

ICE

INTEGRATED CRYOGENIC ELECTRONICS

Product Bulletin ICE-107D



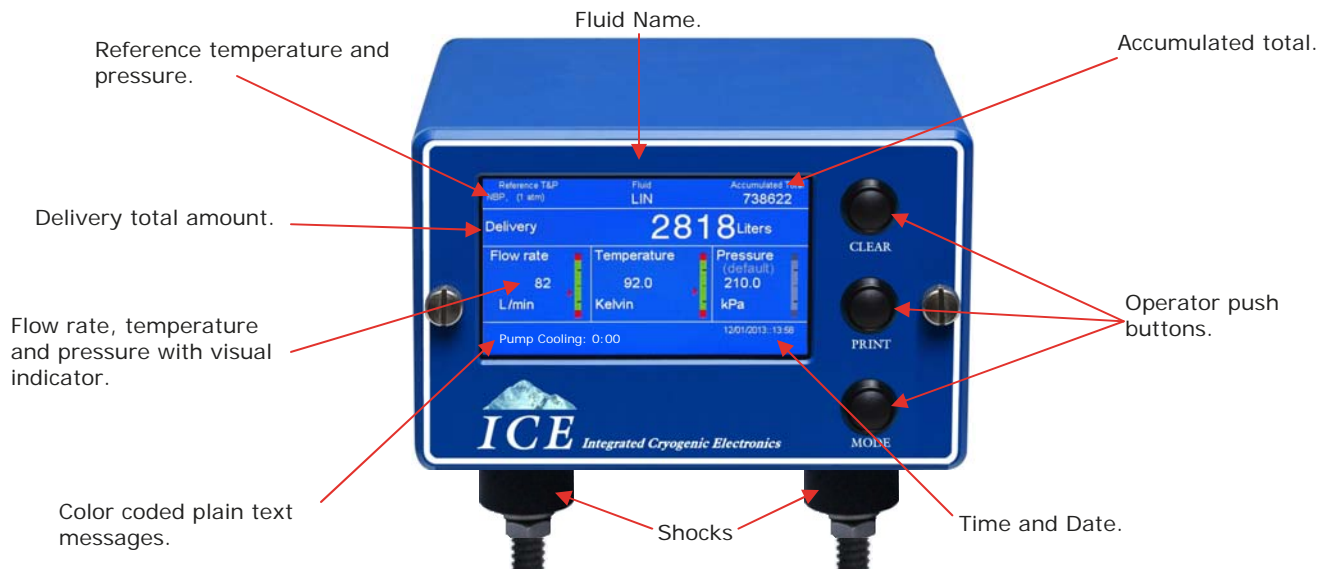
TANKER TRUCK FLOW MEASUREMENT FOR CRYOGENIC SERVICE

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**

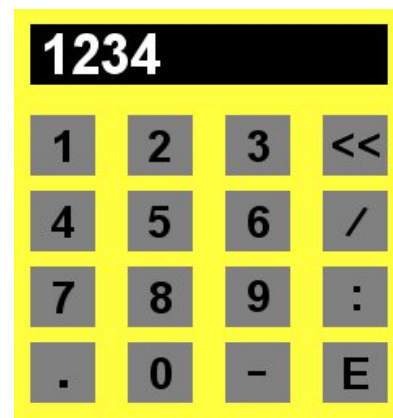
Maintenance Mode	
Print Config	Coil Ohms: 1081.8
Print Trip Log	Coil Hertz: 100.0
Clear Trip Log	RTD Counts: 539
Clear Acc Total	Internal Temp (F): 75.5
Audit Trail	Pump Hours: 153.2
Trailer: 12345678	12/22/2011::10:32

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	ICE SN: 123456789
Next Cal: 12/22/2012	

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.

Ordering Information

Model ICE	(A)	(B)	(C)	(D)	(E)	(F)	(G)
A. SERVICE							
(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 60 CABLE.							
B. PUMP INTERLOCK							
(PI) PUMP INTERLOCK							
THE TEMPERATURE COMPENSATION OPTION MUST BE USED WITH THE PUMP INTERLOCK OPTION. NOT AVAILABLE WITH PULSE SECURITY OPTION.							
C. PULSE SECURITY OPTION							
(PS) QUADRATURE INPUT PER ISO6551 LEVEL B COMPLIANT REQUIRES SECOND MAG COIL ON TURBINE							
(X) INSERT "X" IF NONE OF THE ABOVE APPLY							
D. POWER							
(12) 12 VDC STANDARD							
(24) 24 VDC OPTION							
(AC) 110/220 VAC POWER INPUT, EXTERNAL							
E. HEATERS							
(H) HEATER - REQUIRED FOR BELOW 32° F							
(X) NONE							
F. MOUNTING							
(S) STANDARD - FLAT MOUNT WITH SHOCKS							
(SM) SHOCK MOUNTED ARTICULATED BRACKET							
(E) EX AND NEMA ENCLOSURES.							
(ND) NEMA 4X ENCLOSURE - FOR WALL MOUNTING							
G. SPECIAL FEATURES							
(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.							

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
Heaters
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
United States — NTEP & CTEP

System Components

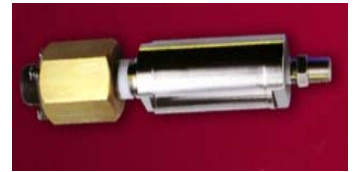
Turbine Flow Meters



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.

