

# FLOW SYSTEM



flow measurement system in open channels and non-pressurized pipes



The flow measurement in open channels is based on the measurement of the increase in height due to the insertion of a suitable device. For partially filled pipes it is necessary to cut the pipe for the insertion of a Palmer Bowlus device. The jump due to the inserted device is measured by means of an ultrasonic level meter (without contact with the liquid) associated with a control unit for the level/flow conversion.

- Flow measurement contactless
- MODBUS RTU communication protocol
- Direct installation in the pipe or in inspection shafts (PB)
- Installation in open channel with rectangular section (BS)
- Measurements traceability via data logger via USB
- Sensors protection degree: IP68



# VLW90M

units for level measurement, open channels flow and pumps control



- 6 independent level measurements
- 2 volume measurements (obtained from the level measurement)
- Up to 8 SGM-LEKTRA MODBUS ultrasonic sensors and 2 4-20mA analog transmitters
- 1 differential level measurement
- 2 open channel flow measurements
- 1 pumps control (raising) up to 5 immersed pumps

VLW90M, a single unit suitable for different applications. Level measurements, difference between levels, open channel flow (hydraulic jump) and pumps control. Different measurement functions directly settable via the keyboard. VLW90M can be connected to ultrasonic sensors and/or to 4÷20mA level transmitters. VLW90M has been developed for the connection to 1 or 2 MODBUS sensors, but it can support up to 8 PTU, MTU, METER or KTU units if externally powered. A remarkable note is the data logger on removable pen-drive, which enables the total traceability of the measurements. It is particularly suitable for the analysis of the flow rate timing in open channel applications.

## FEATURES

- Housing material: ABS
- Mounting: Wall, pipe or DIN rail mounting
- Protection degree: IP66
- Display: LCD backlight 320x240 matrix color
- Keyboard: 5 push buttons
- Electrical connection: Internal connectors
- Working temperature: -20 ÷ +60°C
- Power supply: 85÷230Vac; 24Vdc
- Power consumption: Max. 10W
- Analog output: n.2 isolated configurable 4÷20mA
- Relays output: n.5 fully configurable relay (5A 250Vac)
- Digital output: n.2 open collector (max. 24Vdc 50mA)
- Analog input: n.2 4÷20mA
- Digital input: n.2 (max. 24Vdc 10mA)
- Digital communication: MODBUS RTU
- Datalogger: via Pen Drive USB; max.32GB (FAT32)
- Power supply for analog transmitt.: 24Vdc; 200mA max

## PRODUCT CODES

Version	
2	For connection up to Max. 8 PTU family sensors
9	Special

Relays	
C	5 Relays with change over contact (SPDT)

Power supply	
1	85÷265Vac 50÷60Hz
4	24Vdc

Output	
B	n.2 optoisolated 4÷20mA + n.2 optoisolated open collector

Field Bus	
1	MODBUS RTU
9	Special

Accessories	
A	None
U	8GB USB Pen Drive for datalogger



# PTU50-51

ultrasonic level transmitters



- Non-contact level measurements
- Suitable for liquids and granulates level measurement
- Integrated digital temperature sensor to compensate the measure
- MODBUS RTU communication protocol
- Power supply 24Vdc
- Mechanical protection: IP68
- Output: 1 4÷20mA analog output

The non intrusive system application is now preferred in the level measurements field. For this reason SGM-LEKTRA developed the PTU50, PTU51 units to best meet the "GENERAL-PURPOSE" application requests. PTU50, PTU51 units are compact sensors and have a via connector quick connection. The IP68 protection makes them suitable for external applications with direct exposure to the weather, including areas with diving hazard (up to 1m). PTU50, PTU51 are ultrasonic level transmitter, temperature-compensated and suitable for connection with MODBUS RTU.

## FEATURES

- Housing material: PP
- Mechanical installation: 1" GAS M; (PP flange DN100 opt.)
- Protection degree: IP68
- Electrical connection: IP68 male connector with 5/10/15/20/30/40/50 meters linking cable
- Pressure: up 0,5 to 1,5 bar (absolute)
- Power supply: 24Vdc
- Power consumption: 1.5W
- Measure range:  
PTU50 0.05÷1.5m; PTU51 0.3÷6m  
(In case of non perfectly reflecting surfaces, the maximum distance value will be reduced)
- Working temperature:  $-25^{\circ} \div +75^{\circ}\text{C}$
- Analog output: 4÷20mA max 750ohm
- Digital communication: MODBUS RTU
- Temperature compensation: digital in working temperature
- Accuracy:  $\pm 0,2\%$  (of the measured distance)  
not better than  $\pm 3\text{mm}$  (PTU50  $\pm 1\text{mm}$ )
- Resolution: 1mm
- Calibration: VLW601 prog. module; 4 buttons; via MODBUS RTU
- Warm-up: 30 minutes typical
- LCD Display: matrix LCD display on VLW601 module (opt.)

