



Technology Solutions

TEK-FC 8000FX

Custody Transfer Field Mount Flow Computer



ACCESSORIES



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Introduction

The Tek -FX 8000 FC Multi-run Flow Computer is a flexible platform with scalable capabilities that can be utilized from basic measurement sites to complex multiple-run delivery stations. It helps the operators improve their ability to monitor instrument performance, flow output, and other metrics via increased processing power to avoid unplanned downtime.

The Tek-FX Multi run Flow Computer is designed specially to reduce pipeline disruptions and maintain worker safety. It enables users to control the functions and effectively manage product delivery. It quickly and efficiently integrates into existing measurement and control systems.

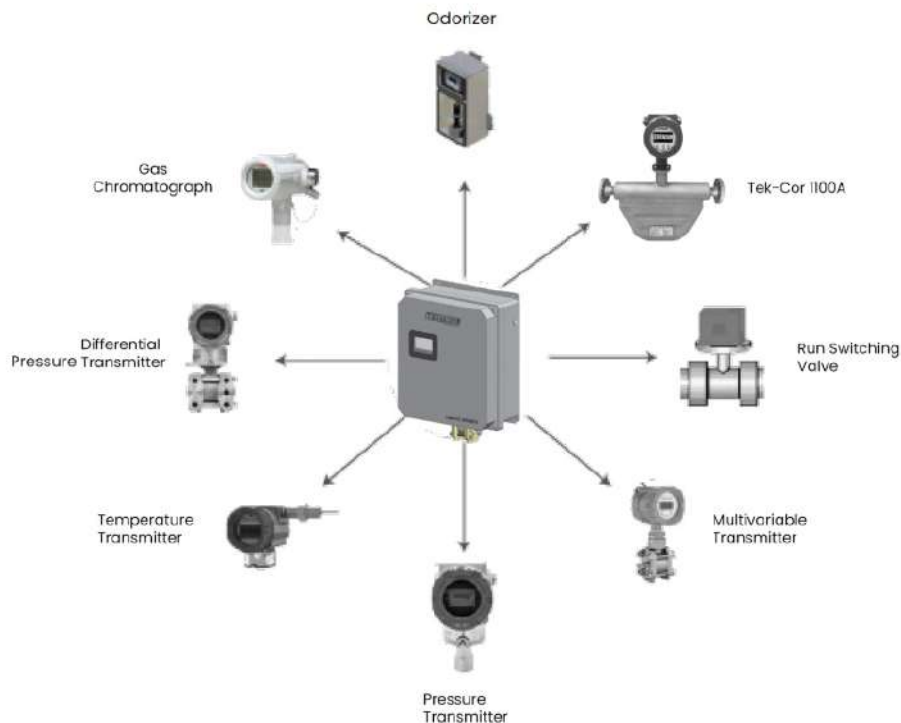


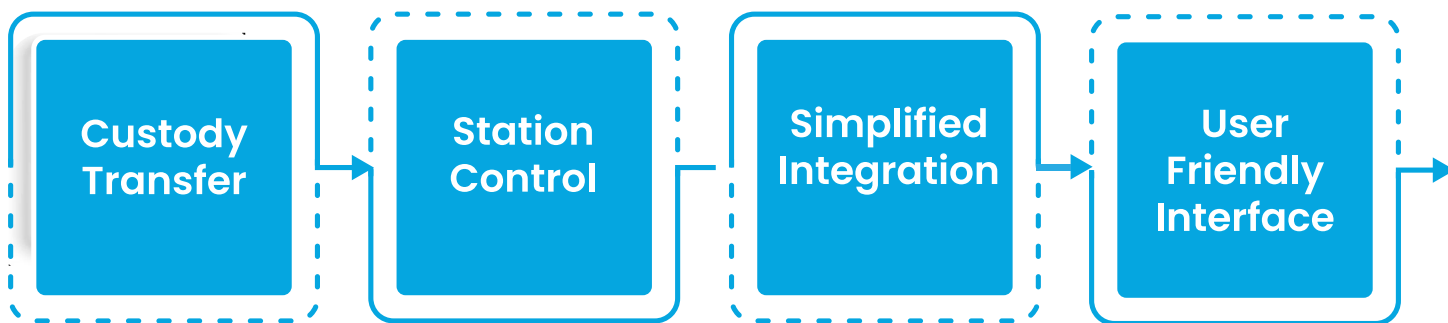
Fig. 1

The Tek-FC 8000 FX includes support for all leading measurement technologies supporting both liquid and gas primary measurement elements as shown in the figure above.

