FLUID COMPONENTS INTERNATIONAL LLC

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Order Information Sheet (OIS)

FLT93 L

FlexSwitch™ In-Line for Flow, Level & Temperature

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

INSTRUCTIONS: To order an **FLT93L**, please fill in each numbered box 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 [4, 29] [-73 °C to 260 °C]	2	

[Block 4] Sensor Element Configuration [5, 6]	Code	
For S-Style Sensor		
Without orifice (S)	A	◀
With orifice (SO)	B	◀
For F-Style Sensor		
Without orifice (F)	C	◀
With orifice (FO)	D	◀
Agency approved, customer specified	W	
Other	*	

[Block 5] All Welded Material of Construction	Code	
316L Stainless steel	1	◀
Hastelloy C	2	
Monel 400	3	
Titanium grade 2 (S-Style only)	4	
Agency approved, customer specified	W	
Other	*	

[Block 6] Process Connection [7, 22]	Code	
3/4 " Female NPT	A	◀
1 " Male NPT	B	◀
1 inch Flanges [8, 9]		
150 lb carbon steel [10]	E	
150 lb per Block 5	F	
300 lb carbon steel [10]	G	
300 lb per Block 5	H	
DIN DN25 Form C Flange		
#PN40, 316L stainless steel	2	
Agency approved, customer specified	W	
Other	*	

[Block 7] Local Enclosure [12]	Code	
Sensor element only with 6 " [152 mm], Kapton wire pigtails, no enclosure	A	
Sensor element only with cable pigtail, no enclosure [13]	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 8] Configuration [21]	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 9] Alarm No. 1: Application [16]	Code	
For Flow Service		
Gas	A	◀
Liquid	B	◀
For Level Service		
Wet/Dry	C	◀
For Temperature Service		
Temperature	E	◀

[Block 10] Alarm No. 2: Application [16]	Code	
Not required	0	
For Flow Service		
Gas	A	◀
Liquid	B	◀
For Level, Interface Service		
Wet/Dry	C	◀
For Temperature Service		
Temperature	E	◀

[Block 11] Application-Specific Setup & Calibration [17]	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 and adjustment of 2 alarm setpoints	8	
Air Flow Curve Range:		
• S-Style with orifice 0 - 1,500 scc/sec		
• S-Style without orifice 0 - 20,000 scc/sec		
• F-Style with orifice 0 - 400 scc/sec		
• F-Style without orifice 0 - 2,500 scc/sec		
Jumper selection, Water flow curve and adjustment of 2 alarm setpoints	9	
Water Flow Curve Range:		
• S-Style with orifice 0 - 15 cc/sec		
• S-Style without orifice 0 - 50 cc/sec		
Agency approved, customer specified	W	

[Block 12] 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 13] 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 14] Cable Length	Code	
Not required	0	◀
10 ' [3 m]	1	◀
25 ' [7,5 m]	2	◀
50 ' [15 m]	3	
Agency approved, customer specified [20]	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 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 "W" or "*" in Block 2.
4. Not available with cable pigtail in Block 7, Code B.
5. Setpoint ranges for specific sensing element configurations can be found in the FLT93 product literature.
6. Inside diameter without orifice is 0.815 ". Inside diameter with orifice is 0.094 ".
7. Inlet to outlet lengths: *Threaded process connections:* 3.375 " [86 mm] *Flanged process connections:* 12 " [305 mm].
8. Flange material will be identical to that selected in Block 5, Codes 2, 3 and 4.
9. ANSI flanges are phonographic serrated, DIN are Form C per DIN 2526/Form B1 per EN DIN1092-01.
10. Carbon steel flanges are available with 316L stainless steel sensor construction only in Block 5, Code 1.
12. Local enclosure required for agency approval. Metal enclosure required for CE mark.
13. Select cable jacket and length in Blocks 13 and 14.
14. IEC approval: 350 °F [177 °C] maximum, Block 3 must be Code 1. Local enclosure, Block 7, must be Code C, D or E. Remote enclosure, Block 12, must be Code 0, B, G or C.
15. Without 19 " rack or mating connector. Also available in dual channel version.
16. Refer to application matrix on Page 2 for valid alarm combinations.
17. For all codes except "0" a completed FLT application data sheet must accompany the order. Application requirements are subject to FCI requirements are subject to FCI review and approval.
18. Customer specified calibration shall not exceed temperature and pressure limitations of the FLT93L product specifications.
19. Remote enclosure required for FM and CSA approval.
20. Wire resistance must be less than 1.5 ohms for the S-Style sensors in Block 4, Codes A or B and less than 7 ohms for the F-Style sensors in Block 4, Codes C or D.
21. FCI default setting for input power is 115 Vac for FM units and 230 Vac for all other agency approvals listed in Block 1.
22. Mounting bracket is a standard feature.
28. Requires selection of stainless steel tag, Code B in Block 2.
29. If electronics installation will exceed 140 °F [60 °C], remote enclosure (Block 13) is required.

Doc. No. 01SA011426V

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Application Data Sheet (ADS)

FLT93 L

FlexSwitch™ In-Line 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 11, Codes 3 through W of OIS)*

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

Application Matrix

(Circle one alarm combination and enter in Blocks 9 - 10 on OIS)

Alarm 1 / Alarm 2	Gas Flow	Liquid Flow	Level (Wet/Dry)	Temperature
Not required	A 0	B 0	C 0	E 0
Gas Flow	A A			
Liquid Flow		B B	C B	
Level (Wet/Dry)	A C	B C	C C	
Temperature	A E	B E	C 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 11, 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_____

Part 2: Calibration Conditions - Flow Applications Only

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) ☐ Special (see Code W)

☐ Water (see Code 9) ☐ 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