

INSTALLATION GUIDE

DI 005 EN K

LPG-TRONIC

Described in EC-type examination certificate N°: LNE-13621

K	2019/12/10	Connectivity [PJA129], Drawings update	DSM	MV
J	2019/02/26	Configuration of the RCT4 switches, New FORM DOC, Drawings update	DSM/CHR	SR
I	2018/06/11	Functional changes for ASKW	CHR	FDS
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.

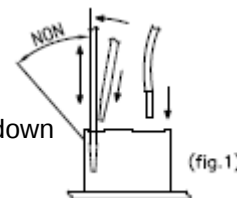
1.1. MECANICAL RECOMMENDATIONS

- ⇒ 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 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).
- ⇒ 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...).
- ⇒ 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.
- ⇒ 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		GYE	Green/Yellow	Verde/Giallo	Verde/Amarillo	Grün/Gelb

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 LPG TRONIC measuring system is covered by the EU type examination certificate N° LNE-13621. Refer to this certificate for any precision about its installation.

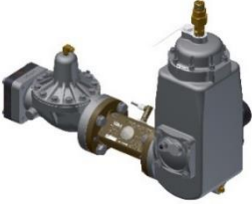
For the sealing plan, see Annex to EU type examination certificate N° LNE-13621.

2.2. SPECIAL CONDITIONS FOR INSTALLATION IN ANY CASES

- ⇒ Safety valves may be incorporated in the ALMA LPG-TRONIC measuring system. If they are located downstream of the turbine meter, they must open to the atmosphere or be connected to the receiving tank. In no case may safety valves located upstream of the turbine meter be connected to the valves located downstream by pipes that bypass the turbine meter.
- ⇒ To prevent any hydraulic connection of bottle under pressure, the purge below the gas separator must finish on a smooth stiff pipe, without threading nor join, and which is not take down.

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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+ LPG TRONIC WITH Bluetooth CONNECTION (Provided with a magnetic or RFID supervisor key)	1	
		Wi-Fi CONNECTION (As an alternative to Bluetooth)		•
		RFID SUPERVISOR KEY		
2		GPL TRONIC CONTROL BOX (Provided with RS232-serial link and power supply for printer)	1	•
3	3.a 	METERING LINE GPL-BALC (Gas separator – ADRIANE turbine meter DN50-30 – differential valve)	1	
	3.b 	ADRIANE TURBINE METER DN50-30 BALC		

Non-contractual pictures

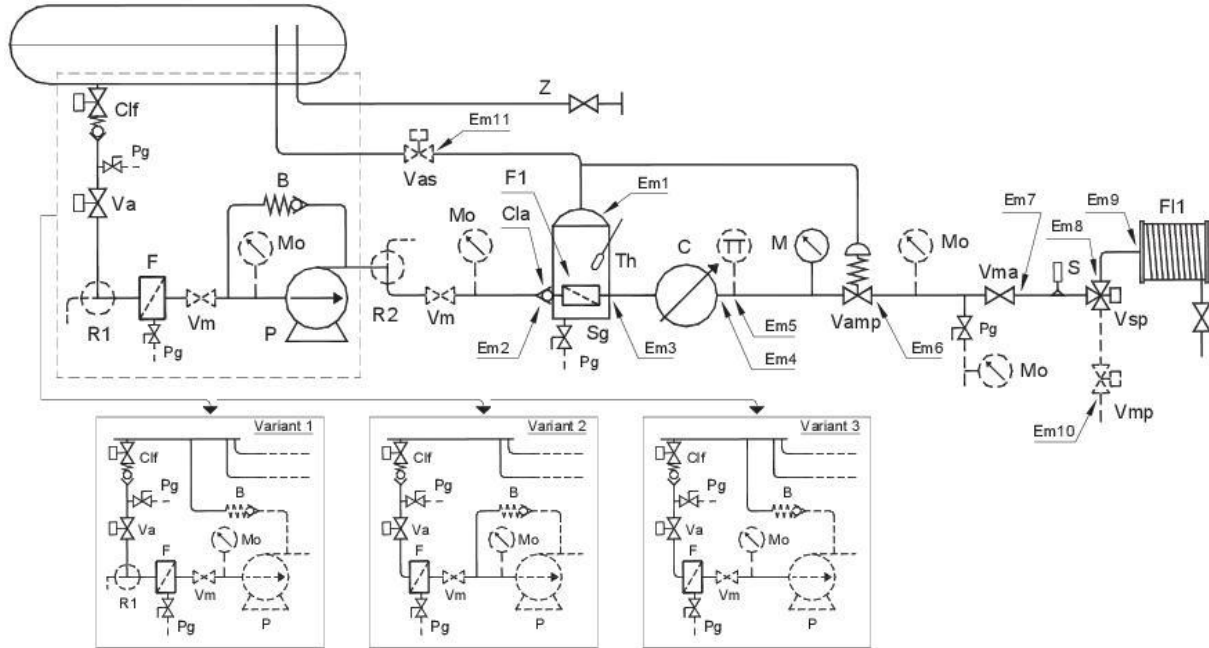
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EQUIPMENTS INCLUDED IN THE MEASURING SYSTEM DELIVERED BY ALMA				
Item	Equipment	Designation	Qty	Option*
4	4a 	PRINTER TMU-295 (Printer – printer holder – cable 5 or 10m)	1	
	4b 	CONVERTER 24VDC/24VDC 2.1A 50W Provided if there is no control box (With RS232 serial link wire and 24VDC power supply for printer)	1	●
5		REMOTE CONTROL RCT4	1	●
6		Pt100 TEMPERATURE SENSOR – CT1001-Pe (Supplied with thermowell)	1	
7		2-ANTENNA BOX GSM AND GPS	1	●
8		KIT FOR MEASURING SYSTEM IDENTIFICATION PLATE (Plate and sealing device)	1	●
Option*: equipment sold as an option by ALMA, it must be installed on the measuring system if required by the certificate.				

Non-contractual pictures

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4. INSTALLATION AND SEALING DRAWING OF THE LPG-TRONIC



Legend:

- Clf: Foot valve
 Pg: Line purge in the atmosphere (can be collected between them)
 Va: Control valve allowing liquid to flow.
 R1: Two-way cock for deliveries with meter and for draining or filling tank without meter. This device is optional and may be replaced by a direct connection.
 F: Filter
 Vm: Operation valve (optional).
 B: Adjustable bypass connected to tank
 Mo: Manometer (optional)
 P: Pump
 R2: Three-way cock (optional) for direct delivery without meter.
 Cla: Non-return valve fitted to block comprising filter and gas separator
 F1: Filter fitted to gas separator
 Sg: Gas separator, connected to gaseous phase of tank. If a safety valve (Vas) is fitted to this device, it must be placed between the tank and the diversion from the pressure control valve (Vamp).
 Vas: Automatic safety valve (optional)
 Th: Thermometer. The thermometer must be located close to the meter, either in the gas separator or at the meter inlet or outlet.
 C: Meter
 TT: Pt100 temperature sensor (optional).
 Vamp: Pressure control valve, regulated to maintain pressure at least 1 bar higher than saturated vapour pressure in the tank
 M: Manometer
 S: Valve of thermal expansion
 Vma: Operation valve
 VSP: Three ways faucet allowing a delivery by two ways of distribution
 FI1: Full hose
 Z: Gaseous phase piping, to be used only for filling vehicle tank or for draining tank when measuring system is verified.

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5. CALCULATOR-INDICATOR MICROCOMPT+

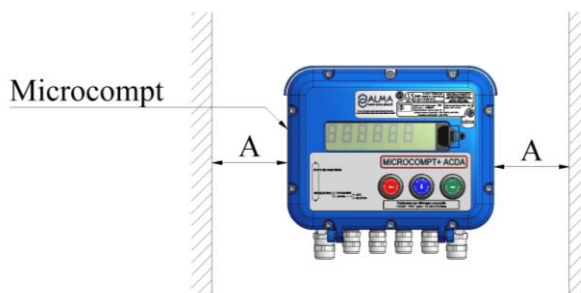


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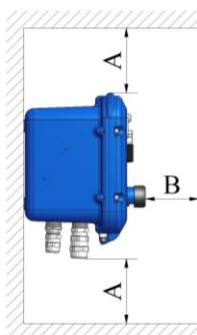
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5.1. INSTALLATION RECOMMENDATIONS CALCULATOR-INDICATOR MICROCOMPT+

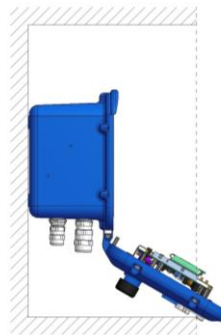
- Fasten the box with 4 M6 screws (holder suitable for vibrations and designed to support the MICROCOMPT). On the box: 4 M6 blind holes tapped length=12 over 185x132).
- Leave an open space around the box in order:
 - o To facilitate maintenance operation.
 - o To prevent any pressing on pushbuttons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



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

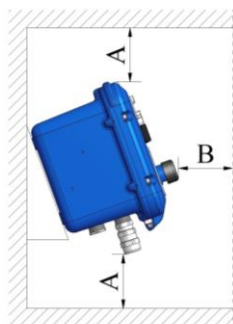


Left hand view
Closed box



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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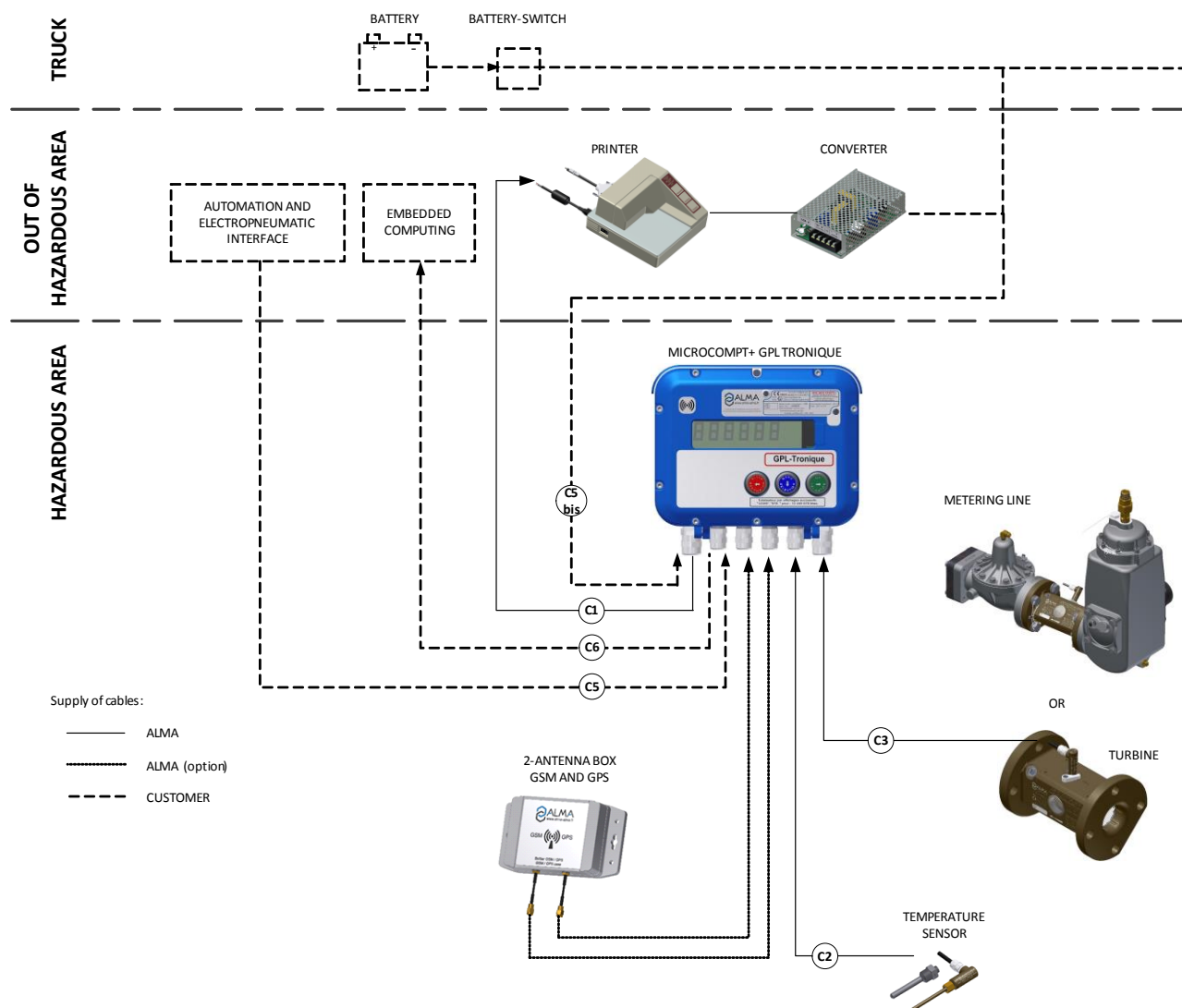
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5.2. ELECTRICAL WIRING CALCULATOR-INDICATOR MICROCOMPT+: BASIC VERSION



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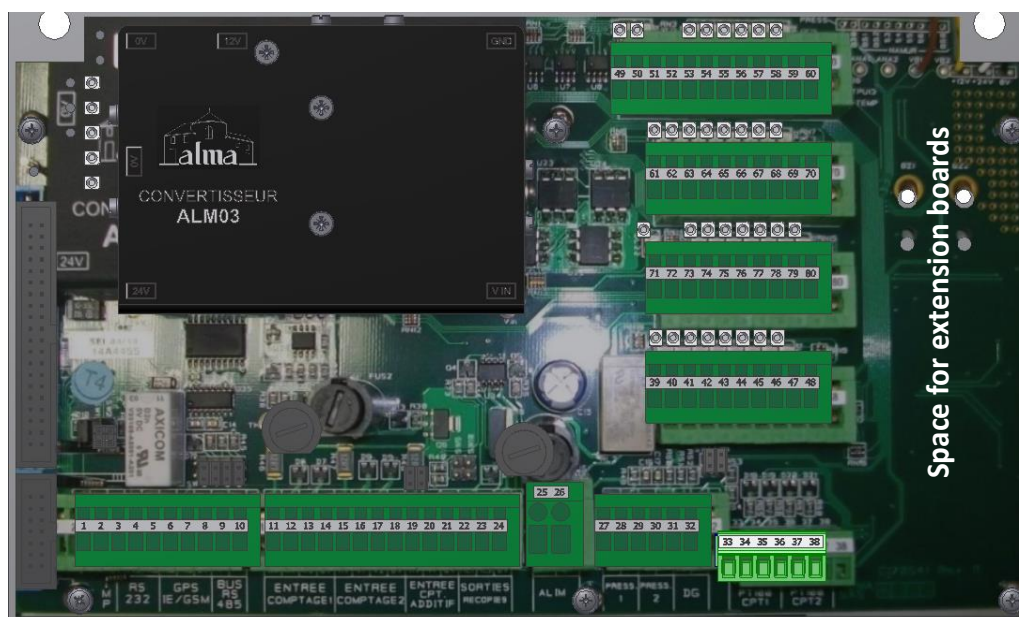
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Terminal assignment of the MICROCOMPT+ power supply board basic version

