Smart Positioners YT-3700 / YT-3750
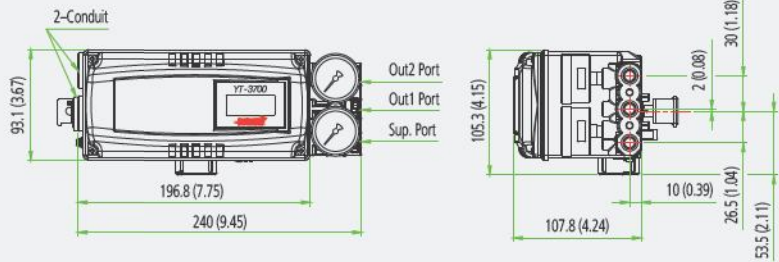
## Digital smart positioner with enhanced diagnostics

Design features

- **Enhanced diagnostic** (including offline and online) to fully check the integrity of the system. Valve signature, advanced step tests and Partial Stroke Testing (PST) can be operated from local or remote positions. Device Description (DD) and Device Type Manager (DTM) files allow for full software compatibility.
- **Visual diagnostic info** to NE107 standard for a user-friendly analysis with a severity alarm scale and a clear visual identification locally on the display or remotely through HART®.

- **Digital input/output configurable** depending on the application and customer preferences. Multiple options are available e.g. start a pre-set PST event or receive error alarms, tailoring interaction with the device as necessary.
- **Auto tuning** functionality.
- **Non-contact sensor** for increased performance for high frequency operating valves and an enhanced lifetime.

YT-3700 Aluminium Enclosure

YT-3700 Aluminium Enclosure With Limit Switches and Dome Indicator
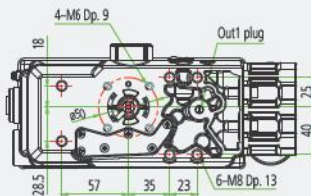
YT-3750 STS316 Enclosure

Dimensions: mm (Inches ")

Online diagnostics

These digital smart positioners employ continuous monitoring and graphic display of valve position, set point target vs time and internal circuit board temperature vs time.

Steady state deviation online analysis can detect:

- Friction in the valve or actuator
- Leakage in pneumatics
- Insufficient supply pressure

A deviation time out alarm occurs when the difference between the target position and the actual position exceeds the preset deviation alarm point (for more than the preset deviation time).
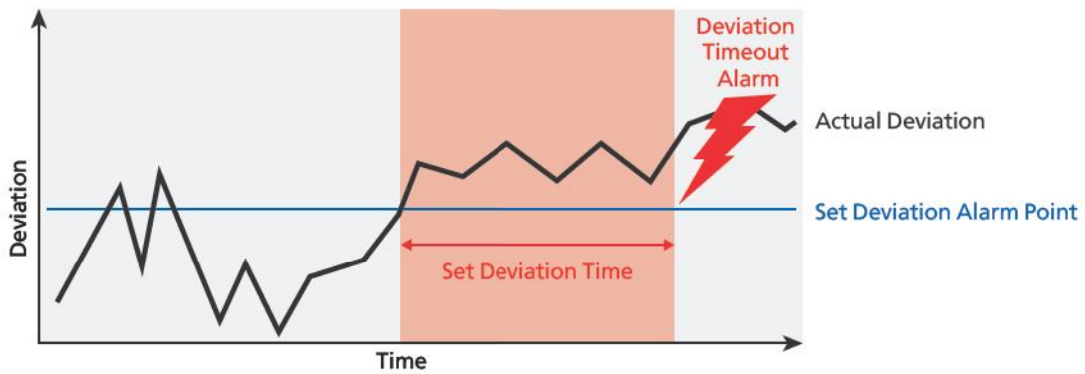

Alarms

An embedded memory in the YT-3700 series can store up to 11 PST test results and up to 20 alarm logs. Through DTM, the history of files will be easy to detect and the valve system integrity easily verified.

