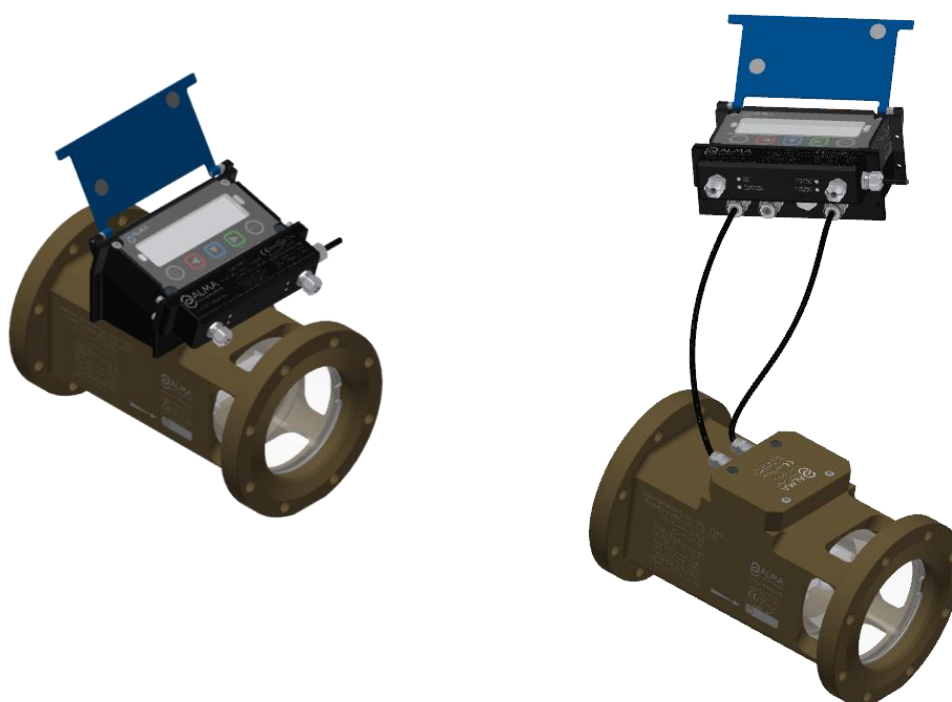


# INSTALLATION GUIDE


## DI 023 EN D

### GRAVICOMPT UNI MPLS

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




D	2021/10/01	Calculator indicator UNI-2. Connection tables. Removal of CTD+. Converter 24VDC/9.2VDC supplied. Interconnection drawing. Update of drawings	DSM	PJ
Issue	Date	Nature of modifications	Written by	Approved by


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## 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.

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## 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 a flat screwdriver 0.4x2.5 (see figure)
    - Push in the spring with the screwdriver
    - Insert or remove the wire and remove the screwdriver.
- ⇒ Do not pinch or clamp the wires when closing the UNI-2 indicator and/or the MPLS.
- ⇒ Do not use wires of section higher than 1.5mm<sup>2</sup>.
- ⇒ 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.
  - Tighten the cable gland cap about one turn (fig.1)
  - Push in the stripped wire up to the stop on the claw (fig.2)
  - Fully tighten the gland cap (fig.3)

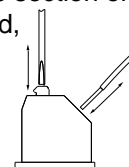


fig.1

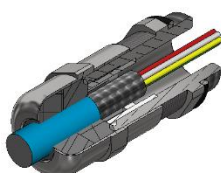


fig.2

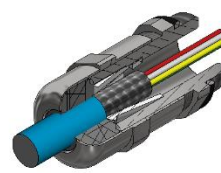



fig.3

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

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⇒ Respect a homogeneous wire color code.

⇒ Current of the electrical devices:

Electrical devices	Supply voltage	Minimum current	Maximum current
UNI-2 through an intrinsic safety barrier	9.2VDC +/-10%	1 mA	200 mA
MPLS	24VDC +/-10%	1 A	1.5 A
PRINTER	24VDC +/-10%	0.1 A	5.5 A (switch-on)

⇒ 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
White	<b>Bc</b>		<b>WH</b>	White	Bianco	Blanco	Weiß
Marron	<b>Mr</b>		<b>BN</b>	Brown	Marrone	Marrón	Braun
Vert	<b>Vt</b>		<b>GN</b>	Green	Verde	Verde	Grün
Jaune	<b>Jn</b>		<b>YE</b>	Yellow	Giallo	Amarillo	Gelb
Gris	<b>Gr</b>		<b>GY</b>	Grey	Grigio	Gris	Grau
Rose	<b>Rs</b>		<b>PK</b>	Pink	Rosa	Rosa	Lila
Bleu	<b>Bl</b>		<b>BU</b>	Blue	Blu	Azul	Blau
Rouge	<b>Rg</b>		<b>RD</b>	Red	Rosso	Rojo	Rot
Noir	<b>Nr</b>		<b>BK</b>	Black	Nero	Negro	Schwarz
Violet	<b>Vi</b>		<b>VL</b>	Violet	Viola	Violeta	Violett
Orange	<b>Or</b>		<b>OG</b>	Orange	Arancio	Naranja	Orange
Vert/Jaune	<b>V/J</b>		<b>GNYE</b>	Green/Yellow	Verde/Giallo	Verde/Amarillo	Grün/Gelb

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### 1.3. PNEUMATIC RECOMMENDATIONS

- ⇒ Air must be filtered – from 40 to 20µm. Specific recommendations may be added in the installation guides or on the presentation drawings.
- ⇒ The air lubrication must be permanent and correct to avoid any damage on the pneumatic components.
- ⇒ The air supply pressure to the inlet of the equipment must be at least 6 bar and max 8 bar. Specific recommendations may be added in the installation guides or on the presentation drawings.
- ⇒ The pneumatic supply pipes (6/4) must be cut straight (no slanting cut) and should not be crushed after cutting to prevent leakage on fittings.
- ⇒ Respect the radii of curvature of the pneumatic pipes indicated by the manufacturer.
- ⇒ Use colored pneumatic pipes to ease maintenance operation.
- ⇒ In no case the exhaust holes of the pneumatic organs should be plugged, obstructed, unless if that is clearly specified in the installation guides or on presentation drawings.
- ⇒ The use of muffler is not allowed under any circumstances (fouling, frost...). Put a pneumatic pipe of sufficient length, pointed downwards, so that its end is placed in a protected area (L = 100 mm min.).
- ⇒ Pressure unit conversion:

PRESSURE UNIT CONVERSION				
Units	Bar	PSI	Pascal	kg/cm <sup>2</sup>
1 Bar =	1	14,5	100 000 (1x10 <sup>5</sup> )	1,0197
1 PSI =	0.069	1	6894,5	0,07031
1 Pascal =	1x10 <sup>-5</sup>	14,5x10 <sup>-5</sup>	1	1,0197x10 <sup>-5</sup>
1 kg/cm <sup>2</sup> =	0,98	14,22	98066,5	1

PSI = Pound per Square Inch (livre par pouce carré)  
 1 bar = 100 kPa = 0.1 MPa (1 MPa = 10 bar)

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## 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.

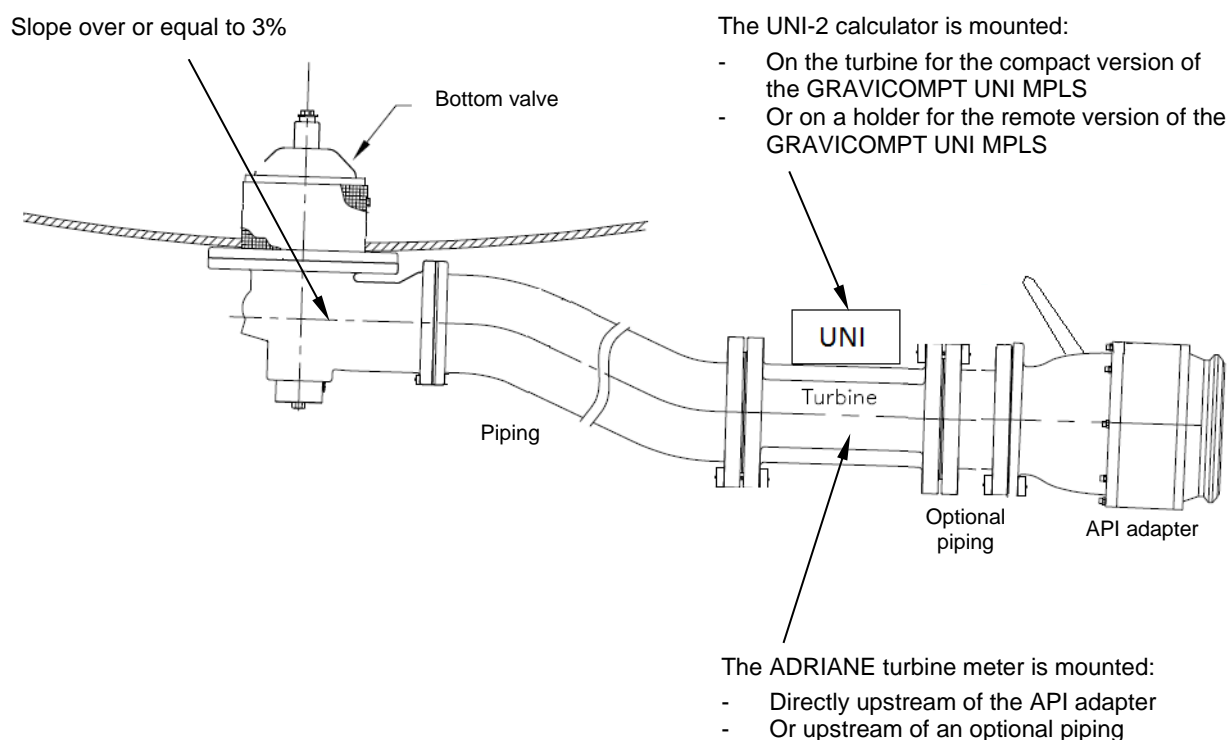
The GRAVICOMPT UNI measuring system is based on a meter made up of the ADRIANE turbine meter and the UNI-2 calculator, associated to an unloading valve (that should be an API-type adapter)


The GRAVICOMPT UNI is a measuring system for gravity measurement of liquids other than water. It measures the product temperature. It can be mono or bi-directional. The MPLS device controls a valve and a printer, it receives an authorization signal.

