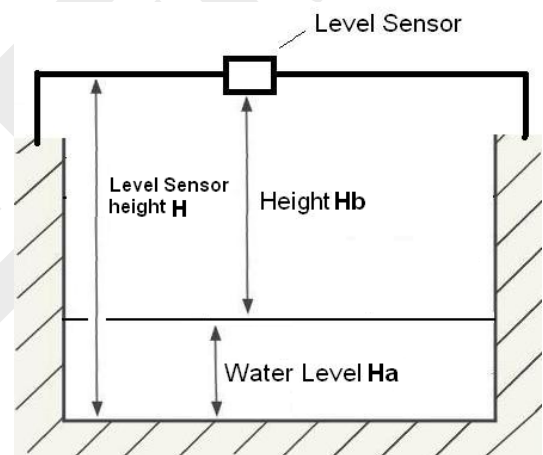


## Solenvis SL93 Open Channel / Flume Meters DMDF-OP-C Flumes and Weirs Ultrasonic Flow Meters

### Principle

Direct measurement of this product relies on the level. When using this product for open channel measurement, we should install a weirnotch in open channel. The certain weirnotch has a physical level-flow relation. The level sensor measures the level in weirnotch and transfers the level signal to transmitter, the transmitter calculate the flow by the level-flow relation of the corresponding weirnotch. Due to the Non-contact measurement, it can be applied in harsh environment.

The level measurement system operates by transmitting an acoustic wave signal from its level sensor towards the liquid being monitored. The reflected signal or echo is received by the sensor and processed. The time between transmission of the acoustic signal and reception of the echo is measured, and using the speed of sound through air, the distance  $H_b$  from the sensor to the water level is calculated, and then water level  $H_a$  is calculated ( $H_a = H - H_b$ ,  $H$  is the installation height of level sensor).



### Features

- Multiple outputs: 4-20mA, RS485, Pulse output, two line Relays alarm outputs and GPRS
- Display the flow rate, total flow and active level directly
- Remote transmitter installation is flexible
- Complete in specifications, and can provide a variety of applications
- Intelligent acoustic analysis technology, and make the level accuracy up to 0.3%.
- Non-contact measurement, low failure rate.

**DMDF-OP-C Flumes and Weirs Flow Meter is only applied for open channel, and consists of transmitter, level sensor and weirnotch.**

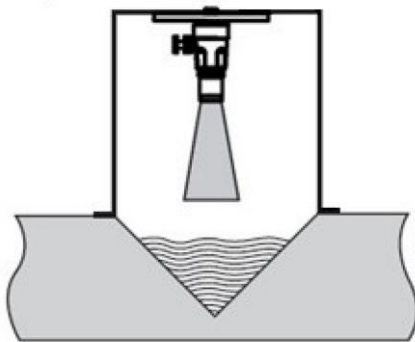
## DMDF-OP-C Flumes and Weirs Ultrasonic Flow Meters

DYNAMETERS series DMDF-OP-C Flumes and weirs ultrasonic flowmeter is designed for continuously monitoring the flow rate and total flow in open channel. It is suitable to measure flow under open channel condition of water conservancy, hydropower, environmental protection and other industrial and agricultural environment. The meter is built in EEPROM module, ensure that total flow will not be lost when power failure.

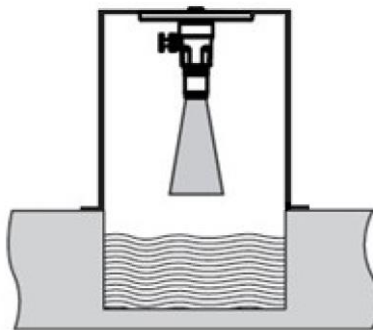


We can provide drawing of Parshall flume, and other weirs for customers to buy or construct them locally. In order to ensure the accuracy of flowmeter to be the greatest degree, and reduce the difficulty of debugging, please improve the precise of the size of matching weir notch as far as possible.

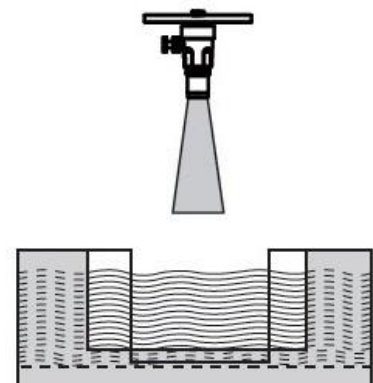
### Typical Applications



V Sharp Weir




Rectangular Sharp Weir



Parshall Flumes



## Technical Specifications

 <p>Fixed Transmitter</p>	<b>Transmitter</b>	
	Enclosure	Fixed: NEMA 4X [IP65], cast aluminum; 260Lx193Wx80H (mm), 10.2Lx7.6Wx3.2H(inch) Portable: NEMA 4X [IP65], ABS; 358Lx250Wx150H (mm), 14.1Lx9.8Wx5.9H(inch)
 <p>Portable Transmitter</p>	Power Supply	Fixed: 85~264VAC, 50/60HZ ±5%, 5VA Max; Or 18~36VDC, 2.5VA Max Portable: Rechargeable built-in lithium battery, 12VDC, 12Ah, Over 40 hours working time on a full-charge. Charger: 110/220VAC, 50/60 Hz ±5%, 3A Max
	Measuring Range	0.36m <sup>3</sup> /h~3.6x10 <sup>4</sup> m <sup>3</sup> /h
 <p>Level Sensor</p>	Flow Accuracy	1% - 5% (Decided by different weir plate)
	Temperature	-40 to +70°C
	Display	Four lines display for total flow, flow rate, level and height.
	Output	4-20mA output for flow rate RS485(ModBus) Pulse output for total flow Two line Relays outputs for alarm
	<b>Level sensor</b>	
	Measuring Level	0-3m
	Level Accuracy	0.3%
Level Dead Band	0.25m-0.5m	
Level Resolution	1mm	
Ambient Temperature	-20°C - +60°C	
Protection Grade	IP67	
Mounting Mode	Mounting by frame or flange	
Enclosure	ABS	
Remote Distance	Less than 50 meters (Remote installation)	

## Model Selection Table of DMDF-OP-C Flowmeters

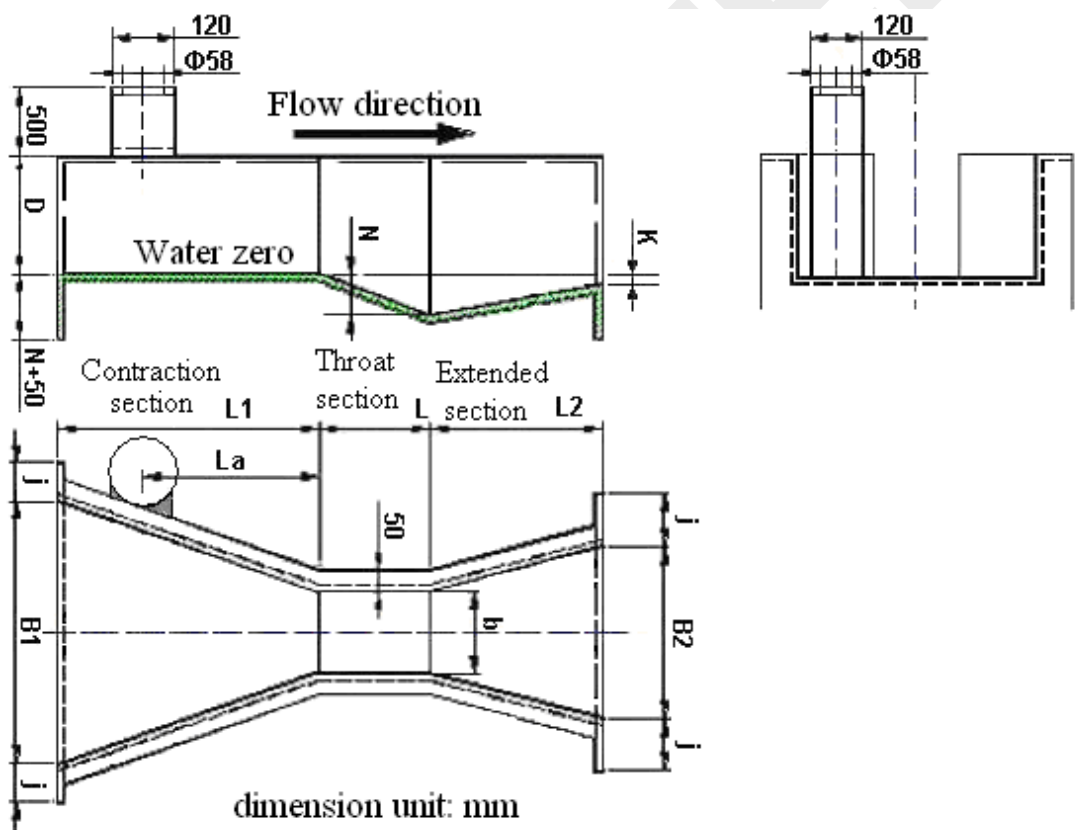
Model	DMDF-OP-C	- X	- X	-X	- X	- X	- X	- X
<b>Flow Transmitter</b>	_____							
F—Fixed								
<b>Power Supply</b>	_____							
A—110VAC								
B—220VAC								
E—24VDC								
S—Solar Supply								
<b>Output</b>	_____							
N—None								
M—4-20mA for flow rate								
R—RS485(ModBus)								
P—Pulse output for total flow								
T—Two line Relays output for alarm								
G—GPRS (Excluding software)								
(Outputs R, M and G only can be selected one)								
<b>Level sensor Enclosure</b>	_____							
S—Standard waterproof Type								
F—Acids, alkalis resistance and Anti-corrosion Type								
<b>Cable length</b>	_____							
6m—Std. 6m, max. 50m.								
<b>Weirnotch Type</b>	_____							
PN—P1-P9 Parshall flumes								
SN—S1-S5 triangular weir								
JN—J1-J5 rectangular weir								
For example: P1 means Parshall 1, if need more details, please contact us.								
<b>Weirnotch Material</b>	_____							
F—FRP (Fiber Reinforce Plastic)								
S—Stainless steel								
U—User homemade (Can buy it in local)								

