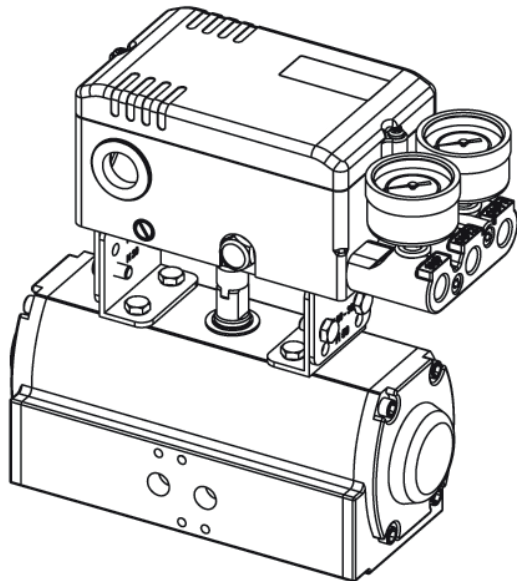




Features / Design

- 1.- Easy and quick auto-calibration.
- 2.- Detecting RA (reverse acting) or DA (direct acting) automatically regardless of wrong air connections.
- 3.- Available to use for single or double acting without any special adjustments.
- 4.- Compact design allowing to be installed on small actuators.
- 5.- Providing error messages against performance failures.
- 6.- Possible to test the actuator with any fixed signal under a test mode.
- 7.- Programmable characteristic curve with 17 points.
- 8.- Wide operating temperature range -30 ~ +80°C.
- 9.- Improved control of high-friction globe and ball valves by eliminating an overshoot and a hunting.
- 10.- Low air consumption.
- 11.- Supporting a NAMUR mounting pattern VDI 3845 (IEC 60534-6-2) and providing a multi-size mounting bracket for rotary valves.

- PIR (Rotary Type)



Options

- Output position transmitter (4 - 20 mA).
- 2 x alarm limit or micro switch (SPDT).
- Explosion proof type (IECEX / ATEX / KC Ex ia IIC T5).
- HART communication.
- Profibus communication (in progress).
- Fieldbus Foundation communication (in progress).

