



Signal Conditioning Unit



The AUTOFLUG Signal Conditioning Units (SCU) are designed and manufactured in various configurations for Fuel Quantity Measurement Systems (FQMS) and Fuel Management Systems (FMS).

The SCU contains different electronic circuitry designed in accordance with RTCA/DO-254 to satisfy all functional and environmental requirements:

- Processing and Communication Unit for Fuel Quantity Computation and I/O interfaces
- Sensor Processing Unit for Fuel Gauge Probe and Fuel Compensator interfaces
- Level Sensor Processing for independent high and low level sensing and warning
- Pump and Valve Driver Unit to control pumps and valves for Fuel Management
- Power Supply Unit for generation, protection and isolation of all kinds of power used by the SCU and sensors
- EMI Protection/Filter Unit for I/O filtering and separation of EMI-dirty and EMI-clean areas

The AUTOFLUG SCU provides fuel quantity data of the fuel tanks via common interfaces and discrete level status information. Acceleration and flight attitude information is received via e.g. an ARINC 429 serial digital interface.

The AUTOFLUG SCU process Fuel Sensor signals and generate analogue and/or digital outputs (ARINC 429, RS232, CAN, TTP, MIL STD 1553B, etc.) as required.

AUTOFLUG Signal Conditioning Units perform the following major functions:

- Fuel Quantity Measurement
 - Fuel type compensation
 - Fuel temperature compensation
 - Flight attitude (acceleration) compensation
 - Fuel quantity calculation
 - Filtering to suppress fuel sloshing effects
- Fuel Level Sensing (independent)
 - Fuel high level detection
 - Fuel low level detection
- Fuel Management
 - Pump control, e.g. fuel supply and balancing
 - Valve control, e.g. refuelling, fuel transfer
- System monitoring and built-in test

The AUTOFLUG Signal Conditioning Unit software is of modular design and can be tailored to a specific application with minimized programming effort. The software is developed and verified in accordance with RTCA/DO-178B.



Signal Conditioning Unit

Mechanical Interface

Mounting and
Dimensions

wall, floor rack mounted versions, dependent on application

Electrical Interface

Input Voltage
Output Voltage to Sensors
I/O Interfaces

28 VDC
13 – 15 VDC (with current limiting/overcurrent protection)
AUTOFLUG provides a wide range of discrete and digital interfaces
such as ARINC 429, RS232, CAN, TTP, MIL-STD-1553B, etc.

Temperature Range

Operational
Storage

- 40 °C to + 71 °C
- 55 °C to + 85 °C

Weight

dependent on application

Qualification

AUTOFLUG Fuel Quantity Measurement Systems are qualified in accordance with RTCA/DO-160 and/or MIL-STD-810 and/or MIL-STD-461.

Fuel System Capability

AUTOFLUG supplies Signal Conditioning Units for fuel measurement and control systems. AUTOFLUG performs fuel tank studies based on customer supplied CAD data in order to define the required quantity and position of Fuel Gauge Transmitters and the associated height vs. volume tables for fuel volume and fuel mass calculation performed by the Signal Conditioning Unit.