



ULTRA OVAL

METER SIZES: 29, 60, 31, 32, 33
(Single-case Construction)
Register Types A, B, and D

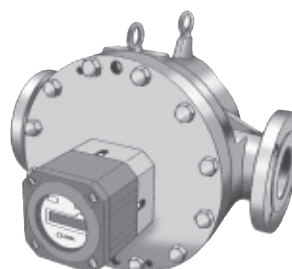
GENERAL SPECIFICATION
GS.No.GBU020E-11

■ GENERAL

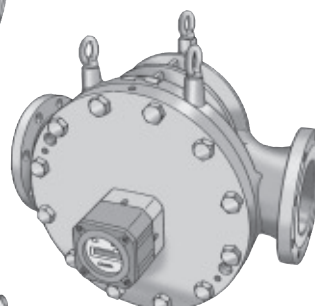
Our workhorse PD flowmeter series is redesigned in this ULTRA OVAL with the most advanced multi-function electronic register (ULTRA register) capable of indicating the instantaneous flowrate and total flow on an easy-to-read LCD and of providing the pulse and output. Significantly improved performance along with compact and lightweight design are among the many benefits it offers.

■ FEATURES

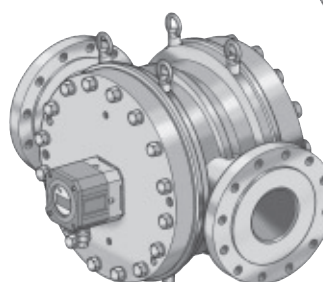
1. Systematic arrangement of pressure rating and temperature range for each model has been restructured.
2. Microprocessor-based ULTRA register indicates variables-total flow, both resettable and cumulative, instantaneous flowrate, selectable with mode select switch, plus alarm (low battery alarm) on the LCD.
3. Output signal is available in two channels simultaneously in the form of total flow (4/20mA DC factored or unfactored current pulses) and instantaneous flowrate signal (4 to 20mA DC analog).
4. A complete series of explosionproof models also available.
5. We also manufacture models approved for applicable high-pressure gas control law.
6. With batch controller equipped ULTRA register, you can simply and readily a batch control system.



Meter size: 29



Meter sizes: 60, 31



Meter sizes: 32, 33

■ GENERAL SPECIFICATIONS

● Meter Body

Item			Description				
Meter size			29	60	31	32	33
Nominal size, mm			80 (3")	100 (4")	150 (6"), ▲100 (4")	200 (8"), ▲150 (6")	200 (8"), ▲150 (6")
Construction			Single-case construction, pocketless design				
Applicable fluid			Water, petroleum, liquid foods, chemical liquids in general, etc.				
Flow range			See flow range table (page 3).				
Operating temp. range	Linearity	±0.35%	−10 to +120°C				
		±0.15%	−10 to +60°C				
Linearity			±0.35% or ±0.15%				
Repeatability			±0.05% or ±0.02%				
Materials	Body		SCS14A				
	Rotors		SUS316 or ▲SUS316L				
	Bearings		Carbon bearings or ceramic bearings				
Flow direction			Right →Left (std.), Left →Right, Bottom →Top, Top →Bottom				

▲ : Special

● Flange Ratings and Max. Operating Pressures: MPa

Pressure Rating	Flange Rating JIS		Flange Rating ASME, JPI
	10K	20K	150
10K	1.18	—	1.37
20K	—	1.96	1.50

Note : Reference temperature; 120°C

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● Register Specifications

Item				Description		
Meter size				29	60, 31, ※ 32, ※ 33	
Local display (LCD) (※1)	Cumulative totalizing counter			0.001 m ³ (std.)	0.001 m ³ (std.)	
	Reset counter, 7digits	C mode		0.01 m ³ , 0.1 m ³	0.01 m ³ , 0.1 m ³	
	Instantaneous flowrate (5 digits)	b1 mode		0.01 m ³ /h (std.)	0.1 m ³ /h (std.)	
		b2 mode		0.0001 m ³ /min (std.)	0.001 m ³ /min (std.)	
Output signal	—	None			Local LCD only	
	Current	Analog			4 to 20mADC Refer to diagram, page 5.	
		Pulse (※4, 5)	Type	Scaled or unscaled: 0/1=4/20 mADC		
			Pulse width	Scaled: 1ms (std.), 50 ms Unscaled: 2ms		
			Unit of scaled pulse	Same as of LCD counter (※1)		
	Open collector	Type	Scaled or unscaled: Max. V: 30 VDC allowable current: 50 mA			
		Pulse (※4, 5)	Pulse width	Scaled: 1ms (std.), 50 ms Unscaled: 2ms		
		Unit of scaled pulse	Same as of LCD counter (※1)			
	Voltage	Type	Scaled or unscaled: 0/1=1 VDC Max./7VDC Min.			
		Pulse (※4, 5)	Pulse width	Scaled: 1ms (std.), 50 ms Unscaled: 2ms		
Unit of scaled pulse		Same as of LCD counter (※1)				
Power supply	Without output signal			Installed lithium battery Life: 8 years (2 years with explosionproof construction ④ and ⑤)		
	With output signal			External power source: 12 to 45 VDC (Analog or current pulse) 12 to 24 VDC (Open collector pulse or voltage pulse) 12 to 45 VDC (Combination analog and current pulse) Current consumption: Max. 30 mADC Refer to diagram, page 6. (※2)		
Transmission cable				Capture cable w/external shield (VCTF 1.25 mm ² , finished O. D. 8.5 to 12mm) (※3)		
Transmission length				Max.1 km		
Transmission lines	2-wire system			Analog or current pulse		
	3-wire system			Open collector or voltage pulse		
	4-wire system			Analog + current pulse		
Ambient temperature				-10 to +60°C (Explosionproof model: -10 to +55°C) (Without dew condensation)		
Explosionproof configuration				Select either one from following two ① Non-explosionproof type ⑤ FM Class I, Division I / Group C, D T4 ② TIIS Exd IIB T4 / Exia IIB T4, Exia IIB T3 (※6) AEx / Exd IIB T4 ③ NEPSI Exd IIB T4 ⑥ KOSHA Exd IIB T4 ④ ATEX II2G Exd IIB T4		
Applicable EU directive				EMC 2004 / 108 / EC ATEX 94 / 9 / EC (※7) PED 97 / 23 / EC (※8)		
Applicable EN directive				EMC EN55011 : 1998 / A1 : 1999 Group 1, Class B EN61000-6-2 : 1999 ATEX EN60079-0 : 2006, EN60079-1 : 2007		
Degree of Protection for enclosure				IP66 (Dust-tight/Water-tight Type)-IEC/EN60529, JIS C 0920		
Material for housing				Aluminum die casting		
Finish				Munsell No. 2.5PB5/8 baked		

*1: If factored pulse units other than above are required, consult the factory.

