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Etat Membre de l'OIML
Member State of OIML
FRANCE

CERTIFICAT OIML DE CONFORMITE
OIML CERTIFICATE OF CONFORMITY

N° R117/2007-FR2-17.02

Autorité de délivrance *Issuing authority*	: Laboratoire National de Métrologie et d'Essais Personne responsable (Person responsible) : Thomas LOMMATZSCH
Demandeur *Applicant*	: ALMA - 4A Boulevard de la Gare - Porte 1 FRANCE 94470 BOISSY SAINT LEGER
Fabricant *Manufacturer*	: ALMA 4A Boulevard de la Gare - Porte 1 FRA 94470 BOISSY SAINT LEGER
Identification du type certifié *Identification of the certified pattern*	: Dispositif calculateur-indicateur électronique et dispositif de conversion ALMA type MICROCOMPT+ *Calculator-indicator device and conversion device ALMA type MICROCOMPT+*
Caractéristiques *Characteristics*	: voir annexe *see annex*

Ce certificat atteste la conformité du modèle mentionné ci-dessus (représenté par les échantillons identifiés dans les rapports d'essais associés) aux exigences de la Recommandation suivante de l'Organisation Internationale de Métrologie Légale – OIML) :

This certificate attests the conformity of the above-mentioned pattern (represented by the samples identified in the associated test reports with the requirements of the following Recommendation of the International Organization of Legal Metrology – OIML) :

R117/2007

Ce certificat s'applique uniquement aux caractéristiques métrologiques et techniques du modèle d'instrument concerné, telles que couvertes par la Recommandation Internationale applicable. Ce certificat ne constitue en rien une approbation internationale à caractère légal. Note importante : à part la mention du numéro de référence du certificat avec le nom de l'Etat Membre de l'OIML dans lequel le certificat a été délivré, une reproduction partielle du certificat ou des rapports d'essais associés n'est pas autorisée, mais ils peuvent être reproduits dans leur totalité.

This certificate relates only to the metrological and technical characteristics of the pattern for the concerned instrument, as covered by the relevant OIML International Recommendation. This certificate does not bestow any form of legal international approval. Important note : Apart from the mention of the certificate's reference number and the name of the OIML Member State in which the certificate was issued, partial quotation of the certificate or the associated test report is not permitted, though they may be reproduced in full.

Les principales caractéristiques figurent dans l'annexe ci-jointe qui fait partie intégrante du certificat OIML de conformité et comprend 3 page(s).
The principal characteristics are set out in the appendix hereto, which forms part of the OIML certificate of conformity and consists of 3 page(s).

Etabli le 31 juillet 2017
Issued on July 31st, 2017

Autorité de délivrance pour Le Directeur Général
Issuing Authority On behalf of the General Director

Laboratoire national de métrologie et d'essais

LNE
Thomas LOMMATZSCH
Responsable du Pôle certification
Measuring Instruments Division Manager

OIML

Référence LNE-33108 rév. n° 0

History

Date	Revision	Modification
01/08/2017	0	Creation

Identification of the certified pattern

Calculator-indicator device ALMA type MICROCOMPT+ designed to be fitted to measuring systems for liquids other than water and is available in two versions (flameproof case EJBA version and Rack version).

This calculator fulfills the requirements of OIML R117-1 (2007) and R117-2 / R117-3 (2014).

The conformity was established by the results of tests and examinations provided in the associated test reports G030252 CQPE/3, G030252 CQPE/4, G030252 CQPE/7, F040746 CQPE/3, F040746 CQPE/6, F040746 CQPE/7, F040746 CQPE/8, F040746 CQPE/1, F040746 CQPE/2, F040746 CQPE/4, G030252 CQPE/1, P167462 DE/3 and P167462 DE/4.

Metrological functions

Calculator-indicator device ALMA type MICROCOMPT+ performs the following functions:

- It calculates and displays volume in metering conditions, or mass if it is linked to a direct mass transducer. The figure is corrected by applying a correction factor determined during calibration of the measuring system.
- It applies a correction coefficient to the volume calculated and displayed in metering conditions, according to the flowrate and/or the type of liquid measured.
- If required, it calculates and displays the mean temperature of the liquid when it is measured by a Pt 100 temperature sensor.
- If required, it calculates and displays volume converted to base conditions. Volume is calculated by taking into account the mean temperature of the liquid during metering. Using a standard conversion formula, the conversion factor can be calculated according to density in base conditions.

