

Liquid Turbine Flow Meter *Catalogue*



General

Operating Principle:

Liquid flows through the turbine housing causing an internal rotor to spin. As the rotor spins, an electrical signal is generated in the pickup coil. This signal is converted into engineering units (liters, cubic meters, gallons etc.) on the local display where is applicable. Optional accessory modules can be used to export the signal to other equipment.

Upon receipt, examine your meter for visible damage. The turbine is a precision measuring instrument and should be handled carefully. Remove the protective plugs and caps for a thorough inspection. If any items are damaged or missing, contact us.

Make sure the turbine flow model meets your specific needs. For your future reference, it might be useful to record this information on nameplate in the manual in case it becomes unreadable on the turbine.

Refer to the nameplate for your customized product's specification.

Technical Date

Measuring System

Application range	Liquid: water; diesel; gasoline (1) Without Impurity (2) Low viscosity
Measured Value	
Primary measured value	Flow Rate
Secondary measured value	Volume flow

Design

Features	
Modular construction	The measurement system consists of a flow sensor and a signal converter. It is available as compact and as separate version.
Compact version converter	N Type: Pulse output without local display
Compact version converter	A Type: 4 - 20mA Output without local
Compact version converter	B Type: Local Display; Lithium Battery Power;
Compact version converter	C Type: Local Display; 24V DC Power; 4 - 20mA Output; Optional Function: (1) Backup Power Supply: Lithium Battery (2) Modbus RS485 (3) Pulse Output
Connection	Thread: DN4 - DN50
Connection	Flange: DN15 - DN200 (DIN, ANSI, JIS)
Connection	Wafer: DN15 - DN100
Measurement Ratio	Standard – 10:1; Optional: 20:1

Measuring Accuracy

Reference conditions	Flow conditions similar to EN 29104
Reference conditions	Medium: Water
Reference conditions	Electrical conductivity: $\geq 300\mu\text{S/cm}$
Reference conditions	Temperature: $+10\dots+30^\circ\text{C}$ / $+50\dots+86^\circ\text{F}$
Reference conditions	Inlet section: $\geq 10\text{DN}$
Reference conditions	Operating pressure: 1 bar / 14.5 psig
Flow Meter Accuracy	Standard: 1.0% of rate
Flow Meter Accuracy	Optional: 0.5% of rate

Operating Conditions

Temperature	
Process temperature	T1 Level: - 20...+80°C
	T2 Level: - 20...+120°C
	T3 Level: - 20...+150°C
Ambient temperature (all versions)	Standard (with aluminum converter housing):
	- 10...+55°C
Storage temperature	- 20...+70°
Pressure	
EN 1092 - 1	DN100...DN200: PN 16
	DN15...DN80: PN 25
	Other pressures on request
ASME B16.5	1/2" ...8": 150 lb RF
	Other pressures on request
JIS	1/2" ...8": 10 K
	Other pressures on request

Installation Conditions

Installation	Take care that flow sensor is always fully
Installation	For detailed information see chapter "Cautions"
Flow direction	Forward
Flow direction	Arrow on flow sensor indicates flow
Inlet run	≥ 10DN
Outlet run	≥ 5DN

Materials

Sensor housing	SS304
Sensor housing	Other materials on request
Flanges	SS304
Flanges	Other materials on request
Rotor	
	EN10088 - 3 1.4021 X20Cr13
	AISI 420
	BS 420S37
	JIS SUS410J1

Optional: CD4MCu	DN15...DN80
Bearings and Shaft	Tungsten Carbide
Converter Housing	Standard: polyurethane coated die - cast aluminum

Process Connections

Flange	
EN 1092 - 1	DN15...200 in PN 6...40
ASME	1/2"...8" in 150 lb RF
JIS	1/2"...8" in 10...20K
Design of gasket surface	RF
	Other sizes or pressure ratings on request
Thread	DN4...DN50 in PN63

Measurable Flow Rate Range

Note: The flow range as blow is for reference only. Consult the factory if you have special requirement.

