TANKER TRUCK FLOW MEASUREMENT FOR CRYOGENIC SERVICE

The ICE, Integrated Cryogenic Electronics is Hoffer’s most advanced truck-mounted cryogenic flow metering system. The design culminates from 50 years of Hoffer experience with cryogenic fluid measurement. The full color graphical display and electronic touch screen ensure user-friendly operator interface and provide direct access to all measurement and configuration parameters. A typical system includes ICE, a turbine flow meter, temperature sensor, optional pressure sensor and optional printer.
ICE System Overview

The front panel includes a 4.3" full color graphical display and 3 rugged panel sealed pushbuttons. The back panel includes environmentally sealed military style electrical connectors for all standard and optional I/O connections. The rugged aluminum enclosure is equipped with shock mounts or optional U-type mounting bracket.

ICE user interface is organized into 4 distinct modes of operation:

- **Delivery Mode (above)**
- **Maintenance Mode**
- **Turbine Calibration Mode**
- **System Configuration Mode**

### Maintenance Mode

- **Print Config**
- **Print Trip Log**
- **Clear Trip Log**
- **Clear Acc Total**
- **Audit Trail**
- **Trailer: 12345678**
  - **Pump Hours:** 153.2
  - **12/22/2011::10:32**

### System Configuration Mode

- **Default Temp:** 83.2
- **Default Press:** 200.0
- **Total Decimal:** 0.00
- **Fluid:** LIN
- **Display T/O(sec):** 600
- **Language:** English

### Turbine Calibration Mode

- **Serial No:** 123456789
- **Meter Size (inch):** 2.00
- **Average K:** 200.000
- **K Method:** Average
- **K-factor Table**
  - Min Flow (gpm): 15.0
  - Max Flow (gpm): 225.0
  - Min Delivery (lb): 220.0
  - Next Cal: 12/22/2012
  - ICE SN: 123456789

### The Numeric Keypad

ICE is equipped with a touch screen feature that allows easy entry of data parameters by authorized personnel. A numeric keypad simplifies the entry of numeric data for password entry or programming.

1234

1 2 3 <<
4 5 6 /
7 8 9 :
. 0 – E
### Features
- **NEW!** Hoffer ICE Cryogenic Truck systems now offers a mobile app. Truck deliveries will be accessible with Hoffer’s ICE Mobile App using Bluetooth LE technology.
- **NEW!** Optional rear panel for use with Sponsler, Inc. or Turbines, Inc. existing systems. Cables not included.
- 4.3" Color LCD with touch screen.
- Pulse security/dual coil.
- Non-volatile memory for configuration parameters and delivery data.
- Real time clock.
- Supports measurement of several predefined liquids: LIN, LOX, LAR, CO2 Single Pipe, CO2 Dual Pipe, LN2O and LNG.
- Password protection to prevent unauthorized configuration of changes.
- Optional Bluetooth wireless interface.
- 1000 OHM RTD input for temp compensation.
- RS232 port for printer.
- Optional 4-20mA input for pressure compensation.
- 0.2 to 5000 Hz frequency input range.
- Trip log containing 100 previous deliveries.
- Audit trail log of last 1000 configuration changes.
- Compatible with Hoffer SY14B proving system.
- Supports English and Metric units.
- Selectable language options for user interface and printed tickets include: English, Spanish, French, German, Polish, Czech and Portuguese.

### Ordering Information

<table>
<thead>
<tr>
<th>Model ICE</th>
<th>(A)</th>
<th>(B)</th>
<th>(C)</th>
<th>(D)</th>
<th>(E)</th>
<th>(F)</th>
<th>(G)</th>
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<tbody>
<tr>
<td>A. SERVICE</td>
<td>(1T)</td>
<td>LIN/LOX/LAR - TEMP/COMP</td>
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<td>(6T)</td>
<td>LNG - TEMPERATURE COMP</td>
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<td></td>
<td>(V)</td>
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<td></td>
<td>(P)</td>
<td>FOR PRESSURE COMP. (4-20MA) ADD &quot;P&quot; TO ANY ABOVE OPTION, SPECIFY PRESSURE RANGE. INCLUDES PRESSURE TRANSMITTER CLEANED FOR OXYGEN SERVICE AND 6&quot; CABLE.</td>
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<td>B. PUMP INTERLOCK</td>
<td>(PI)</td>
<td>PUMP INTERLOCK</td>
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<td>THE TEMPERATURE COMPENSATION OPTION MUST BE USED WITH THE PUMP INTERLOCK OPTION.</td>
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<td>C. PULSE SECURITY OPTION</td>
<td>(PS)</td>
<td>QUADRATURE INPUT PER ISO6551 LEVEL B COMPLIANT REQUIRES SECOND MAG COIL ON TURBINE</td>
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<td>INSERT &quot;X&quot; IF NONE OF THE ABOVE APPLY</td>
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<td>D. POWER</td>
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<td>12 VDC STANDARD</td>
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<td>(BLE)</td>
<td>BLUELE TO LOW ENERGY. FOR USE WITH SMART PHONE APPS.</td>
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<td>OPTIONAL REAR PANEL-USED WITH SPONSLER AND TURBINES, INC.™ CABLES. NO CABLES INCLUDED.</td>
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### Technical Information

**Dimensions:**
4.35"L X 6.54"W X 4.125"H  
11.05cm X 16.61cm X 10.47cm

**Fully Assembled Dimensions with Connectors and Shock Mounts:**
5.6"L X 6.54"W X 4.875"H  
14.224cm X 16.61cm X 12.38cm

**Weight:** 4.2 lbs., 1.90 Kg

**Power Supply:** 10-30 Volts DC

**Operating Temperature:**
-20°C to 70°C (-4°F to +158°F)  
-40°C to 70°C w/ opt. heater (-40°F to +158°F)

**Storage Temperature Range:**
-30°C to +70°C  
(-40°F to +158°F)

**Relative Humidity:**
0-95% Non-condensing

**Options:**
- Optional Explosion-proof enclosure.
- Optional U-type Mounting Bracket
- Pump Interlock
- Bluetooth Wireless Interface

**Approvals:**
- Design Approvals, Standards and Regulatory Compliance
  - CE
  - Emissions EN55022 & FCC Part 15
  - Immunity EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-6
  - MIL-STD810G (Shock and Vibration)
  - NCWM Publication 14
  - NIST Handbook 44
  - National & State Legal for Trade
    - Australia — NMI
    - Brazil — INMETRO
    - China — OIML R81
    - European Union — MID
    - India—W & M
    - Indonesia & Malaysia — SIRIM
    - South Africa — SABS (Pending)
    - United States — NTEP & CTEP
    - ISO 17025
    - Accredited

**Cryogenic Field Calibration Services**
System Components

ICE shown with Standard Flat mount with shocks

Pressure Sensors

Temperature Sensors

Sample Delivery Ticket

Hoffer ICE
Cryogenic Mobile App

Turbine Flow Meters

Optional Rear Panel (ORP)- Option to convert existing Sponsler and Turbines, Inc.™ systems

Printer Options:

P-6

P-8

Turbine Flow Meters and Installation Kits

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www.hfferflow.com email: info@hfferflow.com

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