  The mean temperature of the liquid is calculated from instantaneous temperatures obtained via a Pt 100 temperature sensor.

  Density is acquired prior to metering, or acquired automatically by a density transducer that supplies this information in the form of a frequency or by a serial communication link.
- If required, it calculates and displays mass. Mass is calculated by taking into account the density that is acquired prior to metering or acquired automatically by a density transducer that supplies this information in the form of a frequency or by a serial communication link.
- If required, it calculates and displays pure alcoholic strength by volume and pure alcoholic volume of water-alcohol mixture in metering conditions. Using algorithm based on standard recommendation OIML R22, the conversion factor can be calculated according to instantaneous temperature and density.

  Pure alcoholic strength is calculated by taking into account the density that is acquired prior to metering or acquired automatically by a density transducer that supplies this information in the form of a frequency or by a serial communication link.
- If required, it calculates and displays pure alcoholic volume of water-alcohol mixture converted to base conditions (@ 20°C). Using algorithm based on standard recommendation OIML R22, the conversion factor can be calculated according to mean temperature.

  The mean temperature of the liquid is calculated from instantaneous temperatures obtained via a Pt 100 temperature sensor.
- Its volume indicating device is reset to zero manually or automatically.

- It memorizes and secures measurement information, which is read from the user interface of the calculator-indicator.
- If the measuring system is interruptible, it can preset the volume or mass to be delivered.
- The DUAL version calculates and displays volume (in metering conditions) or mass, measured by two measuring devices that can operate simultaneously.
- If required, the DUAL version displays the total mass or volume that measured by the two measuring devices, in metering conditions or converted to base conditions.
  In case the volume contraction phenomenon can't be neglected, the total volume can't be considered as a metrological value as long as specific tables for conversion of the mixing are not published (for instance E85 mixing). Mixing volume can be displayed under conditions, for instance with a restrictive note beside display or printing.
- It registers accumulated masses or volumes in metering conditions and/or accumulated volumes in base conditions on an index (if required, two indexes in the DUAL version).

Metrological characteristics

- Volume scale intervals: 0.01 m^3, 0.1 m^3, 1 m^3, 0.001 L, 0.01 L, 0.1 L or 1 L
- Mass scale intervals: 0.1 kg or 1 kg or 0.1 t or 1 t
- Maximum indication: 999 999 scale intervals
- Temperature scale intervals: 0.1°C
- Density scale intervals: 0.1 kg/m^3
- Minimum measured quantity:
  - at least 500 scale intervals if the instrument is fitted in a class 0.3 measuring system
  - at least 200 scale intervals if the instrument is fitted in a class 0.5 measuring system
  - at least 100 scale intervals if the instrument is fitted in a class 1 measuring system
- Maximum metering frequency: 500 Hz

In its DC version, ALMA type MICROCOMPT+ calculator-indicator is designed for use only in interruptible measuring systems with an accuracy class of 0.5 or above.

In its AC versions, ALMA type MICROCOMPT+ calculator-indicator is designed for use in interruptible or non-interruptible measuring systems with an accuracy class of 0.3 or above.

The conversion formulas for hydrocarbons are specified in the standardized API-ASTM-IP petroleum measurement tables.

The conversion formulas for light hydrocarbon oils and liquefied petroleum gases are specified in:

- API-ASTM-IP table 53 for conversion of density observed at temperature T
- API-ASTM-IP table 54 for volume conversion coefficients
- French standards NF M 08-009 and NF M 08-017

The ranges for conversion formulas for water-alcohol mixtures are :

- Liquid temperature range : 0°C to +40°C
- Liquid density range :
  - 999.60 kg/m^3 to 771.93 kg/m^3 for liquid temperature range [11 °C ; +40 °C]
  - 968.8 kg/m^3 to 796.91 kg/m^3 for liquid temperature range [0 °C ; +11 °C].

Environment

ALMA type MICROCOMPT+ calculator-indicator is intended for use in the following mechanical, electromagnetic and climatic environments:

- Version with a flameproof case (EJBA Version):
  - Mechanical class: M2
  - Electromagnetic class: E3
  - Temperature range: - 25 ° C to + 55 ° C
  - Condensing humidity and installation in open environment
- Version with a rack case (Rack Version):
  - Mechanical class: M1
  - Electromagnetic class: E2
  - Temperature range: - 10 ° C to + 40 ° C
  - Non-condensing humidity and installation in closed environment

Software

The software version of ALMA type MICROCOMPT+ calculator-indicator is: 3.xx.yy