Pyropress User Guide for The Argus Product Range P_5 & L_5 Only

IMPORTANT: READ CAREFULLY BEFORE USE AND KEEP FOR FUTURE REFERENCE

Symbols Used

⚠	CAUTION/Requirement for safe use
EX	Hazardous area installation requirement

UK CA CE

⚠ The Argus must be installed, maintained, repaired & decommissioned by qualified personnel only.

EX Hazardous area products must be installed in accordance with IEC/EN 60079-14.

⚠ Failure to use the Argus within its specified limits, may adversely affect performance, product life and may cause a hazard to people, animals and the environment. Check the product's identification label before installation to confirm the correct product has been selected.

Contents

Description of the Equipment

The Argus is offered in both pressure-sensing and level-sensing versions and can be specified for use in either industrial or hazardous area applications. It utilises mechanical sensors to detect changes in process media and transmits electrical signals in response - for indication, alarm, or control.

Storage

The Argus can be stored in temperatures of **-40°C to +85°C**.
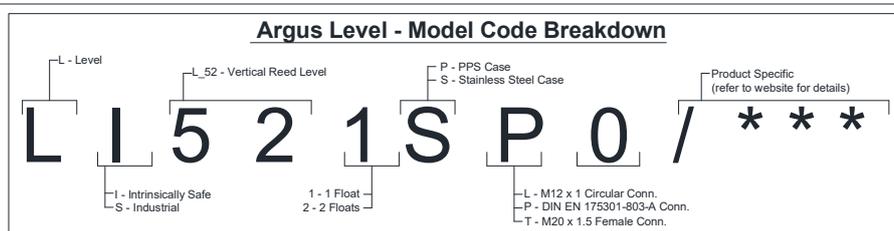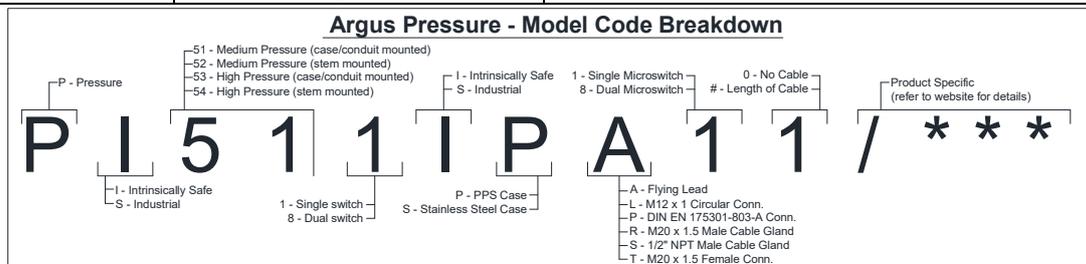
General Dimensions & Features

(A) (L) (P) (R) (S) (T)

All dimensions in mm
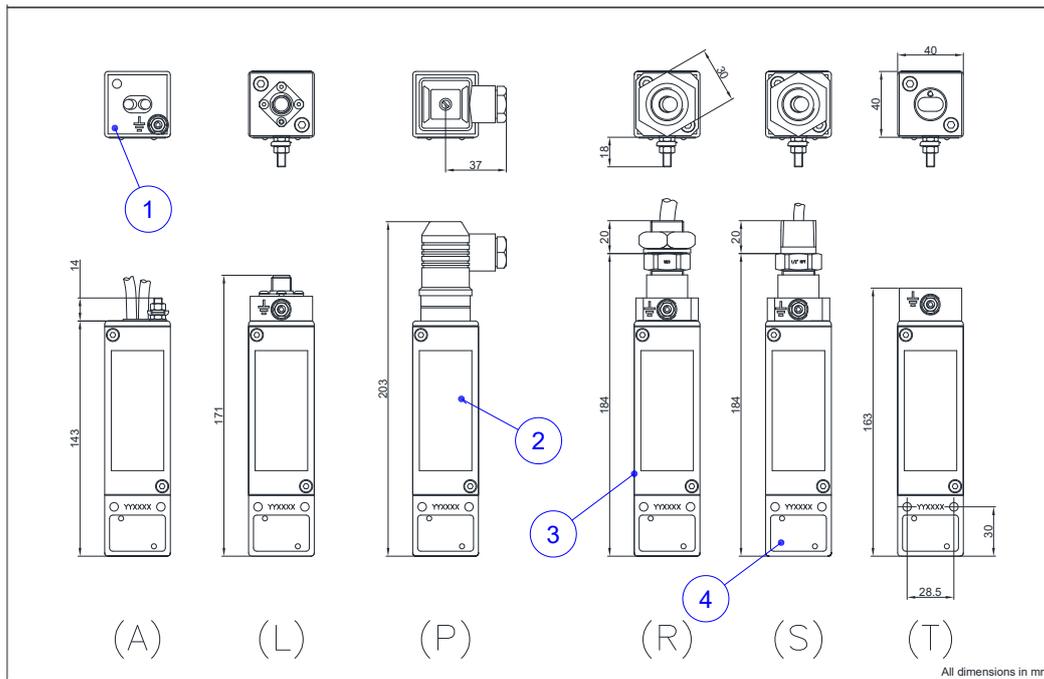
Features	
1	Switch Case
2	Adjustment Cover
3	Identification Label (side)
4	Certification Label

