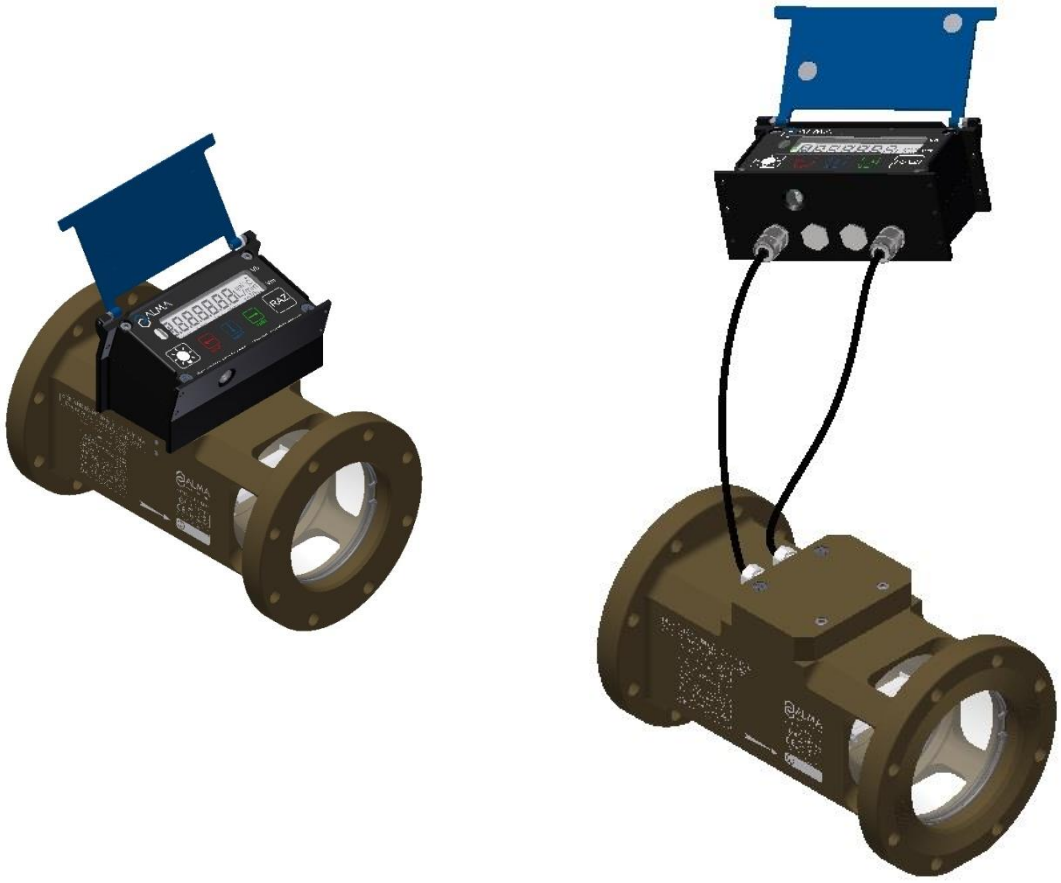
INSTALLATION GUIDE

DI 019 EN B

GRAVICOMPT UNI COUNTER

Described in EU-type examination certificate N°: LNE-30858



Issue	Date	Nature of modifications	Written by	Approved by
B	2019/07/23	Overall drawing, Installation recommendations, Drawings update, New FORM DOC	DSM	MV
A	2017/12/21	Creation *[PJV092]*	DSM	XS

CONTENTS

1. GENERAL RECOMMENDATIONS

IN ORDER TO AVOID ALL THE PROBLEMS CONCERNING THE INSTALLATION, THE OPERATION AND THE MAINTENANCE OF THE EQUIPMENTS, BEING ABLE TO CREATE INOPPORTUNE FAILURE, PLEASE RESPECT THE FOLLOWING RECOMMENDATIONS.

BEFORE ANY WORK, MAKE SURE THAT THE EQUIPMENTS SUPPLIED BY AN EXTERNAL POWER SOURCE ARE TURNED OFF.

1.1. MECANICAL RECOMMENDATIONS

- ⇨ Respect the recommendations of the instruction manual specifying the installation, operation and maintenance conditions of the ATEX equipment (instruction manual supplied with the equipment).
- ⇨ Take care to place the equipment in order to facilitate their installation, operation and maintenance by the technicians (working ergonomics).
- ⇨ Take care to position properly the equipment; the display must be readable without any difficulty.
- ⇨ Apply a tightening torque suitable with size and material of the fixation element except particular specifications mentioned on the presentation drawing or in the installation guides.
- ⇨ Mechanically protect the cables with the corrugated conduit if the cables are not ADR (corrugated conduit adapted to vehicles used for "carriage of dangerous goods of road" - hydrocarbons, LPG … - and meet the requirements of French standard NF R13-903. Refer to the regulations in force).
- ⇨ Ensure there are a good mechanical strength and a good sealing between cable glands and cables, and between cable glands and corrugated conduit.
- ⇨ Respect cables and corrugated conduit radii of curvature.
- ⇨ Leave enough flexibility to wires in order to avoid any risk of stripping.
- ⇨ Allow the drainage of the water in the lower loop (siphon) of the corrugated conduit (not water retention inside the corrugated conduit).
- ⇨ ⚠ See § INSTALLATION AND SEALING RECOMMENDATIONS ADRIANE TURBINE METER.

1.2. ELECTRICAL RECOMMENDATIONS

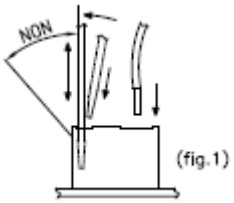
⇨ According to the ATEX directive or any other regulations in force in the country of destination, the safety protection level of the equipment must agree with the installation area (potentially explosive atmospheres).

⇨ Respect the recommendations of the instruction manual specifying the installation, operation and maintenance conditions of the ATEX equipment (instruction manual supplied with the equipment).

