



Three Separate Functions in a Single Loop Powered Device

Switch

Two Independent, Programmable SPST Solid State Relays

- Program switch open and close values in engineering units
- Select diagnostics driven failsafe(s) open or closed
- Program switches for functional operation: HH, LL, HL, SPDT, DPST or null

Gage

Local Indication of Process Variable

- Select from a list of 13 engineering units (psi, H₂O, bar, kPa, etc.)
- Indicates up to 150% of device URL
- Continuous indication of process variable during on-line programming

Transmitter

Independent 4-20mA Analog Output

- Program transmitter zero and span values in engineering units
- Select diagnostic driven failsafe 3.6 mA or 22 mA
- Up to 5:1 turndown and 10% URL zero offset



Easy to Use

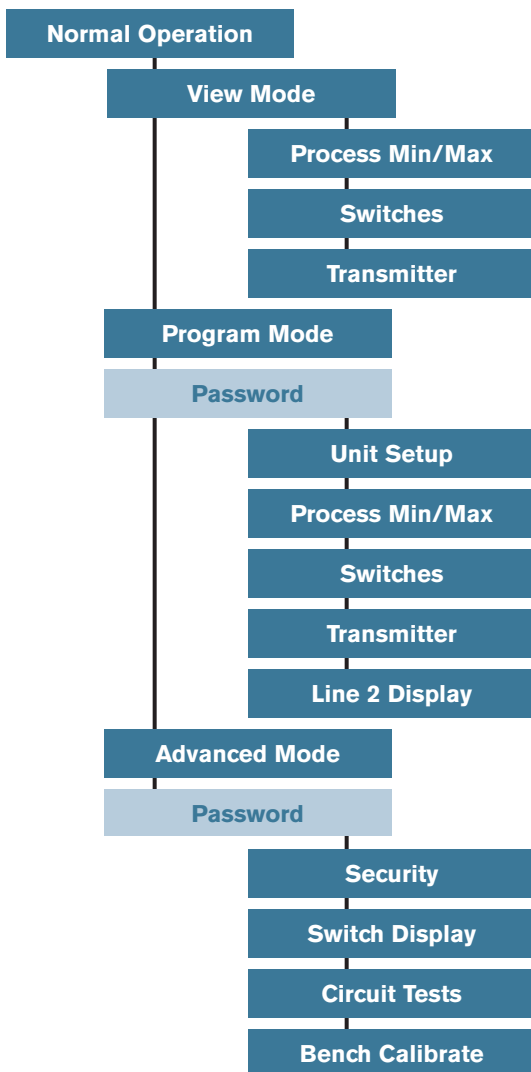
The SGT[®] interface was designed with the user in mind. The SGT[®] is programmed via four low-profile, 1/2-inch diameter tactile buttons which are singular in use with internationally recognized symbols. A 2-line x 16-character, 2-1/4" x 1/2" liquid crystal display (LCD) indicates the process variable and the switch or the transmitter status (user selectable) while in normal operation mode. In view and program modes, the status display (line 2) is replaced by a menu of selectable choices. Navigation is simplified through an intuitive, descriptive menu structure containing an ever-present escape function. Intelligent settings and configuration routines alert the operator to "invalid entries."

The SGT[®] is designed for functional safety, conforming to the performance requirements of ANSI/ISA S84.01

The SGT[®] is the process industry's first electronic pressure instrument that combines the independent functions of a switch, a gage and a transmitter with *self-diagnostics*. This innovation in measurement and control technology is a powerful addition to the instrument choices available to Safety Instrumented System (SIS) designers.

Multi-level password protection is provided to meet Management of Change (MOC) requirements and independent, on-line functional testing of output circuits is included to simplify the periodic verification of SIS integrity.

Menu Structure



Factory Programmed Settings

Switch 1 (S1)

Close = 80% URL
 Open = 90% URL
 Failsafe = Open
 Status (Flash) = Close

Switch 2 (S2)

Close = 20% URL
 Open = 10% URL
 Failsafe = Open
 Status (Flash) = Close

Gage Indication

Unit = psi
 Display = Switch Status

Transmitter (Xmtr)