*2: Battery powered register features a local indicator alone; output signal is not available.

*3: For wiring of explosionproof type, do not fail to use the ancillary pressure-resistant packing. Also, in case of TIIS explosionproof type used under the ambient temperature of 45°C or higher, use a cable resistant to the temperature of 75°C or higher.

*4: Under certain circumstances, the max. flowrate may have limitations if the minimum factored pulse unit is chosen and the pulse width exceeds 1 msec. If this problem arises, consult the factory.

*5: If the minimum factored pulse unit is chosen with the capacity indicated by an asterisk *, pulse width other than 1 ms is NOT selectable.

*6: Explosionproof configuration of ULTRA OVAL register with batch control function.

*7: Details as 94/9/EC compliant explosionproof equipment

Applicable hazardous area	Zone 1 and Zone 2
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*8: As the application to 97/9/EC (Pressurizing instrument order) is dependent on the condition of use, please contact OVAL representative.

• Nominal Meter Factors

Meter Size	Nominal meter factor (mL/P)	Freq. at max. flowrate (Hz)	Max. flowrate (m ³ /h)	Pulse (P/rev.)
29	198.62	125.9	90	12
60	338.9	120.3	150	12
31	629.50	101.4	230	12
32	992.70	89.6	320	12
33	1490.70	83.8	450	12

■ FLOW RANGES

● Table A Flow Range for Liquid in General (Linearity : $\pm 0.35\%$) (Operating temp. range : -10 to $+120^\circ\text{C}$)

Unit in m^3/h

Meter Size	Nom. size mm	Type of Liquid Temp. Viscosity Range Operating Condition	Water		Liquids other than water						
			60°C max.	60°C to 120°C	Less than 0.3mPa·s	0.3 to 0.8mPa·s	0.8 to 2mPa·s	2 to 5mPa·s	5 to 1000mPa·s	1000 to 1500mPa·s	1500 to 2000mPa·s
29	80	Continuous	8 to 40	10 to 35	15 to 50	10 to 50	8 to 50	6 to 70	4 to 70	4 to 60	4 to 54
		Intermittent	8 to 60	10 to 40	15 to 70	10 to 70	8 to 70	6 to 90	4 to 90	4 to 77	4 to 70
		A.I.F.	80	50	90	90	90	90	90	77	70
60	100	Continuous	15 to 75	20 to 60	30 to 85	20 to 85	15 to 85	8 to 120	5 to 120	5 to 103	5 to 93
		Intermittent	15 to 110	20 to 75	30 to 125	20 to 125	15 to 125	8 to 150	5 to 150	5 to 125	5 to 115
		A.I.F.	130	90	150	150	150	150	150	125	115
31	150 ▲100	Continuous	25 to 110	30 to 90	40 to 130	30 to 130	25 to 130	16 to 180	10 to 180	10 to 150	15 to 140
		Intermittent	25 to 160	30 to 110	40 to 190	30 to 190	25 to 190	16 to 230	10 to 230	10 to 195	15 to 175
		A.I.F.	200	140	230	230	230	230	230	195	175
32	200 ▲150	Continuous	35 to 160	40 to 130	60 to 180	40 to 180	30 to 180	25 to 260	15 to 260	15 to 220	15 to 200
		Intermittent	35 to 240	40 to 160	60 to 270	40 to 270	30 to 270	25 to 320	15 to 320	15 to 275	15 to 245
		A.I.F.	300	200	320	320	320	320	320	275	245
33	200 ▲150	Continuous	40 to 210	50 to 180	80 to 250	50 to 250	40 to 250	30 to 360	20 to 360	20 to 305	20 to 280
		Intermittent	40 to 320	50 to 220	80 to 380	50 to 380	40 to 380	30 to 450	20 to 450	20 to 385	20 to 350
		A.I.F.	400	270	450	450	450	450	450	385	350

● Table B Flow Range for Liquid in General (Linearity : $\pm 0.15\%$) (Operating temp. range : -10 to $+60^\circ\text{C}$)

Unit in m^3/h

Meter Size	Nom. size mm	Type of Liquid Temp. Viscosity Range Operating Condition	Water	Liquids other than water						
			60°C max.	Less than 0.3mPa·s	0.3 to 0.8 mPa·s	0.8 to 2 mPa·s	2 to 5 mPa·s	5 to 1000 mPa·s	1000 to 1500 mPa·s	1500 to 2000 mPa·s
29	80	Continuous	15 to 40	22 to 50	15 to 50	13 to 50	9 to 70	6 to 70	6 to 60	6 to 54
		Intermittent	15 to 60	22 to 70	15 to 70	13 to 70	9 to 90	6 to 90	6 to 77	6 to 70
		A.I.F.	80	90	90	90	90	90	77	70
60	100	Continuous	25 to 75	45 to 85	30 to 85	25 to 85	12 to 120	8 to 120	8 to 103	8 to 93
		Intermittent	25 to 110	45 to 125	30 to 125	25 to 125	12 to 150	8 to 150	8 to 125	8 to 115
		A.I.F.	130	150	150	150	150	150	125	115
31	150 ▲100	Continuous	40 to 110	60 to 130	40 to 130	35 to 130	25 to 180	15 to 180	15 to 150	15 to 140
		Intermittent	40 to 160	60 to 190	40 to 190	35 to 190	25 to 230	15 to 230	15 to 195	15 to 175
		A.I.F.	200	230	230	230	230	230	195	175
32	200 ▲150	Continuous	50 to 160	90 to 180	60 to 180	50 to 180	35 to 260	20 to 260	20 to 220	20 to 200
		Intermittent	55 to 240	90 to 270	60 to 270	50 to 270	35 to 320	20 to 320	20 to 275	20 to 245
		A.I.F.	300	320	320	320	320	320	275	245
33	200 ▲150	Continuous	60 to 210	120 to 250	80 to 250	70 to 250	50 to 360	30 to 360	30 to 305	30 to 280
		Intermittent	60 to 320	120 to 380	80 to 380	70 to 380	50 to 450	30 to 450	30 to 385	30 to 350
		A.I.F.	400	450	450	450	450	450	385	350

※1 : In the Operating Condition column "Continuous" means continuous operation; "Intermittent" means no more than 8 hours operation a day, and "A.I.F." indicates allowable instantaneous flowrate.