⇨ Use ADR specific cable, if it is not the case, use at minimum a cable resisting to hydrocarbons. Mechanically protect this cable with a corrugated conduit (corrugated conduit adapted to vehicles used for "carriage of dangerous goods by road" - hydrocarbons, LPG … - and meet the requirements of French standard NF R13-903. Refer to the regulations in force).

⇨ Take care not to damage the terminals of the different electronic boards while wiring.

- Screw terminals: do not damage the screw heads of the terminals.
  - Use insulated lugs and insulated wire ferrules adapted to the section of wires.
- Spring terminals: do not block the springs (if a spring is blocked, the electronic board must be replaced).
  - Use flat screwdriver 0.4x2.5 (see fig.1).
  - Insert the screwdriver slightly tilted, then push it perpendicularly to the terminal.
  - Do not exceed the upright position when the screwdriver is down in order not to block the spring.
  - Insert or remove the wire and remove the screwdriver.



(fig.1)

⇨ Do not pinch or clamp the wires when closing the UNI indicator.

⇨ Do not use wires of section higher than 1.5mm².

⇨ Do not insert more than two wires in a terminal, if necessary use an insulated twin wire ferrule (unless otherwise indicated).

⇨ Strictly respect the polarities of the input/output when wiring, in accordance with serigraphy on the cards and/or with the installation guide indications.

⇨ Whenever possible, perform a wired test, after wiring and before powering.

⇨ Whenever possible, respect the locations of the cables specified in the installation guide.

⇨ Equipment must be connected to the frame ground (external ground connection).

⇨ Whenever possible, use shielded cables with a 360° connection through the metal cable glands (see the documentation delivered with the equipment).

⇨ Whenever possible, label the cables and cores according to the installation guide to facilitate the later maintenance operations.

⇨ Respect a homogeneous wire color code.

⇨ Current of the electrical devices:

Electrical devices	Supply voltage	Minimum current	Maximum current
UNI	Powered by lithium batteries VDC min: 3.1V VDC max: 3.7V	0.5 µA	1000 µA

⇨ Color code according to DIN 47100.

⇨ Code for designation of colours according to IEC 60757 (except FR codes):

FR				EN	IT	ES	DE
Couleurs	Codes		Standard codes CEI 60757	Colours	Colori	Colores	Farbe
Blanc	**Bc**		**WH**	White	Bianco	Blanco	Weiβ
Marron	**Mr**		**BN**	Brown	Marrone	Marrón	Braun
Vert	**Vt**		**GN**	Green	Verde	Verde	Grün
Jaune	**Jn**		**YE**	Yellow	Giallo	Amarillo	Gelb
Gris	**Gr**		**GY**	Grey	Grigio	Gris	Grau
Rose	**Rs**		**PK**	Pink	Rosa	Rosa	Lila
Bleu	**Bl**		**BU**	Blue	Blu	Azul	Blau
Rouge	**Rg**		**RD**	Red	Rosso	Rojo	Rot
Noir	**Nr**		**BK**	Black	Nero	Negro	Schwarz
Violet	**Vi**		**VL**	Violet	Viola	Violeta	Violett
Orange	**Or**		**OG**	Orange	Arancio	Naranja	Orange
Vert/Jaune	**V/J**		**GNYE**	Green/Yellow	Verde/Giallo	Verde/Amarillo	Grün/Gelb

2. GENERAL PRESENTATION

2.1. USE ACCORDING TO MID CERTIFICATE

The GRAVICOMPT UNI measuring system is covered by the EU type examination certificate N° LNE-30858. Refer to this certificate for any precision about its installation.

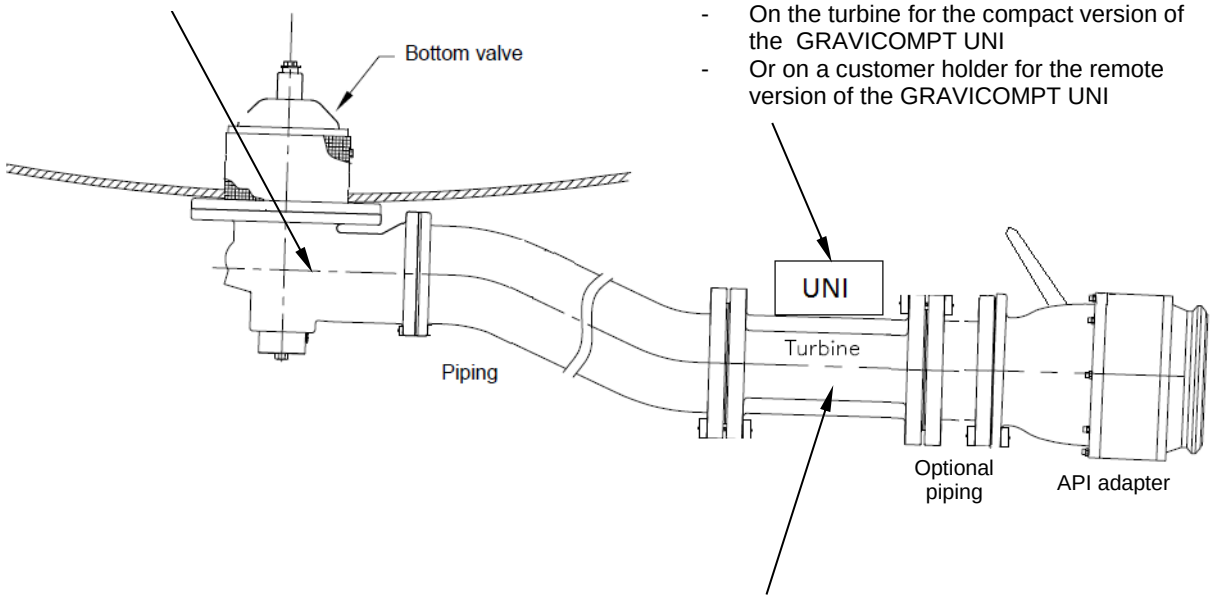
The GRAVICOMPT UNI measuring system is based on a meter made up of the ADRIANE turbine meter and the UNI calculator, associated to an unloading valve (that should be an API-type adapter)

For the sealing plan, see Annex to EU type examination certificate N° LNE-30858.

