



DENSITY COMPUTER FOR MASS FLOWMETER

(Solids content flow calculating capability provided)

MODEL : EL4311

GENERAL SPECIFICATION
GS.No.GEL331E-6

■ GENERAL

In comparison with the previously offered instruments (OVAL EL4080 series), substantial reduction in physical geometry, improved functions and ease of operation have been achieved. Included among the improvements in this newly developed instrument are simplified parameter changes and data logging with IC cards along with a large, easy-to-read LCD display.

This instrument receives mass flow signal and temperature /density signals from the OVAL Coriolis flowmeter and, upon calculation, displays the total flow of solids content of process fluid that contains solids.

It also can display the density corrected for reference temperature and provide an analog output.

■ FEATURES

1. Performs calculation of density corrected for temperature
2. Changing the ranges of density, temperature, pressure, other parameters, of the companion densitometer is simple by keystrokes on the front-panel keypad or by inserting an IC card into the slot.
3. A built-in CPU offers a high degree of performance and accuracy.
4. Variables such as temperature, pressure, and density can be reviewed on command with the front panel keypad, whether or not computation is in progress.
5. A nonvolatile memory (2PROM) retains all parameters in the event of an ac power failure.
6. If an error occurs, its nature is identified as an error message on the display.



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■ GENERAL SPECIFICATIONS (EL4311)

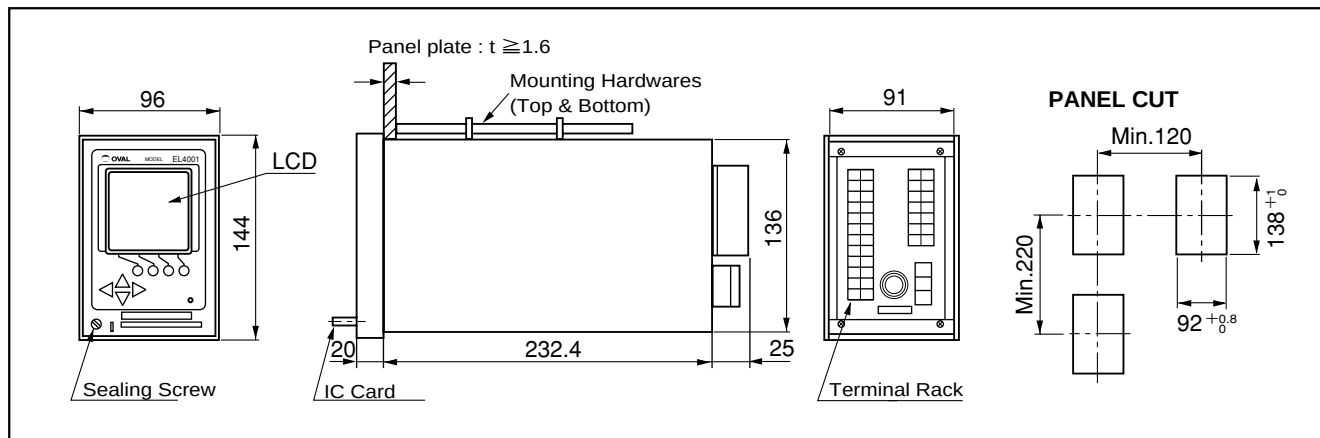
Item			Description		
Input signal	Flow input		2wire Voltage Pulse		Pulse response 2kHz
			Open Collector Pulse		
	Temp. Input	Thermal resistance bulb	Pt 100 at 0°C, 3wires system, Rated Current: 2mA		
		Analog	4 to 20mADC or 1 to 5VDC, 10mV/°C or 5mV/°C		
Density input			Tube period signal (from LH sensor) ±5V square wave		
Output Signal	Pulse input	Total mass flow	Open MOS-FET, Capacity : 230VAC/340VDC 0.2A Pulse width : 1ms/50ms		
		Total solids content flow			
		Output sync with flow input	Open Collector Pulse Capacity : 30VAC, 20mA		
	Alarm output		Open MOS-FET Capacity : 230VAC/340VDC 0.2A		
Analog output		Instant. mass flowrate, Instant. mass flowrate, Solids content ratio and Density after correction.	4 to 20mADC (max.Load : 500Ω) or 1 to 5VDC (Output Impedance : 250Ω)		
			Conversion accuracy : ±0.1% of F.S.		
Display mode			ST Displayer (128 x 128dot) w/Back Light Items:Data, Unit, Error message are displayed at a time (※1) (※2)		
Display items	Density before correction		4 digits under a decimal point (g/ml, etc.)		
	Density after correction		4 digits under a decimal point (g/ml, etc.)		
	Total mass flow		Same as output pulse units (kg, etc.)		Count capacity: 8 digits
	Total solids content flow		Same as output pulse units (kg, etc.)		
	Instant. mass flowrate		kg/h etc.		
	Instant. solids content flowrate		kg/h etc.		
	Temperature		2 digits under a decimal point (when °C is selected.)		
	Density period		1 digits under a decimal point (when μs is selected.)		
	Meter error correction factor		5 digits under a decimal point		
	Solids content ratio		2 digits under a decimal point (%)		
	Annunciation of abnormality		No. of Errors + Error Messages		
Computing Range	Temperature		Pt100Ω at 0°C	Range : -50 to +200°C	Standard span : 70°C
			4 to 20mADC or 1 to 5VDC	Range : -200 to +200°C	Standard span : 200°C
			10mV/°C	Range : -50 to +150°C	
			5mV/°C	Range : -100 to +200°C	
	Density		0.0000 to 6.0000g/ml		
Computing accuracy	ULTRAmassMKII (CN series)	Density before correction	±0.001 g/ml (factory calibrated accuracy: option)		
		Density after correction	±0.002 g/ml (with temp. input 4 to 20mA DC or 1 to 5V DC)		
			±0.006 g/ml (with temp. input of Pt 100Ω at 0°C, 3-wire) (※3)		
	Temperature		Pt100Ω at 0°C	±0.3% of SPAN	
			4 to 20mADC or 1 to 5VDC	±0.1% of SPAN	
			10mV/°C		
			5mV/°C		
Total solids content flow		±0.2% of RD			
Battery for clock IC			Lithium Battery, Life:Approx. 10 years		
Communication (when com. interface is provided.)			Interface: RS485 Multipoint (Up to 16 units can be connected.) Dedicated protocol Baud rate: 4800 bps standard 9600 bps max.		
Transmission cable			Use 3-conductor shielded cable to the resistance thermometer bulb. Loop resist. 5Ω max. Example: 300 meters max. with 3-conductor 1.25mm² cable; 500 meters with 2.0mm² cable		
Power supply			85 to 264VAC, 50/60Hz, or 20 to 30VDC		
Power consumption			20W Max.		
Ambient Temperature			-10 to +50°C		
Installation			Panel mount type		
Finish			Munsell; NI.5		
Weight			Approx. 2.5kg		