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

### 2.2. SPECIAL CONDITIONS FOR INSTALLATION

- ⇒ 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.



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### 3. PART LIST

#### 3.1. GRAVICOMPT UNI MPLS COMPACT VERSION


EQUIPMENTS INCLUDED IN THE MEASURING SYSTEM DELIVERED BY ALMA				
Item	Equipment	Designation	Qty	Option*
1		<b>GRAVICOMPT UNI MPLS FOR COMPACT INSTALLATION</b> (Cable 10m)	1	
		<b>INTRINSIC SAFETY BARRIER</b> (For UNI-2 power supply)		
		<b>CONVERTER 24VDC/9.2VDC.</b> Set the converter to 9.2V, supply voltage of the intrinsic safety barrier (For UNI-2 power supply)		
2		<b>3/2 NC ATEX SOLENOID VALVE to be installed in a box</b>	1	●
3		<b>3/2 NC NON-ATEX SOLENOID VALVE to be installed in a box</b>	1	●
4		<b>PRINTER KIT</b> - Holder - Supply cable 24 VDC 1.5 meter - Converter 24VDC/24VDC (for printer and MPLS) - Connector kit SUB-D25 for MPLS/printer connection, to be wired without any tools <b>Non-ATEX device, not usable in ATEX area</b>	1	●

Non-contractual pictures

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EQUIPMENTS INCLUDED IN THE MEASURING SYSTEM DELIVERED BY ALMA				
Item	Equipment	Designation	Qty	Option*
5		<b>GRAVITY COUPLER</b> (4" API / 3" 1/2 symmetrical coupling – with vacuum breaker)	1	●
6		<b>PNEUMATIC API ADAPTER</b>	1	●
7		<b>KIT FOR MEASURING SYSTEM IDENTIFICATION PLATE</b> (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.				


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## 3.2. GRAVICOMPT UNI MPLS REMOTE VERSION

EQUIPMENTS INCLUDED IN THE MEASURING SYSTEM DELIVERED BY ALMA				
Item	Equipment	Designation	Qty	Option*
1		<b>GRAVICOMPT UNI MPLS FOR REMOTE INSTALLATION INCLUDING:</b>  <b>REMOTE UNI-2 MPLS ELECTRONIC CALCULATOR INDICATING DEVICE</b> (Supplied with a bottom box and a 10 meters cable) <b>ADRIANE TURBINE METER DN100-80 TYPE 241 V-TTMA-DL</b> (Supplied with two 5 meters cables)  <b>The system is not supplied pre-wired</b>	1	
		<b>INTRINSIC SAFETY BARRIER</b> (For UNI-2 power supply)		
		<b>CONVERTER 24VDC/9.2VDC.</b> Set the converter to 9.2V, supply voltage of the intrinsic safety barrier (For UNI-2 power supply)		
2		<b>3/2 NC ATEX SOLENOID VALVE to be installed in a box</b>	1	●
3		<b>3/2 NC NON-ATEX SOLENOID VALVE to be installed in a box</b>	1	●
4		<b>PRINTER KIT</b> - Holder - Supply cable 24 VDC 1.5 meter - Converter 24VDC/24VDC (for printer and MPLS) - Connector kit SUB-D25 for MPLS/printer connection, to be wired without any tools <b>Non-ATEX device, not usable in ATEX area</b>	1	●

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## EQUIPMENTS INCLUDED IN THE MEASURING SYSTEM DELIVERED BY ALMA

Item	Equipment	Designation	Qty	Option*
5		<b>GRAVITY COUPLER</b> (4" API / 3" 1/2 symmetrical coupling – with vacuum breaker)	1	●
6		<b>PNEUMATIC API ADAPTER</b>	1	●
7		<b>KIT FOR MEASURING SYSTEM IDENTIFICATION PLATE</b> (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.				

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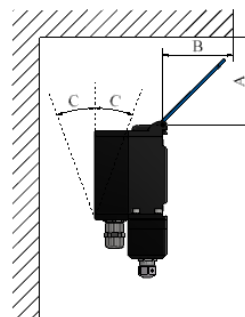
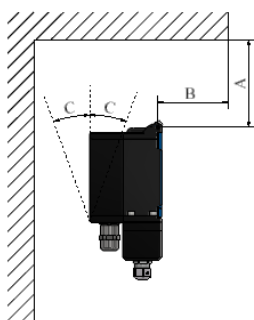
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#### 4. INSTALLATION RECOMMENDATIONS CALCULATOR-INDICATOR UNI-2

- Fasten the calculator UNI-2 with 4 M5 screws (M5 length 10 over 65 x 126)
- Leave an open space above the calculator in order:
  - o To ease the cover opening
  - o To ease connection to the GPS signal
- Dimensions:  $A \geq 100\text{mm}$ ,  $B \leq 100\text{mm}$ ,  $C = \pm 20^\circ$ .

To have an optimal GPS signal, follow the requirements below:

- Do not close the trunk
- Make sure that the installation is in an open environment.



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## 5. GRAVICOMPT UNI MPLS COMPACT VERSION

**Calculator-indicator type UNI**

- ATEX certification N°: INERIS 19 ATEX 0029X
- IECEx certification N°: IECEx INE 19.0030X
- Legal metrology certification CEV N°: LNE-25603

**Power supply of UNI through an NSI/SI barrier Ref.: BZ G761+ (supplied)**  
Barrier power supply 9.2V

**ALMA measuring device type**  
ADRIANE DNI100-80 241 V-TTMA-DL  
- ATEX Certification N°: DCET ATEX 009  
- Legal Metrology Certification CEV N°: LNE-12393

**Flange DNI100 TTMA**  
(8 holes Ø11 on Ø149.3)

**Pre-determination module type MPLS**  
- ATEX Certification N°: INERIS 08 ATEX 0048

**2H00 pulse emitter control well**

**Flow direction**

**Sight glass**

**Stamping area**  
Ø170

**291**

**265.5**

**135°**

**15°**

**ALMA**

**UNI**

**Technical specifications:**

- **Mass:** ~7 Kg
- **EU type Examination Certificate of GRAV/COMPT UNI N°:** LNE-30858
- **Mechanical Class:** M2
- **Electromagnetic Class:** E2
- **Accuracy Class:** 0.5
- **Indication scale interval:** 1L
- **Temperature range:** -10°C to +50°C
- **Maximum pressure:** 5 bar

**Performance:**

- **Flowrate:** from 8 to 80 m³/h
- **Liquids measured:** Liquids Hydrocarbons except LP G and ethanol
- **Viscosity:** from 0.5 to 13 mm²/s
- **Optional:** API coupler with vacuum breaker (code: 3875)  
Solenoid valve 3/2 NC 24V ATEX (code: 4452)  
Solenoid valve 3/2 NC 24V NON ATEX (code: 2374)  
TM-U295 printer kit for MPLS (code: 2669)  
Pneumatic API discharge valve (code: 7098)

**For a safe use of the UNI electronic device, make sure to comply with the requirements of the instruction manual supplied with the equipment**

**Service Development**  
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13127 Vitrolles

**DEV N°:** 959  
**Code:** 3049


**Drawing N° associated with the related CEI file**  
LNE-30858

**Métro:** PV1842  
**ATEX:** INERIS 19 ATEX 0029X

**DEV N°:** 959  
**Drawing N°:** PPV135  
**Rev:** 12/16  
**Folio:** 12/16  
**Created on:** 29/06/2021  
**Modified on:** 08/11/2017  
**Created by:** CC  
**Modified by:** CC

