The ICE, Integrated Cryogenic Electronics is Hoffer’s most advanced truck-mounted cryogenic flow metering system. The design culminates from over 40 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 articulated bracket.

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

- **Delivery Mode**
- **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
- **Date**: 12/22/2011
- **Time**: 10:32

### Turbine Calibration Mode

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

### System Configuration Mode

- **Default Temp**: 83.2
- **Default Press**: 200.0
- **Total Decimal**: 0.00
- **Fluid**: LIN
- **Display T/O(sec)**: 600
- **Language**: English
- **Temp Units**: K
- **Press Units**: psia
- **Del Units**: gallons
- **Compensation**: T&P
- **Pump Delay(min)**: 1.0
- **Change Password**

### 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.
### 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 swivel 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

### Features
- 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
  - German
  - Czech
  - Portuguese
  - French
  - Polish
  - Spanish

### Ordering Information

<table>
<thead>
<tr>
<th>Model ICE</th>
<th>(A)</th>
<th>(B)</th>
<th>(C)</th>
<th>(D)</th>
<th>(E)</th>
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<tbody>
<tr>
<td>A. SERVICE</td>
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<td>(TT) LIN/LOX/LAR-TEMP/COMP</td>
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<td>(2T) CO2-TEMP/COMP</td>
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<td>(3T) NITROUS OXIDE-TEMP/COMP</td>
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<td>(6T) LNG-TEMPERATURE COMP</td>
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<td>(V) TRUE VOLUMETRIC</td>
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<td>(P) FOR PRESSURE COMP. (4-20MA) ADD “P” TO ANY ABOVE OPTION. SPECIFY PRESSURE RANGE, INCLUDES PRESSURE TRANSMITTER CLEANED FOR OXYGEN SERVICE AND 6’ CABLE.</td>
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<td>B. 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>
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<td>(PS) QUADRATURE INPUT PER ISO8551 LEVEL B COMPLIANT REQUIRE SECONDS MAG COIL ON TURBINE</td>
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<td>(X) INSERT “X” IF NONE OF THE ABOVE APPLY</td>
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<td>(T2) 12 VDC STANDARD</td>
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<td>(24) 24 VDC OPTION</td>
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<td>(AC) 110/220 VAC POWER INPUT, EXTERNAL</td>
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<td>(H) HEATER - STANDARD</td>
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<td>F. MOUNTING</td>
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<td>(S) STANDARD - FLAT MOUNT WITH SHOCKS</td>
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<td>(SM) SHOCK MOUNTED ARTICULATED BRACKET</td>
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<td>(E) EX AND NEMA ENCLOSURES.</td>
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<td>(ND) NEMA 4X ENCLOSURE - FOR WALL MOUNTING</td>
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<td>G. SPECIAL FEATURES</td>
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<td>(SW) POWER SWITCH (WEATHER-PROOF)</td>
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<td>(CT) CUSTOM TICKETS</td>
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<td>(BTA) AIR CABLE (BLUETOOTH)</td>
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<td>(SP) ANY SPECIAL FEATURES THAT ARE NOT COVERED IN THE MODEL NUMBER. USE A WRITTEN DESCRIPTION OF THE –SP.</td>
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</table>
System Components

ICE shown on optional Articulated Bracket

Pressure Sensors

Temperature Sensors

Sample Delivery Ticket

P-6

P-8

P-9

Turbine Flow Meters and Installation Kits

Printer Options:

TRAILER NUMBER: 12345678
PRODUCT NAME: LIN
DELIVERY: 876543.21
UNITS: LITERS @ NBP
DATE: 01/13/2014
TIME: 13:55
DELIVERY NUMBER: 3
ACCUMULATED TOTAL: 109876543210

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.