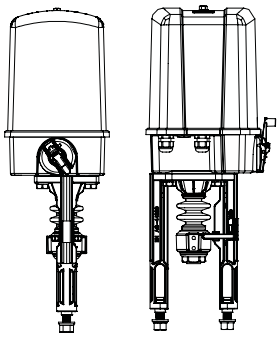
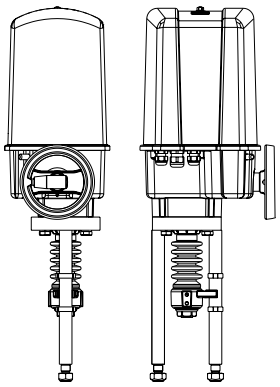
Electric thrust actuator ARI-PREMIO®-Plus 2G

Electric thrust actuator ARI-PREMIO®-Plus 2G 2,2 - 5 kN



Page 2

Electric thrust actuator ARI-PREMIO®-Plus 2G 12 - 25 kN



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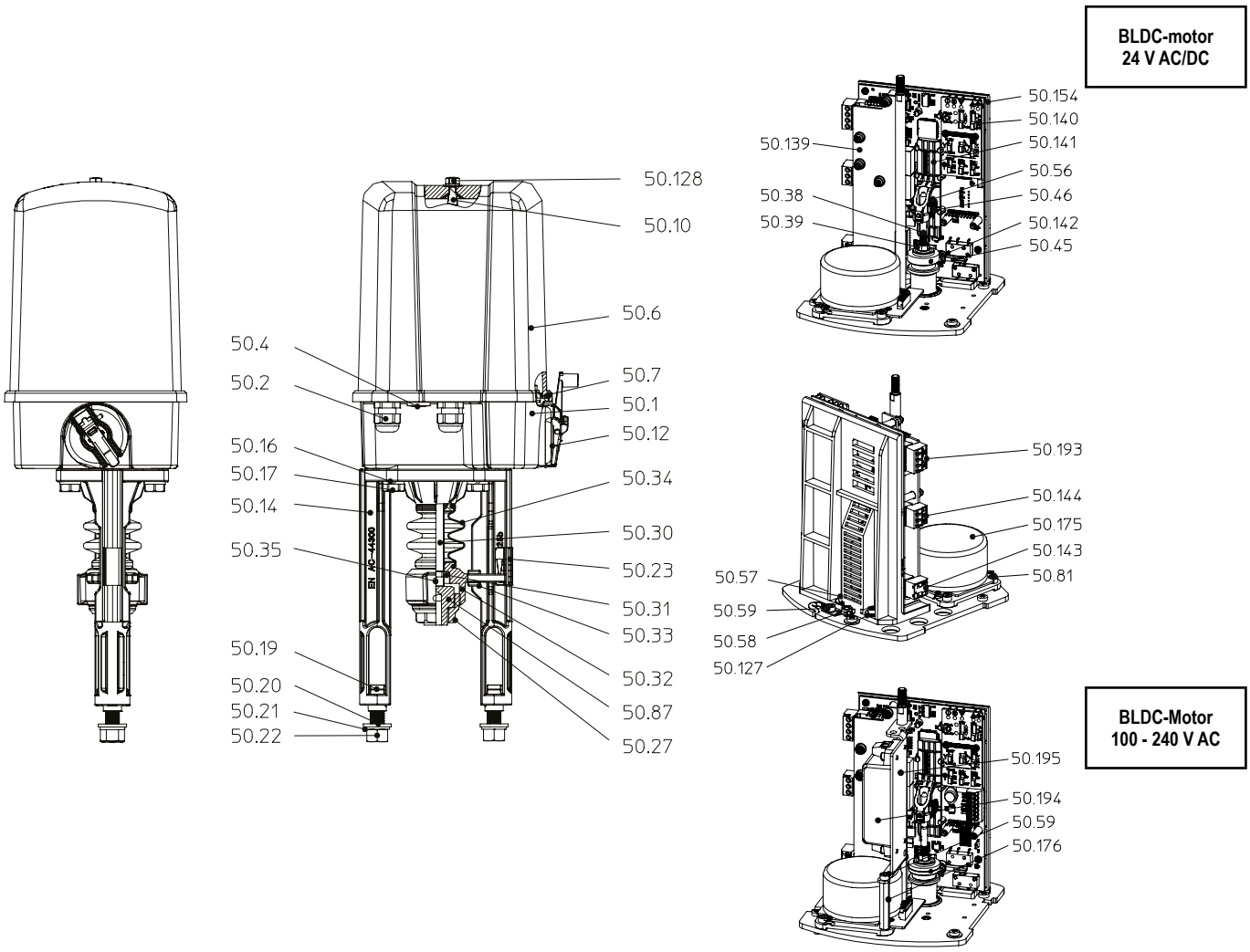
Features

- optional input signal:
  - 3-point from 12 to 250 V AC/DC
  - 0 - 10 V
  - 4 - 20 mA
- automatic valve travel adaption
- economy function for extended lifetime
- emergency manual override handwheel standard
- contactless position determination
- optional thrust or travel switch

Electric thrust actuator ARI-PREMIO®-Plus 2G 2,2 - 5 kN



Pos.	Description
50.1	Gearbox
50.2	Cable gland 2 x M16x1,5
50.4	Sealing plug 1 x M16x1,5
50.6	Hood
50.7	Hood seal
50.10	Column
50.12	Handwheel
50.14	Yoke
50.16	Washer DIN 128-A10
50.17	Hexagon bolt DIN EN ISO 4017 - M10x40
50.19	T-head bolt DIN 261-M12x40
50.20	Washer DIN EN ISO 7089
50.21	Washer DIN 128 - A12
50.22	Hexagon nut DIN EN ISO 4032 - M12
50.23	Lift dial
50.27	Coupling
50.30	Driving spindle
50.31	Spindle safety feature
50.32	Torsion safety feature
50.33	Slide
50.34	Bellow
50.35	Grub screw DIN ISO 4766 - M6
50.38	Guide spindle