Electrical Options	
A	Flying Lead
L	M12 x 1 Circular Connector
P	DIN Plug & Socket
R	M20 x 1.5 Male Cable Gland
S	½" NPT Male Cable Gland
T	M20 x 1.5 Female Conn.

Product Identification

Please check the Identification Label to confirm that the product is correctly specified.

Warnings	Label Text	Example
	Type:	Argus Intrinsically Safe Pressure Switch
	Serial No:	********
⚠️	Model:	PI511IPA11/***
EX	Process Temp. Range:	MIN. to MAX. See Pressure and Temperature Ratings section.
	Max. Working Pressure:	MAX.
	Range:	MIN. to MAX.
	Tag No:	Customer specified

Argus Pressure - Model Code Breakdown

P - Pressure
51 - Medium Pressure (case/conduit mounted)
52 - Medium Pressure (stem mounted)
53 - High Pressure (case/conduit mounted)
54 - High Pressure (stem mounted)
I - Intrinsically Safe
S - Industrial
1 - Single Microswitch
8 - Dual Microswitch
0 - No Cable
- Length of Cable
Product Specific (refer to website for details)

P I 5 1 1 I P A 1 1 / * * *

I - Intrinsically Safe
S - Industrial
1 - Single switch
8 - Dual switch
P - PPS Case
S - Stainless Steel Case
A - Flying Lead
L - M12 x 1 Circular Conn.
P - DIN EN 175301-803-A Conn.
R - M20 x 1.5 Male Cable Gland
S - 1/2" NPT Male Cable Gland
T - M20 x 1.5 Female Conn.

Argus Level - Model Code Breakdown

L - Level
L_52 - Vertical Reed Level
P - PPS Case
S - Stainless Steel Case
Product Specific (refer to website for details)

L I 5 2 1 S P 0 / * * *

I - Intrinsically Safe
S - Industrial
1 - 1 Float
2 - 2 Floats
L - M12 x 1 Circular Conn.
P - DIN EN 175301-803-A Conn.
T - M20 x 1.5 Female Conn.

CE Marking

Argus products for use in Industrial (non-hazardous area) applications carry a CE mark to signify conformity with Directive 2014/35/EU (Low Voltage). Argus products for use in explosive atmospheres carry a CE mark to signify conformity with Directive 2014/34/EU (ATEX). All Argus switch types fall within the Sound Engineering Practice category, as defined by chapter 1, article 4, paragraph 3 of Directive 2014/68/EU (Pressure Equipment). For this reason, the CE mark on the Argus does <u>not</u> signify conformance with 2014/68/EU.

UKCA Marking

Argus products for use in Industrial (non-hazardous area) applications carry a UKCA mark to signify conformity with The Electrical Equipment (Safety) Regulations 2016. Argus products for use in potentially explosive atmospheres carry a UKCA mark to signify conformity with The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016. All Argus switch types fall within the Sound Engineering Practice category, as defined by Part 1, Regulation 8 of The Pressure Equipment (Safety) Regulations 2016. For this reason, the UKCA mark on the Argus does <u>not</u> signify conformance with Pressure Equipment (Safety) Regulations 2016.

Standards Applied

For Industrial (non-hazardous area) Applications:

- BS EN IEC 61010-1:2010+A1:2019
- IEC 61010-1:2010+A1:2019

For Explosive Atmosphere Applications:

Intrinsic Safety, Ex ia – (Zones 0, 1, & 2) (CAT 1, CAT 2 & CAT 3)

- BS EN IEC 60079-0:2018
- BS EN 60079-11:2012
- IEC 60079-0:2017
- IEC 60079-11:2011
- EN IEC 60079-0:2018
- EN 60079-11:2012

Hazardous Area Marking:

Intrinsically safe (Ex ia)

Ensure the correct protection method has been selected for the application.

