

DUS-TT-V

Portable Ultrasonic Flowmeter

Heat meter option



FEATURES

- Non-invasive transducers
- 50-hour battery (rechargeable), back-lit 4 lines display
- Accuracy : better than 1%
- Wide bi-directional flow range of 0.01 m/s to 12 m/s
- DN20 to DN6000 mm
- 4-20 mA ~ RS485 Modbus RTU ~ RS232 ~ Relay ~ OCT
- Portable & Rugged
- Multi-pulse technology for better accuracy
- High performance integrated data logger (SD card)
- Works reliably in both clean and somewhat dirty liquids with turbidity < 10000ppm
- Heat measurement function by configuring with paired temperature sensors.



DESCRIPTION

The clamp-on ultrasonic transducers (sensors) are mounted on the external surface of the pipe for non-invasive and non-intrusive flow measurement of liquid and liquefied gasses in fully filled pipe.

Three pairs of transducers are sufficient to cover the most common pipe diameter ranges. In addition, its optional thermal energy measurement capability makes it possible to carry out a complete analysis of thermal energy usage in any facility.

This flexible and easy to use flow meter is the ideal tool for the support of service and maintenance activities. It can also be used for the control or even for the temporary replacement of permanently installed meters.

Our range of non-invasive flowmeters utilises ultra-sonic technology for the accurate flow measurement of liquids in full pipes. The portable device has been designed to meet the needs of the Service/Maintenance and Commissioning Engineer wishing to check the flow rate of liquids at dif-



APPLICATIONS

- Service and maintenance
- Replacement of defective devices
- Support of commissioning process and installation
- Performance and efficiency measurement
 - Evaluation and assessments
 - Capacity measurement of pumps
 - Monitoring of regulating valves
- Energy efficiency audits
- Water and waste water industry - hot water, cooling water, potable water, sea water etc.)
- Petrochemical industry
- Chemical industry -chlorine, alcohol, acids, thermal oils.etc
- Refrigeration and air conditioning systems
- Food , beverage and pharmaceutical industry
- Power supply- nuclear power plants, thermal & hydropower plants), heat energy boiler feed water.etc
- Metallurgy and mining applications



Débitmètre avec sondes non intrusives



Compteur d'énergie non intrusif

PRINCIPE DE MESURE

DUS-TT-V transit time flow meter utilizes two transducers that function as both ultrasonic transmitters and receivers. The transducers are clamped on the outside of a closed pipe at a specific distance from each other. The transducers can be mounted in V-method in which case the ultra sound transverses the pipe twice, or W-method in which case the ultra sound transverses the pipe four times, or in Z-method in which case the transducers are mounted on opposite sides of the pipe and the ultra sound transverses the pipe only once. The selection of mounting method depends on pipe and liquid characteristics. When the flow meter works, the two transducers transmits and receives ultrasonic signals amplified by multi beam which travels firstly downstream and then ups-tream.

Figure 1

Because ultra sound travels faster downstream than upstream, there will be a difference of time of flight(dt). When the flow is still, the time difference(dt) is zero. Therefore, as long as we know the time of flight both downstream and upstream, we can work out the time difference, and then the flow velocity (V) and flow volume (Q) via the following formula.

