



ICE

INTEGRATED CRYOGENIC ELECTRONICS

Product Bulletin ICE-107B



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

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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

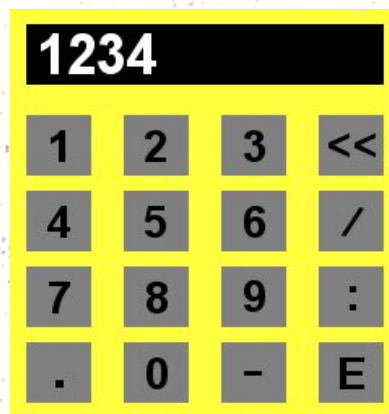
Serial No: 123456789	Meter Size (inch): 2.00
Average K: 200.000	Min Flow 15.0
K Method: Average	Max Flow 225.0
K-factor Table	Min Delivery 220.0 (lb):
Last Cal: 12/22/2011	
Next Cal: 12/22/2012	ICE SN: 123456789

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.

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 6' 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 DEGREES F.							
(X) NONE.							
F. MOUNTING							
(S) STANDARD— FLAT MOUNT WITH SHOCKS							
(SM) SHOCK MOUNTED ARTICULATED BRACKET							
(E) EX AND NEMA ENCLOSURES.							
G. SPECIAL FEATURES							
(SG) MODE KEY GUARD							
(\$W) POWER SWITCH (WEATHER-PROOF)							
(CT) CUSTOM TICKETS							
(BTA) AIR CABLE (BLUETOOTH)							
(BTB) SOCKET 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:

NIST Handbook 44

SIRIM (MALAYSIA)

NCWM Publication 14

OIML R81

NMI (AUSTRALIA) - pending

CE

MID

Emissions EN55022 & FCC PART 15

Immunity EN61000-4-2, EN61000-4-3,
EN61000-4-4, EN61000-4-6

Shock and Vibration

MIL-STD810G

NTEP (National Type Evaluation Program)

System Components

Turbine Flow Meters



ICE shown on optional Articulated Bracket



Pressure Sensors



Temperature Sensors



Provers

Printer Options



P-6



P-8



P-9

METER DELIVERY TICKET

TRAILER NUMBER: 12345678
PRODUCT NAME: LIN
DELIVERY: 876543.21
UNITS: GALLONS @ NBP
DATE: 01/13/2010
TIME: 13:55
DELIVERY NUMBER: 3

ACCUMULATED TOTAL:
109876543210

Sample Delivery Ticket



Turbine Flow Meters and Installation Kits

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