2.2. SPECIAL CONDITIONS FOR INSTALLATION IN ANY CASES

- ⇨ The GRAVICOMPT UNI measuring system must be installed so that air intakes upstream of the meter, and gas releases inside the liquid are avoided during routine operation. The tank must have a device which allows the reference position to be located
- ⇨ In the reference position, the tank must have a single drain pipe without bypass or reverse slope. Along the entire length, this pipework must have a slope over or equal to 3%
- ⇨ In case that a printing device with no assessment is connected to the electronic calculating-indicating device, a label mentioning that the printed information are not subject to legal control must be visibly affixed to the printing device
- ⇨ If necessary, a vacuum breaker not subject to legal control could be installed on the removable coupler coming to plug on the unloading valve.

Slope over or equal to 3%



The UNI calculator is mounted:

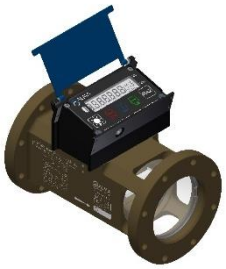
- On the turbine for the compact version of the GRAVICOMPT UNI
- Or on a customer holder for the remote version of the GRAVICOMPT UNI

The ADRIANE turbine meter is mounted:

- Directly upstream of the API adapter
- Or upstream of an optional piping

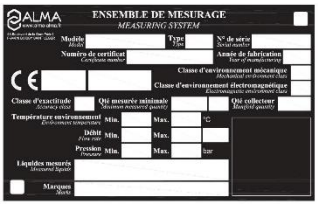
3. PART LIST

3.1. GRAVICOMPT UNI COMPACT VERSION

EQUIPMENTS INCLUDED IN THE MEASURING SYSTEM DELIVERED BY ALMA				
Item	**Equipment**	**Designation**	**Qty**	**Option***
1		**GRAVICOMPT UNI FOR COMPACT INSTALLATION** **Do not remove the batteries during installation**	1	
2		**DATA TRANSFER KEY CTD+** **Non-ATEX device, not usable in ATEX area**	1	●
3		**GRAVITY COUPLER** (4" API / 3" 1/2 symmetrical coupling – with vacuum breaker)	1	●
4		**KIT FOR MEASURING SYSTEM IDENTIFICATION PLATE** (Plate and sealing device)	1	●
Option*: equipment sold as an option by ALMA, it must be installed on the measuring system if required by the certificate.				