Pos.	Description
50.39	Hexagon nut DIN EN 24034 - M5
50.45	Shift lever
50.46	Spring washer
50.56	Spring
50.57	Cylinder screw DIN EN ISO 4762 - M4x10
50.58	Protective conductor terminal
50.59	Cylinder screw DIN EN ISO 4762 - M4x6
50.81	Cylinder screw DIN EN ISO 4762 - M4x8
50.87	Threaded bush
50.127	Washer ISO 7093-1
50.128	Collar nut with sealing ring M6
50.139	Protective cover
50.140	Switch cover
50.141	Trip sllide
50.142	Shakeproof washer
50.143	Connector, 2-pole (N/L)
50.144	Connector, 3-pole (L↑/ L↓/ 0V)
50.154	Board support cpl. (incl. electronic)
50.175	BLDC motor
50.176	Distance bolt M4x45
50.193	Connector, 4-pole (Y in/Y out)
50.194	Power supply, cpl.
50.195	Fixing bracket for power supply

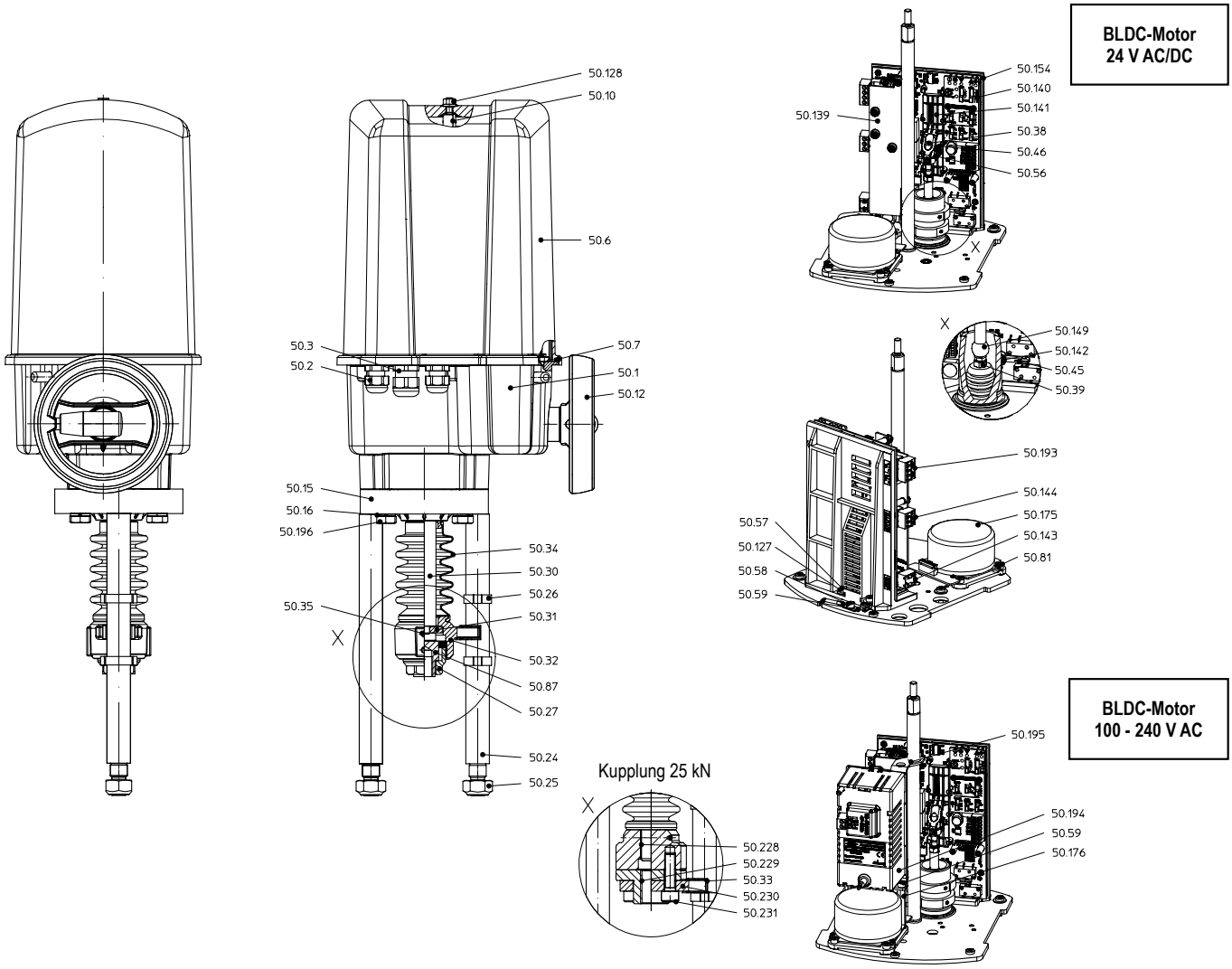
Technical data

Type		ARI-PREMIO®-Plus 2G 2,2 kN	ARI-PREMIO®-Plus 2G 5 kN
Thrust force	kN	**2,2 kN**	**5,0 kN**
Operating speed	mm/s	0,25/0,38/0,47/1,0 adjustable	
Travel distance max.	mm	50 mm	
Duty cycle according to EN ISO 22153		Class C (modulation) @70°C	
Supply voltage	V	24 V AC/DC	
Motor type		BLDC (Brushless DC motor)	
Power consumption (depends on the operating speed)	VA	max. 28	max. 30
Torque switch		2 pcs. included internally	
Enclosure EN 60529		IP65	
Corrosion protection class according to DIN EN ISO 12944		C3 (higher protection classes on request - stainless steel version)	
Max. storage temperature	°C	-40 °C ... +85 °C	
Max. permissible ambient temperature	°C	-20 °C ... +70 °C, for UL/CSA version up to max. +60 °C (For outdoor use and sub-zero temperatures, a heating is recommended!)	
Hand operating device		Yes (always running)	
Operation		optional:· 3-point: 12 V AC/DC to 250 V AC/DC 0 to 10 V DC load resistance 500 kOhm resolution 12 Bit 4 to 20 mA DC load resistance 125 Ohm resolution 12 Bit	
Max. cable cross section		Supply voltage: 2,5 mm² 3-step input: 2,5 mm² Input signals: 2,5 mm²	
Mounting position		Any, except: motor not hanging downwards	
Cable diameter for cable glands		2 x M16 x 1,5: 5 - 9,5 mm	
Electrical safety according to DIN EN 61010, part 1		Overvoltage category II Pollution degree 2 Altitude up to 2000 m Rel. humidity ≤ 90 % non-condensing	
Characteristics at control signal failure		adjustable with slide switch: OPEN, STOP, CLOSE	
Gear lubricant		Klüber Isoflex Topas NB152	
Weight	kg	5,4 kg	