Conditions for Safe Use (X Conditions)

During live maintenance, adjustments, or servicing of the equipment the aluminium parts may be exposed. Care shall be taken to avoid the risk of ignition from incendiary, impact, or abrasive sparks.

The DIN Plug & Socket cover is made of non-conductive material. Care shall be taken to avoid electrostatic discharge during maintenance, adjustments, or servicing. Clean only with a damp cloth.

⚠️ **EX** It is the end-user's responsibility to carry out an assessment to ensure that there are no hazards due to mechanically generated sparks.

All Argus Products

⚠️ **WARNING:** End–users are advised to carry out risk assessments in accordance with the requirements of appropriate, recognised standards. The person or persons undertaking this task must be suitably qualified.

Pressure & Temperature Ratings

Process Temperature:

Please see the product Identification Label for the process temperature range, maximum working pressure & adjustment range.

⚠️ **EX** Upper process temperature limits can be further restricted for intrinsically safe products. If the applicable temperature on the intrinsically safe certificate is lower than one given on the product's identification label, the one on the certificate prevails.

Ambient Temperature:

Permissible ambient temperature range: -40°C to +85°C

⚠️ **EX** If products are Ex II 1G Ex ia IIC certified and installed in a T6 environment, the permissible ambient temperature range is restricted to -40°C to +78°C.

Environmental Limitations

• Argus products are rated IP66/IP67 in accordance with IEC/EN 60529.
• Argus Industrial products should not be installed at altitudes greater than 2000m.
• Contact Pyropress for information regarding shock and vibration limits or SIL information.

Electrical Information

⚠️ Installation should only be carried out when the system has been electrically isolated.

⚠️ **EX** ⚠️ Cables and connectors must have an upper temperature rating of ≥105°C.

⚠️ Use suitable double insulated cables.

For Argus products supplied with a Flying Lead ('A' code)

Products with a single microswitch have one double insulated cable of nominal outer diameter 6.8mm containing 3 cores of cross-sectional area 0.75mm^2.

Products with dual microswitches have two double insulated cables, each of nominal outer diameter 6.8mm and containing 3 cores of cross-sectional area 0.75mm^2 respectively.

Please see **Ratings, Earthing & Electrical Contact Information** sections for further details.
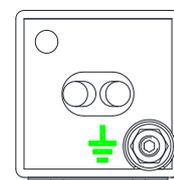
**Flying Lead
('A')**
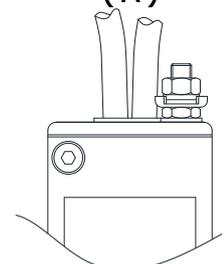
For Argus products supplied with an M12 Circular Connector ('L' code)

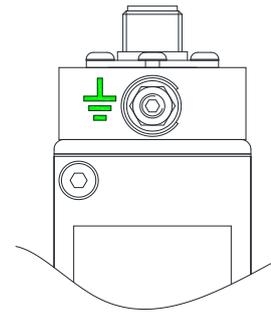Connector Type: Male A-coded plug to IEC 61076-2-101.
Number of Pins: 3
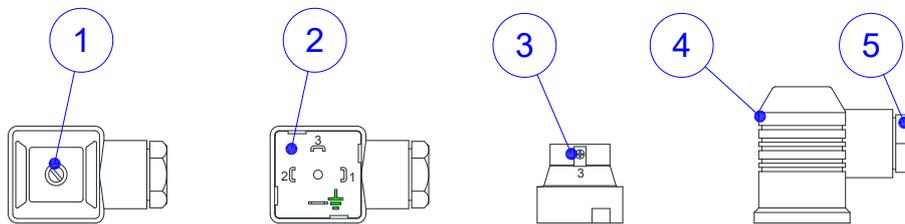The mating thread is M12 × 1 male.
Only use the correct mating connector.

Please see **Ratings, Earthing & Electrical Contact Information** sections for further details.

M12 Circular Connector ('L')

For Argus products supplied with a DIN 175301-803-A Plug and Socket connection ('P' code)

DIN Plug & Socket ('P')

'P' Code components	
1	Centre Screw
2	Terminal Block
3	Screw Terminal
4	Casing
5	Gland Screw

Do not remove the DIN Socket unless the switch has been electronically isolated.