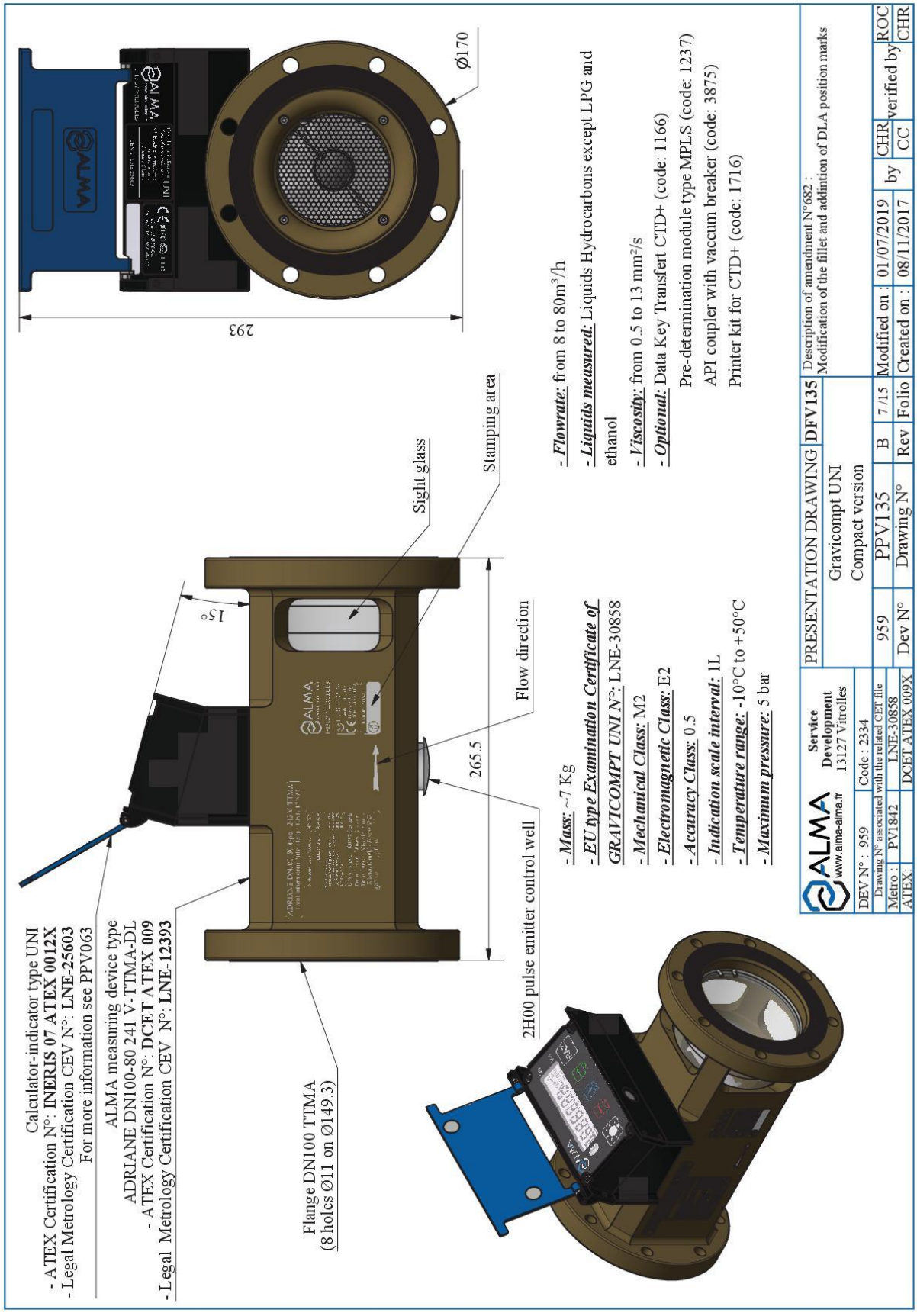
Non-contractual pictures

3.2. GRAVICOMPT UNI REMOTE VERSION

EQUIPMENTS INCLUDED IN THE MEASURING SYSTEM DELIVERED BY ALMA				
Item	**Equipment**	**Designation**	**Qty**	**Option***
1		**GRAVICOMPT UNI FOR REMOTE INSTALLATION INCLUDING:** **REMOTE UNI ELECTRONIC CALCULATOR INDICATING DEVICE** (Supplied with bottom box) **ADRIANE TURBINE METER DN100-80 TYPE 241 V-TTMA-DL** **The system is supplied pre-wired** **Do not remove the batteries during installation**	1	
2		**DATA TRANSFER KEY CTD+** **Non-ATEX device, not usable in ATEX area**	1	●
3		**GRAVITY COUPLER** (4" API / 3" 1/2 symmetrical coupling – with vacuum breaker)	1	●
4		**KIT FOR MEASURING SYSTEM IDENTIFICATION PLATE** (Plate and sealing device)	1	●
Option*: equipment sold as an option by ALMA, it must be installed on the measuring system if required by the certificate.				