$$V = K \cdot D \cdot dt$$

V: Vitesse du liquide

K: Constante

D: Distance entre les deux transducteurs

dt: Différence de temps de transit

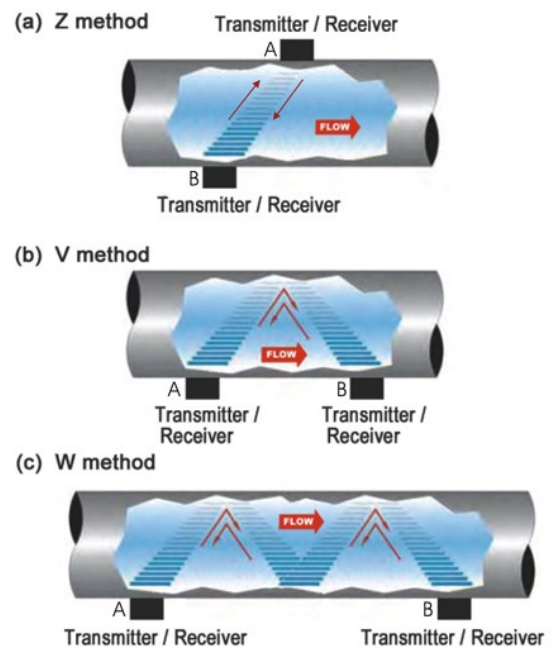


Figure 1

SPECIFICATIONS

F L O W M E T E R	Type	Portable in Pelicase suitcase
	Power supply Battery life	85-265V Autonomie 50 h operating
	Flow Resolution Repeatability	0,01 à ±12m/s bidirectionnal 0.25mm/s 0.2% of reading
	Display	LCD backlit 4 lines × 16 characters
	Operational t emperature	-20°C to +60°C
	Outputs and communications	4 ~ 20mA, Frequency, Relay, RS232C or RS485 Modbus RTU, Alarms Data logger (SD card)
	Accuracy	±1.0% >0.3 m/s ±0.003 m/s <0.3 m/s
	Protection	IP65 according to EN60529
	Rate	Rate and Velocity Display
	Totalisation	gallons, ft ³ , barrels, lbs, liters, m ³ ,kg
	Thermal Energy	GJ, kWh
	Dimensions & Weight	270X215X175mm 3 Kg
	Housing material	ABS(UL 94HB)
S E N S O R S	Liquid Types Supported	Liquids with less than 2% suspended solids Turbidity <10000p
	Protection	IP65 according to EN60529 (IP67 & IP68 in option)
	Liquid Temperature	Standard: -35 ° C ~ 85 ° C (120 ° C for a short time) Option: -35 ° C ~ 200 ° C (250 ° C for a short time)
	Cable length	5 meter in standard (other length in option)
	Transducers / Pipe diameter	2x Transducers S : DN20-50mm (non intrusive) 2x Transducers M : DN40 -1000mm (non intrusive) 2x Transducers L : DN1000-6000mm (non intrusive)
	Dimensions & Xeight	S: Size:52*28*26 mm M: Size:60*34*32 mm L: Size:80*40*42 mm
	Transducer material	Standard : Aluminium
	Heat Meter (En option)	2x Pt1000 (non intrusive) 0 à 200 ° C ~ Accuracy: ± 0,1%

PRODUCT IDENTIFICATION



Portable flowmeter DUS-TT-V



Datalogger SD CARD



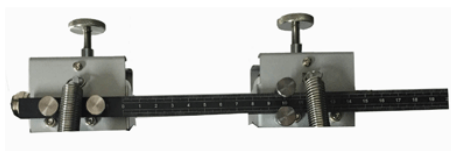
Transducers clamp-on



Sensors and Power supply Jack



PT1000 Sensors clamp-on



Mounting rail for transducers



ORDERING CODE

Reference model : **DUS-TT-V XXX X**

Portable

SORTIES

- 1 - 4-20mA (accuracy 0,1%)
- 2 - OCT
- 3 - Relay (alarme or totalisation)
- 4 - R485 Output (ModBus RTU Protocol) or RS232
- 5 - Datalogger with SD CARD
- 6 - GPRS Wireless Module

3 choice possible

Power supply

- A - 110VAC
- B - 220VAC

Transducers : **DP X X X X X**

Transducers type

- S - Small (DN20-50)
- M - Medium (DN40-1000)
- L - Large (DN1000-6000)

Mounting rail

- N - aucun
- FS - for DN20-50
- FM - for DN50-1000

Transducers temperature

- N - 35 ~ 85 °C
- H- 35 ~200 °C

Cable length

- 5 m - standard
- Xm - confirm your length

RTD : Energy meter option with non-intrusive PT1000 probes