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	Bc	1	Tx	PRINTER	Connect the shielding
						Tx	Mr	2	Rx		
						0V	Vt	3	0V		
●	EMBEDDED COMPUTING	C6			3x0.34 sh.	Rx	Bc	6	Tx	GPS / GSM / EC	Connect the shielding
						Tx	Mr	7	Rx		
						0V	Vt	8	0V		
	TURBINE TRANSMITTER	C3	1/2"NPT		ADR 4x0.34 sh.	12V	Jn	11	12V	TURBINE INPUT	Connect the shielding
						V1	Mr	12	V1		
						V2	Vt	13	V2		
						0V	Bc	14	0V		
	24VDC-INPUT truck (battery)	C5 bis			2x1	Bat (+)	1	25	24VDC	POWER SUPPLY 24VDC	
						Bat (-)	2	26	0V		
	INTERMEDIATE STOP	C5			7X1	Interm. Stop	5	49	24VDC	INTERM. STOP	Free contact from the vehicle automatic process
	MEASURING END					Measur. end	6	50	24VDC	MEASURING END	Free contact from the vehicle automatic process
	HIGH FLOWRATE					HF	3	74	24VDC	HIGH SPEED	24VDC-output to the vehicle automatic process
	AUTHORISATION CHANNEL 1					Author.	4	75	24VDC	AUTHOR. CHANNEL 1	Connect the 24VDC- output in series with the vehicle automatic process
	AUTHORISATION CHANNEL 2					Author.	7	63	24VDC	AUTHOR. CHANNEL 2	Connect the 24VDC- output in series with the vehicle automatic process
	Pt100 TEMPERATURE PROBE	C2	1/2"NPT		ADR 3x0.6 sh.	+	Jn	33	+	Pt100	Connect the shielding
						-	Bc	34	-		
						-	Vt	35	-		

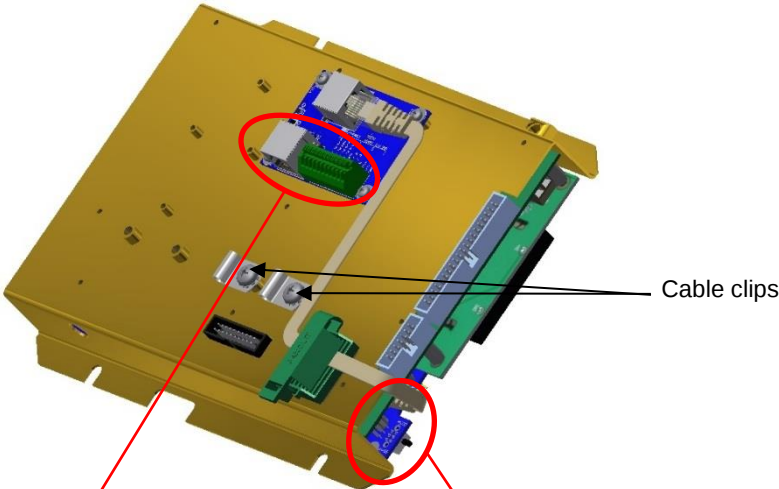
*Refer to the Cable Glands Installation Instruction

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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.



Cable clips

NETWORK BOARD

Ethernet RJ45

RS232 or RS485 Switch

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							Tx / A	RS232 or RS485	Depending on the switch configuration See above	
								Rx / B			
								GND			
	CANBus NETWORK							CAN+	CANBus		
								CAN-			
								GND			

**Refer to the Cable Glands Installation Instructions*

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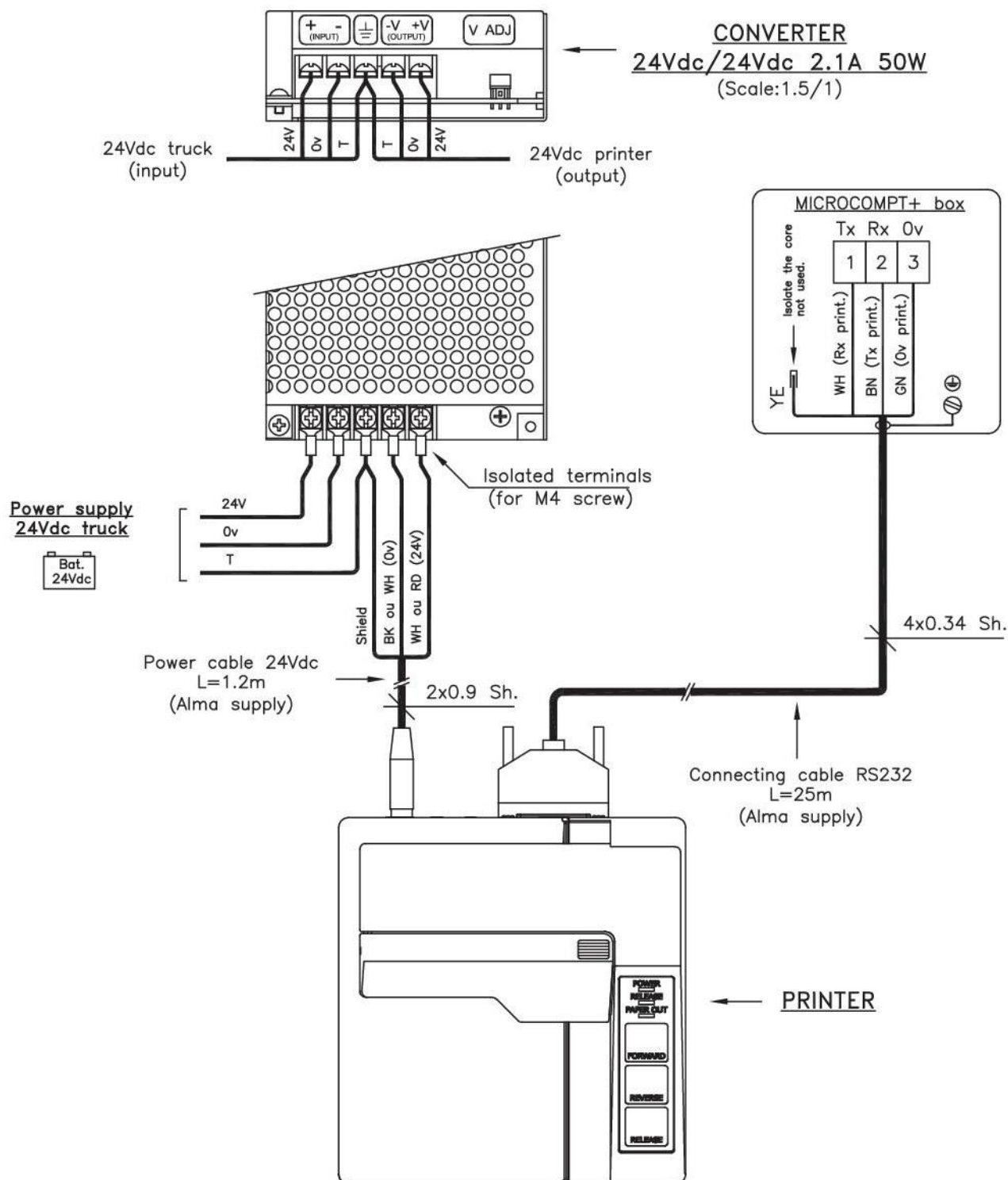


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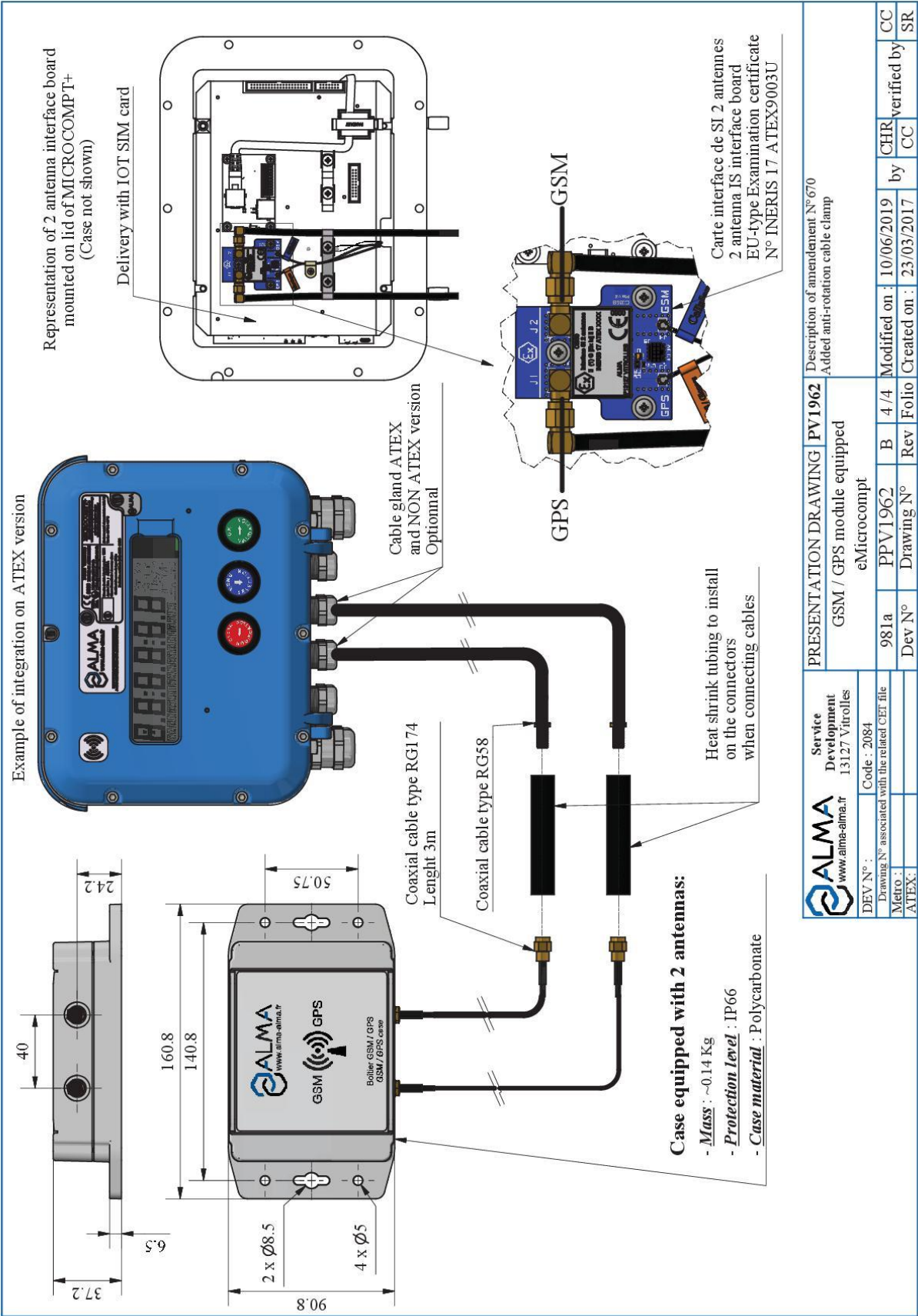
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Units of measure:
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Wiring diagram of the 24VDC/24VDC converter for printer

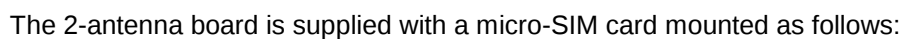


5.3. GSM/GPS MODULE EQUIPPED – 2-ANTENNA BOX



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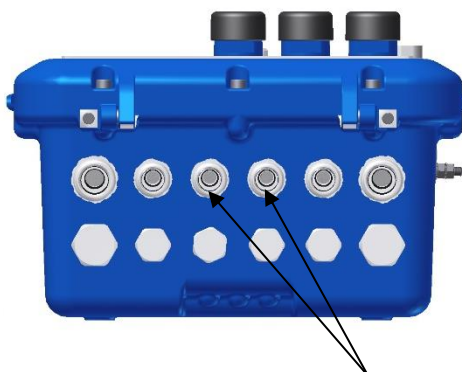
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Mounting of the GSM/GPS cables into the cable glands

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.