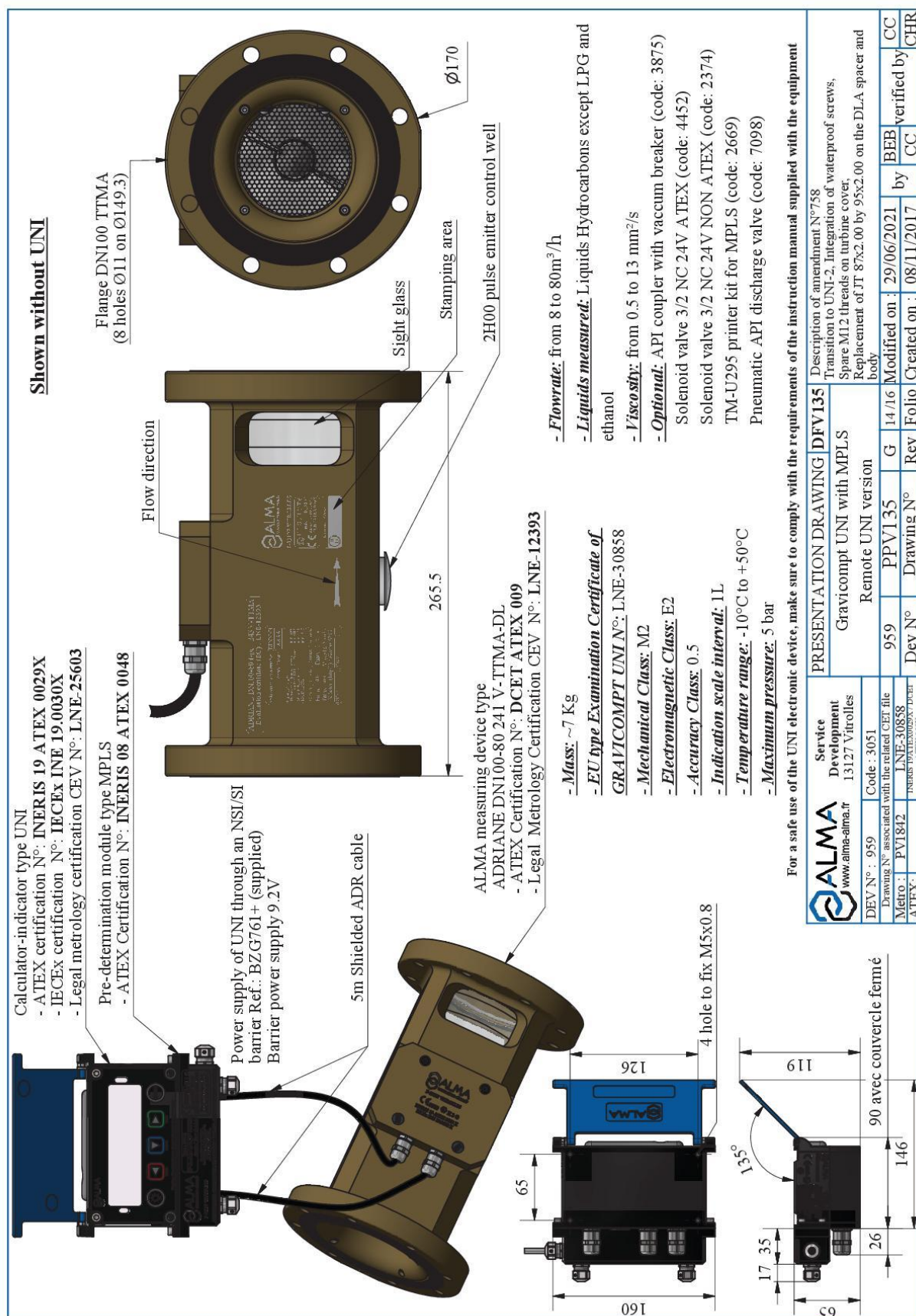
**CC**

**CHR**


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	<b>INSTALLATION GUIDE DI 023 END</b> <b>GRAVICOMPT UNI MPLS</b>	<u><b>Units of measure:</b></u> Length: mm Angle: degree (° / °") Temperature: °C
	This document is available at <a href="http://www.alma-alma.fr">www.alma-alma.fr</a>	Page 14/38



## 6. GRAVICOMPT UNI MPLS REMOTE VERSION



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126±0,1

65±0,1

M5 prof.10

REAR VIEW

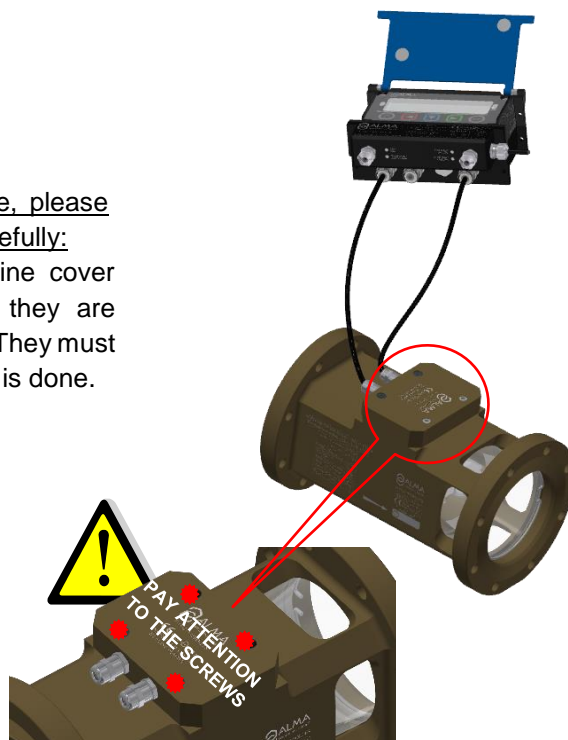
**UNI-2**

**TURBINE**



The wiring of the turbine on the UNI-2 MPLS is the responsibility of the Customer. It must be done in accordance with the connection tables.

The security screws of the turbine cover supplied by Alma are specific, they are equipped with an integrated seal. They must be used to make sure the sealing is done.



**Make sure the sealing is done,  
use the 4 screws supplied Alma**

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INSTALLATION GUIDE DI 023 END  
GRAVICOMPT UNI MPLS

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**Units of measure:**  
Length: mm  
Angle: degree (° ' ")  
Temperature: °C



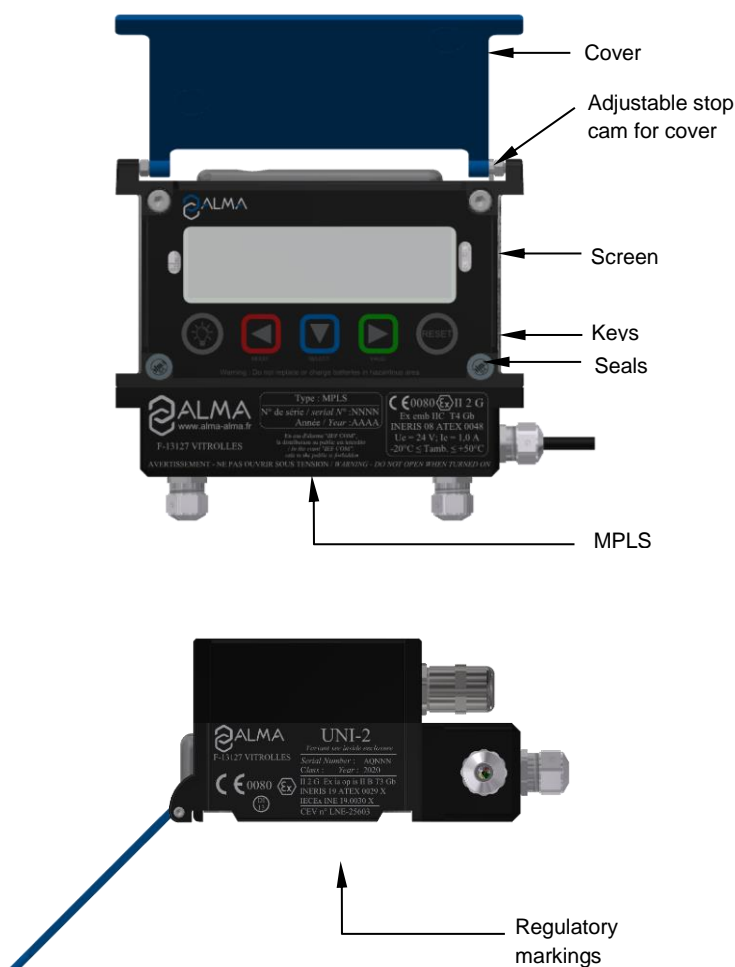
## 6.2. INSTALLATION RECOMMENDATIONS REMOTE CALCULATOR-INDICATOR UNI-2 MPLS

Mounted on a turbine or a holder, the UNI-2 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-2 and the turbine (stamping, seals).
- The using of the UNI-2 with its cover in open position

When the UNI-2 indicator is mounted on a holder, ensure the holder is secured and well-fastened


- Avoid excessive vibration.




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

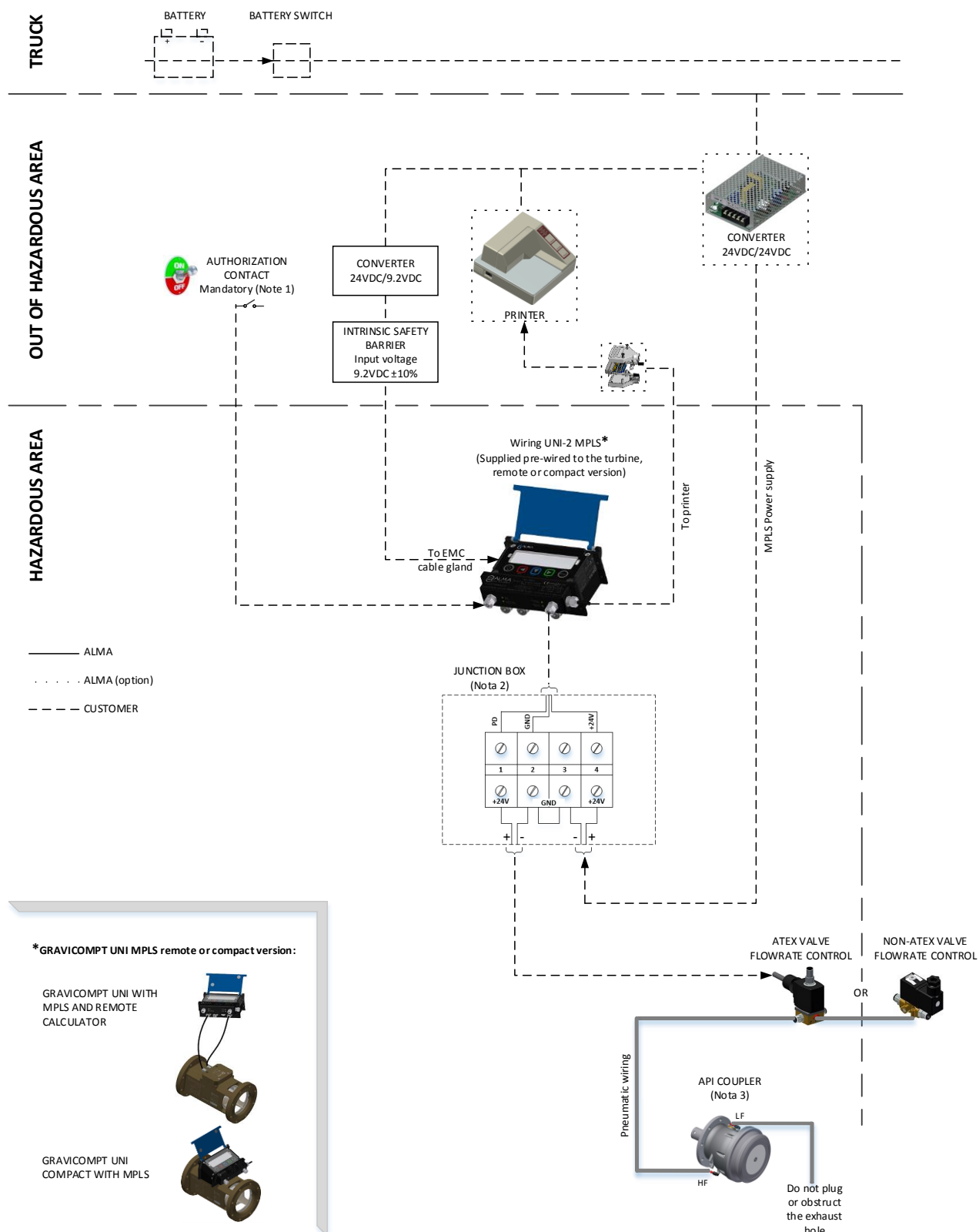
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	<b>INSTALLATION GUIDE DI 023 END</b> <b>GRAVICOMPT UNI MPLS</b>	<u><b>Units of measure:</b></u> Length: mm Angle: degree (° / °") Temperature: °C
	This document is available at <a href="http://www.alma-alma.fr">www.alma-alma.fr</a>	Page 18/38