Refer to the nameplate or certificate for actual flow range.

Nominal Diameter		Standard Flow	Extended Flow
(mm)	(in.)	(m3/h)	(m3/h)
4	0.15	0.04 to 0.25	0.04 to 0.4
6	0.25	0.1 to 0.6	0.06 to 0.6
10	0.4	0.2 to 1.2	0.15 to 1.5
15	0.5	0.6 to 6	0.4 to 8
20	0.75	0.8 to 8	0.45 to 9
25	1	1 to 10	0.5 to 10
32	1.25	1.5 to 15	0.8 to 15
40	1.5	2 to 20	1 to 30
50	2	4 to 40	2 to 40
65	2.5	7 to 70	4 to 70
80	3	10 to 100	5 to 100
100	4	20 to 200	10 to 200
125	5	25 to 250	13 to 250
150	6	30 to 300	15 to 300
200	8	80 to 800	40 to 800

Model & Selection

Table 1: Model Selection Guidance for Liquid Turbine Flowmeter

Model Suffix Code										Description		
QTLD -												
Diameter											Three Digitals; for example: 010: 10 mm; 015: 15 mm; 080: 80 mm; 100: 100 mm	
Converter		N									No display; 24V DC; Pulse Output	
		A									No display; 24V DC; 4 - 20mA Output	
		B										Local display; Lithium Battery Power; No output
		C										Local display; 24V DC Power; 4 - 20mA Output; Optional backup power: Lithium Battery
		C1										Local display; 24V DC Power; 4 - 20mA Output; Modbus RS485 Communication Optional backup power: Lithium Battery
		C2										Local display; 24V DC Power; 4 - 20mA Output; HART Communication Optional backup power: Lithium Battery
Accuracy			10								1.0% of Rate	
			05								0.5% of Rate	
Flow Range				S							Standard Range: refer to flow range table	
				W							Wide Range: refer to flow range table	
Body Material					S						SS304	
					L						SS316	
Explosion Rating						N					Safety Field without Explosion	
						E					ExdIIBT6	
Pressuring Rating							N				Per Standard	
							H(x)				Customized Pressure Rating	
										-DXX	DXX: D06, D10, D16, D25, D40 D06: DIN PN6; D10: DIN PN10 D16: DIN PN16; D25: DIN PN25 D40: DIN PN40	

	-AX	AX: A1, A3, A6 A1: ANSI 150#; A3: ANSI 300# A6: ANSI 600#
	-JX	JX: J1, J2, J4 J1: JIS 10K; J2: JIS 20K; J4: JIS 40K
	-TH	Thread; DN4...DN50
Fluid Temperature	-T1	- 20...+80°C
	-T2	- 20...+120°C
	-T3	- 20...+150°C

Model Code: QTLD - 050C10SSNN - A1 - T1

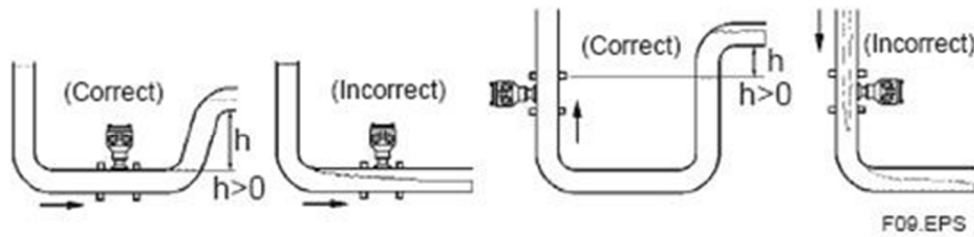
Explanation - Diameter: 50mm; Converter: 24V DC Power Supply, 4 - 20mA Output, Local Display

Accuracy: 1.0%; Flow range: 4 - 40 m³/h; Body Material: SS304; No Explosion;