※2 : Flow range should be selected within the Continuous or Intermittent range specified.

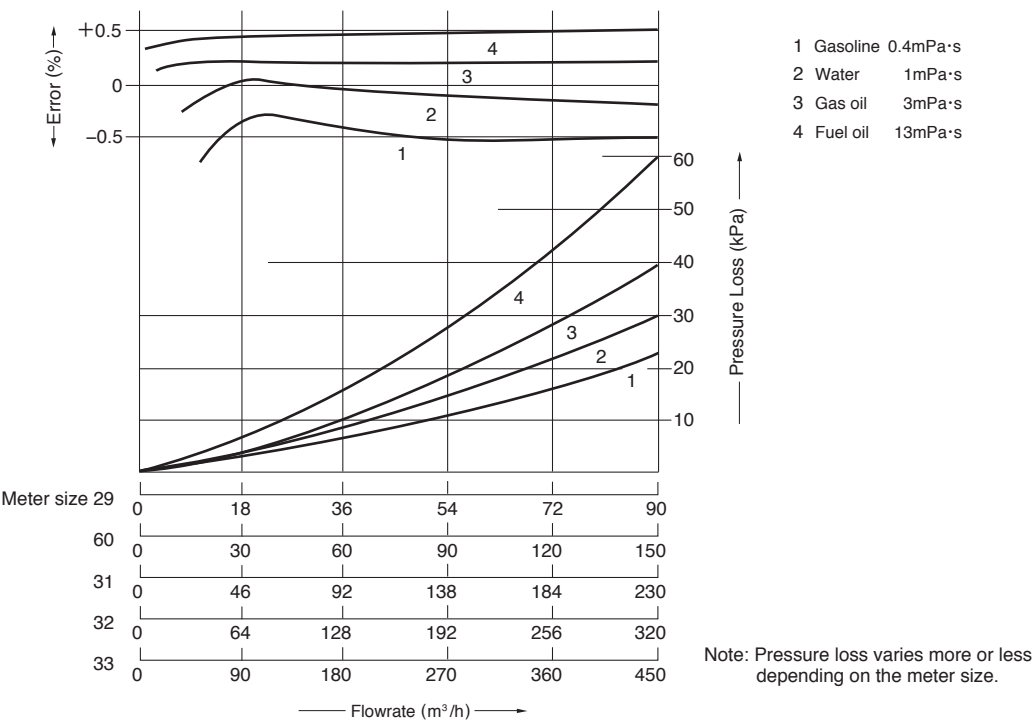
※3 : For applications where viscosity exceeds 200mPa·s, specially machined rotors are used.

※4 : Regarding special chemical liquid (liquid ammonia, nitric acid, ammonium sulfate, chlorosulfonic acid, fuming sulfuric acid, sulfuric acid) and highly viscous liquids in excess of 2000mPa·s, consult factory.

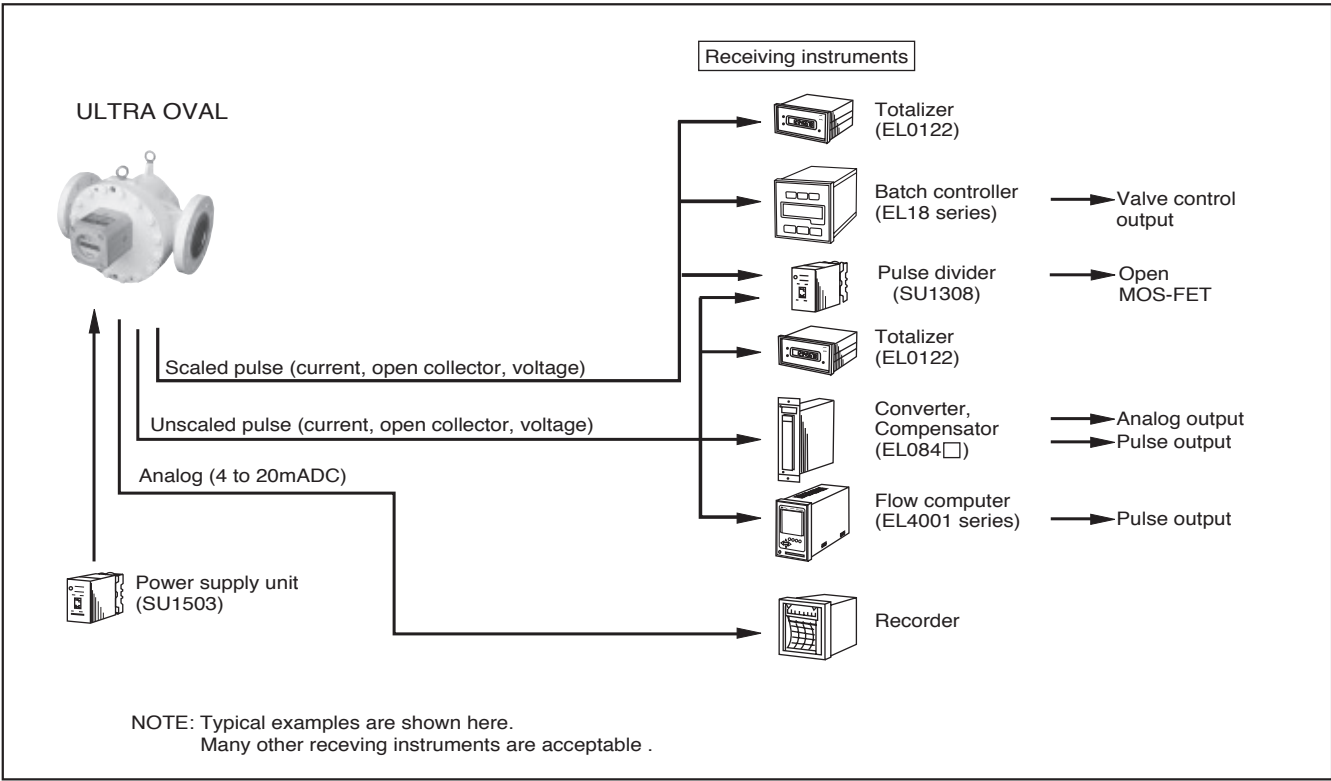
※5 : Regarding liquid ammonia, consult factory.

※6 : ▲Special

METER ERRORS and PRESSURE LOSSES

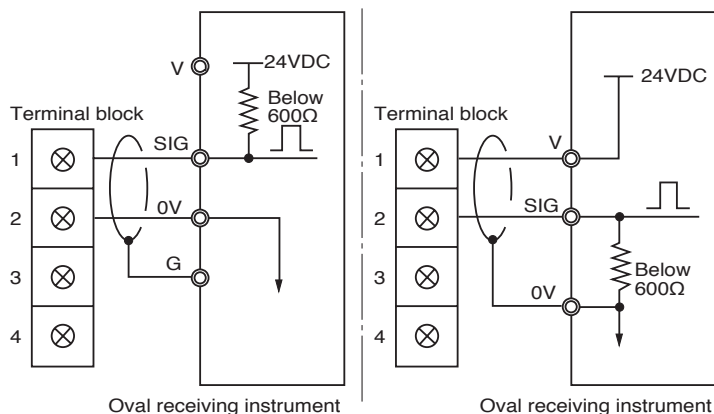


HOOKUP WITH RECEIVING INSTRUMENTS



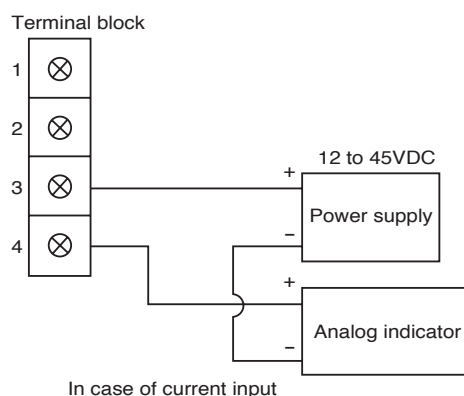
■ WIRING CONNECTIONS

(1) Current pulse output (2-wire system)



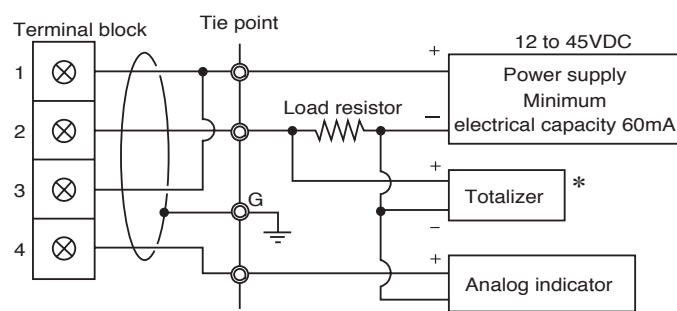
NOTE: OVAL offers two circuit configurations to accept current pulses as shown above. See the respective instruction manual of receiving instrument for correct connections.

(2) Analog output (2-wire system)



NOTE: To accept a voltage signal, couple an external load resistor (see acceptable load resistance range on page 6).

(3) Current pulse and Analog output (4-wire system)



*: Select voltage signal input for the totalizer.
Make sure of the trigger level of incoming voltage signal and determine the supply voltage and load resistance value.

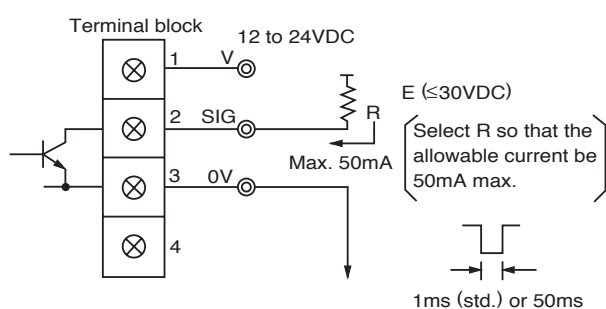
NOTE 1:

In an OVAL receiving instrument, an internal load resistor plays the role of I/V conversion. But if you build a system like the one shown here with a commercially available totalizer, a combination 4/20mA x load resistance serves as a current pulse/voltage pulse converter, make sure of the input level of the totalizer before use.

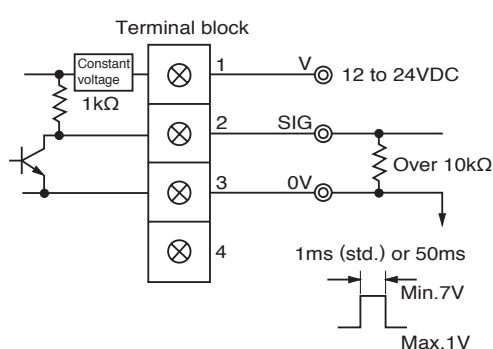
NOTE 2:

With a configuration like the one shown here where an OVAL receiving instrument is used, make sure of the current carrying capacity of receiving instrument's power supply before use. If found inadequate in current carrying capacity, prepare an additional power supply for the analog indicator.

(4) Open collector pulse (3-wire system)



(5) Voltage pulse (3-wire system)

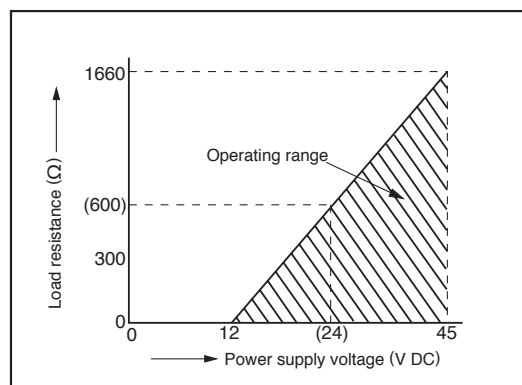


● Range of Load Resistance (for current pulse and analog output)

This instrument uses a two-wire transmission line for analog and pulse signals, so the line serves for both power supply and signal.