※1 : ST display stands for Super Twisted Nematic display.

※2 : Backlight life (luminance declined to one half its original luminance): 2500h approx.

※3 : Depends on the accuracies of temperature input and density expansion coefficient of the fluid with respect to the uncorrected density. (Accuracy is shown where density change is constant with respect to the difference between the temperature input and reference temperature.)

■ OUTLINE DIMENSIONS (Units in mm)



■ PRODUCT CODE EXPLANATION

Item	Code No.						Supplementary Code						Description		
	①	②	③	④	⑤	⑥	—	⑦	⑧	⑨	⑩	⑪		⑫	
Model	E	L	4	3	1	1	—							Density computer for mass flowmeter (with solids content flow calculating capability)	
Power Source								6						20 to 30VDC	Power Consumption : 20W Max.
								7							
Temperature Input								0						None	
								1							Pt100Ω at 0°C
								2							4 to 20mADC/1 to 5VDC
								3							5mV/°C (RFT9739, MT9739 combined)
								4							10mV/°C (MT9712 combined)
								9							Other than above
Pulse, Analog Output								1						Mass/solids content flowrate pulse + instant mass flowrate analog output + alarm output	
								2							Mass/solids content flowrate pulse + instant solids content flowrate analog output + alarm output
								3							Mass/solids content flowrate pulse + solids proportion analog output + alarm output
								4							Mass/solids content flowrate pulse + corrected density analog output + alarm output
								9							Other than above
Sensor tube material								1						SUS316L	
								2							Hastelloy
Communication Capability								0						No	
								1							Yes
Finish								1						Munsell N1.5	