## 7.2. INTERCONNECTION DIAGRAM



Note 1: To make sure that the GRAVICOMPT UNI MPLS will operate, an authorization contact is necessary (see Operating sequence).

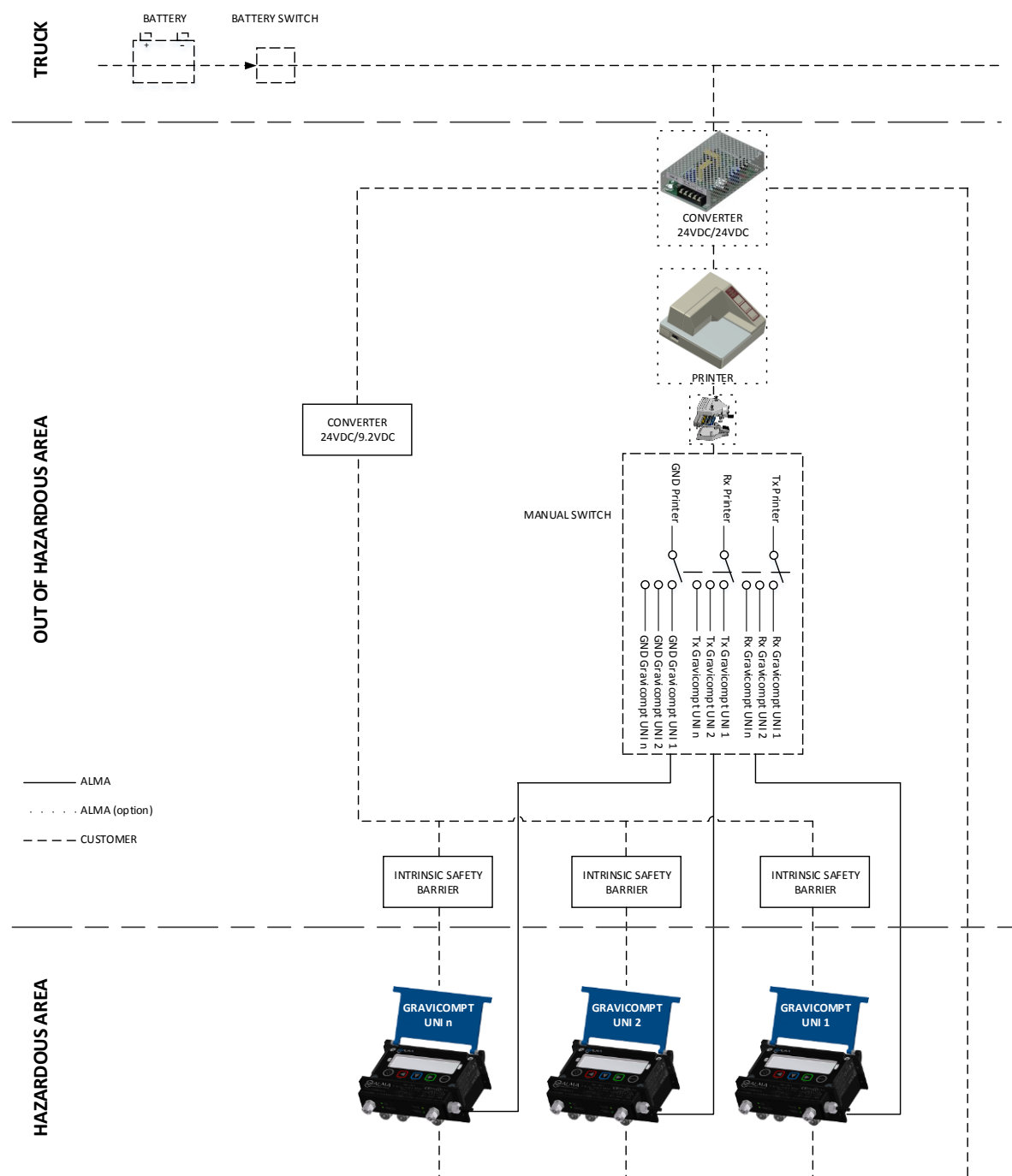
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	<b>INSTALLATION GUIDE DI 023 END</b> <b>GRAVICOMPT UNI MPLS</b>	<b><u>Units of measure:</u></b> Length: mm Angle: degree (° ' ") Temperature: °C
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Note 2: According to the ATEX directive or any other regulations in force in the country of destination, the safety protection level of the junction boxes must agree with the installation area.

Note 3: The 'High flow (HF)' of the API coupler is controlled by the MPLS 'low flow' output using the solenoid valve. Therefore, the 'Low flow (LF)' fitting of the API coupler is not used. It must be equipped with a pneumatic tube which exhaust hole is facing downwards. The exhaust hole must not be plugged nor obstructed.

### Special case: connection of a printer to several GRAVICOPT UNI MPLS

n is the number of GRAVICOPT UNI MPLS connected to the printer.



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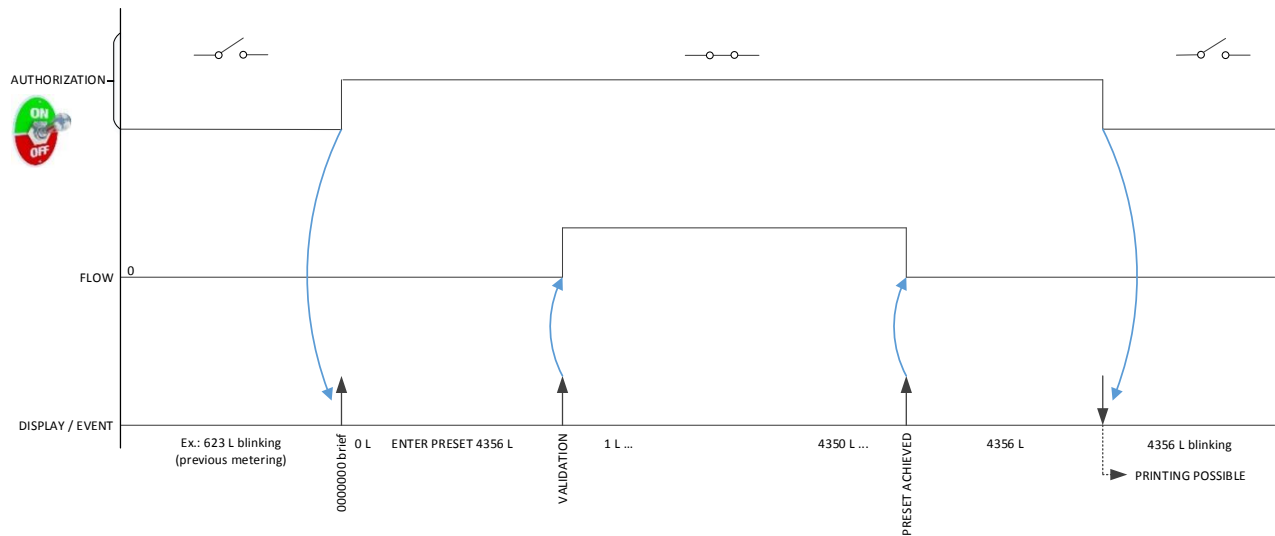
## INSTALLATION GUIDE DI 023 END GRAVICOPT UNI MPLS


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**Units of measure:**  
Length: mm  
Angle: degree (° ' ")  
Temperature: °C

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7.3. OPERATING SEQUENCE

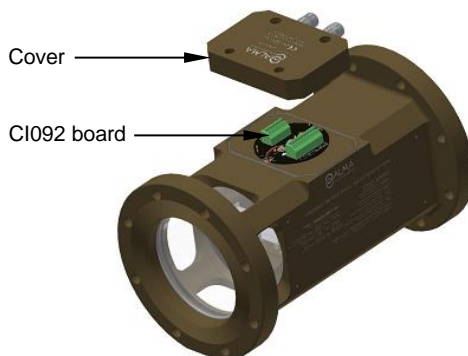


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	This document is available at <a href="http://www.alma-alma.fr">www.alma-alma.fr</a>	Page 21/38

## 7.4. CONNECTION TABLES

The connection of the sensors to the UNI-2 is done through the CI092 board located on the turbine. This board is protected by a sealed cover. To make the connection, follow the steps below:

- Remove the seal protecting the access to the turbine cover
- Unscrew the 4 screws. Make sure to put these 4 screws aside
- Wire the different elements according to the connection tables that follow
- When the wiring is completed, reposition the cover and make sure to fix it using the original screws to ensure the sealing of the assembly.
- Seal the turbine in accordance with regulations in force.



