FS 210 Fuel Sensor

Ruggedized fuel sensor for industrial cold chain monitoring solutions.

The ORBCOMM® FS 210 fuel sensor accurately monitors fuel volume, providing valuable operational and management data to reefer monitoring applications. The fuel sensor can immediately detect and report rapid loss of fuel to provide a significant deterrent against fuel theft and pilferage. The sensor is installed in the reefer fuel tank and typical installation is completed in less than an hour with an easy-to-use configuration tool.

Compliance

In combination with the reefer monitoring applications, the FS 210 helps ensure regulatory compliance by alerting operations staff to low-fuel situations so they can guide drivers to refuel, ensuring the reefer continues running and keeps cargo at the required temperatures.

Efficiency

By monitoring reefer fleet fuel consumption, operations staff can detect when a specific reefer is consuming too much fuel and call that unit out for maintenance to improve fuel efficiency. The FS 210 can read fuel level even when the reefer is off, so re-fuelling can occur before the reefer is started and the load is ready to move, avoiding delays. Companies can also avoid high call-out charges and delays associated to bleeding fuel lines that have drawn air into the system due to an empty tank.

Security

The fuel sensor allows the reefer monitoring application to track rapid fuel loss and provides alerts when fuel theft is suspected.

Integration

The FS 210 Fuel Sensor is integrated with the following:

Devices:
RT 6000 (Dual mode or cellular)
PT 6000 (Dual mode or cellular)

Applications:
ReeferTrak
CargoWatch

Installation

Less than 1-hour installation time. Easy-to-use configuration tool to configure type and size of tank.

Integrated into ORBCOMM cold chain monitoring applications

Ruggedized, versatile, and accurate

Supports both Carrier and ThermoKing reefers

Supports multiple tank shapes and capacities

Quick and easy to Install

Electrical

- Supply voltage, VCC: 9 – 16 VDC
- Supply current, ICC: 8 - 14 mA

Connections

- Terminal connection: Delphi Standard 150 series 3-pin connector
- Tank fitting: ½" NPT

Mechanical

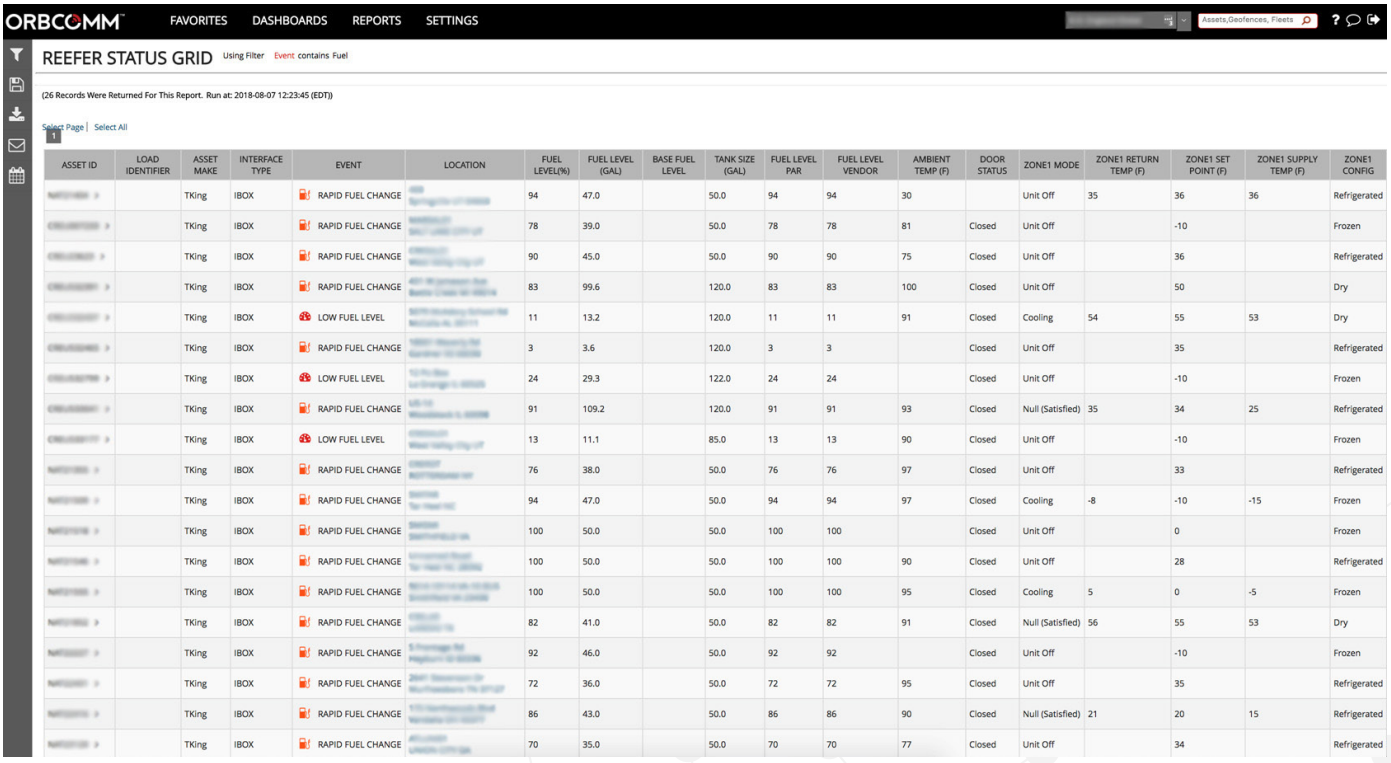
- Compatible with fuel tanks between 25 to 500 gallons in various shapes (cylindrical, square, other) Construction
  - » *Single "clam shell" design.*
  - » *Accommodate tanks of up to maximum diameter/ depth of 22".*
- Dimensions
  - » *5" x 1.75" diameter*
  - » *Flexible tubing: 13" to 22" depending on tank size*