Aditional voltage	refer to page 6

Accessories	refer to page 6 - 10

Electric thrust actuator ARI-PREMIO®-Plus 2G 12 - 25 kN



Pos.	Description
50.1	Gearbox
50.2 / 50.3	Cable gland 2 x M16 x 1,5 / 1 x M20 x 1,5
50.6	Hood
50.7	Hood seal
50.10	Column
50.12	Handwheel (engageable)
50.15	Flange
50.16	Washer DIN 128 - A10
50.24	Distance column
50.25	Hexagon nut DIN EN ISO 4032 - M16
50.26	2-ear clamp (stroke indicator)
50.27	Coupling
50.30	Driving spindle
50.31	Spindle safety feature
50.32	Torsion safety feature
50.33	Slide
50.34	Bellow
50.35	Grub screw DIN ISO 4766 - M6
50.38	Guide spindle
50.39	Hexagon nut DIN EN 24034 - M5
50.45	Shift lever
50.46	Spring washer
50.57	Cylinder screw DIN EN ISO 4762 - M4x10
50.58	Protective conductor terminal

Pos.	Description
50.59	Cylinder screw DIN EN ISO 4762 - M4x6
50.81	Cylinder screw DIN EN ISO 4762 - M4x8
50.87	Threaded bush
50.127	Washer ISO 7093-1
50.128	Collar nut with sealing ring M6
50.139	Protective cover
50.140	Switch cover
50.141	Trip sllide
50.142	Shakeproof washer
50.143	Connector, 2-pole (N/L)
50.144	Connector, 3-pole (L↑/ L↓/ 0V)
50.149	Axial joint
50.154	Board support cpl. (incl. electronic)
50.175	BLDC motor
50.176	Distance bolt M4x45
50.193	Connector, 4-pole (Y in/Y out)
50.194	Power supply, cpl.
50.195	Fixing bracket for power supply
50.196	Hexagon bolt DIN EN 24017 - M10x100
50.228	Spindle unit PREMIO® 25kN
50.229	Threaded bush PREMIO®
50.230	Securing flange
50.231	Cylinder screw DIN EN ISO 4762 - M10x35

Technical data

Type		ARI-PREMIO®-Plus 2G 12 kN	ARI-PREMIO®-Plus 2G 15 kN	ARI-PREMIO®-Plus 2G 25 kN
Thrust force	kN	**12,0 kN**	**15,0 kN**	**25,0 kN**
Operating speed	mm/s	0,20/0,31/0,38/0,79 adjustable		
Travel distance max.	mm	65 mm *		
Duty cycle according to EN ISO 22153		Class C (modulation) @70°C		
Supply voltage	V	24 V AC/DC		
Motor type		BLDC (Brushless DC motor)		
Power consumption (depends on the operating speed)	VA	max. 62	max. 74	max. 137
Torque switch		2 pcs. included internally		
Enclosure EN 60529		IP65		
Corrosion protection class according to DIN EN ISO 12944		C3 (higher protection classes on request - stainless steel version)		
Max. storage temperature	°C	-40 °C ... +85 °C		
Max. permissible ambient temperature	°C	-20 °C ... +70 °C, for UL/CSA version up to max. +60 °C (For outdoor use and sub-zero temperatures, a heating is recommended!)		
Hand operating device		Yes (engageable)		
Operation		optional:· 3-point: 12 V AC/DC to 250 V AC/DC 0 to 10 V DC load resistance 500 kOhm resolution 12 Bit 4 to 20 mA DC load resistance 125 Ohm resolution 12 Bit		
Max. cable cross section		Supply voltage: 2,5 mm² 3-step input: 2,5 mm² Input signals: 2,5 mm²		
Mounting position		Any, except: motor not hanging downwards		
Cable diameter for cable glands		2 x M16 x 1,5: 5 - 9,5 mm 1 x M20 x 1,5: 8 - 13 mm		
Electrical safety according to DIN EN 61010, part 1		Overvoltage category II Pollution degree 2 Altitude up to 2000 m Rel. humidity ≤ 90 % non-condensing		
Characteristics at control signal failure		adjustable with slide switch: OPEN, STOP, CLOSE		
Gear lubricant		Klübersynth G34-130		
Weight	kg	9,5 kg		11 kg

Aditional voltage	refer to page 6

Accessories	refer to page 6 - 10

*other strokes on request

Additional voltage

Switching power supply for ARI-PREMIO®-Plus 2G		2,2 kN	5 kN	12 kN	15 kN	25 kN
Voltage	V - Hz	100 - 240 V AC 50/60 Hz				
Power consumption	VA	max. 40,1	max. 45,8	max. 88		max. 166

Transformer for ARI-PREMIO®-Plus 2G		2,2 kN	5 kN	12 kN	15 kN	25 kN
Voltage	V - Hz	3~ 400 V 50/60 Hz				
Power consumption	VA	max. 36	max. 43	max. 72	max. 82	max. 154

100 - 240 V AC			3~ 400 V
2,2 - 5 kN	12 - 15 kN	25 kN	2,2 - 25 kN

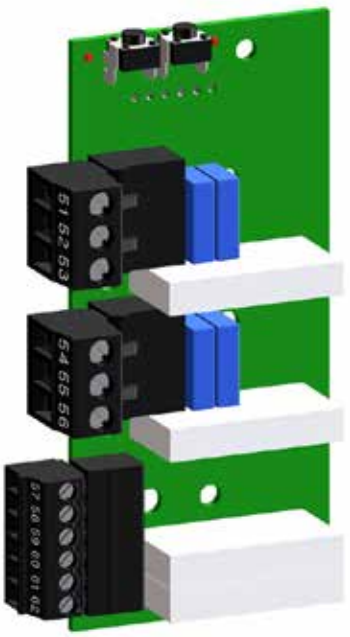
Accessories

Type	ARI-PREMIO®-Plus 2G 2,2 - 25 kN	
Binary feedback	**Type Relay board**	• 2 intermediate positions, - To set by switch, - Changeover contacts 250 V, 6 A ohm resistive load, 3 A inductive load • 1 failure signal and 1 warning signal, - Changeover contacts 30 V AC/DC, 2A
Electronic position indicator	**Type Analog output card**	• Analogue output for position feedback, • 4-20 mA switchable to 0-10V • Invertable • Galvanic isolation between the mains voltage and feedback signal • Active
Heating	**Heating resistor**	• 230 V AC, 115 V AC, 24 V AC/DC; 15 W • Automatic switching circuit
Potentiometer	**Conductive** (max. 2 Stück)	• 1000, 2000, 5000 Ohm, 1 Watt (bei +70 °C) • Wiper current max. 0,01 mA / recommended 0,002 mA
	Wire (max. 2 Stück)	• 100, 200 Ohm, 0,5 Watt (bei +70 °C) • Wiper current max. 35 mA / recommended 0,02 mA
LED – Status Indicator	**2,2/5 kN**	• From the outside on the visible display of the drive status; • Green= OK.; red=error; yellow= warning; blue=maintenance; • Intermediate upgrade modules available starting with SW version 3.3.X
	12/15/25 kN	
Communications package	**2,2/5 kN**	• Features: - Bluetooth interface for communication of "myPREMIO" App - Electronic position indicator: 4 - 20 mA switchable to 0 - 10 V - LED-Status indicator
	12/15/25 kN	
(Process-) controller	**ype Processcontroller dTRON 316**	• Mounted in the actuator • 4-20 mA output for operation of PREMIO®-Plus 2G • For resistance thermometers and thermocouples (provided by the customer) or standard signals, • Pre-configured for temperature control: Control range from -200°C up to +850°C (resistance thermometer)
Fieldbus interface	**Profibus DP** **Anybus®** **Communication interface**	• Control command: - 3-point: OPEN, Stop, Close - Nominal position value 0-100 - Reset - initialization • Feedback signals: - Actual position value: 0 - 100 - Failures, warning messages, end position switches, etc.
	Modbus RTU **Anybus®** **Communication interface**	
Uninterruptible power supply for electrical failsafe position	**UPS-Module IPU 2405-N2.2**	• Selectable fail-safe position on power failure • Power supply via NiMH maintained for 30 minutes after power failure • Charge level indicator • Relay signal on power failure and state of charge

Relay board					
Relay (zero-potential changeover contacts)		**1 (open)**	**1 (close)**	**3 warning**	**4 failure**
Switching capacity	U_B max.	250 V AC, 6 A ohm resistive load, 3 A inductive load		30 V AC/DC, 2 A	
Max. cable cross section		2,5 mm²		1,5 mm²	
Contact material		Gold			
Storage temperature		-40 °C ... +85 °C			
Operating temperature		-40 °C ... +85 °C (Note temperature range for the entire actuator!)			

Features:

- Setting of the switching points over push buttons
- Zero-potential changeover contacts
- 2 intermediate positions or end positions
- 1 Collective failure message:
  - Control signal failure
  - Position can not be reached (Motor-/gear failure)
  - Blocking (actual)
  - Actuator is not intialised
  - Voltage failure
- 1 Collective warning message:
  - Hand operating device
  - Blockage (identified)
  - Position can not be reached
  - Maintenance
  - Internal temperature exceeded
  - ED management active
  - Silent running
  - too small travel during initialization

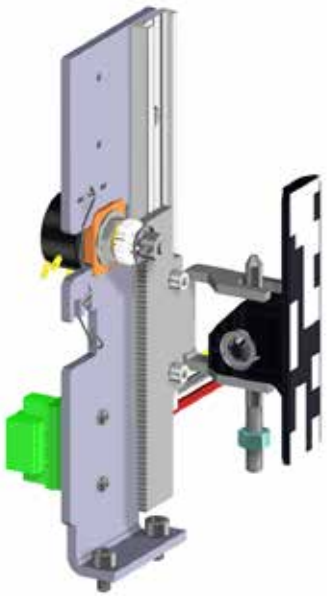


Analog output card			
Output control signal	Y_U	0 - 10V DC Measuring resistance (load resistance)	max. 2 kOhm load resistance·
Output control signal	Y_I	4 - 20 mA DC, active Measuring resistance (load resistance)	max. 500 Ohm·

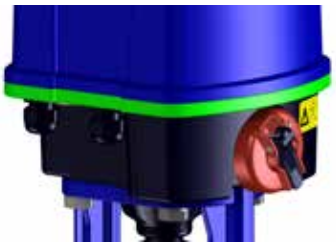
Features:

- For position transmitter
- Output signal configurable with solder jumper

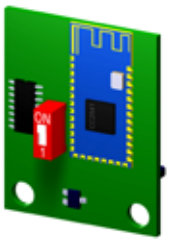
Potentiometer		
Type	**MP21 (Standard)**	**RP19**
Resistance values	1000, 2000, 5000 Ohm	100, 200 Ohm
Element technology	Conductive plastic	Wire
Resistance tolerance	±15 %	±3 %
Independent linearity tolerance	±1 %	±0,5 %
Loading capacity at +70 °C (0 W at 105 °C)	1 Watt	0,5 Watt
Max. / recommended contact current	0,01 mA/0,002 mA	35 mA/0,02 mA
Max. cable cross section	2,5 mm²	
Durability	10 Mio. turns	1 Mio. turns



LED – Status indicator
Features: • From the outside on the visible display of the drive status: - Green = OK - Red = Error - Yellow = Warning - Blue = Maintenance • Intermediate upgrade modules available – SW-Version 3.3.0 or higher on the actuator is required



Communications package		
Consisting of: - BT-Module incl. myPREMIO® App and electronic positioner - LED-Status indicator	2,2 - 25 kN	Interface for communication using the Bluetooth function of the mobile device



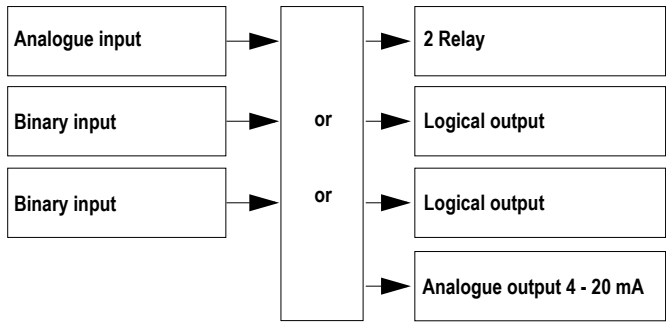
Fieldbus interface		
Profibus DP Anybus® Communication module	2,2 - 25 kN	• Control command: - 3-point: OPEN, Stop, Close, - Nominal position value 0 - 100, - Reset - Initialization • Feedback signals: - Actual position value 0 - 100; - Failures, warning messages, end position switches, etc.
Modbus RTU Anybus® Communication module		