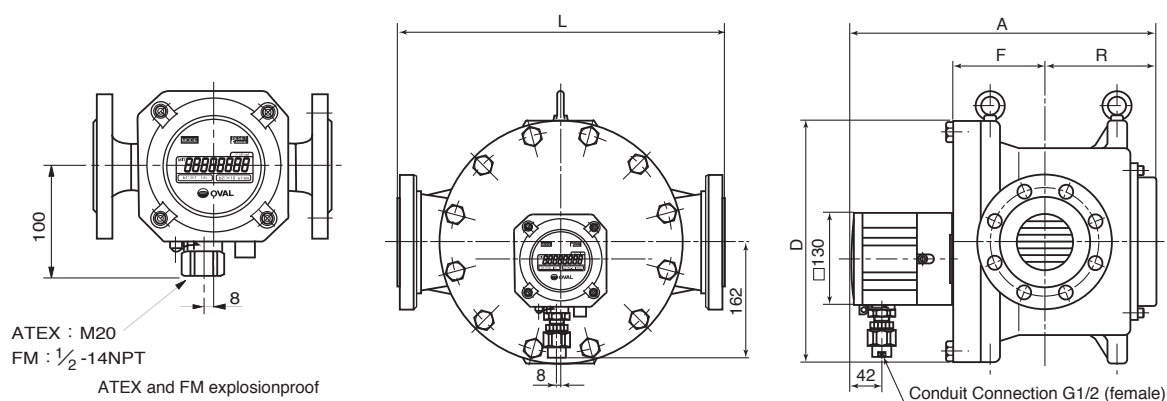
A DC power supply is required for transmission loop. When connecting a meter to the loop, ensure that the meter and the load resistance of cable conductor is within the operating limits shown in the figure at right.

Standard: Power supply voltage = 24VDC
Load resistance = 250Ω



■ OUTLINE DIMENSIONS (Standard register type A provided) [Unit in mm]

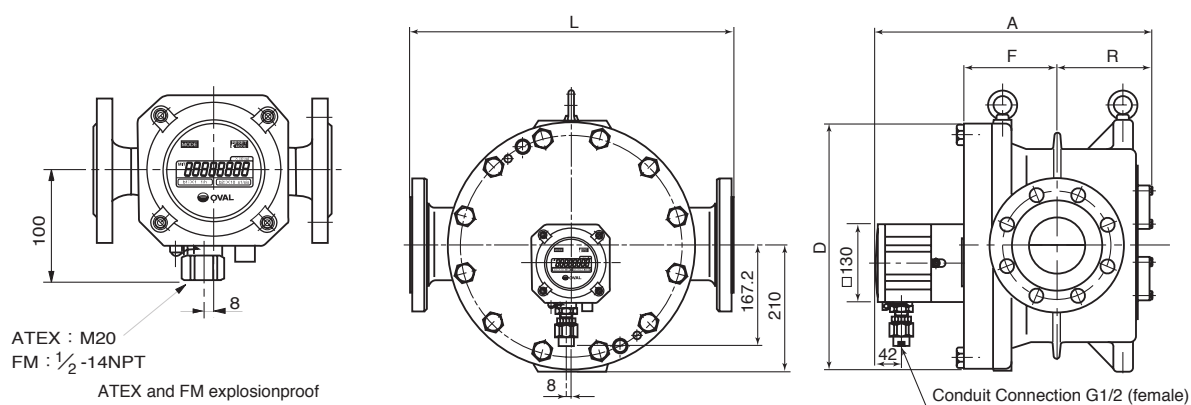
● Meter size: 29



Approx. Weight 10K:108.5kg
20K:111.5kg

Press. Rating Dimensions Flange Rating	10K					20K				
	L	F	R	D	A	L	F	R	D	A
JIS 10K	440.0	128.0	152.9	342.0	421.7	—	—	—	—	—
JIS 20K	—	—	—	—	—	448.0	132.0	152.9	342.0	421.7
ASME/JPI 150	452.0	128.0	152.9	342.0	421.7	452.0	132.0	152.9	342.0	421.7

● Meter size: 60



Approx. Weight 10K:185kg
20K:190kg

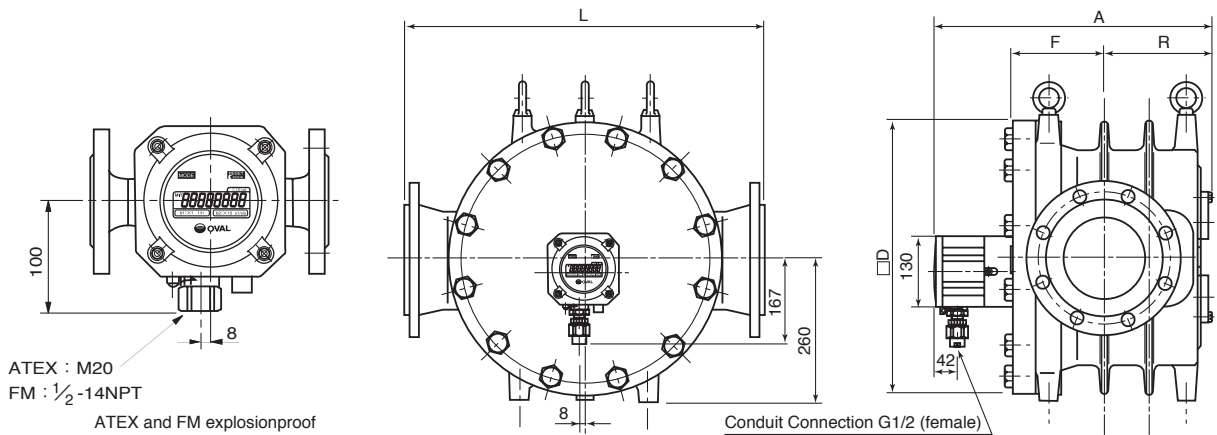
Press. Rating Dimensions Flange Rating	10K					20K				
	L	F	R	D	A	L	F	R	D	A
JIS 10K	520.0	153.0	153.1	412.0	442.9	—	—	—	—	—
JIS 20K	—	—	—	—	—	532.0	158.0	153.1	412.0	442.9
ASME/JPI 150	532.0	153.0	153.1	412.0	442.9	532.0	158.0	153.1	412.0	442.9

※1 : For batch controller equipped ULTRA register, refer to General Specification (No. GBC201E).

※2 : For models provided with auto temperature compensator equipped ULTRA register, consult the factory.

■ **OUTLINE DIMENSIONS (Standard register type A provided) [Unit in mm]**

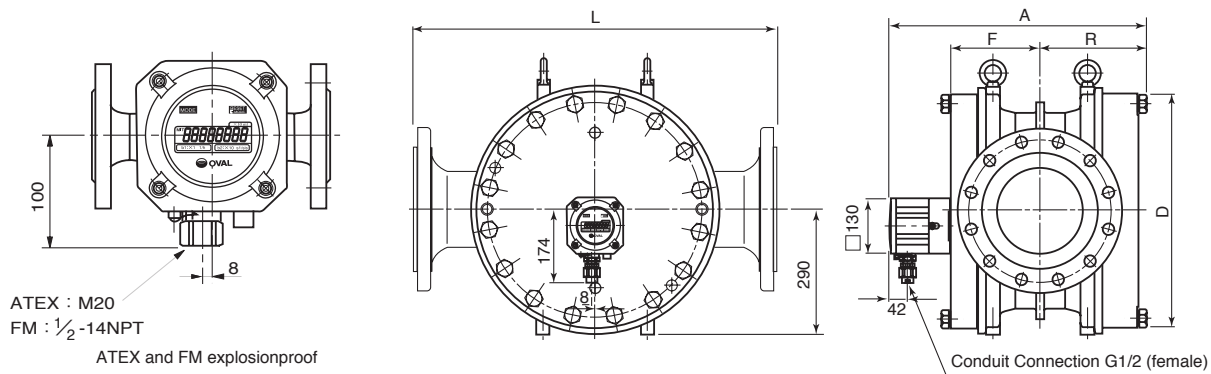
● **Meter size: 31**



Approx. Weight 10K: 150kg
20K: 155kg

Press. Rating Dimensions Flange Rating	10K					20K				
	L	F	R	D	A	L	F	R	D	A
JIS 10K	640.0	168	193.0	498.0	497.8	—	—	—	—	—
JIS 20K	—	—	—	—	—	652.0	173	193	498.0	497.8
ASME/JPI 150	647.0	168	193.0	498.0	497.8	647.0	173	193	498.0	497.8

● **Meter size: 32**

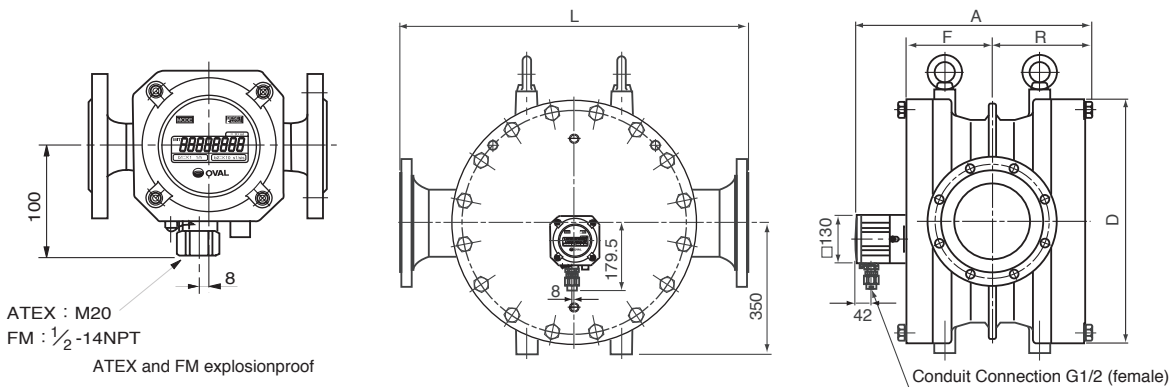


Approx. Weight : 600kg

32					
Press. Rating Dimensions Flange Rating	10K				
	L	F	R	D	A
JIS 10K	800.0	202.0	239	545	581.8
ASME/JPI 150	807.0	202.0	239	545	581.8

■ **OUTLINE DIMENSIONS (Standard register type A provided) [Unit in mm]**

● **Meter size: 33**

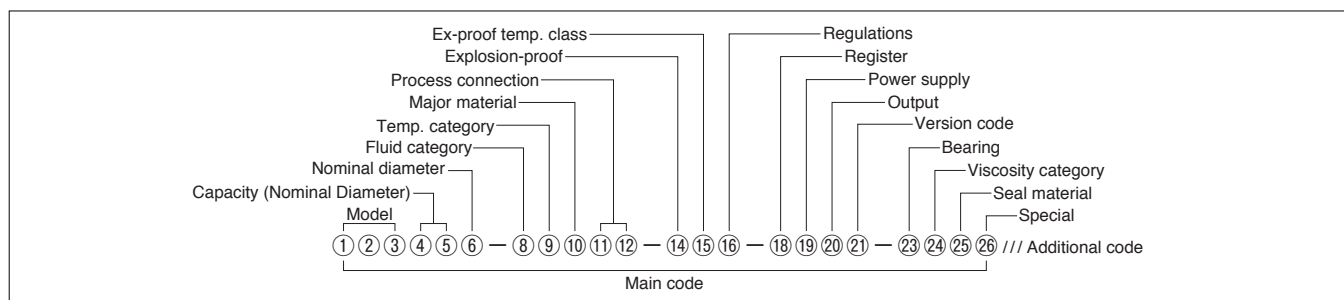


Approx. Weight : 850kg

33					
Press. Rating Dimensions Flange Rating	10K				
	L	F	R	D	A
JIS 10K	900.0	226.0	260.9	648.0	618.7
ASME/JPI 150	914.0	226.0	260.9	648.0	618.7

※1 : For batch controller equipped ULTRA register, refer to General Specification (No. GBC201E).
※2 : For models provided with auto temperature compensator equipped ULTRA register, consult the factory.

