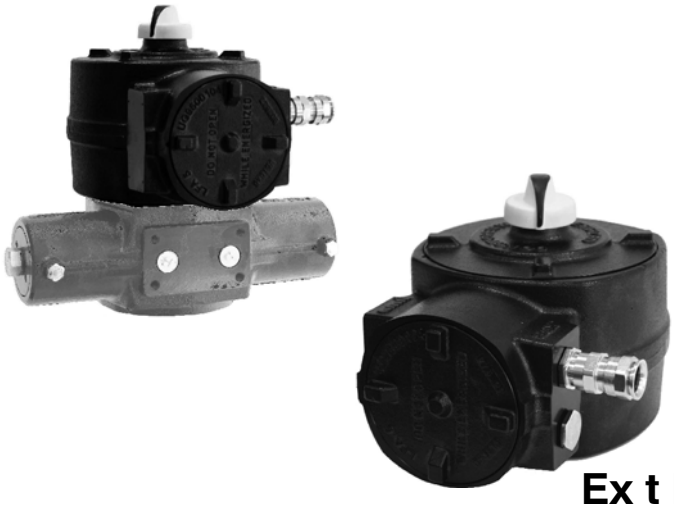
AMTROBOX R Ex d

**Limit switch box
with explosion proof housing**



**CE 0081 Ex II 2 GD
Ex d IIB T4 - T6 Gb
Ex t IIIC T 80° C - T 130° C Db IP 68**

**Monitoring function
fieldbus compatible**

Applications

- Harsh applications such as marine or heavy industry
- Explosive atmospheres.

General information

- AMTROBOX R Ex d (R1189) is a robust open/close detection box with microswitches or inductive proximity detectors.
- Its protection mode is explosion proof housing “d” in accordance with EN 60079-0, EN 60079-1, EN 60079-31 standards.
  EC type examination certificate is: LCIE10 ATEX 3069/01
  The representative gas of explosion risk is ethylene.
- No bracket is necessary, overall dimensions are reduced.
- It can be mounted directly on actuators compatible with VDI/VDE 3845 interface.
- The signalling position is realized by a visual pointer two-colour big size.
- It is in accordance with ATEX 94/9/CE directive regarding to explosive atmosphere and marking:

  CE 0081 Ex II 2 GD

- Explosive area: explosion proof housing Ex d IIB
  Ex t IIIC

Protection

- Protection level: IP 68.
- Corrosion resistant: protection by cataphoresis and paint coating.

Temperature range

- From –25 °C to +70 °C

Materials

- Housing: Cast iron.
- Covers : Cast iron.

Standard variantes

- Feed-back position by potentiometer or by 4-20 mA transmitter.
- Fieldbus AS-i V3.0 / Profibus DP
- Visual pointer

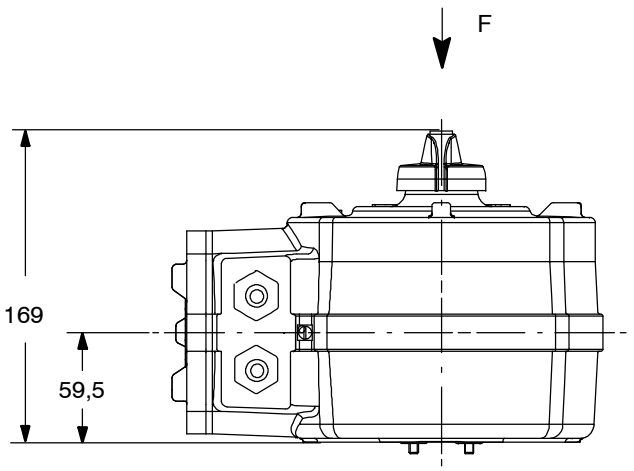
This leaflet is also to be used as a start-up guide ref. 42 803 483

Technical data

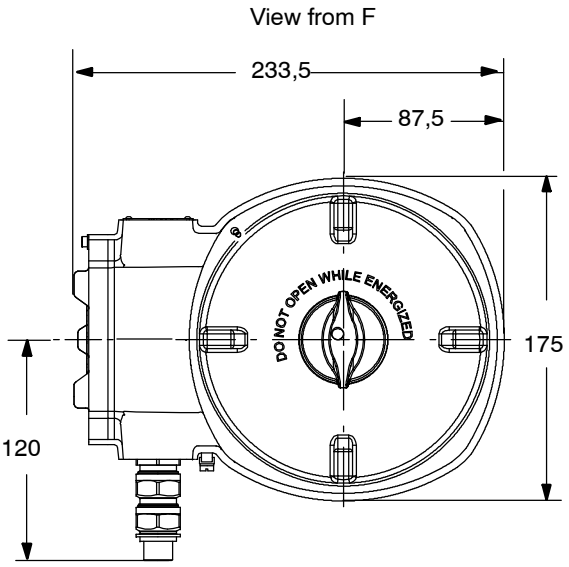
Environment				
- Protection level:	Standard: IP 68 In option: IP 68 (30 m, 72 hours)			
- Resistance to vibrations:	According to “Test Programm Lloyd’s Register - Vibration test 1” and IEC 60068-2-6 Test Fc standard. Frequency: 5 to 100 Hz. Displacement: ± 1 mm. Acceleration: ± 0,7g.			
- Working temperature:	From -25 °C to +70 °C (from -13 °F to +158 °F)			
- Room temperature °C:	-25 to +40	-25 to +50	-25 to +60	-25 to +70
Temperature class:	T6	T5	T5	T4
Max. temperature of the surface:	+80 °C	+95 °C	+95 °C	+130 °C
- Electromagnetic compatibility: - test standards	EN 61000-6-2 ; EN 61000-6-4			
- Protection against the explosive environment by explosion-proof housing	EN 60079-0 ; EN 60079-1 ; EN 60079-31 ; EN 61241-0 ; EN 61241-1			

