OVAL

For use with Oval Coriolis Flowmeter
STmass MKII
Rack-mount Transmitter
MODEL MT9603

GENERAL SPECIFICATION
GS.No.GEJ513E–3

■ GENERAL

OVAL transmitter Model MT9603, an intelligent electronic instrument built around a microprocessor; is designed for use in combination with OVAL Coriolis flowmeter STmass MKII (S015C and S025C only), and finds extensive use in making precise mass flowmetering of widely varying fluids.
Rack-mount construction and ease of servicing makes this transmitter suitable for applications where space is at a premium.
Besides analog outputs for mass flowrate and temperature (available by option), it furnishes a pulse flowrate output, a control output, and produces signals for Bell 202 (or RS-485) communication.

■ FEATURES

1. Digital signal processing in the microprocessor offers outstanding metering accuracy.
2. Compactly built - measures only 200mm deep.
3. Can be reconfigured for parameters, monitors process variables, self diagnoses, and detects errors through the use of Smart Communication Unit EL2310.

4. Zeroing is simple at the touch of a button on this transmitter, or by a remote input, or by auto zero through the communicator EL2310.

■ GENERAL SPECIFICATIONS

Item		Description
Mating Flowmeter Requirements		Straight-tube mass flowmeter STmass MKII sensor unit
Rangeability	Flowrate	Depends on the standard performance table of the sensor (※1)
	Temperature	−25 to +115°C (Nonexplosionproof model −25 to +130°C) (NOTE: Depends on the operating temp. range of sensor unit.)
Power Source		85 to 264VAC 50/60Hz or 20 to 30VDC
Power Consumption		35VA max. or 10W max.
Ambient Temperature		−10 to +50°C
Transmission Length		200 meters max. (between sensor and transmitter) 10-conductor interconnect cable is used. (※2)
Explosionproof Construction		Intrinsically safe explosionproof [Exia] IIB
Installation Construction		Rack mount (for use in nonhazardous location)
Finish		Munsell N6.0 (grey)
Approx. Weight		1.8kg
Communication Interface		Bell 202/RS-485 (using the HART protocol)
Remote Zero		Communication, zeroing button, or status input (option)
Pulse Output		Open collector output (standard) (10Vmin. to 30V max., 50mADC) or voltage pulse (option) "0": 0V, "1": 15V Output impedance 2.2kΩ FS: 0.1 to 10000Hz
Analog Output	ANA1	4 to 20mADC Max. load resistance 600Ω 2 outputs from mass flowrate and temperature Added damping: 0 to 200 sec.
	ANA2	
Status Input		Contact-closure input (Form "a" contact) Close: 200Ω max. Open: 100kΩ min. Select one from function OFF (default), remote zero, total counter zero, or 0% signal lock.
Status Output		Open collector output Normal: ON, Error: OFF (30V max., 50mADC) Select one from error (default), flow dir., zeroing in progress, or Hi/Low alarm.
Drive Gain Voltage Output		DC voltage output (test output)

※1: Floerate signal is cut off below 1% of F.S. (max. permissible flowrate).
※2: If it exceeds 200 meters, consult the factory.
※3: Bell 202 is superimpsed on Analog Output 1 (when connected to Smart communication unit EL2300).

OVAL Corporation
http://www.oval.co.jp/english

Head Office (Tokyo): Tel. +81 3-3360-5121 Fax. +81 3-3365-8605
International Sales Division Email: SK10@oval.co.jp
Overseas Branch Offices: Beijing, Seoul, Singapore, Taipei

■ ACCURACY (combined with sensor)