The conduit supplied can accept cables with a diameter of 4.5mm–11mm (PG11).

The screw terminals can accept conductors of a cross-sectional area up to 1.5mm^2. It is recommended that bootlace ferrules are used. Please install as follows:

1. Loosen the Centre Screw using a flat-head screwdriver. Take care not to lose the O-ring on the screw as this prevents ingress.
2. Pull the DIN Socket up and away from the Switch Case. Take care not to lose the gasket as this prevents ingress.
3. To access the terminals, use a flat-head screwdriver and gently prise the Terminal Block from its casing.
4. Loosen the Gland Screw and pass cable through.
5. Terminate as required.
6. Re-assemble the Terminal Block and Casing and ensure that the earth is in the position shown above <u>or</u> rotate the Terminal Block to suit your application.
7. Tighten the Gland Screw to 15Nm.
8. Reposition DIN Socket with gasket back on to the Plug and retighten the Centre Screw to 0.4Nm.

Please see **Ratings, Earthing & Electrical Contact Information** sections for further details.

For Argus products supplied with a Cable Gland ('R' & 'S' codes)

Products with a single microswitch have one double insulated cable of nominal outer diameter 6.8mm containing 3 cores of cross-sectional area 0.75mm^2.

Products with dual microswitches have one double insulated cable of nominal outer diameter 9.2mm containing 7 cores of cross-sectional area 0.75mm^2. (NOTE: Core 7 should not be connected – cut to ensure it does not protrude beyond the sheath)

For M20 x 1.5 ('R'):

When installing M20 Cable Gland versions, the locknut should be unscrewed, and the bonded seal removed before the male thread is either fed through the associated clearance hole or screwed into the corresponding female thread. The bonded seal should then be guided back over the male thread and the locknut re-engaged and tightened to establish a leak-tight barrier.

Note: An optional junction box can also be supplied in conjunction with this arrangement. Please see the junction box user guide for electrical ratings, ambient temperature ratings and earthing requirements (supplied inside junction box). The specification of the junction box must have been selected at point of sale.
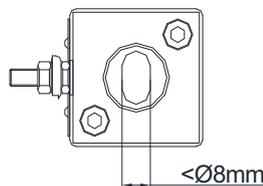
Please see **Ratings, Earthing & Electrical Contact Information** sections for further details.
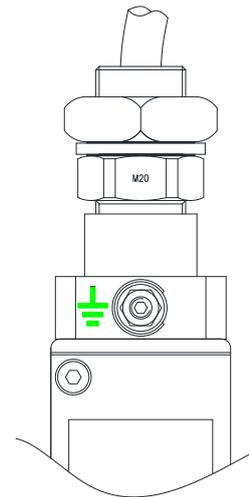
Cable Gland ('R' & 'S')

For Argus products supplied with an M20 x 1.5(F) Conduit Entry ('T' code)

'T' Code components	
1	Terminal Block
2	Insulator

<Ø8mm

The screw terminals can accept conductors of a cross-sectional area up to 2mm^2 solid or up to 1.5mm^2 flexible. It is recommended that bootlace ferrules are used. Please install as follows:

1. Undo the two screws which secure the Adjustment Cover in place using a 3mm A/F hex tool.
2. Wire Terminals then tighten to 0.4Nm for pressure switches, <u>or</u> 0.5Nm for Reed level switches. Ensure the insulator returns to its original position so the terminals are fully shielded.
   CAUTION: Do not over tighten.
3. Tighten any cable glands and adaptors.
   CAUTION: ensure wires are not pulled tight.
4. Before replacing the Adjustment Cover check that mating faces are clean and that the O-ring seal is properly seated.
5. Once in position tighten the Adjustment Cover's two screws to secure it to the Switch Case.
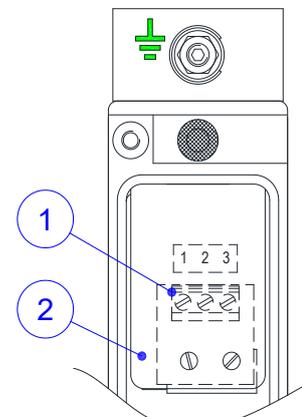
M20 x 1.5 Female ('T')

Please see **Ratings, Earthing & Electrical Contact Information** sections for further details.

