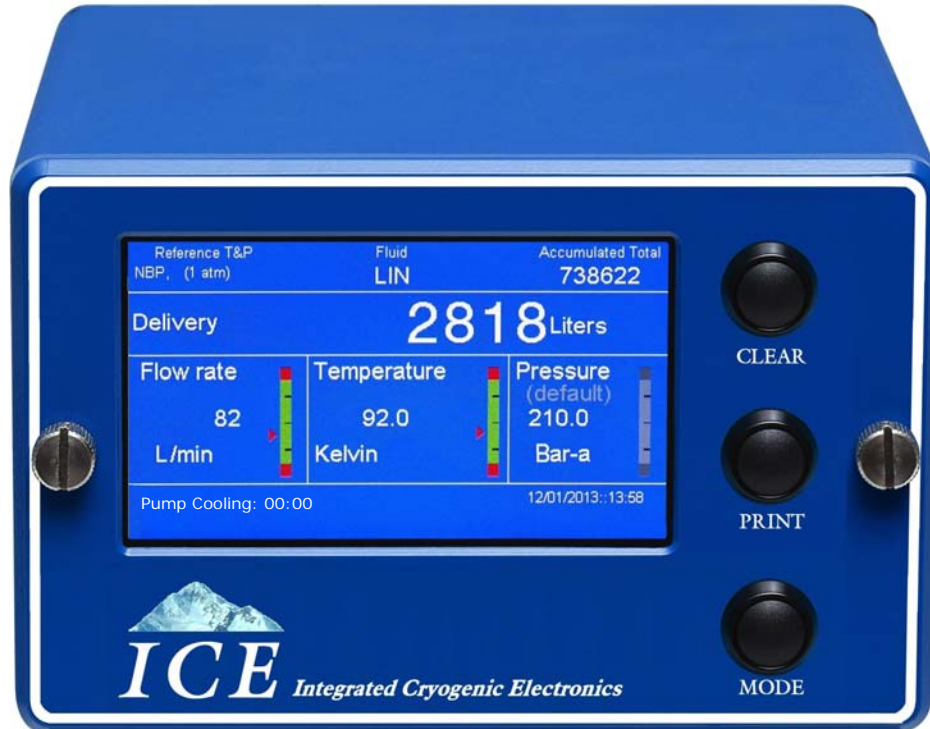


# ICE

# INTEGRATED CRYOGENIC ELECTRONICS

Product Bulletin ICE-107H



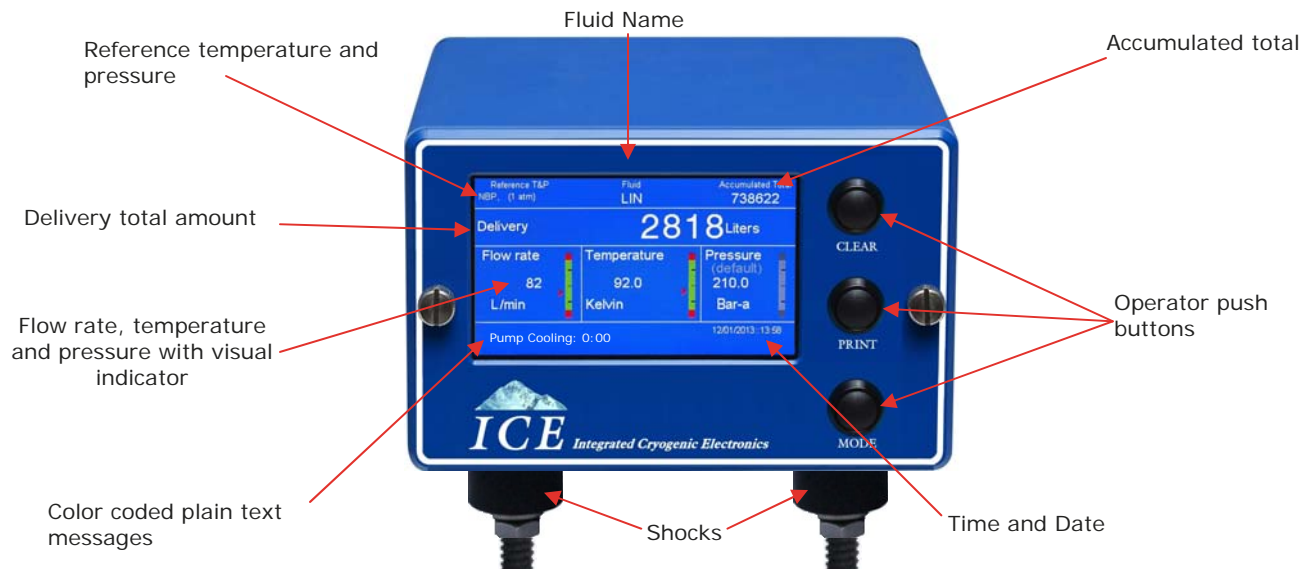
## TANKER TRUCK FLOW MEASUREMENT FOR CRYOGENIC SERVICE

The *ICE, Integrated Cryogenic Electronics* is Hoffer's most advanced truck-mounted cryogenic flow metering system. The design culminates from 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.