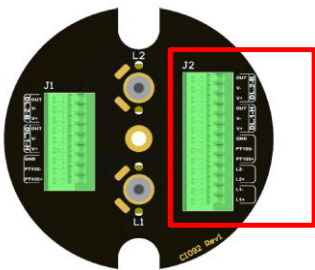

### 7.4.1. Connecting the sensors to the CI092-interface board (coil, gas detection, temperature)

TERMINAL ASSIGNMENT OF THE CI092-INTERFACE BOARD											
EQUIPMENT CONNECTED TO THE TURBINE								CI092-INTERFACE BOARD			
Option	Equipment	Cable (for information)				Function	Colour or No.	Block	Terminal	Function	Observation
		No.	CG*	Alma	Type						
	Pt100 TEMPERATURE PROBE			•		+	Bc	J1	1	Pt100 +	Pt100
						-	Rg		2	Pt100 -	
						-	Rg		3	Pt100 GND	
	GAS DETECTION 1 (HIGH)			•		+	Jn	J1	4	DL1-H (V+)	GD1 (HIGH)
						-	Nr		5	DL1-H (V+)	
						OUT	Bc		6	DL1-H (OUT)	
	GAS DETECTION 2 (LOW)					+	Rg		7	DL2-B (V+)	GD2 (LOW)
						-	Bl		8	DL2-B (V+)	
						OUT	Vt		9	DL2-B (OUT)	

\*Refer to the cable glands installation instructions

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	<b>INSTALLATION GUIDE DI 023 EN D</b> <b>GRAVICOMPT UNI MPLS</b>	<b>Units of measure:</b> Length: mm Angle: degree (° ' ") Temperature: °C
	This document is available at <a href="http://www.alma-alma.fr">www.alma-alma.fr</a>	Page 22/38

### 7.4.2.Connecting the CI092-interface board (coil, gas detection, temperature) to the UNI-2

EQUIPMENT CONNECTED TO THE UNI-2									UNI-2 ELECTRONIC BOARD				
Option	Equipment	Cable (for information)				Block	Function or Terminal	Colour or No.	Block	Terminal	Function	Observation	
		No.	CG*	Alma	Type								
	POWER SUPPLY		PG9				V- Ext		B3	5	V- Ext	The UNI- 2 is powered through an intrinsic safety barrier	
							V+ Ext			6	V+ Ext		
CI092-INTERFACE BOARD									UNI-2 ELECTRONIC BOARD				
 <p>Connection of the CI092-board to the UNI-2 from J2</p>													
TURBINE INDUCTIVE COIL	C1	Only for remote version:  M12 on Turbine and PG9 on UNI-2	•	Only for remote version:  ADR 7x0.34 sh.  L=5m	J2	L1 +	Jn	B1	1	L1+	METERING	The shielding braid of the cable must be connected to the ATEX cable gland	
						L1 -	Bc		2	L1-			
						L2 +	Vt		3	L2+			
						L2 -	Mr		4	L2-			
Pt100 TEMPERATURE PROBE	C2	Only for remote version:  M12 on Turbine and PG9 on UNI-2	•	Only for remote version:  ADR 7x0.34 sh.  L=5m	J2	Pt100 +	Gr	B2	1	Pt100+	Pt100		
						Pt100 -	Rs		2	Pt100-			
						GND	Bl		3	GND			
GAS DETECTION 1 (HIGH)	C2	Only for remote version:  M12 on Turbine and PG9 on UNI-2	•	Only for remote version: ADR 7x0.34 sh.  L=5m		DL1-H (V+)	Jn	B2	4	1 V+	DG1 (HIGH)		
						DL1-H (V-)	Bc		5	1 V-			
						DL1-H (OUT)	Vt		6	1-OUT			
						DL2-B (V+)	Gr		7	2 V+	DG2 (LOW)		
						DL2-B (V-)	Rs		8	2 V-			
						DL2-B (OUT)	Mr		9	2-OUT			
GAS DETECTION 2 (LOW)													
*Refer to the cable glands installation instructions													

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## INSTALLATION GUIDE DI 023 END GRAVICOMPT UNI MPLS

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**Units of measure:**  
Length: mm  
Angle: degree (° ' ")  
Temperature: °C

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## 8. MPLS ELECTRONIC DEVICE

For a safe use of the MPLS electronic device, make sure to comply with the requirements of instruction manual supplied with the equipment.

**Dimensions:**  
 Front view: 52 (width), 35 (height)  
 Side view: 168 (total length), 160 (main body length), 35 (bottom flange height)  
 Internal view: 150 (length), 20 (width)  
 Mounting hole spacing: 104 (between terminal blocks), 104 (between cable glands)

**Labels and Indicators:**  
 - Operating condition indicator  
 - Authorization indicator  
 - High flow indicator  
 - Low flow indicator  
 - Petit débit / Low flow  
 - Grand débit / High flow  
 - Etat / State  
 - Autorisation / Authorization

**CE Marking and Text:**  
 Type : MPLS  
 N° de série / serial N° : NNNN  
 Année / Year : AAAA  
 Ex emb IIC T4 Gb  
 INERIS 08 ATEX 0048  
 Ue = 24 V; Ie = 1,0 A  
 -20°C ≤ Tamb. ≤ +50°C  
 ALMA www.alma-alma.fr  
 F-13127 VITROLLES  
 Avertissement - NE PAS OUVRIR SOUS TENSION / WARNING - DO NOT OPEN WHEN TURNED ON

**Components and Features:**  
 - CEM cable gland  
 - Clamping Range : min 4, max 8  
 - Shielded ADR cable 4x0.34  
 - Resistant to hydrocarbons  
 - Length 10m  
 - Viton O-ring  
 - Terminal block B1  
 - Terminal block B2

**Technical Specifications:**  
 - Mass: ~300g  
 - Box protection level: IP66  
 - Material: Aluminium alloy,  
 - Metal finishing: Black anodization,  
 - Temperature range: -20°C to +50°C  
 - ATEX Protection: Ex emb IIC T4 Gb  
 - EC-type examination certificate: INERIS 08 ATEX 0048  
 - Operating voltage: 24Vcc  
 - Power: 0.5W + solenoid valve power (12W MAX)

**Service Development:**  
 ALMA www.alma-alma.fr  
 13127 Vitrolles  
 Code : 1237  
 Drawing N° associated with the related CET file  
 Metro :  
 ATEX:

**PRESENTATION DRAWING DVF102**  
 MPLS  
 ATEX

**Description of amendment N°**  
 Modification of the oring groove

**Revision History:**

Rev	Folio	Modified on	by	BEB	verified by	CC	SR
5 / 6		29/06/2021					
11/01/2019							

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**Units of measure:**  
 Length: mm  
 Angle: degree (° '' ''')  
 Temperature: °C

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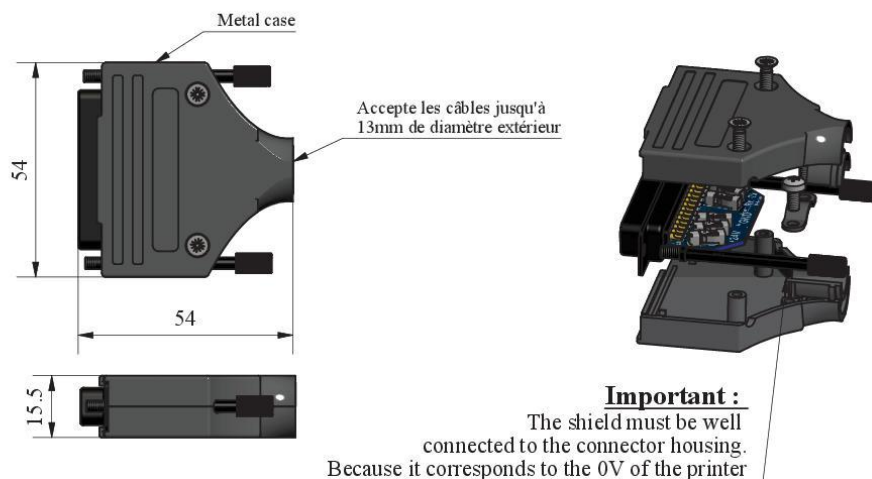


Make sure that any wire obstruct the infra-red communication zone

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	This document is available at <a href="http://www.alma-alma.fr">www.alma-alma.fr</a>	Page 25/38

