



Technology Solutions

# Tek-FCA 8000A

## Field Mount Flow Computer



FLOW



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Flow | Level | Temperature | Pressure | Valves | Analyzers | Accessories | TekValSys

# Tek-FCA 8000A

## Field Mount Flow Computer

Tek-Trol is a technology-driven company providing consistent advanced measurement, automation, and control solutions.

Tek-Trol offers process measurements including control products and solutions for Flow, Temperature, Pressure, Level Applications. We offer our clients a comprehensive dimension of products and solutions

### Introduction

Tek-FCA 8000A field mount flow computer is used in custody and non-custody applications for liquid and gas service applications and is designed to enhance the performance of differential pressure flow meters. With the help of advanced diagnostics it offers a real-time monitoring system and helps reduce uncertainty in measurement making the process measurement reliable and robust.

The Tek-FCA 8000A is a cost-effective low-power field mount flow computer that measures and monitors liquid and gas flow for a differential or linear meter run delivering a convenient approach to remote oil and gas sites including custody or non-custody measurements. Tek-FCA 8000A is the most powerful flow computer that represents operation, performance, and modularity advancements with a wide range of options, configurations that meet specific application requirements.

Using a single hardware platform, with reduced spare part requirements, training and calibration costs it allows for a lower overall cost of ownership

for markets covering Power, Food & Beverages, Water, Wastewater, Oil & Gas, Paper & Pulp, Mining & Steel, Pharmaceuticals and Petrochemical.

Tek-Trol is proud to be recognized for our industry knowledge, innovative solutions, reliable products, and global presence.

and meets the requirements of specialized industries. The flow computer supports extensive alarming capability to enhance operational efficiency and improve the audit trail. Alarms are pre-allocated to meter runs for standard values such as pressure, temperature, differential pressure or frequency as well as meter run flow rates.

The Tek-FCA 8000A offered with the specialized DP Health Check comprehensive verification system for Differential Pressure (DP) meters expands the capability of the DP meter by offering a full diagnostic suite allowing for condition-based maintenance operations. The diagnostic results are shown to the operator in a very simple and easily understood format and is equal to any flow meters diagnostic system.

The Tek-FCA 8000A is available with optional multivariable transmitters providing high accuracy differential pressure and static pressure measurement or configured to connect with standard DP differential pressure transmitters for steam flow measurements.

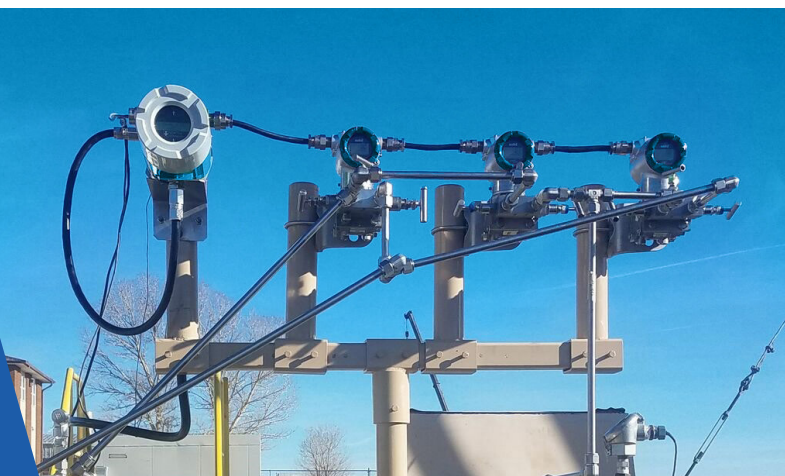
**Continuous Diagnostics**

**Real time Monitoring**

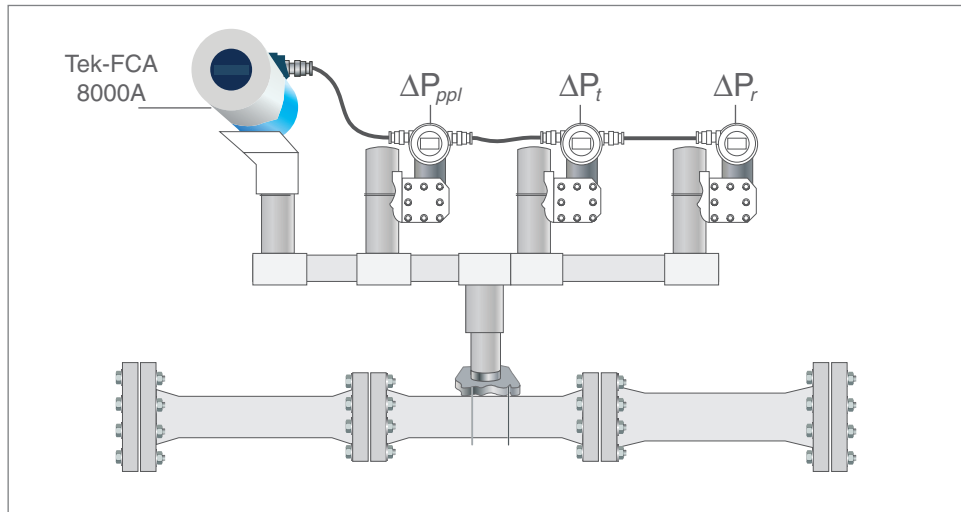
**Liquid & Gas Service**

**Custody and Non-Custody applications**

**Field Mount for Hazardous locations**



## Features / Specifications



### Features

#### Design

Flexible design with power and communication options to meet field instrument needs.