## PRODUCT CODES

Model	
PTU50	Range: 0,05 ÷ 1,5 meters; IP68
PTU51	Range: 0,3 ÷ 6 meters; IP68
Version	
C	Designed to be connected to VLW90M unit + standard male connector
D	4÷20mA + MODBUS output transmitter + standard male connector
E	Designed to be connected to VLW90M unit +SS316 male connector
F	4÷20mA + MODBUS output transmitter + SS316 male connector
Z	Special
Process connection / Sensor material	
0	G 1" A / PP + n. 1 1" BSP / PP fixing bolt
1	DN100 PN6 UNI 1092-1 flange / PP
9	Special
Accessories	
A	None
F	MODBUS PC communication S/W (010F105A)
H	Extension for PTU5x L=250mm in PP + DN100 flange
L	Adjustable extension for PTU5x Lmax=800mm in Al + DN100 flange in PP
T	IP68 female connector with 5 meters linking cable
U	IP68 female connector with 10 meters linking cable
V	IP68 female connector with 15 meters linking cable
W	IP68 female connector with 20 meters linking cable
Z	Special





- Direct installation in the pipe or in inspection shafts
- Ideal for flow measurements of circular pipes
- Matching to VLW90M/PTU50-51 ultrasonic transmitters
- Material: fiberglass

Palmer-Bowlus is essentially a primary device designed to increase, upstream of the restriction, the fluid head during its out flow. Upstream of the Palmer-Bowlus, the fluid head increases or decreases in relation to the fluid volume flowing on it. The head measured by a level transmitter is then used to calculate the instantaneous flow rate value. Its main use is in pipes or ducts accessible through the inspection shaft. The easy installation and the low cost of implementation are the reason for the increasing number of applications for this flow rate measure system.

## PRODUCT CODES

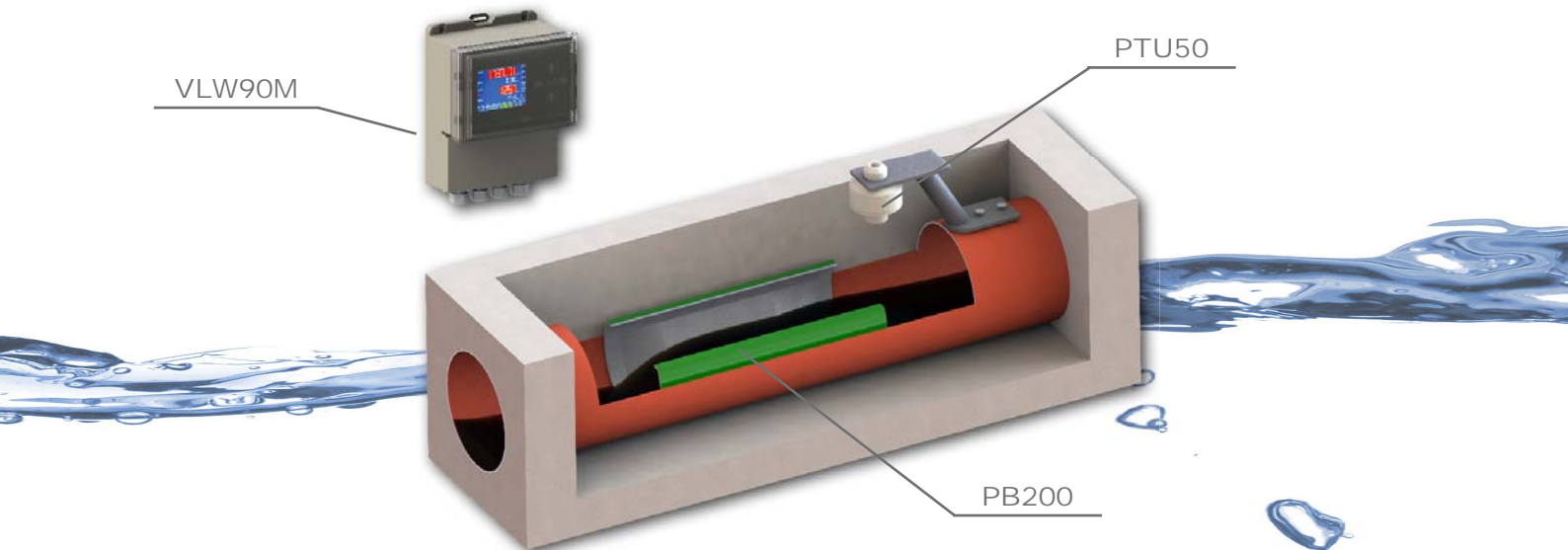
DN Pipe (mm)	
100	DN100 (4"): 0,45 ÷ 8m <sup>3</sup> /h (max. 8.9m <sup>3</sup> /h)
150	DN150 (6"): 0,68 ÷ 21m <sup>3</sup> /h (max. 22.1m <sup>3</sup> /h)
200	DN200 (8"): 1,12 ÷ 50m <sup>3</sup> /h (max. 52.8m <sup>3</sup> /h)
250	DN250 (10"): 1.29 ÷ 80m <sup>3</sup> /h (max. 82.0m <sup>3</sup> /h)
300	DN300 (12"): 2.27 ÷ 100m <sup>3</sup> /h (max. 102.4m <sup>3</sup> /h)
400	DN400 (16"): 2,23 ÷ 256m <sup>3</sup> /h (max. 262.3m <sup>3</sup> /h)
500	DN500 (20"): 5.34 ÷ 490m <sup>3</sup> /h (max. 496.3m <sup>3</sup> /h)
600	DN600 (24"): 10 ÷ 700m <sup>3</sup> /h (max. 709.4m <sup>3</sup> /h)
700	DN700 (28"): 15 ÷ 1150m <sup>3</sup> /h (max. 1177.1m <sup>3</sup> /h)
800	DN800 (32"): 18 ÷ 1800m <sup>3</sup> /h (max. 1841.7m <sup>3</sup> /h)