**Example:** DMDF-OP-C-F-B-MTG-S-6m-P1-U means fixed open channel ultrasonic flowmeter, 220VAC power supply; 4-20mA, relays and GPRS output; level sensor is standard waterproof; 6m cable length; Weirnotch is Parshall 1 and bought in local.

<b>Model</b>	<b>D MDF-OP-C</b>	<b>-X</b>	<b>-X</b>	<b>-X</b>	<b>-X</b>	<b>-X</b>	<b>-X</b>	<b>-X</b>
<b>Flow Transmitter</b>	_____							
	P-Portable							
<b>Charging Power Supply</b>	_____							
	A-110VAC							
	B-220VAC							
<b>Output</b>	_____							
	N—None							
	M—4-20mA for flow rate							
	R—RS485(Modbus)							
	P—Pulse output for total flow							
	T—Two line Relays output for alarm							
	G—GPRS (Excluding software)							
	(Outputs R, M and G only can be selected one)							
<b>Level sensor Enclosure</b>	_____							
	S—Standard waterproof Type							
	F—Acids, alkalis resistance and Anti-corrosion Type							
<b>Cable length</b>	_____							
	8m—Std. 8m, max. 50m.							
<b>Weirnotch Type</b>	_____							
	PN—P1-P9 Parshall flumes							
	SN—S1-S5 Triangular weir							
	JN—J1-J5 Rectangular weir							
	For example: P1 means Parshall 1, if need more details, please contact us.							
<b>Weirnotch Material</b>	_____							
	F—FRP (Fiber Reinforce Plastic)							
	S—Stainless steel							
	U—User homemade (Can buy it in local)							

**Example:** DMDF-OP-C-P-B-MTG-S-8m-P1-U means portable open channel ultrasonic flowmeter, 220VAC charger; 4-20mA, relays and GPRS output; level sensor is standard waterproof; 8m cable length; Weirnotch is Parshall 1 and is bought in local.