Connection: ANSI 150# Flange; Fluid Temperature: - 20...+80°C

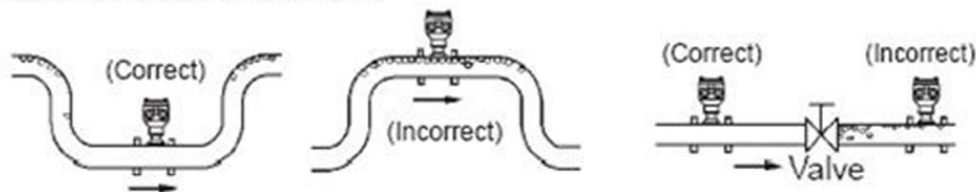
Cautions for Installation

- Pipes must be fully filled with liquids. It is essential that pipes remain fully filled at all times, otherwise flow rate indications may be affected and measurement errors may be caused.



Mounting Positions

- Avoid Air Bubbles. If air bubbles enter a measurement pipe, flow rate indications may be affected and measurement errors may be caused.



Avoiding Air Bubbles

- Avoid all pipe locations where the flow is pulsating, such as in the outlet side of piston or diaphragm pumps.
- Avoid locations near equipment producing electrical interference such as electric motors, transformers, variable frequency, etc.
- Install the meter with enough room for future access for maintenance purposes.

Warning: Precaution for direct sunshine and rain when the meter is installed outside.

Straight Pipe Length

VFA

QTLD TURBIN DEBİMETRE

Flow altering device such as elbows, valves and reducers can affect accuracy. See diagram below for typical flow meter system installation.

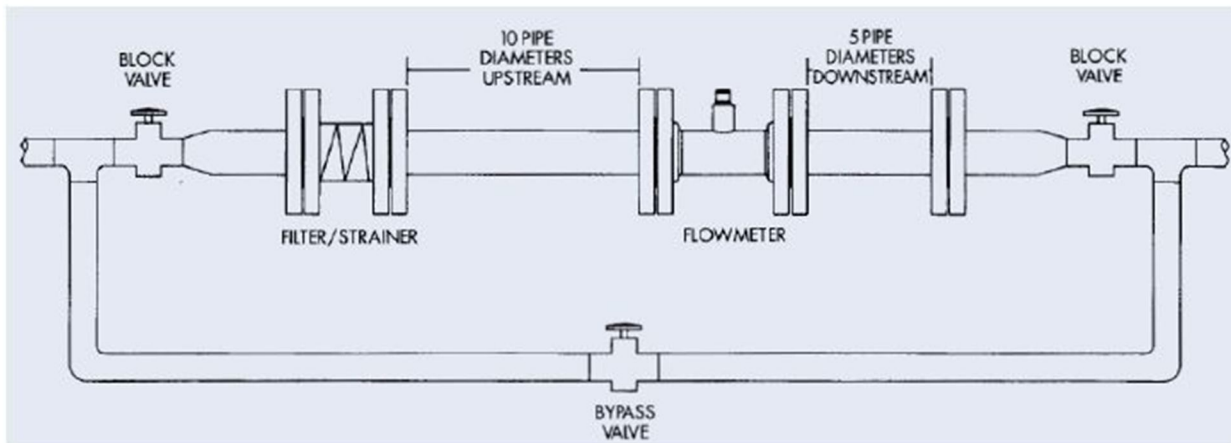
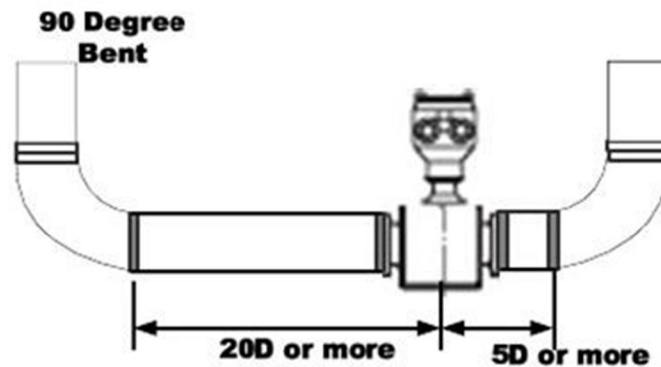
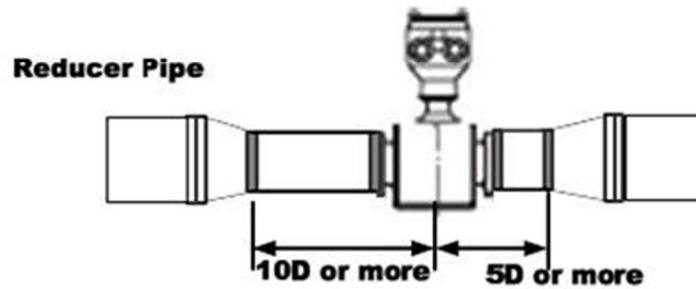
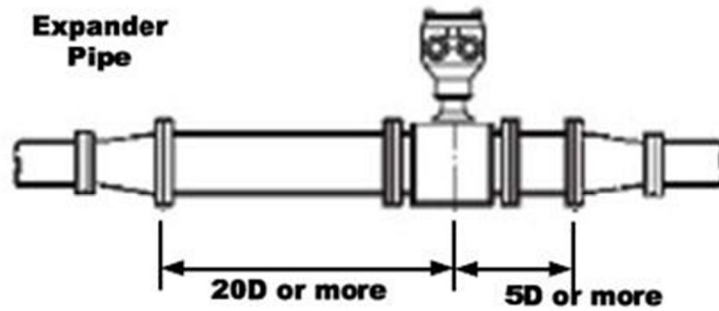