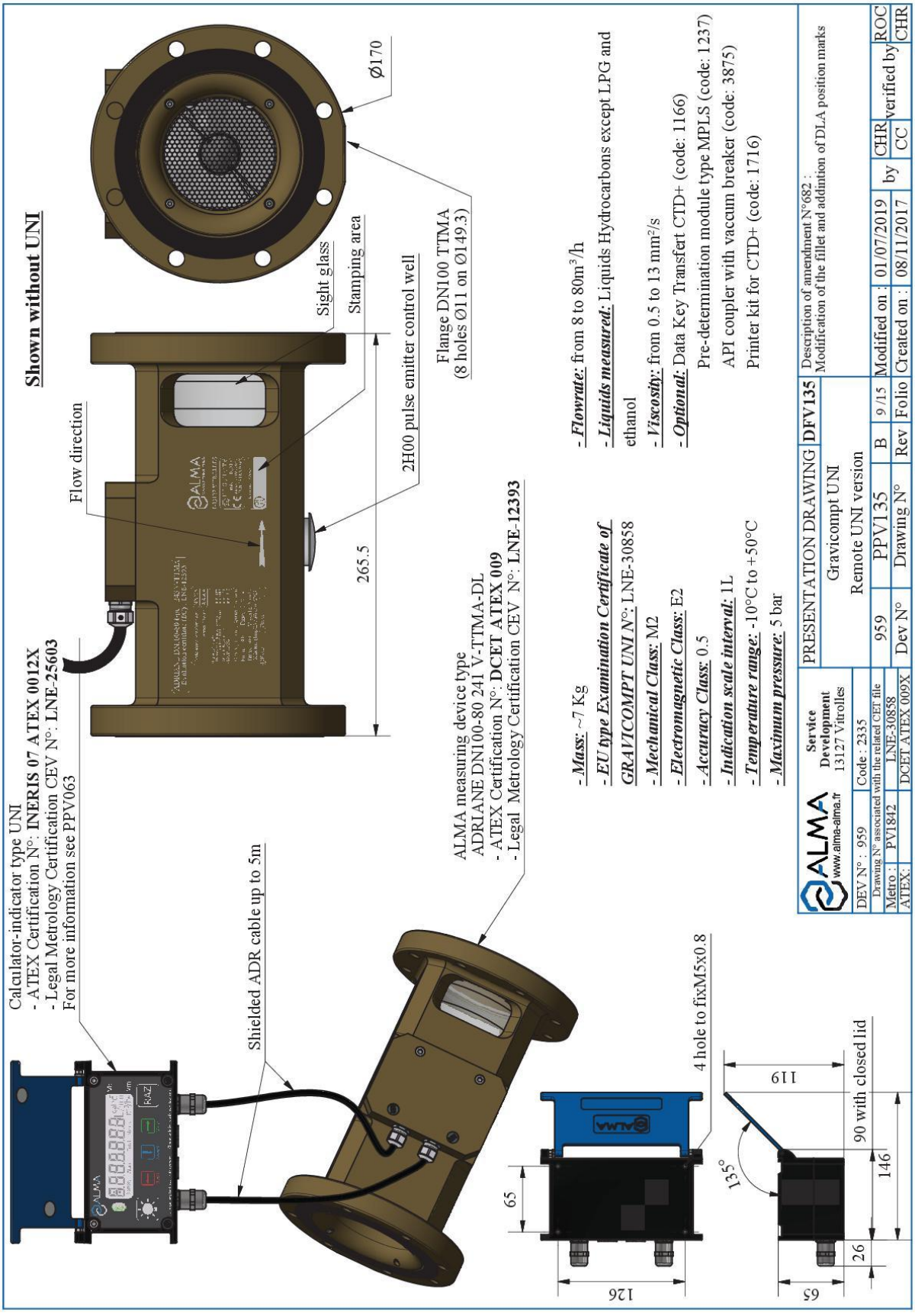
Non-contractual pictures

4. GRAVICOMPT UNI COMPACT VERSION



Document available on website alma-alma.fr

5. GRAVICOMPT UNI REMOTE VERSION

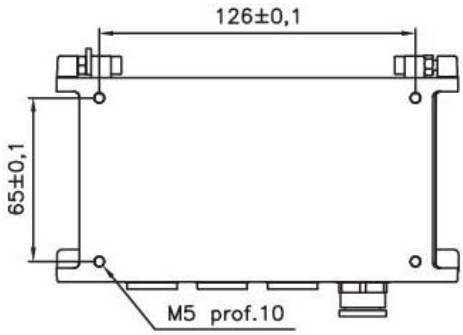


Document available on website alma-alma.fr

5.1. INSTALLATION RECOMMENDATIONS GRAVICOMPT UNI REMOTE VERSION

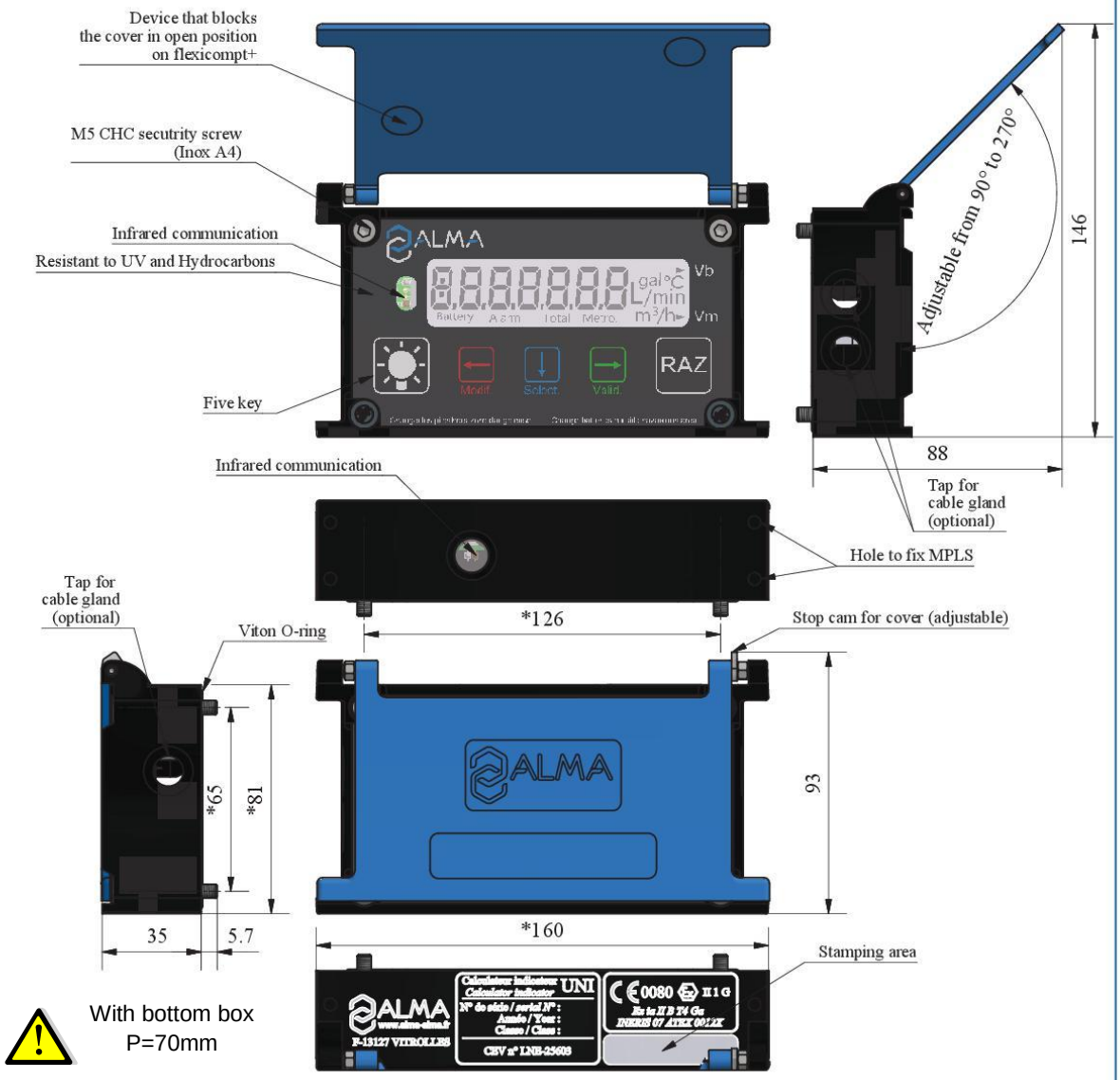
The UNI MPLS and the turbine are supplied pre-wired.

The remote UNI MPLS is fastened on a customer holder. Dimensions of the UNI bottom box:



REAR VIEW

5.2. REMOTE CALCULATOR-INDICATOR UNI



Batteries should be removed outside explosive area

- ***Box protection level*** : IP66
- ***Mass*** : ~600g,
- ***Box and lid material*** : Aluminum alloy,
- ***Metal finishing***: - of the lid: color blue (RAL5010) resistant to hydrocarbons
  - of the box: black anodized
- ***Temperature range*** : -20 °C to +50 °C
- ***Environment class*** : M2, E2,
- ***ATEX ECTEC N°*** : INERIS 07 ATEX 0012X
- ***Legal metrology EVC N°*** : LNE 25603

*Overall dimensions and bottom of UNI fastening are identical of UNI

UNI is supplied by two 3.6 Volts lithium batteries.
Batteries approved for use in hazardous areas are:
- Lithium batteries type SAFT LS 14500 C or SAFT LS 14500 Ex
- Lithium batteries TADIRAN (ex SONNENSCHEIN) type SL-760

Associated items		
Designation	Plan	Code
2B00 Pulse emitter	PPV025	8147
CT1001 temperature sensor	PPV042	8151

ALMA www.alma-alma.fr Service Development 13127 Vitrolles		PRESENTATION DRAWING	DFV063			Description of the amendment No.679 Precisions about the body matter					
DEV N° : 984a	Code : 8760 / 8948	UNI Metering electronic device									
Drawing N° associated with the related CET file		984a	PPV063	L	6 /8	Modified on :	10/06/2019	by	CHR	verified by	CC
Metro :	LNE-25603	Dev N°	Drawing N°	Rev	Folio	Created on :	26/02/2007		BM		SR
ATEX:	INERIS 07 ATEX										

