

Model No. DFC

DIGITAL ENHANCED GAS FIRED MODULATING CONTROL



This manual covers the following product(s):

DFC Direct Fired Control

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Overview

The Direct Fired Control (DFC) is a digital gas fired heating control. The control has a simple five button interface with a four digit LED display. All programmable parameters can be accessed through the user menu with the five button interface. The DFC's setpoint temperature sensing operation ranges from 40°F (4°C) to 250°F (121°C). There is a temperature sensor input that connects to provide a discharge temperature. The setpoint may be adjusted by the controls internal menu settings or by an external remote, such as the DFTD and RDU. There is a combination of two modulating outputs that will power either a 0-24V DC solenoid or a 0-10V DC actuated valve. User parameters are stored in non-volatile memory, and are retained even during a power outage. Also, the DFC is powered by 24V AC.

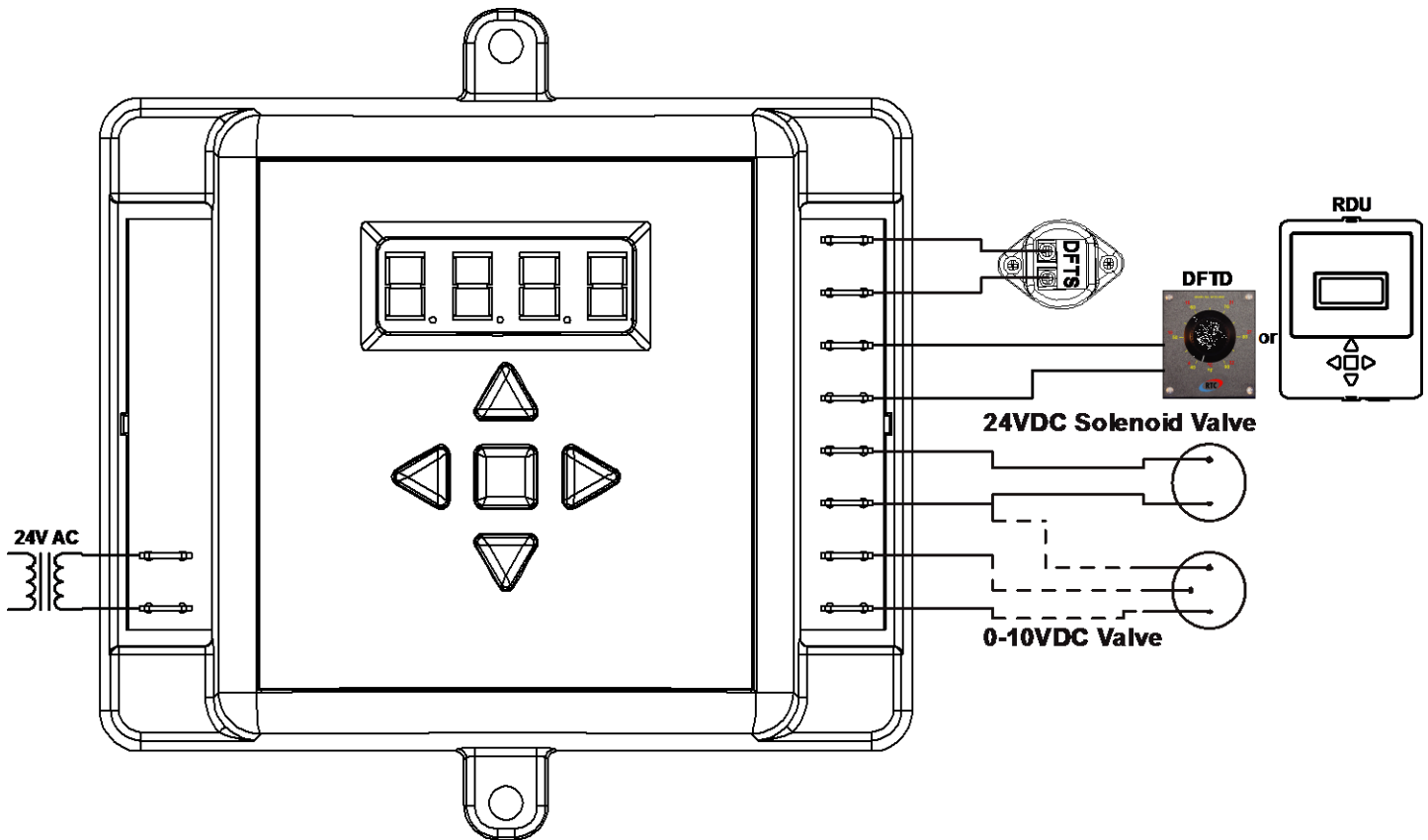


Figure 1: DFC Schematic Layout

Normal Operation

The DFC will always display the current discharge air temperature. Press the **UP** or **DN** key to change the discharge setpoint temperature. Once the key is pressed, the LED will display the text for the current setpoint temperature. Use the **UP** or **DN** key in order to set a new discharge temperature. Then press the **ENT** key to save the changes made. If a key is not pressed for 10 seconds, the DFC will exit without saving. When adjusting the setpoint range, the setpoint cannot surpass the set Low and High values. For instance, if Low ("SPLo") is set to 80°F and High ("SPhi") is set to 150°F, the setpoint is adjustable between 80°F to 150°F.

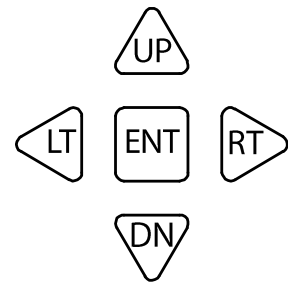


Figure 2: DFC Keys

Programming