⚠️ Ratings

Industrial pressure products excluding M12 circular Connector	250VAC, 5A or 30VDC, 5A
Industrial pressure products with an M12 Circular Connector	250VAC, 2A or 30VDC, 2A
Industrial Level products with SPST switches	250VAC, 0.5A, 10W
Industrial Level products with SPDT switches	125VAC, 0.5A, 5W
All Intrinsically safe (Ex ia) products (through an approved intrinsically safe interface)	Ui:28V Ii:93mA Pi:0.65W Ci:0F Li:0H

⚠️ We recommend that suitably rated cable glands, adaptors, or blanking plugs with an IP66/IP67 rating are fitted.

Earthing

⚠️ Argus industrial products must be earthed to ensure safe use. Utilise a conductor with a minimum nominal cross-sectional area of 0.75mm² (18AWG).

EX Intrinsically safe products must be earthed in accordance with IEC/EN 60079-14.

Over Current Protection

Argus Industrial switches should be fitted with over current protection rated no greater than the maximum amperage shown in the ratings section. The circuit breaker should be suitably located, easily accessible and marked as the disconnecting device for this instrument.

Electrical Contact Information

For SPDT & DPDT Pressure and Reed Level Switching:

SPDT & DPDT Types	For Flying Lead types ('A', 'R' & 'S')		For DIN Plug & Socket & M20 x 1.5(F) ('P' & 'T')		For M12 Circular Connector ('L')	
	For rising signal	For falling signal	For rising signal	For falling signal	For rising signal	For falling signal
Common	1 (or 4)	1 (or 4)	1 (or 4)	1 (or 4)	1	1
Normally Open	3 (or 6)	2 (or 5)	2 (or 5)	3 (or 6)	3	4
Normally Closed	2 (or 5)	3 (or 6)	3 (or 6)	2 (or 5)	4	3

For Reed Level SPST Types:

SPST Types	For M20 x1.5(F) ('T')		For DIN Plug & Socket ('P')		For M12 Circular Connector ('L')	
	'L1'	'L2'	'L1'	'L2'	'L1'	'L2'
Common	1	3	1		1	
Normally Open/closed	2	4	2	3	3	4

Note: Reed switches are wired as per customer specification. switching can be checked before installation by manually actuating the floats.

To prevent damage, it is recommended that wires are secured firmly in terminals prior to tightening cable glands. The product should not be connected to mains electricity until after it is properly mounted and wired.

The information on the Adjustment Cover is unique to the unit it is supplied with. Do not mix the Adjustment Covers.

Set Point Adjustment – Pressure only

Argus products can be safely adjusted whilst the mains is live. Do not remove or interfere with the insulator covering the terminals/switch(es) as this may result in electric shock.

Products supplied by Pyropress are always calibrated (where applicable) but can be reset once installed. To alter a product's setting(s) follow the procedure below:

ePTFE Vent
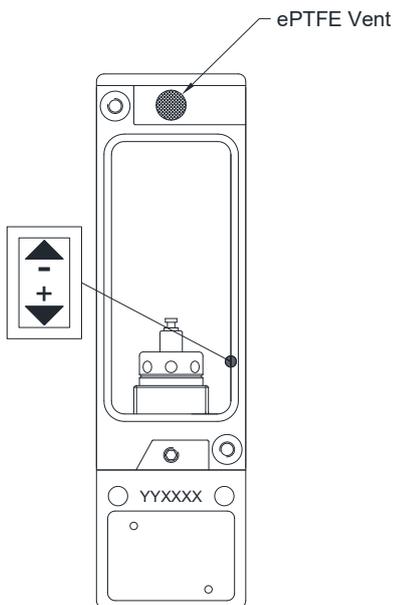
1. Loosen the Adjustment Cover Screws (using a 3mm Hex key) and remove the cover with the O-rings still positioned. **CAUTION:** Do not lose any of these components as they ensure an environmental seal. Contact Pyropress for spares if required.
2. Insert a 3mm Tommy Bar (or 2.5mm Hex Key), rotate the adjuster screw clockwise to increase the pressure setting or, rotate the adjuster screw anti-clockwise to decrease the pressure setting and verify with a pressure gauge.
3. Replace the Adjustment Cover, with the O-ring seals correctly positioned. Tighten the Screws to 1.5Nm. **WARNING:** Take care not to over tighten.

Mechanical Installation

First read the **General Information** section and then navigate to your product type.

General Information

⚠ The Argus must be electrically isolated during installation.
Do not strain cables during installation.