Perfecting Measurement™

# HOFFER

WWW.HOFFERFLOW.COM



**ICE Front Panel In Delivery Mode**

## 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 (above)    Maintenance Mode    Turbine Calibration Mode    System Configuration Mode**

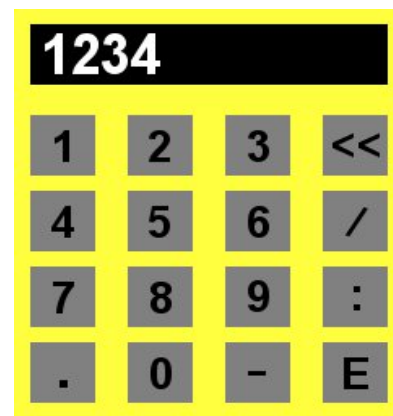
Maintenance Mode	
Print Config	Coil Ohms: 1081.8
Print Trip Log	Coil Hertz: 100.0
Clear Trip Log	RTD Counts: 539
Clear Acc Total	Internal Temp (F): 75.5
Audit Trail	Pump Hours: 153.2
Trailer: 12345678	12/22/2011::10:32

Turbine Calibration Mode	
Serial No: 123456789	Meter Size (inch): 2.00
Average K: 200.000	Min Flow (gpm): 15.0
K Method: Average	Max Flow (gpm): 225.0
K-factor Table	Min Delivery (lb): 220.0
Last Cal: 12/22/2011	
Next Cal: 12/22/2012	ICE SN: 123456789

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



## 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	

## 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

## Ordering Information

Model ICE	(A)	(B)	(C)	(D)	(E)	(F)	(G)
<b>A. SERVICE</b> (1T) LIN/LOX/LAR -TEMP/COMP (2T) CO2 -TEMP/COMP (3T) NITROUS OXIDE -TEMP/COMP (6T) LNG -TEMPERATURE COMP (V) TRUE VOLUMETRIC (P) FOR PRESSURE COMP. (4-20MA) ADD "P" TO ANY ABOVE OPTION, SPECIFY PRESSURE RANGE. IN- CLUDES PRESSURE TRANSMITTER CLEANED FOR OXYGEN SERVICE AND 6' CABLE.							
<b>B. PUMP INTERLOCK</b> (PI) PUMP INTERLOCK  THE TEMPERATURE COMPENSATION OPTION MUST BE USED WITH THE PUMP INTERLOCK OPTION.							
<b>C. PULSE SECURITY OPTION</b> (PS) QUADRATURE INPUT PER ISO6551 LEVEL B COMPLIANT REQUIRES SECOND MAG COIL ON TURBINE (X) INSERT "X" IF NONE OF THE ABOVE APPLY							
<b>D. POWER</b> (12) 12 VDC STANDARD (24) 24 VDC OPTION (AC) 110/220 VAC POWER INPUT, EXTERNAL							
<b>E. HEATERS</b> (H) HEATER - STANDARD							
<b>F. MOUNTING</b> (S) STANDARD - FLAT MOUNT WITH SHOCKS (SM) SHOCK MOUNTED ARTICULATED BRACKET (E) EX AND NEMA ENCLOSURES. (ND) NEMA 4X ENCLOSURE - FOR WALL MOUNTING							
<b>G. SPECIAL FEATURES</b> (SW) POWER SWITCH (WEATHER-PROOF) (CT) CUSTOM TICKETS (BTA) AIR CABLE (BLUETOOTH) (SP) ANY SPECIAL FEATURES THAT ARE NOT COVERED IN THE MODEL NUMBER. USE A WRITTEN DESCRIPTION OF THE -SP. (X) NONE							

# System Components

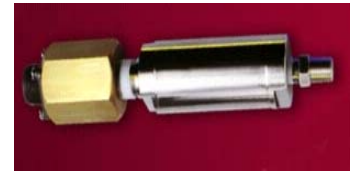
Turbine Flow Meters



ICE shown on optional Articulated Bracket



Pressure Sensors



Provers



Temperature Sensors



Printer Options:

P-6



P-8



P-9



Sample Delivery Ticket

METER DELIVERY TICKET

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

Turbine Flow Meters and Installation Kits



**HOFFER FLOW CONTROLS, INC.**  
 107 Kitty Hawk Lane, P. O. Box 2145, Elizabeth City, NC 27906-2145  
 800-628-4584 252-331-1997 FAX 252-331-2886  
 www.hofferflow.com email: info@hofferflow.com

*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.*



CORPORATE SUSTAINING MEMBER  
 CRYOGENIC SOCIETY OF AMERICA INC.

The quality system covering the design, manufacture and testing of our products is certified to International Standard ISO 9001.

