Countum Group

SATAM

Metering Solutions

Measuring Systems

Satam measuring systems are designed for the custody transfers measurement of liquid hydrocarbons and non-corrosive liquid chemicals.

Areas of activity

- Oil depots
- Transportation of fuel and other energy source liquids
- Aircraft fuelling operations
- Marine and general vehicle fuelling operations
- Additive control, colouring, and blending of fuels

Content

ZCE5

ZCE6

EMS

DEPOT APPLICATIONS

Measuring systems for truck and railcar loading

ZCE5
ZCE6
EMS

The Satam line of metering units for depot applications is designed for truck and train tankers loading stations in a top or bottom loading configuration. The compact, vertical measuring unit enables easy installation in smaller facilities.

Sectors of application

- **Tanker trucks and railcars loading meters**
- **Preparation of bio-fuels by means of online or batch blending**
- **Measurement of white products and bio-fuels**
- **Additive injection control**

Key Points

> Low maintenance cost
Simple and robust construction with minimal moving mechanical components

> Low installation cost
Compact metering unit for installation in smaller areas

> Safe Use
Measuring system supplied "fully assembled" and tested in the factory in order to ensure maximum reliability

> Measurement stability and accuracy
Measurement accuracy guaranteed over a period of many years without any deviation in the calibration curve

> Modular Design
Extensive line of accessories to create customised measurement applications

Measuring systems for truck and railcar loading

Application			Truck and railcar loading				Truck loading
Measuring system			**ZCE5**	**ZCE6**	**ZCE6 M**	**ZCE6 T**	**EMS48**
Strainer- gas elimination device	EC42/FS24	3"/ 2"					●
	EC29	3" - 4"	●				
	EC31	3"		●	●	●	
	EC32	4"		●	●	●	
	EC39	6"		●	●	●	
Meter	ZC17-48	2"	●				●
	ZC17-80 150	3"- 4"	●	●			
	ZC17-250	6"		●			
	MFM T	2" to 4"			●		
	Turbine	3" - 4"				●	
Flow register	VR (mechanical)		●	●			●
	Equalis (electronic)		●	●	●	●	●
Multi-function valve	XAD39	2"					●
	XAD37	3"	●	●	●	●	
	XAD36	4"	●	●	●	●	
	XAD34	6"		●	●	●	

Measuring system		**ZCE5**	**ZCE6**	**ZCE6 M**	**ZCE6 T**	**EMS48**
Maximum flow rate	m^3/h	48-150	80-150-250	430	300	48
	l/mn	800-2500	1333-2500-4166	7167	4888	800
	USGPM	210-660	360-660-1100	1935	1320	210
Description		Vertical unit	Horizontal unit	Vertical or Horizontal unit		Horizontal unit
Measured parameters		Actual volume, temperature-corrected volume*, mass*, flow rate**, temperature* (*: only for electronic register version) (**: option for mechanical register version)				
Measured liquids		Petrol, premium fuels, diesel, E5 …E85, bio-diesel, ethanol, methanol, kerosene, fatty acid methyl ester, oils				
Equipment						
Strainer - Gas elimination device		50 to 450µ Filtering (270 to 40 Mesh) depending on the liquid – not necessary for ZCE6 M Gas release controlled by float and differential valve				
Meter		PD Meter		Mass Flow	Turbine	PD Meter
Temperature measurement		4-wire Pt100 (option for electronic calculator version)				
Multi-function valve		Small and large flow, authorisation, flow limitation Electrical Control for DN 2'' to 6'' and Mechanical Control for DN 2'' to 4''				
Flow register		Mechanical register with pre set*, printer*, pulser * or Equalis electronic register with display, secure archiving of transactions				
Operating Conditions						
Pressure		10 bar max.				8 bar / 10 bar upon request
Maximum viscosity		50cSt max. – Ask us about greater viscosities.				
Temperature		Ambient -40 to +60°C / Liquid -10 to +80°C Ask us about higher or lower temperatures				
Metrological performance						
Accuracy		< ± 0.15% - Option < ± 0.1% - for measurement range of 10 :1				
Repeatability		< ± 0,02%				
Temperature accuracy		† 0.5°C				
Installation						
Protection class		IP66 for electronic register version				
Custody Transfer approval		MID - CE type approval n° LNE 6184	MID/EC evaluation certificates : according to OIML R117-1			MID - CE type approval n° LNE 11123