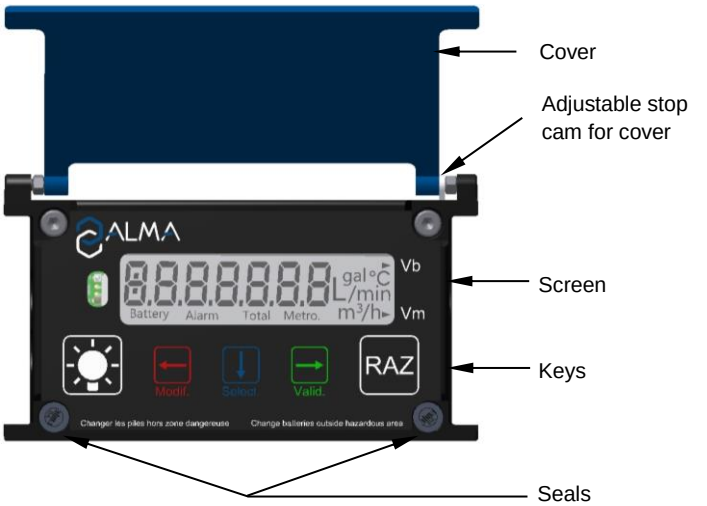
5.3. INSTALLATION RECOMMENDATIONS REMOTE CALCULATOR-INDICATOR UNI

Mounted on a turbine or a holder, the UNI indicator shall be positioned to allow:

- A good visualization of the screen.
- Easy access to the keys of the keyboard
- Free access to the box for connection and maintenance operation.
- Free access to regulatory markings of the UNI, the turbine and the 2B00 pulse transmitter (stamping, seals).
- The using of the UNI with its cover in open position
- The easy implementation and holding of the CTD+ key. **Since the key is not ATEX, it must be used with the UNI outside potentially explosive area.**

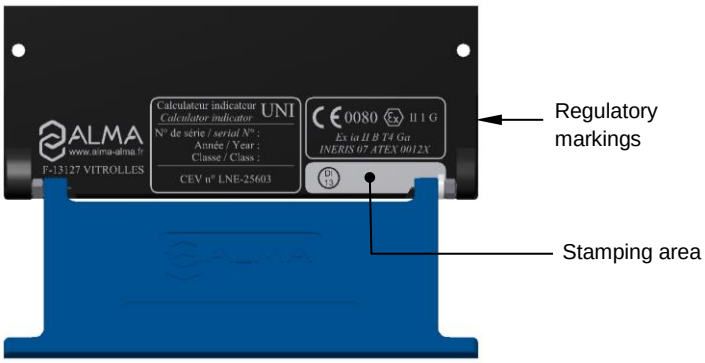
When the UNI indicator is mounted on a holder, ensure the holder is secured and well-fastened

- Avoid excessive vibration.



CTD+ KEY OPTION

The CTD+ key must be placed flat and in abutment in the bottom left-hand corner of the indicating device.



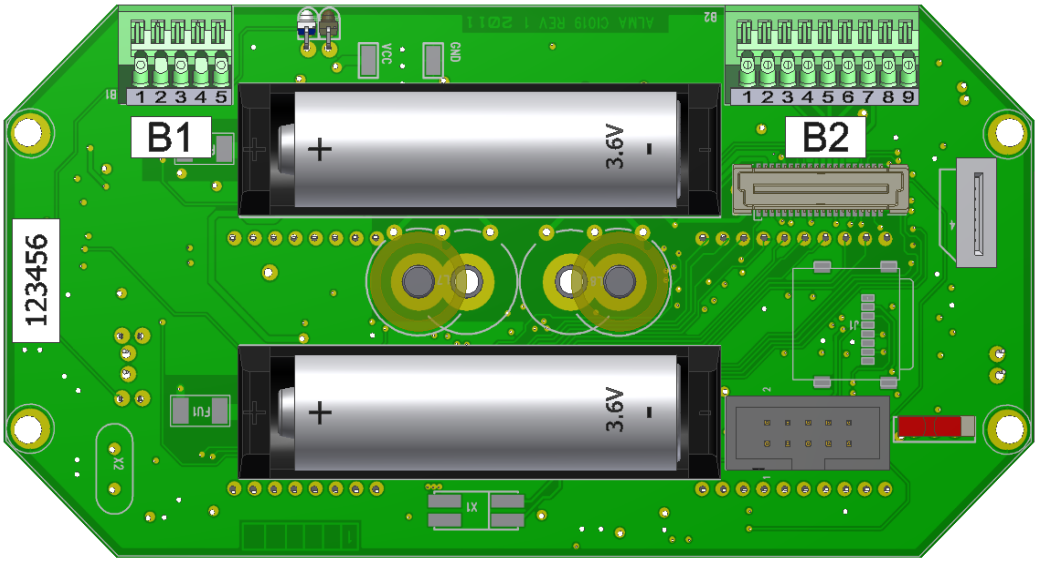
REFER TO THE INSTRUCTION MANUAL
(DELIVERED WITH THE EQUIPMENT OR AVAILABLE ON ALMA WEBSITE)

6. ELECTRICAL WIRING

The GRAVICOMPT UNI COMPACT VERSION is pre-connected at factory. There is no additional connection.

Terminal assignment of the UNI electronic board

TERMINAL ASSIGNMENT OF THE UNI ELECTRONIC BOARD



EQUIPMENTS CONNECTED TO THE UNI								UNI ELECTRONIC BOARD				
Option	Equipment	Cable (for information) No.	CG*	Alma	Type	Function	Colour or No.	Block	Terminal	Function		Observation
	TURBINE INDUCTIVE COILS	C1	PG9	•	ADR 7x0.34 sh. L=5m	Coil 1	YE	B1	1	Coil 1	METERING	Indications for GRAVICOMPT UNI REMOTE VERSION **The shielding braid of the cable must be connected to the ATEX cable gland**
						Coil 1	WH		2			
						Coil 2	GN		3	Coil 2		
						Coil2	BN		4			
	Pt100 TEMPERATURE PROBE					+	GY	B2	1	+	Pt100	
						-	PK		2	-		
						-	BU		3	-		
	GAS DETECTOR 1	C2	1/2"NPT	•	ADR 7x0.34 sh. L=5m	+	YE	B2	4	+	DG1	**The shielding braid of the cable must be connected to the ATEX cable gland**
						-	WH		5	-		
						Shielding	GN		6	Shielding		
	GAS DETECTOR 2					+	GY		7	+	DG2	
						-	PK		8	-		
						Shielding	BN		9	Shielding		

