

INSTALLATION GUIDE

DI 002 EN O

CMA TRONIQUE TC50 and TC80 types

Described in EU-type examination certificate N°: LNE-14983



O	2019/03/18	Additivation control and additive low level [PJA120], Jumper configuration on the extension board 4DG, Drawings update	DSM	MV
N	2018/10/15	New FORM DOC for connectivity [PJA074], Drawings update	DSM	MV
M	2018/02/08	Modification of the assignment of the extension board 'sonde AD' 2 wires [PJV128], Drawings update	DSM	XS
F	2015/04/16	Creation	DSM	XS
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 ARE NOT POWERED.

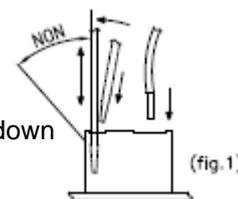
1.1. MECANICAL RECOMMENDATIONS

- ⇒ 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 properly position 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).
- ⇒ Connect the supply of the equipment downstream cut-out, on the power supply reserved to the measured distribution.
- ⇒ Put a delayed protection of 5A upstream the 24VDC supply to protect equipment in case of reverse polarity or overcurrent.
- ⇒ 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.
- ⇒ Pass the power supply cores (24VDC truck) through the ferrites by carrying out a loop (ALMA supply).
- ⇒ 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).
Otherwise, connect the shields to devices inside the equipment (ground terminal, earth bar, earth boss...).



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- ⇒ Whenever possible, label the cables and cores according to the installation guide to facilitate the later maintenance operations.
- ⇒ Respect a homogeneous wire color code.
- ⇒ Printer TMU295: before positioning the printer on its support, check that configuration switches of the data link protocol, located under the printer, are well positioned: No3 on 'ON' and the 7 others on 'OFF'.
- ⇒ Current of the electrical devices:

Electrical devices	Supply voltage	Minimum current	Maximum current
MICROCOMPT+	24VDC +/-10%	0.7 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
Blanc	Bc		WH	White	Bianco	Blanco	Weiß
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

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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				
Unités	Bar	PSI	Pascal	kg/cm ²
1 Bar =	1	14,5	100 000 (1x10 ⁵)	1,0197
1 PSI =	0.069	1	6894,5	0,07031
1 Pascal =	1x10 ⁻⁵	14,5x10 ⁻⁵	1	1,0197x10 ⁻⁵
1 kg/cm ² =	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 measuring system CMA TRONIQUE type TC50 or TC80 is covered by the EU type examination certificate N° LNE-14983. Refer to this certificate for any precision about its installation.

For the sealing plan, see Annex to EU type examination certificate N° LNE-14983.

2.2. SPECIAL CONDITIONS FOR INSTALLATION

ALMA CPR3000 pressure sensor is to be installed:

- ⇒ If possible by an equal distance between filter and pump entry, and in all cases with a minimal distance 200mm upstream from the pump entry
- ⇒ At the most vertical position regardless of the nipple on the pipe.

Any disruptive system (filter, valve, etc.) cannot be situated between the pressure entry and the pump entry.

Connection pipework between the compartments and the pump must have a minimum gradient of 3%. In case of a manifold configuration, this requirement is limited to the following conditions:

- ⇒ 3% minimum gradient of the pipe between bottom flap and manifold
- ⇒ No reverse slope between manifold and pump entry.

If the measuring system is fitted with two delivery points, it needs to be equipped with a device allowing a liquid delivery by only one point at once.

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3. PART LIST

EQUIPMENTS INCLUDED IN THE MEASURING SYSTEM DELIVERED BY ALMA				
Item	Equipment	Designation	Qty	Option*
1		CALCULATOR INDICATOR MICROCOMPT+ CMA TRONIQUE WITH Bluetooth CONNECTION NON ATEX or ATEX version	1	
		Wi-Fi CONNECTION (As an alternative to Bluetooth)		•
		RFID SUPERVISOR KEY		
2	2a 	ADRIANE TURBINE METER DN50-50 or DN80-80 (Depending on configuration)	1	
	2b 	ADRIANE TURBINE METER DN80-80 373 PN16 Ad blue® (Only for CMA TRONIQUE Ad blue®)		
3		RELATIVE PRESSURE SENSOR – CPR3000 NON ATEX or ATEX (Supplied with hydraulic shock absorber)	1	
4		PRINTER TMU-295 (Printer – power supply cable – serial link cable 10m)	1	
5		CONVERTER 24VDC/24VDC 2.1A 50W (Printer power supply 24VDC)	1	

Non-contractual pictures

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EQUIPMENTS INCLUDED IN THE MEASURING SYSTEM DELIVERED BY ALMA

Item	Equipment	Designation	Qty	Option*
6		NON-RETURN VALVE KIT DN50 or DN80 (Depending on configuration)	1	
7		SIGHTGLASS KIT DN50 or DN80 FOR ADRIANE TURBINE METER (Depending on configuration) (Supplied with pre-drilled screws for sealing)	1	
8		CONNECTION KIT DN50 or DN80 (Depending on configuration) (Supplied with pre-drilled screws for sealing)	1	●
9		NC/NO SOLENOID VALVES KIT NON ATEX or ATEX version	1	●
10		Pt100 TEMPERATURE PROBE – CT1001-Pe ATEX (Supplied with thermowell)	1	●
11		2-ANTENNA BOX GSM AND GPS	1	●
12		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.

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4. **MICROCOMPT+ CMA TRONIQUE NON ATEX OR ATEX**

4.1. **CALCULATOR-INDICATOR MICROCOMPT+ NON ATEX**

Mass : ~12 Kg.

Box protection level : IP66.

Box material : Aluminium alloy.

Metal finishing : Color blue (RAL5010) resistant to hydrocarbons

Temperature range : -20°C to +55°C.

Environment class : I.

Complies with : EN 60079-0, 60079-1, 60079-11,

EC-type examination certificate: LNE 15270,

Evaluation certificate : LNE 13624,

OIML Certificate N° : R117/2007-FR2-17.02,

4 rear fastening points:
M6 tapped holes depth 12

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

133

ø20

185

Cables entries and plugs used:

- 3/4" NPT cable glands or plugs
- PG11 cable glands or plugs
- PG9 cable glands or plugs

Lid sealing

MICROCOMPT+ producer data plate

Electronic seal

Measurement units indication area

6 digits, 7 segments, h=27

20 digits, 14 segments, h=9

Three push buttons (fourth button is optional)

205

175

257

2

310

Lid sealing

LCD backlight

Connectivity: Wifi or Bluetooth and Ethernet

Ground through

340

120°

392

	Service Development 13127 Vitrolles	PRESENTATION DRAWING IDV080 Description of amendment N°640 Integration Bluetooth module	
	DEV N° : 973 Drawing N° associated with the related CET file Metro : LNE-13270 / LNE-13624 ATEX:	Code : 0071 LNE-13270 / LNE-13624	
XTronique No ATEX MICROCOMPT+		J 6 / 8 Modified on : 30/10/2018 by CC	Rev Folio Created on : 17/07/2009 by CC
973 Dev N°		PPV080 Drawing N°	CHR verified by SR

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4.2. CALCULATOR-INDICATOR MICROCOMPT+ ATEX

Mass : ~12 Kg,

Box protection Level : IP66,

Box material : Aluminium alloy,

Metal finishing : Color blue (RAL5010) resistant to hydrocarbons

Temperature range : -20°C to +55°C,

Environment class : I,

EC-type examination certificate : INERIS 07 ATEX 0057X :

Ex II2 (1)G Ex d [ia] IIB T6

Complies with : EN 60079-0, 60079-1, 60079-11,

EC-type examination certificate : LNE 15270,

Evaluation certificate : LNE 13624,

OIML Certificate N° : R117/2007-FR2-17.02,

Cables entries and ATEX plugs used:

- 3/4" NPT Cable glands - cable Ø5,5 to Ø13 - sheath Ø10 to Ø19
- 3/4" NPT Cable glands - cable Ø8 to Ø18 - sheath Ø15 to Ø24
- 1/2" NPT Cable glands - cable Ø4 to Ø10 - sheath Ø5 to Ø15
- 1/2" NPT Cable glands - cable Ø5,5 to Ø13 - sheath Ø10 to Ø19
- 1/2" and 3/4" NPT Plugs

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

Dimensions:
 Top view: 132 (width), 185 (depth)
 Front view: 205 (width), 175 (depth)
 Side view: 340 (height), 392 (depth), 120° (tilt angle)
 Open view: 310 (width)
 Cable glands: 4 rear fastening points: M6 tapped holes depth 12

Labels: Lid sealing, MICROCOMPT+ producer data plate, Electronic seal, Measurement units indication area, 6 digits, 7 segments, h=27, 20 digits, 14 segments, h=9, 2, Three push buttons (fourth button is optional), LCD backlight, Connectivity: Wifi or Bluetooth and Ethernet, Ground through

Service Development: 13127 Vitrolles
 www.alma-alma.fr

Code : 3802
 DEV N° : 973
 Drawing N° associated with the related CET file : LNE-15270/LNE-13624
 Metro : ATEX: INERIS 07 ATEX 0057X

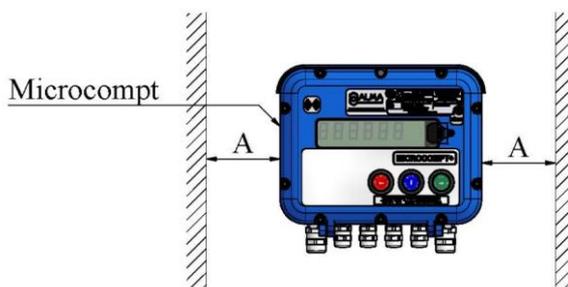
PRESENTATION DRAWING	DFV087	Description of amendment N°641 Integration Bluetooth module			
XTronique ATEX	MICROCOMPT+				
973	PPV087	L	6/8	Modified on :	01/11/2018
Dev N°	Drawing N°	Rev	Folio	Created on :	28/01/2010
				by	CC
				CC	verified by
					SR

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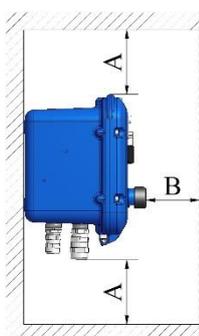
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4.3. INSTALLATION RECOMMENDATIONS CALCULATOR-INDICATOR MICROCOMPT+

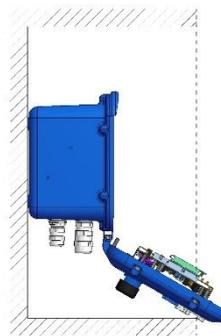
- Fasten the box with 4 M6 screws (holder suitable for vibrations and designed to support the MICROCOMPT). On the box: 4 M6 blind holes tapped length=12 over 185x132).
- Leave an open space around the box in order:
 - o To facilitate maintenance operation.
 - o To prevent any pressing on pushbuttons and on the glass.
- The space between the front face of the box and the cabinet door shall be sufficient.
- Dimensions: A > 100mm and B > 60mm



- SOLUTION 1: straight box if it's a breast height.

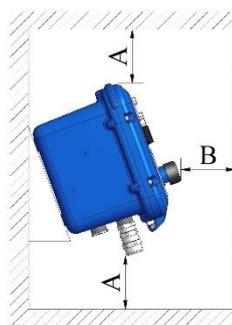


Left hand view
Closed box

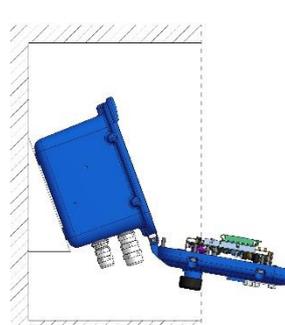


Left hand view
open box

- SOLUTION 2: 20° angle if it's not at breast height.