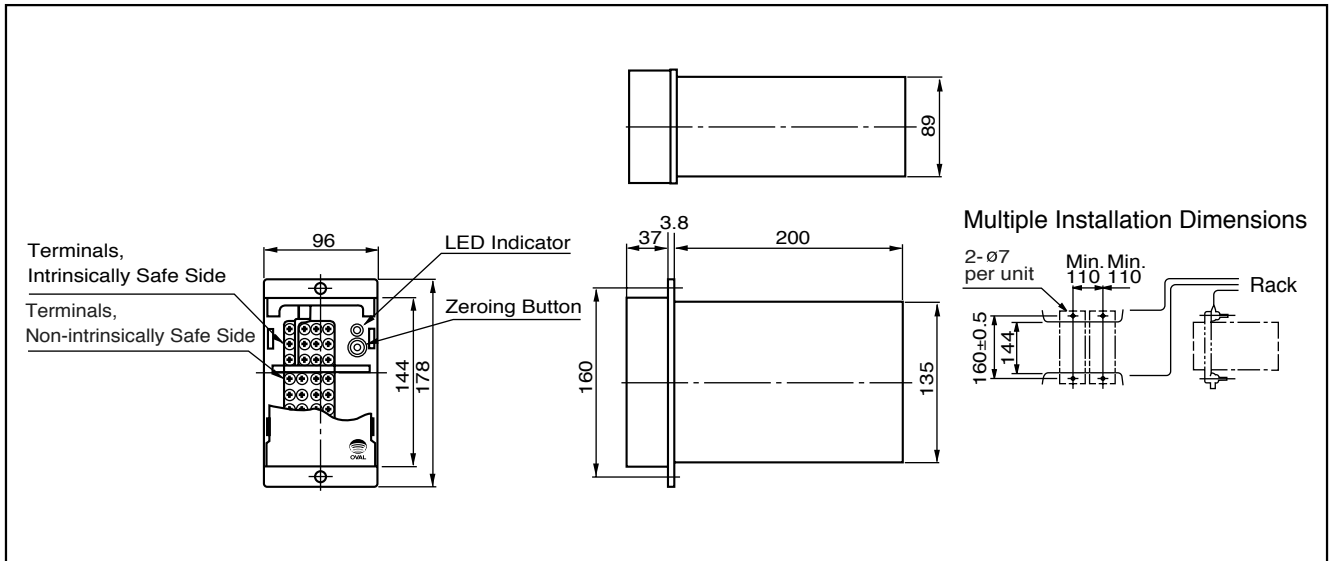| Item			Description
Flowrate	**Factory calibration accuracy**	**Liquid**	$\left[\pm 0.2\% \pm \dfrac{\text{Zero stability (kg/min)}}{\text{Flowrate (kg/min) at measurement}} \times 100\% \right]$ of indicated reading
	Reproducibility	**Gas**	$\left[\pm 0.2\% \pm \dfrac{\text{Zero stability (kg/min)}}{\text{Flowrate (kg/min) at measurement}} \times 100\% \right]$ of indicated reading
Analog accuracy			Accuracy±0.1%of full scale

■ TERMINAL IDENTIFICATION

MT9603

INTRINSICALLY SAFE SIDE

1 BRN	DRIVE SIG.	3 ORN	TEMP. B	5 GRN	L.P.O(+)	8 GRA	R.P.O(−)
2 RED	DRIVE 0V	4 YEL	TEMP. b	6 BLU	R.P.O(+)	9 WHT	L.P.O(−)
E	EARTH	0 BLK	SHIELD	7 VIO	TEMP. A	10 ORN	TEMP. A'

NON-INTRINSICALLY SAFE SIDE

1	PERIOD	5	+ ANALOG 1	9	+ ANALOG 2	13	+ STIN
2	N.C.	6	−	10	−	14	−
3	COM.	7	+ PULSE	11	+ ALARM	15	+ 485
4	D.GAIN	8	−	12	−	16	−

POWER SUPPLY

L1(+)	GND	L2(−)