Examples of YT-3700 user configurable alarm/status based on NE107 status signal:

- Critical NVM failure
- Travel sensor failure
- RAM defect
- Drive Signal
- Temperature signal
- Deviation
- Travel accumulator
- Cycle counter
- Full close/open count
- PST failure
- Auto calibration failure

Note: Alarm severity can be set by operator
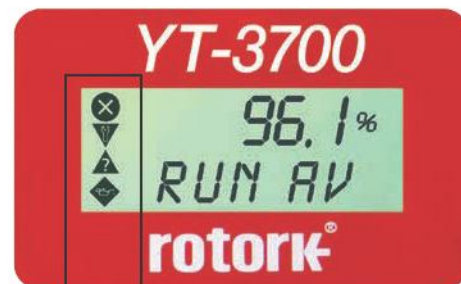
|		
✕	**Failure**	High severity
🔧	**Check function**	Signal temporarily invalid
?	**Out of specification**	Medium severity
🛢	**Maintenance required**	Low severity

Explanation of on-screen icons

Offline diagnostics

Automated package tests, checking integrity and dynamic behavior:

- Valve signature
- 25% step test
- Large step test
- Performance step test

These tests provide data to validate system performances. The system allows a reference to be set for further analysis highlighting performance shifts for predictive maintenance.
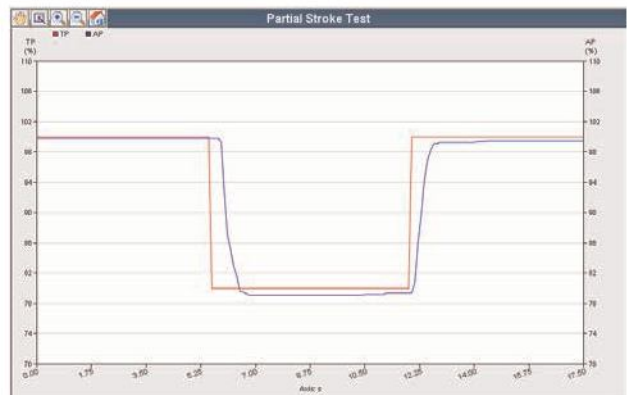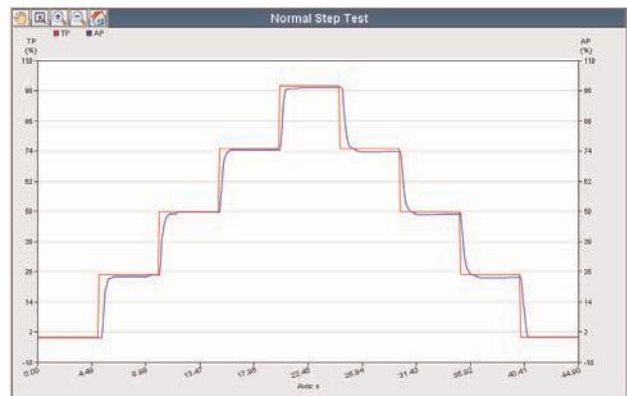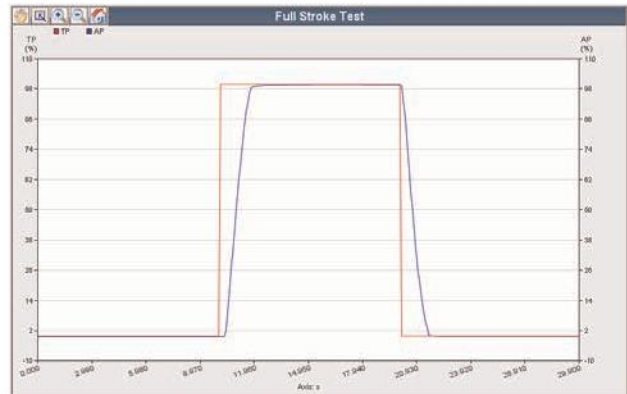
Partial Stroke Test capabilities

Automated PST functionality:

Configurable parameters

- PST interval [days]
- Position tolerance [%]
- PST start position [%]
- Target position [%]
- PST time out limit [sec]
- Target position hold time [sec]
- PST ramp up/down [%/sec] to reduce risks of overshooting system

Test activation via:

- Local positioner menu
- Remote DI control push button
- Remote HART® connection

Item Type		YT-3700	YT-3750
Input Signal		4 to 20 mA DC	
Supply Pressure		0.14 to 0.7 MPa / 1.4 to 7 bar / 20 to 102 psi	
Stroke	Linear Type	10 to 150 mm (0.4 to 6")	
	Rotary Type	55 to 110°	
Impedance		Max. 500 Ω @ 20 mA DC	
Air Connection		Rc1/4, 1/4NPT, G1/4	1/4NPT
Gauge Connection		Rc1/8, 1/8NPT	1/8NPT
Conduit		G1/2, M20, 1/2NPT	G1/2
Operating Temp.	Standard Type	-30 to +85 °C (-22 to +185 °F)	
	Low Temp. Type	-40 to +85 °C (-40 to +185 °F)	
	Arctic Temp. Type	-55 to +85 °C (-67 to +185 °F)	
	LCD	withstands -55 to +85 °C (-67 to +185 °F) only visible above -40 °C (-40 °F)	
Linearity		±0.5% F.S.	
Hysteresis		±0.5% F.S.	
Sensitivity		±0.2% F.S.	
Repeatability		±0.3% F.S.	
Air Consumption		Below 2 LPM (sup = O.14 Mpa) Below 0.07 CFM (sup = 20 psi)	
Flow Capacity		70 LPM (sup = O.14 MPa) 2.47 CFM (sup = 20 psi)	
Output Characteristics		Linear, EQ%, Quick Open, User set (5, 21 points)	
Material		Aluminium Diecasting	Stainless Steel 316
Ingress Protection		IP66	IP66
Explosion Protection Type	ATEX / IECEx	Ex ia IIC T5/T6 Gb Ex ia IIIC T100°C/T85°C Db IP 6x	
	SIL	In progress	
	Nepsi	Ex ia IIC T5/T6 Gb Ex iaD 21 T100/T85	
	KCs	Ex ia IIC T6/T5 Ex ia IIIC T85°C/T100°C	
	FM	In progress	
	CSA	In progress	
	INMETRO	Ex ia IIC T6/T5 Gb Ex ia IIC T85°C/T100°C Db IP66	
Communication (Option)		HART (ver.7)	
L/S Rating	Mechanical Type (Omron)	AC 125 V, 3 A / DC 30 V, 2 A	
	Proximity Type (P&F)	DC 8.2 V 8.2 mA	
Weight		2 kg (4.4 lb)	5.1 kg (11.2 lb)
Digital Input		Low level control voltage 0 to 5 VDC High level control voltage 11 to 28 VDC Max current < 4 mA	
Digital Output		Supply voltage 5 to 28 VDC Low level current < 1 mA High level current > 2.1 mA @5 VDC, < 14mA @28 VDC	

Product Code

YT-3700 - L - S - N - 2 - 4 - 2 - 4 - S

Model
YT-3700 = Aluminium housing
YT-3750 = Stainless steel housing

Motion Type
L = Linear
R = Rotary (in case of a switches request the device will have visual position indicator as standard)

Acting Type
S = Single
D = Double

Explosion Protection
N = Non-explosion
i = Intrinsically Safe ATEX, IECEx. NEPSI, KCs
A = Intrinsically Safe CSA, FM (Both S and L of Operating Temp. available.)
E = Intrinsically Safe EAC

Lever Type
Linear
0 = 10 to 40 mm
1 = 20 to 100 mm
2 = 90 to 150 mm

Rotary
5 = NAMUR

Conduit & Air Connection
1 = G1/2 - Rc1/4
2 = G1/2 - 1/4 NPT (YT-3750 is available for No. 2 ONLY)
3 = G1/2 - G1/4
4 = M20 - 1/4 NPT
5 = 1/2 NPT - 1/4 NPT

Communication Protocols
2 = HART communication

Output Options
0 = None
1 = 4 to 20 mA feedback
4[1] = 4 to 20 mA feedback + Limit Switch - Mechanical Type (potentiometer drive without digital I/O communication)
5[2] = 4 to 20 mA feedback + Limit Switch - Proximity Type (potentiometer drive without digital I/O communication)

Operating Temp. (Non-explosion proof)[3]
S = -30 to +85 °C (-22 to +185 °F)
L = -40 to +85 °C (-40 to +185 °F)
A = -55 to +85 °C (-67 to +185 °F) (only available with EAC certification

Notes:
1. Only S, L of Operating Temperature are available for 4 of Output Options
2. Only S of Operating Temperature is available for 5 of Output Options
3. This option is just the normal operating temperature of the product and is not related to explosion protection temperature. See certificates for explosion protection temperature.