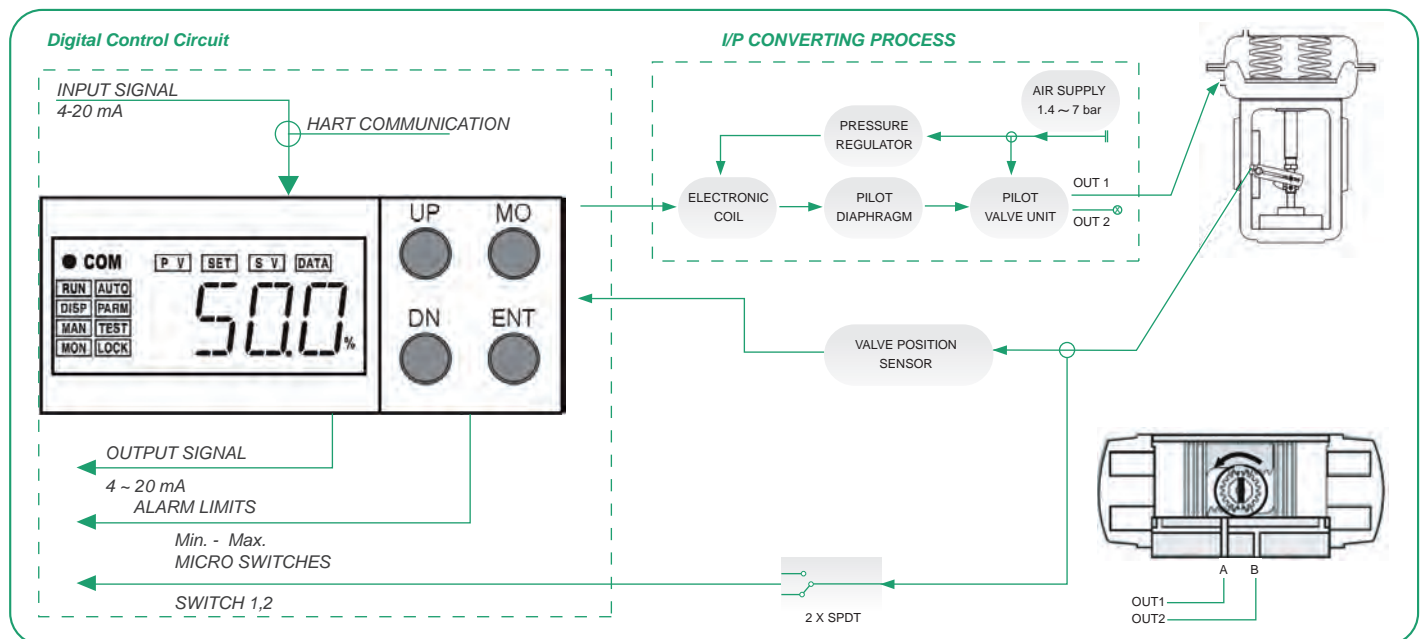


Specifications

Communication	Without	HART	Profibus - PA	Foundation Fieldbus
Input Signal / Bus voltage	4 - 20 mA @ 24 VDC		9-32 VDC	
Min. / Max. Current	3.6 mA / 50 mA		-	
Current Consumption	-	-	15mA	16mA
Voltage Drop (Resistance)	8.7 VDC(435Ω)	9.4 VDC(470Ω)	-	-
Stroke / Angle	Rotary type : 25 - 120°			
Air Supply Pressure	1.4 - 7.0 bar (20 - 100 psi), filtered, compressed dry and non-oiled to meet Class 3 of ISO 8573-1			
Output Pressure Range	0 - 100% of supply air pressure			
Air Capacity	80 μ /min = 4.8 N m ³ /h = 2.8 scfm (Sup = 1.4 bar) 233 μ /min = 14 N m ³ /h = 8.2 scfm (Sup = 6 bar)			
Air Consumption	2.8 μ /min = 0.17 N m ³ /h = 0.1 scfm (Sup = 1.4 ~ 6 bar)			
Characteristic	Linearity < \pm 0.3% F.S Hysteresis < 0.2% F.S		Sensitivity < 0.2% F.S Repeatability < 0.2% F.S	
Performance Characteristic	Linear, EQ %, Quick open, User set (17 points)			
LCD Indication	4-digit LCD indicator			
Adjustable Speed	1 - 1000 (lowest 1, highest 1000)			
Scan Time	2ms			
Shut-off Value	Range 0 - 10% of position signal			
Valve Action	direct action (DA) / reverse action (RA)			
Operating Temperature	- 30 ~ +80°C (- 22 ~ +176 ° F)*			
Pneumatic Connections	PT(Rc) 1/4 or NPT 1/4			
Electrical Connections	2 x PF(G) 1/2 , NPT 1/2 , M20 x 1.5			
Protection Class	IP66, Intrinsically safe (IECEX / ATEX / KC Ex ia IIC T6/T5)			
Body Material	Aluminum die-cast / powder-painted			
Weight	1.6 kg			

* -40 °C on request

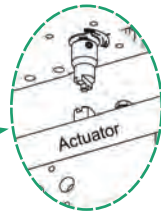
Principle of Operation



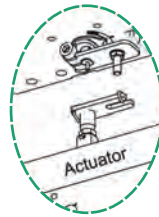
If 4-20 mA input signal (or Bus communication signal) is supplied, the micro processor compares input signal with position feedback and sends control signal to the I/P converting module. Pneumatic signal from the I/P converting module operates the valve and the valve stays at the desired position.

Mouting To Rotary Actuator

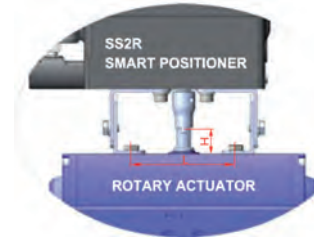
- PIR (ROTARY TYPE)



NAMUR TYPE MOUNTING
(VDI/VDE 3845, IEC 60534-6-2)



