

Flat Panel Controller

for D-Series Syringe Pumps

Overview

The Flat Panel Controller for D-Series Syringe Pumps is designed for rack and custom cabinet mounting.

Note

The flat panel controller has the functionality of the D-Series Legacy controller only. More information about controller versions can be found in Technical Bulletin [TB28 Controller Versions](#).



Figure 1: Flat panel controller Part #60-5364-388

Unlike the standard D-Series controller, the flat panel controller does not have a rear panel or angled face. This design is to allow mounting inside an enclosure door with access to the controller keypad.

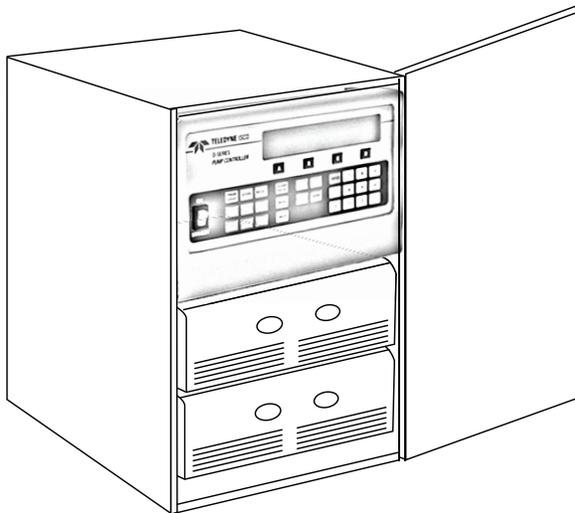


Figure 2: Flat panel controller mounting example

Functionality

The flat panel controller regulates all pumping functions and contains all system input and output connectors (except for the main power switch, located on the first pump).

Operating Modes

- Constant flow or pressure with up to three pumps
- Gradient LC programming
- Flow or pressure programming with a single pump

Key Functions

Table 1: Pump Controller Key Functions

Key	Description
ON/STANDBY	Two-position toggle switch turns controller on and activates drive motor to maintain position. Standby disables the drive motor and halts the controlling processor.
A, B, C, D	Softkeys; used to select displayed options.
PRGM GRAD	Program gradient: Puts pump in gradient mode and accesses the softkey driven gradient programming.
CONST PRESS	Constant pressure: Puts pump in constant pressure mode.
CONST FLOW	Constant flow: Puts pump in constant flow rate mode.
STORE	Stores the current program in nonvolatile memory and exits programming mode.
LIMITS	Displays and allows changes to the maximum and minimum pressure and flow rate limits.
RAPID PRESS	Rapid pressure: Allows rapid pressurization to the stable pressure point and then switches automatically to constant flow. (Available in constant flow mode only.) NOTE: This feature is automatic, <i>i.e.</i> RAPID PRESS is pressed only once without specifying pressure. Specifying a target pressure may speed equilibration.
RECALL	Replaces the current program with one recalled from nonvolatile memory.
ACC CTRL	Accessory control: Manually operates accessories such as valves.
ZERO PRESS	Zero pressure: Sets pressure display to zero. Active only from -750 to +750 psi.
CLEAR ENTRY	Clears the last digit entered with the numeric keys.
MENU	Accesses software to set operational modes, units, and other optional parameters.
HELP	Provides information.
HOLD	Freezes the program clock. The unit will continue at the current gradient parameters.
REFILL	Turns on pump drive motor to move piston downward at a previously programmed rate.
RUN	Turns on pump drive motor to move piston upward in a previously programmed mode, such as "CONSTANT FLOW" or "CONSTANT PRESSURE."
STOP	Stops the drive motor.
ENTER	Saves selected values to memory.
NUMBER KEYS	These keys are used to make menu selections and enter values when setting parameters.

Cable Connections

The board locations for connecting a pumping system with the flat panel controller are called out in the figure below. See Table 2 for a more detailed explanation of each connection.

Note that the flat panel is normally shipped with one custom connector for plugging in a second

syringe pump (or auxiliary device). For additional custom connectors, contact Teledyne Isco.



DANGER

Turn off Pump A and disconnect AC power before adding or changing any connections to the flat panel controller.

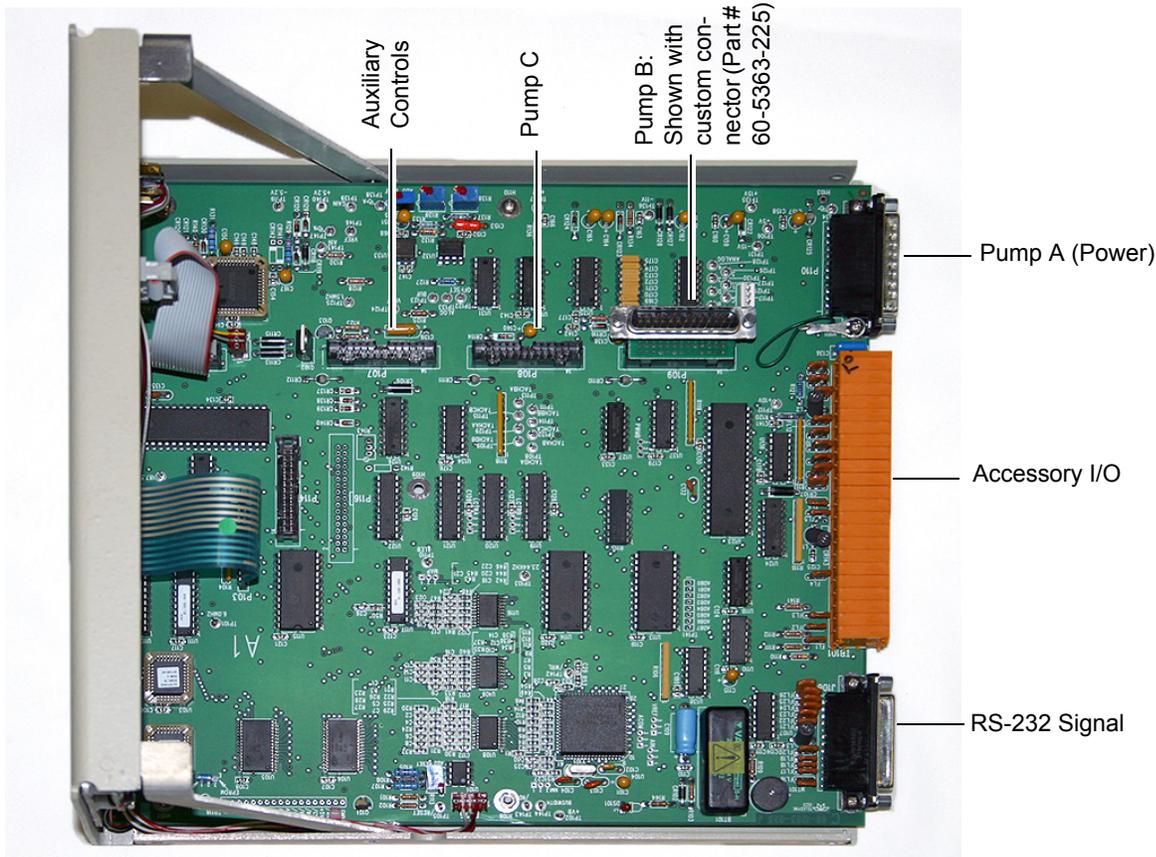


Figure 3: Board connections (See Table for additional information)

Table 2: Pump Controller Rear Panel Connector Functions

AUXILIARY	Connection for external controls.	PUMP B	Only used during multiple pump operation. The control cable from the rear panel of the second pump is attached to this connector.
RS-232	Connection for placing the pump under computer control.	PUMP C	Only used during multiple pump operation. The control cable from the rear panel of the third pump is attached to this connector.
PUMP A	Connection of control cable from pump rear panel. Secure with thumbscrews. The Pump A connector is the only input power connector on the controller. During single-pump operation, the pump must be attached to this connector to power the controller.	ACCESSORY	Connection of input and output signals (such as analog controls and external RUN/STOP).

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