Housing	
- Material:	Cast iron EN-GJL 250 (JL 1040)
- Coating:	Cataphoresis (25 µm) + black paint (125 µm)
- Position signalling:	By visual pointer
- Electrical connection:	By metallic packing-gland Ex d M20x1.5, for cable dia. 8,5 to 16 mm In option : packing-gland (30 m, 72 hours) for cable dia 6 to 13 mm

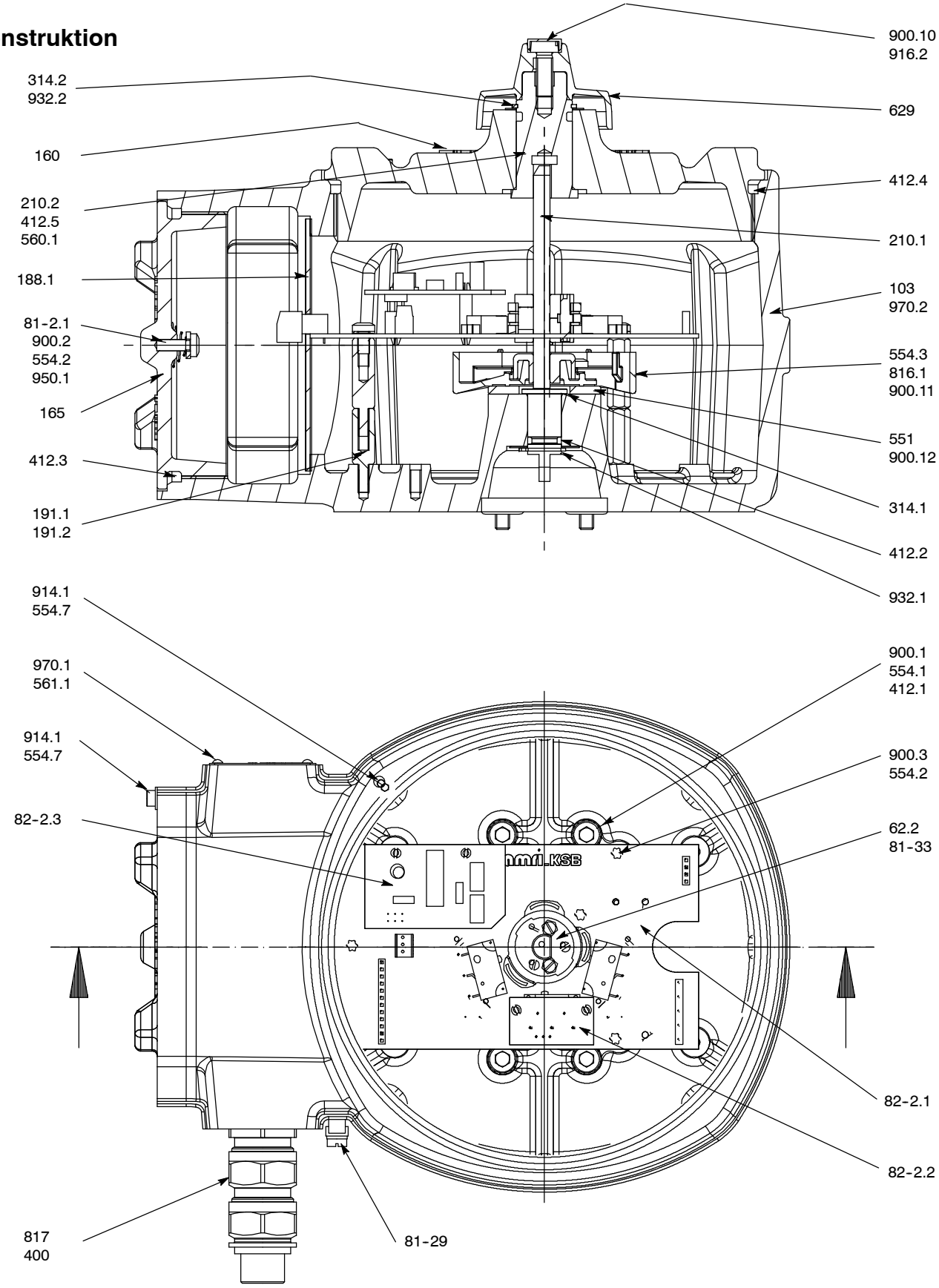
Overall dimensions (mm) and weight (kg)



