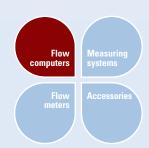**Countum Group**

SATAM

Metering Solutions

Flow computer for on board metering

Equalis S for trucks

The Satam Equalis S is a powerful and versatile field batch controller designed for aircraft refueling vehicles and tank trucks. It meets all the requirements in terms of security and accuracy for installation fuels transport vehicles. Custody transfer certified, Equalis S is compatible with the entire range of volumetric meters used in this industrial sector. It can directly interface with most cab mounted data capture systems.

Flow computers · **Measuring systems** · **Flow meters** · **Accessories**

Field of applications

- Delivery of oil and fuel via tank truck
- Delivery of aviation fuels to aircrafts via fuel transport vehicles

Very open communication skills

Communications features

Communication via serial link, Ethernet and USB port

Analog and binary inputs and outputs

Configurable printing of parameters and transactions

Data transfer to Host system

Large number of supported protocols

Can be directly linked to cab mounted data capture systems

Compatible with most of existing measuring devices

An optimized verification tool

Diagnosis elements and the operating data continuously stored by the management software during the delivery.

Possibility to extract data via USB port or serial link

Remote access for periodic verification and diagnosis

User-friendly operations

Man-Machine Interface with direct and local access to pre-programmed functions such as meter calibration, meter selection, ticket printing, emergency stop...

On screen browsing of stored transactions

Duplication of volume or mass display

Key points

Metrology

Weight and Measures Custody transfer approved

Approved measurements of volume, temperature and density

Calculation of base volume, mass, rate of flow

Transactions in operating volume, base volume or mass

Multipoint calibration for an optimized measurement accuracy

Possibility to connect of one or two meters to the Equalis

Transactions and data storage

High capacity of transactions storage (more then 60 000 transactions)

Complete recording of events and operating status

Secured back-up of stored data

Compact design for easy installation

Because of its simplified design, Equalis S field batch controller has a drastically reduced installation cost. Its compact housing allows easy installation on aircraft refuelers, tank trucks and compact assemblies.

Comprehensive automation and control functions

Management of overfilling sensors and security devices

Direct management of additives injection

Management of engine start-up and acceleration

Seal parcel delivery compatible

Pneumatic manifold control

Management and control of defueling operation

Control of purge valves and pipeline air blasting

Side to side transfert

Technical Data - Flow computer

Model	EQUALIS S
Aplication	Electronic register, batch controller to be field mounted
Functions	Calculation of corrected volume and mass Secured back-up of metrological data transactions Management of safety devices (grounding, dead man…) Control of loading valves and blending valves Additive injection control
	Control of functions associated with the fuel distribution on truck (motor, pump clutch, valve, drain valve, bottom valve, overfill probe)
Metrology — Meter Inputs	PD Meter, mass flow meter, ultrasonic meter, turbine meter
Temperature Inputs	Pt 100
Density input	RS485 Modbus or 4-20 mA transmitter
Pressure input	4-20 mA transmitter
Corrected volume/mass calculation	Calculation of base volume at 15°C, 20°C and 30°C Fuels : ASTM 54B & 60B tables - Ethanol, methyl ester, bio-diesel : ASTM 54C & 60C tables Lubrication oils: ASTM 54D & 60D table - LPG: ASTM API as per NF M80 17
Equipment — User interface module	Inputs: meter, temperature (Pt100), current (4-20 mA), binary Display : graphic screen, 240 x 128 pixels, backlight, volume resolution : 999999 points Display repeater*: graphic screen, 240 x 128 pixels, backlight, 999999 points Keyboard: numeric, antivandalism design Push buttons: pre-programmed, start/stop cycle
Transaction module	Power supply, relays outputs, databus
Enclosures	User interface module : aluminum base with epoxy coating Transaction module (ATEX version) : aluminum Transaction module (non ATEX version) : polycarbonate
Data storage	60 000 transactions
Associated software package	Maintenance and configuration tool
Inputs/Outputs — Meter inputs	1 or 2 inputs dual-pulse with flow direction Intrinsic safety or NAMUR*
Temperature inputs	1 or 2* inputs (4-wire Pt100)
Current inputs	1 or 2* for pressure, temperature and density measurements (in preparation)
Digital inputs	15 inputs (intrinsic safety) and 2* input (NAMUR) for grounding system, overfilling system, additive volume, emergency stop
Digital outputs	10 (+10*) relays (250V, 10A) for valve commands, pump, alarm, additive injection control
Pulse outputs	1 volume output for seal parcel delivery & additive injection control
Current output	1 for rate of flow
Databus	1 RS232 port : printer 1 RS232 port: communication with data capture system 1 RS485 or Ethernet TCP/IP port (upon request): communication with data capture system and measurements inputs 1 USB port: data extration and software updating Supported protocols : Modbus, Rubis/Saphir, IFSF (in preparation)
Operating conditions — Ambient temperature	Standard : -20 °C to +55 °C - Option : -40 °C to +55 °C (compact version)
Certification for potentially explosive atmospheres	ATEX and IEC Ex Zone 1 – II 2 (1) 1 G
Protection class	IP66
Power supply	19 to 36 VDC - 12VDC in preparation
Custody transfer approval	Evaluation certificate EC/MID Type compliance certificate OIML R117-1 API compliance : MPMS Chapters 4-1, 4-4, 5-1, 5-2, 5-4, 7, 11-1, 12-2

Dimensions and weight	Height x width x deepth (mm)	Weight
Remote version — User interface module	216 x 285 x 71 (without cable gland)	5.0 kg
Transactions module (ATEX version)	260 x 359 x 69 (without cable gland)	5.7 kg
Transactions module (non ATEX version)	278 x350 x115 (without cable gland)	8.5 kg
Compact version (all-in-one flow computer)	278 x350 x192 (without cable gland)	16.0 kg

*Option