**Refer to the Cable Glands installation instructions*

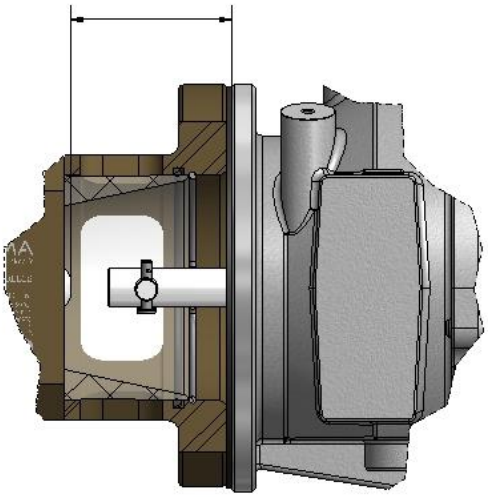
Conductors must be 8mm-stripped and spread before being pushed into the terminals.

7. TURBINE ADRIANE DN100-80 TYPE 241 V-TTMA-DL

7.1. INSTALLATION AND SEALING RECOMMENDATIONS ADRIANE TURBINE METER

For overall dimensions of the turbine meter, please refer to the drawings PPV135: GRAVICOMPT UNI REMOTE VERSION or GRAVICOMPT UNI COMPACT VERSION.

- The identification plate and the led of the pulse emitter(s) shall be visible and accessible.
- The turbine must be installed with respect to the flow direction.
- Put sealing rings each other sides between the turbine and the backflanges.
- Leave an open space all around the turbine in order to ease maintenance.
- The position or the movement of moving parts of the API adapter inside the turbine cannot exceed 60 mm of the downstream face of the flange of the turbine.



- Refer to the certificate written on the identification plate of the measuring system to suit the sealing requirements
- No loose lead wire on the sealing devices

For accuracy class 0.5 measuring systems, the pipes and equipment upstream or downstream the turbine meter must have the same nominal diameter as the meter on a length at least equal to 10 times this diameter upstream and 10 times this diameter downstream.

These lengths can be straight or bent.

It is mandatory that no flowrate adjustment device (e.g. a variable-opening valve) is located upstream at a distance less than 10 times the nominal diameter of the meter. Do not create derivation circuits with sample or bypass, specially make sure that no nozzle is present on this pipe.

8. DATA KEY TRANSFERT CTD+

The key is powered by a 3.6V lithium battery of AA size

Once the key positioned on the front of UNI, the transfert of UNI parameters and load reports of "n" last day, start after key "Select" and "RAZ" has been pressed simultaneously. The number of days "n" is defined in Supervision menu of UNI.
During data transfer, UNI displays the percentage of progress.
One can also download only the list of UNI configuration settings, as soon as demand display in the Supervision menu of UNI while the key is placed on UNI.
The file name in the key is composed of UNI name followed by "M" for measurement report and by "P" for parameters.

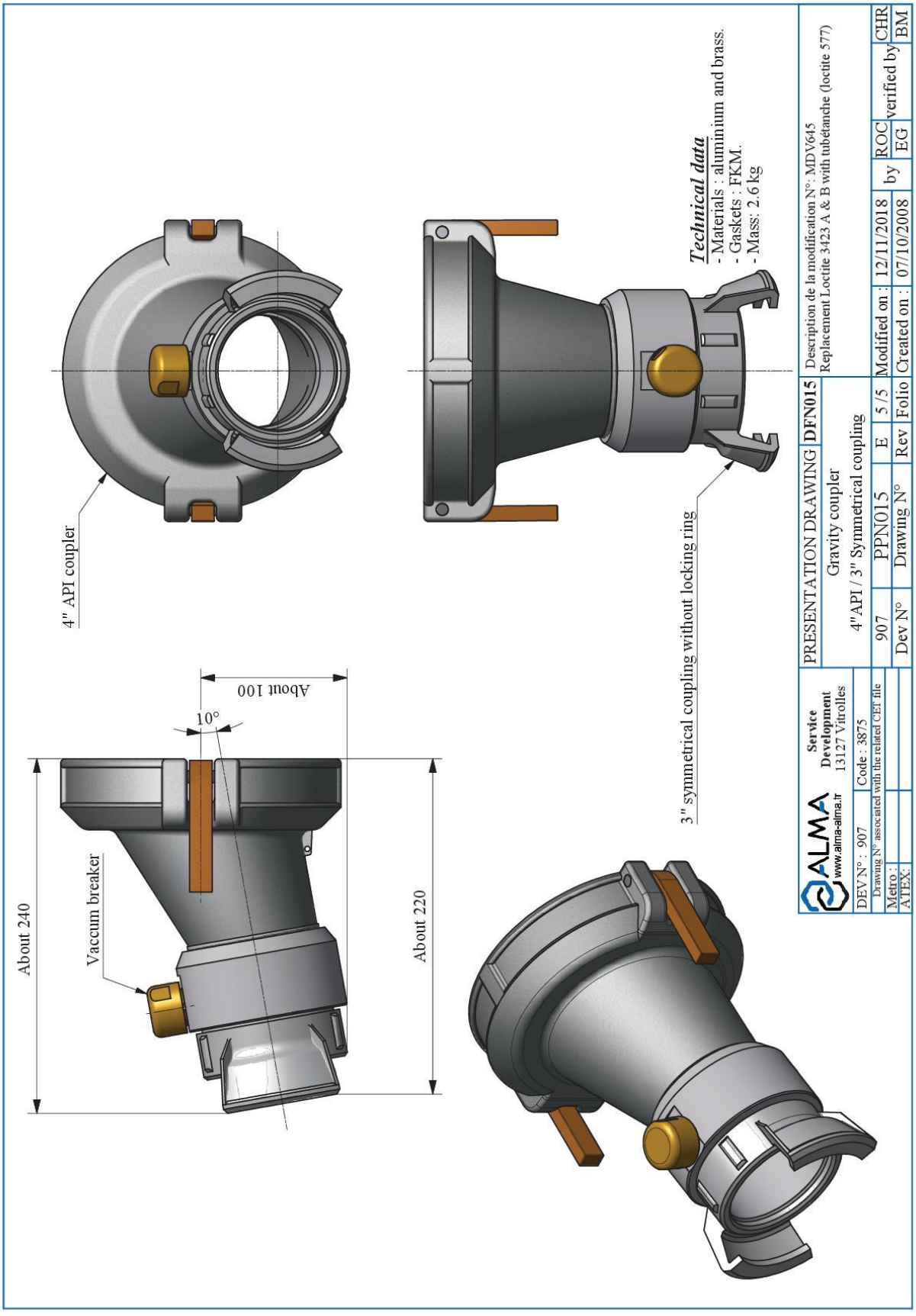
The files can then be read in Excel on PC connected via a USB cable.