**Parshall Flumes**



**Parshall Flumes Dimension (mm)**

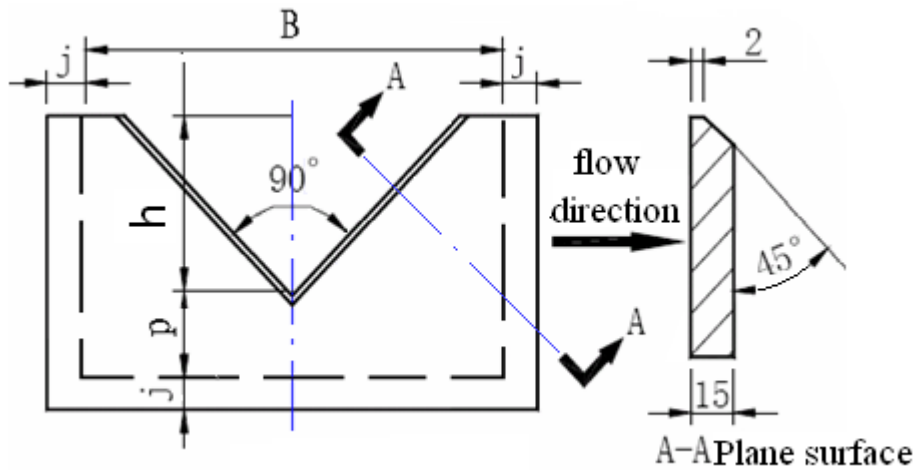


Flumes	Throat section			Contraction section			Extended section			Height	Parameter		flow (m <sup>3</sup> /h)	
	b	L	N	B1	L1	La	B2	L2	K	D	C	n	Qmin.	Qmax.
1	25	76	29	167	356	242	93	203	19	229	217.44	1.550	0.32	19.44
2	51	114	43	214	406	276	135	254	22	254	434.52	1.550	0.65	47.52
3	76	152	57	259	457	311	178	305	25	457	637.56	1.550	2.77	115.56
4	152	305	114	400	610	415	394	610	76	610	1372.32	1.580	5.4	399.6
5	228	305	114	575	864	587	381	457	76	762	1927.44	1.530	9	903.6
6	250	600	230	780	1325	900	550	920	80	800	2019.6	1.513	10.8	900
7	300	600	230	840	1350	920	600	920	80	950	2444.4	1.521	12.6	1440
8	450	600	230	1020	1425	967	750	920	80	950	3736.8	1.537	16.2	2268
9	600	600	230	1200	1500	1020	900	920	80	950	5050.8	1.548	45	3060
10	750	600	230	1380	1575	1074	1050	920	80	950	6379.2	1.557	90	3960
11	900	600	230	1560	1650	1121	1200	920	80	950	7729.2	1.565	108	4500
12	1000	600	230	1680	1705	1161	1300	920	80	1000	8629.2	1.569	108	5400
13	1200	600	230	1920	1800	1227	1500	920	80	1000	10454.4	1.577	126	7200
14	1500	600	230	2280	1950	1329	1800	920	80	1000	13204.8	1.586	162	9000
15	1800	600	230	2640	2100	1427	2100	920	80	1000	15984	1.593	288	10800
16	2100	600	230	3000	2250	1534	2400	920	80	1000	18779.2	1.599	342	12960
17	2400	600	230	3360	2400	1636	2700	920	80	1000	21614.4	1.605	360	14400

**Note:**

1. Should ensure level installation in open channel;
2. Parshall flumes centerline and channel centerline should be overlapping;
3. Open-channel should ensure the smooth drainage;
4. Flumes should be installed firmly in the channel, and closely connected to channel wall and bottom, no leaking.

## Triangular Weir



**Triangular Weir Common Specification Installation Dimensions (mm)**

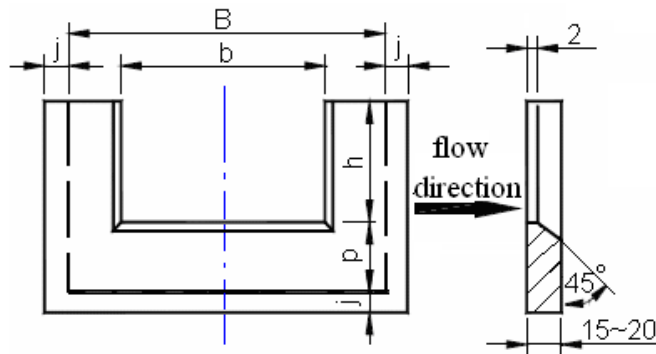
Flumes		1	2	3	4	5
Parameter						
flow (m <sup>3</sup> /h)	Q Max.	20	40	80	182	395
	Q Min.	0	0	0	0	0
B		275	360	475	660	900
h		110	144	190	264	360
p		110	144	190	264	360
For channel > width x height		>275x220	>360x288	>475x380	>660x528	>900x720
Parameter	n	2.50	2.50	2.50	2.50	2.50
	c	5100	5100	5100	5100	5100

### Note:

1. The dimensions of the triangle mouth should be accurate. The surface is flat and smooth without distortion;
2. Triangular weir centerline and channel centerline should be overlapping;
3.  $j$  is the part embedded in channel wall, the dimension is decided according to the site condition.



## Rectangular Weir



### Rectangular Weir Common Specification Installation Dimensions (mm)

Flumes		1	2	3	4	5
Parameter						
flow (m <sup>3</sup> /h)	Q Max.	414	803	1662	3332	6504
	Q Min.	0.08	0.10	0.15	0.19	0.26
B		750	850	1000	1250	1450
b		375	510	700	875	1160
h		308	387	501	683	857
p		442	463	499	567	593
For channel > width x height		>750x750	>850x850	>1000x1000	>1250x1250	>1450x1450
Parameter	n	1.50	1.50	1.50	1.50	1.50
	C	2406	3318	4669	5886	8178

#### Note:

1. The dimensions of the rectangular mouth should be accurate. The surface is flat and smooth without distortion;
2. Rectangular weir centerline and channel centerline should be overlapping;
3. j is the part embedded in channel wall, dimension is decided according to the site condition.

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