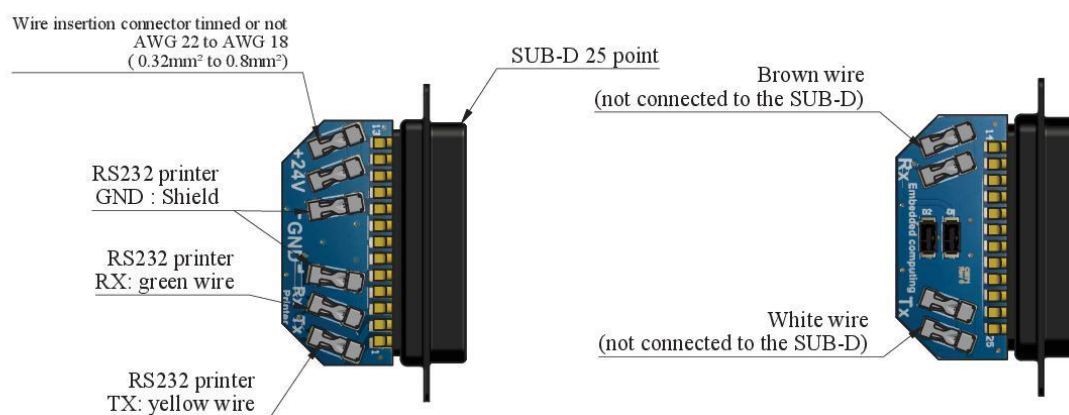


### 8.3. CONNECTOR KIT SUB-D25 FOR MPLS/PRINTER CONNECTION

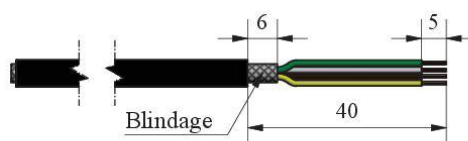



Top view

Bottom view




#### Cable preparation



 <b>Service Development</b> 13127 Vitrolles	PRESENTATION DRAWING <b>PV2148</b>				Description of amendment N°			
	Connector kit SUB-D 25 For connection MPLS / Printer				Adding the indication of the connection of the shield to the GND			
DEV N° : 907	Code : 2665	907	PPV2148	B	2 / 2	Modified on : 08/06/2021	by CC	verified by CHR
Drawing N° associated with the related CET file		Dev N°	Drawing N°	Rev	Folio	Created on : 11/01/2019	ROC	SR


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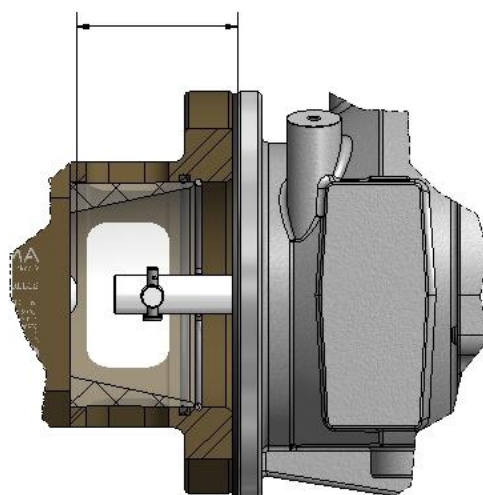
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	This document is available at <a href="http://www.alma-alma.fr">www.alma-alma.fr</a>	Page 27/38

## 9. ADRIANE TURBINE METER DN100-80 TYPE 241 V-TTMA-DL

### 9.1. 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.

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.

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**Units of measure:**  
Length: mm  
Angle: degree (° ' ")  
Temperature: °C

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## 10. 3/2 NC ATEX SOLENOID VALVE

**PNEUMATIC DIAGRAM**


3/2NC solenoid valve

**Technical data:**

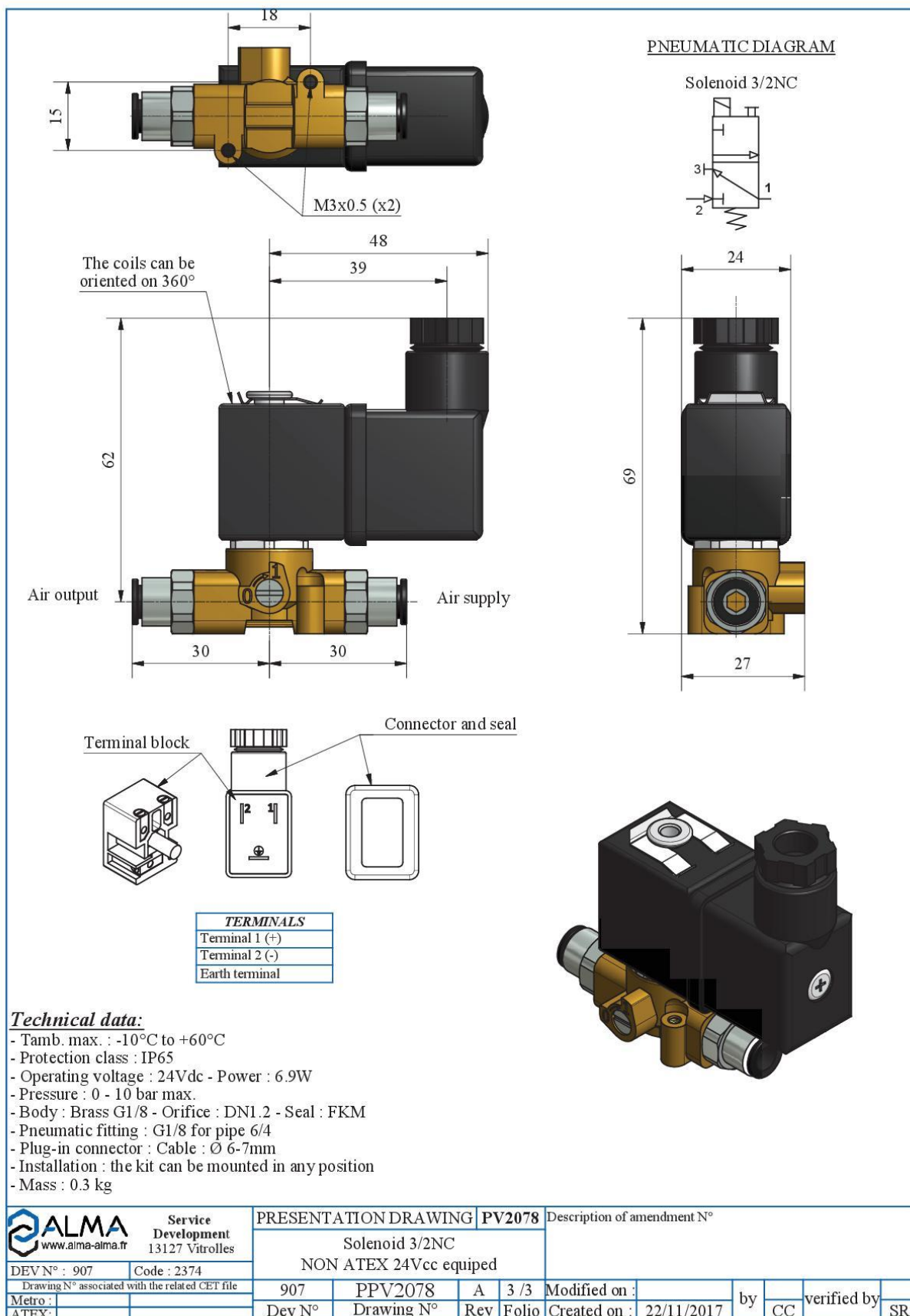
- Ex protection : II 2G Exmb IIC T4 Gb
- Tamb. max. : -10°C to +55°C
- Protection class : IP65
- Operating voltage : 24VDC ±10% - Power : 3W
- Pressure : 0 - 10 bar max. - Flow rate: 55 l/min (air)
- Body valve : brass G1/8 - Orifice : DN1,2 - Seal : FKM
- Pneumatic fitting : G1/8 and R1/8 for pipe 6/4
- Cable : moulded 3G0.75 L=3m
- Installation : free
- Mass : 0.4 kg

ALMA Service Development www.alma-alina.fr		PRESENTATION DRAWING: DFN031		Description of the amendment: N° : 389	
DEV N° : 907	Code : 4452	3/2NC SOLENOID VALVE (ATEX - 24VDC)		Changing the solenoid model	
Drawing N° associated with the related CET file		C	5 / 5	Modified on :	02/02/2015
Metro :		Rev.	Folio	Created on :	09/06/2009
ATEX :		Dev N°	PPN031	by	SR FG
		Drawing N°		verified by	BM FG

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## 11. 3/2 NC NON-ATEX SOLENOID VALVE



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## 12. PRINTER KIT FOR MPLS DEVICE

## 12.1. PRINTER

**Dimensions:**

- Front view: 180 (width), 190 (height)
- Side view: 101.5 (depth)

**Labels and Connections:**

- Switch SW1 (under printer)
- Switch 3 ON
- D-Sub connector 25 pin female
- 24Vdc connector

**Warnings:**

- DO NOT EXPOSE THE PRINTER TO ANY HEAT-SOURCE, AND PROTECT IT FROM VIBRATIONS AND FROM WATER PROJECTIONS.
- IF IT'S NOT IN THE TRUCK CABIN, THE PRINTER MUST BE INSTALLED IN A TIGHT BOX IN ORDER TO FACILITATE INTRODUCTION AND EXTRACTION OF PAPER.