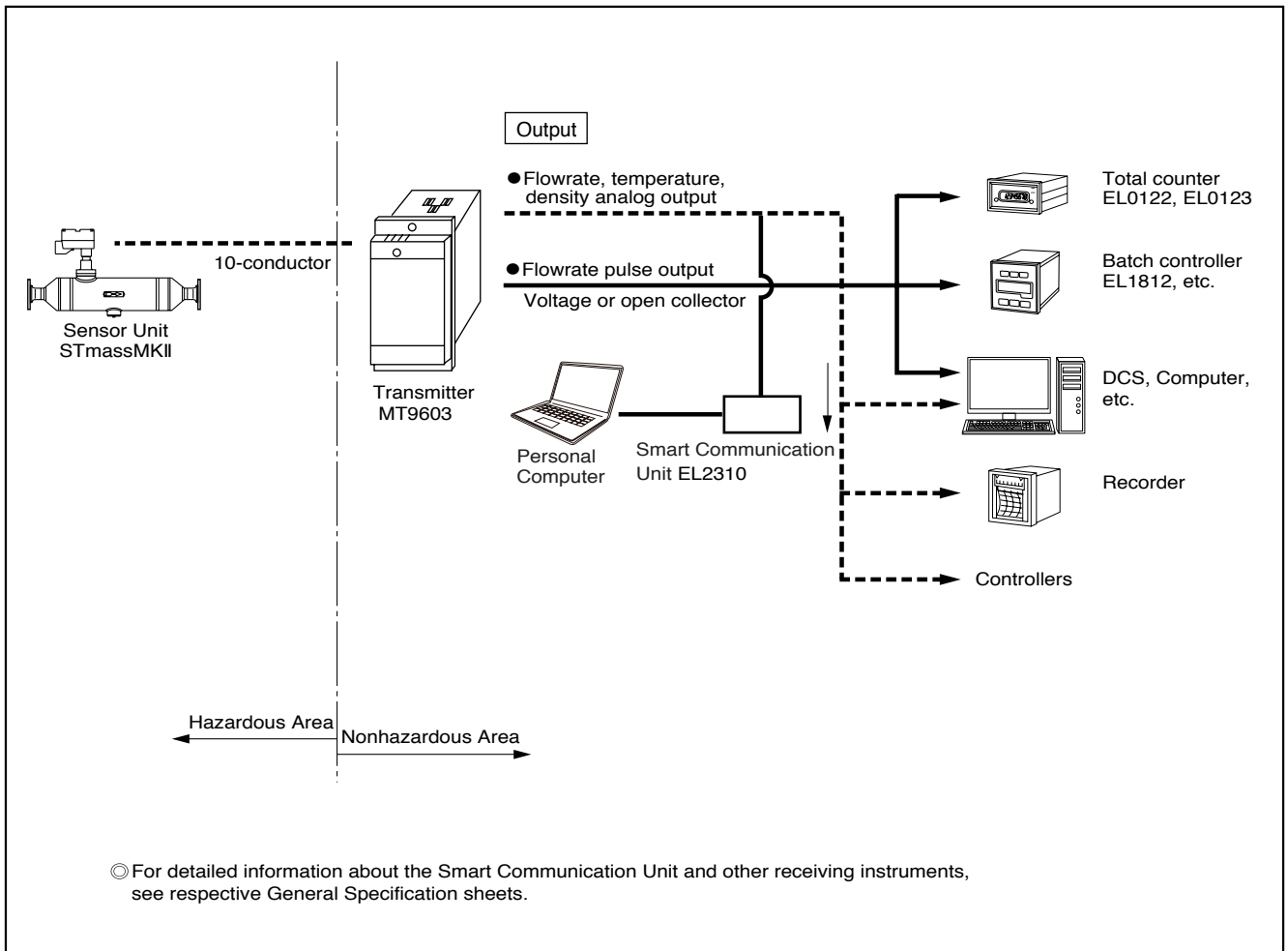| Item	Terminal No.	Label	Description		Cable color to sensor body
Intrinsically safe side	1	DRIVE SIG.	Flow tube drive output	Sensor combined	BRN
	2	DRIVE 0V			RED
	E	EARTH	First Class grounding		
	3	TEMP .B	Temperature input		ORG
	4	TEMP .b	Common		YEL
	0	SHIELD			BLK
	5	L.P.O(+)	L.H. pos. pickoff sensor input		GRN
	6	R.P.O(+)	R.H. pos. pickoff sensor input		BLU
	7	TEMP.A	Temperature input		PUR
	8	R.P.O(−)	R.H. pos. pickoff sensor input		GRY
	9	L.P.O(−)	L.H. pos. pickoff sensor input		WHT
	10	TEMP.A'			
Non-intrinsically safe side	1	PERIOD	Tube frequency output, open collector output		
	2	N.C.			
	3	COM.	Common		
	4	D.GAIN	Drive gain		
	5	+ ANALOG 1	Analog output 1		
	6	−			
	7	+ PULSE	Pulse output:Voltage pulse or open collector output		
	8	−			
	9	+ ANALOG 2	Analog output 2		
	10	−			
	11	+ ALARM	Error alarm output, open collector output		
	12	−			
	13	+ ZERO	Remote zero input, Form "a" contact input		
	14	−			
	15	+ 485	RS-485 communication terminals		
	16	−			
	L1	+ POWER	Power source		
	L2	−			
	G	GND	Earth ground		

