FLUID COMPONENTS INTERNATIONAL LLC

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Order Information Sheet (OIS)

FLT93 S

FlexSwitch™ Insertion for Flow, Level & Temperature

	General		Sensor Element						Control Circuit					Interconnecting Cable	
FLT93 S -			-						-					-	
Block No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

INSTRUCTIONS: To order an **FLT93S**, please fill in each numbered block above with the appropriate code from the categories below. Once you have determined all the specifications, contact an FCI representative or FCI directly for price information or additional options not shown. Consult FCI on the cost of special data and documentation. Final acceptance of the part number is subject to FCI's approval.

[Block 1] Agency Approval	Code	
Not required	0	◄
Factory Mutual (FM)	1	◄
Factory Mutual (FM) (T4 rated) [1]	2	◄
ATEX, CE Marking	3	◄
FMc	4	
FMc (T4 rated) [1]	5	
IEC [16]	6	◄
Inmetro	7	
Other	*	

[Block 2] Identification Tag [2]	Code	
Mylar	A	◄
316L stainless steel	B	◄
Agency approved, customer specified	W	
Other	*	

[Block 3] Process Temperature	Code	
-40 °F to 350 °F [-40 °C to 177 °C]	1	◄
-100 °F to 500 °F [3, 4] [-73 °C to 260 °C]	2	
-100 °F to 850 °F [3, 4] [-73 °C to 454 °C]	3	

[Block 4] All Welded Material of Construction	Code	
316L stainless steel	A	◄
316L stainless steel Electro-polish	B	
Hastelloy C	C	
Monel 400 [25]	D	
Titanium grade 2 [25]	E	
Agency approved, customer specified	W	
Other	*	

[Block 5] Process Connection	Code	
3/4 " Male NPT [5]	1	◄
1 " Male NPT	2	◄
1 " Male BSPT [6]	3	
Flanged	4	◄
Retractable Packing Gland with Graphite Packing Material [26]		
Low pressure to 50 psig [3.5 bar(g)]		
1 1/4 " Male NPT	5	
Flanged	6	
Medium pressure to 500 psig [35 bar(g)]		
1 1/4 " Male NPT	7	
Flanged	8	
(continued next column)		

[Block 5] Process Connection	Code	
(continued from previous column)		
Compression Fitting		
Teflon ferrule [23] to 150 psig [10 bar(g)] and 200 °F [93 °C]		
3/4 " Male NPT	C	
Flanged	G	
Metal ferrule [23] to 250 psig [17 bar(g)] and 500 °F [260 °C]		
3/4 " Male NPT	H	
Flanged	J	
Agency approved, customer specified	W	
Other	*	

[Block 6] Flange Size [8]	Code	
Not required	0	◄
1-1/2 " Flange [9]		
150 lb carbon steel [10]	A	◄
150 lb per Block 4	B	◄
300 lb carbon steel [10]	C	◄
300 lb per Block 4	D	◄
2 " Flange [9]		
150 lb carbon steel [10]	E	◄
150 lb per Block 4	F	◄
300 lb carbon steel [10]	G	◄
300 lb per Block 4	H	◄
DIN DN40 Form C Flange		
#PN40, 316L stainless steel	4	
DIN DN50 Form C Flange		
#PN16, 316L stainless steel	5	
#PN40, 316L stainless steel	6	
Flat duct stainless steel flange with 3/4 " FNPT	J	
Agency approved, customer specified [11]	W	
Other	*	

[Block 7] Insertion Length		Code	
1.2 "	[30 mm] [12]	1	◄
2 "	[51 mm]	2	◄
4 "	[102 mm]	3	◄
6 "	[152 mm]	4	◄
9 "	[229 mm]	5	◄
12 "	[305 mm]	6	
18 "	[457 mm]	7	
Agency approved, customer specified [13]		W	

[Block 8] Local Enclosure [14]	Code	
Sensor element only with 6 " [152 mm], Kapton wire pigtails, no enclosure	A	
Sensor element only with cable pigtail, no enclosure [15]	B	
Note maximum cable temp: PVC: 190 °F [90 °C] Teflon: 300 °F [150 °C]		
Aluminum; NEMA Type 4X (IP66) and hazardous locations Groups B, C, D, E, F, G and EEx d IIC; 1 x 1" NPT entry	C	◄
Aluminum; NEMA Type 4X (IP66) and hazardous locations Groups B, C, D, E, F, G and EEx d IIC; 2 x 3/4" NPT entries	D	◄
316 stainless steel; NEMA Type 4X (IP66) and hazardous locations Groups B, C, D, E, F, G and EEx d IIC; 1 x 1" NPT entry	E	
Agency approved, customer specified	W	
Other	*	

[Block 9] Configuration [24]	Code	
Single channel dual alarms with standard epoxy sealed, gold plated contacts 6 amp at 115 Vac relays	4	
Single channel dual alarms with hermetically-sealed, 0.5 amp at 115 Vac relays	5	
Agency approved, customer specified	W	
Other	*	

[Block 10] Alarm No. 1: Application [18]	Code	
For Flow Service		
Gas	A	◄
Liquid	B	◄
For Level Service		
Wet/Dry	C	◄
Interface (wet/wet)	D	◄
For Temperature Service		
Temperature	E	◄

[Block 11] Alarm No. 2: Application [18]	Code	
Not required	0	◄
For Flow Service		
Gas	A	◄
Liquid	B	◄
For Level Service		
Wet/Dry	C	◄
Interface (wet/wet)	D	◄
For Temperature Service		
Temperature	E	◄

[Block 12] Application-Specific Setup & Calibration [19]	Code	
Not required	0	◄
Jumper selection only	1	◄
Jumper selection and adjustment of 1 alarm setpoint in Air or Water	3	
Jumper selection and adjustment of 2 alarm setpoint in Air or Water	4	
Jumper selection, Air flow curve from 0 SFPS to 120 SFPS [36.6 NMPS] and adjustment of 2 alarm setpoints	8	
Jumper selection, Water flow curve from 0 FPS to 3 FPS [0.91 MPS] and adjustment of 2 alarm setpoints	9	
Agency approved, customer specified [18, 20]	W	

[Block 13] Remote Enclosure	Code	
Not required	0	◄
Aluminum; NEMA Type 4 (IP66) and hazardous locations Groups C, D, E, F, G with opposing 2 x 1" NPT entries	A	◄
Aluminum; NEMA Type 4X (IP66) and hazardous locations Groups B, C, D, E, F, G and EEx d IIC; 2 x 1" NPT entries *(not recommended for cable gland installation)*	B	◄
Aluminum; NEMA Type 4X (IP66) and hazardous locations Groups B, C, D, E, F, G and EEx d IIC; 2 x 3/4" + 1 1" entries	G	◄
316 stainless steel; NEMA Type 4X (IP66) and hazardous locations Groups B, C, D, E, F, G and EEx d IIC; 2 x 1" NPT entries [28] *(not recommended for cable gland installation)*	C	
No enclosure; panel mounted control circuit [21]	F	
Agency approved, customer specified	W	
Other	*	

[Block 14] Cable Jacket	Code	
Not required	0	◄
PVC 190 °F [90 °C] maximum temperature	1	◄
Teflon 300 °F [150 °C] maximum temperature	2	
Agency approved, customer specified	W	

[Block 15] Cable Length	Code	
Not required	0	◄
10 ft [3 m]	1	◄
25 ft [7.5 m]	2	◄
50 ft [15 m]	3	
Agency approved, customer specified [22]	W	

Notes

◄ Shorter manufacturing lead times are available when this is selected in every option.

* Voids Agency Approvals. Contact FCI.

1. Field selectable heater power is disabled.
2. Customer specified tag data field maximum 3 lines by 20 characters/line and must be supplied at time of order. All other require a "W" or "*" in Block 2.
3. Electronics' maximum temperature is 140 °F [60 °C]. If installation location will exceed this, insulation, extending the "U" length (Block 7) or remote enclosure (Block 13) is recommended.
4. Not available with cable pigtail.
5. 1.2 " length is available for all materials of construction. 2 " and longer lengths are only available in stainless steel. 1 " male NPT must be selected for 2 " or greater lengths and exotic materials of construction.
6. Available in 316L stainless steel only.
8. ANSI flanges are phonographic serrated, DIN are Form C per DIN 2526/ Form B1 per EN DIN1092-01.
9. Flanged material will be identical to that selected in Block 4 , Codes B, D, F and H.
10. Carbon steel flange available with 316L stainless steel sensor construction only.
11. Customer specified flange shall be per ANSI or DIN specifications and must be 1 1/2 " [DN40] or larger.
12. For use only in a 3/4 " tee.
13. Maximum length is 120 ".
14. Local enclosure required for agency approval. Metal enclosure required for CE.
15. Select cable jacket/length in Blocks 14-15.
16. IEC approval: 350 ° F [177°C] maximum, Block 3 must be Code 1. Local enclosure, Block 8, must be Code C, D or E. Remote enclosure, Block 13, must be Code 0, B, G or C.
17. Without 19" rack or mating connector. Also available in dual channel version.
18. Refer to application matrix on Application Data Sheet for valid alarm combinations.
19. For all codes except "0" a completed FLT application data sheet must accompany the order.
20. Customer specified calibration shall not exceed temperature and pressure limitations of the FLT93 specifications.
21. Remote enclosure required for FM and CSA.
22. Wire resistance must be less than 1.5 ohms.
23. Material will match Codes A or C selected in Block 4. Metal ferrule permanently locks after tightening the compression fitting.
24. Factory default setting for input power is 115 Vac for FM, and 230 Vac for all other agency approvals in Block 1.
25. These materials of construction are not available with high temperature selection in Block 3, Code 3.
26. Teflon packaging material must be ordered when process media is Ozone, Chlorine or Bromine.
28. Requires selection of stainless steel tag, Code B in Block 2.