**Technical data:**

- Power supply : 24Vdc  $\pm 10\%$
- Current consumption (at 24V) :
  - Mean : approx. 600mA
  - Peak : approx. 5.5A
- Standby : approx. 100mA
- Temperature : +5°C to +40°C
- Mass: 1.6 kg


**Service Development**  
13127 Vitrolles  
www.alma-alma.fr  
Code : 6176

**PRESENTATION DRAWING PPN901**  
Flatbed printer  
TM-U295

DEV N°	907	D	2 / 2	Modified on	11/01/2019	by	CC	EG	SR
Drawing N°	PPN901	Rev	Folio	Created on	24/03/2010				XS
Metro									
ASSY									

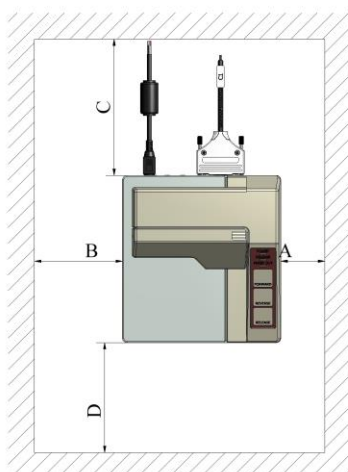
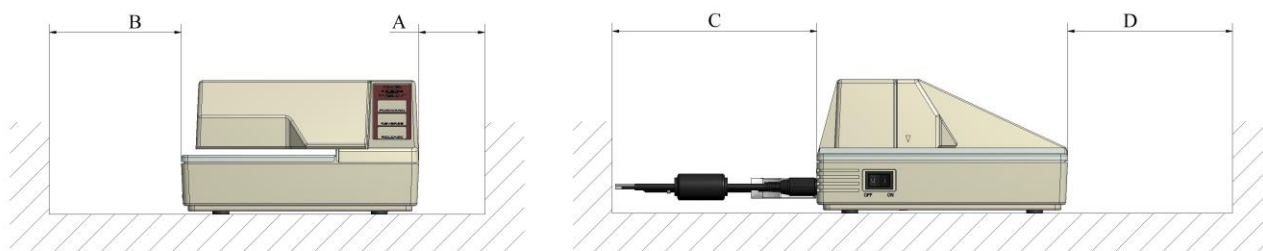
Description of the amendment: N° :  
Removing the wiring

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## 12.2. INSTALLATION RECOMMENDATIONS PRINTER

- The printer must be installed in a tight box and be laid out so as not to obstruct the introduction/extraction of sheet of paper (Dimension D).
- Do not store anything above the printer.
- Leave an open space all around the printer to ease maintenance.
- Dimensions:  $A \geq 50\text{mm}$ ,  $B \geq 100\text{mm}$ ,  $C \geq 120\text{mm}$ .



DO NOT EXPOSE THE PRINTER TO ANY HEAT-SOURCE.  
PROTECT IT FROM VIBRATIONS AND WATER PROJECTIONS.

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### INSTALLATION GUIDE DI 023 EN D GRAVICOMPT UNI MPLS


**Units of measure:**  
Length: mm  
Angle: degree (° ' ")  
Temperature: °C


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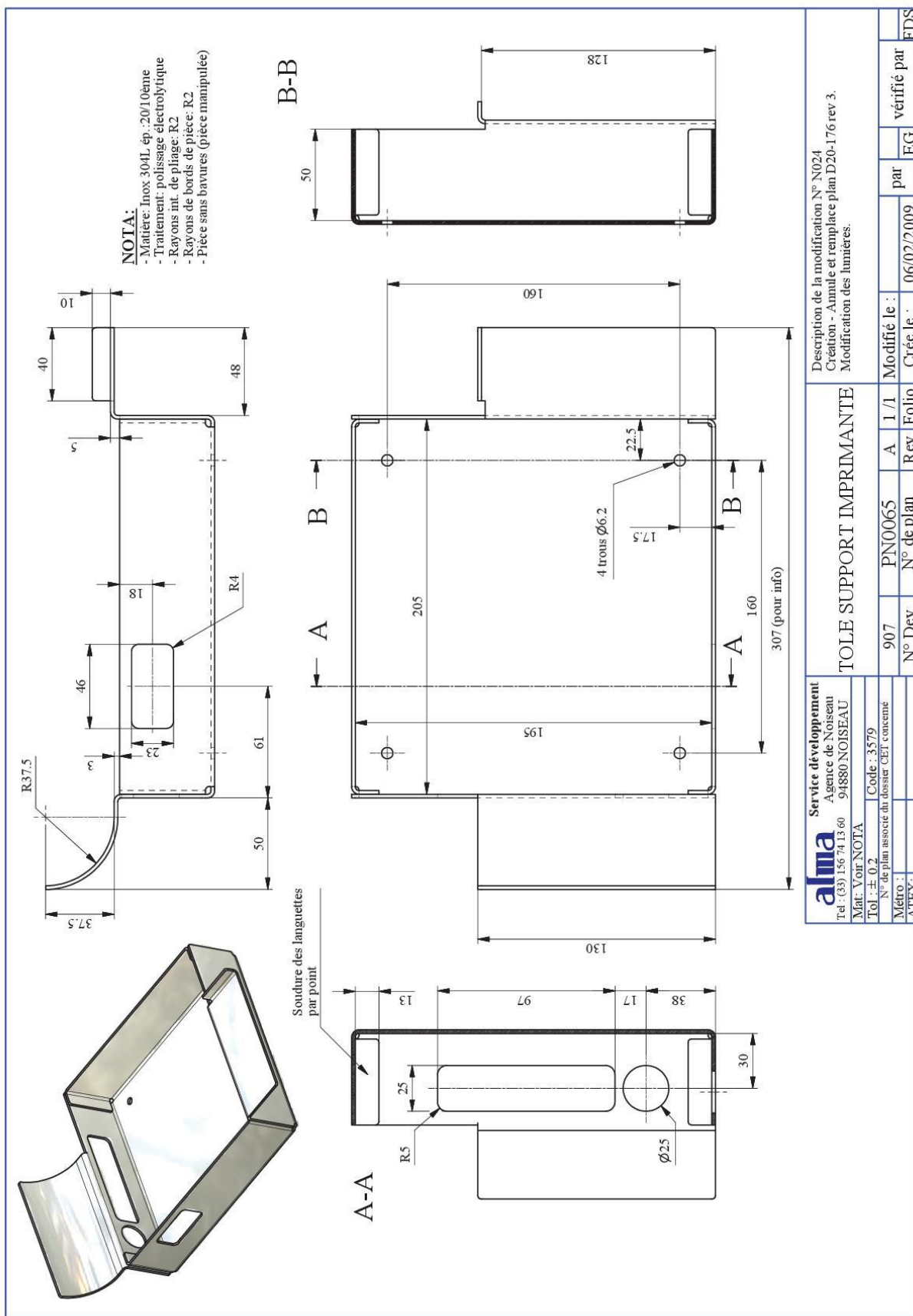


## 12.3. ELECTRICAL WIRING PRINTER


PRINTER SUPPLY CABLE						
						
CONVERTER 220VAC/24VCC				PRINTER		
Option	Equipment	Function	Colour		Function	Observation
•	CONVERTER 220VCC/24VDC	24VDC	Nr	White- coated (Bc)	PRINTER SUPPLY	Cable: 2x9mm2 External diameter: 5mm Length : 1,50m
		0V	Bc	Red- coated (Rg)		
		Shielding	Braid			

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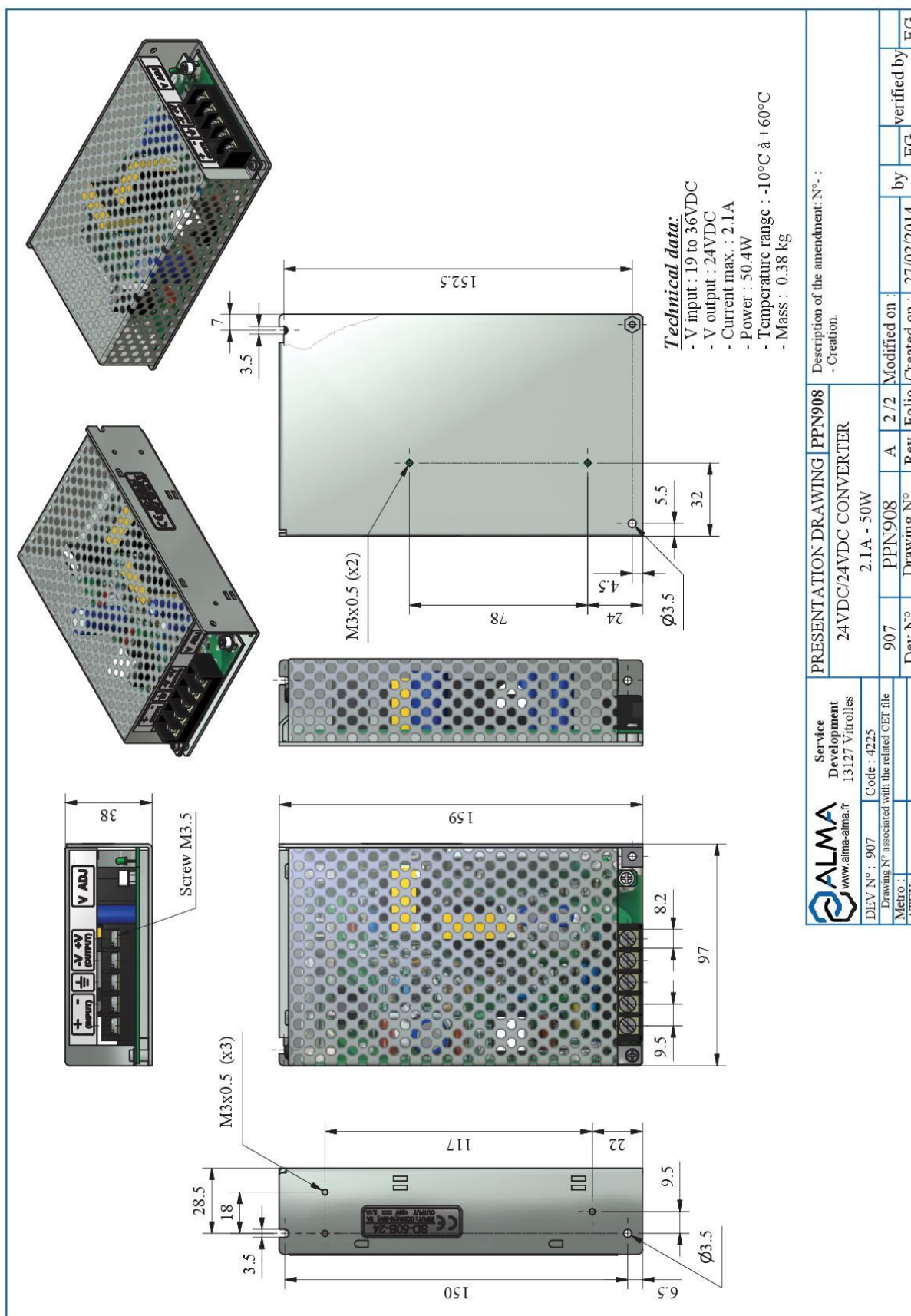
## 12.4. PRINTER HOLDER