Integrated (Process-) controller dTRON 316

Features

- Programmable analogue input
- 2 Auto-tune methods
- Program function with 8 program sections or slope-function
- 2 Timer functions
- 4 Limit-comparators
- Interlock for keyboard and level
- 4 Programmable setpoints, two parameter sets
- 4 Digit resolution (max. 2 decimal places)
- Controller characteristic P, PD, PI or PID
- Actual value input by usual temperature sensors (see in table)
- 2 Relay outputs 230 V / 3 A (shutter)
- 4 - 20 mA Output for operation of PREMIO®-Plus 2G
- 2 Combinable binary inputs / binary outputs

Blockstruktur



Input thermocouples		
Description		**Measuring range**
Fe-CuNi „L“		-200 ...+900 °C
Fe-CuNi „J“ DIN EN 60584		-200 ...+1200 °C
Cu-CuNi „U“		-200 ...+600 °C
Cu-CuNi „T“	DIN EN 60584	-200 ...+400 °C
NiCr-Ni „K“ DIN EN 60584		-200 ...+1372 °C
NiCr-CuNi „E“	DIN EN 60584	-200 ...+1000 °C
NiCrSi-NiSi „N“	DIN EN 60584	-100 ...+1300 °C
Pt10Rh-Pt „S“	DIN EN 60584	0 .....+1768 °C
Pt13Rh-Pt „R“	DIN EN 60584	0 .....+1768 °C
Pt30Rh-Pt6Rh „B“	DIN EN 60584	0 .....+1820 °C
W5Re-W26Re „C“		0 .....+2320 °C
W3Re-W25Re „D“		0 .....+2495 °C
W3Re-W26Re		0 .....+2400 °C

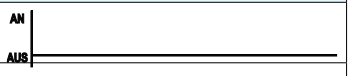
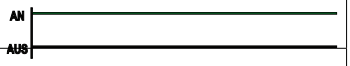
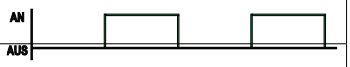
Input standardized active current or voltage signals	
Description	**Measuring range**
Voltage	0 (2) ... 10 V, input resistance Re > 100 kOhm
Current	0 (4) ... 20 mA, voltage drop ≤ 1,5 V

Input resistance thermometer		
Description	**Type of connection**	**Measuring range**
Pt 100 (standard)	2-wire / 3-wire / 4-wire	-200...+850 °C
Pt 500	2-wire / 3-wire / 4-wire	-200...+850 °C
Pt 1000	2-wire / 3-wire / 4-wire	-200...+850 °C
KTY11-6	2-wire	-50...+150 °C
Sensor output resistance: max. 30 Ohm each circuit at 3- and 4-wire connection		
Measurement current: approx. 250µA		
Circuit adjustment: - At 3- and 4-wire connection not necessary. - At 2-wire connection a circuit acjustment can be done with sofware by correcting the actual value.		

UPS-Module IPU 2405-N2,2

Features:

- Power supply maintained for 30 minutes after power failure
- Selectable fail-safe setting
  (Retracting / extending actuator stem, no fail-safe position approached)
- Potential-free relay signal on power failure
- Potential-free relay signal if state of charge low /
  standby mode ends (> 30 min)
- High power reserves (several fail-safe runs
  possible depending on the size of the actuator)
- Easy to upgrade
- Suitable for all PREMIO®-Plus 2G actuator sizes
- Max. permissible ambient temperature -20...+70 °C
- Enclosure IP66 (applies only to the UPS)

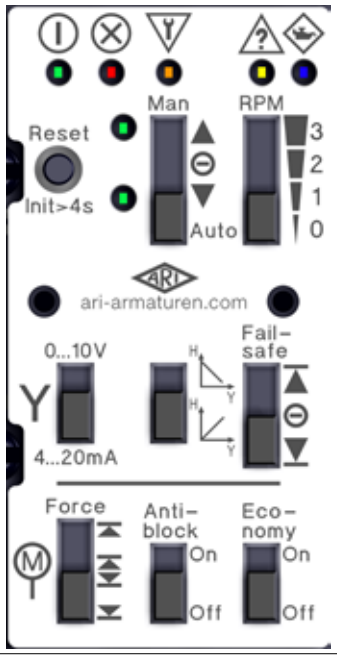
Status LED on the UPS module	
Status	**Indication**
Assembly de-energised	
Grid mode	
Standby mode	
Warning: Energy storage fault or state of charge low / enable open / 0 V at wire 8	

Technical Data

Type	UPS IPU 2405-N2,2
Input voltage U_{in}	23 V DC - 30 V DC
Input current	Typically 5.5 A
Output in grid mode	
Nominal output voltage U_A	Typically U_{in} - 0.5 V DC
Nominal output current I_N	5.0 A
Continuous short-circuit protection	Yes
Output in standby mode	
Nominal output voltage U_A	23 V DC ± 3%
Nominal output current I_N	max. 5 A (in function of output voltage and temperature)
General	
Rated output power	120 W
Efficiency	Typically 96%
Overload protection (Standby mode)	Typically 10 A
Short-circuit protection	Switch-off with automatic restart
Energy storage technologies	NiMH
Energy storage capacity	2.2 Ah
Low state of charge alert threshold	30% (State of charge)
Deep discharge protection	Yes
Switching capacity of signalling contacts	30 V / 1 A / 30 VA
Isolation device	External
Power connection	Sheathed cable 8 x 1,5 mm^2, Cable length 600 mm, ferrules
Enclosure (Built-in device)	IP66 (applies only to the UPS)
Operating temperature T_a	-20 °C ... +70 °C
Dimensions (W x H x D)	160 x 160 x 91 mm
Weight	2.9 kg
Mounting	Angle plate
Enclosure material	Industrial enclosure – aluminium

Direct operator panel

- Setting with switches, without a PC or tools
- Failure signals acc. to Namur 107
- Switchable economy function for extended lifetime
- Local operation
- Anti-block function
- Control signal switch 0-10 V / 4-20 mA
- Control signal invertible
- Adjustable failsafe characteristic at control signal failure
- Adjustable motor speed to adapt the operating speed