RECOMMENDED CABLE GLANDS
(FOR INFORMATION ONLY)

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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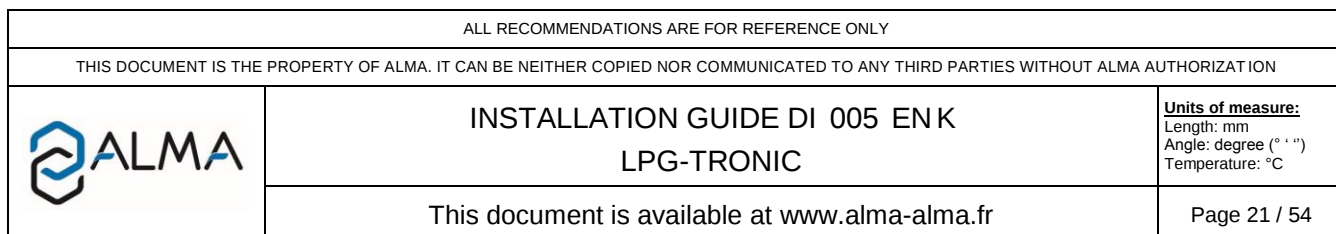


INSTALLATION GUIDE DI 005 EN K
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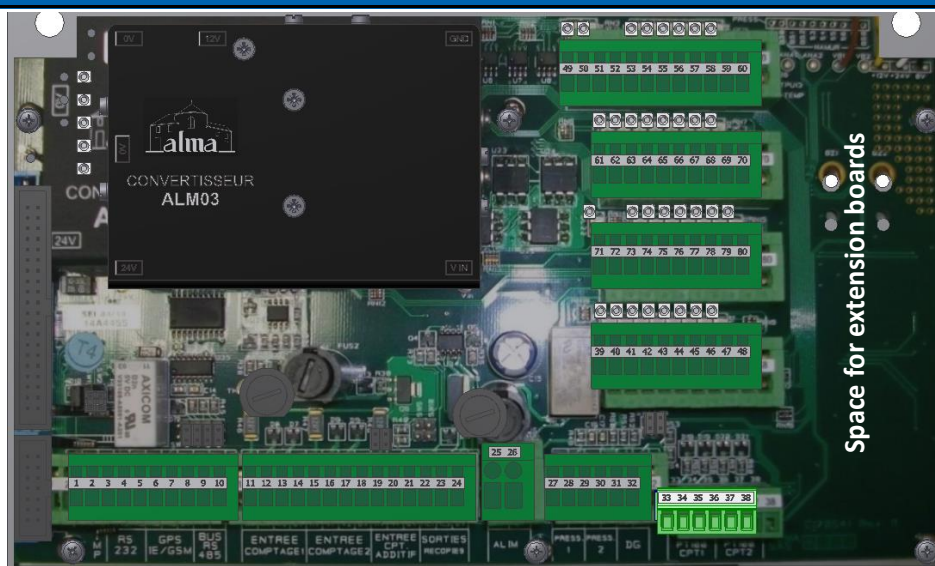


Terminal assignment of the MICROCOMPT+ power supply board RCT4 version

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							
	CONTROL BOX serial links	C6		●	ADR 12x0.34 sh.	Rx	Vt	1	Tx	PRINTER		
						Tx	Jn	2	Rx			
						0V	Nr	3	0V			
						Rx	Bl	4	Tx	RS232 EC + RC	Serial link RS232 Embedded computing (EC) Remote control (RC)	
						Tx	Rg/Bl	5	Rx			
						RS485+	Bc	9	RS485+	RS485 EC + RC	Serial link RS485 Embedded computing (EC) Remote control (RC)	
						RS485-	Rs	10	RS485-			
						Pulses output +	Rg	22	S	PULSES OUTPUT		
						Pulses output -	Gr	24	0V			
						Mesur. End	Vi	53	24VDC	MEASURING END	Anti- fraud, Final stop	
PTO control	Mr	58	PTO	PTO CONTROL								
	TURBINE TRANSMITTER	C3	1/2"NPT		ADR 4x0.34 sh.	12V	Jn	11	12V	TURBINE INPUT	Connect the shielding	
						V1	Mr	12	V1			
						V2	Vt	13	V2			
						0V	Bc	14	0V			
	RECEIVER RCT4 Commands	C5		●	12G1	24VDC	1	25	24VDC	POWER SUPPLY 24VDC		
						0V	2	26	0V			
						HS	3	74	24VDC	HIGH SPEED		High speed
						Author.	4	75	24VDC	AUTHOR.		Authorisation
						Interm. stop	5	49	24VDC	INTERM. STOP		Intermediate stop
						Measuring end	6	50	24VDC	MEASURING END		Measuring end
	Pt1000 TEMPERATURE PROBE	C2	1/2"NPT		ADR 3x0.6 sh.	+	Jn	33	+	Pt100	Connect the shielding	
						-	Bc	34	-			
						-	Vt	35	-			

*Refer to the Cable Glands Installation Instruction

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Angle: degree (° ' ")
Temperature: °C

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Control box LPG-TRONIC

Customer cable gland:
- 2 PG13 cable Ø6-12
- 1 PG09 cable Ø4-8

Pneumatic block

Pneumatic indicator (presence air brake park)

M (1 : 2)
Emergency stop from customer
From Trunk
Air supply
From parking brake

3 Sub-D 9pts male

Regulator calibrated at 6 bar and fittings packed in bag

Luminous power button

Vent plug (do not block)

Print cable L=5m power supply and RS232

Technical features

- Box (No ATEX): 250x200x159 material ABS with transparent lid.
- Protection level : IP50
- Temperature: -10° to +60°C
- Mass (except wiring): about 3.2 kg
- Electrical part:
 - Input power 24Vdc (truck).
 - Customer terminal block BN3: 1.5mm² max.
 - Solenoid valves control: 24Vdc ±10% - 1.2W
- Pneumatic part:
 - Pneumatic (4 output 3/2NC).
 - Fluid: 40µm filtered air lubricated or not
 - Operating Pressure: 10 bar max.
 - Flowrate at 6 bar: 500 Nl/min.
 - Pneumatic fittings: for tube Ø6.
 - Unused outputs must be plugged.

DESCRIPTION OF MODIFICATION 686:
Changing the start button label

PRESENTATION DRAWING		DEF045
Control box		
907	PPN045	
Dev N°	Drawing N°	Rev
		Folio
		Modified on : 18/09/2019
		Created on : 05/06/2012
		by EG
		ROC verified by
		CHR
		XS

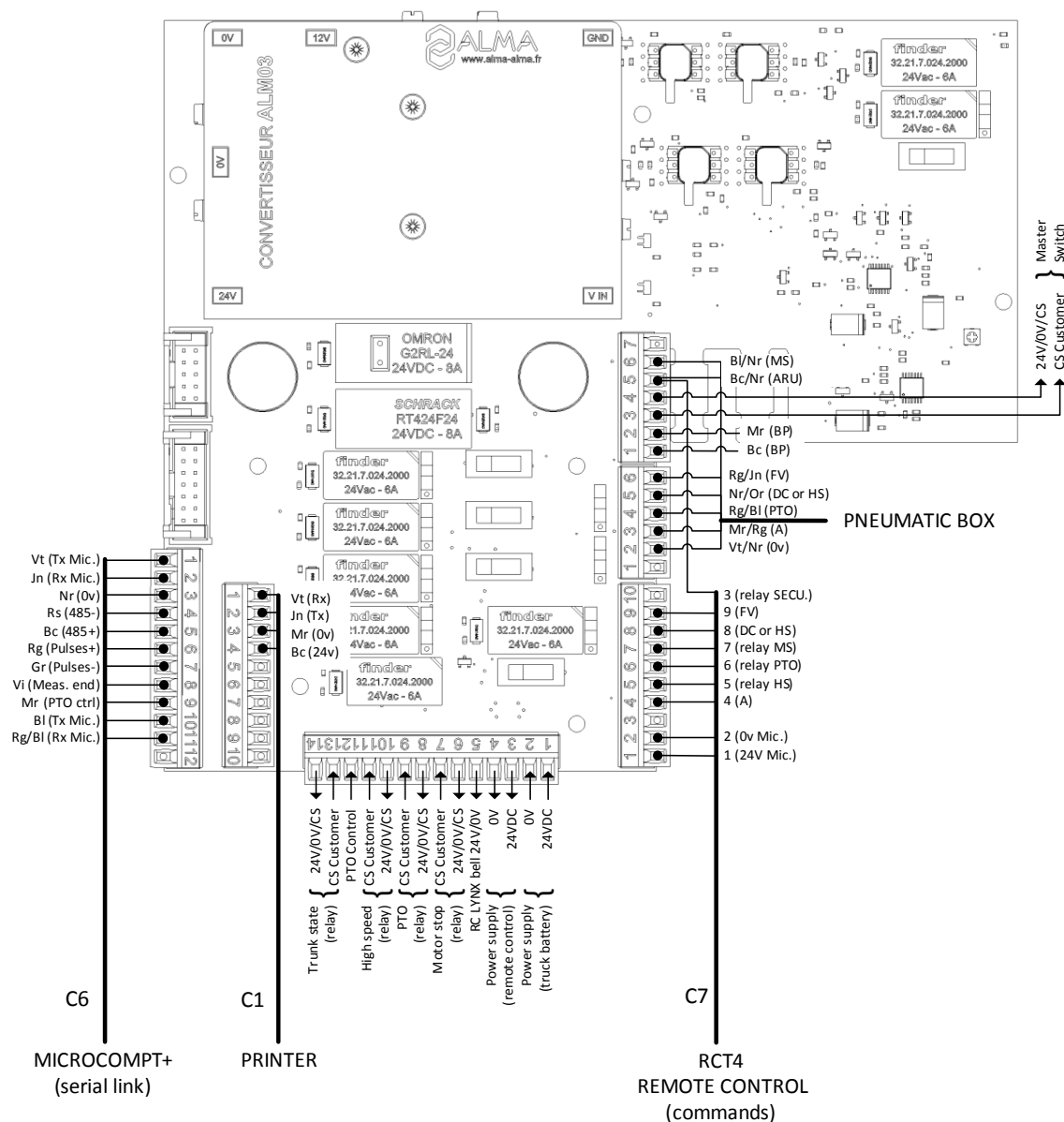
NOTE: Overall dimensions on next folio

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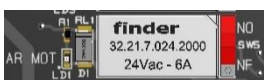
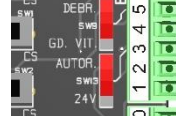
Electrical wiring control box RCT4 version

Wiring diagram of the control box RCT4 version:



Configuration of switches:

PTO (Power take off), Motor stop (AR MOT), High speed (GD. VIT.), RC LYNX, Truck trunk (COFFRE), Master Switch (M. SW), SW9 and SW13:

 Linear switching element for relays NC or NO contact	 Three-position switch for common contact of the relay: 1 → 24VDC 2 → GND (0V) 3 → CS (Free contact)	 SW9 → DEBR. (Declutching) or GD. VIT. (H. speed) for semi trailer SW13 → 24V for PTO or AUTOR for semi trailer
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TERMINAL ASSIGNMENT OF THE CONTROL BOX RCT4 VERSION



EQUIPMENT CONNECTED TO THE CONTROL BOX														
Option	Equipement	Cable for information)				Function	Colour or No.	Block	Terminal	Function		Observation		
		N°	CG*	Alma	Type									
	MICROCOMPT+ Serial links	C6			12x0.34 sh	Tx	Vt	BN1	1	Rx	PRINTER	RS485 serial link Embedded computing (EC) Remote control (RC) RS232 serial link Embedded computing (EC) Remote control (RC)		
						Rx	Jn		2	Tx				
						0V	Nr		3	0V				
						RS485 -	Rs		4	RS485	EC + RC			
						RS485 +	Bc		5					
						Tx	Bl		10					
						Rx	Rg/Bl		11	RS232	EC + RC			
	PRINTER	C1		●	2x1	Rx	Vt	BN2	1	Rx	PRINTER			
						Tx	Jn		2	Tx				
						0V	Mr		3	0V				
						24VDC	Bc		4	24VDC				
	POWER SUPPLY					24VDC		BN3 - Bornier client	1	24VDC	POWER SUPPLY	24VDC truck battery (after battery switch and protected by a fuse)		
	0V						2		0V					
RC LYNX BELL							5		-	-				
MOTOR STOP							6		24VDC/0V/CS	MOTOR STOP	Relay (Configuration 24V, 0V or Free contact) Only used with configuration Free contact			
							7		CS					
PTO							8		24VDC/0V/CS	PTO	Relay (Configuration 24V, 0V or Free contact) Only used with configuration Free contact			
							9		CS					
HIGH SPEED							10		24VDC/0V/CS	HIGH SPEED	Relay (Configuration 24V, 0V or Free contact) Only used with configuration Free contact			
							11		CS					
TRUCK TRUNK							12		-	-				
							13		CS	TRUCK TRUNK	Only used with configuration Free contact			
							14		24VDC/0V/CS	TRUCK TRUNK	Relay (Configuration 24V, 0V or Free contact)			
	RECEIVER RCT4	C7		●	12G1	24VDC	10		BN3	3	24VDC	SUPPLY CARD AND CRADLE	Power supply for the remote control card and cradle	
						0V	11			4	0V			
						24VDC	1	BN4	1	24VDC	MICROCOMPT+ + POWER SUPPLY	Fuse		
						0V	2		2	0V				
						Author.	4		4	EV 3/2NC	AUTHOR.	Authorisation		
						HS	5		5	RELAY	HS	High speed		
						PTO	6		6	EV 3/2NC	PTO	Power take off		
						Stop	7		7	RELAY	MS	Motor Stop		
						DC	8		8	EV 3/2NC	DC	Declutching (or High Speed)		
						FV	9		9	EV 3/2NC	FV	Footvalve		
						Security	3	BN6	5	RELAY	SECURITY	Safety request		
							V/J							