Please refer to the “DFC Menu Map” on Page 4 for programming in program mode. To enter program mode, hold the **ENT** key down for 3 seconds until “SPLo” is displayed. Use the **UP** and **DN** keys to navigate to the desired menu parameter as shown in column 1. To edit a menu parameter, press the **RT** key once on the desired parameter. The current value of that parameter will be displayed as shown in column 2. Use the **UP** and **DN** keys again to edit the parameters for column 2. Press the **ENT** key to save the changes made or the **LT** key to cancel without saving and return to column 1. If a key is not pressed for 10 seconds or the **ENT** key is held for 3 seconds while in program mode, the control will return to normal mode.

Features

Alarms:

Error messages on the DFC will be scrolled across the display with a detailed message. This will allow users to realize the issue in order to resolve the error faster. The list of errors and their meanings are below.

1. “dFtS oPEn” - There is no Discharge Temperature Sensor connected to the DFC. Therefore, no discharge temperature reading can be made.
2. “dFtd oPEn” - The user has the Remote (“rEtd”) parameter on the DFC enabled, but no external control is found to take a reading.
3. “dFts ShortEd” - There is a short in the connection of the Discharge Temperature Sensor.
4. “dFtd ShortEd” - The user has the Remote (“rEtd”) parameter on the DFC enabled and there is a short in the connection.

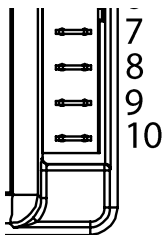
To resolve an issue check the wiring connections. Please refer to “Installation” on page 5 for proper terminal connections.

Password:

When trying to access program mode, if the DFC is password protected the display will show “PASS”. Otherwise the display will show “SPLo”, which is the start of program mode. If password protected no menu settings may be altered until the correct password is entered. In order to enter the password press the **ENT** key while “PASS” is displayed and use the **UP** and **DN** keys to set the DFC to the factory set password (21). Once on the number 21, press the **ENT** key again to access program mode. If the wrong password is entered then the DFC will return to normal mode.

Modulating Valve Outputs:

The DFC has the ability to power either a 24V DC or a 10V DC modulating valve. Only one valve at a time may be connected.