⚠ Ensure there is at least 10mm between the back of the Switch Case and adjacent surfaces. This allows the Blow-out Disc to detach and relieve any overpressure in the event of process media leaking past diaphragms/pressure seals and into the Switch Case.

⚠ Not Following the installation instructions may result in leaks.
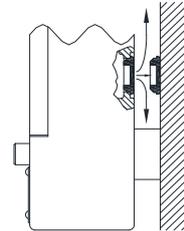
- The Argus can be mounted in any orientation.

- If products are being fitted to a system where fluid flow can become unstable and cause pressure to pulsate or surge rapidly, it is imperative that a means of protecting the sensing element be provided – by adding a pressure snubber or over-range protector for example.

- If products are being fitted to a system where the process temperature could exceed the limits stated for that configuration (**see the Identification Label**), they must be remote mounted to allow for sufficient heat dissipation.

- Products should always be mounted such that any free movement is minimal. To avoid damage from vibration or accidental impact, products mounted via the process or electrical connection should be properly supported.

- We recommend that PTFE tape is used on tapered process connections (to improve the seal and prevent cold welding) and appropriately sized bonded seals on parallel process connections.

- All compression fittings must be sufficiently tightened to prevent leakage.

- The Argus can be supplied with accessories such as chemical seals, gauges, and manifolds. Please refer to any separate documentation supplied when installing accessories not covered by this user guide.

- We recommend that anti-vibration washers are used when mounting the product.

- Argus products are supplied with a bracket, mounting spacer or should be mounted via the process connection.
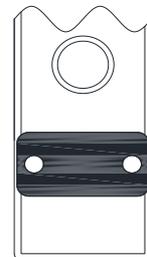
- To install products fitted with a 2" (52mm) pipe bracket first unscrew the two M8 full nuts from the 'U' bolt, separate the saddle and 'U' bolt from the mounting bracket and then from each other. Place the 'U' bolt around the pipe and slide the saddle into place before feeding the 'U' bolt back through the clearance holes in the mounting bracket and evenly tightening the M8 full nuts to clamp the product firmly to the pipe.
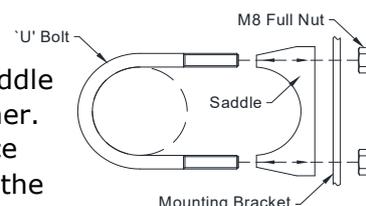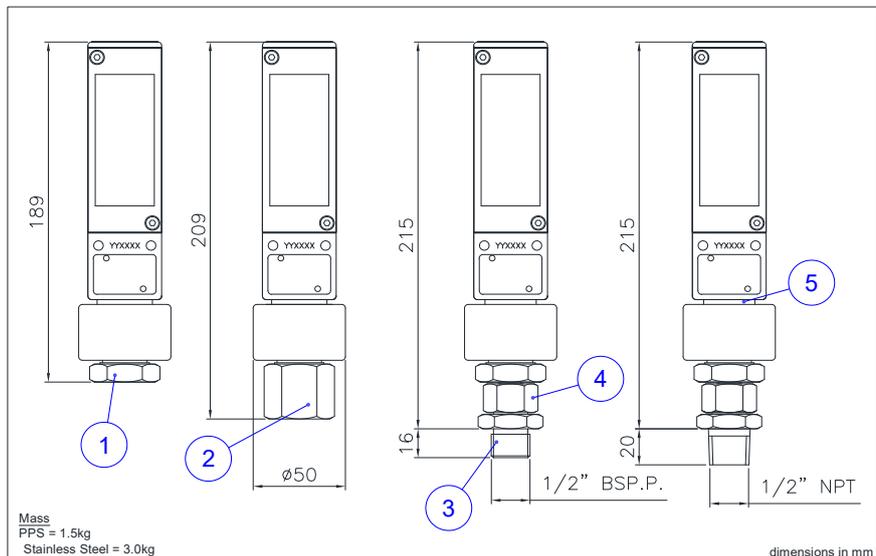
Diaphragm - P_51 & P_52 (Medium Pressure)
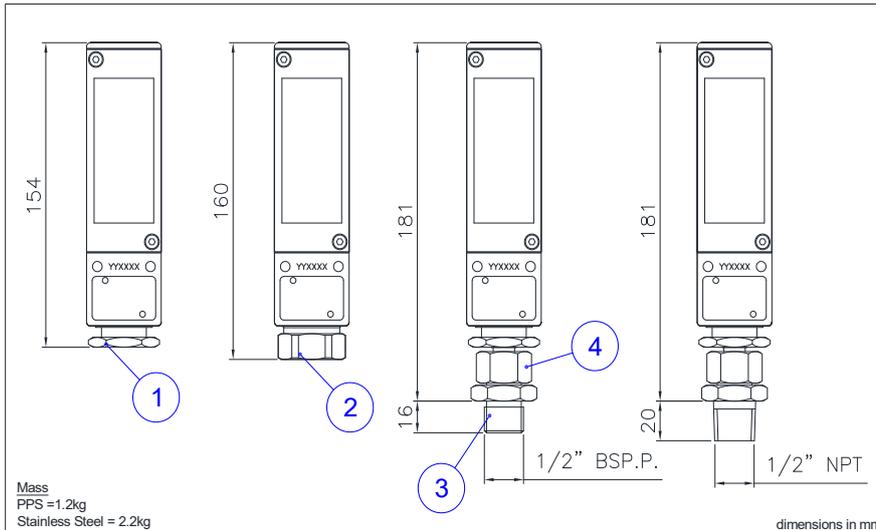
Diaphragm P_51 & P_52 Medium Pressure	
1	¼" Female Process Entry
2	½" Female Process Entry
3	Stem Head
4	Coupling Nut