Diagram 1. Typical Flow Meter System Installation

Connections

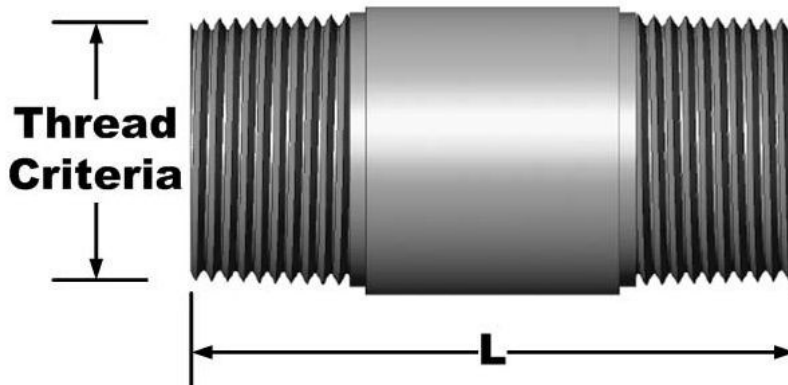
Thread Connection

Note: Default Thread is Male G Thread, other thread are available on request. For example: Female NPT

Thread, Male NPT Thread; Consult SURE for more information

DN4...DN10: Straight Runs and filter are included in the length for DN4 to DN10.