ZCE11-48

ZCE11-80

ZCE21

DEPOT APPLICATIONS

Reception units - Transfer units
Process measuring systems

ZCE 6
ZCE11
ZCE21

Satam reception units are designed for applications that involve the delivery of hydrocarbons to oil depots and service stations made by tanker truck, tanker train, tanker ship and pipeline.
The ZCE11 is designed for the measurement of fuels delivered by gravity from the tank to an underground storage tank. Equipped with a mechanical register and a mechanical printer, it can operate in a completely autonomous mode, if necessary.
The ZCE21 has an integrated pumping unit and is supplied pre-cabled, tested and mounted on a support frame.
It allows for immediate use without requiring electrical cabling and complex hydraulic connections. It is a compact design and can be easily installed in small areas.
The ZCE 6 series are large capacity metering systems for the measurement of refined products transported through pipelines and via ship tankers.

Areas of application

- **Tanker truck unloading operation**
- **Fuel delivery to service stations**
- **Measurement of products transferred via pipeline**
- **Ship loading and unloading**

Key Points

> Low maintenance costs
Simple and robust construction with few moving mechanical components

> Available in an autonomous version (ZCE11)
Compact measurement system that operates without an electrical or pneumatic power source.

> Flexibility of installation
The measuring equipment comes completely assembled and tested.
Direct Connection to truck and storage tank tubing

> Safe to use
Automatic gas purge system to allow start-up with empty tubing
Filtering with automatic clogging detection

Reception units - Transfer units - Process measuring systems

Application		Gravity feed truck reception units		Reception units with pump for truck and railcar		Metering systems for pipelines and ships loading and unloading	
Measuring Equip. Set		**ZCE11 48**	**ZCE11 80**	**ZCE21**	**ZCE6**	**ZCE6**	**ZCE6 T ZCE6 U**
Strainer – gas elimination device	EC42/FS24 3"/2"	●					
	Air vent valve (before pump)				●		
	EC41/60			●			
	EC31 3"				●	●*	●*
	EC32 4"				●	●*	●*
	EC35		●				
	EC39 6"					●*	●*
Meter	ZC17-48	●					
	ZC17-80		●	●	●		
	ZC17-150				●	●	
	ZC17-250					●	
	Turbine/Ultrasonic						●
Flow register	VR (mechanical)	●	●	●	●	●	
	Equalis (electronic)	●	●	●	●	●	●
Multi-fonction valve	XAD39 2"						
	XAD37 3"			●		●*	●*
	XAD36 4"					●*	●*
	XAD34 6"					●*	●*
	XAD50 3"		●				
Electro-pump				●	●*		

* optional according to the application conditions

		ZCE11 48	ZCE11 80	ZCE21	ZCE6	ZCE6 T/U
Maximum flow rate	m^3/h	27	45	60	80-150-250	2500
	l/mn	450	750	1000	1333-2500-4166	41660
	USGPM	121	200	264	360-660-1100	11000
Description		Gravity group		Pump-equipped group	Horizontal group	Vertical or horizontal group
Measured parameters		Actual volume, temperature-corrected volume*, mass*, flow rate**, temperature* (* : only for electronic register version) (**:option for mechanical register version)				
Measured liquids		Petrol, premium fuels, diesel, E5 …E85, bio-diesel, ethanol, methanol, kerosene, fatty acid methyl ester, oils				
Equipment						
	Gas elimination device - Strainer	Filtering 50 to 450µ (270 to 40 Mesh) depending on the liquid– not necessary for ZCE6 U Gas release controlled by float and differential valve				
	Meter	PD Meter				Turbine/Ultrasonic
	Temperature measurement	4-wire Pt100 (option for electronic calculator version)				
	Multi-function valve	Small and large flows, authorisation, flow limitation Electrical Control for DN 2'' to 6'' Mechanical Control for DN 2'' to 4''				
	Flow register	Mechanical register, preset *, printer*, pulser *, (* : option) or Equalis electronic register with display, secure archiving of transactions				
	Electro-pump			Centrifugal	-	Centrifugal (option)
Operating Conditions						
	Maximum pressure	10 bar				
	Maximum viscosity	50cSt – Contact us about higher viscosities				
	Temperature	Ambient -40 to +60°C / Liquid -10 to +80°C – Contact us about higher and lower temperatures				
Metrological performance						
	Volume accuracy	< ± 0.15% - Option < ± 0.1% - for measurement range of 10 :1				
	Volume repeatability	< ± 0,02%				
	Temperature accuracy	† 0.5°C				
Installation	Protection class	IP 66 for electronic register version				
Custody transfer approval		MID Evaluation Certificate n° LNE 11052 (ZC17) EEC Approval Certificate n° F 06 C 1139 (ZCE21) In accordance with OIML R117-1 and API				