Weight: 9kg



Konstruktion



Reference	Designation	Materials
103	Ex d housing	Cast iron
160	Ex d top cover	Cast iron
165	Electric compartment cover	Cast iron
188.1	Fixing plate	Steel
191.1	Support of printed circuit board	Nickeled brass
191.2	Support of printed circuit board	Nickeled brass
210.1	Operating shaft one-piece	Brass
210.2	Operating shaft	Stainless steel
314.1	Thrust washer	Stainless steel
314.2	Thrust washer	Stainless steel
400	Plain joint	Nitrile
412.1	O-Ring	Nitrile
412.2	O-Ring	Nitrile
412.3	O-Ring	Nitrile
412.4	O-Ring	Nitrile
412.5	O-Ring	Nitrile
551	Space washer	Zinc coated steel
554.1	Wawed washer	Stainless steel
554.2	Plain washer	Stainless steel
554.3	Wawy washer	Stainless steel
554.7	Plain washer	Steel
560.1	Pin	Acier zingué
561.1	Grooved pin	Stainless steel
62-2	Cam sub-assembly	Acetal
629	Pointer	Polyamide 6.6
81-2.1	Ground wire sub-assembly	Copper + PVC
81-29	Earth terminal	Stainless steel
816.1	Angle sensor	Acetal
817	Ex packing-gland	Stainless steel
81-33	Detection sheet	Steel
82-2.1	Printed circuit with 2 microswitches or 2 detectors	----------
82-2.2	Printed circuit for intermediate microswitch (in option)	----------
82-2.3	Printed circuit for feed back position	----------
900.1	Ex d attachment screw	Stainless steel
900.2	Screw	Stainless steel
900.3	Cheese-head screw	Stainless steel
900.10	Cheese-head screw	Stainless steel
900.11	Cheese-head screw	Stainless steel
900.12	Screw	Stainless steel
914.1	Cheese-head screw	Stainless steel
916.2	Plug	Polyamide
932.1	Circlips	Stainless steel
932.2	Circlips	Stainless steel
950.1	Spring cônique	Stainless steel
970.1	Identity plate	Stainless steel
970.2	Notice instructions	Paper

Position detection by microswitches on printed circuit - Box R.1189-1.....

• Detection with 2 microswitches: 1 on opening and 1 on closing, function change-over, adjustable by cam on each microswitch.
• Electrical connection : see page 12.

Microswitches characteristics

Manufacturer:	CROUZET	
Material:	Housing	Polyester UL94V0
	Button	Polyester
	Contact	Ag/Ni gold plated
	Membrane	Silicone
Rating:	Cut-off capacity 6 A under 24 VCC and 250 VCA	
Life:	Electrical	under I = 5 A 7×10^4 operating cycles
		under I = 1 A 3×10^5 operating cycles
		under I = 0,2 A 10^6 operating cycles
	Mechanical	2×10^6 operating cycles
Resistance to vibrations:	Standard CEI 60068-2-6 / 3 axis / 50g from 10 to 500 Hz	
Electromagnetic compatibility:	EN 61000-6-2, EN 61000-6-4	
Electrical connection:	Welded on circuit	
Protection level:	IP 67	

Breaking capacity according to the standard CEI 60947-5-1 standard: 6000 cycles

I (A) ↘	Alternating current (AC)				
	24 V	48 V	110 to127 V	220 to 240 V	380 à 440 V
AC-12	6	6	6	6	5
AC-13	2	1,5	1	1	0,5
AC-14	≤ 72 VA				
AC-15	2	1,5	1	1	0,5

I (A) ↘	Direct current (DC)			
	24 V	48 V	110 to 127 V	220 to 240 V
DC-12	6	2	0,4	0,2
DC-13	3	1	0,2	0,1
DC-14	0,6	0,15	0,02	0,01

I (A) : Allowable maximum intensity (A)

AC-12: Control of resistive loads and solid state loads with isolation by optocouplers
AC-13: Control of solid state loads with transformer isolation
AC-14: Control of small electromagnetic loads (≤ 72 VA)
AC-15: Control of electromagnetic loads (≥ 72 VA)
DC-12: Control of resistive loads and solid state loads with isolation by optocouplers
DC-13: Control of electromagnets
DC-14: Control of electromagnetic loads having economy resistors in circuit

This microswitch is designed to operate indifferently on circuits of bi-level type: low intensity (1 mA, 4 V minimum) or medium intensity (6 A maximum). However, a microswitch must change over only one and same type of printed circuit during its all use.

Position detection by inductive proximity detectors on printed circuit Box R.1189-2.....

- Detection by 2 inductive proximity detectors: 1 on opening position and 1 on closing position, trigger action by adjustable cam on each proximity detector.
- Electrical connection : see page 12.

Proximity detectors characteristics

Manufacturer	IFM
Material:	Box in polybutylenetherephtalate
Operating voltage:	5 to 36 V direct current
Current rating/continuous and peak:	200 mA
Minimum load current:	4 mA
Maximum voltage drop:	< 4,6V
Residual current:	< 0,8 mA
Switching frequency:	2 kHz
Output status indication:	by yellow LED
Resistance to impacts:	5 g
Resistance to vibrations:	According to “Test Programm Lloyd’s Register - Vibration test 1” and IEC 60068-2-6 Test Fc standard. Frequency: 5 to 100 Hz. Displacement: ± 1 mm. Acceleration: ± 0,7g
Electromagnetic compatibility:	EN 61000-6-2, EN 61000-6-4
Electrical connection:	Welded on circuit

Position detection by microswitches or inductive proximity detectors fitted on metallical sheet - Box RA1189

Various types of microswitches or inductive proximity detectors can be fitted on a metal plate in the AMTROBOX R Ex d for open and close positions.

In this version, AMTROBOX R Ex d box can be equipped:
- either with one microswitch or one inductive proximity detector on opening,
- with one microswitch or one inductive proximity detector on closing,
- with one microswitch or onen inductive proximity detector on opening or closing.

Microswitches

Manufacturer	Type	Reference	Size	Codification
CROUZET	electric	83-186-069-FD0 + lever 170A R24	V4	RA1189-A111....