■ TERMINAL CONNECTIONS

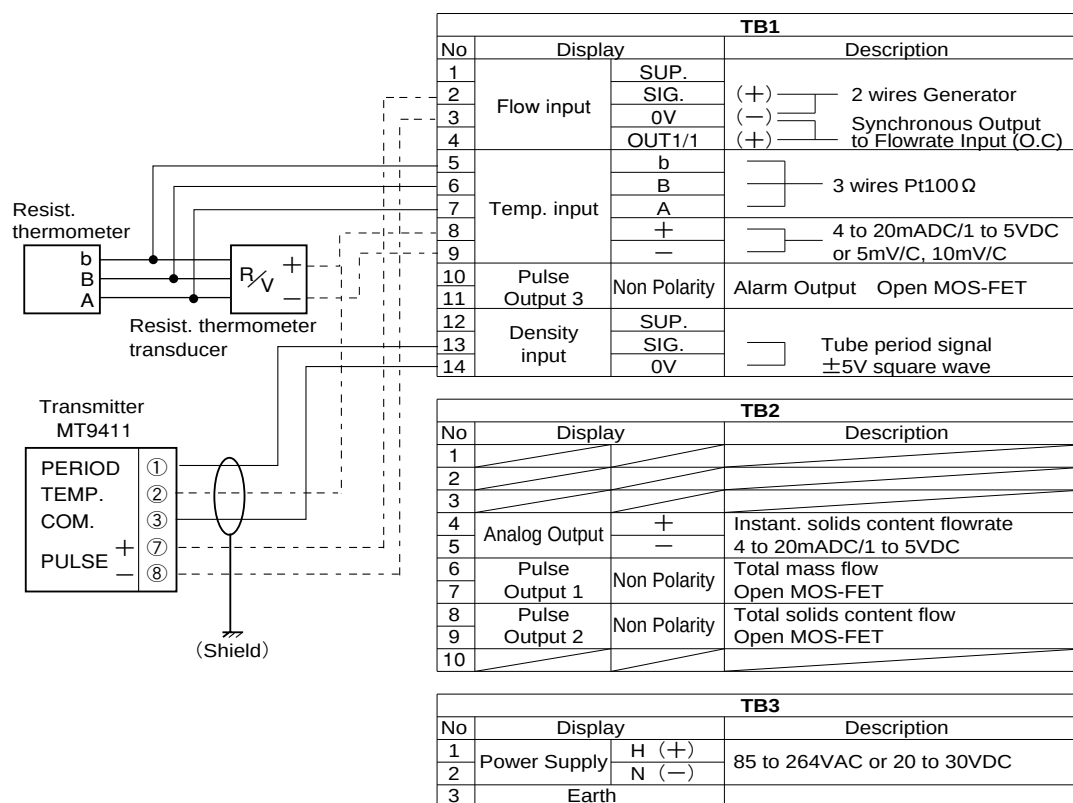
TB1					
1	SUP.	FLOW IN	12	SUP.	DENSITY IN
2	SIG.		13	SIG.	
3	0V		14	0V	
4	OUT1/1	TEMP IN	15		
5	b		16		
6	B		17		
7	A		18	+	COMM1 (※1)
8	+		19	-	
9	-		20	+	COMM2 (※1)
10	+	PULSE OUT3	21	-	
11	-				

※1 : Provided with communication interface

TB2					
1		PULSE OUT2	8	+	
2			9	-	
3			10		
4	+	ANALOG OUT	11		
5	-		12		
6	+	PULSE OUT1	13		
7	-				

TB3		
	H (+)	POWER
	N (-)	
	GND	

■ TERMINAL IDENTIFICATION



Terminal connection screws : M3.5

■ When you make inquiries please state the following: (fill in blanks or check ☐ with ✓ mark)

1. Companion Mass Flowmet Model	
2. Process Fluid Na	
3. Receiving Instrume	Type (indicator, recorder, etc.) Model Specifications, Manufacturer
4. Power Source Specificatio	
5. Probe (flowmete	Transmitter
6. Density comput	Length to the receiving instrument and installation location
7. Temperature Compensati Range	_____ to _____ °C Ref. Temperature _____ °C
8. Density Expansion Coef	_____ g/ml/°C
9. Miscellaneo	In case of displaying the concentration Temp./density/concentration characteristics

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