EMS

ZCE26

TANKER TRUCK MEASUREMENT
Onboard metering units

EMS
ZCE 26

Satam onboard meters are designed for measurement under pressure on a tanker truck and, in particular, for fuel tankers.

It can be supplied with an electronic batch controller that ensures secure archiving of transactions but also monitoring of controls associated with the loading operations such as bottom valve, pump, throttle valve control, and injection of additives. It is also equipped with an integrated PC card and ensures, as a standard feature, the transmission of data to an onboard IT system by means of a field network or a USB port.

It can also be equipped with a wireless system that provides direct transmission of the delivery transactions to a host station located in the local administrative building.

Sectors of application

- **Delivery of heating oil to individuals**
- **Delivery of fuels to service stations**
- **Delivery of fuels to worksites, ships, boiler rooms**

Key Points

> **Compact design**
Simplified installation on the fuel delivery tanker

> **Flexibility of use**
Flow computer with secure archiving of transactions and monitoring of commands associated with the loading (throttle valve, pump clutch, bottom valve, publishing of the delivery notice or invoice).

> **Easy to use**
Mechanical register and printer version with autonomous operation without an external electrical or pneumatic power source

> **Multi-product metering**
Automatic hose purge management software included into batch controller

> **Safe to use**
"Dry" gas eliminator with no need of gas removal pipe connected to the first compartment

> **Environmental protection**
Sealed system to prevent any possibility of spilling liquid if the tanker falls upside down

Onboard metering units

Application		Measuring unit for tank truck distribution		
Measuring system		**ZCE26 With "dry" gas eliminator**	**EMS24**	**EMS48**
Strainer – gas elimination device	EC42/FS24 3"/2" with no-return valve		●	●
	EC48 3"/2" with no-return valve	●		
Meter	ZC17-24 2"	●	●	
	ZC17-48 2"	●		●
Flow register	VR (mechanical)		●	●
	Equalis (electronic)	●	●	●
Multi-function valve	XAD39 mechanical		●*	●*
	XAD39 electrical	●*	●*	●*
	XAD54 pneumatic	●*	●*	●*

* optional supply

Measurement Equipment		ZCE26	EMS24 / 48
Maximum Flow rate	m^3/h	48	24/48
	l/mn	800	400/800
	USGPM	210	105/210
Description		Compact unit with "dry" gas eliminator	Compact unit
Measured parameters		Actual volume, temperature-corrected volume*, mass*, flow rate**, temperature* (* : only for electronic register version) (**:option for mechanical register version)	
Measured liquids		Petrol, premium fuels, diesel, E5 …E85, D5 …D85, bio-diesel, ethanol, methanol, kerosene, fatty acid methyl ester, oils, non-corrosive liquids	
Equipment			
Strainer		Stainless steel, horizontal basket strainer 450µ (gas/oil) or 200µ (petrol)	
Gas elimination device		Aluminium tank with no-return valve	
		• Float to control pneumatic gas elimination valve • Sealed system for environmental protection • Pressure switch for high flow rate control	• Gas release controlled by float and differential valve
Meter		PD Meter model ZC 17 24 & ZC17 48	
Temperature measurement		4-wire Pt100 (option for electronic register version)	
Multi-function valve		Low and high flow rate, authorisation, restriction of flow rate, mechanical, electrical or pneumatic control	
3-way valve		Distribution to hose on reel or to short hose	
Flow register		Mechanical register with preset*, printer*, pulser* (* : option) or Equalis electronic register with display, secure archiving of the transactions, measured distribution control (bottom valve, pump, start/stop engine)	
Operating Conditions			
Maximum pressure		8 bar / 10 bar upon request	
Maximum viscosity		50 cSt – Contact us about higher viscosities	
Temperature		Ambient -40 to +60°C / Liquid -10 to +80°C - Contact us about higher or lower temperatures	
Metrological Performance			
Volume accuracy		< ± 0.15% - Option < ± 0.1% - for measurement range 10 :1	
Volume repeatability		< ± 0,02%	
Temperature accuracy		≤ 0.5° C	
Installation			
Protection class		IP66 for electronic register version	
Custody transfer approval		MID Evaluation Certificate n° LNE 11052 (ZC17) MID CE Approval Certificate n° LNE 11123 (EMS24 and EMS48) Complies with OIML R117-1 and API	