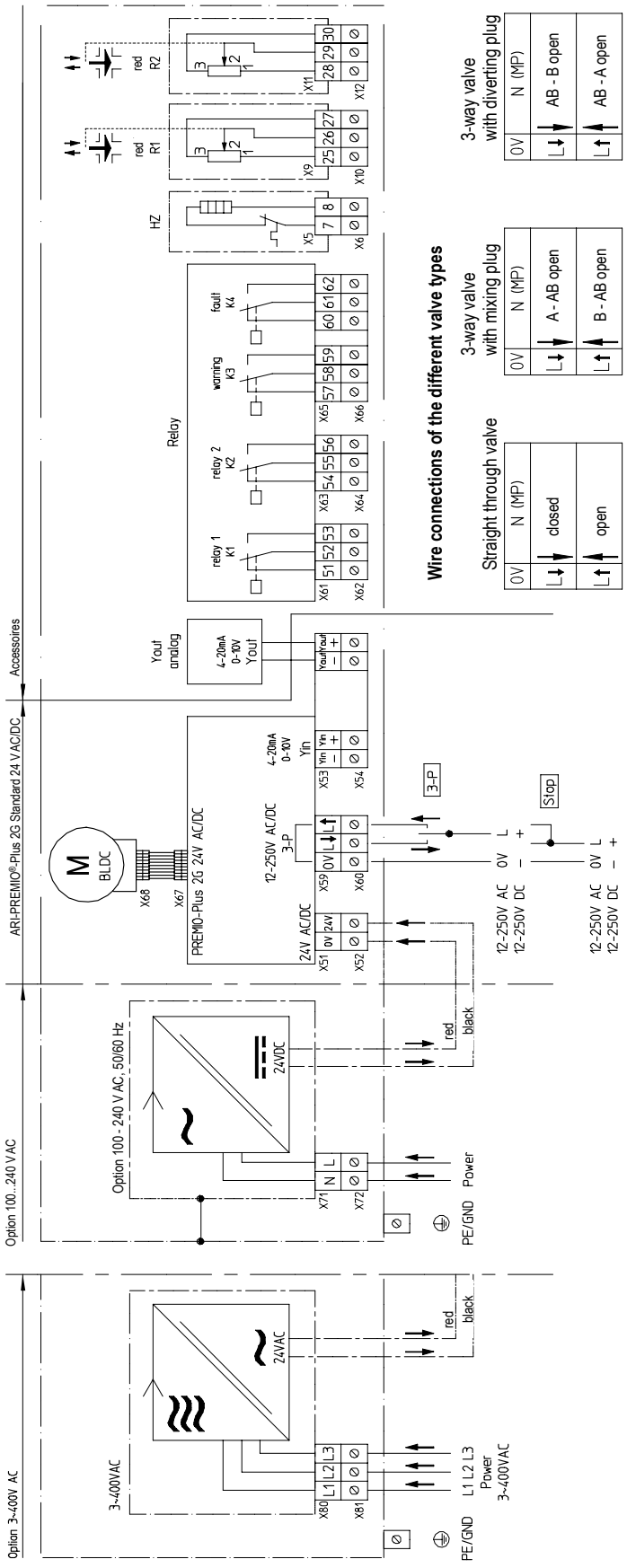


Additional features:

- Automatic valve travel adaption
- Priority control for 3-point signals - e.g. for anti-freeze function
- Economy function for extended lifetime
  - Prevents cycling of the valve, reducing wear
  - Control optimisation for 3-point operation
- Tight-closing function
- Detection and suppression of interferences on the signal line
- Automatic fault detection (incl. emergency functionality)
- Temperature duty cycle management and performance adjustment
- Avoid condensation by integrated humidity sensor with heating elements
- Contactless position determination
- Failure and warning signal via relay contact

