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SFC 500 Training

Section 1: Course Description

Our training session is a one day, hands-on workshop that provides the student an opportunity to explore all the features of our flow computers in a safe and guided environment. Our objective is to help our customers become familiar with our products and maximize the investment they make in Dynamic Flow Computers.

1.1 Course Objectives

- Identify Hardware Components
- Build sample meter configuration
- Understand calibration procedures
- Retrieve historical information

1.2 Course Overview

- Introduction: Basic SFC 500 overview
- Technical Data: Flow computer physical & electrical characteristics
- Communications: SFC 500 wiring and communication setup
- Configuration Software:
 - Overview of Screens
 - Diagnostics Section
 - Snapshot Section
 - Configuration Section
 - Calibration
 - Reporting
 - Additional features
- Firmware Download (optional)
- Questions & Answers

1.3 Prerequisites

- Students must have basic knowledge of fluid measurement. This class is focused on the flow computer operation and not on fluid measurement.
- Participants must bring their own laptop computers and any special equipment they would like to covered in the class, such as calibration equipment. Demo SFC 500 units, power supplies, software and handouts will be provided by Dynamic Flow Computers.

Section 2: SFC 500 Overview

2.1 Introduction

The SFC 500 flow computer handles up to 4 gas or liquid meter runs. It includes the following flow equations: New API 14.3 (orifice plate), ISO 5167, Turbine (AGA7) and V-Cone, Foxboro Mass Meter, Venturi and Wedge.

Additionally, it can perform density calculations using AGA8 standards and API tables for liquid applications.

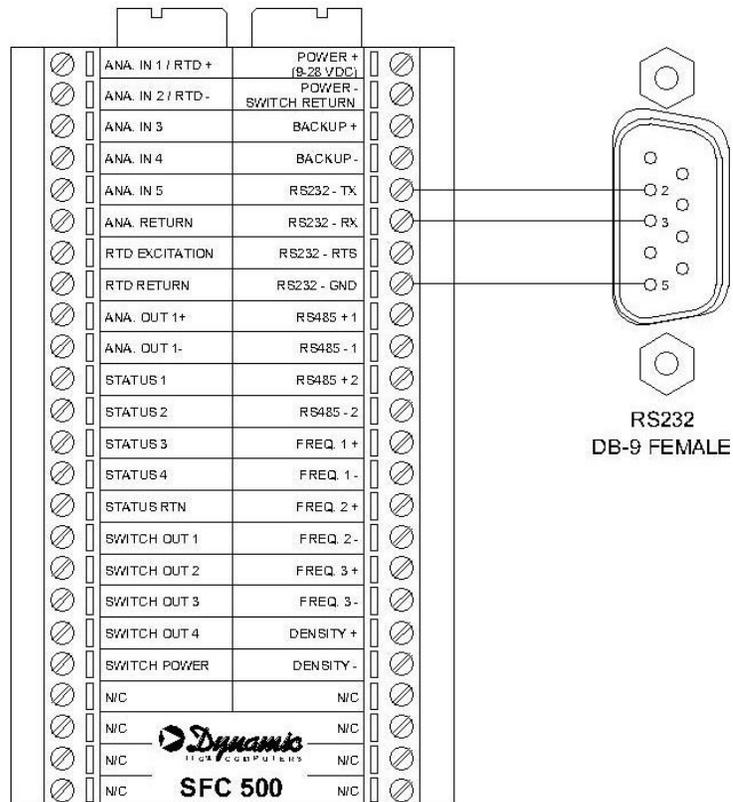
SFC 500 Technical Details:

POWER	
Voltage	18 to 30 VDC (Optional 120VAC)
Power Consumption	10 Watts
OPERATING CONDITIONS	
Temperature	-20 to 170 °F
Humidity	Non-Condensing
Housing	General Purpose
FEATURES	
Display	Plasma, Backlit display 4 lines, 20 Characters per line
Processor	32 bit Motorola 68332 @ 16.7 MHz
Flash Rom	4 MB @ 70 Nanoseconds
RAM	2 MB @ 100 Nanoseconds
Frequency Input	3 Channels (Expandable to 4) Wave Range 0-5000 Hz with Turbine diagnostic function Signal < 70 mV for Sine Wave Signal > 6 Volts for Square Wave
Analog Input	4 Inputs standard – expandable to 8
RTD Input	2 Channels, 4 wires
Analog Output	Two 12 bit, single ended output
Digital Output	10 digital outputs Outputs 1 thru 5 can be switch or pulse - 0.5 Amp rating Outputs 6 thru 10 are switch outputs - 0.25 Amp rating
Status Input	10 on/off type signal
All inputs and outputs are optically isolated	
Serial	One RS-485 Serial Port @ 9600 baud One RS-232 Serial Port @ 9600 baud
Communication Protocol	Modbus
Print Output	One output
Prover Connection	Additional connections for small and large volume provers

Section 3: SFC 500 Communications

3.1 Communication

The SFC 500 flow computer has three serial ports, one RS-232 and one RS-485. Follow the wiring drawing below to connect the serial cable.



Once the cable is in place, use the Dynacom[®] software to detect the flow computer. In the Dynacom **Tools** menu, select **Comm Settings** and click on the **Auto Detect** button.

Section 4: Configuration Software

4.1 Dynacom® Configuration Software

In order to calculate flow, it is necessary to enter site parameters such as size of the orifice plate and characteristics at base conditions of the gas or liquid being measured.

The flow computer requires at least Pipe ID, Orifice ID and Gas composition information to calculate gas flow. To get a detailed description of the data entries, please refer to the Operator's Manual.

Calibration Reset

Returns calibration to default factory settings.

1. Select multivariable DP, temperature or pressure.
2. Select Reset calibration method.
3. Verify the live reading against the flow computer reading.

Offset Calibration

Performs a single point adjustment to the variable reading.

1. Induce live value for temperature, pressure or DP.
2. Select multivariable DP, temperature or pressure.
3. Select offset calibration method, enter offset value and click the 'OK' button.
4. Read induced live values to verify the calibration.

Full Scale Calibration

Uses a two point calibration sequence for an accurate range calibration.

1. Induce live value for temperature, pressure or DP.
2. Select multivariable DP, temperature or pressure.
3. Select full calibration method.
4. Induce the low range signal, enter the first point and then click the 'OK' button.
5. Induce the high range signal, enter the second point and then click the 'OK' button.
6. Verify the live reading against the flow computer reading.

Data Collection:

- Previous Hourly Data
- Previous Daily Data
- Last Month Data
- Last Month Daily Data
- Alarm Report
- Audit Report

Additional Features:

- I/O Configuration
- Display Assignments
- Modbus Shift
- PID Control

Section 5: Image File

5.1 Image File Download

An Image file is the firmware of the flow computer and sets it up for a certain application (liquid, gas, prover, etc). The Image file is only done when an application upgrade is required.

- When an Image file is downloaded to the flow computer, all the information in the flow computer is lost (configuration and historical data), so make sure to retrieve all flow computer data before updating the Image file.

An Image file can be downloaded through the **main RS-232 port only**. To download a new Image file, follow these steps:

- Select '**Download Program**' from the Dynacom[®] Software '**Tools**' menu.
- A pop-up window will appear, asking for the name of the Image file to be downloaded. Type it in or use the Browse button to locate it.
- Once the name has been entered or the file has been selected, click the '**Download**' button.
- A Warning message reminds you that this action will erase ALL the data on the flow computer.
- The Image file download should take about 7 minutes to complete. Once the Image file is in place, the flow computer is ready to be configured (see Section 4 of this training for more information).