FORK LEVER TYPE MOUNTING



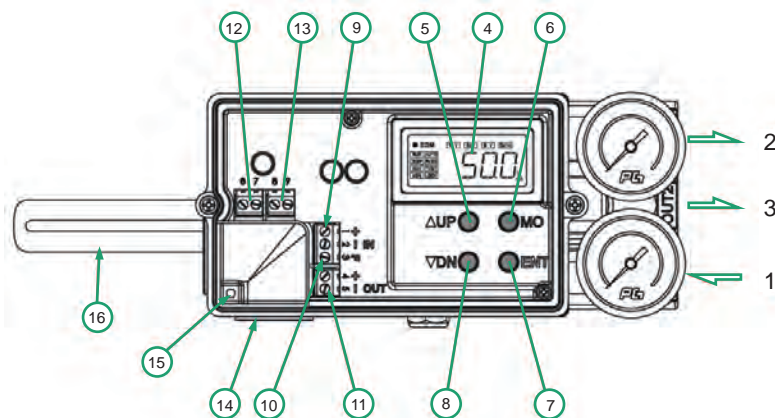
SIZE VARIATION OF MULTI-SIZE BRACKET
 1) 80 X 30 X 20 (H), 4) 130 X 30 X 20 (H)
 2) 80 X 30 X 30 (H), 5) 130 X 30 X 30 (H)
 3) 80 X 30 X 50 (H), 6) 130 X 30 X 50 (H)
 H: ROTARY ACTUATOR SHAFT HEIGHT
 L: LENGTH (80 OR 130mm)

Air Connections

- PIR (Rotary Type)

Spring Return		Double Acting	Double Acting
<p>OUT2 must be plugged</p> <p>As the input signal increases, Actuator shaft rotates counter-clockwise</p>		<p>As the input signal increases, Actuator shaft rotates counter-clockwise</p>	<p>As the input signal increases, Actuator shaft rotates clockwise</p>
Spring Return		Double Acting	
Reverse Acting	Out1 : piped, Out2: plugged	Out1 : piped to Actuator port A, Out2: piped to Actuator port B	
Direct Acting	Out 1 : plugged, Out2 : piped	Out1 : piped to Actuator port B, Out2: piped to Actuator port A	

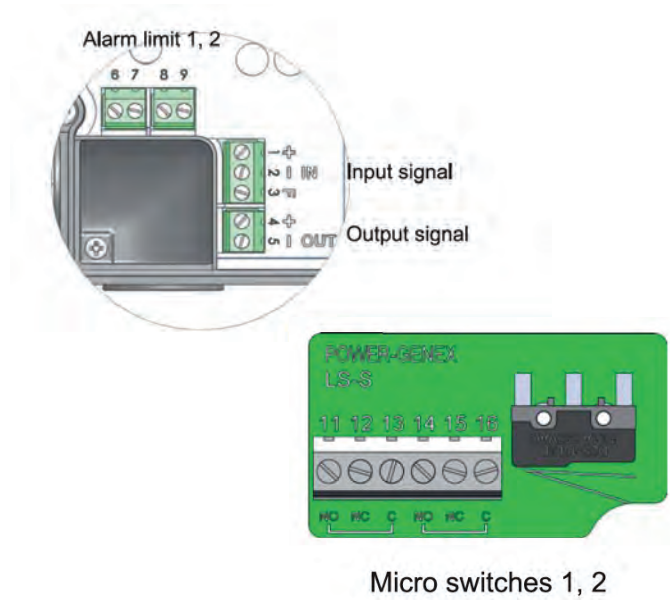
PIR Front Cover Removed



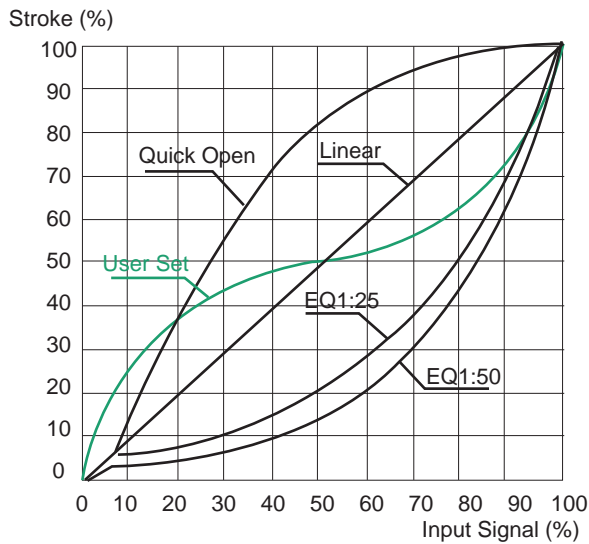
- 1 : Air supply
- 2 : OUT 1
- 3 : OUT2
- 4 : Display LCD
- 5 : Up key
- 6 : Mode key
- 7 : Enter key
- 8 : Down key
- 9 : Input signal (+, -)
- 10 : Frame ground
- 11 : Output signal (+, -)
- 12 : Alarm limit 1
- 13 : Alarm limit 2
- 14 : Electrical connections
- 15 : Ground
- 16 : Feedback lever