ARI-PREMIO® -Plus 2G 2,2 - 25 kN

Wiring diagram



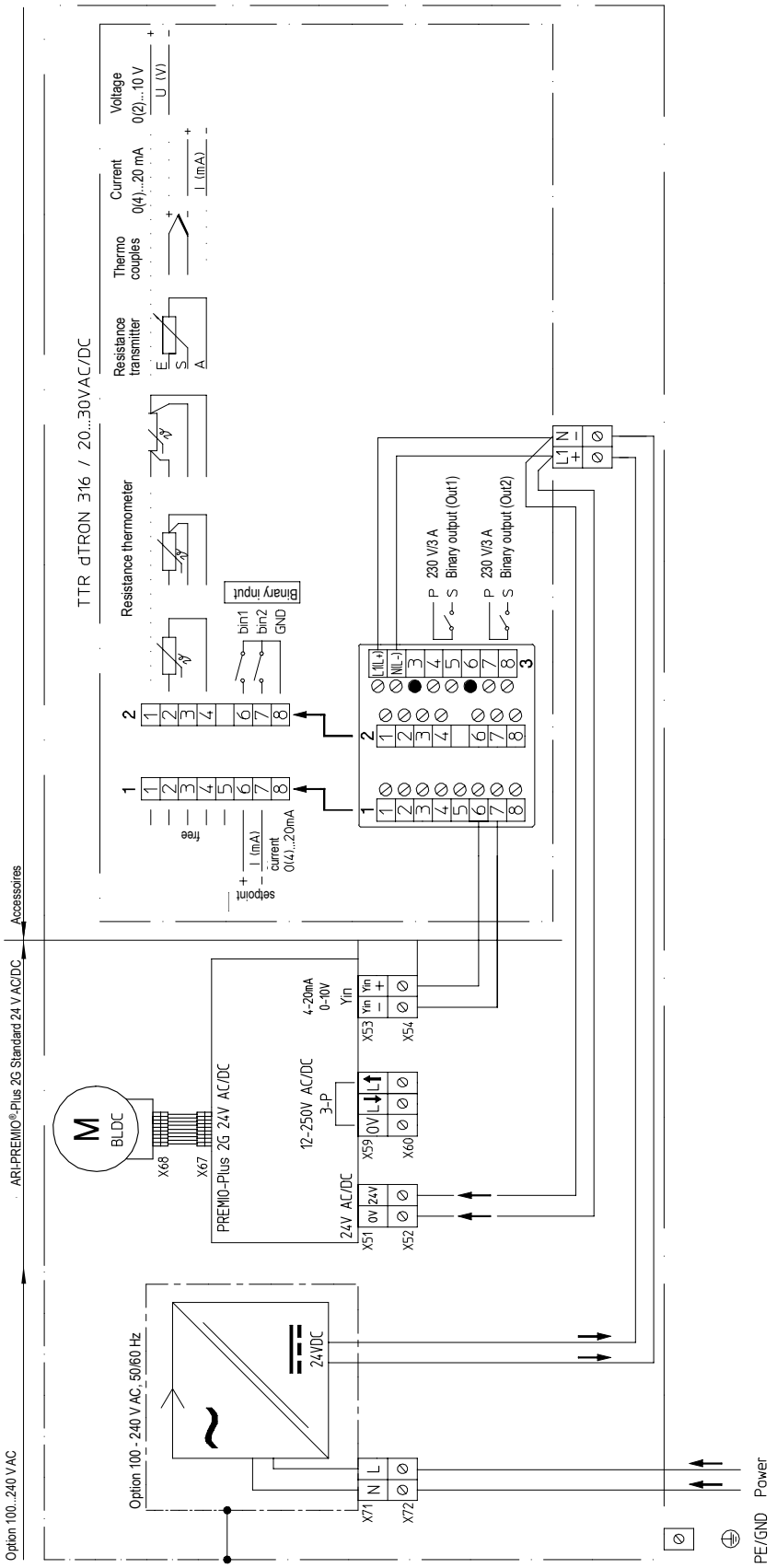
HZ Heating resistor

TTR Electronic temperature controller dTRON316

Relay Relay board

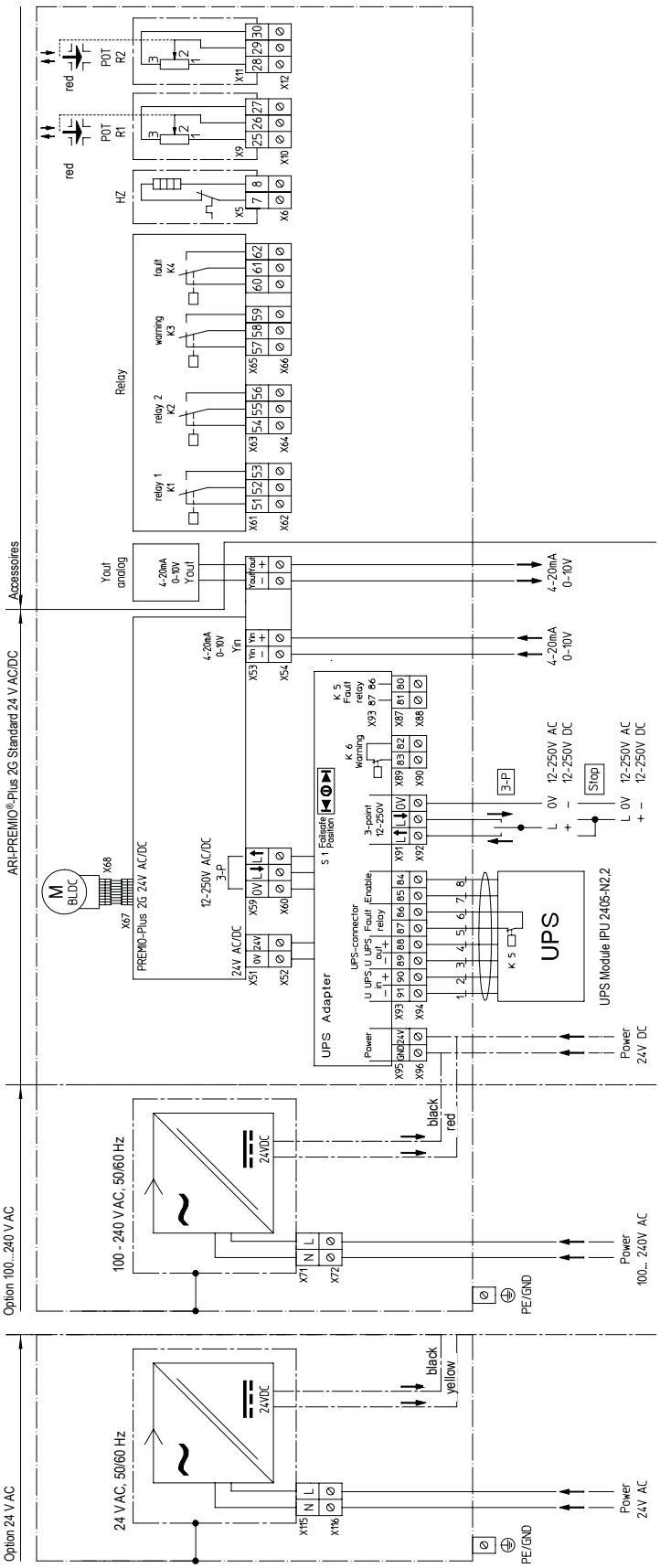
Y out Analog output card

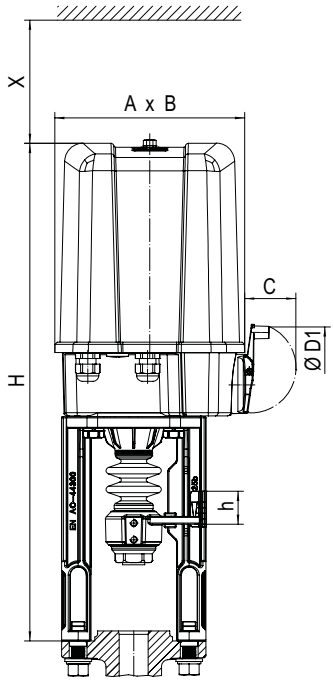
POT Potentiometer


TTR dTRON 316 / 20...30VAC/DC
Voltage 0(2)...10 V
U (V)
Current 0(4)...20 mA
I (mA)
Thermo couples
Resistance transmitter
Resistance thermometer
Binary input
bin1
bin2
GND
230 V/3 A Binary output (Out1)
230 V/3 A Binary output (Out2)
free
I (mA) current 0(4)...20mA
setpoint
Accessoires
ARI-PREMIO®-Plus 2G Standard 24 V AC/DC
PREMIO-Plus 2G 24V AC/DC
BLDC
4-20mA 0-10V Yin
12-250V AC/DC 3-P
24V AC/DC
Option 100 - 240 V AC, 50/60 Hz
24VDC
Option 100...240 VAC
Power
PE/GND

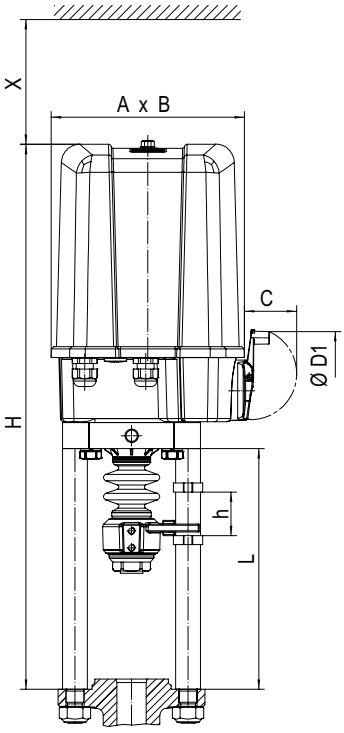
ARI-PREMIO® -Plus 2G 2,2 - 25 kN UPS IPU 2405-N2,2

Wiring diagram



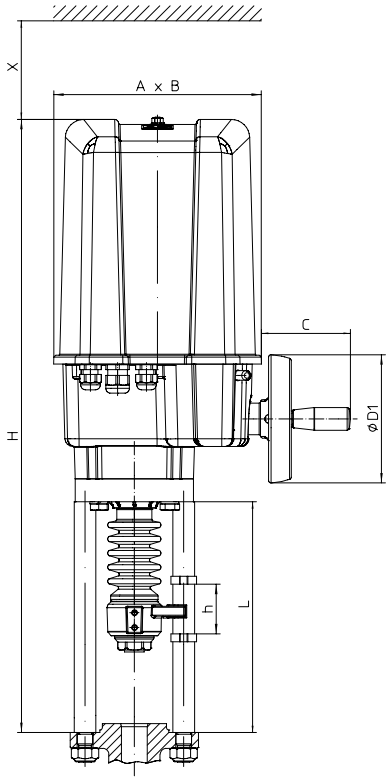


2,2 - 5 kN
Nominal travel max. 30 mm



2,2 - 5 kN
Nominal travel > 30 mm - 50 mm

		2,2 - 5 kN	
A	(mm)	171	
B	(mm)	156	
C	(mm)	50	
ØD1	(mm)	90	
X	(mm)	150	
H	(mm)	448	482
h (Nominal travel)	(mm)	max. 30	max. 50
L (Column)	(mm)	for X=83 199 for X=98 213	

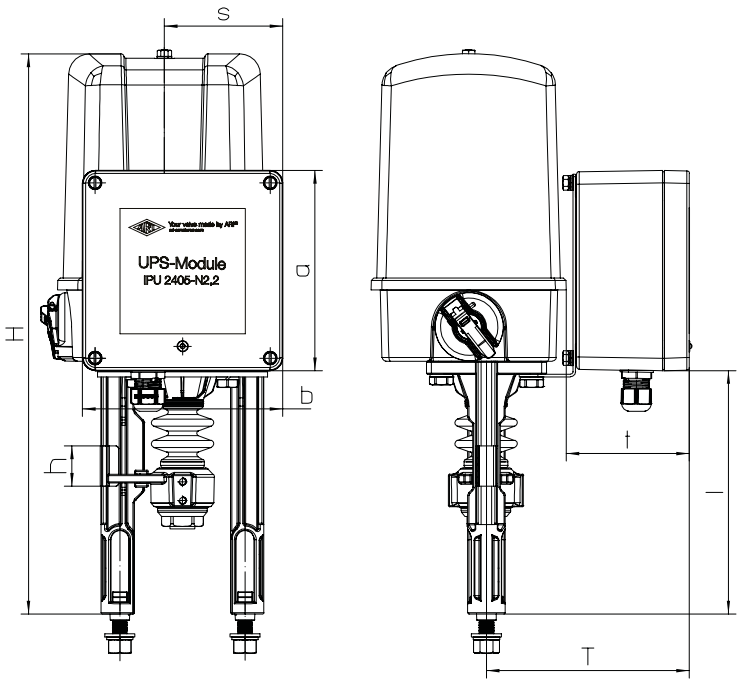


12 - 25 kN
Nominal travel max. 80 mm

		12 - 25 kN		
A	(mm)	210		
B	(mm)	184		
C	(mm)	90		
Ø D1	(mm)	130		
X	(mm)	200		
H	(mm)	622	637	652
h (Nominal travel)	(mm)	max. 50	max. 65	max. 80
L (Column)	(mm)	234	249	for X=83 249 for X=98 264

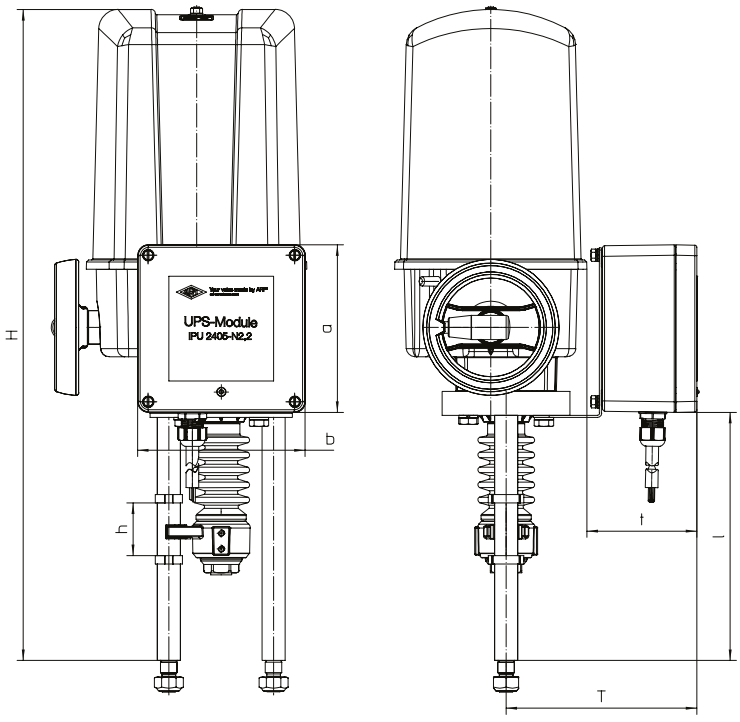
ARI-PREMIO®-Plus 2G UPS IPU 2405-N2,2

Dimensions



2,2 - 5 kN

		2,2 - 5 kN	
a	(mm)	160	
b	(mm)	160	
t	(mm)	99	
T	(mm)	162	
s	(mm)	95	
l	(mm)	195	
H	(mm)	448	482
h	(mm)	max. 30	max. 50



12 - 25 kN

		12 - 25 kN		
a	(mm)	160		
b	(mm)	160		
t	(mm)	105		
T	(mm)	182		
l	(mm)	237		
H	(mm)	622	637	652
h	(mm)	max. 50	max. 65	max. 80

If installing the ARI-Premio®-Plus 2G with UPS-Module, a distance of 20 mm must be maintained all around the UPS-Module.

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