Features

- Application scalability
- Instrument health
- Avoid unnecessary downtime
- Provides Bluetooth connectivity
- Provides Real time insight to end consumers for quick decision making
- Seamless integration
- Optional Remote web based monitoring application available
- Software to be supplied along with the unit in CD.

Benefits



Modular Scaler Platform

The Tek-FC 8000 FX offers a flexible platform that allows operators, from the wellhead to the end consumer, to increase their ability to monitor instrument performance and flow throughput. It comes with 3-slot and 7-slot options, along with an integrated or remote mount field computer.



Custody Transfer

A critical component of oil and gas operations is accuracy and repeatability during the transactions involving transporting hydrocarbons from one operator to another or its end user. These transactions occur at various points during the oil and gas value chain, such as tankers, ships, and pipelines. Our Tek FX 8000 Multi-run Flow Computer provides software with a full suite of flow calculations to manage any custody transfer application within the value chain. Our study contains natural gas and liquid calculations that comply with the latest API Chapter 21.1 and 21.2 standards.

The Tek- FX can also manage all of your custody transfer historical archiving and store multiple critical data points in its own historical archive. It provides accurate and repeatable measurement to ensure maximum monitoring and control of lost and unaccounted-for gas and liquids.

Gas Flow Calculations	Gas Properties / Energy Calculations	Liquid Calculations
AGA3	AGA 8 (Short, Gross, Detailed)	ASTM D1250, Table 5/6 A/B/C 23/24 A/B/D, 24C, 53/54 A/B/D, 54C
GOST	NX19	API CH 11.1
V-Cone	AGA10	GPA TP15, TP27, table 23/24E, 53/54

Slotted Orifice	AGA11	Brazil CNP, Alcohol
ISO 5167	Gerg91	Propylene
Verabar	GPA 2172	Ethylene
NIST 14	GOST 303	IUPAC
Venturi		Prover
Steam		

Station Control

Our Tek-FX 8000 FC Multi-run Flow Computer is designed to coordinate all the functions for the quality and quantity of gas being transferred in a pipeline. Different functions like flow control, pressure reduction, pressure regulation, and overpressure protection are combined, simplifying the configuration and field deployment. It can easily manipulate the function to address seasonal changes in demand with quick and easy access to critical data points and an overview of control schemes.

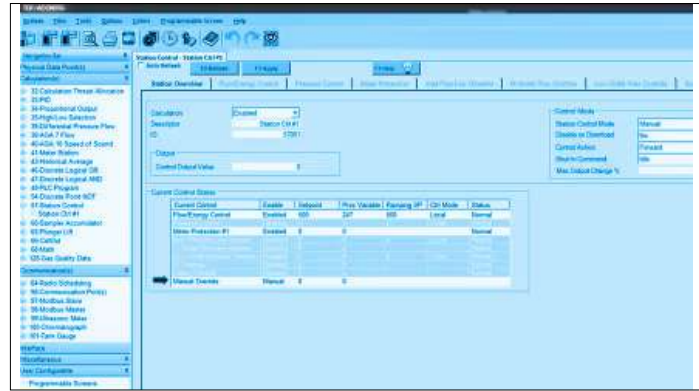


Fig. 2

Our scalable platform allows technicians to add additional control as the station demand changes quickly. Simplified configuration functions allow for simultaneous connection to tertiary equipment such as odorizers, GCs, dewpoint analyzers, and H2S analyzers, creating a single access point to ensure efficient and effective product delivery.