Electrical Connections

- 1 (+) — IN. 4-20mA input signal
- 2 (-) —
- 3 (FG) — Frame Ground
- 4 (+) — OUT. 4-20 mA Output signal
- 5 (-) —
- 6 (+) — LS1. (Low) Alarm limit 1
- 7 (-) —
- 8 (+) — LS2. (High) Alarm limit 2
- 9 (-) —



Characteristic Curves

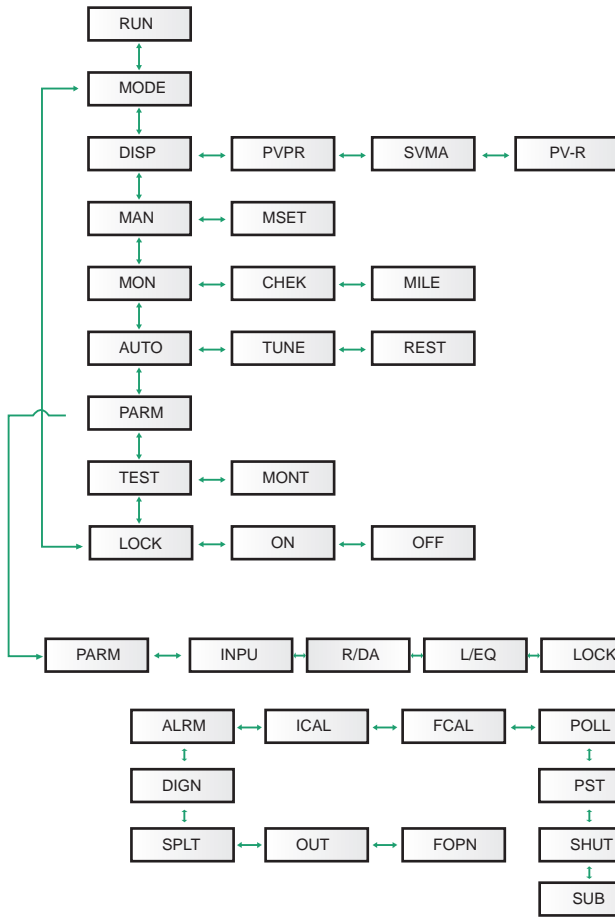


Quick Start and Checking

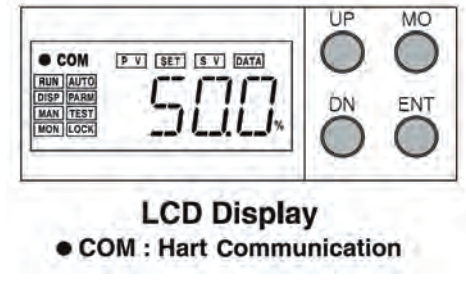
	Button	Action
Auto Calibration	MO	Push 5 seconds for auto-calibration.
Span	▽DN or ENT ENT or ▲UP ENT or MO	Push Δ DN 5 seconds to change a measured span (Try this option only when a valve doesn't reach a desired position).
Ambient Temp.	ENT	Confirm an ambient temperature surrounding this smart valve positioner.



Parameters Diagram

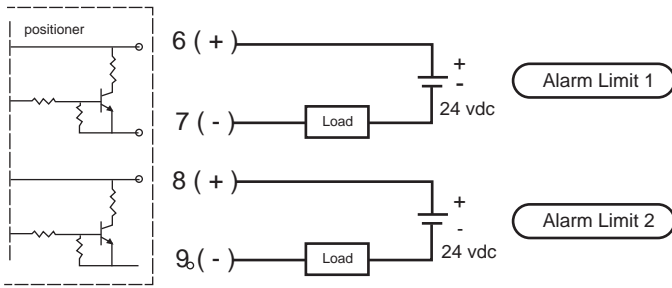


- Shows the operating situation of the positioner.
- Changes the parameters.
- Decides LCD display mode in mA, % or a reverse way.
- Converts to the manual mode.
- Shows the selected parameters and a total valve runtime.
- Performs auto-calibration and resets all programmed values.
- Main parameters.
- Mounting test mode.
- Locks the set values.