*Refer to the Cable Glands Installation Instructions

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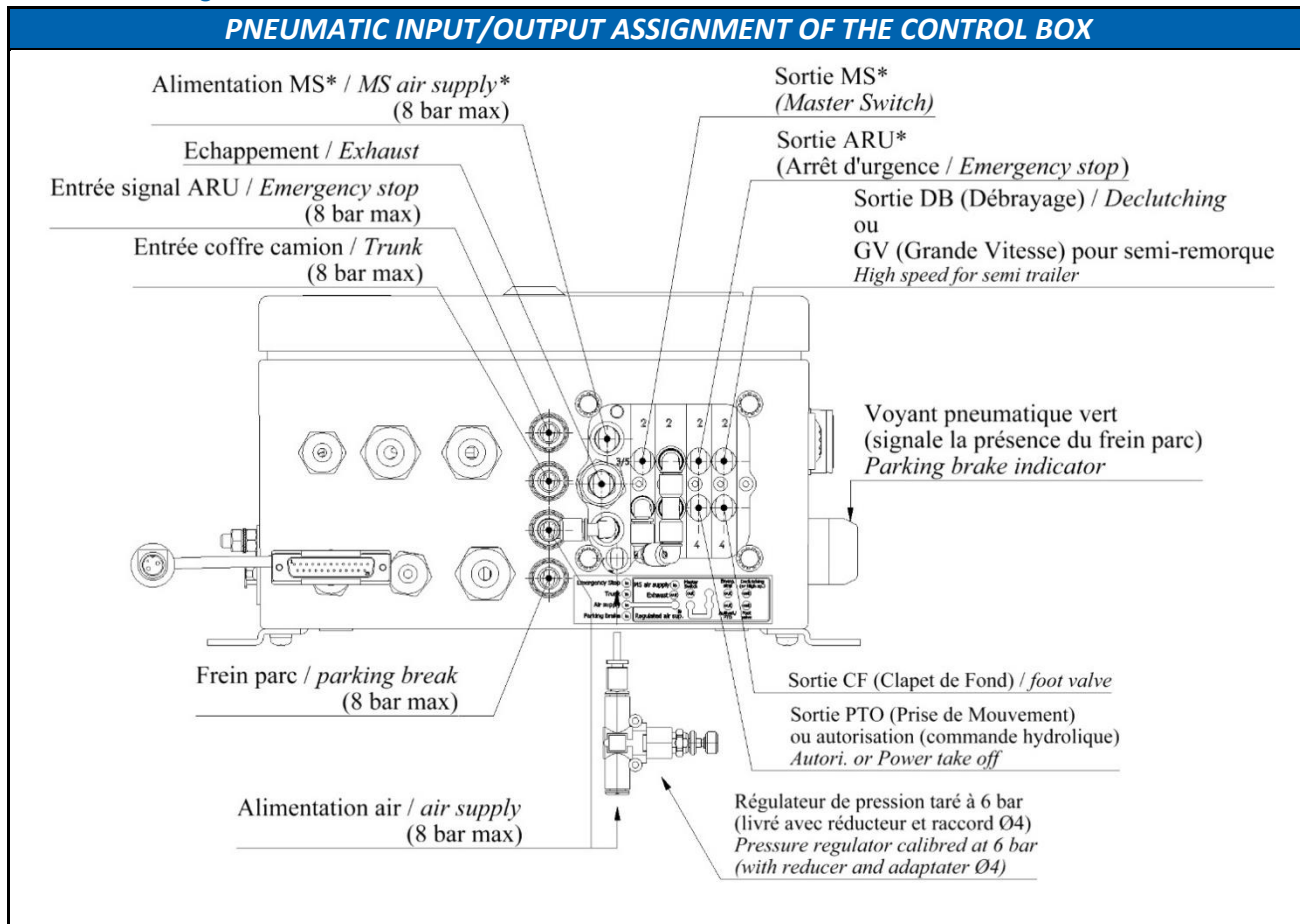
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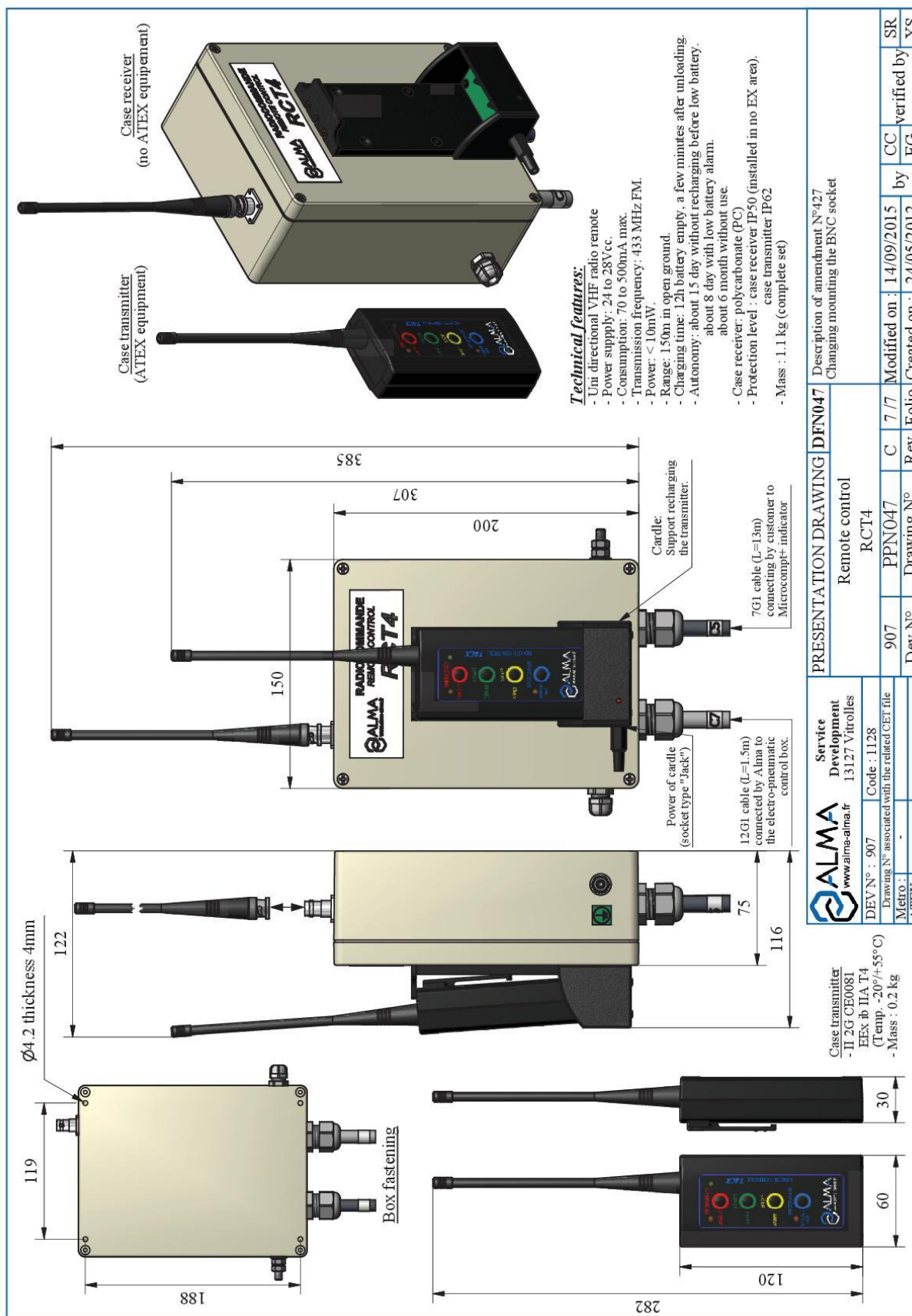
Pneumatic wiring control box RCT4 version



Label	Input	Output	Function	Observation
Air supply	X		Main supply of the control box + detector for pressure drop	Pressure >1 bar: green warning light Pressure <1 bar: orange warning light. Disable the security management for trunk, pressure drop and customer ARU
	X		Secondary supply of the control box	The 6 bar-calibrated regulator, the 6/4 reducer and the Ø4 coupling are packed in a bag inside the control box
Air from parking brake	X		Air from parking brake	
Exhaust		X	Exhaust	Put a tube L=100mm min. (no muffler)
Emergency stop*		X	Pneumatic emergency stop	
Declutching		X	Declutching actuator (or High speed)	With pneumatic declutching
Footvalve		X	Footvalve opening	
Power take off PTO or Authorisation		X	Power take off or Authorisation	Power take off: leave the plug in place and don't connect any tube in case of electrical control Authorisation: hydraulic control
ARU Emergency stop input	X		Detection of emergency stop requests	ARU are connected in series in a positive safety loop
Trunk	X		Detection of back trunk openings	No air=trunk opened
MS*		X	Timed Master switch	When using the MS pneumatic output
Supply MS*	X		Master switch air supply	When using the MS pneumatic output

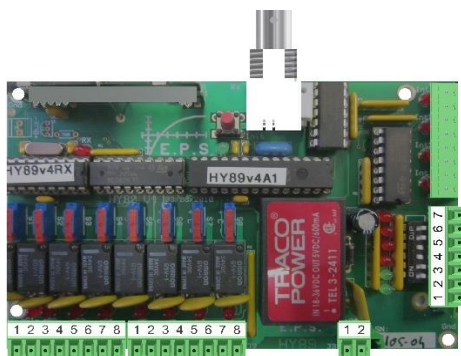
*Unused ports must be plugged.

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Electrical wiring RCT4 remote control receiver

TERMINAL ASSIGNMENT OF THE RCT4 RECEIVER



EQUIPMENT CONNECTED TO THE RCT4 RECEIVER								RCT4 RECEIVER TERMINAL BLOCK					
Option	Equipment	Cable for information)				Function	Colour or No.	Block	Terminal	Function		Observation	
		No.	CG*	Alma	Type								
	MICROCOMPT+ Commands	C5			12G1	24VDC	1	BN1	1	24VDC	MICROCOMPT+ POWER SUPPLY		
						0V	2		2	0V			
						IN1 (A)	4		5				AUTHORISATION
						HS	3	J4	5		HIGH SPEED		
						Author.	4		4		AUTHORISATION		
						Interm. stop	5		3		INTERMEDIATE STOP		
						Measur. end	6		2		MEASURING END		
	CONTROL BOX Commands	C7		●	12G1	Fuse	1	BN1	1		MICROCOMPT+ POWER SUPPLY		
							2		2				
						EV AU	3	J2	5		SAFETY REQUEST	Emergency stop	
						EV Author.	4	J4	4		AUTHORISATION		
						Relay HS	5	J1	7		HIGH SPEED		
						EV PTO	6		5		POWER TAKE OFF		
						Relay MS	7	J2	3		MOTOR STOP		
						EV DC	8	J1	1		DECLUTCHING	or High speed	
						EV FV	9		3		FOOTVALVE		
						24VDC	10	J3	1	24VDC	SUPPLY RC CARD AND CRADLE		
						0V	11		2	0V			
				V/J									

*Refer to the Cable Glands Installation Instructions

Configuration of switches:

	Switches position Default configuration	Terminal J4: Enable or disable the function with switches
	6 → OFF 5 → OFF 4 → ON 3 → OFF 2 → OFF 1 → OFF	7 → IN4 PTO (ON=pulse 3 seconds) 6 → IN3 Parking brake 5 → IN2 High speed authorization Alma 4 → IN1 Anti-fraud Alma 3 → OUT2 Intermediate stop Alma 2 → OUT1 End of delivery Alma 1 → Ground

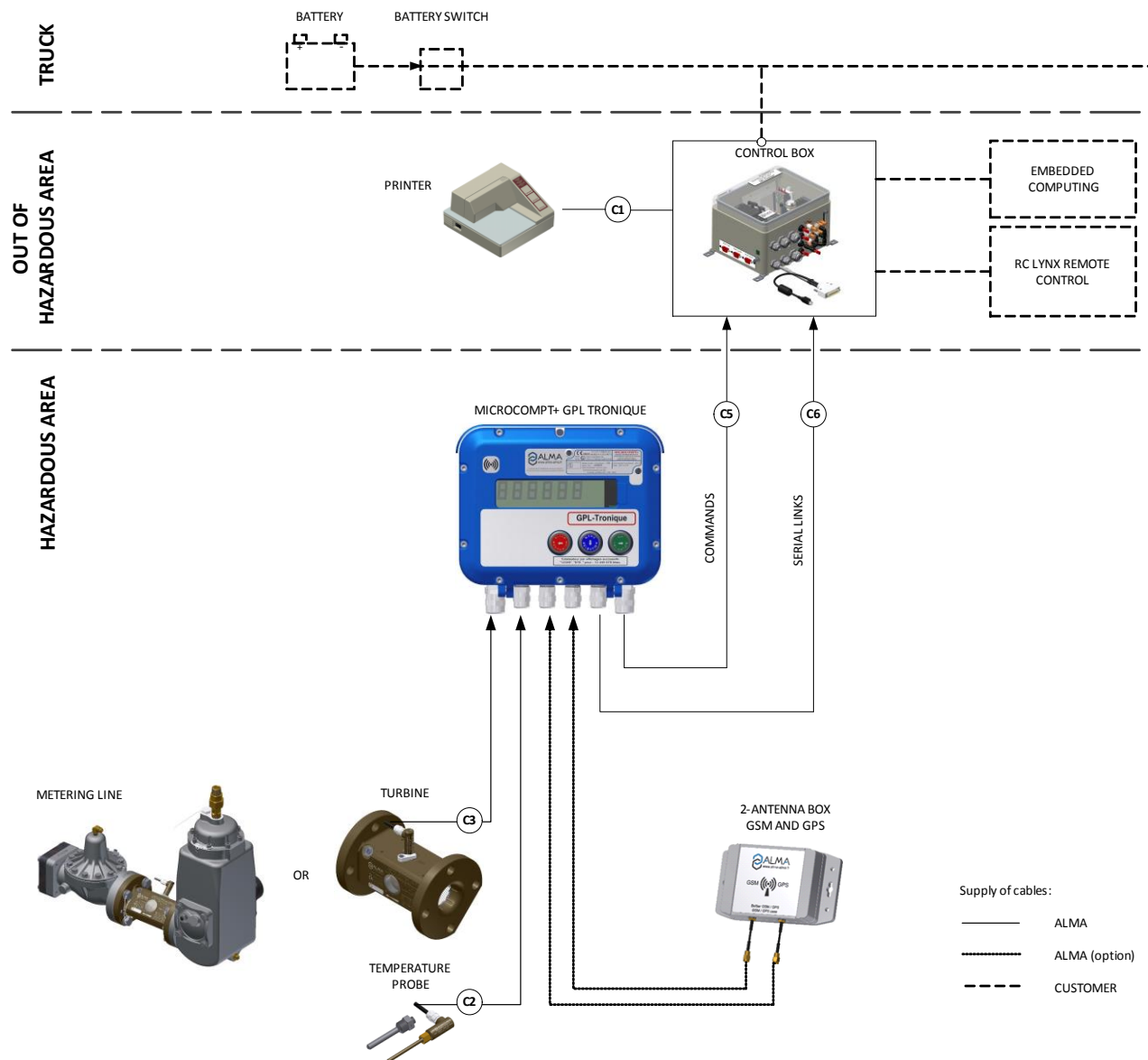
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5.5. ELECTRICAL WIRING WITH CONTROL BOX AND RC LYNX REMOTE CONTROL



Terminal assignment of the MICROCOMPT+ power supply board RC LYNX version

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							
	CONTROL BOX serial links	C6		●	ADR 12x0.34 sh.	Rx	Vt	1	Tx	PRINTER	Serial link RS232 Embedded computing (EC) Remote control (RC)	
						Tx	Jn	2	Rx			
						0V	Nr	3	0V			
							Bl	4	Tx	RS232 EC + RC		
							Rg/Bl	5	Rx			
						RS485 +	Bc	9	+	RS485 EC + RC	Serial link RS485 (RC Lynx) Embedded computing (EC) Remote control (RC)	
						RS485 -	Rs	10	-			
						Pulses output +	Rg	22	S	PULSES OUTPUT		
						Pulses output -	Gr	24	0V			
						Mesur. End	Vi	53	24VDC	MEASURING END PTO CONTROL	Anti- fraud, Final stop	
PTO control	Mr	58	PTO									
	TURBINE TRANSMITTER	C3	1/2"NPT		ADR 4x0.34 sh.	12V	Jn	11	12V	TURBINE INPUT	Connect the shielding	
						V1	Mr	12	V1			
						V2	Vt	13	V2			
						0V	Bc	14	0V			
	CONTROL BOX commands	C5		●	12G1	24VDC	1	25	24VDC	POWER SUPPLY 24VDC	Ferrite on the supply wire (make a loop)	
						0V	2	26	0V			
						Security	3	72	24VDC	SECURITY	Autorisation	
						Author.	4	75	24VDC	AUTHOR.		
						HS	5	73	24VDC	HS	High speed	
						PTO	6	61	24VDC	PTO	Power take off	
						Stop	7	62	24VDC	MS	Motor stop	
						DC	8	76	24VDC	DC	Declutching (for High speed)	
						FV	9	64	24VDC	FV	Footvalve	
	Pt100 TEMPERATURE PROBE	C2	1/2"NPT		ADR 3x0.6 sh.	+	Jn	33	+	Pt100	Connect the shielding	
						-	Bc	34	-			
						-	Vt	35	-			
				●		-	71	0V		Connect 71to 80		
					-	80	0V		Connect 71to 80			