Aircraft refuelling unit

Q200

FUEL DISTRIBUTION APPLICATIONS

Measuring unit for aircraft refuelling, Fuel distribution for seaports, worksite machinery, industrial vehicles

REFUELLING UNITS, DISPENSERS

This product line is designed for the refuelling of aircrafts, ships and motorised vehicles. It consists of a distinct range of products which are perfectly tailored to the requirements for safety, reliability and accuracy specific to these three applications.
It is available in different versions to adapt to the constraints which are specific to each application. Thus, the range can be supplied in an autonomous version with motorised thermal pump, manual pump for operating safety and volume display with a mechanical printing system.
The versions equipped with an electronic register provide a secure backup of each transaction and direct transmission to the administrative and management system.

Sectors of application

- **Fuel distribution for airplanes and helicopters**
- **Metering dispenser on floats or dockside**
- **Fuel distribution for worksite machinery and industrial vehicles**

Key Points

> **Low installation cost**
Meter equipment is provided on a frame and is fully assembled, wired and tested.

> **Reduced maintenance cost**
Simple and robust construction with minimal moving, mechanical parts

> **Available in an autonomous version**
Operates without an external electrical or pneumatic power source

> **Certified for custody transfer**
Meters certified for fuel custody transfers

> **Safe to use**
Atex certification, robust and reliable meter technology

Refuelling units, dispensers

Application			Fuel Distribution				
			Aviation		Marine	Marine and vehicles	
Equipment			Aircraft refuelling unit	Metering for aircraft refueller	Seaport refuelling unit	Fuel distribution unit	Dispenser Q200
Strainer – gas elimination device	EC42/FS24	3"/2"			●	●	
	EC30-5	2"	●			●	
	EPZ75						●
Gas eliminator head	XAD 20 150			●			
Micro-filter separator			●	●*			
Micro-filter absorber			●	●*			
Meter	MA 26-5		●			●	
	ZC17-12						●
	ZC17 24-48		●	●	●	●	
	ZC17 80-150			●			
	ZC17 250			●			
Flow register	VR (mechanical)		●	●	●	●	●
	Equalis (electronic)		●	●	●	●	
	Cecli						●
Authorization Valve			●		●*	●*	●*
Nozzle			●		●	●	●
Pump	Centrifugal or volumetric.		●*		●*	●*	●
	manual		●*		●*	●*	●*

* optional supply

Measurement Equipment		Aircraft refuelling unit	Metering for aircraft refueller	Seaport refuelling unit	Fuel distribution unit	Dispenser Q200
Maximum Flow rate	m^3/h	5-12	250	20-40	5-24	10
	l/mn	83-200	4166	333-666	83-400	166
	USGPM	22-53	1100	88-176	22-105	44
Description		Small aircraft and helicopter re-fuelling	Hardware to be integrated into an aircraft re-fueller	Fishing-boat re-fueller	Fuel distribution for vehicles, pleasure boats, worksite machinery	
Measured parameters		Actual volume, temperature-corrected volume* (* : for versions with electronic register)				
Measured liquids		Jet A1, avgas		Diesel, premium fuel, bio-diesel, methanol, bio-fuels		
Equipment						
	Strainer	Micro-filter and water separator		200µm for diesel - 50 to 100µm for premium fuel		
	Gas elimination device	included				
	Meter	Positive displacement meter				
	Temperature measurement	Pt100 sensor (optional for electronic register version)				
	Authorization valve	Electronic or manual valve				
	Flow register	Mechanical (VR) or electronic (Equalis)				Electronic Q200IE Mechanical Q200IM Mechanical Q200LC Terminal Q200ID
	Pump equipment	Electro-pump	-	Electro-pump	Electro-pump or Thermal group or Manual pump	Electro-pump and emergency manual pump
	Delivery hose	15 to 30 m	-	20 to 40 m	3.5 to 15 m	6 m
	Retraction system	Manual Motorised Back spring	-	Manual Motorised Back spring		-
	Grounding system	Roller 15 m	-	Optional		-
	Nozzle	Aviation nozzle with manual shutoff		Nozzle with manual shutoff	Nozzle with manual or auto. shutoff	Nozzle with automatic shutoff
Operating Conditions	Maximum pressure	10 bar – 2 bar with MA 26				
	Temperature	-40 to +60°C (liquid and ambient)				
Metrological Performance	Volume accuracy	< ± 0.15% - Option < ± 0.1% - for a 10:1 measurement range				
	Volume repeatability	< ± 0.02%				
Installation						
	Protection class	IP65/66 for the electronic register version				
Custody transfer approval		MID Evaluation Certificate n° LNE 11052 (ZC17) /Conform to OIML R117-1 and API				