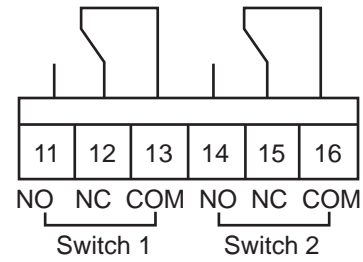
Parameter	Description	Fcution	Default
INPU	Input signal	4 -20mA or 20- 4mA	4 ~ 20mA
R/DA	RA/DA	Reverse acting or direct acting	Auto-set
L/EQ	Characteristic	Linear, E.Q.%(1 :25 or 1:50), Quick open or User set(17points)	Linear
SPAN	Span adjustment	0 ~ 100%	100%
ZERO	Zero adjustment	0 ~ 99%	0%
PID	P-GN / I-GN / D-GN	Proportional / Integral / Differential gain value	Auto-set
SPED	Response speed	1 ~ 1000	1000
SWST	Slow start	Smooth operation (ON or OFF)	Auto-set
CNLT	Control limit	50 ~ 1250	Auto-set
GCNL	Gap control limit	50 ~ 1250	Auto-set
DEAD	Dead band	0 ~ 9.99%	0.5%
FDGN	D-gain setting for hard mode	D-Gain setting for hard mode	Auto-set
C/MD	NORM / HARD / SMALL	Standard actuator, strong valve packing friction, small actuator	NORM
SHUT	Shut-off	0 ~ 9.9%	0.3%
FOPN	Full-open	0 ~ 9.9%	0.3%
OUT	Output signal	4 ~ 20mA or 20 -4mA	4 ~ 20mA
SPLT	Split range	4 ~ 12mA or 12 -20mA	4 ~ 20mA
DIGN	Display place	Movement to one or two decimal places	1
ALAM	Alarm limit low, high	AL 1 L / AL 1 H / AL2L / AL2H	0 ~ 10%, 90 -105%
ICAL	IN4M / IN20	Internat match with 4-20mA input signals from a calibrator	Factory setting
FCAL	FB4M / FB20	Internat match with 4-20mA output signals to a calibrator	Factory setting
POLL	Polling address	HART Communication polling address (0 ~ 15)	0

Wiring Alarm Limits



Note that 24 VDC should be supplied for power.

Micro Switches (SPDT):

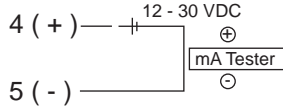


Measuring Output Signal

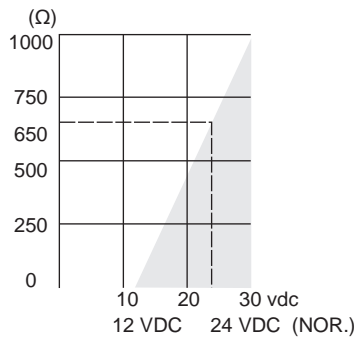
1. With mA loop calibrator



2. With multimeter (mA)



ZERO and SPAN of position feedback are automatically set after auto-calibration process.