7	PWM For Solenoid Valve
8	24VDC Valve Output
9	0-10VDC Valve Output
10	Valve Ground

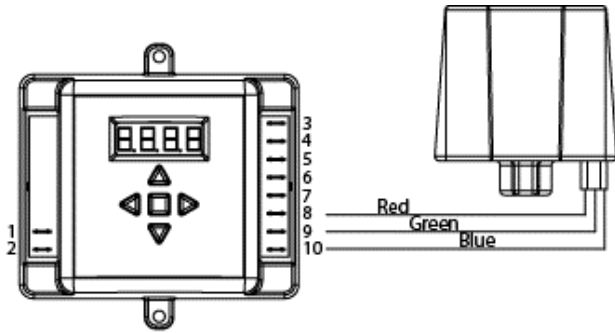
Connection for 0-24V DC use terminals 7 and 8

Connection for 0-10V DC use terminals 8, 9, and 10

Figure 3: DFC Modulating Output Terminals

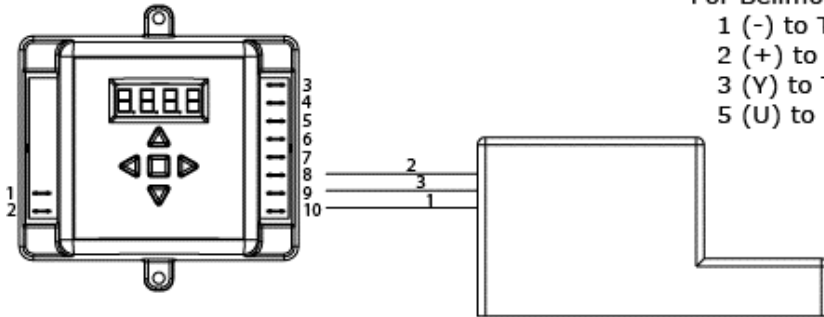
Valve Connections

DFC	Solenoid	ACT-4.0	Belimo	Siemens
Term 7: PWM	PWM			
Term 8: 24VDC	24VDC	Red: 24VDC	2: 24VDC	Red: 24VAC
Term 9: 0-10V Output		Green: 0-10V Input	3: 2-10V Input	Gray: 0-10V Input
Term 10: Ground		Blue: Ground	1: Ground	Black: Ground



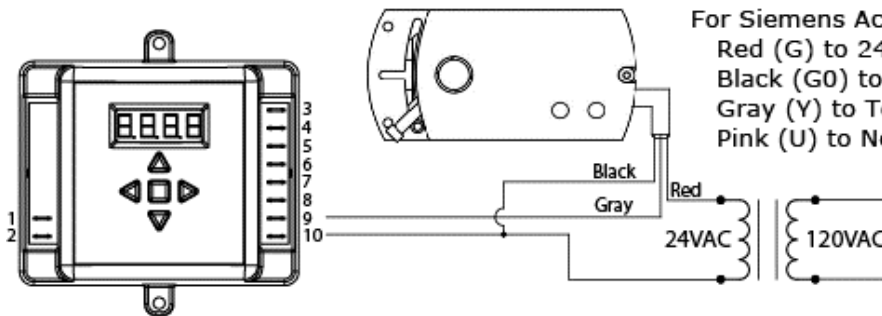
For Enolgas Actuator

- Red to Terminal 8 (24VDC)
- Blue to Terminal 10 (Ground)
- Green to Terminal 9 (0-10VDC Input)
- Pink to No Connect (0-10VDC Output)



For Belimo Actuator

- 1 (-) to Terminal 10 (Ground)
- 2 (+) to Terminal 8 (24VDC)
- 3 (Y) to Terminal 9 (2-10VDC Input)
- 5 (U) to No Connect (2-10VDC Output)



For Siemens Actuator

- Red (G) to 24VAC Transformer (24VAC)
- Black (G0) to 24VAC Transformer & Terminal 10 (Ground)
- Gray (Y) to Terminal 9 (0-10VDC Input)
- Pink (U) to No Connect (0-10VDC Output)