*：Explosionproof model requires Grade "A" grounding; nonexplosionproof model requires Grade "D" grounding.

■ OUTLINE DIMENSIONS (units in mm)

Terminals, Intrinsically Safe Side
Terminals, Non-intrinsically Safe Side
LED Indicator
Zeroing Button

96 · 144 · 178 · 89 · 3.8 · 37 · 200 · 160 · 135

Multiple Installation Dimensions
2-ø7 per unit · Min. 110 · Min. 110 · Rack
160±0.5 · 144

■ TELEMETERING HOOKUP

Thanks to a wide option in output form, the OVAL Coriolis flowmeter is compatible with a broad selection of receiving instruments as shown below.

Output

Sensor Unit STmassMKII

10-conductor

Transmitter MT9603

Personal Computer

Smart Communication Unit EL2310

● Flowrate, temperature, density analog output

● Flowrate pulse output
Voltage or open collector

Total counter EL0122, EL0123

Batch controller EL1812, etc.

DCS, Computer, etc.

Recorder

Controllers

Hazardous Area | Nonhazardous Area

◎ For detailed information about the Smart Communication Unit and other receiving instruments, see respective General Specification sheets.

＊: Explosionproof model requires Grade "A" grounding ; nonexplosionproof model requires Grade "D" grounding.

■ MODEL CODE NUMBER

Item	Code No.							Supplementary Code							Description
	1	2	3	4	5	6	–	7	8	9	10	11	12	13	
Model	M	T	9	6	0	3	–								Rack-mount Transmitter
Power Source								6							20 to 30VDC
								7							85 to 264VAC 50Hz/60Hz
Analog Output									M	M					2 nass flowrate outputs (1 output inclusive)
									M	T					Mass flow output + temperature output
Pulse Output											1				Mass flowrate voltage pulse
											3				Mass flowrate open collector pulse
Status Output												1			Error output
												2			Flow direction
												3			Zeroing in progress
												4			Hi/Low alarm output
Explosionproof													0		Non-explosionproof
														B	Always "B"

■ WHEN YOU INQUIRE

Please supply us with the following information when you inquire:

1	**Product model**	MT9603 −□□□□□□
2	**Companion flowmeter (sensor) model**	
3	**Full scale**	~　　　　□ kg/min　　　　□ kg/h　　　　□ L/min　　　　□ L/h
4	**Explosionproof rating**	□ Req' d　　　　　　　□ Not req' d
5	**Power source**	V　　　　　□ AC　　　　　□ DC (available in near future)
6	**Output specifications**	Analog signal :□ 4~20mADC 　　　　　　□ Mass flow　　□ Temperature Pulse signal:　□ Mass voltage pulse　　□ Open collector pulse Pulse output specification:_____Hz (at full scale), or_____kg/Pulse
7	**Control output**	Select one from □ Flow direction　　□ Error alarm or　　□ Zeroing in progress
8	**Companion receiving instrument**	□ Totalizer　　□ Indicator　　□ Recorder　　□ Flow Controller　　□ Batch controller □ CPU　　□ Other receiving instruments (maker, model, in/out specs., power source, etc.)
9	**Transmission length**	Sensor unit (　　　→　　) m　Transmitter (　　　→　　) m Receiving instrument
10	**Quantity required**	
11	**Application**	
12	**Miscellaneous**	

The specification as of December, 2017 is stated in this GS Sheet. Specifications and design are subject to change without notice.

Sales Representative: