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SEF2-P DC Pump System Controller







The Ultimate DC Hydraulic Pump and Proportional Valve Control System

The Curtis Model SE F2-P is a Half-bridge DC hydraulic pump and proportional valve control system with a flexible feature set. The SE F2-P uses dual ARM Cortex microprocessors to provide high performance and category 2 functional safety.

Model SE F2-P is optimized for use as a hydraulic controller on class I and class II trucks. The SE F2-P is also suitable for hydraulic pump control on other types of mobile machinery, such as aerial scissor lift platforms. System designers can define and control the dynamic performance of their hydraulic pump systems. Model SE F2-P also provides comprehensive vehicle management and CAN capabilities.

FEATURES

- ► Fully integrated Half-bridge hydraulic pump controller.
- Configurable for various hydraulic layouts.
- Rugged housing with a small footprint for its power rating.
- Heavy duty M6 busbars for motor and battery connectors.
- Sealed, 23-pin AMPseal I/O connector.
- Impervious to most oils, solvents, degreasers and other chemicals often encountered by industrial vehicles.
- ▶ IP67 environmental protection as per IEC 60529.
- Exceeds global conformance requirements for functional safety, electrical safety and EMC.
- CE/UKCA marked as a programmable safety device.
- UL583 recognized component (pending).

Motors

- Works with brushed DC pump motors.
- Variable speed Half-bridge DC pump output provides superior regulation of pump motor speed and current demand.







Get More Out of Your Battery— Regardless of the Technology

- High-efficiency means more of your battery's energy is converted to motor output power.
- Configurable overvoltage and undervoltage protection parameters.
- Wide operating voltage range allows use with cell chemistries such as lithium ion.
- Configurable CANbus and VCL allow easy integration with the Battery Management Systems (BMS) typically found on lithium battery packs.

High Performance Dual Microprocessors

- Dual-micro architecture achieves up to PL=c, category 2 functional safety under EN ISO 13849-1:2015 and EN 1175:2020.
- Blazing processor speeds for precise regulation of voltage and current.

Customize Your Vehicle with VCL

 The Curtis Vehicle Control Language (VCL) enables Curtis motor controllers to operate as system controllers, eliminating the need for costly additional controllers.

Highly Flexible I/O

- All I/O pins are multi-function, and can be configured to provide up to:
 - Eight digital/switch Inputs
 - Ten analog inputs
 - One 2-wire or 3-wire potentiometer source
 - Five output drivers, including one proportional valve driver
 - +5V and +12V external power supplies (200mA maximum)

Comprehensive CAN Capabilities

- Configurable 11 or 29 bit protocol support for CANopen or J1939 use.
- Plug and play support for Curtis CAN displays.
- Fully CANopen compliant per CiA 301.
- Acts as a "CAN interpreter" that allows third-party CAN devices with differing profiles to work on the same CANbus.

Diagnostics

- Status LED for at-a-glance system troubleshooting.
- Thermal cutback, warning, and automatic shutdown protect the motor and controller.
- Error logging, fault history and CAN Emergency Messages.

Programmable Over the CANbus.

- Supports most CAN-based service tools used by major industrial truck manufacturers worldwide.
- Develop, configure, optimize and debug vehicle systems with the Curtis Integrated Toolkit.





SYSTEM ACCESSORIES



Curtis Model 3150

A CAN-based color LCD vehicle status display in a rugged 52 mm diameter housing is the ideal partner to Model SE F2-P.

- Battery Discharge Indicator, Service (Hours) Counter and Diagnostic/ Message Center functions.
- Sealed to IP67 front and IP65 rear.
- ► CE/UKCA compliant.
- ▶ UL583 recognized component.
- Optional heater.
- For more information, see the Curtis Instrumentation page.



The Curtis Integrated Toolkit

The Curtis Integrated Toolkit (CIT) provides a suite of development and diagnostic tools for working with CAN systems that use Curtis and third-party CAN devices. CIT consists of the following tools:

- Launchpad Starting point and project editor.
- Programmer
 Configure parameters, view monitor values, and view active faults and the fault history.

- **TACT** Stand-alone oscilloscope and data-logging tool.
- VCL Studio
 Editor and compiler for
 VCL software.
- Menu Editor
 Create and modify programming menus.
- Package & Flash
 Load your software into CAN devices.

The Curtis Integrated Toolkit is compatible with many leading USB>CAN interface dongles from Peak, Kvaser, iFAC, Sontheim, etc. For more information, see the Curtis Programming page.

MODEL CHART

Model Number	Nominal Battery Voltage	Pump Max Current [S2-2 min]	Internal 120Ω CAN Termination
SE F2-P 24-280-001	24V	280A	Yes
SE F2-P 24-280-051	24V	280A	No
SE F2-P 24-400-001	24V	400A	Yes
SE F2-P 24-400-051	24V	400A	No
SE F2-P 48-240-001	36-48V	240A	Yes
SE F2-P 48-240-051	36-48V	240A	No
SE F2-P 48-350-001	36-48V	350A	Yes
SE F2-P 48-350-051	36-48V	350A	No





DIMENSIONS







CONNECTOR WIRING





PINOUT CHART







SPECIFICATIONS

Nominal Input Voltage	24V	36V/48V	
Undervoltage	12V	18V	
Overvoltage	33V	63V	
Electrical Isolation to Heatsink	500VAC		
Storage Ambient Temperature	-40°C to 95°C		
Operating Ambient Temperature	-40°C to 50°C		
Thermal Cutback	Controller linearly reduces maximum current limit when the internal heatsink temperature is between 85°C and 95°C; complete cutoff occurs above 95°C and below –40°C.		
Design Life	8000 hours		
Package Environmental Rating	IP67		
Weight	1.02Kg		
Dimensions W x L x H	155 mm x 120 mm x 55 mm		
Mounting	Clearance holes for 4X M6 bolts		
Power Connections	3x M6x1.0		
EMC	Designed to the requirements of EN 12895:2015+A1:2019		
Safety	Designed to the requirements of EN ISO 13849-1:2015 and EN 1175:2020		
UL	UL583 (pending)		

Note: Regulatory compliance of the complete vehicle system with the controller installed is the responsibility of the vehicle OEM.



Two year limited warranty from time of delivery.



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