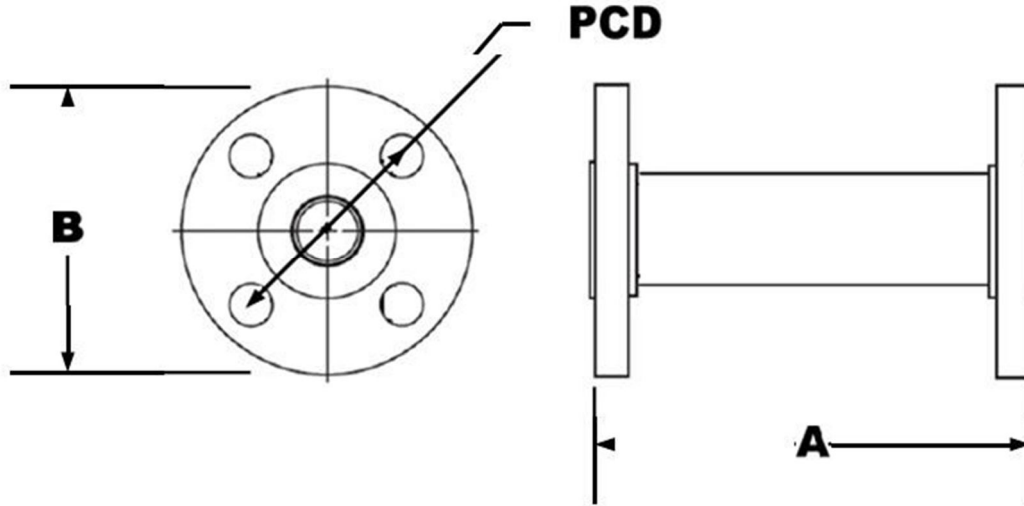
DN15...DN50: Straight Runs are optional on request.



Diameter	L (mm)	Thread
4	279	G 1/2"
6	270	G 1/2"
10	390	G 1/2"
15	75	G 1"
20	80	G 1"
25	100	G 1 - 1/4"
32	140	G 2"
40	140	G 2"
50	150	G 2 - 1/2"



Flange Connection



ANSI Flange Meter Dimensions							
Size Code		A	ANSI Flange Rating Class	Flange Diameter (B)	Bolt Hole Diameter	Bolt Circle Diameter (PCD)	Bolt Hole Quantity
(inch)	(mm)	(mm)		(mm)	(mm)	(mm)	
1/2"	15	75	150	89	16	60	4
			300	95	16	67	4
3/4"	20	80	150	99	16	70	4
			300	117	19	83	4
1"	25	100	150	108	16	79	4
			300	124	19	89	4
1-1/4"	32	140	150	115	16	89	4
			300	135	19	98	4
1-1/2"	40	140	150	127	16	99	4
			300	155	22	114	4
2"	50	150	150	152	19	121	4
			300	165	19	127	8
2-1/2"	65	170	150	180	19	140	4
			300	190	22	149	8
3"	80	200	150	191	19	152	4
			300	210	22	168	8
4"	100	220	150	229	19	191	8
			300	254	22	200	8
5"	125	250	150	255	22	216	8
			300	280	22	235	8
6"	150	300	150	279	22	241	8
			300	318	22	270	12
8"	200	360	150	343	22	298	8
			300	381	25	330	12



DIN Flange Meter Dimensions							
Size Code		A	DIN Flange Pressure	Flange Diameter (B)	Bolt Hole Diameter	Bolt Circle Diameter (PCD)	Bolt Hole Quantity
(inch)	(mm)	(mm)	MPa	(mm)	(mm)	(mm)	
1/2"	15	75	2.5	95	14	65	4
3/4"	20	80	2.5	105	14	75	4
1"	25	100	2.5	115	14	85	4
1-1/4"	32	140	2.5	140	14	100	4
1-1/2"	40	140	2.5	150	18	110	4
2"	50	150	2.5	165	18	125	4
2-1/2"	65	170	1.6	185	18	145	4
3"	80	200	1.6	200	18	160	8
4"	100	220	1.6	220	18	180	8
5"	125	250	1.6	250	18	210	8
6"	150	300	1.6	285	22	240	8
8"	200	360	1.6	340	22	295	12

Tri-clamp connection

Nominal Caliber-Flow Range

Nominal Caliber(mm)	Normal Flow Range (m ³ /h)	Expanded Flow Range(m ³ /h)
DN4	0.04~0.25	0.04~0.4
DN6	0.1~0.6	0.06~0.6
DN10	0.2~1.2	0.15~1.5
DN15	0.6~6	0.4~8