■ PRODUCT CODE EXPLANATION



● Main code

①	②	③	Model
L	U	S	ULTRA OVAL (integral type) Single case all stainless
④	⑤	Capacity (Nominal Diameter)	
2	9	80mm (3") ND (Small)	
6	0	100mm (4") ND (Big)	
3	1	100mm or 150mm (4" or 6") ND (Small (special) or Big)	
3	2	150mm or 200mm (6" or 8") ND (Small (special) or Big)	
3	3	150mm or 200mm (6" or 8") ND (Small (special) or Big)	
⑥	Nominal diameter		
3	Nominal diameter (Small) (Special)		
4	Nominal diameter (Big) integral type		
⑦	—		
⑧	Fluid category		
L	Liquid		
⑨	Temp. category		
0	60°C and lower		
1	Over 60°C up to 120°C		
⑩	Major material		
C	SCS14A (SUS316)		
E	Body: SCS14A + Rotors: SUS316L		
Z	Special		
⑪	⑫	Process connection	
J	1	JIS10K RF	
J	2	JIS20K RF	
Z	9	Special	
⑬	—		
⑭	Explosion-proof		
0	Non-explosionproof		
4	TIIS		
5	ATEX	※1	
6	FM	※1	
7	NEPSI	※2	
8	KOSHA	※1	
T	ITRI	※2	
⑮	Ex-proof temp. class		
0	Non-explosionproof		
3	T3		
4	T4		
⑯	Regulations		
0	Standard		
G	High Pressure Gas Safety Act (Approved product)		※ w/Material test certificate
H	High Pressure Gas Safety Act (Individual test)		※ w/Material test certificate (Designed on PO issued)
J	High Pressure Gas Safety Act (Completion inspection)		※ w/Material test certificate
L	Gas Business Act (Approved product)		※ w/Material test certificate (Designed on PO issued)
M	Gas Business Act		※ w/Material test certificate
Q	Electricity Business Act (Certificate required)		※ w/Material test certificate (Designed on PO issued)
R	Electricity Business Act		※ w/Material test certificate
T	Fire Service Act		※ w/Material test certificate
A	Nuclear power		※ w/Material test certificate (Designed on PO issued)
F	w/Material test certificate		
Z	Special		

*1: When register code ⑱ is "A", selectable.

*2: When register code ⑱ is "A, B", selectable.

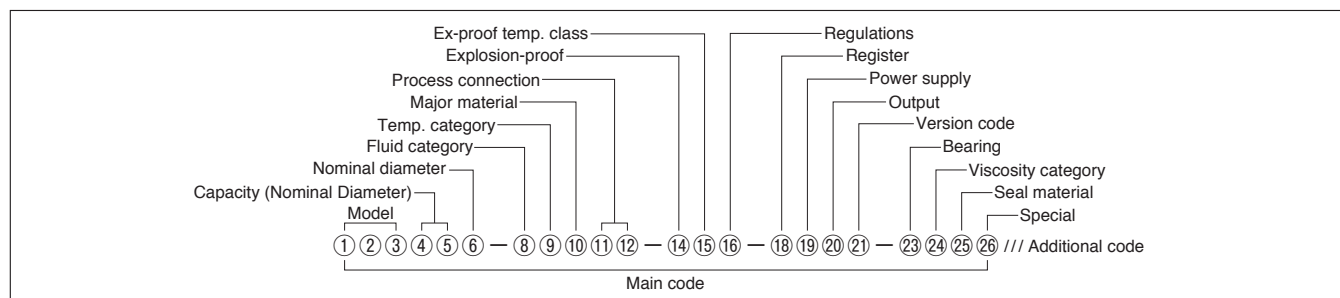
*3: See General Specification Sheet No. GBC201 for detail.

*4: Consult with OVAL.

*5: When register code ⑱ is "B", selectable.

⑰	—
⑱	Register
A	Standard ULTRA register
B	Batch controller equipped ULTRA register (LW74E/LW76E) *3
D	Auto temp. compensator equipped ULTRA register *4
⑲	Power supply
0	External power supply (standard)
V	Battery drive
⑳	Output
G	Standard output (open collector pulse output)
A	Analog
D	Current pulse
B	Voltage pulse
T	Current pulse + analog
N	No output (w/Battery unit)
2	Pneumatic 2 step open and close (w/LW76E register) *5
Z	Special
㉑	Version code
A	Version code: A
㉒	—
㉓	Bearing
0	Standard (carbon bearing)
2	Standard (strong alkali carbon)
8	Polymerizing liquid (carbon bearing)
5	Hydrogen peroxide solution (ceramic bearing)
6	Highly corrosive polymerizing liquid (ceramic bearing)
7	Polymerizing liquid (carbon bearing)
㉔	Viscosity category
5	Below 200mPa·s (sintered rotors inapplicable) cut rotor
6	200mPa·s and over (sintered rotors inapplicable) special cut cut rotor
㉕	Seal material
F	O-ring (FPM), gasket (T#1120)
C	O-ring (IIR), gasket (T#1120)
T	O-ring (PTFE), gasket (V7020)
P	O-ring (PTFE), gasket (V7035)
Z	Special
㉖	Special
0	Standard
Z	Special

■ PRODUCT CODE EXPLANATION



● Additional code

Category of High Pressure Gas		
H P	0	Other than High Pressure Gas
H P	1	Toxic gas and flammable gas
H P	2	Toxic gas
H P	3	Flammable gas
H P	4	Other than toxic or flammable gas
Accuracy		
R 0	5	±0.50% ACCURACY
L 0	1	±0.15% LINEARITY ※Only for export
L 0	3	±0.35% LINEARITY ※Only for export
R 0	2	±0.20% ACCURACY
R 9	9	Special
Operating condition		
F C	0	Continuous
F M	0	Intermittent
Special test (instrumental error)		
A 1	0	Taxed custody transfer
A 2	0	By certified measurer
A 6	0	Standard oil meter According to JMIF standard (Bore size 80mm and over)
A 7	0	Std. fuel oil meter, std. water meter
A 8	0	Std. fuel oil meter, std. water meter
A 9	9	Designation of instrumental error test method Addition of one (1) test point, etc.
Flow direction		
F R	0	R → L
F L	0	L → R
F U	0	T → B: Electric conduit at the bottom
F D	0	B → T: Electric conduit at the bottom
Designated special paint on body		
B C	0	Corrosion proof
B A	0	Salinity and acid tolerance 120°C and lower
B X	0	Customer designation
Designated special paint on transmitter		
S F	0	Corrosion proof Special treatment
S D	0	Salinity tolerance
S E	0	Acid tolerance Special treatment
S X	0	Customer designated paint Special treatment
Cleansing		
T W	0	Non-oil and non-water treatment
T W	1	Non-oil and non-water treatment equivalent
T F	0	Food cleansing
T A	0	Nuclear cleansing
T C	0	CIP Choose countermeasure to sudden temp. change
Label		
N P	J	Label (Japanese)
N P	E	Label (English)