Doc. No. 01SA011303 AA

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Application Data Sheet (ADS)

FLT93 S

FlexSwitch™ Insertion for Flow, Level & Temperature

Customer Information

Customer Name & Address: _____

_____

_____

Contact: _____

Phone: _____ Fax: _____

Email: _____

P.O. No.:_____ Customer Order: _____

Tag Number(s):

Control Circuit Jumper Section *(Required for Block 12, Codes 1 through W of OIS)*

Input Power: ☐ 115 Vac ☐ 230 Vac ☐ 24 Vdc ☐ 24 Vac

Application Matrix

(Circle one alarm combination and enter in Blocks 10 - 11 on OIS)

Alarm 2 \ Alarm 1	Gas Flow	Liquid Flow	Level (Wet/Dry)	Inter-face	Temper-ature
Not required	A 0	B 0	C 0	D 0	E 0
Gas Flow	A A				
Liquid Flow		B B	C B	D B	
Level (Wet/Dry)	A C	B C	C C	D C	
Interface		B D		D D	
Temperature	A E	B E	C E	D E	E E

Alarm No. 1

Alarm Condition:

☒ ☐ Relay de-energized with low flow, low level (dry), or high temperature

☒ ☐ Relay de-energized with high flow, high level (wet), or low temperature

Contact Configuration: ☐ SPDT ☐ DPDT (This selection disables Alarm No. 2)

Alarm No. 2

Alarm Condition:

☒ ☐ Relay de-energized with low flow, low level (dry), or high temperature

☒ ☐ Relay de-energized with high flow, high level (wet), or low temperature

Contact Configuration: ☐ SPDT (only)

Instrument Calibration *(Required for Block 12, Codes 3 through W of OIS)*

Part 1: Process Conditions

☐ Primary Flow Media: _____

☐ Lower Level Media: _____

☐ Gas ☐ Liquid

Temperature: ☐ °F ☐ °C

Minimum _____ Nominal _____ Maximum_____

Pressure: ☐ Psig ☐ Bar(g)

Minimum _____ Nominal _____ Maximum_____

☐ Secondary Flow Media: _____

☐ Upper Level Media: _____

☐ Gas ☐ Liquid

Temperature: ☐ °F ☐ °C

Minimum _____ Nominal _____ Maximum_____

Pressure: ☐ Psig ☐ Bar(g)

Minimum _____ Nominal _____ Maximum_____

Interface Description (specify state: foam, sediment, slurry): _____

Part 2: Calibration Conditions

IMPORTANT: FCI calibrates in two medias; choose ☐ Water or ☐ Air

For Temperature Applications Only

Temperature Range

☐ As entered for the primary/lower media in the "Process Conditions" section above.

☐ As entered for the secondary/upper media in the "Process Conditions" section above.

☐ Other: _____

Alarm Set Point: No. 1 _____

No. 2 _____

Analog Output Curve: ☐ Required ☐ Not required

Note: *For vacuum and/or small volume (less than 10 in.^{3} or 150 cm^3) process conditions, calibration of the temperature output is recommended if the temperature alarm is used in combination with a flow or level/interface alarm.*

For Flow Applications Only

Pipe or duct inside diameter: _____ ☐ inches ☐ mm

Pipe Orientation: ☐ horizontal ☐ vertical

Sensing Element Mounting: ☐ side ☐ top

Flow Direction: ☐ right to left ☐ left to right ☐ top to bottom ☐ bottom to top

Flow Range: minimum _____ maximum _____

Nominal Flow Rate: _____

Flow Units: _____

Alarm Set Point: No. 1 _____ No. 2 _____

Analog Output Curve (per Block 11 on OIS):

☐ Air (see Code 8) ☐ Water (see Code 9)

☐ Special (see Code W) ☐ Not required

For Level/Interface Applications Only

Sensing Element Mounting: ☐ Side ☐ Top

Level Rate-of-Change: _____ ☐ inches/sec ☐ mm/sec
(at sensing element)

Interface Rate-of-Change: _____ ☐ inches//hr ☐ mm/hr
(at sensing element)

Output Bar Graph: ☐ Required ☐ Not required

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