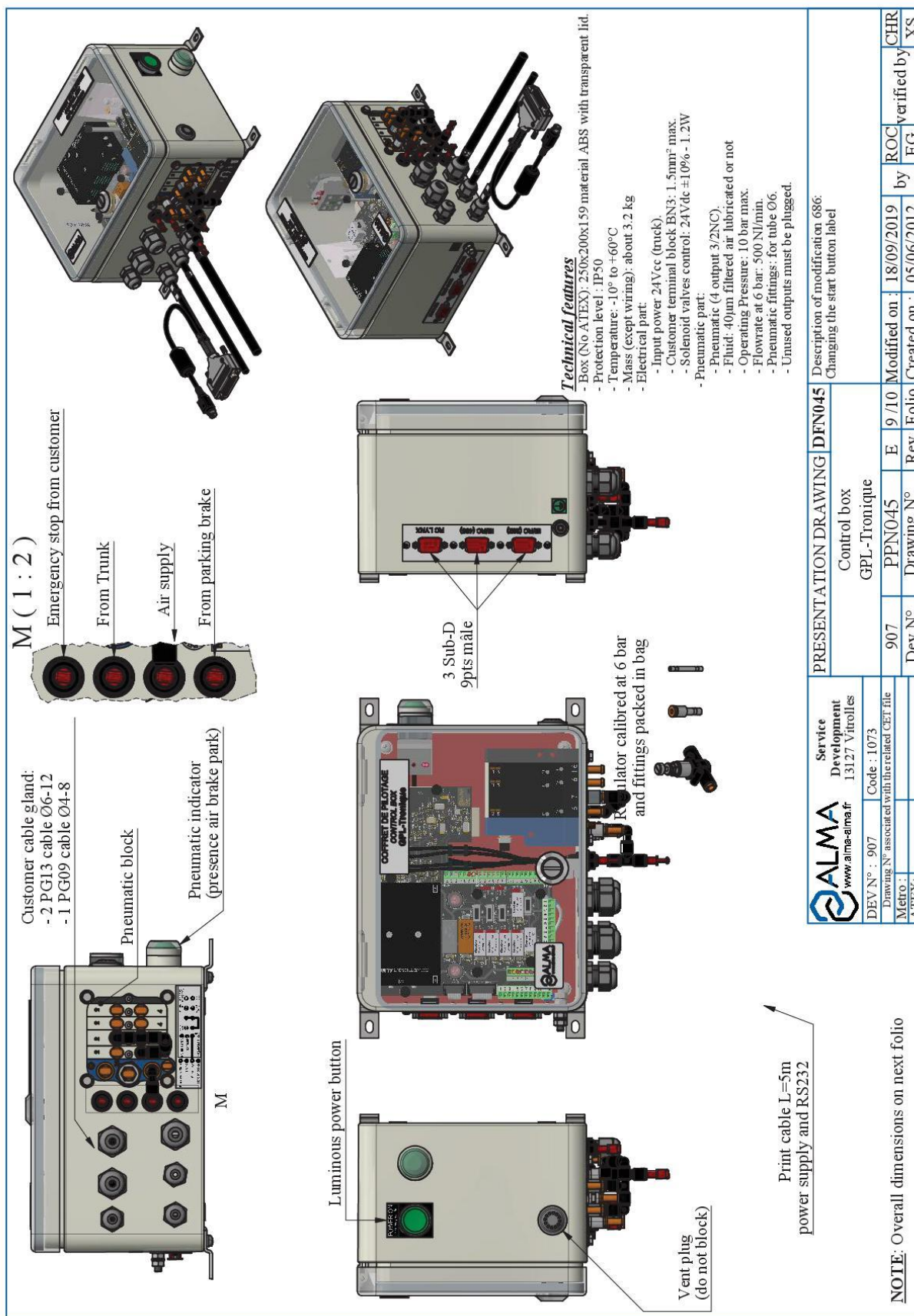
*Refer to the Cable Glands Installation Instruction

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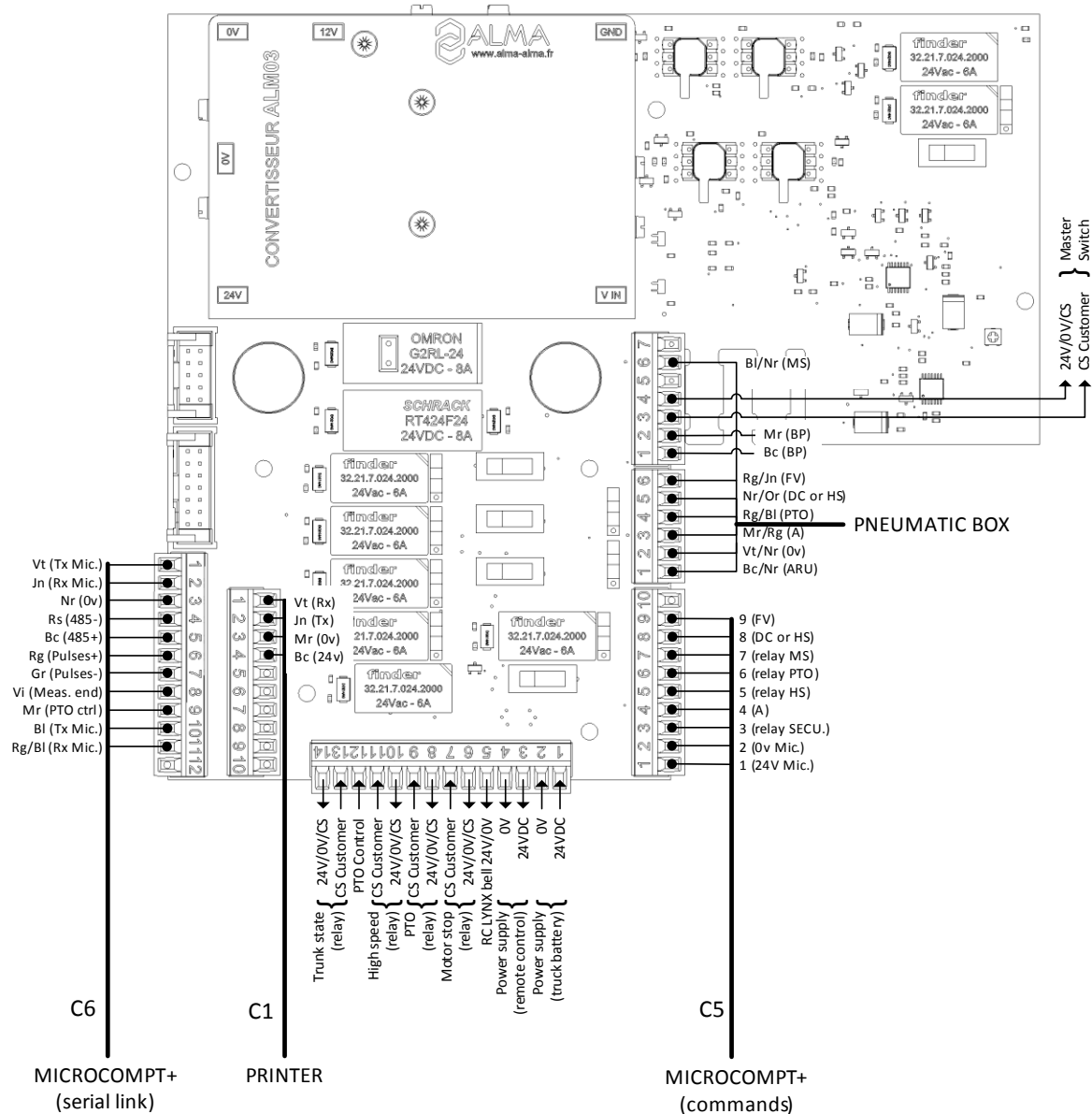
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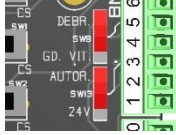
Electrical wiring control box RC LYNX version

Wiring diagram of the control box RC LYNX version:



Configuration of switches:

PTO (Power take off), Motor stop (AR MOT), High speed (GD. VIT.), RC LYNX, Truck trunk (COFFRE), Master Switch (M. SW), SW9 and SW13:

		
Linear switching element for relays NC or NO contact	Three-position switch for common contact of the relay: 1 → 24VDC 2 → GND (0V) 3 → CS (Free contact)	SW9 → DEBR. (Declutching) or GD. VIT. (H. speed) for semi-trailer SW13 → 24V for PTO or AUTOR for semi-trailer

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TERMINAL ASSIGNMENT OF THE CONTROL BOX RC LYNX VERSION

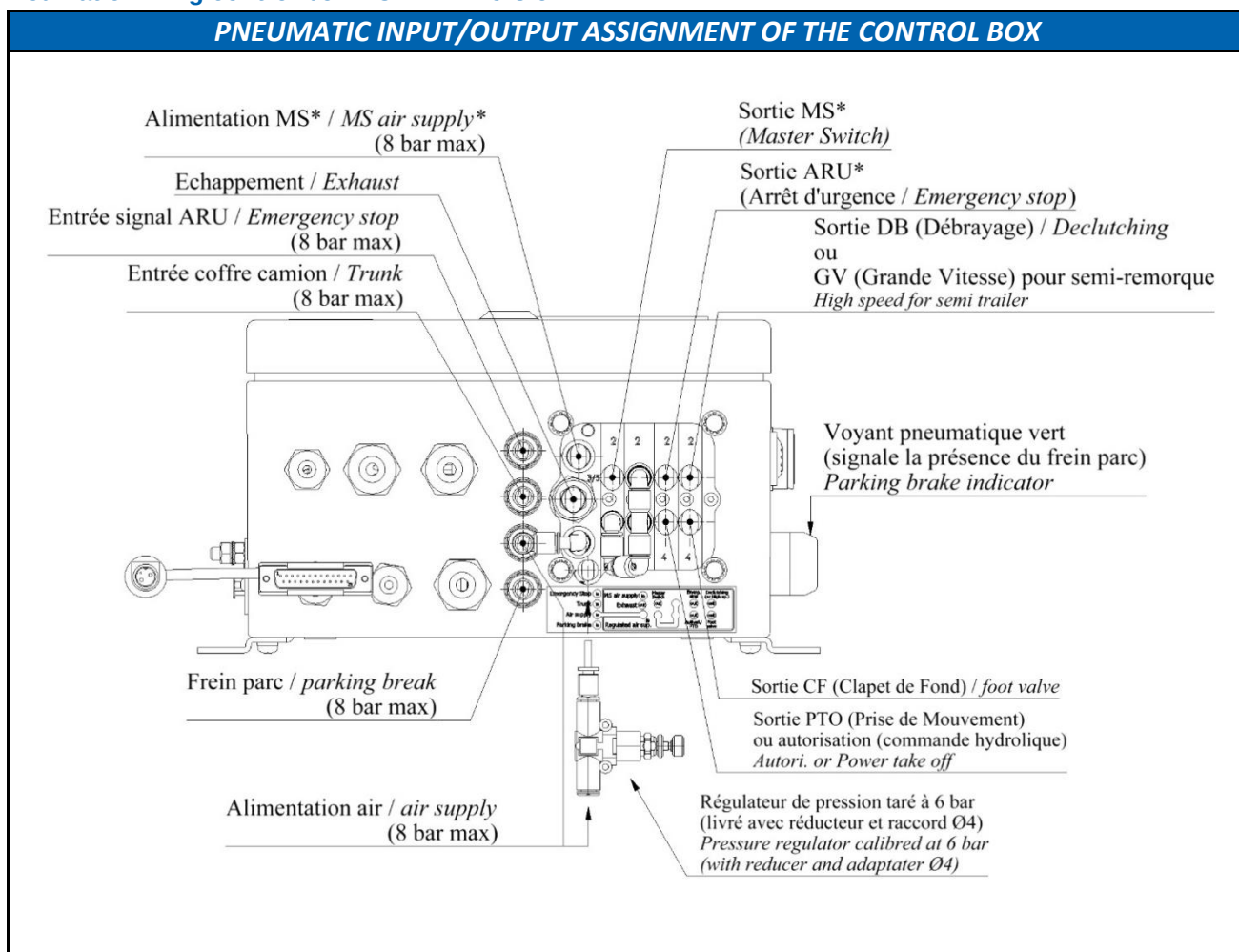


EQUIPMENT CONNECTED TO THE CONTROL BOX								CONTROL BOX TERMINAL BLOCKS					
Option	Equipement	Cable for information)				Function	Colour or No.	Block	Terminal	Function		Observation	
		N°	CG*	Alma	Type								
	MICROCOMPT+ Serial links	C6			12x0.34 sh	Tx	Vt	BN 1	1	Rx	PRINTER	RS485 serial link Embedded computing (EC) Remote control (RC)	
						Rx	Jn		2	Tx			
						0V	Nr		3	0V			
						RS485 -	Rs		4	RS485	EC + RC		
						RS485 +	Bc		5				
						Recop +	Rg		6	Recop +	RECOPIE		
						Recop -	Gr		7	Recop -			
						Measur. end	Vi		8		MEASURING END		
						PTO	Mr		9		PTO CONTROL		
						Tx	Bl		10	RS232	EC + RC		RS232 serial link Embedded computing (EC) Remote control (RC)
						Rx	Rg/Bl		11				
	PRINTER	C1		●	2x1	Rx	Vt	BN 2	1	Rx	PRINTER		
						Tx	Jn		2	Tx			
						0V	Mr		3	0V			
						24VDC	Bc		4	24VDC			
	POWER SUPPLY					24VDC		BN 3 - Bomier client	1	24VDC	POWER SUPPLY	24VDC truck battery (after battery switch and protected by a fuse)	
					0V		2		0V				
	POWER SUPPLY REMOTE CONTROL				24VDC		3		24VDC	POWER SUPPLY RC			
	RC LYNX BELL				0V		4		0V				
	MOTOR STOP								5	-	-		
									6	24VDC/0V/CS	MOTOR STOP	Relay (Configuration 24V, 0V or Free contact)	
							7		CS			Only used with configuration Free contact	
	PTO								8	24VDC/0V/CS	PTO	Relay (Configuration 24V, 0V or Free contact)	
									9	CS		Only used with configuration Free contact	
	HIGH SPEED								10	24VDC/0V/CS	HIGH SPEED	Relay (Configuration 24V, 0V or Free contact)	
									11	CS		Only used with configuration Free contact	
	PTO CONTROL								12	-	-		
	TRUCK TRUNK								13	CS	TRUCK TRUNK	Only used with configuration Free contact	
									14	24VDC/0V/CS	TRUCK TRUNK	Relay (Configuration 24V, 0V or Free contact)	
	MICROCOMPT+ Commands	C5			12G1	24MC	1	BN 4	1	24VDC	MICROCOMPT + POWER SUPPLY	Fuse	
						0MC	2		2	0V			
						Security	3		3	RELAY	SECURITY	Safety request	
						Author.	4		4	EV 3/2NC	AUTHOR.	Authorisation	
						HS	5		5	RELAY	HS	High speed	
						PTO	6		6	EV 3/2NC	PTO	Power take off	
						Stop	7		7	RELAY	MS	Motor Stop	
						DC	8		8	EV 3/2NC	DC	Declutching (or High Speed)	
						FV	9		9	EV 3/2NC	FV	Footvalve	
							V/J						