Equalis L

Equalis MPC

Electronic registers for measuring systems

EQUALIS

The “Equalis register” product line is cutting edge technology that meets all the requirements for automation and management of loading systems.
These flow computers were developed by Satam engineers. They have taken advantage of their strong in-field experience to incorporate solutions for all installation, use, safety and maintenance constraints associated with the measurement of hydrocarbons in oil depots.
Custody transfer certified, they are compatible with the entire range of volumetric and mass meters used in the industry. Open systems equipped with state-of-the-art communication systems, the Equalis registers can interface directly with most terminal automation and data management systems.

In order to ensure optimal effectiveness, the Equalis line is available in two complementary models.

Equalis is designed for fixed station applications for the monitoring of loading and unloading of tanker trucks, railcars or ships. Its modular design is based on a CAN data bus which links the set of gantry registers to a module located in the control room. This ensures the configuration backup of registers as well as secure archiving of all transactions.

Equalis is also suitable for mobile metering applications. Its compact design is a cost effective solution for on-board units and skids metering systems.

Fields of Application

- **Tanker truck and rail car loading and off loading**
- **Bio-fuels online and batch blending**
- **Custody measurement of fuels and bio-fuels**
- **Delivery of heating oil to individuals**
- **Delivery of fuels to service stations**
- **Delivery of fuels to worksites, ships, boiler rooms.**

Key Points

> Modularity
Open system with direct communication to SCADA system

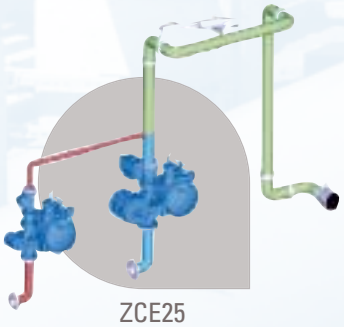
> User-friendly
Direct access to pre-programmed functions
Screen to review data stored transactions

> Compact
Easy installation on tank trucks and compact assemblies
Reduced installation cost