4mA = 0% URL
 20mA = 100% URL
 Failsafe = 3.6 mA

Security

Password = 0000
 Levels = None

Product Specifications			
Ranges	30-inch Hg vacuum, 10, 20, 50, 100, 200, 500, 1000, 2000 psig/psia	Gage	
Over Pressure	1.5 times URL (Range 30V: 30psi)	Range	0 to 150% URL (Range 30V: 100% URL)
Accuracy (L, H and R)	±0.5% URL	Resolution	≤ 0.1% URL
Long Term Stability	±0.5% URL per year	Liquid Crystal Display	2-line by 16-character
Temperature Effect	±1% URL per 100°F (55°C)	Engineering Units	psi, inH ₂ O, ftH ₂ O, inHg, bar, mbar, mmH ₂ O, mH ₂ O, mmHg, kg/cm ² , Pa, kPa, MPa
Temperature Ranges		Transmitter	
Process (std)	-20 to 250°F (-29 to 121°C)	Analog, Loop Powered	4 to 20 mA (current limited 3.8 to 20.5 mA)
Ambient, electronics	-40 to 160°F (-40 to 71°C)	Zero Offset	+10% URL
Ambient, LCD	-20 to 160°F (-29 to 71°C)	Span	20 to 100% URL (5.1 turndown)
Compensated	-20 to 160°F (-29 to 71°C)	Maximum Load	500 ohms @ 24 vdc
Storage	-40 to 185°F (-40 to 85°C)	Failsafe	3.6 mA or 22 mA (high/low current loop per NAMUR NE 43)
Power		Wetted Materials (Standard)	
Supply	13 to 30 vdc, loop powered	Sensor	Ceramic (Al ₂ O ₃)
Power Supply Effect	≤ 0.005% URL per volt	Process Connection	316SS, 1/2-inch NPT(F)
Electrical Protection	Reverse polarity, EMI/RFI	O-Ring	Viton GLT
Current Consumption	3.5 mA (nominal)	Enclosure (Standard)	
Warm-up Time	≤ 10 seconds	Material	Aluminum
Memory	Non-volatile	Conduit Connection	3/4-inch NPT (F)
Response Times		Terminal Block	14 to 28 AWG
Sensor Sampling Rate	20 ms (50 Hz)	Keypad	4 tactile membrane switches
Switches	≤ 10 ms (after sample)	Environmental Protection	NEMA 4X, IP65
Transmitter (90% FSO)	≤ 15 ms (after sample)	Mechanical	
Self-Diagnostics Sampling Rate	≤ 1 second	Vibration	2g @ 15 to 150 Hz 1g @ 150 to 2000 Hz
Gauge Update Rate	600 ms (nominal)	Drop and Topple	Per SAMA PMC 31.1 - 1980
Switch		Impact	Per CENELEC EN 50 021
Photo MOS Relay (two, independent, solid state)	SPST, NO	Weight	1.68 lbs. (0.762 kg)
Ratings	1A @ 25°C, 0.6A @ 71°C; 125 VAC/120 vdc	Warranty	3 year
Maximum Inrush	3A @ 25°C		
Off-State Leakage Current	10 μ a		
Range	0 to 100% URL		
Deadband	0.2 to 100% URL		
Repeatability (per ANSI/ISA S51.1)	±0.1% URL		
Failsafe	Open or Closed		

Specifications at 77°F (25°C) and 24 vdc unless otherwise noted.0



Agency Approvals

UL, cUL
Class I, II, III; Div 2; Nonincendive



ATEX Directive 94/9/EC
Ex II 3 G/D



EMC Directive 89/36/EEC (pending)

Sample Model Number

1SGT200AAPK

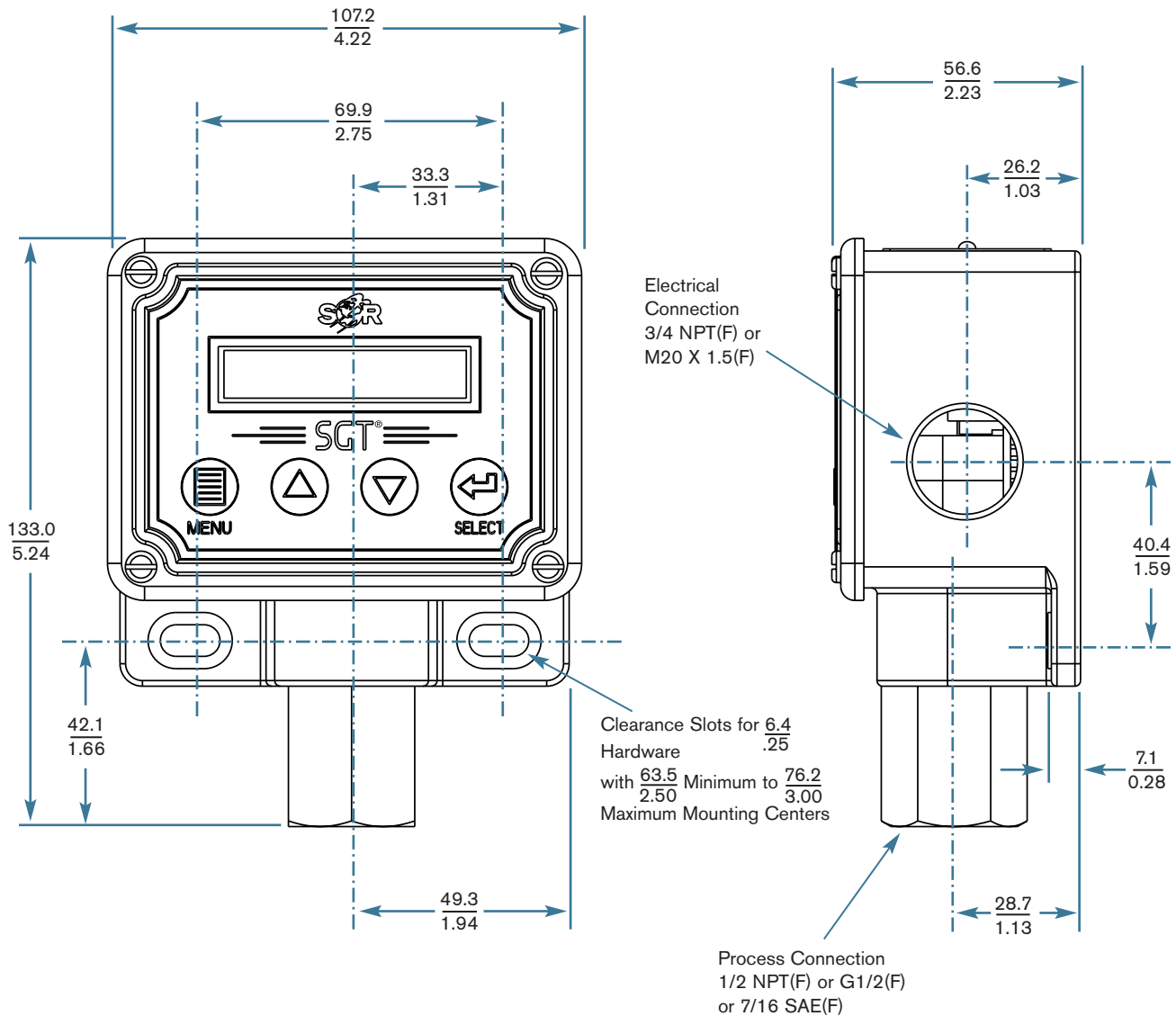
SGT electronic pressure instrument; 0-200 psi; 3/4" NPT(F) electrical; 1/2" NPT(F) process; Viton GLT o-ring; 316 SS port; and pipe kit.

Sample Specification

Pressure instrument shall be loop powered with independently programmable switch, gage and transmitter functions suitable for use in Class 1, Div 2 hazardous locations, and shall be weathertight, NEMA 4X (IP65), with terminal block connections. Device shall have $\pm 0.5\%$ URL accuracy, 20 ms sample rate, ≤ 10 ms switch response, ≤ 15 ms transmitter response, indication to 150% URL in selectable engineering units, self-diagnostic driven failsafes, multi-level security, and on-line circuit test capabilities. Instrument shall include two SPST Photo MOS relays with programmable deadbands and 4 to 20 mA analog output scaleable 5:1. Instrument shall be SOR Model 1SGTxxxx.

Process Connection		3
	1/2" NPT(F) - Standard	A
	G1/2" (F)	B
	7/16" SAE (F)	C
Electrical Connection		2
	3/4" NPT(F) - Standard	A
	M20 x 1.5(F)	B
Range		1
Gage Pressure - Standard		
Engineering Unit Conversions	0-10 psi	10
psi * 27.73 = in H ₂ O	0-20 psi	20
psi * 2.311 = ft H ₂ O	0-50 psi	50
psi * 2.036 = in Hg	0-100 psi	100
psi * 0.06895 = bar	0-200 psi	200
psi * 68.95 = mbar	0-500 psi	500
psi * 703.1 = mm H ₂ O	0-1000 psi	1K
psi * 0.7031 = m H ₂ O	0-2000 psi	2K
psi * 51.71 = mm Hg	0-30" Hg Vac	30V
psi * 0.07031 = kg/cm ²		
psi * 6895 = Pa		
psi * 6.895 = kPa		
psi * 0.006895 = MPa		
1SGT	200	A A PK

4 Wetted Materials	
Sealing o-ring and operating temperature range.	
Std	Viton GLT -20 to 250°F (-29 to 121°C)
E1	Buna-N -40 to 200°F (-40 to 93°C)
E2	Neoprene 0 to 200°F (-18 to 93°C)
E3	EPR -40 to 200°F (-40 to 93°C)
E4	Aflas 32 to 250°F (0 to 121°C)
E5	Kalrez 40 to 250°F (4 to 121°C)
Pressure port	
Std	316 Stainless Steel
M1	316L Stainless Steel
M2	Hastelloy C-276
M3	Monel
5 Accessories	
AB	Absolute Pressure Sensor <i>(not available with range 30V)</i>
BB	Cleaned for industrial oxygen service
PK	Pipe mounting kit
PP	Fiber tag with customer-specified information
RR	SS tag wired to control with customer-specified information
TT	SS nameplate affixed to housing with customer-specified information
VV	Fungicidal varnish
YY	Epoxy coating
CT	Available certificates (specify types on order)
	Certificate of Calibration
	Certificate of Compliance
	Certificate of NACE Compliance
	Certificate of Conformance
	Certificate of Materials
	Hydrostatic Test Certificate
	Insulation Resistance Test Certificate
	Dielectric Test Certificate
	Quality Assurance Inspection Certificate
	← Model Number



Dimensions in this catalog are for reference only and may be changed without notice. For certified drawings of a particular model number, contact SOR.

Dimensions in this catalog are shown in millimeters over inches.

Linear = $\frac{\text{mm}}{\text{in}}$



Process Instrumentation

SOR INC.

14685 West 105th Street
Lenexa, Kansas 66215

Phone 913-888-2630
Toll Free 800-676-6794
Fax 913-888-0767

www.sorinc.com

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