- |
| EMS | Manufacturer | Hasler Rail |
| Product family name and version | REM 2.0 |
|  | Reverification General requirements for the reverification/recalibration of the EMS | No requirements on EMS, only on DC sensors and ECF |

|  |  |  |
| --- | --- | --- |
| Sensor  AC Current (CMF) | Manufacturer Write ‘not applicable’ when not present | Ritz Transformers |
| Product family name and version | Inductive current transformer |
| Accuracy class From EN 50463-2 | 0.5 according to EN 61869-2:19xx |
| Deviations To be used if not fully compliant | Transformer was verified according to EN 61869-2:19xx |
| Measuring method Transformer, shunt, hall-effect, … | Inductive transformer |
|  | Rated primary current(s) | 250A |
|  | Reverification Requirements for the reverification/ recalibration of the sensor (incl. validity period) | No reverification needed. Accuracy remains during lifetime. |
|  | | |
| Sensor  AC Voltage (VMF) | Manufacturer  Write ‘not applicable’ when not present | Ritz Transformers |
| Product family name and version | Inductive voltage transformer |
| Accuracy class From EN 50463-2 | 0.5 according to EN 61869-3:19xx |
| Deviations To be used if not fully compliant | Transformer was verified according to EN 61869-3:19xx |
| Measuring method Transformer, shunt, hall-effect, … | Inductive transformer |
|  | Rated primary voltage(s) | 25.000 V |
|  | Reverification Requirements for the reverification/ recalibration of the sensor (incl. validity period) | No reverification needed. Accuracy remains during lifetime. |

|  |  |  |
| --- | --- | --- |
| Sensor  DC Current (CMF) | Manufacturer  Write ‘not applicable’ when not present | STE |
| Product family name and version | DCC2000 |
| Accuracy class From EN 50463-2 | 0,5R |
| Deviations To be used if not fully compliant | No |
| Measuring method Transformer, shunt, hall-effect, … | Shunt |
|  | Rated primary current(s) | 2000 A |
|  | Reverification Requirements for the reverification/ recalibration of the sensor (incl. validity period) | Replaced before 8 years validity After recalibration: 6 years |

|  |  |  |
| --- | --- | --- |
| Sensor  DC Voltage (VMF) | Manufacturer  Write ‘not applicable’ when not present | STE |
| Product family name and version | DCV3000 |
| Accuracy class From EN 50463-2 | 0,5R |
| Deviations To be used if not fully compliant | No |
| Measuring method Transformer, shunt, hall-effect, … | Voltage divider |
|  | Rated primary voltage(s) | 3000 V |
|  | Reverification Requirements for the reverification/ recalibration of the sensor (incl. validity period) | Replaced before 10 years validity After recalibration: 10 years |

|  |  |  |
| --- | --- | --- |
| Meter (ECF) | Manufacturer | Hasler Rail |
| Product family name and version | REM 2.0 |
| Accuracy class From EN 50463-2 | 0,5R |
|  | Reverification Requirements for the reverification/ recalibration of the meter (incl. validity period) | Replaced before 12 years validity No recalibration |

|  |  |  |
| --- | --- | --- |
| Data Handing System (DHS) | Manufacturer | Hasler Rail |
| Product family name and version | REM 2.0 |
| Available data structures  CEBDBlock, ReadingBlock, State, EventSet, Heartbeat, AssetData, (Change)CommunicationConfig | All of them |

**Traction Unit Type**

|  |  |
| --- | --- |
| Train builder | Bombardier |
| Product family name Name used by train builder, found on official documents | TRAXX F140 MS (D-A-CH-I-B-NL) |
| Local class-name Name used by RU in your country | - |
| Maximum Power (kW) Value at engine or at wheel. Use highest available value | 5600 |
| Additional Power (kW) Value needed for hotel loads, traction losses and charging of on-board batteries | 1600 |
| Maximum speed (km/h) | 160 |
| Electricity source 0 = not specified 1 = external (e.g. catenary) 2 = on-board (e.g. diesel) 3 = hybrid (= external and on-board) | 1 |
| Vehicle type 0 = not specified 1 = locomotive or power unit 2 = trainset or multiple unit 3 = shunter 4 = on track machine or infrastructure inspection vehicle | 1 |
| Electricity type used Choose one or more from list: 00 = not specified 01 = 25 kV 50 Hz AC 02 = 15 kV 16.7 Hz AC 03 = 3 kV DC 04 = 1.5 kV DC 05 = 750 V DC / 600 V DC | 01, 02, 03 and 04 |
| Possible combinations Add names of other Traction Unit Types that can be part of the same train | Other Traxx |

**Delivered by**

|  |  |
| --- | --- |
| Company That delivers this document to Infrastructure Manager | Lineas |
| Name | Jan Janssens |
| Signature |  |
| Date | 29/04/2025 |