DN20	0.8~8	0.45~9
DN25	1~10	0.5~10
DN32	1.5~15	0.8~15
DN40	2~20	1~20
DN50	4~40	2~40
DN65	7~70	4~70
DN80	10~100	5~100
DN100	20~200	10~200

Tri-clamp (Sanitary type) General Information



Measuring Medium	Food, liquid medicine industry liquid.			
Carried Standard	Turbine flow meter sensor (JB/T9146-1999)			
Inspection Standard	Tri-clamp connection	DN4-DN100		
Accuracy Degree	$\pm 1\% R, \pm 0.5\% R, \pm 0.2\% R$ (custom-made)			
Material	Flow sensor	SS316(L)	Guide Flow	316
	Impeller	Dual-phase steel	Frame	304
Flow Range	10:1~20:1			

Pressure Degree	1.0MPa			
Calibration Condition	Calibration Device	Standard flowmeter liquid testing device		
	Environment Condition	Environment Temperature	20°C	
		Relative Humidity	65%	
Application Condition	Medium Temperature	T1(ordinary type)		
		T2(high temperature,selection)		
		T2(high temperature,selection)		
	Environment Temperature	-20°C~+60°C	Relative Humidity	5%~90%
	Atmospheric Pressure	86Kpa~106Kpa		

Electrical Wiring

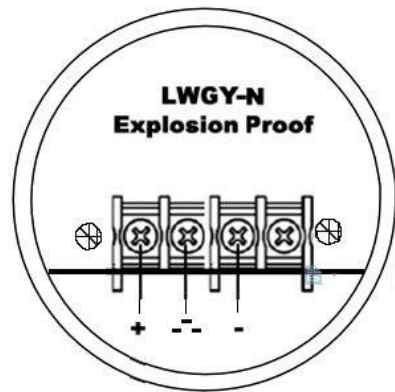
Warning: Electrical Hazard Disconnect power before beginning wiring.

LWGY - N; Pulse Output, Basic Model.

Cable Color	Terminal Symbols	Description
Red Wire	Power (+)	Power Supply: "24V+"
White Wire	Common	GND
Yellow Wire	Pulse (+)	Pulse Output

LWGY - N; Pulse Output, explosion proof model.

Terminal Configuration

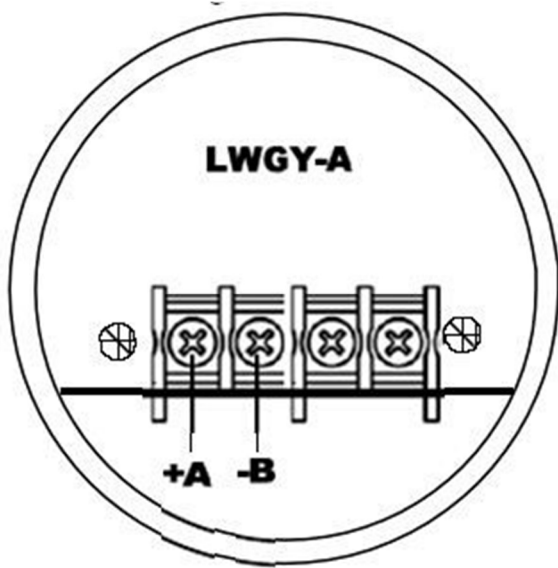


Terminal Wiring

Terminal Symbols	Description
+	Power Supply: "24V+"
-	GND
	Pulse Output

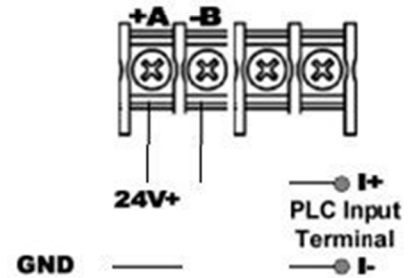
LWGY - A; two - wire 4 - 20mA Output, No Local Display.