Proximity detectors inductifs

Manufacturer	Type	Reference	Size	Codification
BAUMER	PNP-NO	IFFK 10P11A11 - 3 lugs 4.8	V3	RA1189-H311....
IFM EFFECTOR	PNP-NO	IS-3003-BPOG/IS 5031- cable 3 wires	V3	RA1189-H211....
	PNP-NC	IS-3003-APOG/IS 5032 - cable 3 wires	V3	RA1189-H212....
	CC Quadronorm	IS-2002-FROG/IS 5026 - cable 2 wires	V3	RA1189-HA31....
	CC/CA	IN-2004-ABOA/IN0081 - cable 2 wires	40 x 26 x 12	RA1189-JA31....
PEPPERL & FUCHS	CC-NO	NBN4-12GM40-Z0 - cable 2 wires	M12	RA1189-MA32....
	PNP-NC	NBB2-V3-E2-V5	V3	RA1189-H312....
TELEMECANIQUE	CC-NO	XS512B1DAL2 - cable 2 wires	M12	RA1189-MA31....
	CC-NO	XS518B1DAL12 - cable 2 wires	M18	RA1189-PA31....

Please consult us for the technical characteristics of these components or for other microswitches or other detectors.

Options

Intermediate microswitch - Box R.1189-1.....

One third switch identical to the two previous ones, can be fitted and be adjusted on any point of the travel (ajustable on 90°).

Heating resistance - Box RA1189

This option allows to warm continuously the inside of the box in order to avoid the condensation phenomenons encountered in the hazardous areas (tropical environment, humidity, ...).
This option is available in two kits:

Voltage	Regulated temperature	Consumption	Kit reference
12 VDC -24 VDC	40° C	10 W	42095198
110 VAC - 230 VAC	50° C	10 W	42095199

The wiring is achieved by connecting the two supply wires to the no-polarized resistance through the packing gland.

Feed back position 0° to 90° by resistive angle sensor - All boxes

AMTROBOX R Ex d can be equipped with feed-back position sensor.
So, the valve position is transmitted during its whole travelling angle by means of a variable resistance between 0 Ω and 4,7kΩ.

In instrumentation technology, the use of a potentiometer to transmit a signal under voltage exposes the user to electromagnetic pollution, mainly for high distance transmissions or in very poluted environment.
The use of a 4-20 mA Icurrent loop is always favorable due to its better electromagnetic strength (see following page).

Technical characteristics of angle sensor

	Min.	Nominal	Max.	Units
Mechanical travel	80	90	105	Degrees
Electrical span	3.58	4.03	4.7	kΩ
Max. current			1	mA
Mechanical and electrical life			> 5.10^6	Travel O/C

Other values are available: 1 kΩ, 2.2 kΩ and 4.7 kΩ. Please consult us for the characteristics.

Feed back position by 4-20 mA signal

A transmiter can be associated with the angle sensor in order to convert the measure in a 4-20 mA signal insuring a good immunity to the electrical disturbances.

This transmiter can be:

- active : it generates the 4-20 mA signal and may be supplied in 24 VCC (wiring 3 wires) - Box R.1189,
- passive : it changes the intensity in the current loop in accordance with the position measured by the angle sensor (wiring 2 wires) Boxes R.1189 and RA1189.

4-20 mA active feed back position (3 wires) - Box R.1189

Parameter	Minimal	Nominal	Maximal	Unit
Supply voltage	18	24	30	VCC
Output signal	0.6	/	21	mA
Loop resistance	0	/	550	Ω
Zero adjustment (4 mA)	0.6	4	5	mA
Gain adjustment (20 mA)	12	20	21	mA
Temperature range	-20	/	+70	° C
Temperature influence (from -20 to +70 ° C)		± 0.12	± 0.28	% FS
Hysteresis and dead band		± 0.05	± 0.2	% FS
Linearity		± 0.05	± 0.2	% FS

4-20 mA passive feed back position (2 wires) - Box R.1189

Parameter	Minimal	Nominal	Maximal	Unit
Supply voltage	7.5	/	36	VCC
Output signal	3.6	/	28	mA
Loop resistance [$(U_{alim}$ - 7.5V)/0.02A]	0	700	1425	Ω
Zero adjustment (4 mA)	2	4	11	mA
Gain adjustment (20 mA)	16	20	26	mA
Temperature range	-20	/	+70	° C
Temperature influence (from -20 to +70 ° C)		± 0.12	± 0.28	% FS
Hysteresis and dead band		± 0.05	± 0.2	% FS
Linearity		± 0.05	± 0.2	% FS

4-20 mA passive feed back position (2 wires) - With transmiter - Box RA1189

Parameter	Minimal	Nominal	Maximal	Unit
Supply voltage	7.5	/	36	VCC
Output signal	3.6	/	28	mA
Loop resistance	0	700	1425	Ω
Zero adjustment (4 mA)	2	4	11	mA
Gain adjustment (20 mA)	16	20	26	mA
Temperature range	-20	/	+70	° C
Temperature influence (from -20 to +70 ° C)	/	± 0.12	± 0.28	% FS
Hysteresis and dead band	/	± 0.05	± 0.2	% FS
Linearity	/	± 0.05	± 0.2	% FS

Box or angle sensor defects detection

Active feed back position (3 wires)		**Passive feed back position (2 wires)**	
Box R.1189		**Box R.1189**	**Box RA1189**
Wiring defects		**Angle sensor defect**	**Transmitter defects**
Wire + opened sensor	2,8 mA	Opening wire 1 (**-**) I output = 26 mA	Opening wire1 I output ≈ 20 mA
Wire **-** opened sensor	23 mA	Opening wire 2 (**M**) I output = 1.7 mA	Opening wire 2 I output ≈ 25 mA
Wire **M** opened sensor	3,15 mA	Opening wire 3 (**+**) I output = 1.2 mA	Opening wire 3 I output ≤ 4 mA
No sensor	2,8 mA		No sensor I output ≈ 25 mA

ON/OFF FIELDBUS - Box R.1189

AMTROBOX R Ex d can be connected to fieldbus.
The reduction of cables lengths, cable ways quantity and connecting points constitute more significant savings in the case of harsh environments.
Various communication protocols are available as AS-i, Profibus DP and allow to digitalize the information of travel limit switches.

Bus characteristics

Protocol	AS-i v3.0	Profibus DP		
Topology	Bus, tree and ring	Bus, tree with repeaters		
Cable type	2-wires cable AS-i power	4-wires shielded cable: twisted pair and 24 VDC power supply		
Speed and length of network	Cycle time de 10 msec. Length from 100 metres to 300 metres with repeater	Speed (kbit/s) 9,6 19,2 45,45 93,75 187,5 500 1500	Length (without repeater) 1200 m 1200 m 1200 m 1200 m 1000 m 400 m 200 m	Length (with repeater) 10 km 10 km 10 km 10 km 6 km 1 km 600 m
Profil / version	S-BAE / version 3.0 S-30F / version 3.0			
Max. quantity stations	62 profile S-BAE 31 profile S-3OF	32 per segments -126 max.		
Bus acces	Polling	Polling master/slave : Token rings between masters		
Adressing	E^2PROM	By encoders		
Electrical consumption	3 w (max.)	3 w (max.)		
Supply	26,5 to 31,5 VCC	24 VCC ± 15%		

IP 68, 30m, 72 hours Version

This version is designed with a top cover without position visual indication and with a specific packing gland.

Cable diameter (outer sheath diameter) : 6 to 13.4 mm,
Cable diameter (inner sheath diameter : 3.1 to 8.6 mm,
Armour wires crawling for electrical continuity and mechanical crawling

Comissioning

Warnings

CAUTION !

The installation and start-up of position control boxes must be according to the best practices and mainly:

Electrical wiring:
- The electrical components are “CE” marked in accordance with 2004/108/CE and ATEX 94/9/CE european directives.
- The electric supply voltage and the electrical values of the signals must be checked before connecting the components.
- The components of the safe electric loops should be checked to ensure the intputs and outputs as well as wiring, do meet the regulations in force,
  KSB shall keep at the disposition of users the loop calculations for the recommended associated equipment.
- An external earth terminal allows grounding of all metallic parts of the box, tightening capacity: 4mm^2.
- **External connection elements (e**arth terminal) **must be correctly protected against the corrosion.**

Never exceed the values stipulated in this leaflet!

This box is a pressurized electric device. As such, it may be a source of danger for property or even personnel.
Any excess of these values may cause damage.

Never open, never uncouple and never disassembly AMTROBOX R Ex d when pressurized or energized.

To open the box, it must loose the locking screw(s) (one screw per cover) then unscreww the cover(s).

After the operation, it must screw completely all covers and lock them with the locking screws.

The dust thickness on the box must not exceed 5 mm.
Do not open the box in dust atmosphere.
Do not clean using a compressed air gun to avoid dust in atmosphere.
To remove dust, use a duster a little bit damp.

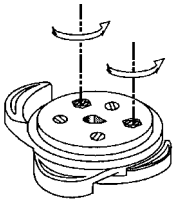
During workshop or on-site checking, the valve associated with the actuator and its AMTROBOX R Ex d can be operated from full open to full closed position.
This operation may be of a high significant risk of personal injury if the safety steps required are not taken to prevent access between the disc and the seat.

Mounting on actuator

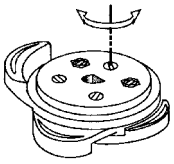
AMTROBOX R Ex d is fitted on the actuator according to VDI/VDE 3845 interface
The Ex specific four screws can be reached easily by opening the top cover.
The driving of the shaft is done by couplingn on the actuator pinion.

Adjustment of open/close detection

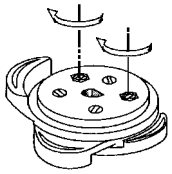
The limit switches or detectors are factory adjusted.
It is not necessary to re-adjust before valve mounting on site.
Nevertheless, if you wish to re-adjust after a maintenance operation, proceed as follows:
- Unlock the cover ref. 160 by unscrewing its locking screw ref. 914.1 using a ring spanner (width 2.5).
- Unscrew the cover ref. 160 using a spanner.
- Put the disc in extreme position (opening or closing).
- Loosen the two metallic screws one turn with a plain screwdriver.
- Adjust triggering of the required detector by turning the coloured screw corresponding to the colour of the cam to adjust.
- Repeat the same operations for the opposite switch.
- Each cam is adjusted independently and the adjustment does not affect in any way the adjustment of the other cam.
- When adjustments are completed, slightly tighten the two metal screws to prevent adjustments being changed.
- Screw the cover ref. 160 using a spanner
- Lock the cover ref. 160 by screwing its locking screw ref. 914.1 using a ring spanner (width 2.5).



1 -Loosen the metallic screws



2 - Adjust the cams

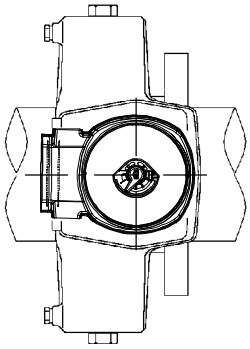


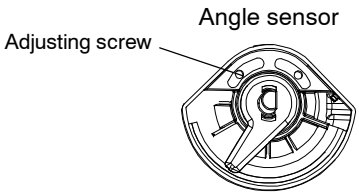
3 - Tighten the screws

Angle sensor adjustment

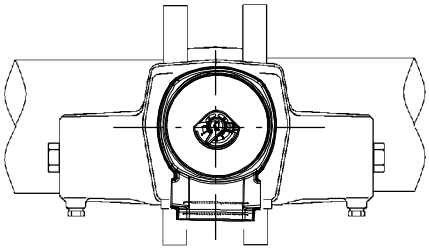
Following actuator position on the pipe (”N” or “M” mounting), angle sensor position must be adjusted.
Use a screwdriver type Torx T20 to adjust the angle sensor. See diagram below.

“N” Mounting

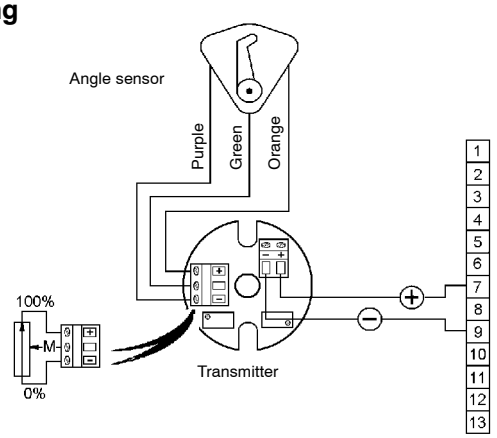




“M” Mounting



Transmitter 4-20 mA, internal wiring Box RA1189

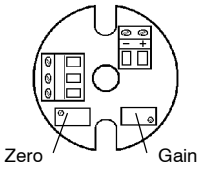


4-20 mA transmitter adjustment

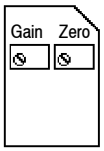
When the AMTROBOX R EEx ia box is delivered with its actuator, the transmitter is pre-adjusted in workshop.
It is not necessary to re-adjust it before valve mounting on site.
Nevertheless, if you wish to re-adjust it after a maintenance operation, proceed as follows:

- Unlock the cover ref.160 by unscrewing the locking screw ref. 914.1 using a ring spanner (width 2.5).
- Unscrew the cover ref.160 out of the AMTROBOX R Ex d using a spanner.
  Two adjustments are available for the zero adjustment (4 mA)
  and the gain (20 mA) thanks to two potentiometers.
- Replace the top cover by screwing it with a spanner.

Box RA 1189



Box R 1189
All options



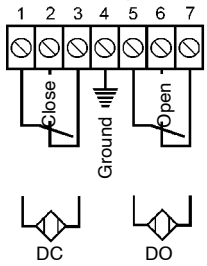
Electrical connection

The box can be delivered with a plug or a packing-gland.
In standard version, it is equipped with one metallic packing-gland Ex d M20 x 1.5.
Gland capacity: cable external dia. 8,5 to 16 mm. Other gland capacities are available.
Unlock the cover ref.165 du compartiment électrique by unscrewing the locking screw using a ring spanner (width 2.5).
Unscrew the cover ref.165 du compartiment électrique to access to the terminal block by unscrewing using a spanner.
The wiring is done by debrochable connector, capacity 0.08 to 1.5 mm^2.
The good tightness of the box depends on cable selection and tightening of packing-gland.
Unscrew enterly the cover ref.165 du compartiment électrique.
Lock the cover ref.165 by screwing its locking screw using a ring spanner (width 2.5).

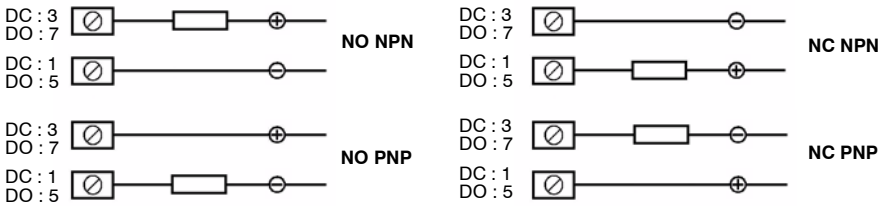
Wiring diagrams

Boxes R.1189 - Microswitches or proximity detectors

Principal

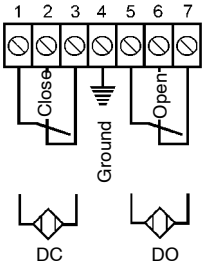


Customer connection for proximity detectors

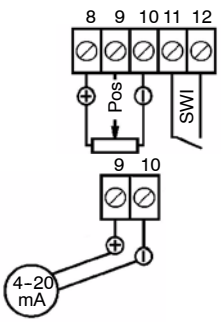


Boxes R.1189 - All options

Principal

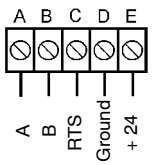


Auxillary

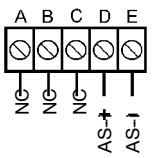


Bus

Profibus DP

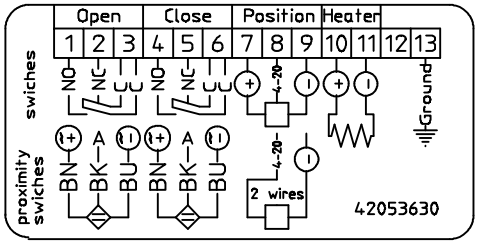


AS-i

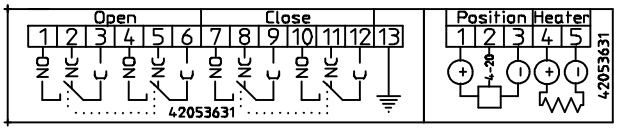


Boxes RA.1189

1/O and 1/C



2/O and 2/C



Assembly instructions for installation of packing gland type T3CDS

Always adopt safe working practices as your prime consideration, and use good engineering principles when carrying out your duties. Everyone is responsible for following corporate health and safety requirements.

This packing gland is certified EEx d IIC & EEx e II, category 2 IIGD, for use in Zone 1, Zone 21, Zone 2 and Zone 22 in hazardous areas for braided, SWA (Single Wire Armour), Strip Armour and Tape Armour cables, providing a explosion proof seal on the cable inner sheath, and an environmental seal to the cable outer sheath with the added benefit of deluge protection to the armour lock chamber.

Please read these instructions carefully before start the installation:

This packing gland design has four key elements to its general construction, as shown by the diagram below. When opening the packing gland, there are two loose components, the armour cone and clamping ring, which facilitate a disconnectable arrangement.

It does not necessary to dismantle the packing gland any further than shown below.

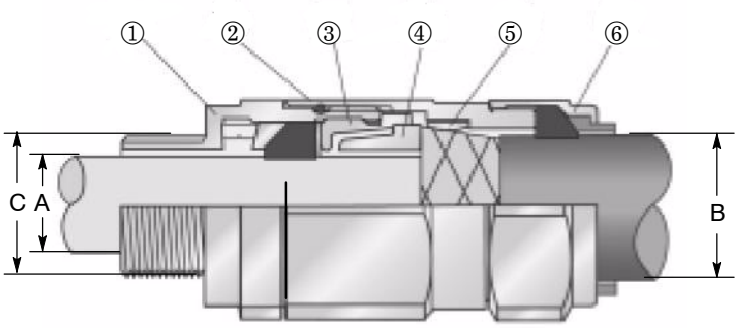
Installation instructions

1. Select the correct packing cable size using physical dimensions of the cable cross-referenced (see table next page).
2. Separate the packing gland into two sub-units A and B.
   Note : Items 4 and 5 are loose components (See diagram above).
3. Determine conductor length required and strip back cable outer sheath and cable braid or armour to suit the equipment geometry. (Note: when cutting armour wires, care should be taken to avoid cutting into the inner cable sheath beneath the armour wires). Expose the cable braid or armour further by stripping the outer sheath enough to allow contact with the tapered cone. This length may vary slightly depending upon diameter of the cable. See figure 2 and table opposite for guidance.
   Note: The reversible armour cone is suitable for terminating several cable armour types including Braid, SWA (Single Wire Armour), Strip Armour and Tape Armour. Identification of the cable armour types is marked on the cone.

   For reference: Smooth/Plain side of cone is for terminating SWA cable (W),
   Grooved side of cone is for terminating Braid, Strip Armour or Tape Armour (X,Y, Z).
4. Secure entry component (sub-unit A) into equipment using a spanner, and in case where a locknut is to be fitted inside the equipment, two spanners will be required to tighten correctly.
5. Pass sub-unit B and clamping ring 5 over the cable, outer seal nut first.
6. Insert reversible armour cone 4 in the orientation to suit the cable braid or armour type, into compensating sleeve 3 and pass the cable through sub-unit A equally spacing the braid or armour around the cone. See figure 3.
7. Whilst continuing to push the cable forward to maintain the cable braid or armour in contact with the cone, tighten compensating sleeve 3 into entry component 1 until the components are metal to metal, and cannot be tightened any further.
8. Terminate the cable braid or armour by first securing entry component with a spanner (to prevent additional stress being transfer red to entry threads) then tighten body 2 onto entry component 1 using a second spanner until the components are metal to metal, and cannot be tightened any further. See figues 4 and 5.
9. Close outer seal by tightening outer seal nut 6 onto body 2. Figure 5 shows a complete assembly.

Remote installation

1. For remote installation, follow the operations 1 to 9 in reverse order, ignoring operation 4.
2. Disconnect the sub-unit A from entry the sub-unit B. Unscrew compensating sleeve ③ untill cable can be withdrawn from entry the sub-unit A.
3. Remotee the actually cable by a new cable (See operation 3 previous page).
4. Follow operations 4 to 9 (See previous page).



T3CDS type packing gland

Fig.1

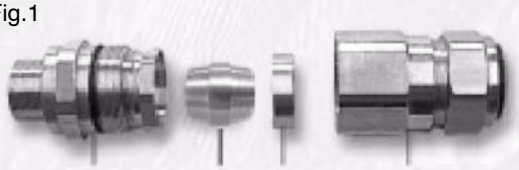


Fig. 2

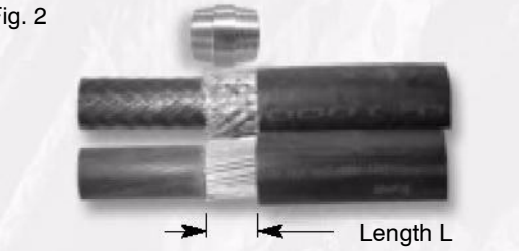
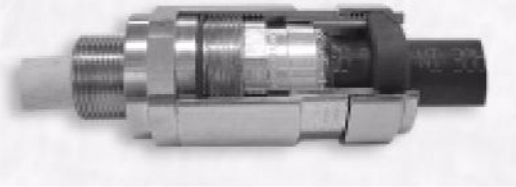


Fig. 3

Fig. 4

Fig. 5



Packing gland	Threading dia. in intput C	Ø A : Internal cable		Ø B : External cable		Length L
	Standard Metric	Min.	Max.	Min.	Max.	
20/16	M20	3.1	8.6	6	13.4	12

EC declaration of Conformity

Hereby we,

KSB S.A.S.
Zone industrielle Gagnaire Fonsèche
24490 LA ROCHE CHALAIS
Registered office: 92635 – Gennevilliers
France

declare that the automation boxes used in potentially explosive gaseous atmosphere and listed below comply with the requirements of the Directives 94/9/EC and 2004/108/EC (EMC).