Case mounted: 2 x M5 screws through switch case.

Process mounted:
1. Hold the Coupling Nut in place with a 1" spanner and remove the Stem Head with a 30mm spanner.
2. Screw the Stem Head into your process connection and tighten to ensure an adequate seal is formed.
3. Mate the product to the Stem Head and then rotate to the position required.
4. Holding the Stem Head with a spanner, tighten the Coupling Nut to secure in place.

Piston - P_53 & P_54 (High Pressure)

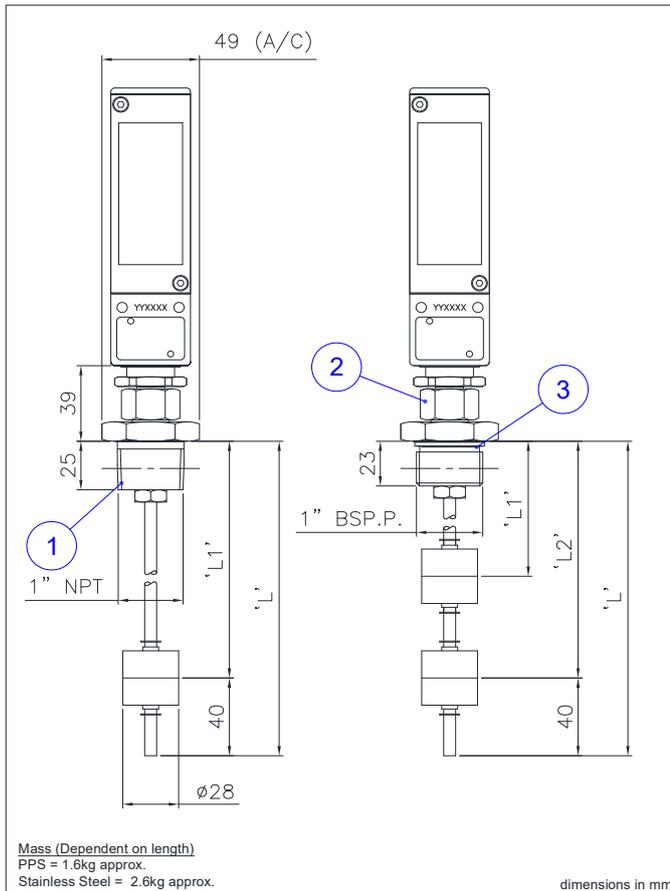The Sealing Band allows process media to vent if a pressure seal fails.

Piston P_53 & P_54 High Pressure	
1	¼" Female Process Entry
2	½" Female Process Entry
3	Stem Head
4	Coupling Nut
5	Sealing Band

Case mounted: 2 x M5 screws through switch case.

Process mounted:
1. Hold the Coupling Nut in place with a 1" spanner and remove the Stem Head with a 30mm spanner.
2. Screw the Stem Head into your process connection and tighten to ensure an adequate seal is formed.
3. Mate the product to the Stem Head and then rotate to the position required.
4. Holding the Stem Head with a spanner, tighten the Coupling Nut to secure in place.