Simplified Integration

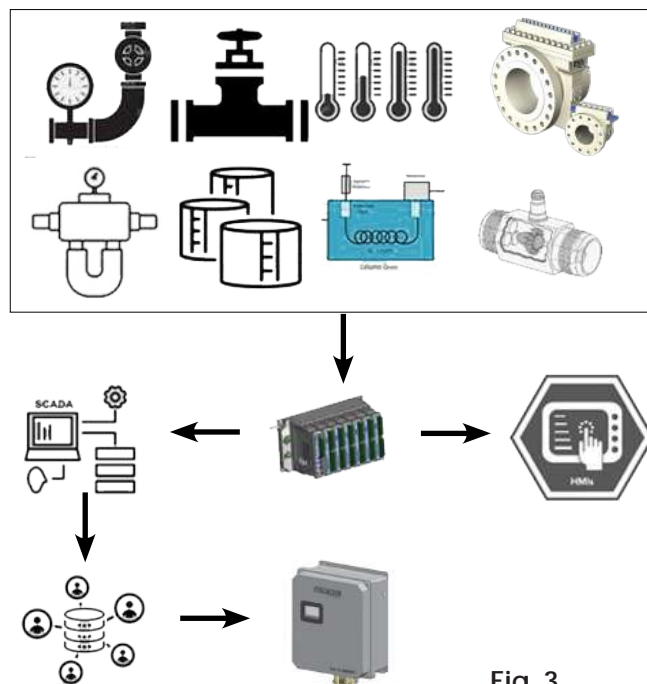


Fig. 3

The Tek- FX Multi Run Flow Computer helps you avoid unnecessary downtime by easily and efficiently deploying a flow computer to a critical site. We also make the Ethernet ports available on every unit up to a speed of 1GB/s. Single-click exporting and importing MODBUS mapping is also available for simplified SCADA connection.

User Friendly Interface

Our Software provides an efficient and personalized experience. It is designed with ease-of-use mind. With the new interface and improved processing capabilities, our latest offering requires minimal upfront programming due to the preconfigured tools, simplifying customer field deployment.



Fig. 4

Specification

Design	Field Mont Multirun Flow Computer for Gas and Liquid
Standards	AGA-3 and AGA-7 with pressure & temperature compensated volume, AGA-8 for super compressibility factory including detailed, gross-1 and gorss-2 method
Input Type	Receives differential pressure, static pressure and temperature inputs from multiple meter runs from remote mounted MV sensors, in multi drop configuration, with expansion support for add on AI/AO, DI/DO and PI.
Input/Output	Two built-in 4-20 mA analog inputs (one of them field selectable for pulse input from turbine meter). Additional analogs inputs and outputs available as option for future expansion.
Control Functions	Closed loop PID control for each with Logic and sequencing control for run switching
Processor	792MHz 32 bit High Performance ultra low power ARM processor with Neon co-processor
Program memory	256MB
CPU board communication port	(2) Serial (2) Ethernet (1) USB
Input Power	10 VDC to 30 VDC