*Refer to the Cable Glands Installation Instructions

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Pneumatic wiring control box RC LYNX version

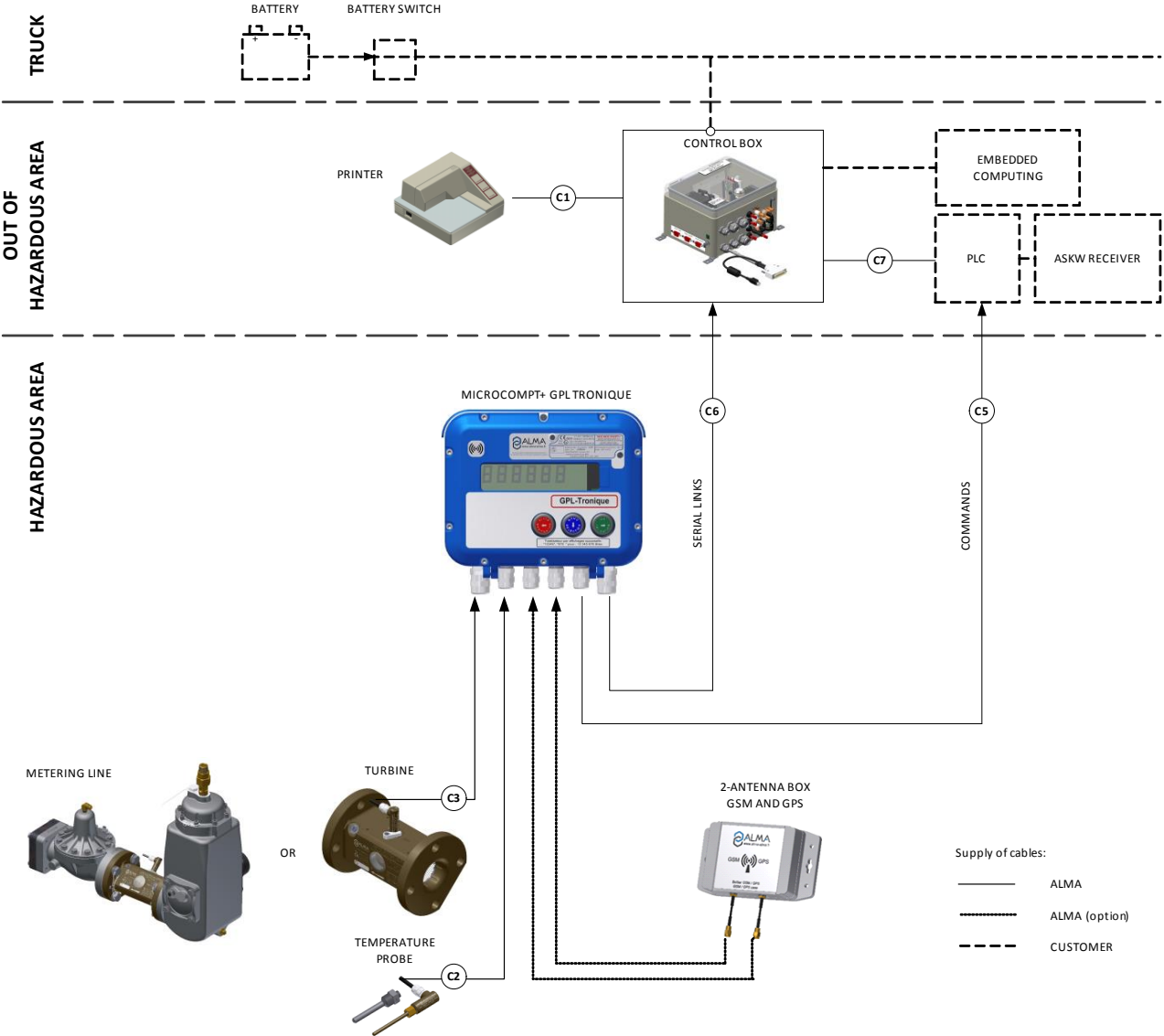


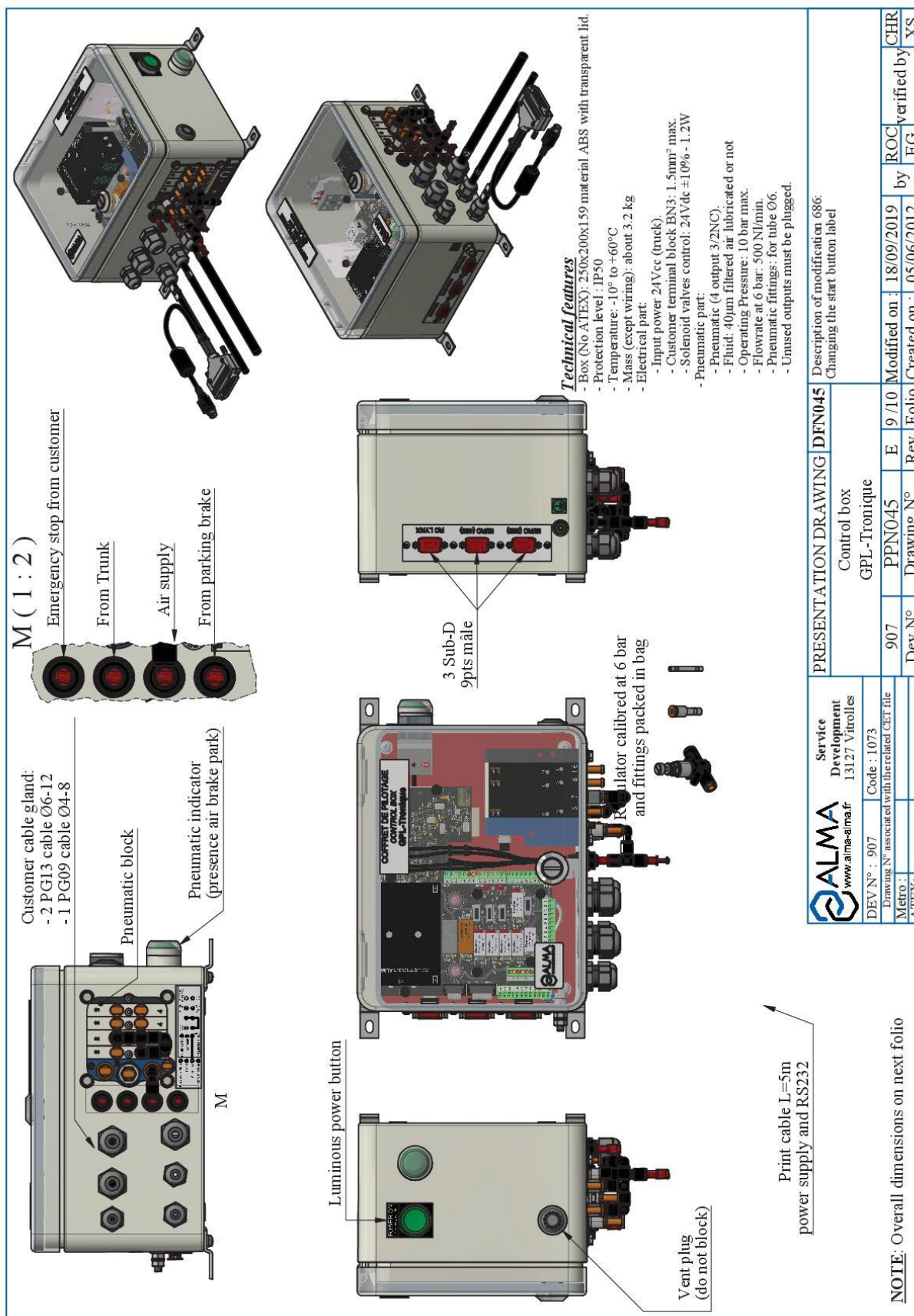
Label	Input	Output	Function	Observation
Air supply	X		Main supply of the control box + detector for pressure drop	Pressure >1 bar: green warning light Pressure <1 bar: orange warning light. Disable the security management for trunk, pressure drop and customer ARU
	X		Secondary supply of the control box	The 6 bar-calibrated regulator, the 6/4 reducer and the Ø4 coupling are packed in a bag inside the control box
Air from parking brake	X		Air from parking brake	
Exhaust		X	Exhaust	Put a tube L=100mm min. (no muffler)
Emergency stop*		X	Pneumatic emergency stop	
Declutching		X	Declutching actuator (or High speed)	With pneumatic declutching
Footvalve		X	Footvalve opening	
Power take off PTO or Authorisation		X	Power take off or Authorisation	Power take off: leave the plug in place and don't connect any tube in case of electrical control Authorisation: hydraulic control
ARU Emergency stop input	X		Detection of emergency stop requests	ARU are connected in series in a positive safety loop
Trunk	X		Detection of back trunk openings	No air=trunk opened
MS*		X	Timed Master switch	When using the MS pneumatic output
Supply MS*	X		Master switch air supply	When using the MS pneumatic output

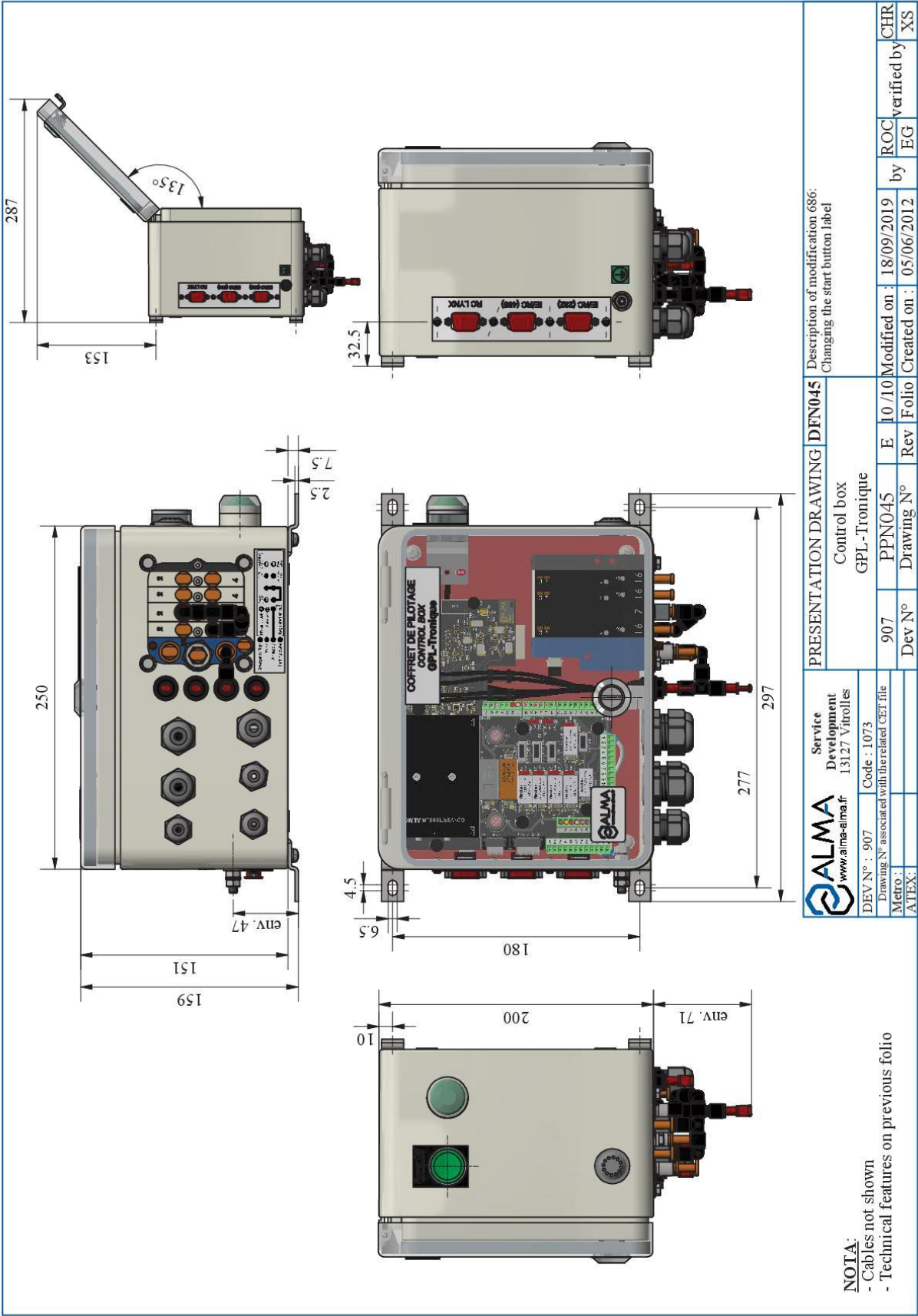
*Unused ports must be plugged.

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5.6. ELECTRICAL WIRING WITH CONTROL BOX AND ASKW REMOTE CONTROL



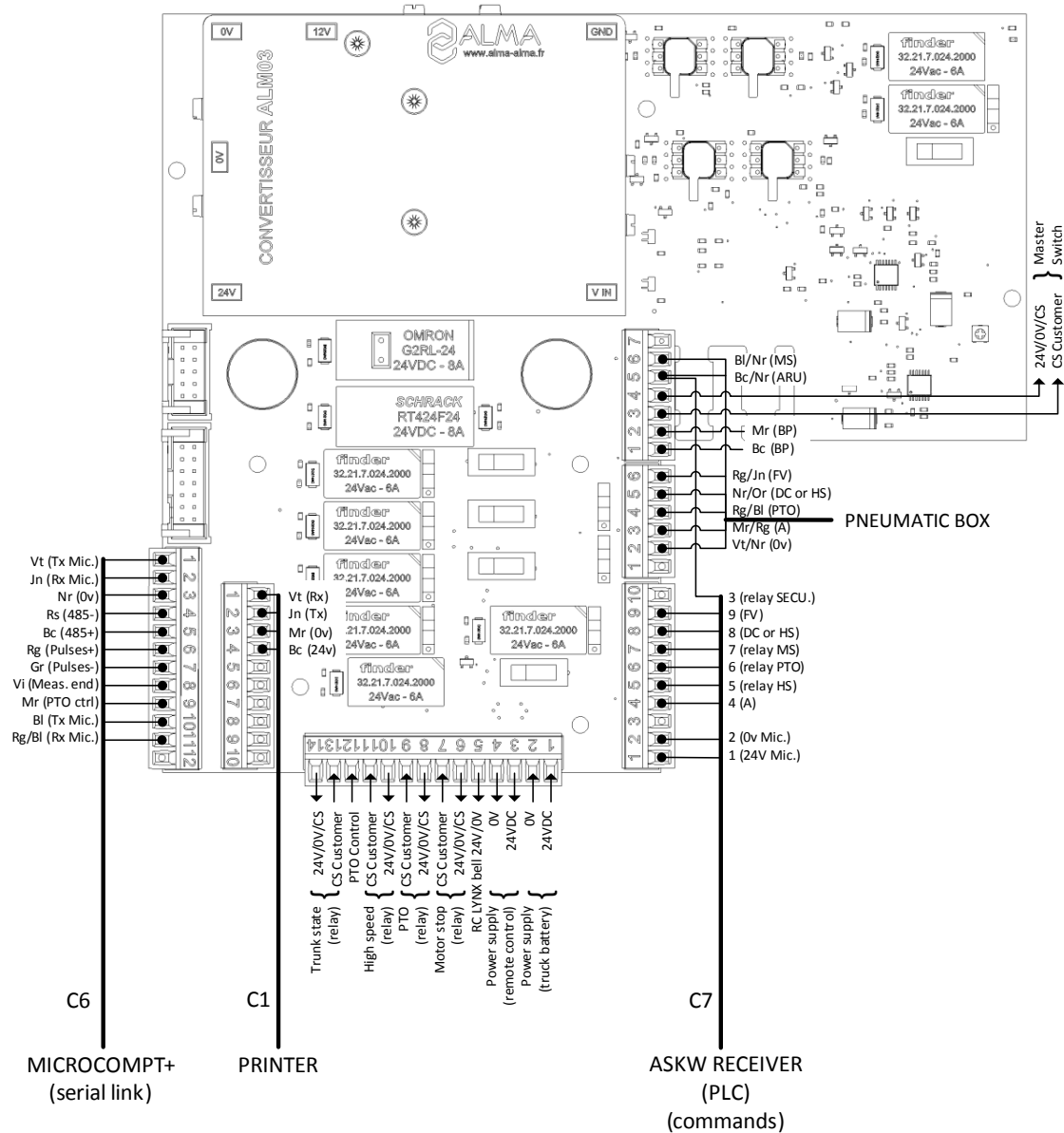




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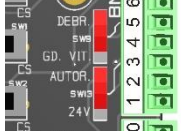
Electrical wiring control box ASKW version

Wiring diagram of the control box ASKW version:



Configuration of switches:

PTO (Power take off), Motor stop (AR MOT), High speed (GD. VIT.), RC LYNX, Truck trunk (COFFRE), Master Switch (M. SW), SW9 and SW13:

		
Linear switching element for relays NC or NO contact	Three-position switch for common contact of the relay: 1 → 24VDC 2 → GND (0V) 3 → CS (Free contact)	SW9 → DEBR. (Declutching) or GD. VIT. (H. speed) for semi trailer SW13 → 24V for PTO or AUTOR for semi trailer

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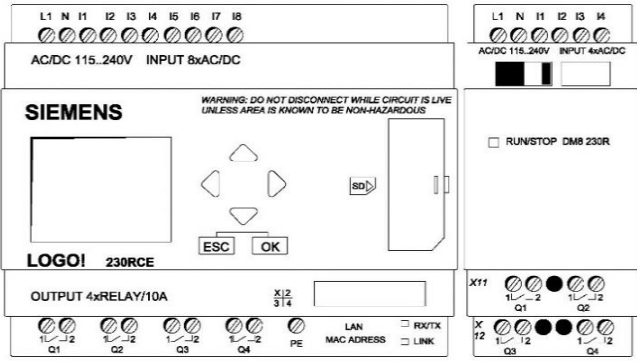
TERMINAL ASSIGNMENT OF THE CONTROL BOX ASKW VERSION



EQUIPMENT CONNECTED TO THE CONTROL BOX								CONTROL BOX TERMINAL BLOCKS					
Option	Equipement	Cable for information)				Function	Colour or No.	Block	Terminal	Function		Observation	
		N°	CG*	Alma	Type								
	MICROCOMPT+ Serial links	C6			12x0.34 sh	Tx	Vt	BN1	1	Rx	PRINTER	RS485 serial link Embedded computing (EC) Remote control (RC) RS232 serial link Embedded computing (EC) Remote control (RC)	
						Rx	Jn		2	Tx			
						0V	Nr		3	0V			
						RS485 -	Rs		4	RS485	EC + RC		
						RS485 +	Bc		5				
						Tx	Bl		10	RS232	EC + RC		
						Rx	Rg/Bl		11				
	PRINTER	C1		●	2x1	Rx	Vt	BN2	1	Rx	PRINTER		
						Tx	Jn		2	Tx			
						0V	Mr		3	0V			
						24VDC	Bc		4	24VDC			
	POWER SUPPLY					24VDC		BN3 - Bornier client	1	24VDC	POWER SUPPLY	24VDC truck battery (after battery switch and protected by a fuse)	
					0V		2		0V				
	POWER SUPPLY REMOTE CONTROL					24VDC			3	24VDC	POWER SUPPLY RC		
					0V		4		0V				
	RC LYNX BELL								5	-	-	MOTOR STOP	Relay (Configuration 24V, 0V or Free contact) Only used with configuration Free contact
	MOTOR STOP								6	24VDC/0V/CS			
									7	CS			
	PTO								8	24VDC/0V/CS	PTO	Relay (Configuration 24V, 0V or Free contact) Only used with configuration Free contact	
									9	CS			
	HIGH SPEED								10	24VDC/0V/CS	HIGH SPEED	Relay (Configuration 24V, 0V or Free contact) Only used with configuration Free contact	
									11	CS			
	PTO CONTROL								12	-	-	TRUCK TRUNK TRUCK TRUNK	Relay Only used with configuration Free contact Relay (Configuration 24V, 0V or Free contact)
	TRUCK TRUNK								13	CS			
									14	24VDC/0V/CS			
	RECEIVER ASKW (PLC)	C7		●	12G1	24VDC	10	BN3	3	24VDC	MICROCOMPT+ POWER SUPPLY	Fuse	
						0V	11		4	0V			
						24VDC	1		BN4	1			24VDC
						0V	2	2		0V			
						Author.	4	4		EV 3/2NC	PTO	Power take off	
						HS	5	5		RELAY			
						PTO	6	6		EV 3/2NC	M S	Motor Stop	
						Stop	7	7		RELAY			
						DC	8	8		EV 3/2NC	DC	Declutching (or High Speed)	
						FV	9	9		EV 3/2NC			FV
						Security	3	BN6	5	RELAY	SECURITY	Safety request	
						V/J							

*Refer to the Cable Glands Installation Instructions

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TERMINAL ASSIGNMENT OF THE ASKW RECEIVER (PLC)												
												
EQUIPMENT CONNECTED TO THE ASKW							TERMINAL BLOCK OF THE PLC FOR ASKW					
Option	Equipement	Cable (for information)				Function	Colour or No.	Block	Terminal	Function		Observation
		N°	CG*	Alma	Type							
	MICROCOMPT+ Commands	C5			12G1	24VDC	1	C7	1	24VDC		Connect to C7
						0V	2	C7	2	0V		Connect to C7
						HS	3		I2	HS		High speed
						Author.	4		I1	AUTHOR.		Authorisation
						Interm. Stop	5	Q1	2	INTERMEDIA TE STOP		Intermediate stop
						Measur. End	6	Q2	2	MEASURING END		Measuring end
	CONTROL BOX Commands	C7			12G1	EV Emergency	3	MAQ4	2	SAFETY REQUESTT		Emergency stop
						EV Author.	4		I1	AUTHOR.		Authorisation
						Relay HS	5	MAQ1	2	HS		High speed
						EV PTO	6	MAQ2	I5	PTO		CONTINUOUS Power take off
									2			PULSE Power take off
						Relay MS	7	Q3	2	MS		Motor Stop
						EV DC	8	MAQ3	2	DC		Declutching
						EV FV	9		I6	FV		Footvalve
						24VDC	10	Q3	L1	24VDC	BOARD 24V-SUPPLY	
								Q4	1			
								MAQ1	1			
								MAQ2	1			
								MAQ3	1			
								MAQ4	1			
						0V	11	MA	L1	0V		
								Q1	1			
								Q2	1			
								MA	N			
						Parking brake		MA	I2	24VDC	Parking brake	Present: +24VDC Absent: No authorisation
								MA	I4			

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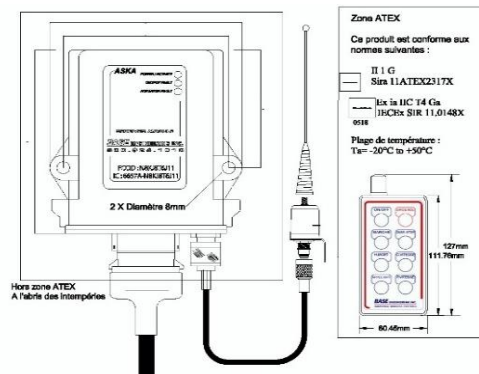
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Length: mm
Angle: degree (° ' ")
Temperature: °C

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TERMINAL ASSIGNMENT OF THE ASKW RECEIVER (REMOTE CONTROL)



EQUIPMENT CONNECTED TO THE ASKW							ASKW REMOTE CONTROL CABLE		
Option	Equipement	Cable (for information)				Terminal	Block	Cable	Observation
		N°	CG*	Alma	Type				
	ASKW PLC					13		Vt/Nr	CALL/OPTION
						14		Bl	DECLUTCHING/STOP
						15		Bc	START
						16		Nr/Bc	INTERNAL VALVE
						17		Vt	ACTIVATION OF CONTROL-RELAY
						18		Rg/Nr	HIGH SPEED
						2	Q4	Rg	24VDC
						11	M A	Or	ON/OFF
						13			
	MICROCOMPT+	C5		•			2	Nr	GROUND 0V
	CONTROL BOX	C7		•			2		

*Refer to the Cable Glands Installation Instructions

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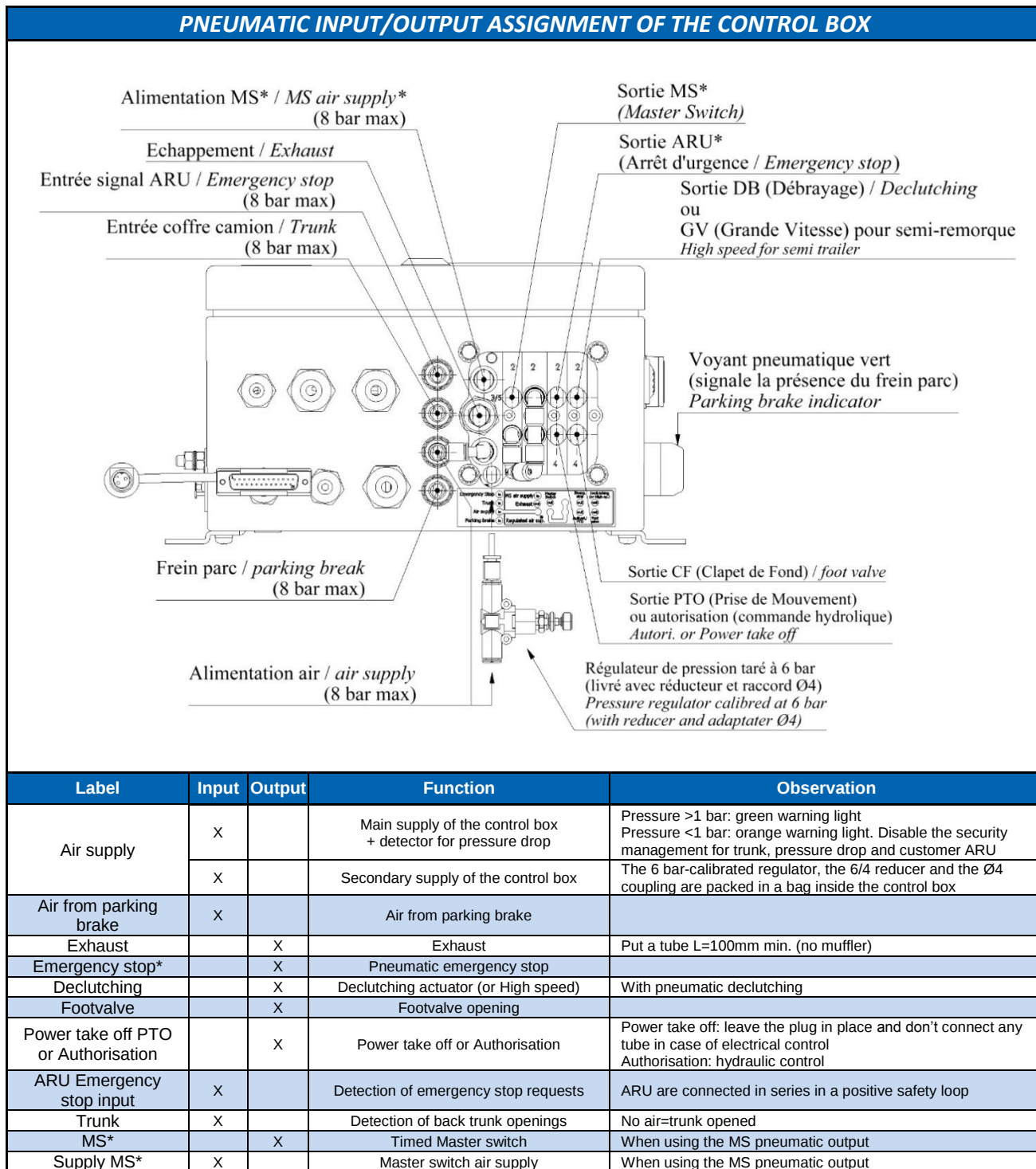
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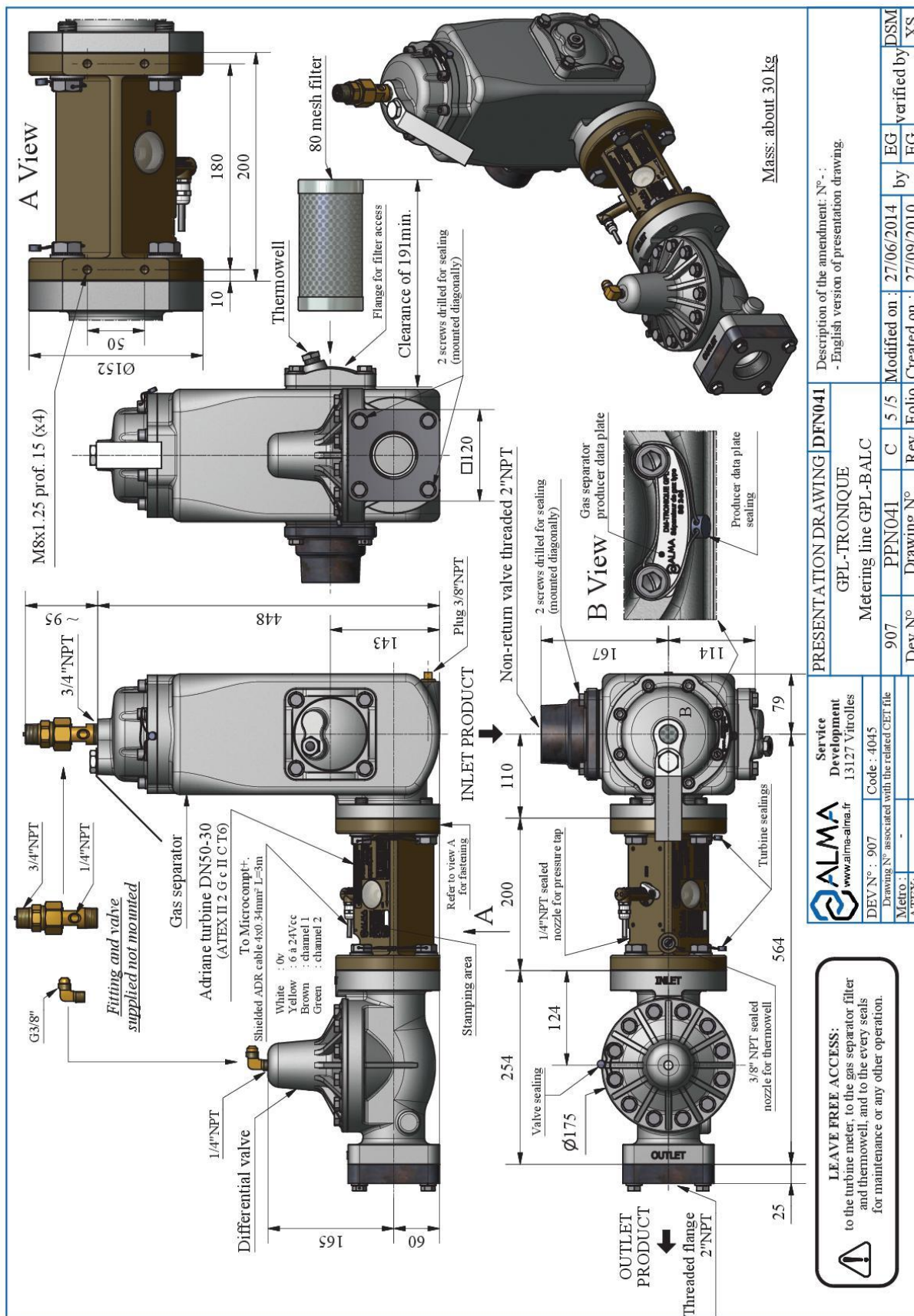
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Pneumatic wiring control box ASKW version



*Unused ports must be plugged.

6. METERING LINE GPL-BALC



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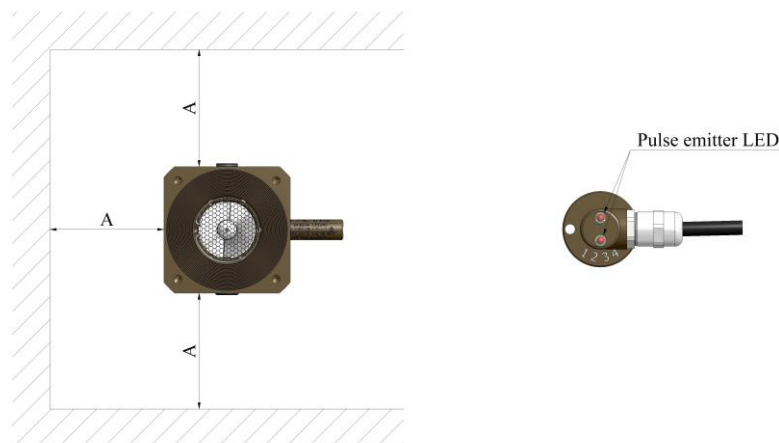
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6.1. INSTALLATION AND SEALING RECOMMENDATIONS ADRIANE TURBINE METER

- 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 400 μ 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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7. PRINTER

180

101.5

190

Switch ON/OFF

Switch SW1 (under printer)

24Vdc connector

D-Sub connector 25 pin female

Switch 3 ON

Switch SW1 (under printer)

Technical data:

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

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.

PRESENTATION DRAWING PPN901
Flatbed printer
TM-U295

907 Dev N° Drawing N° Rev 2/2 Modified on : 11/01/2019 Created on : 24/03/2010 by CC verified by SR XS

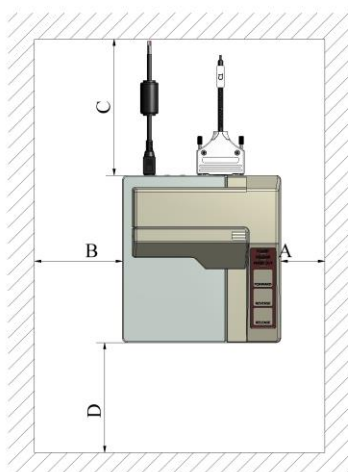
Service Development 13127 Vitrolles
www.alma-alma.fr
Code : 6176
DEV N° : 907
Drawing N° associated with the related CEI file
Metro : -
ATEX: -

Description of the amendment: N° :
Removing the wiring

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-
- Technical drawings of the 3D printer showing dimensions A, B, C, and D. Dimension A is the height of the printer. Dimension B is the width of the printer. Dimension C is the length of the printer with the filament spool holder. Dimension D is the length of the printer without the filament spool holder.



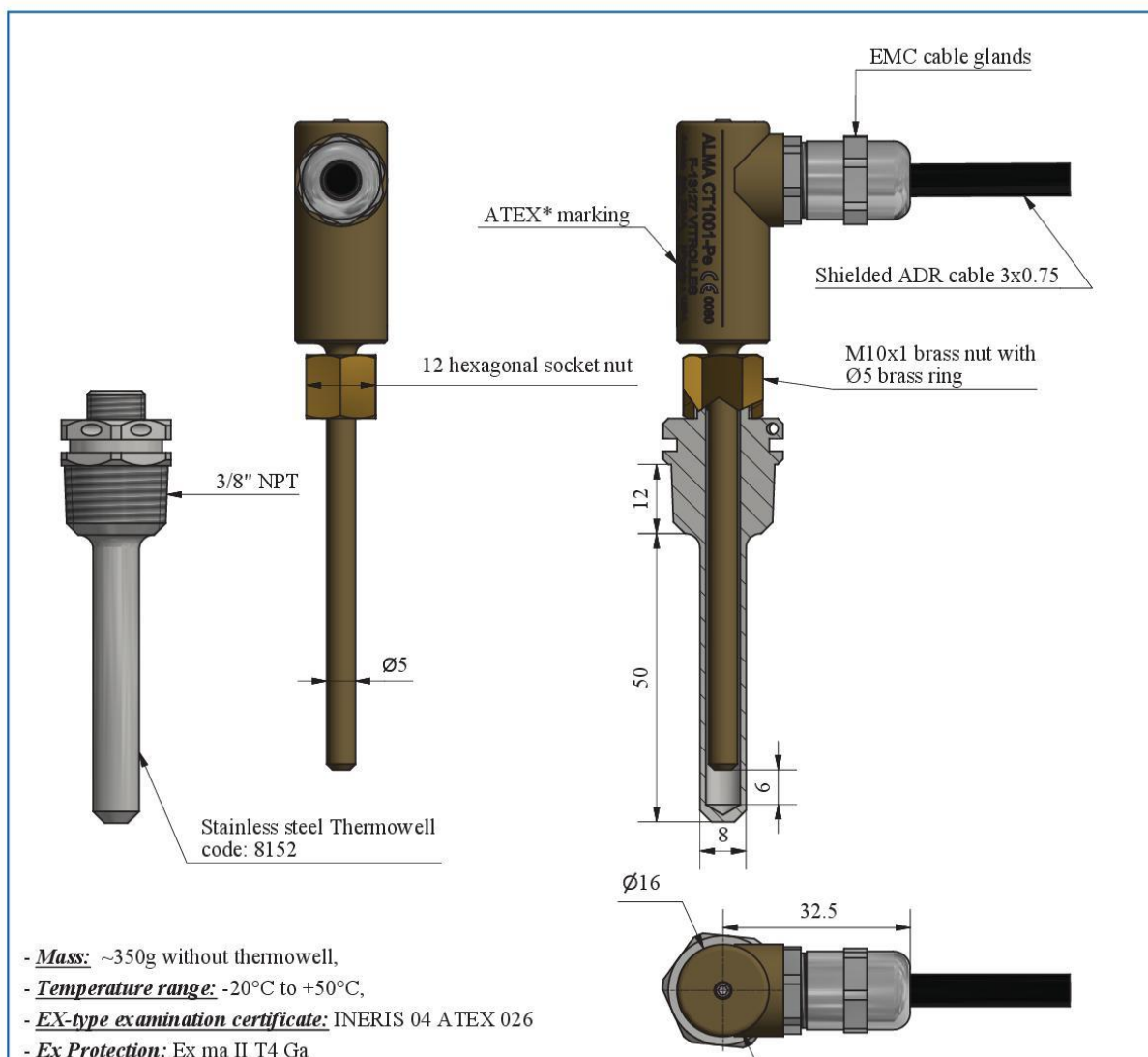
DO NOT EXPOSE THE PRINTER TO ANY HEAT-SOURCE.
PROTECT IT FROM VIBRATIONS AND WATER PROJECTIONS.

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9. TEMPERATURE PROBE Pt100 – CT1001



- **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

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

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

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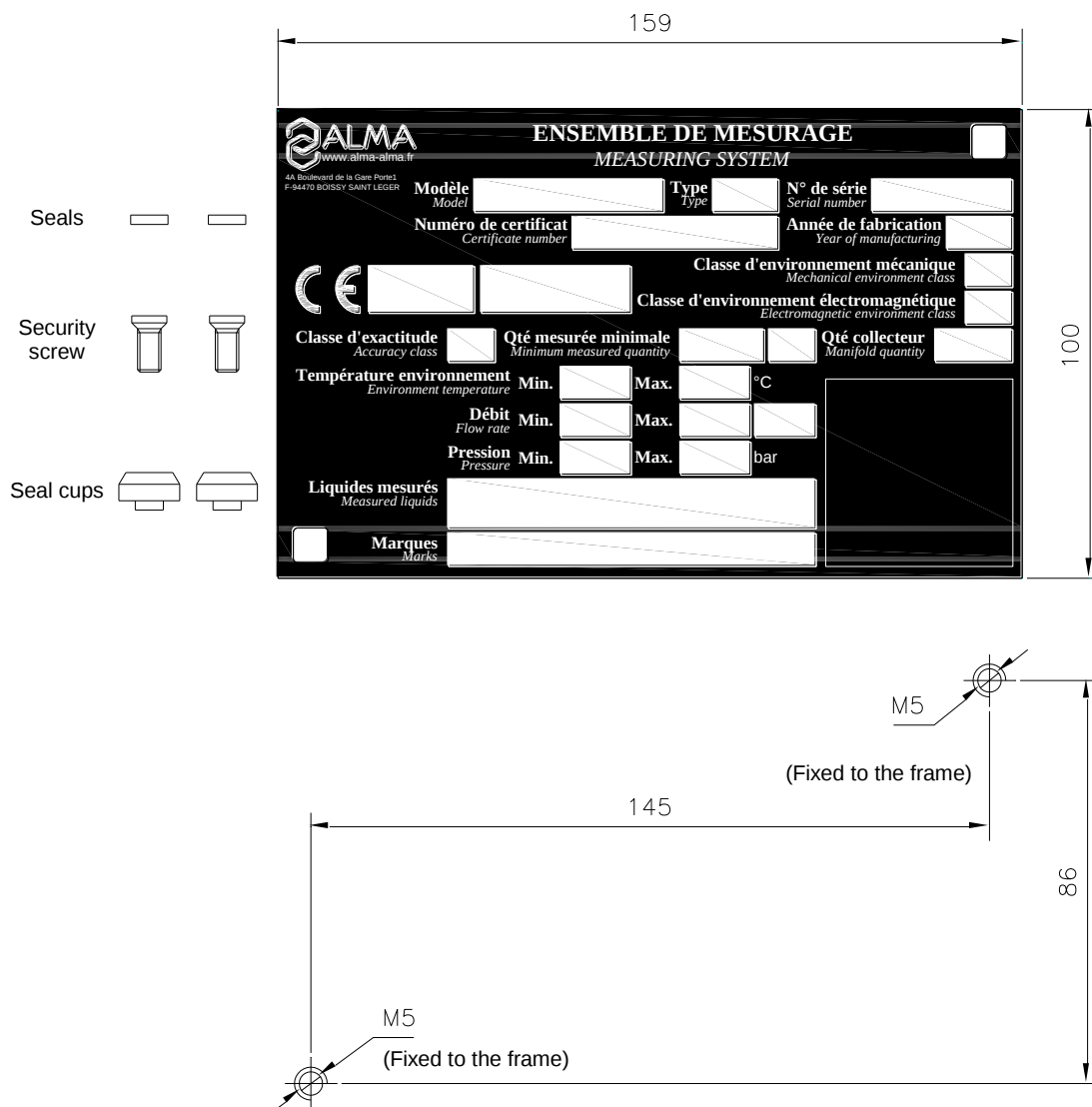
INSTALLATION OF THE TEMPERATURE SENSOR ON THE ALMA TURBINE METER:



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10. KIT FOR MEASURING SYSTEM IDENTIFICATION PLATE

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



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

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