#### Compliances

Provide Custody transfer and fiscal measurement requirements.

#### Data Logging

Real time measurement and Enhanced Data Logging capabilities.

#### Advanced Diagnostic

Continuously monitor and verify the flow meter health and reduce output uncertainty using Advanced diagnostic software.

#### Operator Friendly

Easy to use with multiple differential pressure like Orifice, Venturi, Flow Nozzle, Wedge, Cone.

#### Field Configuration

Simple and easily interface with the device using push buttons.

#### Flow Units

Volumetric or Mass flow measurement of Liquid, Gases and Steam.

#### Calculations

AGA-3, ISO5167, V Cone

#### Mass Flow Equations

Real gas, Ideal gas, AGA 8, API 2540

#### Measurement Options

Steam Quality Measurement: Reliable steam quality (steam dryness) as well as mass flow measurement.

Density of Gas Mixture: Calculate the density of changing gas mixtures.

Energy Monitoring: Energy consumption for Steam, Water, and Heat Transfer applications.

#### Low Power

Cost Effective, Low Power field mount flow computer.

#### HART Protocol Communications – Standard

Modbus, BACnet, Power over Ethernet (PoE) communications available.

#### Approvals

Pending

### Specifications

#### Ambient Temperature

Operating : -40 to 140°F (-40 to 60°C)

Storage: -40 to 185°F (-40 to 85°C)

#### Working Humidity

0 to 100% RH

## Specification

### Electrical Connection

½" and ¾" NPT conduit connections

### Power Requirements

DCH option: 12-36 VDC, 300mA, 9W  
max DCHPOE : 12-28 VDC or Power over Ethernet,  
5 Watts maximum

### Display

2 Line X 16 Character LCD Alphanumeric  
Digital Display, Six Push buttons For Full Field  
Configuration, Mounted In 90° Intervals For Better  
Viewing

### Input Signals

4-20mA (Flow, Pressure), Pulse, Frequency RTD  
(Ohm), BACnet

### Output Signals

Analog: 4-20mA (Volumetric flow, mass flow,  
density, pressure, temperature)  
Alarm: Solid state relay, 40 VDC  
Totalizer Pulse: 50 millisecond pulse, 40 VDC  
Volumetric or Loop Powered Mass: One analog,  
one totalizer pulse, HART

### CPU

Type: 32 bit 250 MHz, Flash: 8 MB, RAM: 64 MB  
DDR2

### Approvals

Pending

## MULTI-VARIABLE VERSION

### Accuracy:

DP linear mode:  $\pm 0.075\%$  F.S., optional Enhanced  
Accuracy of  $\pm 0.065\%$ ,  $\pm 0.04\%$ ; Static Pressure:  
 $\pm 0.075\%$  F.S., optional Enhanced Accuracy of  
 $\pm 0.065$ ,  $\pm 0.04\%$ ; Temperature effect on Differential  
Pressure:  $\pm 0.03\%$  of F.S.

### Diaphragm Materials

SS316 or Hastelloy C

### Measuring Range

Differential Pressure/ Static Pressure: 150"- 400" in  
H2O up to 2000 PSI

### Stability

Process Temperature:  $\pm 0.25^\circ\text{C}/\text{month max}$ ;  
Static and Differential Pressure:  $\pm 0.05\%$   
URL/Year Typical Working Temperature Ambient  
Operating:  $-40$  to  $140^\circ\text{F}$  ( $-40$  to  $60^\circ\text{C}$ )  
Ambient Storage:  $-40$  to  $185^\circ\text{F}$  ( $-40$  to  $85^\circ\text{C}$ )  
Operating Temperature with Display:  $-30$  to  $+60^\circ\text{C}$

### Output Signal

4 to 20 mA with HART®

### Electrical Connection

½" and ¾" NPT conduit connections

### HART Loop Resistance

250 to 550 Ohm

### Process Connection

¼" NPT on flanges or manifold mount

### Media Temperature

Silicon oil filling:  $-40^\circ\text{F}$  to  $248^\circ\text{F}$  ( $-40^\circ\text{C}$  to  $120^\circ\text{C}$ )  
Fluorocarbon oil filling:  $-49^\circ\text{F}$  to  $320^\circ\text{F}$  ( $-45^\circ\text{C}$  to  
 $160^\circ\text{C}$ )

### Communication

HART, Modbus

### Power

Operating Voltage Range: 4.0 to 30.0 VDC

## DIFFERENTIAL PRESSURE VERSION

### Communication:

HART protocol 16.5-55 VDC, communication load  
resistance  $250\ \Omega$  Load resistance 0-2119  $\Omega$  for  
working condition, 250- 600  $\Omega$  for HART < 1000  $\Omega$

### Power

500 mW at 24 VDC, 20.8 mA

## Verification

The Tek-FCA 8000A offered with the specialized DP Health Check comprehensive verification system for Differential Pressure (DP) meters expands the capability of the DP meter by offering a full diagnostic suite allowing for condition-based maintenance operations. The diagnostic results are shown to the operator in a very simple and easily understood format and is equal to any flow meters diagnostic system.

DP Health Check is a comprehensive verification system for Differential Pressure (DP) meters. Utilizing a third pressure port downstream of the DP meter and reading three DPs, DP Health Check analyses not just the traditional single DP reading, but the entire pressure field. The additional information expands the capability of the DP meter, offering a full diagnostic suite. DP Health Check creates a smart DP meter allowing for condition-based maintenance operations.

DP Health Check creates seven diagnostic checks, i.e. one DP integrity check, three separate inter-comparable flowrate predictions, and three DP ratios comparable with the baselines. The HMI (human machine interface) is designed for simplicity: the seven diagnostics are plotted as four points on a graph with a 1x1 box. All points inside the box shows the meter is functioning normally (see Fig 2).

Any points outside the box shows a potential metering issue. Figs. 3 and 4 show response to varying saturated steam quality and single-phase DP reading error respectively. Pattern recognition technology allows the source of the problem to be directly identified.

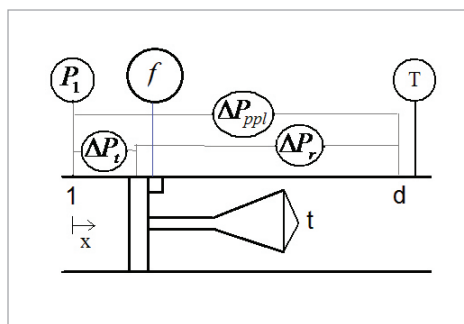


Fig 1.

DP Health Check™ ready Cone DP Meter and Associated Pressure Field

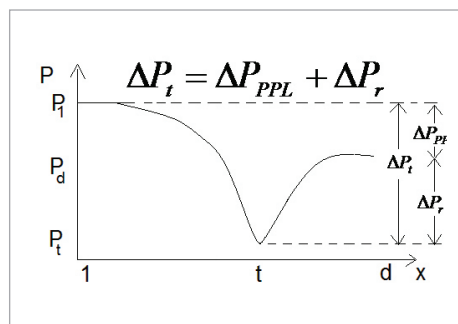


Fig 1.1

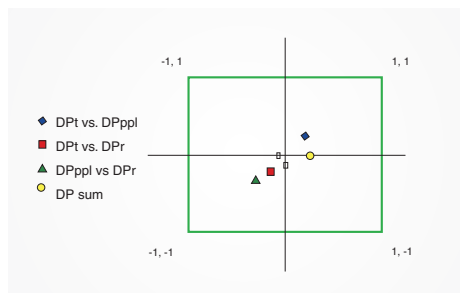


Fig 2.

Display for Correctly Operating Meter

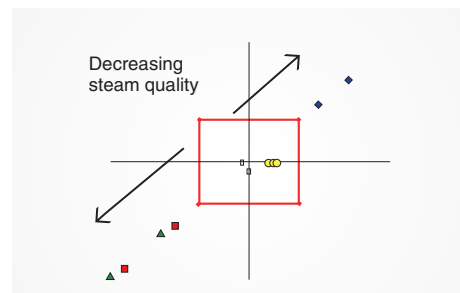


Fig 3.

Display for Varying Quality Saturated Steam Flow

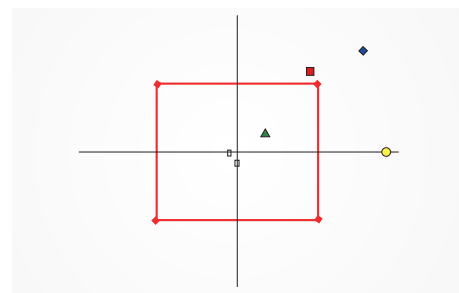


Fig 4.

Display for Drifting DP Transmitter

# Customer Service and Support



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Tek-Trol is a fully owned subsidiary of Tek-Trol LLC. We offer our customers a comprehensive range of products and solutions for process, power, and oil and gas industries. Tek-Trol provides process measurement and control products for Flow, Level, Temperature and Pressure measurement, Control valves and Analyzer systems. We are present in 15 locations globally and are known for our knowledge, innovative solutions, reliable products, and global presence.

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