Menu Map

DFC Menu Map

What you want to do

What you see

What it means

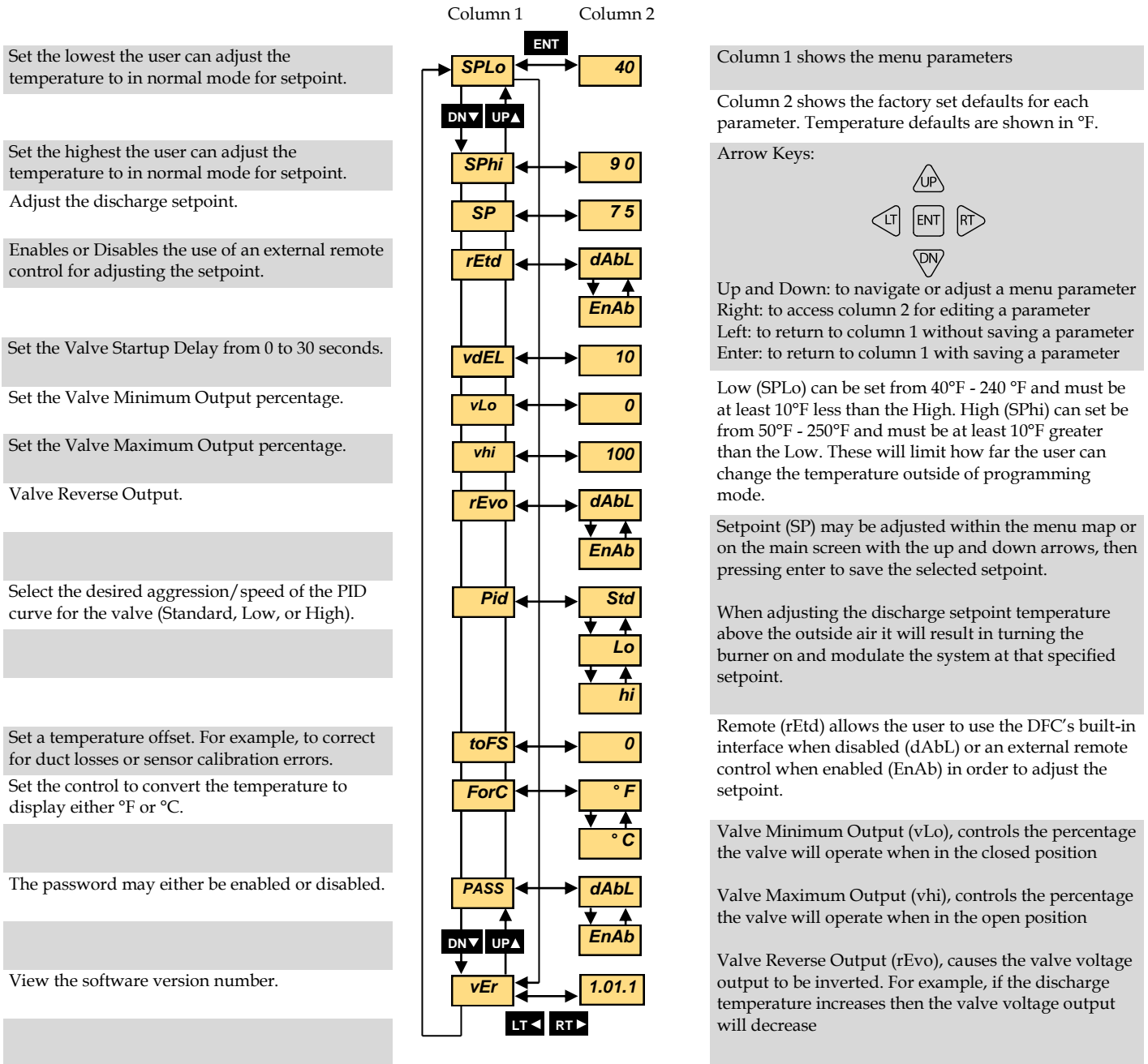


Figure 4: Menu Map

Installation

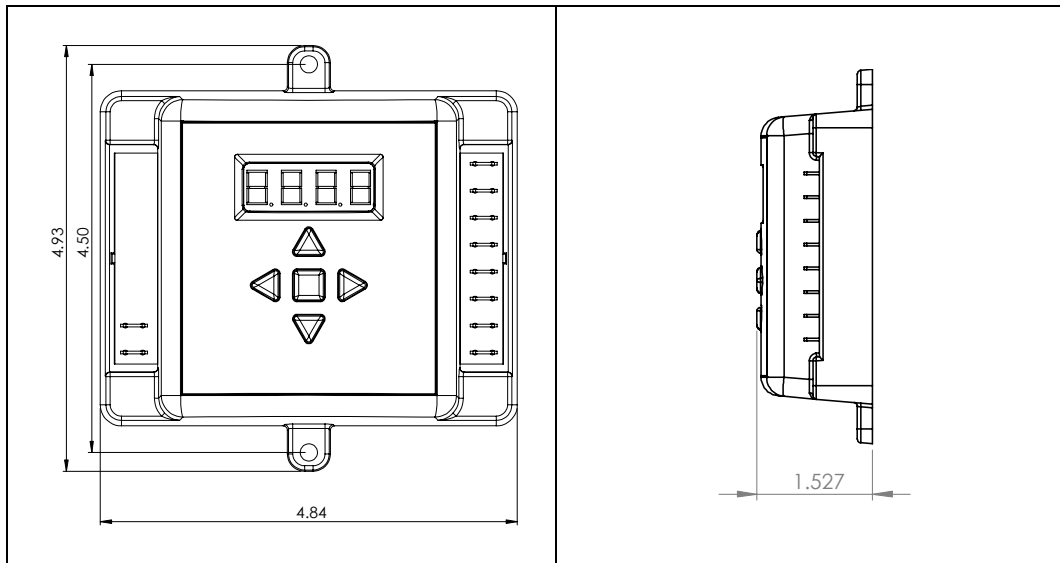


Figure 5: DFC Front Panel

Figure 6: DFC Side view

***All dimensions are in inches ***

Wiring for the DFC is convenient for the user with easy access to all terminal connections.