Terminal Configuration



Terminal Wiring |

Terminal	Description
+A	Power Supply:
- B	Current Output



LWGY - B, LWGY - C, LWGY - C1, LWGY - C2; Local Display

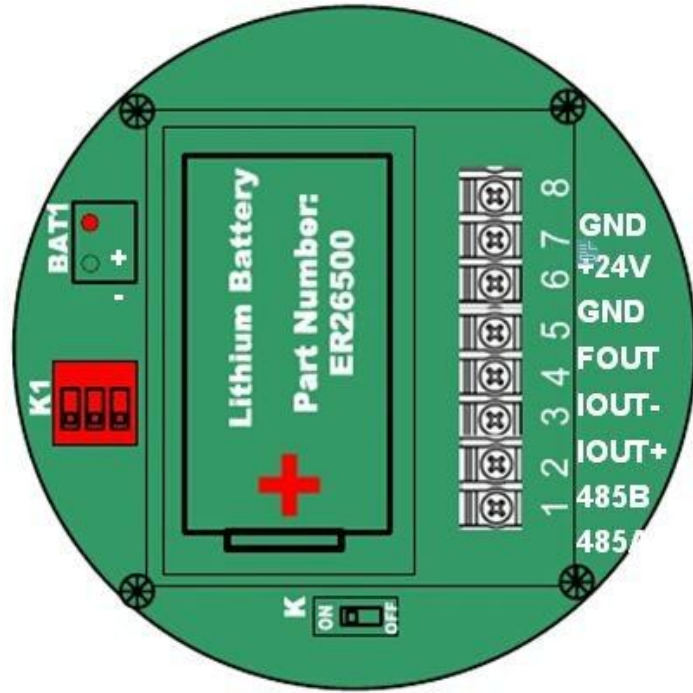
Note: Terminal configuration is same for LWGY - B, LWGY - C, LWGY - C1 and LWGY - C2, but some functions are

ONLY available on specified model. The table lists the function of each model.

Function List for converter with local display

Model	Primary Power Supply	Optional Dual Power Supply	Output	Optional Dual Output	Communicati	Note
LWGY - B	Lithium Battery	Not Available	Not Available	Not Availab	Not	
LWGY - C	24V DC	Lithium Battery	4 - 20mA	Pulse	Not	Output is only available when 24V Power supply is on.
LWGY - C1	24V DC	Lithium Battery	Pulse	Not Available	Modbus	
LWGY - C2	24V DC	Lithium Battery	4 - 20mA	Pulse	HART	

Terminal Configuration



DIP Switch: K1			
Function	1	2	3
Original Pulse Output	ON	OFF	OFF
Scaled Pulse Output: 1 m ³ / Pulse	OFF	ON	OFF
Scaled Pulse Output: 1L/Pulse; 10L/Pulse; 100L/Pulse Configure it in parameter setting	OFF	OFF	ON

LWGY - C, LWGY - C1 and LWGY - C2

Model	Function (Optional)	Terminal Code	Terminal Symbols	Description
LWGY - C	(2 wires) 4 - 20mA Output	3	IOUT+	24V DC+
		4	IOUT -	GND
	(3 wires) 4 - 20mA Output	7	+24V	24V+ DC Power Supply
		8	GND	GND
	(4 wires) 4 - 20mA Output	3	IOUT+	Current Output 4 - 20mA DC (+)
		7	+24V	24V+ DC Power Supply
		8	GND	GND
		3	IOUT+	Current Output (+) Iout+
	6	GND	Current Output (-) Iout -	
	7	+24V	24V+ DC Power Supply	
	8	GND	GND	

		5	FOUT	Pulse output +
		6	GND	Pulse output -
		1	485A	RS485 +
		2	485B	RS485 -
LWGY - C2	HART Communication	3	IOUT +	24V DC+
		4	IOUT -	Current and HART Output

Electrical Wiring Diagram