Electronic register for measuring systems

Models	EQUALIS L	EQUALIS MPC
Description	Electronic register, batch controller to be field mounted	
Functions	Control of dosing valves and blending valve Additive injection control Management of safety devices Calculation of corrected volume and mass Secured back-up of metrological data transactions	
	Control of inputs and outputs associated with the loading arm	Control of functions associated with the fuel distribution on truck (motor, pump clutch, valve, drain valve, bottom valve)
Metrology		
Meter Inputs	PD Meter, mass flow meter, ultrasonic meter, turbine meter	
Temperature Input	Pt 100	Pt100 or 4-20mA transmitter
Density, pressure inputs	Optional	4-20 mA transmitter
Corrected volume/mass calculation	Fuels: ASTM 54B table - Ethanol, methyl ester, bio-diesel : ASTM 54C table - Lubrication oils: ASTM 54D table - LPG: CFBP tables* and ASTM API as per NF M80 17 (* only for Equalis L)	
Equipment		
User Interface	Graphics screen 240x128 pixels back-lit	240 x 320 pixels, graphics, back-lit
	Volume resolution : 999999 points Numeric keyboard with pre-programmed buttons, cycle start/stop pushbutton	
Enclosure	Aluminium base with epoxy coating	Impact-modified, UV resistant polycarbonate
Data storage	Capacity 500 000 transactions	Capacity 50 000 transactions
Inputs/Outputs		
Meter inputs	1 or 2 inputs dual-pulse with flow direction	
Pt100 inputs	1 or 2 inputs (4 wire Pt100)	
Current inputs	-	2 inputs for pressure and temperature measurements
Digital inputs	15 inputs for grounding system, arm position, overfilling detection, additive volume, vapour recovery 1 input for emergency stop	8 inputs for grounding system, arm position, overfilling system, additive volume, vapour recovery, emergency stop
Digital outputs	10 relay outputs (250V, 8A) for valve commands, pump, additive injection, alarm 3 open-collector outputs for additive injection commands, alarms	6 relay outputs (250V, 6A) for valve commands, pump, additive injection, alarm, additive injection control
Pulse outputs	2 volume outputs for seal parcel delivery & additive injection	
Current output	1 output for digital valve control	-
Databus	2 ports RS 485 MODBUS 1 Ethernet port– TCP IP 1 RS232 port for printer 2 USB ports for data transfer via memory stick	2 RS 485 ports 1 CAN bus 2.0b port 1 RS232 port for printer 1 radio frequency port (optional) for wireless data transmission
Operating conditions		
Ambient temperature	-25 to + 55°C	-40 to + 60°C
Installation		
Ex approval	EEx ia IIb T4 / EEx d IIb T6	EEX ib [iq] II AT4
Protection class	IP66	
Power suppy	230 VAC or 24VDC	
Custody transfer approval	MID-CE Evaluation Certificate n° LNE 6854 Conform to OIML R117-1	Current MID Evaluation Certificate pending Conform to OIMLR117-1

MPA



ZCE25

Fuel blending and additive injection

Equablend ZCE25 MPA

The Equablend product line is suitable to complete the Satam fuel measurement activity by ensuring the monitoring of blending and additive-injection applications.

Preparation of biofuels – Online and batch blending
Equablend ZCE25 is a complete measurement group dedicated for blending control and custody transfer measurements of final product and mixed products. Its state-of-the-art electronic register provides exceptional flexibility.

Additive injection and fuel colouring
The Equablend MPA injector controller is capable of controlling from 1 to 16 Equablend AIM injection modules operating simultaneously or individually. The MPA can accept pulses from the most basic mechanical meter to the most complex flow computer.

Application			**Fuel blending Biofuel preparation**	**Additive Injection Fuel colouring**
Equipment			**Equablend ZCE25**	**Equablend MPA**
Measuring system	EMS 24 /48		•	
	ZCE5		•	
	EMS 48		•	
Multi-function valve	XAD37	3''	•	
	XAD36	4''	•	
	XAD34	6''		
Digital valve	XAD56	2'' à 4''	•	
Injection module	AIM			•
Controller	Equalis L		•	
	MPA			•

Equablend		**ZCE 25**	**MPA**
Max. flow rate	m^3/h - l/mn - USGPM	150 - 2500 - 660	0.6 - 10 - 2,64
Description		Blending and measuring system	Additive injection control system
Measured parameters		Actual & corrected volume, mass	Additive volume
Measured medium		Petrol, premium fuels, diesel, biofuels	Additives, colorants, markers
Equipment	Measuring system	2 measuring system in parallel ZCE 5 or/and EMS	Additive Injection Manifold (AIM)
	Strainer – air eliminator	Included	75 µm min
	Meter	PD Meter ZC 17 24 / 48 /80 / 150	Oval gear meter
	Temperature measurement	4-wire Pt 100 (option)	-
	Valves	Multifunction valve & digital control valve	Solenoid valve with ruby seat
	Digital register	Equalis L	MPA
Operating conditions	Pressure	10 bar max	20 bar max
	Max viscosity	50cSt Contact us about higher viscosities	
	Temperature	-10 to +80°C (liquid)	-25 to +60°C (liquid)
Metrological performance	Accuracy	< ± 0.15% Option < ± 0.1%	< 0.5% @ 3cSt
Custody transfer approval		MID CE Approval Certificate n° LNE 11123 (EMS) & n°LNE 6184(ZCE5)	-

Master meter for instrument calibration

ZCV17

The Satam "Master Meter" product range is dedicated to periodic calibration of custody transfer measuring equipment.
The ZCV17 is a working standard that can be used regularly to check and calibrate measuring instruments or measuring systems. With minimal dimensions, it can easily be moved to several different sites without the requirement for lifting tools. Equipped with an Equalis electronic register that ensures linearization of measurements, it can be used with liquids of various viscosities without no loss of accuracy.