1	24VAC
2	24VAC
3	DFTS
4	DFTS
5	DFTD or RDU
6	DFTD or RDU
7	PWM For Solenoid Valve
8	24VDC Valve Output
9	0-10VDC Valve Output
10	Valve Ground

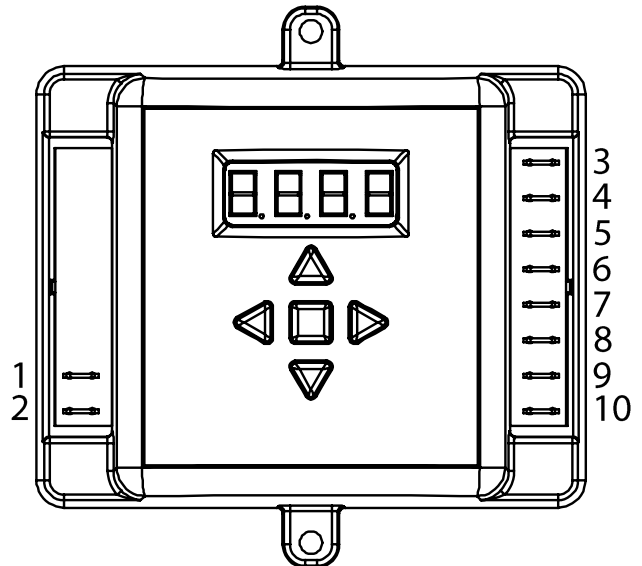


Figure 7: DFC Terminal Number Layout

Specifications

Power Requirements	24V AC
Current Rating 24V Output	1A
DFC Ambient Temperature Limits Operating	40-250°F (4-48°C)
Accuracy	+/-3°F (1°C)