Left hand view
Closed box

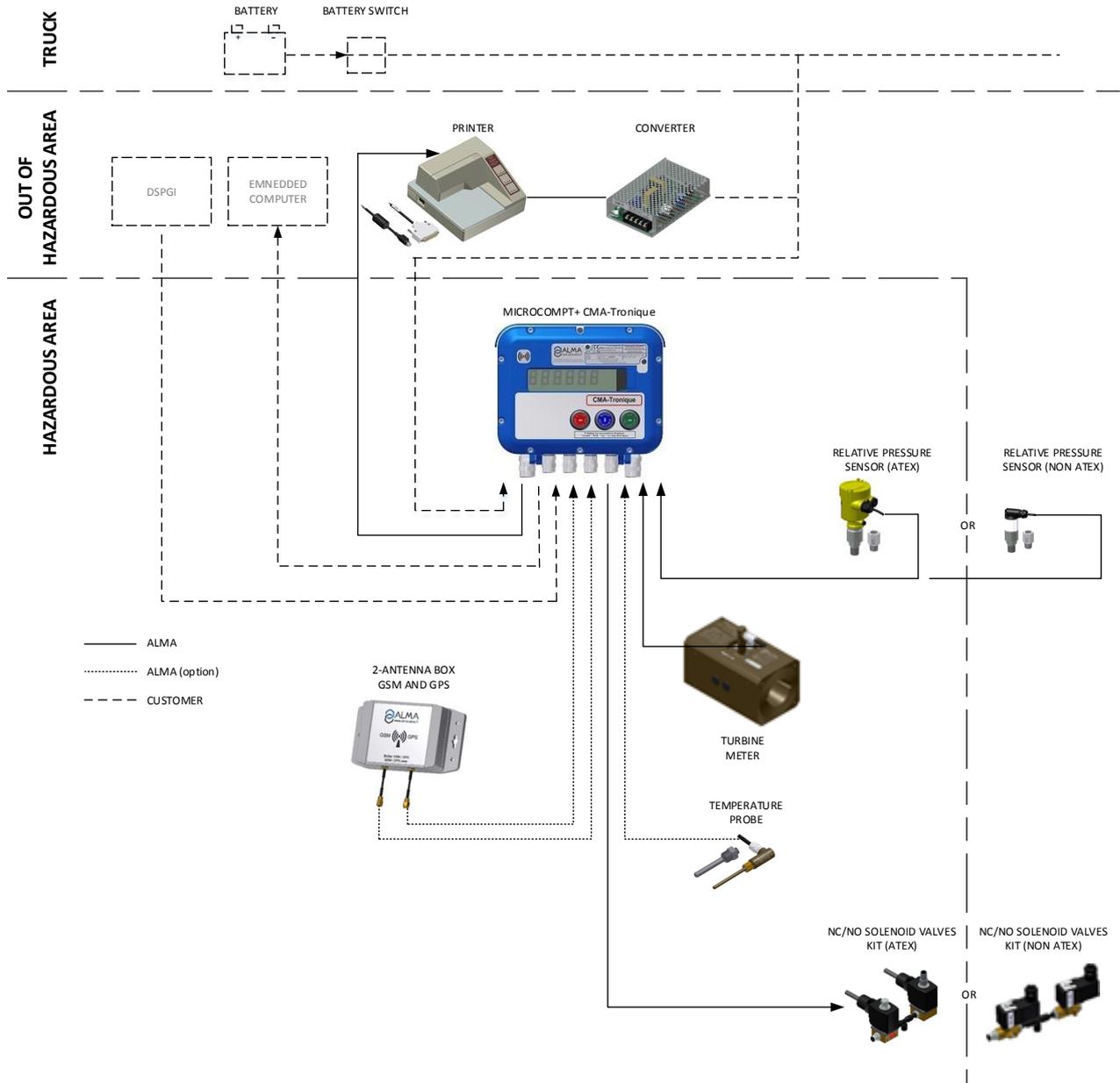


Left hand view
open box

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

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4.4. ELECTRICAL WIRING CALCULATOR-INDICATOR MICROCOMPT+



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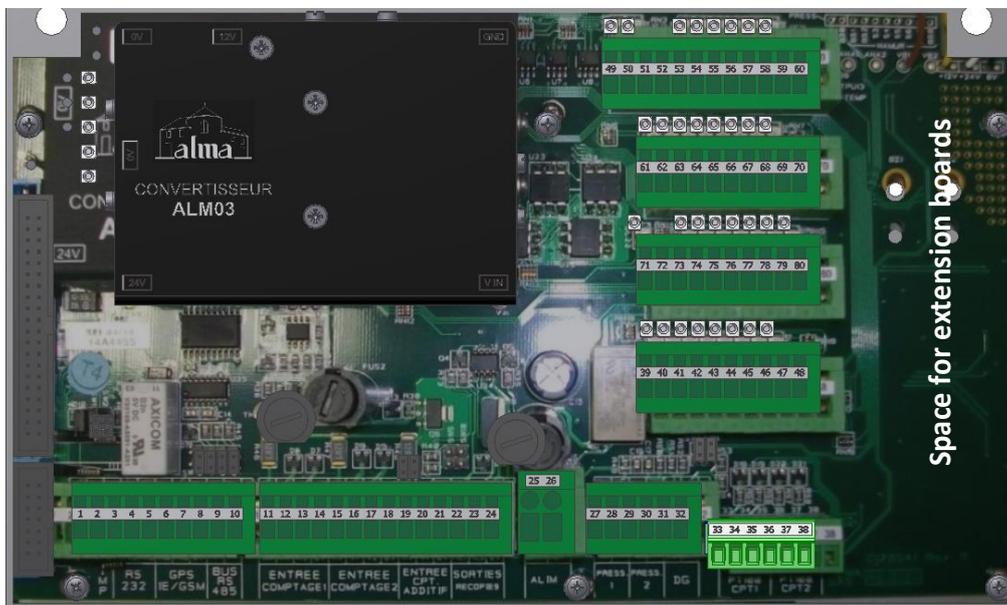
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Terminal assignment of the power supply board

Any mass braids and shielding must be connected to the MICROCOMPT+ ground bar

TERMINAL ASSIGNMENT OF MICROCOMPT+ BOARDS

POWER SUPPLY BOARD



EQUIPMENTS CONNECTED TO THE MICROCOMPT+							POWER SUPPLY BOARD				
Option	Equipment	Cable (for information)				Function	Colour or No.	Terminal	Function		Observation
		No.	CG*	Alma	Type						
	PRINTER	C1	1/2"NPT	●	ADR 4x0.34 sh.	Rx Printer Tx Printer 0V	Bc Mr Vt	1 2 3	Tx Rx 0V	Printer	Connect the shielding
●	EMBEDDED COMPUTING	C8	1/2"NPT		3x0.34 sh.	Rx E.C. Tx E.C.		4 5	Tx Rx	RS232	Connect the shielding. ALMA or FTL Light Protocol
●	DSPGI DEVICE					Rx Tx Ground	Vt Bc Nr	6 7 8	Tx Rx Ground	DSPGI	Gauging system for product identification
●	REMOTE DISPLAY					Tx Rx		9 10	+ -	RS485	Remote display type SREI TC5-10-24 Ext Use an RS485/RS232 converter
	TURBINE TRANSMITTER	C2	1/2"NPT	●	ADR 4x0.34 sh.	12V V1 V2 0V	Jn Mr Vt Bc	11 12 13 14	12V V1 V2 0V	Input turbine EMA	Connect the shielding
●	ADDITIVE INJECTOR METERING OR INJECTOR 1 FEEDBACK CONTROL							19 20 21	12V V1 0V	Input additive metering OR Injector 1 feedback ctrl	
●	PULSES OUTPUT		1/2"NPT			PO EMA PO EMB 0V		22 23 24	PO EMA PO EMB 0V	Pulses output	Control system / Display Put SW9 and SW10 to have a 0-24V signal

EQUIPMENTS CONNECTED TO THE MICROCOMPT+								POWER SUPPLY BOARD				
Option	Equipement	Cable (for information)				Function	Colour or No.	Terminal	Function		Observation	
		No.	CG*	Alma	Type							
	SUPPLY 24VDC	A1	1/2"NPT		2x1	Bat (+)	1	25	24VDC	Power supply	24VDC truck battery (after battery switch and protected by a fuse)	
						Bat (-)	2	26	0V			
	RELATIVE PRESSURE SENSOR CPR3000 (NON ATEX)	C3	1/2"NPT	●	2x0.34 sh.	+	Mr	27	+	Pressure	Connect the shielding	
						-	Bl	28	-			
●	Pt100 TEMPERAURE PROBE	C4	1/2"NPT	●	ADR 3x0.6 sh.	+	Jn	33	+	Pt100	Connect the shielding	
						-	Bc	34	-			
						-	Vt	35	-			
	MANIFOLD FLAP CONTROL OR PRODUCT RETURN AUTHORISATION AND/OR ADDITIVATION 2 CONTROL				4 to 7x1	Flap 1	1	39	24VDC = opened flap (outputs FET 24V 5W max.) FET=Field Effect Transistor	EV Flaps or Product return and/or Additivatoin 2	Depending on configuration: direct connection or via plexmi electronic board. Refer to the assignment table and the connection table of the relevant plexmi board	
						Flap 2	2	40				
						Flap 3	3	41				
						Flap 4	4	42				
						Flap 5	5	43				
						Flap 6	6	44				
						Flap 7	7	45				
								46				
					1x1	0V		47	0V			
								48				
	RC-HEATING OIL RECEIVER				2x1	Start/Stop	1	49	Start/Stop	RC-Oil_1		
						LF/HF	2	50	LF/HF	RC-Oil_2		
	ADDITIVE 1 LEVEL CONTROL				1x1	Ctrl ADD1		53		Additive 1 low level ctrl		
	ADDITIVE 2 LEVEL CONTROL				1x1	Ctrl ADD2		54		Additive 2 low level ctrl		
	INJECTOR 2 FEEDBACK CONTROL				1x1	Ctrl INJ2		56		Injector 2 feedback ctrl		
	COUNTED / PUMPED DISTRIBUTION WAY (with additional commands)				3x1	Gravi/Pmp	1	51	0V	Gravity / Pumped	Closed circuit=product pumped (end position)	
							Pct/Pnc	2	52	0V	Pumped counted/ no counted	Closed circuit=product counted
							0V	3	59	0V	0V (GND)	51, 52 and 59 are shunted if manual valves are not instrumented
	PTO CONTROL				1x1	PTO Ctrl		58		PTO control	Power-take- off engaged	
	FOOTVALVE CONTROL				1x1	Footvalve		64	24VDC= cde	Footvalve	24VDC=opening (Outputs FET 24V 5W max.) FET=Field Effect Transistor	
	PRODUCT RETURN CONTROL				3 to 6X1	PR1	1	65	24VDC= author.	Return_1	Depending on configuration: direct connection (Outputs FET Field Effect Transistor 24V 5W max.) or via plexmi electronic board. Refer to the assignment table and connection table of the relevant plexmi board	
						PR2	2	66		Return_2		
						PR3	3	67		Return_3		
						Chasse		68		Cde chasse		
	HOSES 1 AND 2 AUTHORISATION CONTROL	C6			3x1	0V	1	70	0V	0V (GND)	Hoses 1 and 2 authorisation control (Outputs FET 24V 5W max.)	
						Hose 1	2	75	24VDC= distrib.	Hose_1 ctrl	FET=Field Effect Transistor	
						Hose 2	3	63		Hose_2 ctrl		
	ADDITIONAL COMMANDS				5X1	PTO	1	61	24VDC= pto	PTO	(Outputs FET 24V 5W max.) FET=Field Effect Transistor	
						Stop Mot.	2	62	24VDC= stop	Stop motor		
						Acc. Mot.	3	73	24VDC= acc.	Motor acceleration		
						Clutching	4	76	24VDC= clutchin	Clutching		
						Start Mot.	5	77	24VDC= start	Start motor		

EQUIPMENTS CONNECTED TO THE MICROCOMPT+								POWER SUPPLY BOARD			
Option	Equipement	Cable (for information)				Function	Colour or No.	Terminal	Function		Observation
		No.	CG*	Alma	Type						
	ADDITIONATION 1 CONTROL				2x1	Power Control	1 72	71 72	NO free contact	Additivation 1	Closed contact=additivation (Output: NO free potential relay)
	• KIT SOLENOID VALVES • NC/NO (NON ATEX or ATEX)	C5		•	[3xG0.75]	NC valve Pump bypass NO valve Exhaust	1 / [Mr] 2 / [NI] 1 / [Mr] 2 / [NI]	74 80 79 80	24VDC 0V 24VDC 0V	NC control NO control	24VDC= opening NC solenoid valve 24VDC= closing NO solenoid valve <i>[cable supplied by ALMA for ATEX version]</i>
	MANIFOLD VENT VALVE CONTROL				1x1	Vent valve		78	24VDC	Vent valve control	24VDC=opening (Outputs FET 24V 5W max.) <i>FET=Field Effect Transistor</i>

SOME EXTENSION BOARDS MAY BE SET ON TO THE POWER SUPPLY BOARD

*Refer to the Cable Glands Installation Instructions

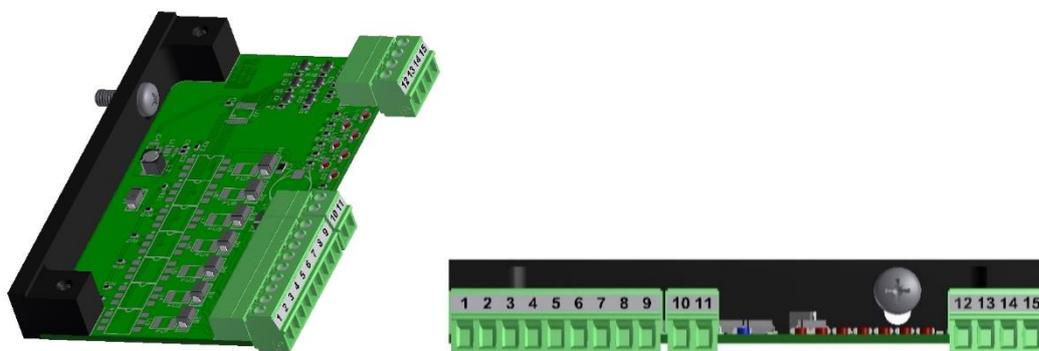
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Assignments table according to number of flaps, product returns and depending on the presence or not of a second additive injector:

MICROCOMPT+ power supply board V1 REV11													
Nb of Flaps	Nb of Returns	Addit #1	Addit #2	45	44	43	42	41	40	39	67	66	65
5	0-4	yes	yes	addit#2	ret#4	flap#5	flap#4	flap#3	flap#2	flap#1	ret#3	ret#2	ret#1
5	5	yes	no	ret#5	ret#4	flap#5	flap#4	flap#3	flap#2	flap#1	ret#3	ret#2	ret#1
6	0-3	yes	yes	addit#2	flap#6	flap#5	flap#4	flap#3	flap#2	flap#1	ret#3	ret#2	ret#1
6	4	yes	no	ret#4	flap#6	flap#5	flap#4	flap#3	flap#2	flap#1	ret#3	ret#2	ret#1
6	5-7	yes	yes	addit#2	flap#6	flap#5	flap#4	flap#3	flap#2	flap#1	PLEXMI 1 (ret#1-ret#7)		
7	0-3	yes	no	flap#7	flap#6	flap#5	flap#4	flap#3	flap#2	flap#1	ret#3	ret#2	ret#1
7	4-7	yes	no	flap#7	flap#6	flap#5	flap#4	flap#3	flap#2	flap#1	PLEXMI 1 (ret#1-ret#7)		
8	0-6	yes	no	ret#6	ret#5	ret#4	flap#8	PLEXMI 1 (flap #1- flap#7)			ret#3	ret#2	ret#1
9	0-5	yes	no	ret#5	ret#4	flap#9	flap#8	PLEXMI 1 (flap#1- flap#7)			ret#3	ret#2	ret#1
9	6-9	yes	no	ret#9	ret#8	flap#9	flap#8	PLEXMI 1 (flap#1- flap#7)			PLEXMI 2 (ret#1-ret#7)		

If both PLEXMI electronic boards are useful, PLEXMI 1 is fixed to the MICROCOMPT+ frame and PLEXMI 2 (ret#1-ret#7) has to be installed in a 24VDC-supplied independent box.

Connection of plexmi electronic boards for manifold flaps and product returns



Multiplexing table:

MULTIPLEXING TABLE									
Input 1 (12)	Input 2 (13)	Input 3 (14)	Output 1 (1)	Output 2 (2)	Output 3 (3)	Output 4 (4)	Output 5 (5)	Output 6 (6)	Output 7 (7)
0	0	0	0	0	0	0	0	0	0
24V	0	0	24V	0	0	0	0	0	0
0	24V	0	0	24V	0	0	0	0	0
24V	24V	0	0	0	24V	0	0	0	0
0	0	24V	0	0	0	24V	0	0	0
24V	0	24V	0	0	0	0	24V	0	0
0	24V	24V	0	0	0	0	0	24V	0
24V	24V	24V	0	0	0	0	0	0	24V

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PLEXMI board connection table for manifold flaps:

CONNECTED EQUIPMENT							PLEXMI ELECTRONIC BOARD						MICROCOMPT+									
Option	Equipment	Cable (for information)			Function	Colour or No	Term in:	OUTPUTS		INPUTS				POWER SUPPLY BOARD								
		No	CG*	Alma				Type	Function	Observation	Observation	Function	Term in:	Term in:	Function	Observation						
●	MANIFOLD FLAP CONTROL			4 to 7x1	Flap#1	1	1	Outputs 24VDC (24VDC = opened flap)	Flap#1	500 mA max	Multiplexing** for flap#1 to flap#7	Input 1	12	39	Outputs 24VDC (24VDC = opened flap) outputs FET 24V 5W max	Flap#1 to Flap#7						
					Flap#2	2	2		Input 2			13	40									
					Flap#3	3	3		Input 3			14	41									
					Flap#4	4	4															
					Flap#5	5	5															
					Flap#6	6	6															
					Flap#7	7	7															
											8	0V	GND			SUPPLY	24VDC	10	S2	24VDC (white)	Supply via	
																0V	11	S4	0V (black)	Microcompt+		
			1x1	0V		9	0V	GND			GND	0V	15	47	0V							

*Refer to the Cable Glands installation instructions
 ** Refer to the multiplexing table

PLEXMI board connection table for product returns:

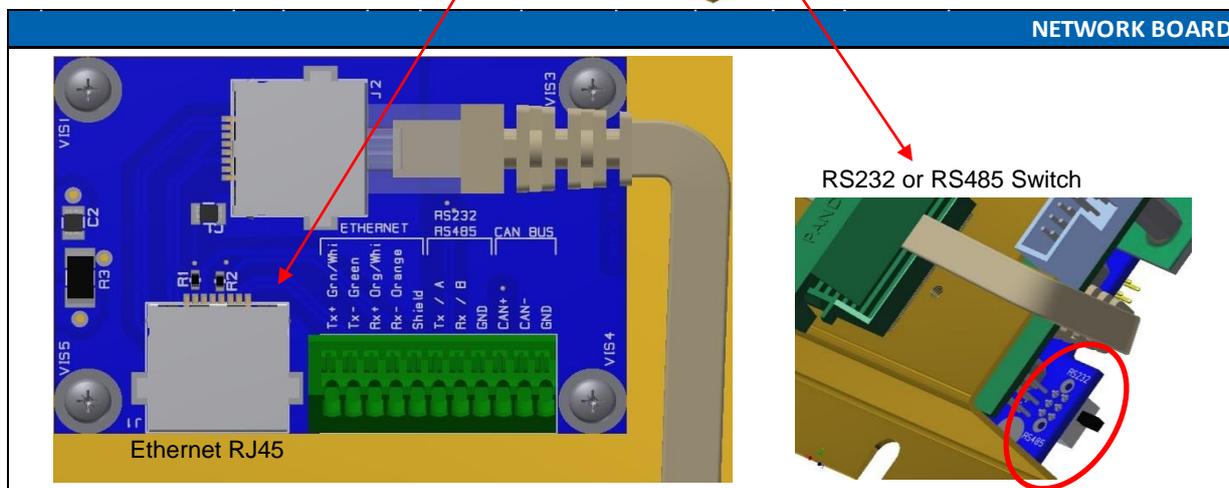
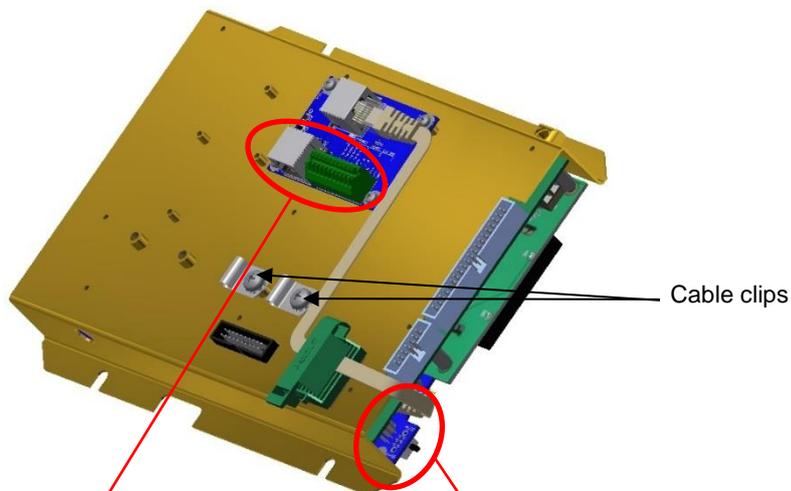
CONNECTED EQUIPMENT							PLEXMI ELECTRONIC BOARD						MICROCOMPT+									
Option	Equipment	Cable (for information)			Function	Colour or No	Term in:	OUTPUTS		INPUTS				POWER SUPPLY BOARD								
		No	CG*	Alma				Type	Function	Observation	Observation	Function	Term in:	Term in:	Function	Observation						
●	PRODUCT RETURN CONTROL			4 to 7x1	Return#1	1	1	Outputs 24VDC (24VDC = opened return)	Return#1	500 mA max	Multiplexing** from return#1 to return#7	Input 1	12	65	24VDC = authorisation	Product return compartment 1 to 7	Output FET 24V 5W max					
					Return#2	2	2		Input 2			13	66									
					Return#3	3	3		Input 3			14	67									
					Return#4	4	4															
					Return#5	5	5															
					Return#6	6	6															
					Return#7	7	7															
											8	0V	GND			SUPPLY	24VDC	10	S2	24VDC (white)	Supply via	
																0V	11	S4	0V (black)	Microcompt+		
			1x1	0V		9	0V	GND			GND	0V	15	47	0V							

*Refer to the Cable Glands installation instructions
 ** Refer to the multiplexing table

Connection of the network board – Ethernet, RS232/485, CANBus

Connection to the Ethernet network:

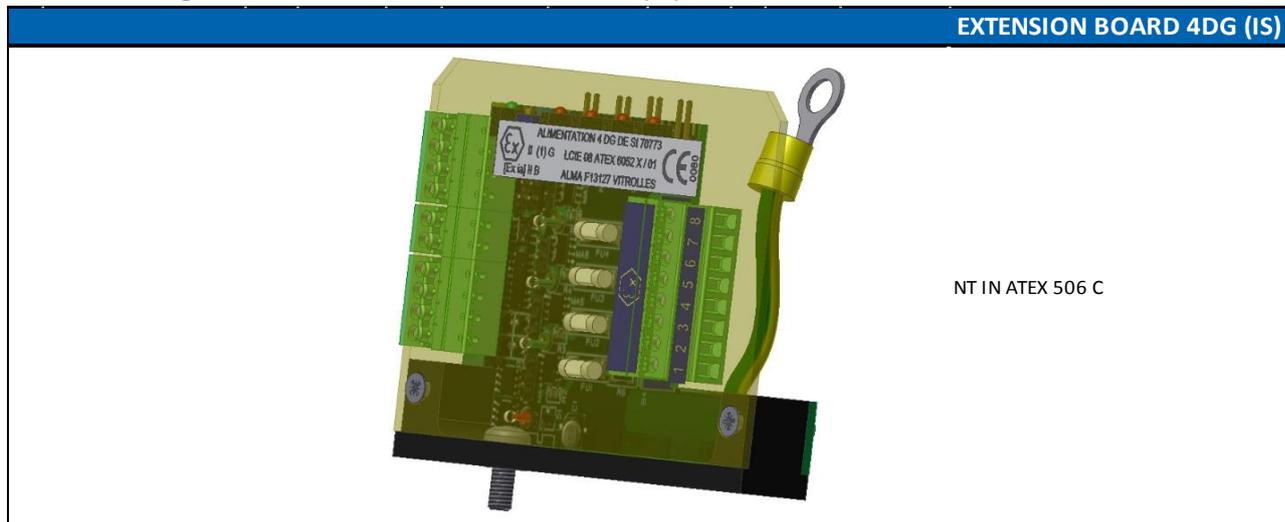
- With the RJ45 connector according to the EIA/TIA-568 standard
- Or with the screw-terminal: see details in the table below.



NETWORK CONNECTION TYPE								NETWORK BOARD			
Option	Connection	Cable (for information)				Function	Coulor or No.	Coulor	Function		Observation
		No.	CG*	Alma	Type						
	ETHERNET NETWORK							Vt/Bc	Tx+	Ethernet	Or connection with RJ45 according to EIA/TIA- 568
							Vt	Tx-			
							Or/Bc	Rx+			
							Or	Rx-			
	RS232 or RS485								Sh	RS232 or RS485	Depending on the switch configuration See above
								Tx / A			
								Rx / B			
	CANBus NETWORK								GND	CANBus	
								CAN+			
								CAN-			
									GND		

*Refer to the Cable Glands Installation Instructions

Terminal assignment of the extension board 4DG (IS)

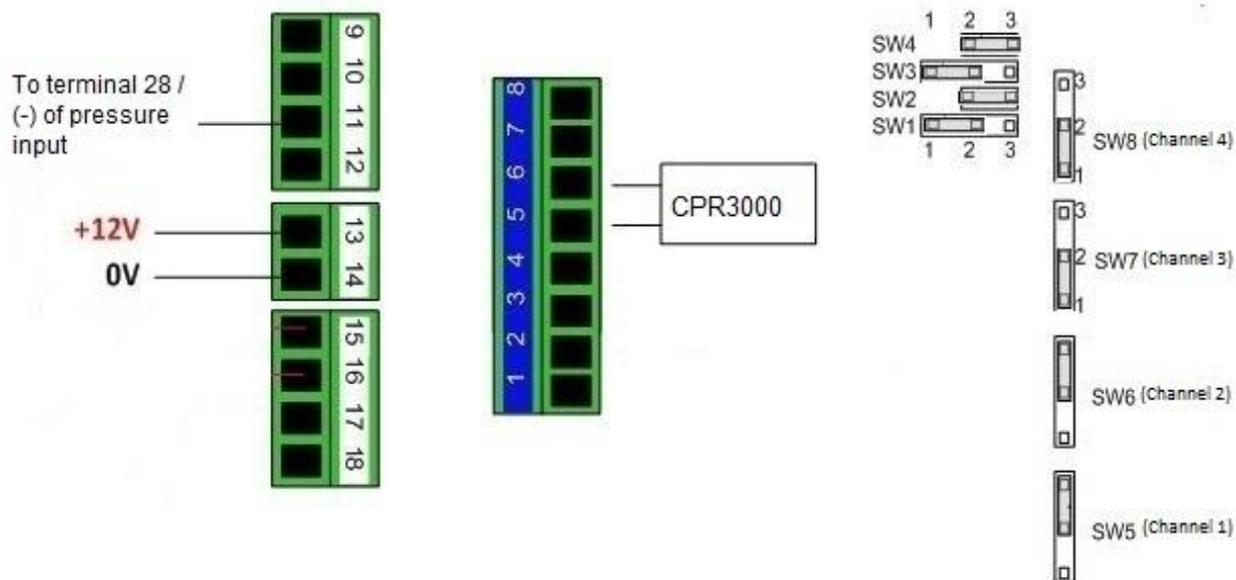


NT IN ATEX 506 C

EQUIPMENTS CONNECTED TO THE MICROCOMPT+							EXTENSION BOARD 4DG (IS)				
Option	Equipment	Cable (for information)				Function	Colour or No.	Terminal	Function		Observation
		No.	CG*	Alma	Type						
	RELATIVE PRESSURE SENSOR CPR3000 (ATEX)	C3			ADR 4x0.34 sh.	PRESSURE	Bc Mr	5 6	+ -	PRESSURE	

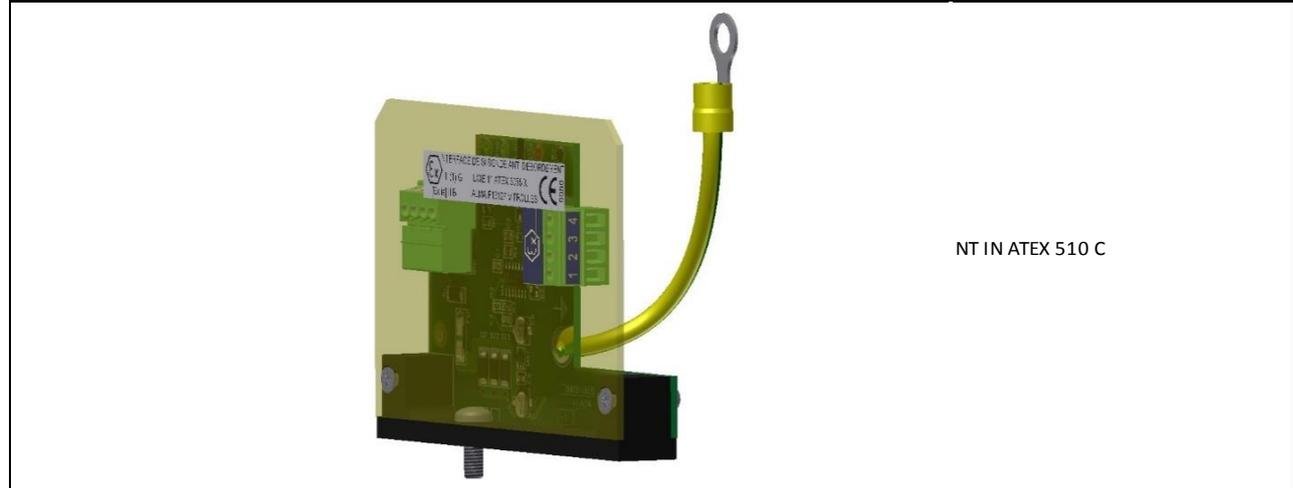
*Refer to the Cable Glands Installation Instructions

Jumper configuration on the extension board 4DG:



Terminal assignment of the extension board “sonde AD” 5 wires (IS)

EXTENSION BOARD SONDE AD 5 wires (IS)



NT IN ATEX 510 C

EQUIPMENTS CONNECTED TO THE MICROCOMPT+							EXTENSION BOARD SONDE AD (IS)				
Option	Equipement	Cable (for information)				Function	Colour or No.	Terminal	Function		Observation
		No.	CG*	Alma	Type						
•	OVERFILL PREVENTION PROBE	C7			[6x1]	Common	[Nr]	1	-	OVERFILL PREVENTION PROBES	[If cable are supplied by ALMA]
						Supply	[Rg]	2	+		
						From probe	[Or]	3	From probe		
						To probe	[Jn]	4	To probe		

*Refer to the Cable Glands Installation Instructions

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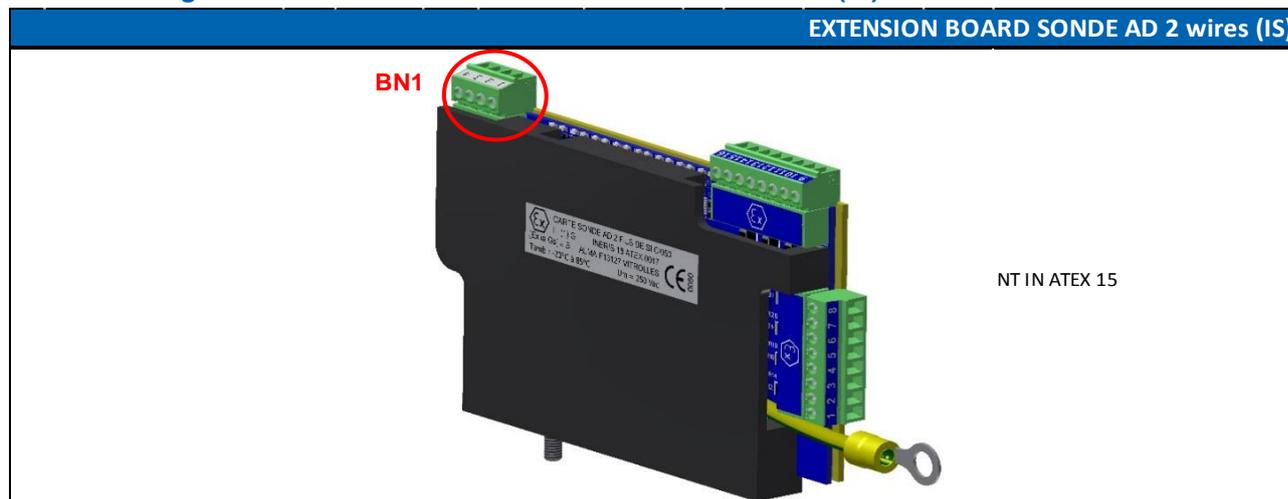


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Terminal assignment of the extension board "sonde AD" 2 wires (IS)



NT IN ATEX 15

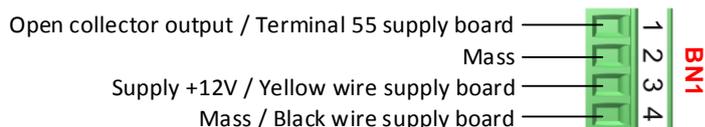
EQUIPMENT CONNECTED TO THE MICROCOMPT+ EXTENSION BOARD SONDE AD (IS)

Option	Equipment	Cable (for information)				Function	Terminal	Function		Colour	Observation
		No.	CG*	Alma	Type						
•	OVERFILL PREVENTION PROBE 1				Supply	1	Supply +	SIGNAL PROBE 1	Mr		
					Common	2	Common		Bc		
•	OVERFILL PREVENTION PROBE 2				Supply	3	Supply +	SIGNAL PROBE 2	Rg		
					Common	4	Common		Bc		
•	OVERFILL PREVENTION PROBE 3				Supply	5	Supply +	SIGNAL PROBE 3	Or		
					Common	6	Common		Bc		
•	OVERFILL PREVENTION PROBE 4				Supply	7	Supply +	SIGNAL PROBE 4	Jn		
					Common	8	Common		Bc		
•	OVERFILL PREVENTION PROBE 5				Supply	9	Supply +	SIGNAL PROBE 5	Vt		
					Common	10	Common		Bc		
•	OVERFILL PREVENTION PROBE 6				Supply	11	Supply +	SIGNAL PROBE 6	Bl		
					Common	12	Common		Bc		
•	OVERFILL PREVENTION PROBE 7				Supply	13	Supply +	SIGNAL PROBE 7	Vi		
					Common	14	Common		Bc		
•	OVERFILL PREVENTION PROBE 8				Supply	15	Supply +	SIGNAL PROBE 8	Gr		
					Common	16	Common		Bc		

*Refer to the Cable Glands Installation Instructions

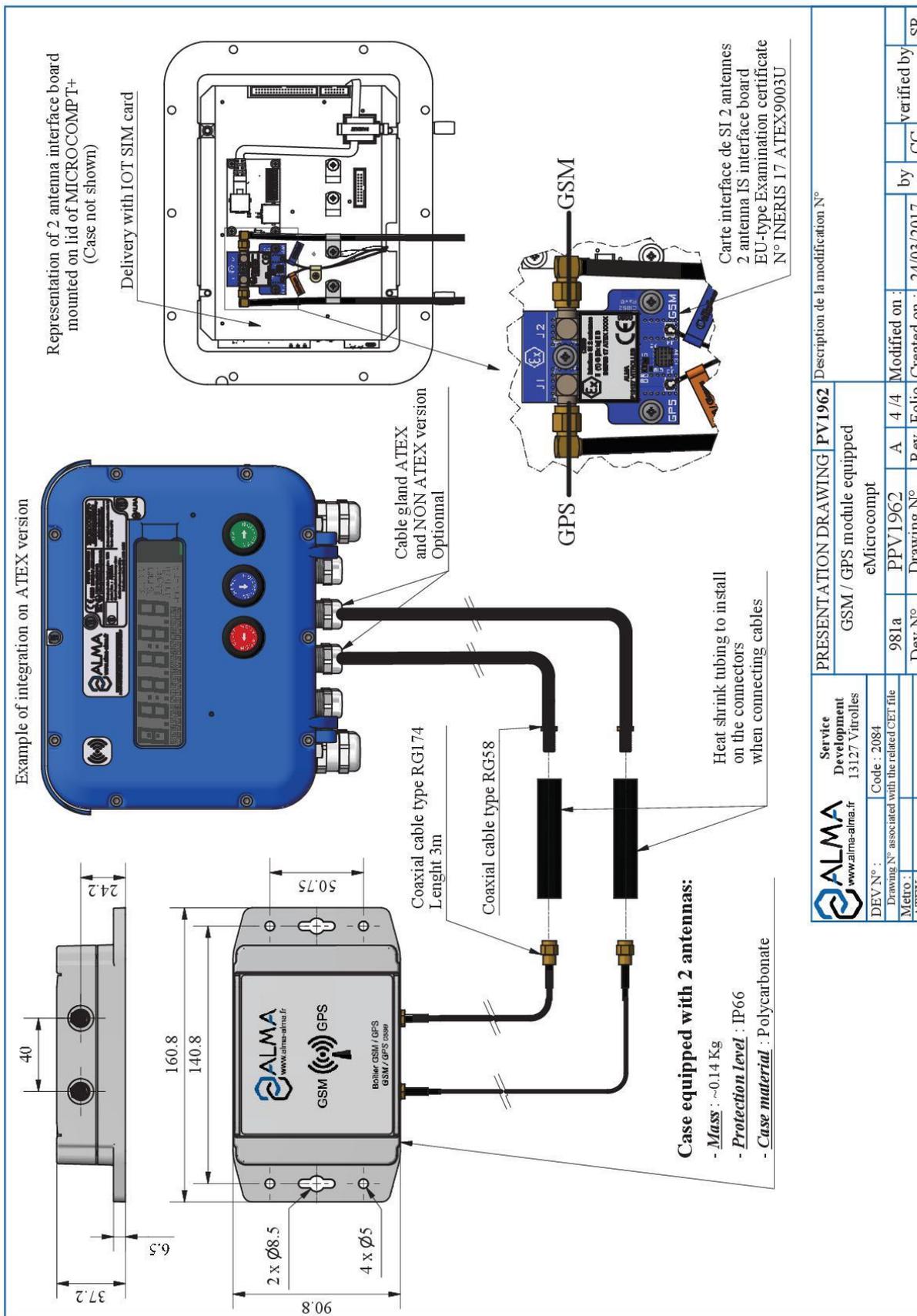
- This extension board only works with two-wire optic overfill prevention probes.
- A Dummy device is a two-wire dry probe simulator. Channels that are not connected to overfill prevention probes must be connected to a Dummy device. None of the 8 channels must be open.
- Do not install the Dummy into the MICROCOMPT housing.
- If the MICROCOMPT is off, the probes and the Dummy device shall be electrically isolated.

Connection of the BN1-terminal to the MICROCOMPT+ power supply board (non-IS area):



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4.5. GSM/GPS MODULE EQUIPPED – 2-ANTENNA BOX

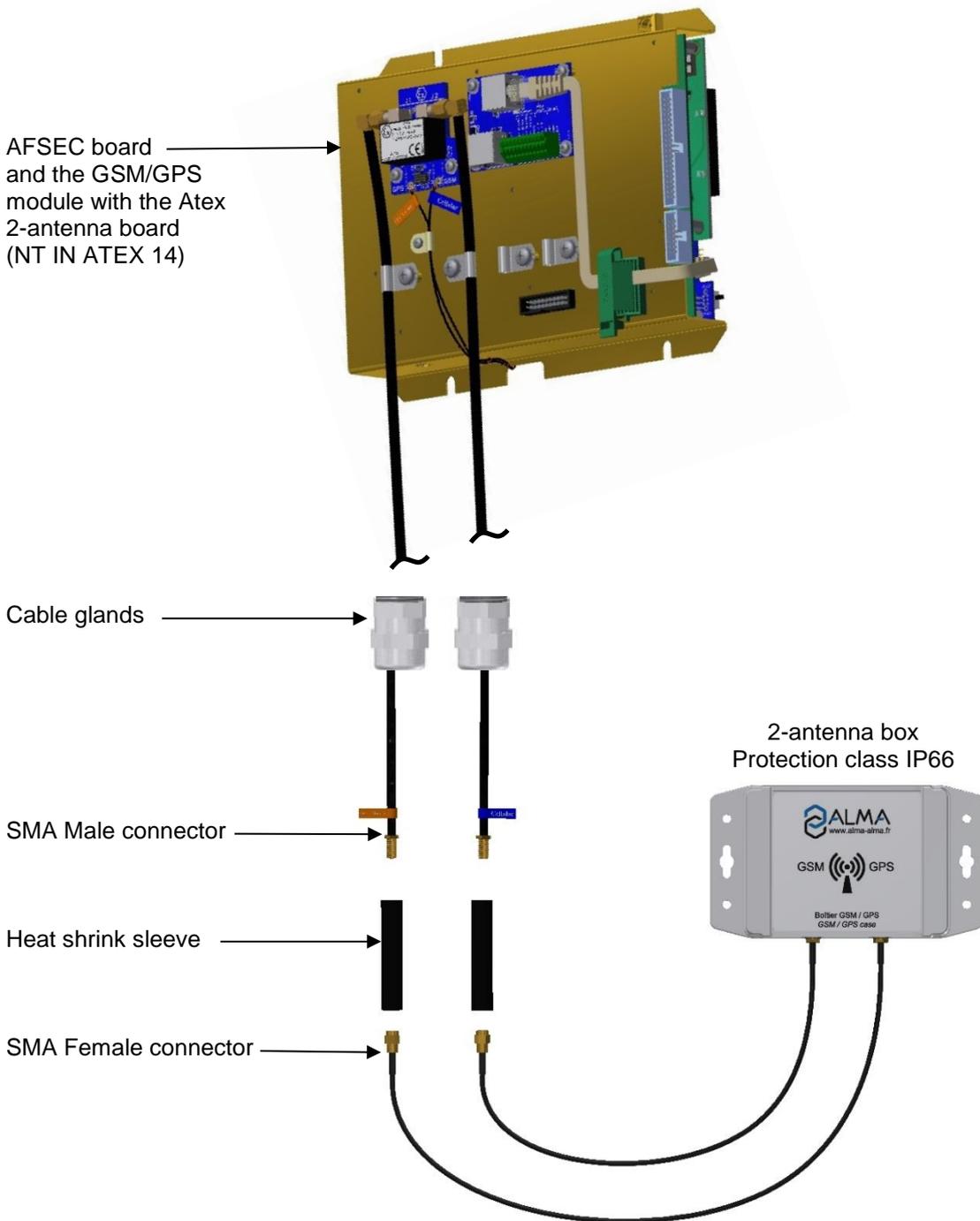


 Service Development 13127 Vitrolles www.alma-alma.fr		PRESENTATION DRAWING PV1962 GSM / GPS module equipped eMicrocompt		Description de la modification N°	
DEV N° : 981a	Code : 2084	Rev Folio : A	4 / 4	Modified on : 24/03/2017	by CC verified by SR
Drawing N° : PPV1962	Drawing N° : 981a	Rev Folio : A	4 / 4	Modified on : 24/03/2017	by CC verified by SR
Metro : ATEX:					

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Mounting and wiring of the GSM and GPS antennas



The 2-antenna board is supplied with a micro-SIM card mounted as follows:



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Mounting of the GSM/GPS cables into the cable glands

ALMA connects the GSM and GPS antenna to the MICROCOMPT+ (2-antenna board).



At the outlet of the MICROCOMPT+ box, you must pass both cables through cable glands. In case of an ATEX MICROCOMPT+, cable glands must be ATEX.



Into the MICROCOMPT+, adjust the cable length to easily open and close the cover. Make sure to prevent damage to the cable.

Tighten both cable glands.

Wiring of the 2-antenna box to the MICROCOMPT+

Fasten the box. You must install it in an area free of metallic cover to have a good reception and broadcasting of signal. You can install the box in a horizontal or vertical position.

Put each coaxial cable through the heat shrink sleeve.

Plug the RG58⁽¹⁾ cable from the MICROCOMPT+ with the RG174⁽²⁾ cable from the antenna box and tighten them. Isolate the male/female SMA connectors with the supplied heat shrink sleeve (both antennas in the box are the same, cables don't have to be labelled).

Position and heat up the sleeve on the connectors to prevent corrosion and humidity.



WARNING: The cables of this box can be **neither shortened nor extended**

⁽¹⁾ RG58: Semi-rigid coaxial cable, 5mm diameter

⁽²⁾ RG174: Flexible coaxial cable, 2.7mm diameter

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4.6. SPOOL VALVE CONTROL: ELECTRICAL AND HYDRAULIC WIRING

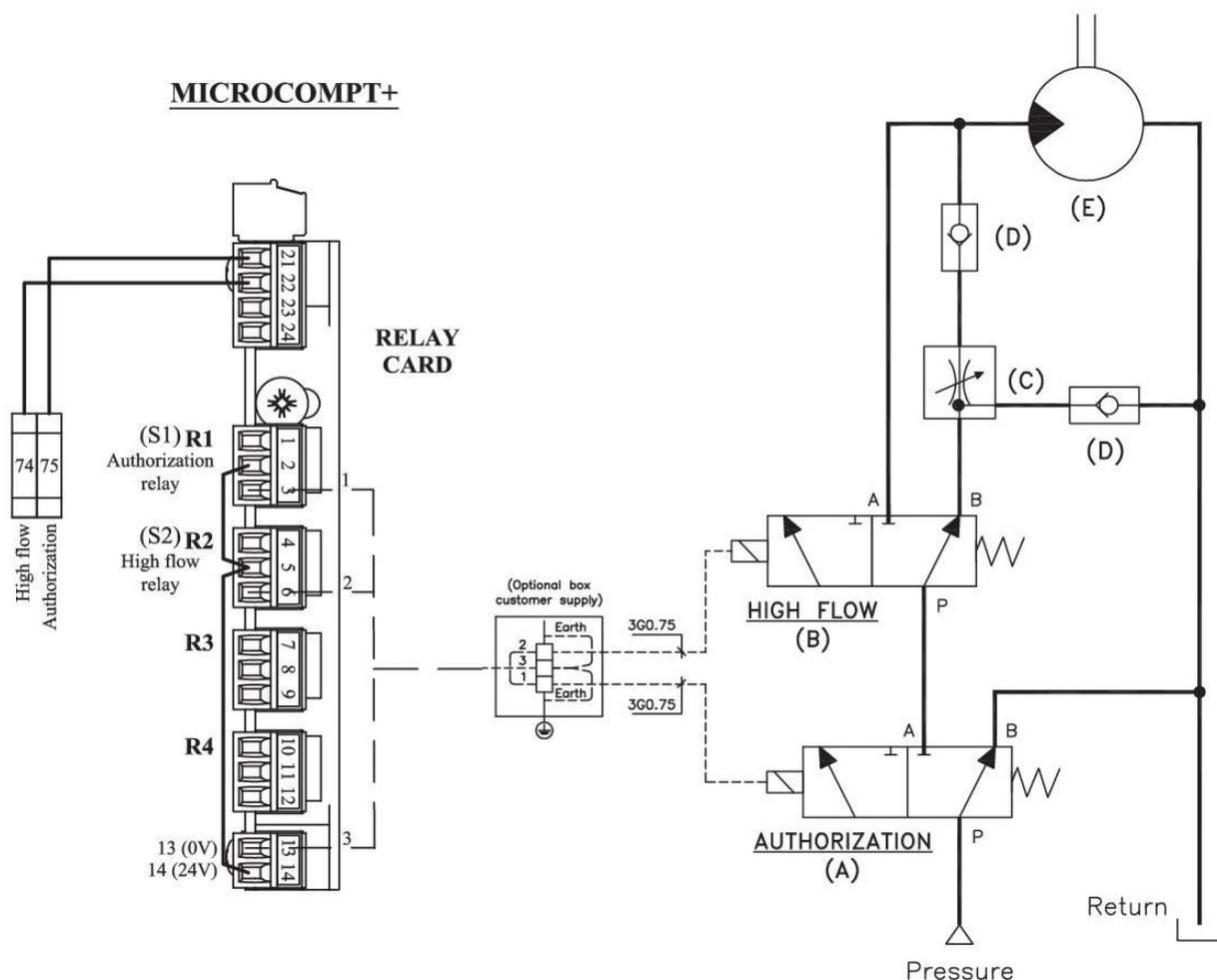
EQUIPMENTS CONNECTED TO THE MICROCOMPT+								POWER SUPPLY BOARD			
Option	Equipement	Cable (for information)				Function	Colour or No.	Terminal	Function		Observation
		No.	CG*	Alma	Type						
	MANIFOLD FLAP CONTROL OR PRODUCT RETURN AUTHORISATION AND/OR ADDITIVATION 2 CONTROL				4 to 7x1	Flap 1	1	39	24VDC = opened flap (outputs FET 24V 5W max.) FET:FieldEffect Transistor	EV Flaps or Product return autorisation and/or Additivation 2	Depending on configuration: direct connection or via plexmi electronic board. Refer to the assignment table and to the connection table of the relevant plexmi board
						Flap 2	2	40			
						Flap 3	3	41			
						Flap 4	4	42			
						Flap 5	5	43			
						Flap 6	6	44			
						Flap 7	7	45			
					1x1	0V		46	0V		
								47			
								48			
	RC-HEATING OIL RECEIVER				2x1	Start/Stop	1	49	Start/Stop	RC-Oil_1	
						LF/HF	2	50	LF/HF	RC-Oil_2	
	COUNTED / PUMPED DISTRIBUTION WAY (with additional commands)				3x1	Gravi/Pmp	1	51	0V	Gravity / Pumped	Closed circuit=product pumped (end position)
						Pct/Pnc	2	52	0V	Pumped counted/ no counted	Closed circuit=product counted
						0V	3	59	0V	0V (GND)	51, 52 and 59 are shunted if manual valves are not instrumented
	PTO CONTROL				1x1	PTO Ctrl		58		PTO control	Power- take- off engaged
	FOOTVALVE CONTROL				1x1	Footvalve		64	24VDC= cde	FOOTVALVE	24VDC=opening (Outputs FET 24V 5W max.) FET=Field Effect Transistor
	PRODUCT RETURN CONTROL				3 to 6X1	PR1	1	65	24VDC= author.	Return_1	Depending on configuration: direct connection (Outputs FET Field Effect Transistor 24V 5W max.) or via plexmi electronic board. Refer to the assignment table and to the connection table of the relevant plexmi board
						PR2	2	66		Return_2	
						PR3	3	67		Return_3	
						Chasse		68		Cde chasse	
	ADDITIONAL COMMANDS				5X1	PTO	1	61	24VDC= pto	PTO	(Outputs FET 24V 5W max.) FET=Field Effect Transistor
						Stop Mot.	2	62	24VDC= stop	Stop motor	
						Acc. Mot.	3	73	24VDC= acc.	Motor acceleration	
						Clutching	4	76	24VDC= clutchin	Clutching	
						Start Mot.	5	77	24VDC= start	Start motor	
	ADDITIVATION 1 CONTROL				2x1	Power	1	71	NO free contact	Additivation 1 control	Closed contact=additivation
						Control	2	72			(Output: NO free potential relay)
	SPOOL VALVE CONTROL				2x1	HF		74	HF solenoid valve	Spool valve (hydraulic motor)	
						Author.		75	Solenoid valve		
	MANIFOLD VENT VALVE CONTROL				1x1	Vent valve		78	24VDC	Vent valve control	24VDC=opening (Outputs FET 24V 5W max.) FET=Field Effect Transistor

SOME EXTENSION BOARDS MAY BE SET ON TO THE POWER SUPPLY BOARD

*Refer to the Cable Glands installation instructions

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HYDRAULIC DIAGRAM



- (A) : AUTHORISATION solenoid valve (not supplied by ALMA)
- (B) : HIGH FLOW solenoid valve (not supplied by ALMA)
- (C) : Flow regulator (not supplied by ALMA)
- (D) : Non return valve (not supplied by ALMA)
- (E) : Hydraulic motor (not supplied by ALMA)

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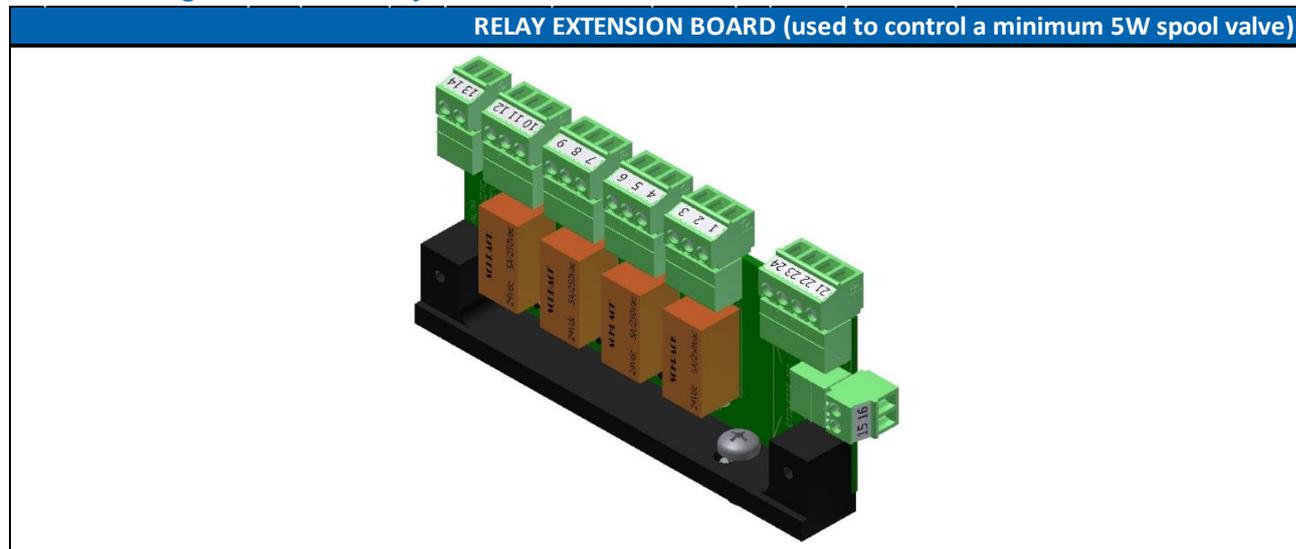
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CMA TRONIQUE TC50 and TC80 types

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

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Terminal assignment of the relay extension board



EQUIPEMENT CONNECTED TO THE MICROCOMPT+							RELAY EXTENSION BOARD				
Option	Equipement	Cable (for information)				Function	Colour or No.	Terminal	Function	Observation	
		No.	CG*	Alma	Type						
	AUTHORISATION SOLENOID VALVE					Author.		1 2 3	NC free contact 0V/24VDC NO free contact	RELAY 1	Hydraulic control of hydraulic pump
	HIGH FLOW SOLENOID VALVE					High flow		4 5 6	NC free contact 0V/24VDC NO free contact	RELAY 2	High flow control of hydraulic pump

*Refer to the Cable Glands Installation Instructions

5. ADRIANE TURBINE METER

5.1. ADRIANE TURBINE METER DN50-50 243 100x100

Designation	Code	Plan
2H00 Pulse emitter	8145	PPV069
2B00 Pulse emitter	8147	PPV025
UNI electronic	8760 / 8948	C0101
CT1001 thermowell	8152	A0728
3/8"NPT temperature sensor	8151	A0730
Calculator holder	-	-
Sight glass kit	8099	-
Connection kit	8061	-
Non return valve kit	6932	-
Connection deported kit	8175	-

Associated items		Liquids measured
Emetteur de type 2H00	Shielded ADR cable 4x0.35, length: 3m	Liquid hydrocarbons except LPG, FAME, ethanol, aqueous urea solutions with a concentration of 32.5%
Emetteur de type 2B00	Shielded ADR cable 4x0.35, length: 3m	Liquid hydrocarbons except LPG, FAME, ethanol, aqueous urea solutions with a concentration of 32.5%

<p>ALMA Service Development www.alma-alma.fr 13127 Vitrolles</p>	<p>PRESENTATION DRAWING DFV006 Adriane DN50-50 241 100x100 One-piece light alloy version</p>	<p>Description of the amendment N°341 Straightener pass from 58t to 158t</p>
DEVN° : 902a	Code : 8047	
Drawing N° associated with the related CET file		
Metro : LNE-17513		
ATEX : DCEI ATEX 009X		
902	PPV006	AA
6/6	Modified on :	14/01/2014
by	SR	CC
01/01/1997	Created on :	01/01/1997
Rev	Folio	
SR	verified by	BM

Document available on website [alma-alma.fr](http://www.alma-alma.fr)

5.2. ADRIANE TURBINE METER DN80-80 243 110x110

It is advisable to install upstream of the turbine a filter minimum 400µ
 Liquids in measured