ZCV17 MASTER METER

Application		Meter calibration by master meter	
Equipment		**ZCV 17 IM**	**ZCV 17 IE**
PD Meter	ZC17 24 to 250 2'' to 6''	●	●
Volume indication	Mechanical register VR	●	
	Digital register Equalis MPC		●
Flow rate indication	ROF	●	
	Digital register Equalis MPC	●	●
Temperature indication	Local Indication	●*	●*
	PT100 Transmitter		●*
Pressure indication	Local Indication	●*	●*
ZCV mounted on trolley		●*	●*

* optional supply

Model		24	48	80	150	250
Flow rate	Maximum Flow rate: (m3/h)	24	48	80	150	250
	l/mn	400	800	1333	2500	4166
	USGPM	105	210	360	660	1100
Description		Master meter with volume totalizer, adjustment system and flow rate indicator				
Measured parameters		Actual volume, corrected volume (only with IE version)				
Connection	Type	Flanges–TODO connection (optional)				
	Diameter	2''	2''	3''	4''	6''
Equipment		PD Meter ZC17 24 to ZC17 - 250				
	Indicating device	Mechanical register version		Electronic register version Equalis MPC		
	Adjustment as per viscosity of liquid measured	Manual calculation from calibration curves		Linearization curves per integrated product		
	Volume indication	Actual volume		Actual volume and temperature corrected volume		
	Flow rate indication	ROF module		Integrated into Equalis MPC		
Optional equipment						
	Temperature measurement	Local Indication		Local Indication / Pt100		
	Pressure measurement	Local Indication				
	Drainage equipment	manual drainage pump with purge valves - 2 release valves				
	Connection	2 x 3m tubing with flange or dry couplings				
	Trolley	Unit mounted on chassis with 4 pivoting wheels				
Operating conditions	Maximum pressure	8 bar - 10 bar upon request		10 bar		
	Maximum viscosity	50 cSt				
	Temperature	-40 to +60°C (liquid and ambient)				
Metrological performance	Volume accuracy	0.1 % v.m.		< ± 0.05% v.m. with linearization		
	Volume repeatability	< ± 0.02% v.m.				
	Temperature accuracy	< ± 0.1%				
	Calibration certificate linearization curve	Calibration Certificate conform to OIML R117				
Installation	Electrical power supply	No (self-powered device)		24 VDC or 230 VAC		

Measuring systems for the oil transport chain

	Aircraft refuelling p.8	Seaport refuelling p.8	EMS 24-48 p.2/6	Equablend MPA p.12	Equablend ZCE25 p.12	Fuel distribution unit p.8	Q200 Dispenser p.8	ZCE 5 p.2	ZCE 6 p.2/4	ZCE 6 M p.2/4	ZCE 6 T p.2/4	ZCE 6 U p.2/4	ZCE 11 48 p.4	ZCE 11 80 p.4	ZCE 21 p.4	ZCE 26 p.6
 Pipeline product transfer metering									●	●	●	●				
 Process metering									●	●	●	●				
 Ship Loading									●	●	●	●				
 Biofuels preparation online or batch blending					●											
 Fuel additive injection and colouring				●												
 Reception units for depots									●	●	●	●	●	●	●	
 Tanker truck loading station			●	●	●			●	●	●	●	●			●	●

		Aircraft refuelling p.8	Seaport refuelling p.8	EMS 24-48 p.2/6	Equablend MPA p.12	Equablend ZCE25 p.12	Fuel distribution unit p.8	0200 Dispenser p.8	ZCE 5 p.2	ZCE 6 p.2/4	ZCE 6 M p.2/4	ZCE 6 T p.2/4	ZCE 6 U p.2/4	ZCE 11 48 p.4	ZCE 11 80 p.4	ZCE 21 p.4	ZCE 26 p.6
	Measuring unit for tanker truck distribution			●			●										●
	Fuel delivery to service station													●	●		
	Aircraft refuelling	●															
	Ship refuelling		●				●										
	Vehicle and worksite machinery refuelling						●	●									

●: ideally suited

Countum Group

SATAM

Metering Solutions

World wide Location Chart

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As Satam regularly improves its products to ever better respond to evolving market and regulatory requirements, it reserves the right to change any of the specifications of these products, and this without prior notice.

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