ALMA www.alma-alma.fr	Service Development 13127 Vitrolles	PRESENTATION DRAWING	DFV099	D	5 /6	Modified on : 17/03/2016	by	CC	SR
DEV N° : 984c	Code : 1166	Data Key Transfert CTD+				Created on : 17/10/2011		BM	SR
Drawing N° associated with the related CET file		984c	PPV099	Rev	Folio	Dev N°	Drawing N°		verified by
Metro :									
ATEX :									

Description of amendment N°449
- Modification Machining USB connector

Document available on website alma-alma.fr

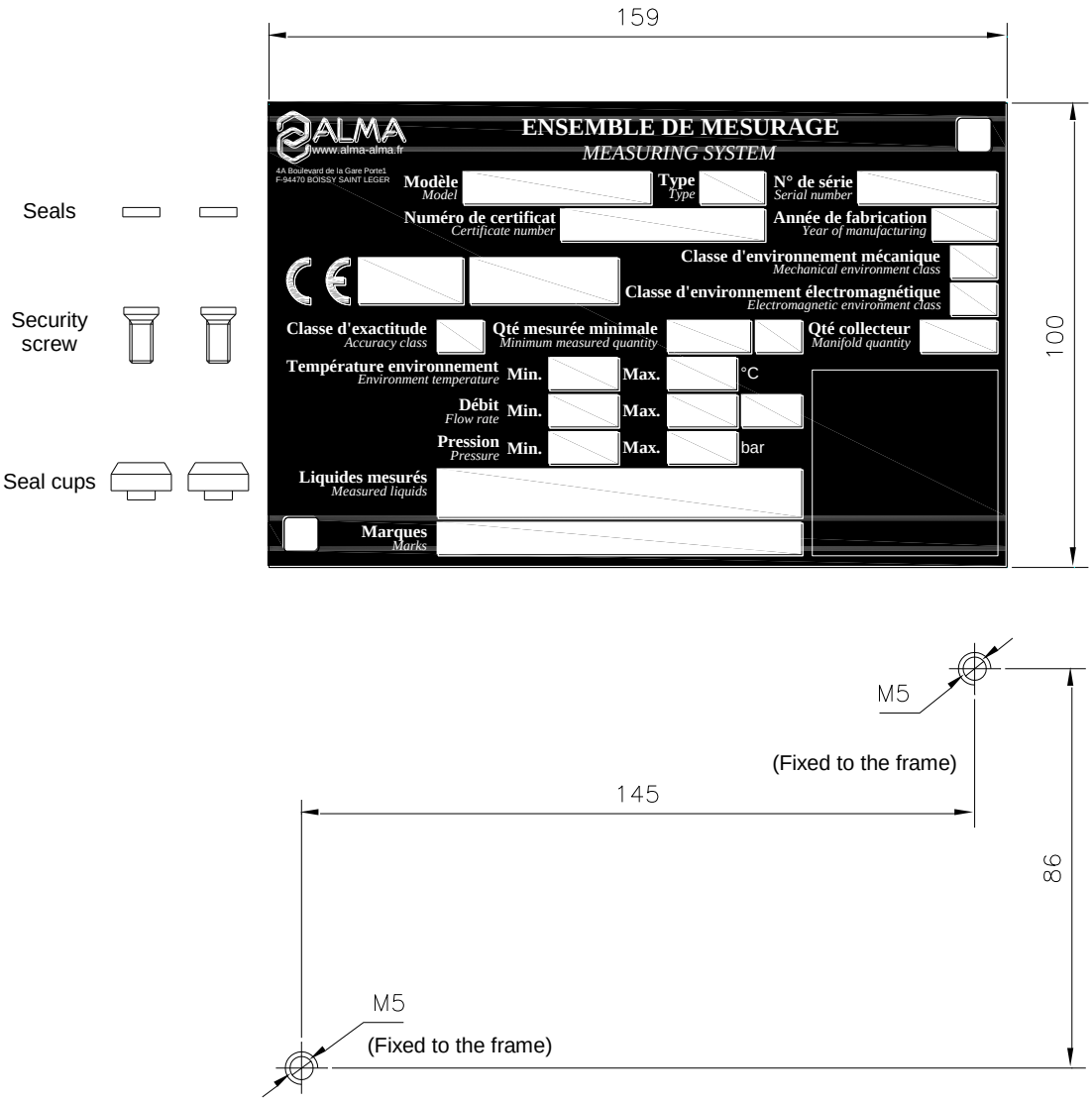
9. GRAVITY COUPLER



Document available on website alma-alma.fr

10. KIT FOR MEASURING SYSTEM IDENTIFICATION PLATE

The identification plate shall be clearly installed, near the associated indicator device, and of easy access in order to be able to read features and to stamp the regulatory marks.



The security screws of the cups (provided by ALMA) must be screwed in the tap of the frame (do not use removable nuts).