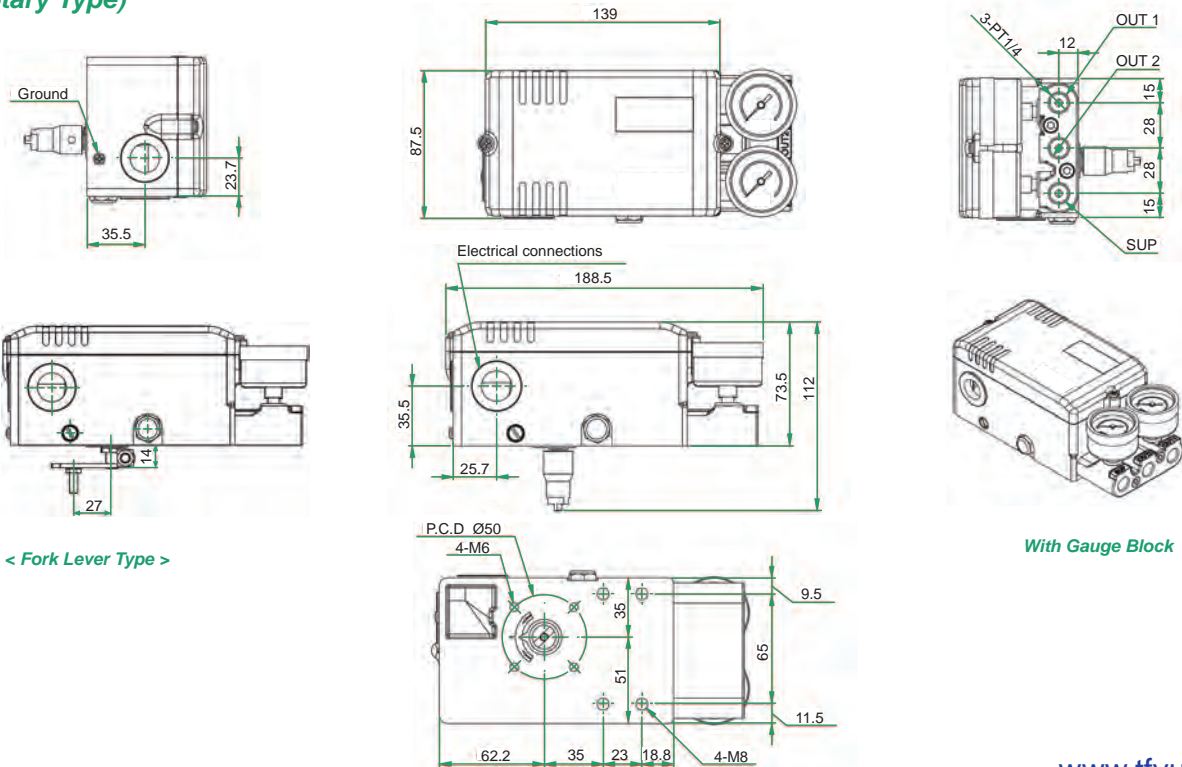


< Transmitter Load Limitation >

MICRO SWITCHES	
Type	SPDT
Rating	10.1A @ 250 VAC
Ambient Temperature	-30 ~ +85°C
Position Transmitter	
Output Signal	4 - 20 mA, 2-wire
Power Supply	12 - 30 VDC
Output Current Limit	30 mA DC
Linearity	1% F.S
Operating Temperature	-40 ~ +80°C

Dimensions:

- PIR (Rotary Type)



< Fork Lever Type >

With Gauge Block



How To Order

PIR

Actuator Operation

Protection Class

Feedback Lever

Pressure Gauges

By-Pass

Position Feedback

Communication

Connection Threads

Mounting Bracket

Feedback Pin Guide Lever Set

DESCRIPTION	CODE	DESCRIPTION	CODE
Actuator Operation:	L Linear type R Rotary type	Position Feedback:	N None O Position transmitter (4~20mA output signal) L 2 x alarm limit S 2 x micro switch (SPDT) M O + L Q O + S
Protection Class:	I Intrinsically safe IECEX / ATEX / TR-CU Ex ia IIC T6/T5 K Intrinsically safe (KC - Ex ia IIC T6/T5) W Weatherproof to IP66	Communication: (only for weatherproof type)	N None H HART P Profibus PA F Fieldbus Foundation
Feedback Lever:	F Fork lever N NAMUR shaft (direct mounting)	Connection Threads: (pneumatic - electrical)	3 PT(Rc) 1/4 - PF (G) 1/2 4 NPT 1/4 - NPT 1/2 5 PT(Rc) 1/4 - M20 X 1.5
- Rotary type:		Mounting Bracket:	N None R IEC 60534-6-2 (for PIR) VDI/VDE 3845
Gauge Block:	0 Not mounted 1 6 bar (90 psi) 2 10 bar (150 psi)		
By-pass:	N None (standard) Y Yes (auto/manual screw)		