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### 13. CONVERTER 24VDC/24VDC 2.1A 50W



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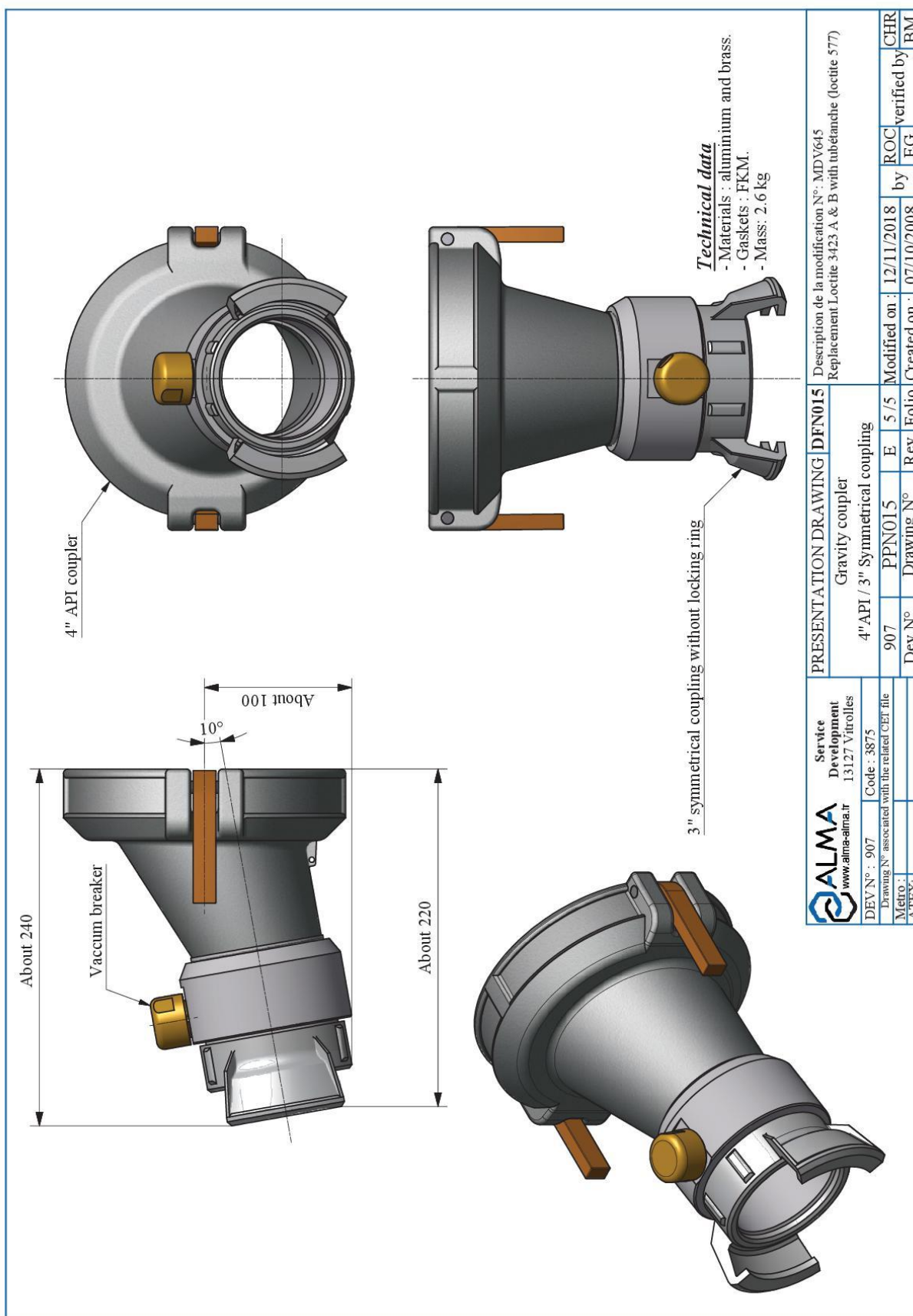
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<b>Units of measure:</b>
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Angle: degree ( $^{\circ}$ ' ")
Temperature: $^{\circ}\text{C}$

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## 14. GRAVITY COUPLER




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**Technical data:**  
- Aluminium alloy  
- Mass : 3 kg

 <b>Service Development</b> 13127 Vitrolles <a href="http://www.alma-alma.fr">www.alma-alma.fr</a>	Code : 7098		Description of the amendment: N°				
	DEV N° : 907	PRESENTATION DRAWING PPN703					
	Drawing N° associated with the related cET file	API adaptor					
		Double stage pneumatic					
		907	PPN703	A	2 / 2	Modified on :	by
Metro :		Drawing N°	Rev.	Eolio	Created on :	CC	SR
MEV :					13/10/2014		

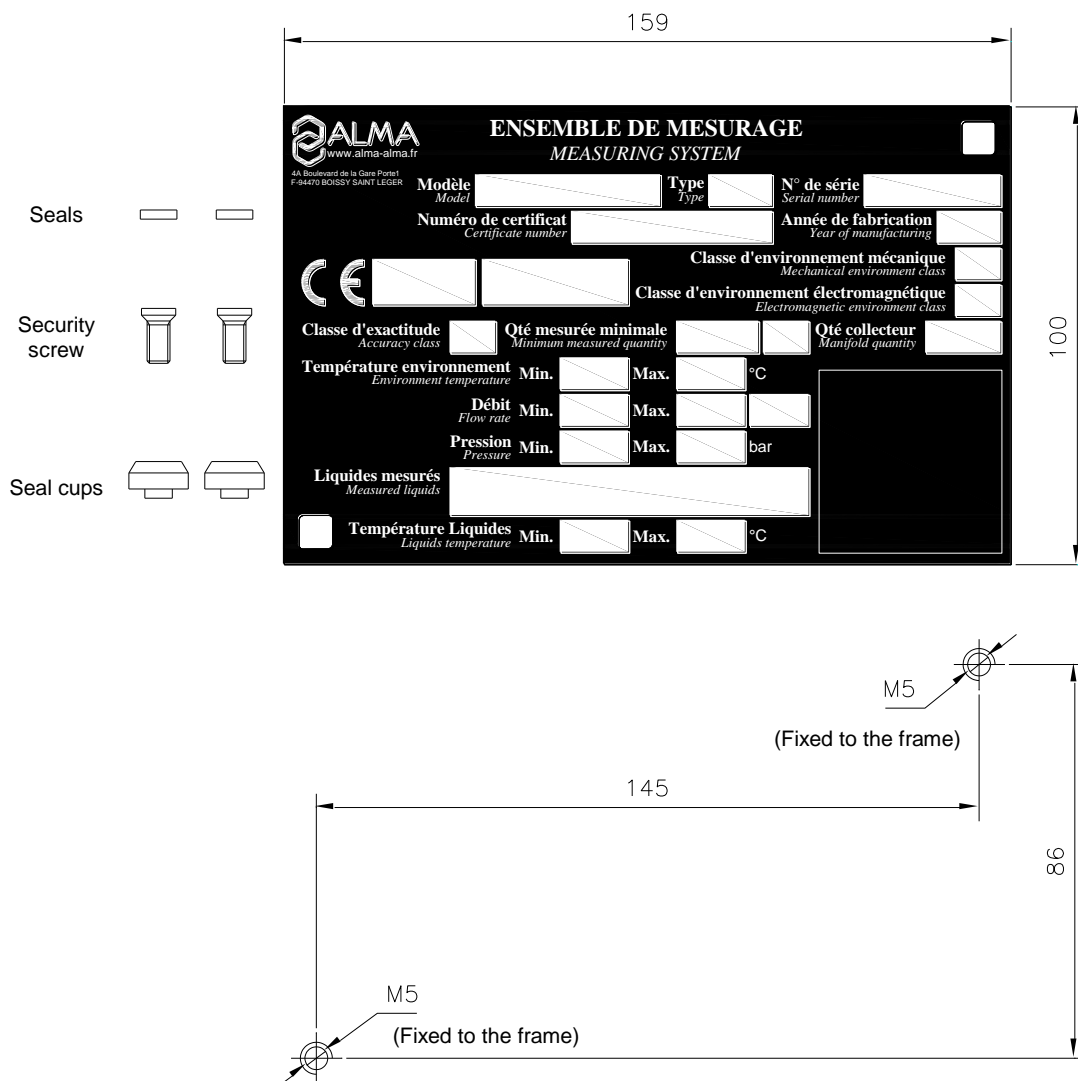
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## 16. KIT FOR MEASURING SYSTEM IDENTIFICATION PLATE

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).

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