L_52 – Vertical Reed Level

Mass (Dependent on length)
PPS = 1.6kg approx.
Stainless Steel = 2.6kg approx.

dimensions in mm

L_52 - Vertical Reed Level	
1	Stem Head
2	Coupling Nut
3	Bonded Seal (supplied)

Process mounted:
1. Hold the Coupling Nut in place with a 1" spanner and remove the Stem Head with a 42mm spanner.
2. Screw the Stem Head into your process connection and tighten to ensure an adequate seal is formed.
3. Mate the product to the Stem Head and then rotate to the position required.
4. Holding the Stem Head with a spanner, tighten the Coupling Nut to secure in place.

Note: If supplied with a flange please use either suitable seals that match the flange designation or an adhesive (allow sufficient time to cure before use).

⚠️ DO NOT ROTATE SWITCH CASE MORE THAN 270° FROM THE ADAPTOR'S LOCKED POSITION. DOING SO COULD DAMAGE THE INTERNAL WIRING

Maintenance

EX Intrinsically safe products must be maintained in accordance with IEC/EN 60079-17.

⚠️ Before undertaking any maintenance, ensure that the Argus is de-energised and isolated from pressurised media. Temperatures of exposed surfaces should be checked before handling to avoid injury.

Maintenance Procedure	Frequency* (*dependent on usage)
Check process and electrical connections remain tight	Every 12 months
Inspect and operate product if not in use	
Visually Check ePTFE Vent for damage	
Replace seals and diaphragms	Every 3-5 years
Replace microswitch assemblies	Every 5-10 years

Troubleshooting

Problem	Likely Cause	Solution
Leak of media	• Diaphragm/O-ring failure. • Loose connection.	• Replace diaphragm/O-ring. • Tighten the connection.
Shift in set point	• Excessive vibration, shock or impact. • Diaphragm or O-ring at end of life.	• Re-adjust the set point. • Replace diaphragm/O-ring.
Slow response	• Media too viscous. • Blockage in system. • Valve not fully opened within system.	• Use a chemical seal. • Ensure lines are free of debris. • Ensure valves are fully opened.
No signal or intermittent signal	• Microswitch failure. • Foreign objects blocking mechanism. • Diaphragm/O-ring failure. • Loose electrical connection.	• Replace microswitch. • Remove and check for damage. • Replace diaphragm/O-ring. • De-energize the system and tighten electrical connections.

Note: Replace with OEM parts only. Contact Pyropress for more information.
If any issues persist, contact Pyropress.

Spares & Repair

EX   Intrinsically safe products must be repaired in accordance with IEC/EN 60079-19.

⚠   Argus Vertical Reed Level products are not intended for customer repair. Please contact Pyropress for all spares and repairs regarding this product.

Diaphragm, pressure seal and environmental seal kits are available for the following products:

- Medium pressure (P_51 & P_52)
- High pressure piston (P_53 & P_54)

Fully assembled and pressure tested high pressure piston (P_53 & P_54) assemblies are available for onsite repair.

Standard and dual microswitch assemblies are also available.

All products should be thoroughly tested before re-introducing them into service. It is likely the set points will vary slightly from their original setting and will require recalibration.

All switch types can be returned to Pyropress for repair and overhaul.

⚠   Before returning products to Pyropress, please ensure they are decontaminated by removing any residual process media.

Materials of Construction

⚠   It is the responsibility of the end-user to ensure that the product's materials of construction are compatible with process media and the surrounding atmosphere.

External & easily accessible parts

- ANC4B stainless steel
- 316 stainless steel
- Polyphenylene Sulphide (PPS)
- Copper/silicone (cable)
- Glass reinforced polymer (DIN Socket)
- Polyamide (DIN Plug)
- 303 stainless steel (internal pushrod)
- 304 stainless steel (pipe bracket)
- Polyester (Label)
- Glass/nickel (M12 Circular Connector)

Wetted parts

- 316 stainless steel (standard)

- Monel® 400 (if specified)
- Inconel (if specified)
- Hastelloy® C276 (if specified)
- Nitrile (L_52 types only)

Diaphragms & seals (upon request)

- Viton® (option)
- Nitrile (option)
- PTFE (option)
- EPDM (option)
- Silicone (environmental seals only)
- ePTFE (Vent only)

Fasteners

- A2 & A4 stainless steels

Disposal

Please ensure that components which may have been in contact with harmful substances are safely cleaned and/or disposed of in line with relevant legislation and regulations. Electrical and elastomeric components should also be removed before the remaining items are then recycled.

Contact Details

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