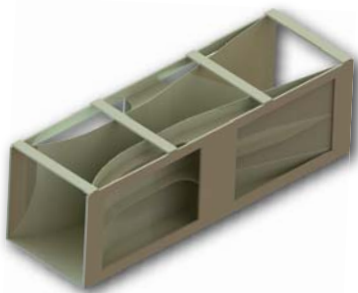
  

Construction materials	
A	Fiberglass
Z	Special

Accessories	
0	None
2	PTU50/51 holder (835A027R)
3	FLOWMETER holder (835B027R)
9	Special





- Installation in open channel with rectangular section
- Matching to VLW90M/PTU50-51 ultrasonic transmitters
- Material: polypropilene

SGM-LEKTRA has developed its own flumes family called BS... in co-operation with the Pavia University Hydraulic Division. The BS... flume is a special Venturi with flat bottom and ready to be lodged in a pre-existing rectangular channel.. The BS... flumes are suitable for use in irrigation systems, industrial waste water treatment, sewage, and in general for turbid waters; the flat bottom without protrusions has a self-cleaning effect, does not favor the debris deposit and can be easily inserted in existing rectangular ducts. The submerged flow (ratio from downstream head and upperstream head) can be well tolerated. The practical limit of submergence for all sizes is about 90%.

## PRODUCT CODES

Dimension (mm)	
<b>BS150</b>	Qmin=1m <sup>3</sup> /h - 0,28l/sec; Qmax=50m <sup>3</sup> /h - 13,8l/s Length 0,480m; width 0,15m; high 0,27m
<b>BS200</b>	Qmin=2m <sup>3</sup> /h - 0,55l/sec; Qmax=55m <sup>3</sup> /h - 15,27l/s Length 0,639m; width 0,2m; high 0,24m
<b>BS300</b>	Qmin=3m <sup>3</sup> /h - 0,83l/sec; Qmax=150m <sup>3</sup> /h - 41,6l/s Length 0,958m; width 0,3m; high 0,36m
<b>BS400</b>	Qmin=10m <sup>3</sup> /h - 2,7l/sec; Qmax=310m <sup>3</sup> /h - 86,1l/s Length 1,278m; width 0,4m; high 0,48m
<b>BS500</b>	Qmin=20m <sup>3</sup> /h - 5,5l/sec; Qmax=500m <sup>3</sup> /h - 138,8l/s Length 1,598m; width 0,5m; high 0,60m
<b>BS600</b>	Qmin=25m <sup>3</sup> /h - 7,15l/sec; Qmax=850m <sup>3</sup> /h - 236l/s Length 1,5m; width 0,6m; high 0,72m
<b>BS800</b>	Qmin=50m <sup>3</sup> /h - 13,9l/sec; Qmax=1400m <sup>3</sup> /h - 389l/s Length 2m; width 0,8m; high 0,90m
<b>BS1000</b>	Qmin=60m <sup>3</sup> /h - 16,6l/sec; Qmax=2250m <sup>3</sup> /h - 625l/s Length 2,5m; width 1m; high 1m
Construction materials	
<b>P</b>	Polypropilene PP (moplen)
<b>Z</b>	Special
Accessories	
<b>A</b>	None
<b>I</b>	Wooden crate- available to BS300 and higher
<b>Z</b>	Special