Environmental

- Operating temperature: -40 °C to 70 °C
- Storage temperature: -40 °C to 85 °C
- SAE J1455 (temperature cycle, temperature shock, humidity, random vibration, salt spray , immersion/ ingress protection)
- IP67
- MIL-STD 810G (random vibration, shock)
- IEC 60529 (immersion/ingress protection)

Compliance

- Zone1 (Class I, Division 1)
- North America
  - » *CSA 61010-1 – Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use*
  - » *CSA 60079-0 – Electrical Apparatus for Explosive Gas Atmospheres; General requirements*
  - » *CSA 60079-15 – Electrical Apparatus for Explosive Gas Atmospheres; Equipment protection by type of protection "n"*
  - » *ISA 12-12-01 – Non-Incendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous Locations*
  - » *CSA 22.2 No.213 – Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations*



ASSET ID	LOAD IDENTIFIER	ASSET MAKE	INTERFACE TYPE	EVENT	LOCATION	FUEL LEVEL(%)	FUEL LEVEL (GAL)	BASE FUEL LEVEL	TANK SIZE (GAL)	FUEL LEVEL PAR	FUEL LEVEL VENDOR	AMBIENT TEMP (F)	DOOR STATUS	ZONE1 MODE	ZONE1 RETURN TEMP (F)	ZONE1 SET POINT (F)	ZONE1 SUPPLY TEMP (F)	ZONE1 CONFIG
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	94	47.0		50.0	94	94	30		Unit Off	35	36	36	Refrigerated
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	78	39.0		50.0	78	78	81	Closed	Unit Off		-10		Frozen
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	90	45.0		50.0	90	90	75	Closed	Unit Off		36		Refrigerated
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	83	99.6		120.0	83	83	100	Closed	Unit Off		50		Dry
[redacted]		TKing	IBOX	LOW FUEL LEVEL	[redacted]	11	13.2		120.0	11	11	91	Closed	Cooling	54	55	53	Dry
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	3	3.6		120.0	3	3		Closed	Unit Off		35		Refrigerated
[redacted]		TKing	IBOX	LOW FUEL LEVEL	[redacted]	24	29.3		122.0	24	24		Closed	Unit Off		-10		Frozen
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	91	109.2		120.0	91	91	93	Closed	Null (Satisfied)	35	34	25	Refrigerated
[redacted]		TKing	IBOX	LOW FUEL LEVEL	[redacted]	13	11.1		85.0	13	13	90	Closed	Unit Off		-10		Frozen
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	76	38.0		50.0	76	76	97	Closed	Unit Off		33		Refrigerated
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	94	47.0		50.0	94	94	97	Closed	Cooling	-8	-10	-15	Frozen
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	100	50.0		50.0	100	100		Closed	Unit Off		0		Frozen
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	100	50.0		50.0	100	100	90	Closed	Unit Off		28		Refrigerated
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	100	50.0		50.0	100	100	95	Closed	Cooling	5	0	-5	Frozen
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	82	41.0		50.0	82	82	91	Closed	Null (Satisfied)	56	55	53	Dry
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	92	46.0		50.0	92	92		Closed	Unit Off		-10		Frozen
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	72	36.0		50.0	72	72	95	Closed	Unit Off		35		Refrigerated
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	86	43.0		50.0	86	86	90	Closed	Null (Satisfied)	21	20	15	Refrigerated
[redacted]		TKing	IBOX	RAPID FUEL CHANGE	[redacted]	70	35.0		50.0	70	70	77	Closed	Unit Off		34		Refrigerated

CALL: 1.800.ORBCOMM **EMAIL: SALES@ORBCOMM.COM** **VISIT: WWW.ORBCOMM.COM**

ORBCOMM is a global leader and innovator in the industrial Internet ofl Things, providing solutions that connect businesses to their assets to deliver increased visibility and operational efficiency. The company offers a broad set of asset monitoring and control solutions, including seamless satellite and cellular connectivity, unique hardware and powerful applications, all backed by end-to-end customer support, from installation to deployment to customer care. ORBCOMM has a diverse customer base including premier OEMs, solutions customers and channel partners spanning transportation, supply chain, warehousing and inventory, heavy equipment, maritime, natural resources, and government. For more information, visit www.orbcomm.com.