Description of automation boxes:

– AMTROBOX R R.1189

As per harmonized european standards:

Electrical equipment for potentially explosive atmosphere:
– EN 60079–0 (2009) ; EN 60079–1 (2007) ;
EN 60079–31 (2009)

Electromagnetic compatibility:
– EN 61000–6–2 ; EN 61000–6–4

Electrical equipment suitable for:

Group II category 2 (zones 1 + 21)

Marking:

Ex II 2 GD – Ex d IIB T4 – T6 Gb
Ex t IIIC T 80° C – T 130° C Db IP 68
LCIE 10 ATEX 3069

Manufacturing Quality Assurance notification:

LCIE 03 ATEX Q8078

Name and adress of the authorizing and monitoring notified body:

L.C.I.E.
33, avenue du Général Leclerc
92266 FONTENAY-AUX-ROSES CEDEX
FRANCE

Number of notified body:

0081

Michel Delobel

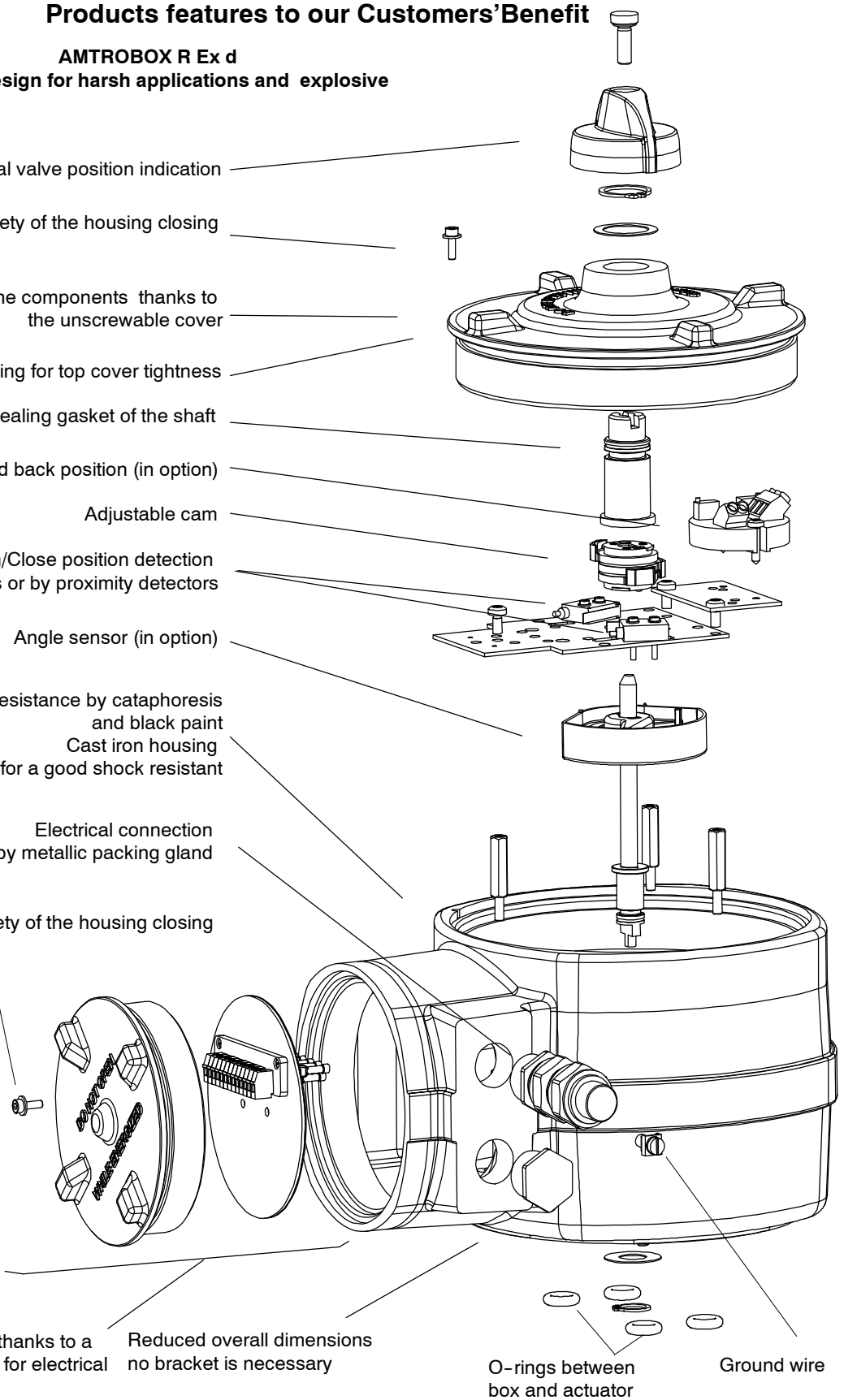
Quality Assurance

05/12 – Rev. 4

This document was prepared electonically and is valid without signature

Products features to our Customers'Benefit

AMTROBOX R Ex d
Robust design for harsh applications and explosive



Protectionlevel: IP 68

This leaflet is not contractual and may be amended without notice.

15.05.12
8525.14/5-10

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