Designation	Codes	Plan
2H00 Pulse emitter	8145	PPV069
2B00 Pulse emitter	8147	PPV025
UNI electronic	8760 / 8948	C0101
3/8" NPT CT1001 thermometer	8152	A0728
CT1001 temperature sensor	8151	A0730
Calculator holder	-	-
Non-return valve kit	8798	-

Associated items	
Liquid hydrocarbons except LPG, FAME, ethanol, aqueous urea solutions with a concentration of 32,5%	CET LNE-17513
	DEV LNE 12393
	ATEX II 2 G cII CT6
	Mass : 4Kg

PRESENTATION DRAWING DFV021	
Description of the amendment N°507: Replacing fastener screw for axis support with CHCM3 screws	
Adriane DN80-80 243 110x110 One-piece light alloy version	
906	PPV021
V	5 / 6
Rev	Folio
07/12/2016	Modified on :
03/08/1999	Created on :
SR	CC verified by
BM	SR

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5.3. ADRIANE TURBINE METER DN80-80 373 PN16 Adblue®

Shielded ADR cable 4x0.35, length : 5m

2H00 pulse emitter

Sealing by Viton O-rings 85.09 x 5.33

Sealing producer data plate

Flange PN16 Inox 316L

2H00 pulse emitter well

2B00 pulse emitter well

Stamping area

220.5

2H00 sealing

Sightglass

Flow direction

Sealing by Viton O-rings 85.09 x 5.33

Flange PN16 Inox 316L

Ø200

2H00 pulse emitter

2B00 pulse emitter

CET LNE-17513
CEV LNE 12393
ATEX II 2 G e II CT6
Mass : ~11Kg
- OIML Certificate N°: R117/2007-FR2-17.01

It is advisable to install upstream of the turbine a filter minimum 400µ

Liquids measured
Liquid hydrocarbons except LPG, EMHV, ethanol,
aqueous urea solutions with a concentration of 32.5%

ASSOCIATED ITEMS

Designation	Codes	Plan
2H00 Pulse emitter	8145	PPV069
2B00 Pulse emitter	8147	PPV025

PRESENTATION DRAWING DFV112

ADRIANE

DN80-80 373 PN16 ADBL UE

905a PPV112 I 5/6

Dev N° Drawing N° Rev Folio

Modified on : 07/03/2019

Created on : 18/06/2013

by CC

CHR verified by

ROC SR

Service Development
www.alma-alma.fr
13127 Vitrolles
Code : 1398
Drawing N° associated with the related CET file
LNE-17513/LNE-12393
Metro :
ATEX : DCEI ATEX 009

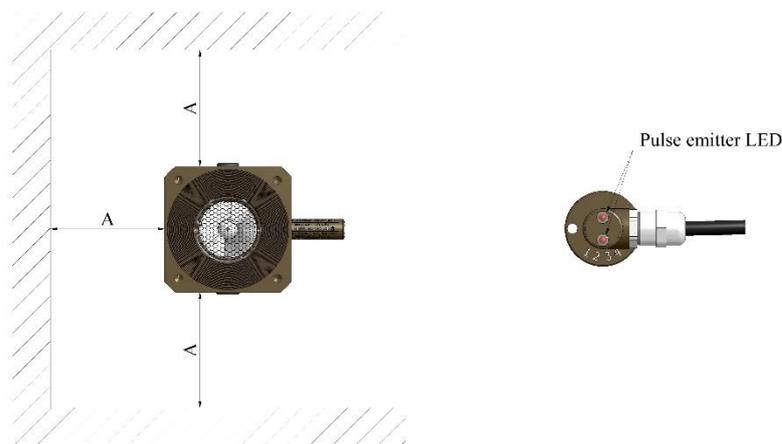
DESCRIPTION OF AMENDMENT N° 660 :
- Modification of the zinc coating
- Addition of manufacturing recommendations
- Suppression of the "X" in the Atex number

Document available on website www.alma-alma.fr

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	<p>INSTALLATION GUIDE DI 002 EN O CMA TRONIQUE TC50 and TC80 types</p> <p>This document is available at www.alma-alma.fr</p>	<p>Units of measure: Length: mm Angle: degree (° ' ") Temperature: °C</p>
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5.4. INSTALLATION AND SEALING RECOMMENDATIONS ADRIANE TURBINE METER

- 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.
- Install a 400µ filter (mini) on the pipe upstream from the turbine meter.
- After installation or during the commissioning period, if the new or modified pipes have not been perfectly cleaned or pickled and passivated, the turbine should be protected by a honeycomb sieve – max. 1mm mesh. It must be placed between two flanges upstream from the turbine.
- Dimensions: A > 100mm.



- 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 and 1.0 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 5 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.

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Angle: degree (° ' ")
Temperature: °C

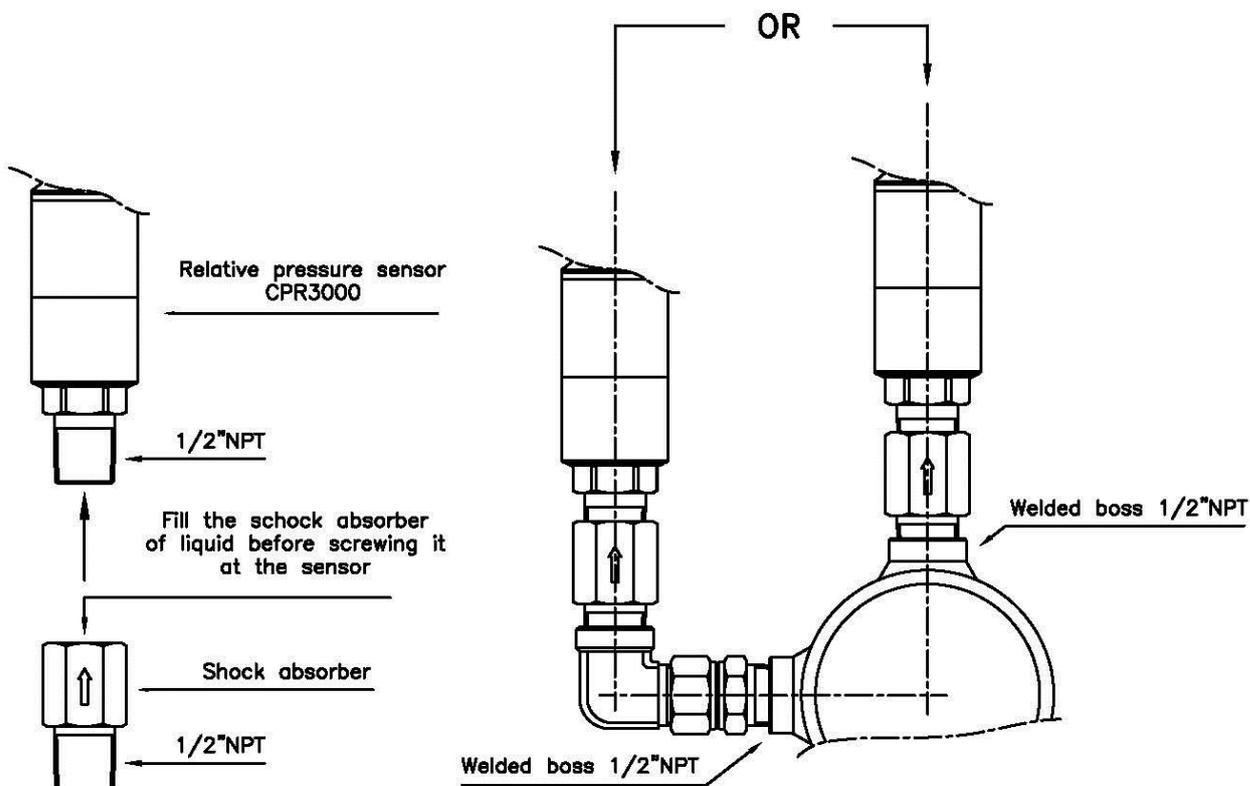
This document is available at www.alma-alma.fr

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6.2. INSTALLATION RECOMMENDATIONS CPR3000 NON ATEX

Install the pressure sensor in upright position

- Mount the pressure sensor on a boss 1/2"NPT welded on the vertical or horizontal axis of the pipe.



Screw the shock absorber and ensure the sealing
(Ex: Loctite tubetanche 577)

Connect the pressure sensor, equipped of the shock absorber, on the pipe via a welded boss 1/2"NPT and ensure a good sealing of the assembly.
(upright position of the sensor $\pm 10^\circ$)



DISTANCE BETWEEN THE PRESSURE SENSOR AND THE SUCTION FLANGE OF THE PUMP MUST BE AT LEAST 200mm.

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Temperature: °C

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6.3. RELATIVE PRESSURE TRANSMITTER CPR3000 ATEX

Technical data:

- Ex protection Ex: II 1G, 1/2G, 2G Ex ia IIC T6
- Protection class: IP66
- Temperature range: -20°C to +60°C
- Operating voltage: 12-30Vdc - Output signal: 4-20mA
- Range: 3-6-20-5mA - Signal resolution: 1.6µA - Max. output current: 22mA
- Run-up: 10s - Dead time: ≤ 150ms
- Step response time: ≤ 250ms (t_r: 0s, 10...90%)
- Pressure: 0-250mbar
- Process fitting: 1/2"NPT SS 316L - Body: polyester (PET)
- Seal: FFKM
- Cable: ADR-RTMD - NFR13-413
- Mass: 0.8 kg

PRESENTATION DRAWING DFN028		Description of the amendment: N° :	
CPR3000 (IS)		- English version of presentation drawing.	
RELATIVE PRESSURE SENSOR	907	PPN028	B 5/5
Dev N°	Drawing N°	Rev	Folio
-	-	-	-
Metro :	-	-	-
ALEX:	-	-	-

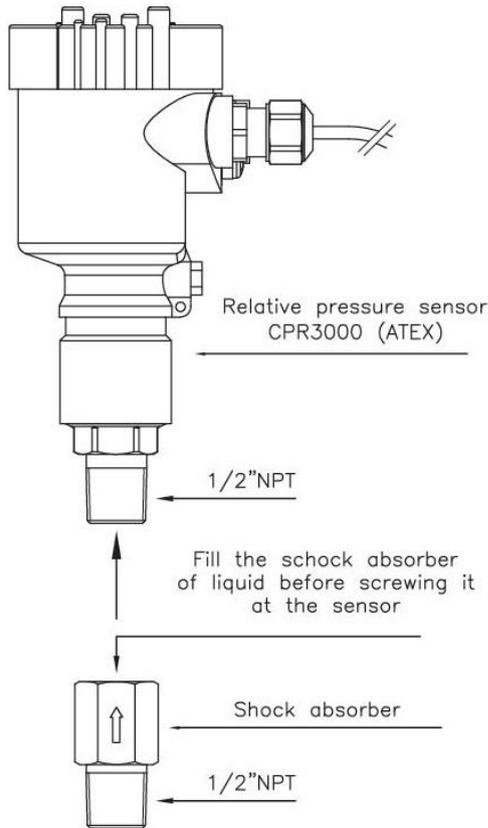
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6.4. INSTALLATION RECOMMENDATIONS CPR3000 ATEX

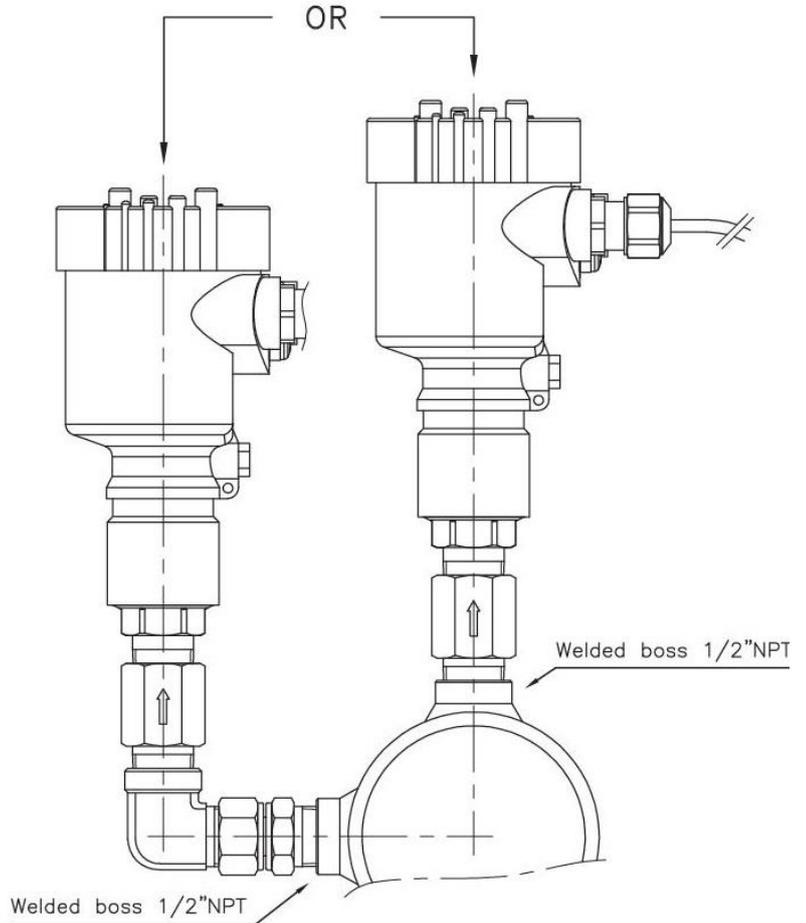
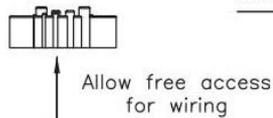
Install the pressure sensor
in upright position

- Mount the pressure sensor on a boss 1/2"NPT welded on the vertical or horizontal axis of the pipe.



Screw the shock absorber and ensure the sealing (Ex: Loctite tubetanche 577)

Rotation of the head pressure sensor on about 330°.



Connect the pressure sensor, equipped of the shock absorber, on the pipe via a welded boss 1/2"NPT and ensure a good sealing of the assembly. (upright position of the sensor +/- 10°)

! DISTANCE BETWEEN THE PRESSURE SENSOR AND THE SUCTION FLANGE OF THE PUMP MUST BE AT LEAST 200mm.

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

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

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7. **PRINTER**

Printer kit with TM-U295 printer
Code: 0284 (with 5 meters cable)
Code: 0765 (with 10 meters cable)
(Printer presentation drawing PPN901)

Printer kit with SP298MD printer
Code: 0766 (with 5 meters cable)
Code: 0767 (with 10 meters cable)
(Printer presentation drawing PPN900)

PRINTER LINK CABLE

TYPE	CABLE	COLOUR WIRE	FUNCTION
	Shielded cable * 4x0.75mm ² ø ext. 8 L=5m / Code 4339 L=10m / Code 4578	White (WH) Brown (BN) Yellow (YE) Green (GN) Shielding	24Vdc Or Tx printer Rx printer Shielding

PRINTER KIT:
- 1 Printer.
- 1 Printer link cable (Length= 5 or 10m).
- 1 Printer holder (SS 304L thickness 2mm - Mass 1.5 kg).

Dimensions:
Without printer: 114, 92.5, 307, 55, 209, 160, 74.5, 19.5, 130, 160, 4xø6.2, 130, 149.

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.

Service Development
www.alma-alma.fr
13127 Vitrolles
Code: -
DEV N° : 907
Drawing N° associated with the related cET file
Metro :
ATEX:

PRESENTATION DRAWING PPN902
PRINTER KIT

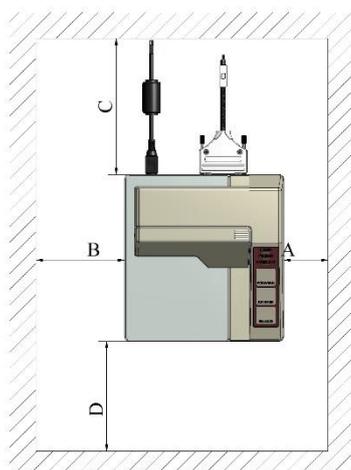
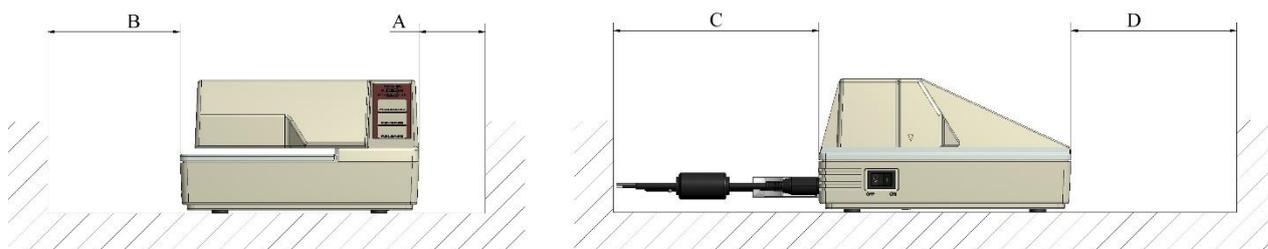
907	PPN902	B	2 / 2	Modified on : 06/05/2014	EG	verified by	DSM
	Dev N°	Drawing N°	Rev	Folio	Created on : 25/03/2010	EG	XS

* ADR-RTMD - NFR13-413 cable
Description of the amendment: N° :
- English version of presentation drawing.

Document available on website www.alma-alma.fr

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

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8. **CONVERTER 24VDC/24VDC 2.1A 50W**

Technical data:

- V input : 19 to 36VDC
- V output : 24VDC
- Current max. : 2.1A
- Power : 50.4W
- Temperature range : -10°C à +60°C
- Mass : 0.38 kg

Service Development 13127 Vitrolles www.alma-alma.fr		PRESENTATION DRAWING		PPN908		Description of the amendment: N° : - Creation.	
		24VDC/24VDC CONVERTER		2.1A - 50W			
DEV N° : 907	Code : 4225	907	PPN908	A	2 / 2	Modified on :	by
Drawing N° associated with the related CEI file	Metro :			Rev	Folio	Created on :	verified by
ATEX:						27/02/2014	EG
							EG

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9. NON-RETURN VALVE KIT DN50 OR DN80

Specifications:

- **Mass:** ~ 2,5 Kg
- **Material:** Inox 316L
- **Operating temperature:** -10°C to +350°C
- **Permissible operating pressure:** 40 bar
- **Maximum permissible pressure:**
 - Liquid 1: 2,5 bar
 - Gas 1: 1,2 bar
 - Liquid 2: 40 bar
 - Gas 2: 40 bar
- **Pressure drop:** 0,2 bar at 50 m³/h
- **Mounting:** Between downstream flange of the turbine
- **Tightness:** Flat gasket
- **Standards:**
 - CE conformity directive 97/23/CE
 - CE ATEX conformity directive 94/9/CE

		Service Development 13127 Vitrolles www.alma-alma.fr		Description of amendment N° Kit non return valve, calibrated at 0,3 bar Adriane DN80 24X	
Mat.	Code: 87508	Dev N°	905a	Modif on:	
Tol. ± 0,2	Code: 87508	Drawing N°	PV1908	Created on:	29/03/2016
Metro: associated with the related CPT file		Rev	Folio	Created on:	29/03/2016
ATEX:				by	CC
				verified by	SR

Specifications:

- **Mass:** ~ 1Kg
- **Material:** Valve: Inox 316L
Flat gasket: KINGLERSIL
- **Operating temperature:** -10°C to +350°C
- **Permissible operating pressure:** 40 bar
- **Maximum permissible pressure:**
 - Liquid 1: 40 bar
 - Gas 1: 20 bar
 - Liquid 2: 40 bar
 - Gas 2: 40 bar
- **Pressure drop:** 0,4 bar at 25 m³/h
- **Mounting:** Between downstream flange of the turbine
- **Tightness:** Flat gasket
- **Standards:**
 - CE conformity directive 97/23/CE
 - CE ATEX conformity directive 94/9/CE

Additional Info:

- Screws: Inox A4-70

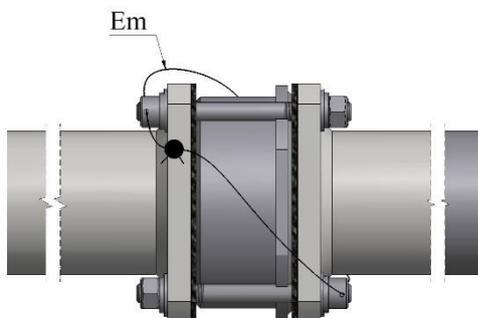
4 screws CHC M8 x 80 including 2 screws drilled for sealing

		Service Development 13127 Vitrolles www.alma-alma.fr		Description of amendment N° Kit non return valve Adriane DN50 24X	
Mat.	Code: 6932	Dev N°	902	Modif on:	
Tol. ± 0,2	Code: 6932	Drawing N°	PV1909	Created on:	29/03/2016
Metro: associated with the related CPT file		Rev	Folio	Created on:	29/03/2016
ATEX:				by	CC
				verified by	SR

Document available on website www.alma-alma.fr

9.1. INSTALLATION RECOMMENDATIONS NON-RETURN VALVE KIT DN50 OR DN80

- 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



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Units of measure:
Length: mm
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Temperature: °C

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10. SIGHTGLASS KIT DN50 OR DN80

Mounting example

B (1.5 : 1)
Socket head cap screw
For sealing

Put parts in a bag								
Rep	Qty	Item description	Material	Reference	Rev.	Mdf	Code	Observation
1	1	Sightglass DN80 110X110	Modified PAMMA	A0533	B		0908	
2	3	CHC screw M10 x 70 (ISO 4762)	Stainless A4-70				8595	
3	1	Washer W M10 (DIN 127)	Stainless A4-70				8474	
4	1	Washer M M10 (NFE 25-514)	Stainless A4-70				8430	
5	1	CHC screw M10 x 70 (ISO 4762) with head pierced	Stainless A4-70	PN0030	B	A	3465	

Service Development
 www.alma-alma.fr
 Code: 1091
 13127 Vitrolles
 Tol: ± 0.2
 Drawing N° associated with the related CEF file
 Metro: ATEX

Service Development
 Description of amendment N°530
 Integration of drill head screws
 Sightglass kit DN80 24X
 Adriane turbine meter
 PV167.4
 Dev N° 905
 Drawing N° 30/03/2016
 Rev Folio 2 / 2
 Modified on: 17/02/2017
 Created on: 30/03/2016
 by CC verified by SR
 CC CC

Mounting example

B (1.5 : 1)
Socket head cap screw
For sealing

Put parts in a bag								
Rep	Qty	Item description	Material	Reference	Rev.	Mdf	Code	Observation
1	1	Sightglass DN50	Modified PAMMA	A0389	C		8062	
2	1	Plast gasket DN50 100x100	Klingeril C-H30	A0386	B		8251	
3	4	Washer M M8 (NFE 25-514)	Stainless A4-70				8245	
4	4	Washer W M8 (DIN 127)	Stainless A4-70				8244	
5	3	CHC screw M8 x 80 (ISO 4762)	Stainless A4-70				8247	
6	1	CHC screw M8 x 80 (ISO 4762) with head pierced	Stainless A4-70	PN0030	B	A	2178	

Service Development
 www.alma-alma.fr
 Code: 8099
 13127 Vitrolles
 Tol: ± 0.2
 Drawing N° associated with the related CEF file
 Metro: ATEX

Service Development
 Description of amendment N°530
 Integration of drill head screws
 Sightglass kit DN50 24X
 Adriane turbine meter
 PV1669
 Dev N° 902
 Drawing N° 30/03/2016
 Rev Folio 2 / 2
 Modified on: 17/02/2017
 Created on: 30/03/2016
 by CC verified by SR
 CC CC

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10.1. INSTALLATION RECOMMENDATIONS SIGHTGLASS KIT DN50 OR DN80

- 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



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11. CONNECTION KIT 100x100 DN50 OR DN80

Socket head cap screw For sealing

Socket head cap screw For sealing

Mounting example

B (1.5 : 1)

Rep	Qty	Item description	Material	Reference	Rev.	Matf	Code	Observation
1	2	Steel backflange DN80 110x110	E24 steel	PN0159	A		9205	
2	2	Flat gasket DN80 110x110	Kingsseal C-4430	PN0158	A		9206	
3	4	Washer M10 (NFE 25-514)	Stainless A4-70				8470	
4	8	Washer M10 (DIN 127)	Stainless A4-70				8474	
5	6	CHC screw M10 x 40 (ISO 4762)	Stainless A4-70				8630	
6	2	CHC screw M10 x 40 (ISO 4762) with head pierced	Inox A4-70	PN0030	B	A	8237	

Put parts in a bag

Matf	Code	Observation
PN0159	A	
PN0158	A	

Socket head cap screw For sealing

Service Development	Integration of drill head screws
ALMA	ALMA
13127 - Vitrolles	13127 - Vitrolles
Code: 0389	Code: 0389
Drawing N° associated with the related CEF file	Drawing N° associated with the related CEF file
Dev N°	Dev N°
905	905
PV1675	PV1675
B 2/2	B 2/2
Modified on: 17/02/2017	Modified on: 17/02/2017
Created on: 30/03/2016	Created on: 30/03/2016
by CC	by CC
verified by SR	verified by SR

Socket head cap screw For sealing

Socket head cap screw For sealing

Mounting example

B (1.5 : 1)

Rep	Qty	Item description	Material	Reference	Rev.	Matf	Code	Observation
1	2	Backflange DN50 100x100	tee	A0148	C		8250	
2	2	Flat gasket DN50 100x100	Kingsseal C-4430	A0386	B		8251	
3	6	CHC screw M8 x 40 (ISO 4762)	Stainless A4-70				8240	
4	8	Washer M8 (NFE 25-514)	Stainless A4-70				8245	
5	8	Washer M8 (DIN 127)	Stainless A4-70				8244	
6	2	CHC screw M8 x 40 (ISO 4762) with head pierced	Stainless A4-70	PN0030	B	A	2177	

Put parts in a bag

Service Development	Integration of drill head screws
ALMA	ALMA
13127 - Vitrolles	13127 - Vitrolles
Code: 8061	Code: 8061
Drawing N° associated with the related CEF file	Drawing N° associated with the related CEF file
Dev N°	Dev N°
902	902
PV1672	PV1672
B 2/2	B 2/2
Modified on: 17/02/2017	Modified on: 17/02/2017
Created on: 30/03/2016	Created on: 30/03/2016
by CC	by CC
verified by SR	verified by SR

Socket head cap screw For sealing

Service Development	Integration of drill head screws
ALMA	ALMA
13127 - Vitrolles	13127 - Vitrolles
Code: 8061	Code: 8061
Drawing N° associated with the related CEF file	Drawing N° associated with the related CEF file
Dev N°	Dev N°
902	902
PV1672	PV1672
B 2/2	B 2/2
Modified on: 17/02/2017	Modified on: 17/02/2017
Created on: 30/03/2016	Created on: 30/03/2016
by CC	by CC
verified by SR	verified by SR

Document available on website www.alma-alma.fr

12. NC/NO SOLENOID VALVES KIT NON ATEX OR ATEX

12.1. NC/NO SOLENOID VALVES KIT NON ATEX

CONNECTOR SUPPLIED UNASSEMBLED

Terminal block

Connector and seal

TERMINALS	
Terminal 1 (+)	
Terminal 2 (-)	
Earth terminal	

Pneumatic diagram
2/2NC - 2/2NO

Air supply 2

Air output

Technical data:

- Tamb. max. : -10°C to +60°C
- Protection class : IP65
- Operating voltage : 24Vdc - Power : 5W
- Pressure : 0 - 10 bar max.
- Body : Brass G1/8 - Orifice : DNI.2 - Seal : FKM
- Pneumatic fitting : G1/8 for pipe 6/4
- Plug-in connector : Cable : Ø 6-7mm
- Installation : the kit can be mounted in any position
- Mass : 0.3 kg

