



SOR Inc
14685 W 105th St.
Lenexa, KS 66215



Certificate of Compliance to IEC 61508

FM Approvals
Certifies herewith that the

Mechanical Pressure Switch Products
(Safety Manual [Form 1538 (3.12) © 2012 SOR Inc.]

Complies with the relevant requirements of standards listed below:

Standards	Description	Compliance
IEC 61508-1 1997	Functional Safety of Electronic/Electrical/Programmable Electronic Safety-Related Systems- General Requirements	Part 1
IEC 61508-2 2000	Functional Safety of Electronic/Electrical/Programmable Electronic Safety-Related Systems	Part 2

And therefore

**IS DECLARED "FIT FOR USE" IN A
Low Demand SAFETY APPLICATION**

(Type A Component with HFT 0)

*This certificate is subject to conditions of use presented in FM Approval Report
Project ID # 0003044628*

A handwritten signature in dark ink, appearing to read 'J.E. Marquedant'.

James E. Marquedant
Group Manager, Electrical
FM Approvals
1151 Boston-Providence Turnpike
Norwood, MA 02062

April 18, 2012
Approval Granted

0003044628 Mechanical Pressure Switch Products



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Opposed Piston Differential Pressure

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
13, 14, 15, 16, 17, 18	RB, RC, RE, RH, S, SC, TA	Dry-Contact	High Pressure Alarm	Gas/Vapor	DPDT	2	0.68	7.32E-05	16.69
					SPDT	2	0.66	4.56E-05	10.39
				Liquid	DPDT	2	0.70	6.89E-05	15.69
					SPDT	2	0.69	4.12E-05	9.39
			Low Pressure Alarm	Gas/Vapor	DPDT	2	0.74	6.05E-05	13.79
					SPDT	2	0.75	3.29E-05	7.49
				Liquid	DPDT	2	0.74	6.05E-05	13.79
					SPDT	2	0.75	3.29E-05	7.49



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Series 20 Differential Pressure

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
22, 24	RB, RH, TA	Dry Contact	High Pressure Alarm	Gas/Vapor	DPDT	2	0.72	6.41E-05	14.61
					SPDT	2	0.72	3.65E-05	8.31
				Liquid	DPDT	2	0.73	6.19E-05	14.11
					SPDT	2	0.74	3.43E-05	7.81
			Low Pressure Alarm	Gas/Vapor	DPDT	2	0.70	6.92E-05	15.76
					SPDT	2	0.69	4.15E-05	9.46
				Liquid	DPDT	2	0.70	6.92E-05	15.76
					SPDT	2	0.69	4.13E-05	9.41



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102/103 Differential Pressure

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
102, 103	W1, AD, JS	Dry Contact	High Pressure Alarm	Gas/Vapor	DPDT	2	0.69	6.96E-05	15.86
					SPDT	2	0.67	4.20E-05	9.56
				Liquid	DPDT	2	0.69	7.20E-05	16.41
					SPDT	2	0.67	4.44E-05	10.11
			Low Pressure Alarm	Gas/Vapor	DPDT	2	0.73	6.15E-05	14.01
					SPDT	2	0.74	3.38E-05	7.71
				Liquid	DPDT	2	0.66	7.79E-05	17.76
					SPDT	2	0.63	5.03E-05	11.46
		Hermetically Sealed	High Pressure Alarm	Gas/Vapor	DPDT	2	0.67	6.96E-05	15.87
					SPDT	2	0.64	4.20E-05	9.57
				Liquid	DPDT	2	0.67	7.21E-05	16.42
					SPDT	2	0.64	4.44E-05	10.12
			Low Pressure Alarm	Gas/Vapor	DPDT	2	0.71	6.15E-05	14.02
					SPDT	2	0.71	3.39E-05	7.72
				Liquid	DPDT	2	0.65	7.80E-05	17.77
					SPDT	2	0.60	5.03E-05	11.47



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101/121 Differential Pressure

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
101, 121	AG, AH, BA, H3, NN, N3, N4, N6, PP, P3, RB, RL, RN, RM, RS, RT, B3, B4, B5, B6, L, LC, S, SC, TA	Dry Contact	High Pressure Alarm	Gas/Vapor	DPDT	2	0.67	7.73E-05	17.61
					SPDT	2	0.64	4.96E-05	11.31
				Liquid	DPDT	2	0.70	7.18E-05	16.36
					SPDT	2	0.68	4.42E-05	10.06
			Low Pressure Alarm	Gas/Vapor	DPDT	2	0.74	6.04E-05	13.76
					SPDT	2	0.76	3.27E-05	7.46
				Liquid	DPDT	2	0.73	6.37E-05	14.51
					SPDT	2	0.74	3.58E-05	8.16
		Hermetically Sealed	High Pressure Alarm	Gas/Vapor	DPDT	2	0.65	7.73E-05	17.62
					SPDT	2	0.60	4.97E-05	11.32
				Liquid	DPDT	2	0.68	7.18E-05	16.37
					SPDT	2	0.65	4.42E-05	10.07
			Low Pressure Alarm	Gas/Vapor	DPDT	2	0.73	6.04E-05	13.77
					SPDT	2	0.73	3.28E-05	7.47
				Liquid	DPDT	2	0.71	6.37E-05	14.52
					SPDT	2	0.72	3.59E-05	8.17



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107 Differential Pressure

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)	
107	AL, EL	Dry Contact	High Pressure Alarm	Gas/ Vapor	SPDT	2	0.70	3.65E-05	8.31	
			Low Pressure Alarm			2	0.66	4.13E-05	9.41	
		Hermetically Sealed	High Pressure Alarm		DPDT	2	0.69	6.42E-05	14.62	
			Low Pressure Alarm			SPDT	2	0.67	3.65E-05	8.32
			High Pressure Alarm				DPDT	2	0.67	6.90E-05
			Low Pressure Alarm			SPDT		2	0.63	4.13E-05



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Big Hermet Pressure

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
1, 4, 5, 6, 9, 10, 12, 46, 52, 54, 56, 124, 126	BA, BL	Hermetically Sealed	High Pressure Alarm	Gas/Vapor	DPDT	2	0.69	6.42E-05	14.62
					SPDT	2	0.67	3.65E-05	8.32
				Liquid	DPDT	2	0.70	6.20E-05	14.12
					SPDT	2	0.68	3.43E-05	7.82
			Low Pressure Alarm	Gas/Vapor	DPDT	2	0.71	6.04E-05	13.77
					SPDT	2	0.70	3.28E-05	7.47
				Liquid	DPDT	2	0.71	6.04E-05	13.77
					SPDT	2	0.70	3.28E-05	7.47



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Mini-Hermet Pressure

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
1, 5, 6, 9, 10, 56	AG, AH, AP, AS, BG, BH, JH	Hermetically Sealed	High Pressure Alarm	Gas/Vapor	DPDT	2	0.69	6.42E-05	14.62
					SPDT	2	0.67	3.65E-05	8.32
				Liquid	DPDT	2	0.70	6.20E-05	14.12
					SPDT	2	0.68	3.43E-05	7.82
			Low Pressure Alarm	Gas/Vapor	DPDT	2	0.71	6.04E-05	13.77
					SPDT	2	0.70	3.28E-05	7.47
				Liquid	DPDT	2	0.71	6.04E-05	13.77
					SPDT	2	0.70	3.28E-05	7.47



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Sub-Mini Hermet Pressure

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
1, 5, 6, 9	AT, SM	Hermetically Sealed	High Pressure Alarm	Gas/Vapor	DPDT	2	0.69	6.42E-05	14.62
					SPDT	2	0.67	3.65E-05	8.32
				Liquid	DPDT	2	0.70	6.20E-05	14.12
					SPDT	2	0.68	3.43E-05	7.82
			Low Pressure Alarm	Gas/Vapor	DPDT	2	0.71	6.04E-05	13.77
					SPDT	2	0.70	3.28E-05	7.47
				Liquid	DPDT	2	0.71	6.04E-05	13.77
					SPDT	2	0.70	3.28E-05	7.47



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General Pressure

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
1, 4, 5, 6, 9, 10, 12, 45, 46, 124, 125, 126	PP, P3, N, NN, N2, N3, N4, RL, RN, RM, RT, RS, LC, SC, B3, B4, B5, B6, J4, RB, H3, N6, L, TA, S	Dry Contact	High Pressure Alarm	Gas/Vapor	DPDT	2	0.71	6.41E-05	14.61
					SPDT	2	0.70	3.65E-05	8.31
				Liquid	DPDT	2	0.72	6.19E-05	14.11
					SPDT	2	0.72	3.43E-05	7.81
			Low Pressure Alarm	Gas/Vapor	DPDT	2	0.73	6.04E-05	13.76
					SPDT	2	0.74	3.27E-05	7.46
				Liquid	DPDT	2	0.73	6.04E-05	13.76
					SPDT	2	0.74	3.28E-05	7.46
		Hermetically Sealed	High Pressure Alarm	Gas/Vapor	DPDT	2	0.69	6.42E-05	14.62
					SPDT	2	0.67	3.65E-05	8.32
				Liquid	DPDT	2	0.70	6.20E-05	14.12
					SPDT	2	0.69	3.43E-05	7.82
			Low Pressure Alarm	Gas/Vapor	DPDT	2	0.71	6.04E-05	13.77
					SPDT	2	0.70	3.28E-05	7.47
				Liquid	DPDT	2	0.71	6.04E-05	13.77
					SPDT	2	0.70	3.28E-05	7.47



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Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
1, 2, 3, 5, 6, 9	AC	Hermetically Sealed	High Pressure Alarm	Gas/Vapor	SPDT	2	0.67	3.64E-05	8.3
				Liquid		2	0.68	3.42E-05	7.8
			Low Pressure Alarm	Gas/Vapor	SPDT	2	0.70	3.27E-05	7.45
				Liquid		2	0.71	3.25E-05	7.4



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Dual Hi-Lo Pressure

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
11, 44, 55, 66, 74, 99	V1, V2	Dry Contact	Dual High Pressure Alarm	Gas/Vapor	DPDT	2	0.70	1.28E-04	29.22
					SPDT	2	0.69	7.29E-05	16.62
				Liquid	DPDT	2	0.71	1.24E-04	28.22
					SPDT	2	0.71	6.86E-05	15.62
			Dual Low Pressure Alarm	Gas/Vapor	DPDT	2	0.72	1.21E-04	27.52
					SPDT	2	0.72	6.55E-05	14.92
				Liquid	DPDT	2	0.72	1.21E-04	27.52
					SPDT	2	0.72	6.55E-05	14.92
			High Pressure & Low Pressure Alarm	Gas/Vapor	DPDT	2	0.71	1.24E-04	28.37
					SPDT	2	0.71	6.92E-05	15.77
				Liquid	DPDT	2	0.72	1.22E-04	27.87
					SPDT	2	0.72	6.70E-05	15.27
		Hermetically Sealed	Dual High Pressure Alarm	Gas/Vapor	DPDT	2	0.69	1.28E-04	29.24
					SPDT	2	0.67	7.30E-05	16.64
				Liquid	DPDT	2	0.70	1.24E-04	28.24
					SPDT	2	0.68	6.86E-05	15.64
			Dual Low Pressure Alarm	Gas/Vapor	DPDT	2	0.71	1.21E-04	27.54
					SPDT	2	0.70	6.56E-05	14.94
				Liquid	DPDT	2	0.71	1.21E-04	27.54
					SPDT	2	0.70	6.56E-05	14.94
			High Pressure & Low Pressure Alarm	Gas/Vapor	DPDT	2	0.70	1.25E-04	28.39
					SPDT	2	0.69	6.93E-05	15.79
				Liquid	DPDT	2	0.70	1.22E-04	27.89
					SPDT	2	0.69	6.71E-05	15.29



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Adjustable Deadband Pressure

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
4, 5, 6, 9	V1, V3	Dry Contact	High Pressure Alarm	Gas/Vapor	SPDT	2	0.67	4.53E-05	10.32
				Liquid		2	0.70	4.09E-05	9.32
			Low Pressure Alarm	Gas/Vapor		2	0.72	3.78E-05	8.62
				Liquid		2	0.72	3.79E-05	8.62
		Hermetically Sealed	High Pressure Alarm	Gas/Vapor	DPDT	2	0.67	7.30E-05	16.63
				Liquid		2	0.68	6.86E-05	15.63
			Low Pressure Alarm	Gas/Vapor		2	0.70	6.55E-05	14.93
				Liquid		2	0.70	6.55E-05	14.93



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Pivot Seal Pressure

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
2, 3	AG, AH, BA, BG, BH, H3, JH, J4, N, NN, N3, N4, N6, PP, P3, RB, RL, RM, RN, RS, RT, B3, B4, B5, B6, L, LC, S, SC, TA	Dry Contact	High Pressure Alarm	Liquid	DPDT	2	0.73	5.86E-05	13.36
			Low Pressure Alarm		SPDT	2	0.74	3.10E-05	7.06
			High Pressure Alarm		DPDT	2	0.72	6.04E-05	13.76
			Low Pressure Alarm		SPDT	2	0.73	3.27E-05	7.46
		Hermetically Sealed	High Pressure Alarm		DPDT	2	0.71	5.87E-05	13.37
			Low Pressure Alarm		SPDT	2	0.71	3.10E-05	7.07
			High Pressure Alarm		DPDT	2	0.70	6.04E-05	13.77
			Low Pressure Alarm		SPDT	2	0.69	3.28E-05	7.47



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General Temperature

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
201, 203, 205, 207, 209	PP, P3, NN, N3, N4, RL, RN, RM, RT, RS, LC, B3, B4, B5, B6, H3, N6, L, TA, RB, S, SC, AG, BA, AG, BG, AH, BH	Dry Contact	High Temperature Alarm	Gas/Vapor	DPDT	2	0.68	7.29E-05	16.61
					SPDT	2	0.66	4.52E-05	10.31
				Liquid	DPDT	2	0.69	7.07E-05	16.11
					SPDT	2	0.67	4.31E-05	9.81
			Low Temperature Alarm	Gas/Vapor	DPDT	2	0.74	6.04E-05	13.76
					SPDT	2	0.75	3.27E-05	7.46
				Liquid	DPDT	2	0.74	6.04E-05	13.76
					SPDT	2	0.75	3.28E-05	7.46
		Hermetically Sealed	High Temperature Alarm	Gas/Vapor	DPDT	2	0.66	7.29E-05	16.62
					SPDT	2	0.62	4.53E-05	10.32
				Liquid	DPDT	2	0.67	7.07E-05	16.12
					SPDT	2	0.63	4.31E-05	9.82
			Low Temperature Alarm	Gas/Vapor	DPDT	2	0.72	6.04E-05	13.77
					SPDT	2	0.73	3.28E-05	7.47
				Liquid	DPDT	2	0.72	6.04E-05	13.77
					SPDT	2	0.73	3.28E-05	7.47



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Dual Hi-Lo Temperature

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
201, 203, 205, 207, 209	V1, V2	Dry Contact	Dual High Temperature Alarm	Gas/ Vapor	DPDT	2	0.69	1.37E-04	31.22
					SPDT	2	0.67	8.17E-05	18.62
				Liquid	DPDT	2	0.70	1.33E-04	30.22
					SPDT	2	0.68	7.73E-05	17.62
			Dual Low Temperature Alarm	Gas/ Vapor	DPDT	2	0.72	1.21E-04	27.52
					SPDT	2	0.73	6.55E-05	14.92
				Liquid	DPDT	2	0.72	1.21E-04	27.52
					SPDT	2	0.73	6.55E-05	14.92
			High Temperature & Low Temperature Alarm	Gas/ Vapor	DPDT	2	0.70	1.33E-04	30.37
					SPDT	2	0.69	7.80E-05	17.77
				Liquid	DPDT	2	0.71	1.31E-04	29.87
					SPDT	2	0.70	7.58E-05	17.27
		Hermetically Sealed	Dual High Temperature Alarm	Gas/ Vapor	DPDT	2	0.68	1.37E-04	31.24
					SPDT	2	0.64	8.18E-05	18.64
				Liquid	DPDT	2	0.68	1.33E-04	30.24
					SPDT	2	0.66	7.74E-05	17.64
			Dual Low Temperature Alarm	Gas/ Vapor	DPDT	2	0.71	1.21E-04	27.54
					SPDT	2	0.71	6.56E-05	14.94
				Liquid	DPDT	2	0.71	1.21E-04	27.54
					SPDT	2	0.71	6.56E-05	14.94
			High Temperature & Low Temperature Alarm	Gas/ Vapor	DPDT	2	0.69	1.33E-04	30.39
					SPDT	2	0.67	7.81E-05	17.79
				Liquid	DPDT	2	0.69	1.31E-04	29.89
					SPDT	2	0.68	7.59E-05	17.29



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General Vacuum

Piston	Housing	Switch Type	Process Measurement	Process State	Switch Contact Type	SIL Level	SFF	PFD	Dangerous Undetected Failures (FIT)
52, 54, 56	PP, P3, NN, N3, N4, RL, RN, RM, RT, RS, LC, SC, B3, B4, B5, B6, J4, RB, H3, N6, L, TA, S	Dry Contact	High Pressure Alarm	Gas/Vapor	DPDT	2	0.70	6.85E-05	15.61
					SPDT	2	0.68	4.09E-05	9.31
				Liquid	DPDT	2	0.71	6.52E-05	14.86
					SPDT	2	0.71	3.76E-05	8.56
			Low Pressure Alarm	Gas/Vapor	DPDT	2	0.73	6.08E-05	13.86
					SPDT	2	0.74	3.32E-05	7.56
				Liquid	DPDT	2	0.73	6.08E-05	13.86
					SPDT	2	0.74	3.32E-05	7.56
		Hermetically Sealed	High Pressure Alarm	Gas/Vapor	DPDT	2	0.68	6.85E-05	15.62
					SPDT	2	0.64	4.09E-05	9.32
				Liquid	DPDT	2	0.69	6.53E-05	14.87
					SPDT	2	0.67	3.76E-05	8.57
			Low Pressure Alarm	Gas/Vapor	DPDT	2	0.71	6.09E-05	13.87
					SPDT	2	0.71	3.32E-05	7.57
				Liquid	DPDT	2	0.71	6.09E-05	13.87
					SPDT	2	0.71	3.32E-05	7.57



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