Historical data storage	User configurable; defaulting to 65 days of daily, 35 days of hourly
Audit Trails	User configurable; defaulting to 200 audit events, 60 different types of audits
Alarm log storage	User configurable; defaulting to 200 alarm events, 15 different types of alarms
Operating temperature	-40°C to +85°C (-40°F to +185°F)
Operating Humidity Range	0 to 95% RH, Non-condensing
Enclosure Rating	IP65 (NEMA 4X)
Certifications/ Compliance	CSA/C-US Class I, Div 2, Groups C and D hazardous locations; ambient temperature range of -40°C to +85°C, temperature code T3Cl Type 4X enclosure)
Rack/Panel Mount Dimensions	7.18"W X 7.5"H X 6.9"D
Live Density Input	UGC, 4 to 20 mA
NEMA 4X Dimensions	15.27"W X 17.28"H X 8.15"D
Display	128 x 65 backlit LCD display; User programmable scroll list and menus
Natural Gas Calculations	<p>Super compressibility (Fpv) AGA 8 Gross-1992; AGA 8 Gross-2017; AGA 8-1992/2017; AGA 8 Short-1988; NX-19; NX-19 Analysis; GERG</p> <p>Differential meters (DP, Orifice) AGA 3/ANSI/API 2530-1992 Method 2; AGA 3/ANSI/API 2530-1985; ISO 5167; Cone meters; Annubar; GOST</p> <p>Linear meters (Turbine) AGA 7; AGA 9; AGA 11</p> <p>Energy AGA 5; GPA 2172; ISO 6976</p> <p>Diagnostic AGA 10 SoS</p> <p>Additional factors/equations Fwv (manual, partial or full); Fws</p> <p>Turbine meter linearization 10 Point Frequency/K-factor Table</p>
Liquid calculations	<p>API tables (Table A (generalized crude oils); Table B (generalized products); Table C (alpha 15/60 supplied); Table D (Lubricating Oils); Old Table (NGL, LPG SG range 0.425 to 0.650); Table 23/24 E, 53/54 E (NGL, LPG); VCF (CH 11.1 2004); Propylene (CH 11.3.3.2); Ethylene (API 2565/CH 11.3.2.1); Ethylene (NBS 1045)</p> <p>Volume correction factor (VCF) Consistent with API 2540/ASTM D1250-80/IP 200; 5/6 A/B; 23/24 A/B/D; 53/54 A/B/D; 6/24/54 C; CH 11.1 2004; Note: natural gas liquids (NGL) and liquefied petroleum gases (LPG): OLD 23/24, OLD 53/54; Table E is new standard to replace OLD 23/24.</p> <p>Correction for effect of pressure on liquid Ch 11.2.1/Ch 11.2.2; Ch 11.2.1M/Ch 11.2.2M (compressibility factors for hydrocarbons), GPA TP15 equilibrium pressure</p> <p>Propylene density API Ch 11.3.3.2</p> <p>Diagnostic AGA 10 SoS</p> <p>Ethylene density API 2565 (Ch 11.3.2.1); Ethylene NBS 1045; IUPAC</p> <p>Live density input Tektrol 's Sarasota liquid density meter, Solartron, UGC, 4-20 mA</p>

IO Module	Point Count	Electrical	Isolation
Communication Board	(2) RS232/485 2/4 wire (1) isolated 485 4 wire (1) non-isolated 485 4 wire	Up to 2 Comm modules in one system Up to 115.2K baud rate	1500 V
Non-isolated Combo Board	Multifunction points: (2) PI/DI/DO (4) DI/DO (1) DO/FO/DI (5) AI (1) AO (1) RTD	PI: SW selectable dry contact, slot sensor or magnetic input with internal pull up; DO: FET, 1A /channel, 30VDC max. DI: Dry contact or an open collector AI: SW selectable, 4-20 mA or 1-5VDC FO: 0-100 KHz RTD: -100 to 400 deg F	
Analog Input Board	(12) AI	SW selectable, 4-20 mA or 1-5VDC	1500 V
Analog Output Board	(6) AO	SW selectable, 4-20 mA or 1-5VDC	1500 V
Digital Input Board	(8) DI	DI: Dry contact or an open collector	1500 V
Digital Output Board	(8) Relay output	250VAV/300VDV max, current 3A max	1500 V
Isolated Combo Board	(4) PI/DI/DO (4) DI/DO (4) AI (1) AO (1) RTD	PI: SW selectable dry contact, slot sensor or magnetic input with internal pull up DO: FET, 1A /channel, 30VDC max DI: Dry contact or an open collector AI: SW selectable, 4-20 mA or 1-5VDC RTD: -100 to 400 deg F	1500 V
Prover Board	(2) switch input	Switch input for start/stop	1500 V
Digital Multifunction Board	(6) PI (4) DI (4) DO	PI: SW selectable dry contact, slot sensor or magnetic input with internal pull up DO: FET, 1A /channel, 30VDC max DI: Dry contact or an open collector	1500 V

Customer Service and Support



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