<p>PRESENTATION DRAWING IDFN032</p> <p>NC/NO - NON ATEX</p> <p>SOLENOID VALVES KIT</p>	
<p>Service Development</p> <p>www.alma-alma.fr</p> <p>13127 Vitrolles</p>	<p>Description of the amendment: N° : - English version of presentation drawing.</p>
<p>DEV N° : 907</p> <p>Drawing N° associated with the related CET file</p> <p>Metro : -</p> <p>ATEX : -</p>	<p>907</p> <p>PPN032</p> <p>5 / 5</p> <p>Modified on : 05/05/2014</p> <p>Created on : 10/06/2009</p>
<p>Code : 4146</p>	<p>Rev Folio</p>
<p>Dev N°</p>	<p>by</p>
<p>Drawing N°</p>	<p>EG</p>
<p>Rev</p>	<p>verified by</p>
<p>Folio</p>	<p>DSM</p>
<p>BM</p>	

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

12.2. NC/NO SOLENOID VALVES KIT ATEX

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 : 1 kg

Pneumatic diagram

Solenoid valve 3/2NC configured 2/2NC

Solenoid valve 3/2NC configured 2/2NO

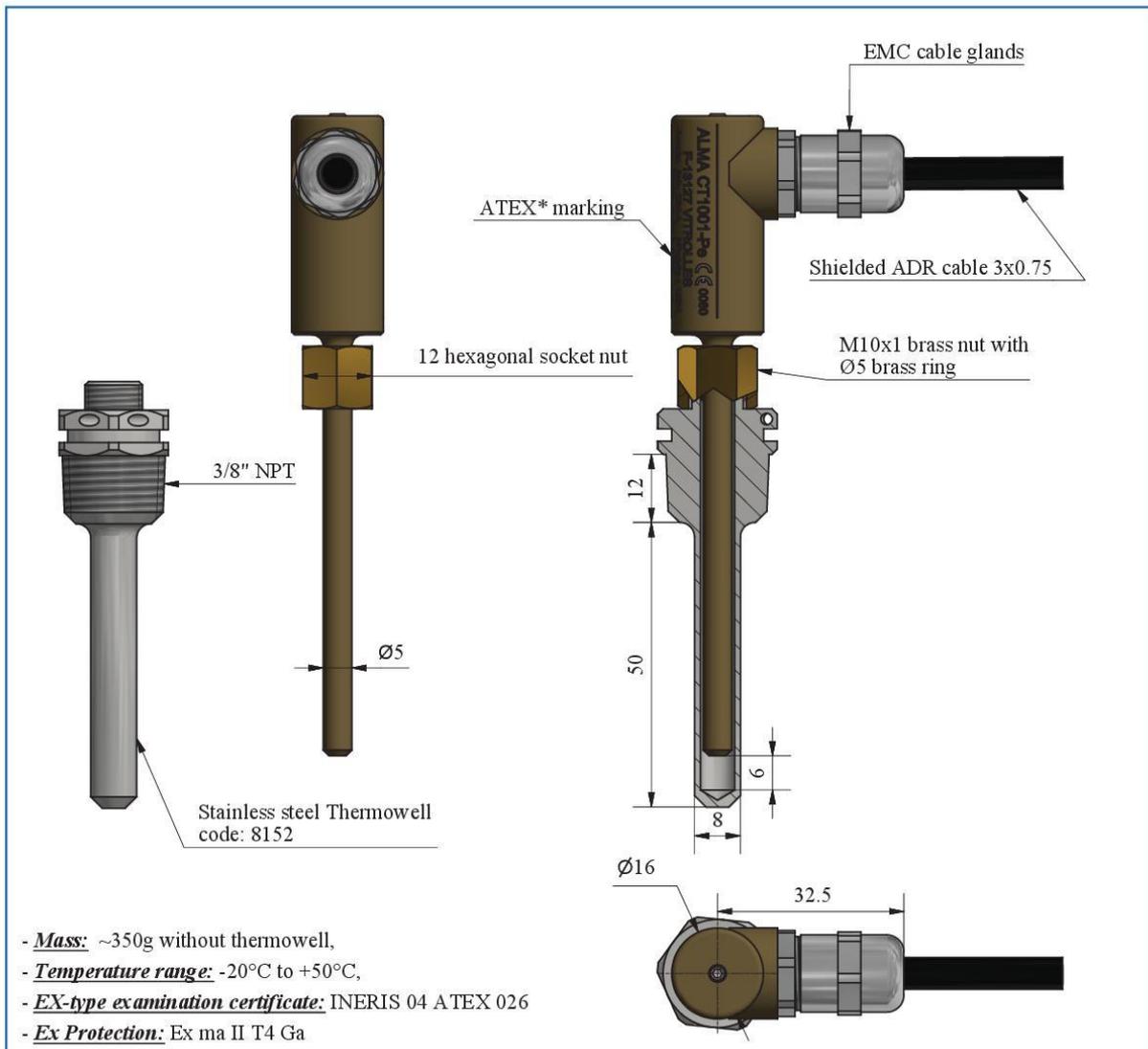
Table:

PRESENTATION DRAWING PPN903		Description of the amendment: N°454 : Mise à jour	
Solenoid valves kit NC/NO - ATEX		C 2/2	Modified on : 07/01/2016
907	PPN903	Rev	Folio Created on : 29/04/2009
Dev N°	Drawing N°	by	CC verified by
-	-	EG	FDS

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13. TEMPERATURE PROBE Pt100 – CT1001 ATEX



- **Mass:** ~350g without thermowell,
- **Temperature range:** -20°C to +50°C,
- **EX-type examination certificate:** INERIS 04 ATEX 026
- **Ex Protection:** Ex ma II T4 Ga

The sensor body is made of bronze color anodized aluminum alloy.
 The ring and the nut are made of brass.
 The probe can be mounted either on a ALMA thermowell or on a
 thimble connection 1/4 "BSP (M10x1 n5).
 Before installation, lubricate the parts in contact with the thermowell or
 the boss, to prevent corrosion

PT100 features:

- 3 wires
- 1/3 DIN

*ATEX "ma" certification.
 For installation and use in hazardous areas see Instruction manual

Also available with output connector according to IEC 60947-5-2

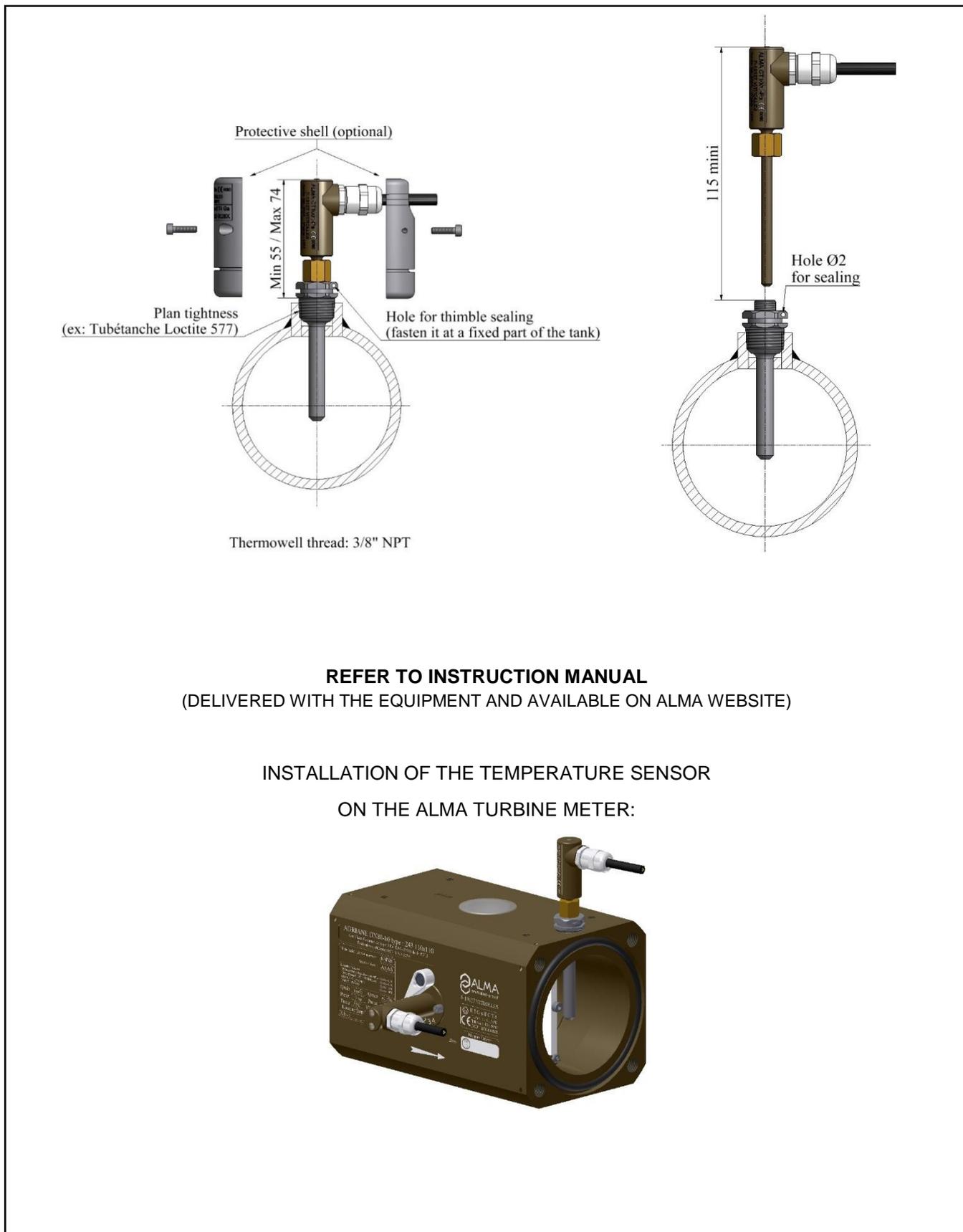
Connecting the cable		
Function	Marking on the wire	Color wire
PT100/1	1	Yellow
PT100/2	2	White
PT100/3	3	Green

 Service Development 13127 Vitrolles www.alma-alma.fr	PRESENTATION DRAWING		DFV042		Description of the amendment N°662 Removal of the apparent 5mm requirement on the wiring	
	Temperature probe CT1001-Pe					
DEV N° : 949d	Code : 8151	949d	PPV042	L	5 / 6	Modified on : 29/03/2019
Drawing N° associated with the related CET file		Dev N°	Drawing N°	Rev	Folio	Created on : 13/09/2003
Metro :						by CHR
ATEX :	INERIS 04 ATEX 0026					BM verified by CC
						BM

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13.1. INSTALLATION RECOMMENDATIONS TEMPERATURE PROBE



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

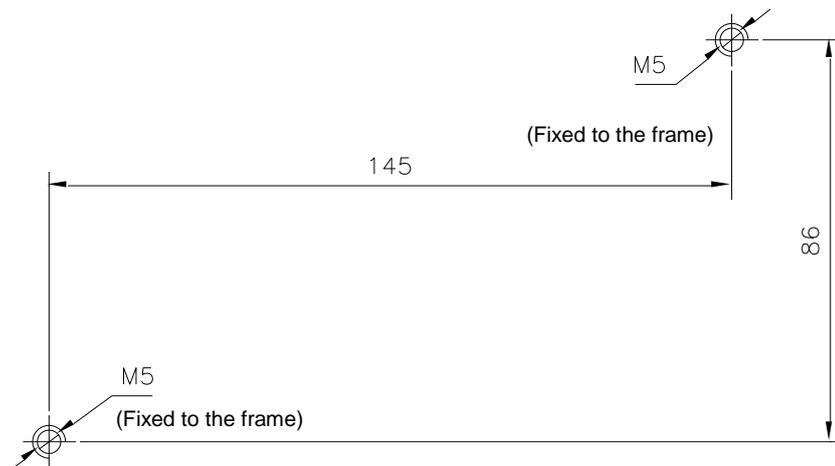
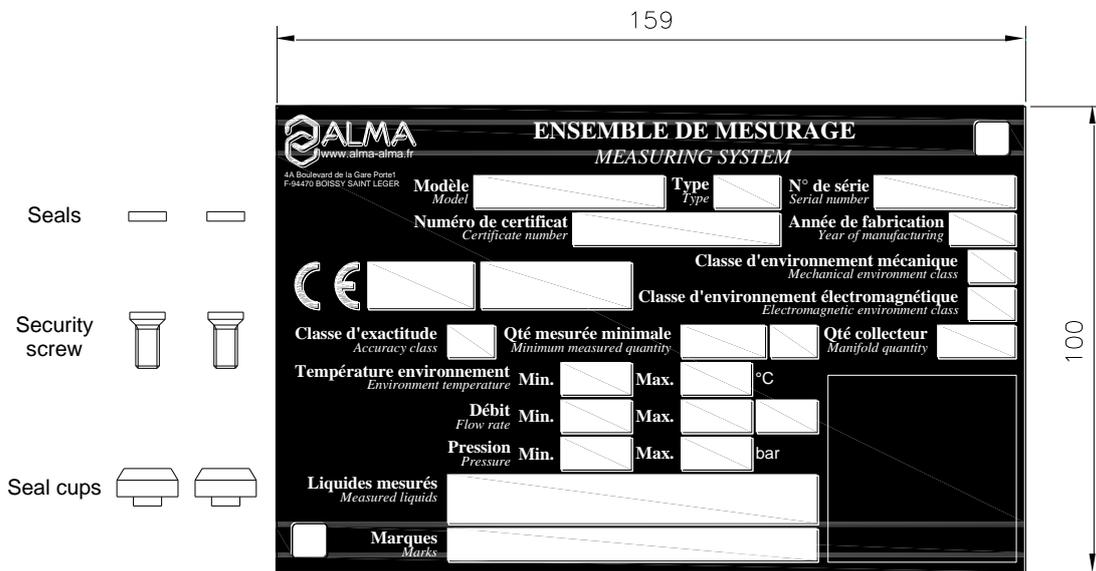
INSTALLATION OF THE TEMPERATURE SENSOR
 ON THE ALMA TURBINE METER:



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14. 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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