Document		
D S	J	DWG and specifications for approval (Japanese)
D S	E	DWG and specifications for approval (English)
D R	0	Re-submission of DWG with specifications
D C	J	Final DWG (Japanese)
D C	E	Final DWG (English)
D P	J	Calculation sheet (Japanese)
D P	E	Calculation sheet (English)
S E	J	Instrumental error test report (Japanese)
S E	E	Instrumental error test report (English)
S T	J	Pressure test report (Japanese)
S T	E	Pressure test report (English)
S A	J	Airtight test report (Japanese)
S A	E	Airtight test report (English)
D D	J	Dimensional check record (Japanese)
D D	E	Dimensional check record (English)
S P	J	Penetrant test report (Japanese) Welded part of pressure resistant vessel
S P	E	Penetrant test report (English) Welded part of pressure resistant vessel
S M	J	Magnetic particle inspection (Japanese) Welded part of pressure resistant vessel
S M	E	Magnetic particle inspection (English) Welded part of pressure resistant vessel
S R	J	Radiographic inspection (Japanese) Welded part of pressure resistant vessel
S R	E	Radiographic inspection (English) Welded part of pressure resistant vessel
S U	J	Ultrasonic inspection (Japanese) Welded part of pressure resistant vessel
S U	E	Ultrasonic inspection (English) Welded part of pressure resistant vessel
S X	J	PMI test report (Japanese)
S X	E	PMI test report (English)
S S	J	Impact test report (Japanese)
S S	E	Impact test report (English)
D Y	J	WPS/PQR (Japanese)
D Y	E	WPS/PQR (English)
D 9	J	Photo (Japanese)
D 9	E	Photo (English)
D T	J	Inspection procedure (Japanese)
D T	E	Inspection procedure (English)
C A	J	Inspection certificate: A set Only Japanese
C B	J	Inspection certificate: B set Only Japanese
C C	J	Inspection certificate: C set Only Japanese
C D	J	Inspection certificate: D set Only Japanese
Witnessed by customer		
V 1	0	Required

FORMER PRODUCT CODE EXPLANATION

The new product code has been implemented since April 2017.
Therefore, the product code explanation of the old product code will not be updated after April 2017.
Contact OVAL if you wish to order with the old product code for reasons such as type approval.

Item	Code No.															Description
	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	
Type	L															Flowmeter for liquid service
Material of metering element	C															SCS14A
	E															SUS316L (rotors only) [Special]
Meter size																Large size
																Small size
	2	9														Nominal size 80mm (3")
	6	0														Nominal size 150mm (4")
	3	1														Nominal size 150mm (6") (Special)
	3	2														Nominal size 200mm (8") (Special)
Meter construction																Nominal size 200mm (8") (Special)
																Nominal size 150mm (6") (Special)
Register type																Single-case construction (Small nominal size)
																Single-case construction (Large nominal size)
																Basic ULTRA model
Heat radiation adapter																Batch controller equipped ULTRA register (LW76E) (*1)
																Auto temperature compensator equipped ULTRA register (*2)
																None
Body material																SCS14A
Pressure rating																10K
																20K
Bearing type																Carbon bearings
																Ceramic bearings
																Polymerization-inhibited ceramic bearings
																Polymerization-inhibited special carbon bearings
Transmission type																ULTRA register coupled
Register configuration																Non-explosionproof
																TIIS explosionproof
																ATEX explosionproof (*3)
																FM explosionproof (*3)
																NEPSI explosionproof
																KOSHA explosionproof (*3)
Types of output signal (Register code UA only.)																No output signal, Local LCD only (w/battery unit)
																Unscaled pulse (Current pulse) 2 wires
																Scaled pulse (Current pulse) 2 wires
																Unscaled pulse (Open collector pulse) 3 wires
																Scaled pulse (Open collector pulse) 3 wires
																Unscaled pulse (Voltage pulse) 3 wires
																Scaled pulse (Voltage pulse) 3 wires
																Analog 2 wires
																Analog + Unscaled pulse (Current pulse) 4 wires
																Analog + Scaled pulse (Current pulse) 4 wires
Batch control function (Only register type UB)																Pneumatic batch controller (LW76E register) 2-step open/2-step close type

*1 : For register code UB, see General Specification (No.GBC201E).

*2 : For register code UD, consult the factory.

*3 : Applies only in the case of "Standard ultra counter".

■ OPERATING PRECAUTIONS

This flowmeter is not provided with subtract function. If pulsation in the flow (where the fluid moves back and forth in the pipeline under the influence of

pressure) or reversal of flow exists, the total counter may show erratic reading, accumulating all incoming pulses irrespective of flow direction.

■ ORDERING INFORMATION

Please complete the following form when making inquiries.

1. Model	L _____
2. Fluid to be measured	Name _____ Viscosity _____ mPa·s Specific gravity _____
3. Flowrate (m³/h)	Maximum _____ Normal _____ Minimum _____
4. Fluid temperature (°C)	Maximum _____ Normal _____ Minimum _____
5. Ambient temperature (°C)	Maximum _____ Normal _____ Minimum _____
6. Pressure (MPa)	Maximum _____ Normal _____ Minimum _____
7. Flow direction	Right \longleftrightarrow Left, Bottom \longleftrightarrow Top
8. Flange connection	Nominal size _____ mm Flange rating _____
9. Required Linearity	\pm _____ %
10. Explosionproof configuration	<input type="checkbox"/> Required class _____ <input type="checkbox"/> Not required
11. Accessories	<input type="checkbox"/> Strainer <input type="checkbox"/> Air eliminator <input type="checkbox"/> Companion flange
12. Quantity	Including accessories _____
13. Receiving instrument	Type, manufacturer, model, specifications (input, output, power supply, etc.)
14. Distance between flow meter and receiving device	_____ m

The specification as of December, 2018 is stated in this GS Sheet. Specifications and design are subject to change without notice.

Sales Representative: