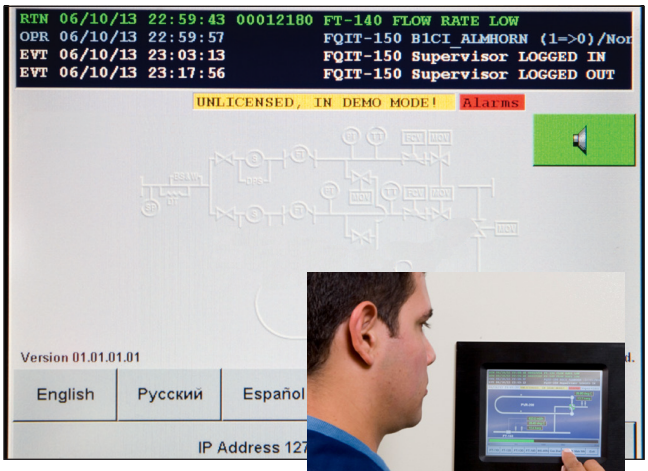
Flow Management Computer

Bulletin SS09042 Issue/Rev. 0.2 (09/10)

Flow Management Computer

Guidant's Flow Management Computer is a flexible, extremely robust, user programmable and configurable microprocessor-based instrument designed to continuously monitor and control flow of liquid and gas petroleum products.

The flow management computer can act as a high integrity, stand-alone flow computer or as a powerful building block for integration into a supervisory computer control system. The instrument includes interfaces for remote communications, temperature, pressure and density monitoring, process loop control, report printing, and the capability of providing analog and digital outputs to remote equipment.



Main Screen Display

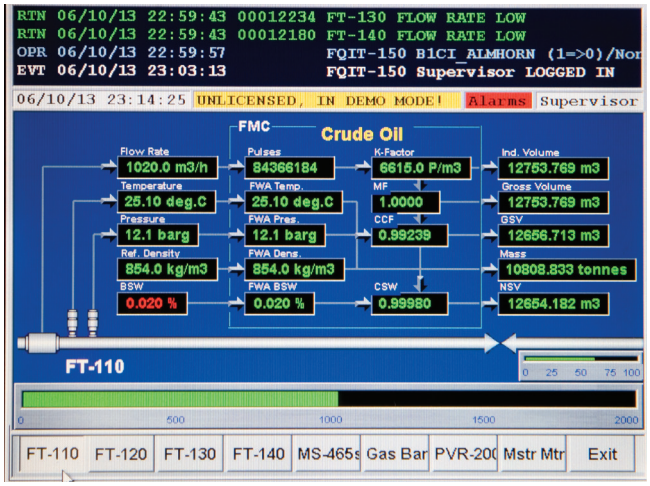
Touch Screen Interface

Features

- Flexible and scalable Field Input/Output Blocks (FIOBs)
- Graphical and menu driven Human Machine Interface (HMI) via touch screen; unprecedented in the flow computer market
- Multi-language, user configurable text for displays, alarms/events and reports (English, Russian, Spanish, Portuguese, and French)
- All major current and historical standards for API and AGA (Including measurement of Ethanol per Brazilian specifications)
- Automatic proving support for displacement and master meter provers with selectable automatic meter factor acceptance
- Advanced Statistical Control of the meter factor
- Multi-manufacturer frequency densitometer inputs
- User-configurable Modbus Master interface – can be used to collect data from any Modbus Slave device (Gas Chromatographs, Ultrasonic Meters, other flow computers, etc.)
- Twelve (12) point meter factor linearization
- User-configurable Modbus Slave interface to host or SCADA systems, or any Modbus Master device
- Full PI (Proportion/Integral) process loop control functions, with selectable secondary variable for use in override situations (i.e. back pressure control); bumpless transfer between modes
- Standard report templates, as well as user-configurable report templates. Archival of 100 records of each report type
- Intuitive, efficient and secure file transfer to/from the via standard USB flash drive or to a shared network folder (Archived reports, alarms, configurations, etc.)
- Standard as well as user-configurable menu system
- Graphic trending of process variables
- Onscreen viewable reports
- Graphic alarm display screen
- Integrated Meter Run Motor Operated Valve (MOV) Control and Sequencing (Online/Offline, Onprove/Offprove)
- Optional Remote HMI (RHMI) Software for remote monitoring and control
- Flow computer Dual and Triple Redundancy support
- Condition-Based Monitoring (CBM) of all process variables

Applications

- Pipeline Deliveries
- Batch Deliveries
- Proving (Displacement/Master Meter)
- Easily manages most fiscal-type displacement and inference meters (e.g. PD, conventional turbine, helical turbine, ultrasonic, orifice)
- Gas and Liquid: One software version supports applications for gas or liquid measurement systems, as well as all measurement units (U.S. Customary or Metric), or any combination of liquid measurement units. A single can support mixed fluid types per meter run (i.e. two meter runs measure liquid products, two meter runs measure gas products, within the same flow management computer.)



Meter Stream Display

Technical Specifications

Process Input/Output

Maximum **6 dual-pulse meter runs**, with a combination of Analog Input/Output modules and RTD input modules, with Master Meter, Bidirectional prover, and frequency densitom-eter inputs.

Human Machine Interface

8 inch, panel mounted touch screen interface

16-bit color 800 x 600 screen resolution

32-bit CPU processing power

Panel Cutout Dimensions:

8.69" (221mm) W,
7.25" (184mm) H

Weight:

3.9 lb (1.77 kg)

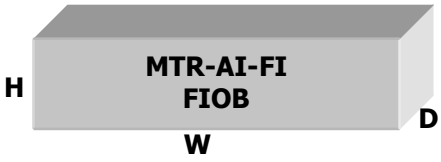
Field Input/Output Block (FIOB) (MTR-AI-FI)

Dimensions:

14.76" (375 mm) W
4.75" (120.65 mm) H
3.5" (89 mm) D

Weight:

3.9 lb (1.77 kg)



Electrical/Environment Specifications

Field Input/Output Block (FIOB)

Supply Voltage: 24 VDC, +20/-15%

Typical Current Consumption (meter run): 24VDC, 3A max

Operating Temperature 0°C to 55°C (32°F to 131°F)

Storage Temperature -25°C to 75°C (-13°F to 167°F)

Relative Humidity 75% Non-Condensing

Suitable for installation in ordinary locations.

HMI Display Unit

Supply Voltage: 24 VDC Current Consumption: 5A max

Operating Temperature 0°C to 50°C (32°F to 122°F)

Storage Temperature -25°C to 55°C (-13°F to 131°F)

Relative Humidity 75% on average, 85% occasionally; no condensation

Communications Connectivity

1 EIA-232 DB9 serial port, up 115k Baud 1 EIA-422/485 DB9 serial port, up 115k Baud

2 Ethernet RJ45 ports, 10/100 Mbit/s

User configurable Modbus Master/Slave interface via serial or Ethernet. (Modbus ASCII/RTU/TCP)

Input/Output Specifications

Frequency Module

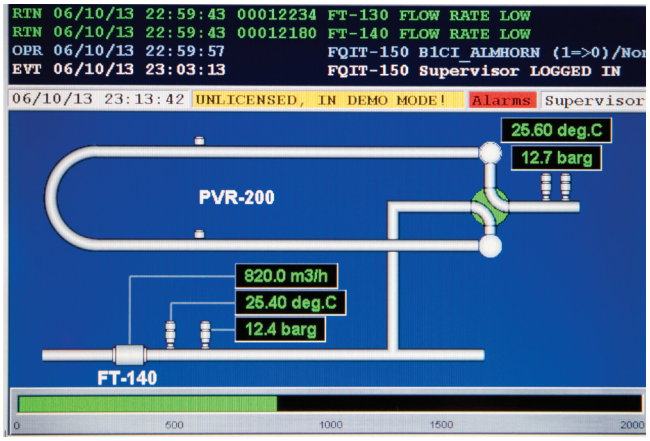
Meter Pulse/Density Inputs

Type: High-speed, edge-triggered, voltage-sourcing pulse transmitter input (optically-isolated), according to DIN EN 61131-2 Type 1.

Meter pulse fidelity checking and correction per IP Level A or Level B.

24VDC Pulse Inputs

Frequency Range: 0 to 10.0 kHz



Prover Display

FIOB (Field Input/Output Block)

Pulse Outputs

Type: Optically-isolated, 24VDC, 6 watt solid state output

Pulse width/output type software configurable

Analog Inputs

Single-ended signal inputs for the connection of either voltage or current signals.

Measurement ranges: 0 mA to 20 mA, 0 VDC to 10 VDC

Connection: Shielded pair (two conductors with shield)

Accuracy: +/- 0.02% of range

Measurement resolution: > 14 Bit

Signal Supply Voltage: Short Circuit Proof
See Note 1

Analog Outputs

Type: Outputs to connect either current or voltage outputs

Current range: 0 mA to 20 mA

Voltage range: 0 VDC to 10 VDC

Connection: Shielded Pair (Two conductors with shield)

Accuracy: +/- 0.008% of range (voltage), +/-0.01% of range (current)

Output load: 500 Ohms (current, maximum), 2 kOhms (voltage, minimum)

Output Resolution: >14 Bit

Current Output: Short Circuit Proof
See Note 1

RTD Inputs

Type: Resistive temperature sensors input, Pt100, Ni, Cu, 10 – 3000 Ohm

Connection: 3 or 4-wire, shielded sensor cable

Accuracy: +/-0.2°F, +/-0.83 maximum (Pt100, 4-wire)

Measurement Resolution: 14 Bit plus a sign bit

Signal Supply Voltage: Short Circuit Proof
See Note 1

Digital Inputs

Type: Optically-isolated solid-state voltage sensor inputs

Input Voltage Range: -3VDC to + 30VDC (24 VDC typcal)

Maximum low level voltage: < 5 VDC

Minimum high level voltage: > 15 VDC

Signal Supply Voltage: Short Circuit Proof
See Note 1

Digital Outputs

Type: Electrically-isolated relay contact output

Connection: Form C relay contact output

Maximum Switching Voltage: 250 VDC/VAC

Output Current: 3A Maximum
See Note 1

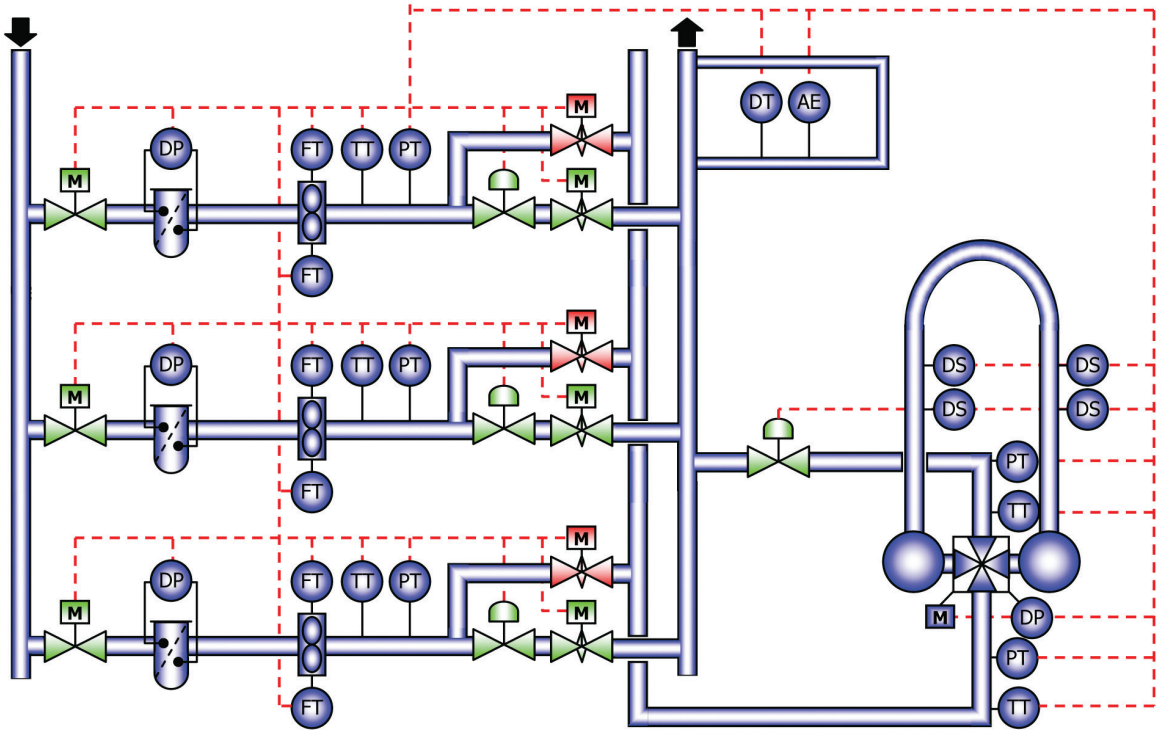
Approvals/Certifications/Listings

- OIML R-117-1, “Measuring systems for liquids other than water”
- EN-12405-1(/A1), “Electronic gas volume conversion device”
- GOST (Russian) Pattern Approval
- UL/CE
- FCC (display)

Note 1: Analog / RTD / Digital point function programmable via software.

Application Example

Typically Instrumented 3-Meter Run, Bidirectional Prover and Quality Loop System



Notes:

1: "DP" = Differential Pressure; may be a transmitter or switch for strainers, switch for 4-way seal
2: "DT" = Densitometer (frequency or analog)
3: "AE" = Analyzer Element (S&W)
4: Sample Controller may be driven by integrated pulse output on the Frequency Module

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.

USA Operation
1602 Wagner Avenue
Erie, Pennsylvania 16510 USA
P:+1 814.898.5000

Germany Operation
Smith Meter GmbH
Regentstrasse 1
25474 Ellerbek, Germany
P:+49 4101 304.0

© Guidant Corporation 2025 All rights reserved.