



CURTIS

Motor Controllers



DC Series Pump Motor Controller

Model 1216



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Model 1216



DC Series Pump Motor Controller

The Curtis Model 1216 is a highly cost-effective hydraulic pump controller for use with series wound DC motors.

The Curtis Model 1216 provides exceptional value for on-vehicle hydraulic pump motor applications such as scissor lifts and other types of mobile elevating work platforms.

FEATURES

- ▶ Models available in 300A and 360A output at 24V. These are true 2 minute ratings, not short-term boost values.
- ▶ High power density gives maximum power output from smallest possible package.
- ▶ Factory programmable for any pump application.
- ▶ Field upgradeable software.
- ▶ Logic connections via sealed 6-pin Deutsch DT connector.
- ▶ Short circuit and Electrostatic Discharge (ESD) protection on all I/O.
- ▶ Rugged sealed IP65 housing provides excellent chemical resistance and protection from harsh environments.
- ▶ 0–5V throttle input.

Meets or complies with relevant US and International Regulations

- ▶ EMC: Designed to the requirements of EN12895.
- ▶ Safety: Intended for use as a component in a control system that meets EN1175-1:1998+A1:2010.
- ▶ IP65 Rated per IEC 60529 with mating Deutsch connector fitted.
- ▶ UL583.
- ▶ Regulatory compliance of the complete vehicle system with the controller installed is the responsibility of the vehicle OEM.

See a 360° view of Model 1216 at:
curtisinstruments.com/360view



MODEL CHART

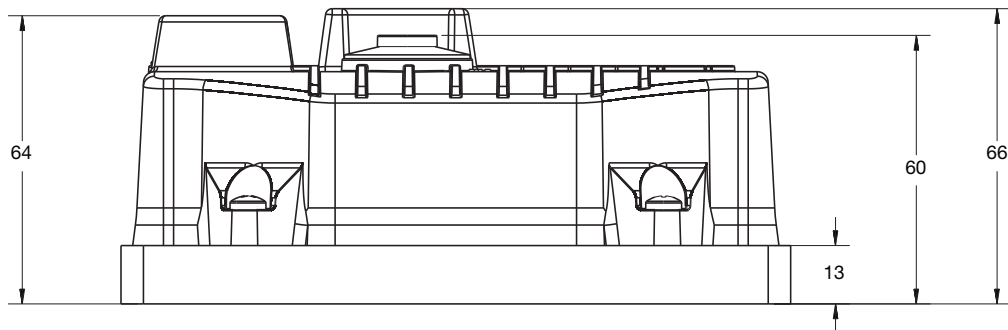
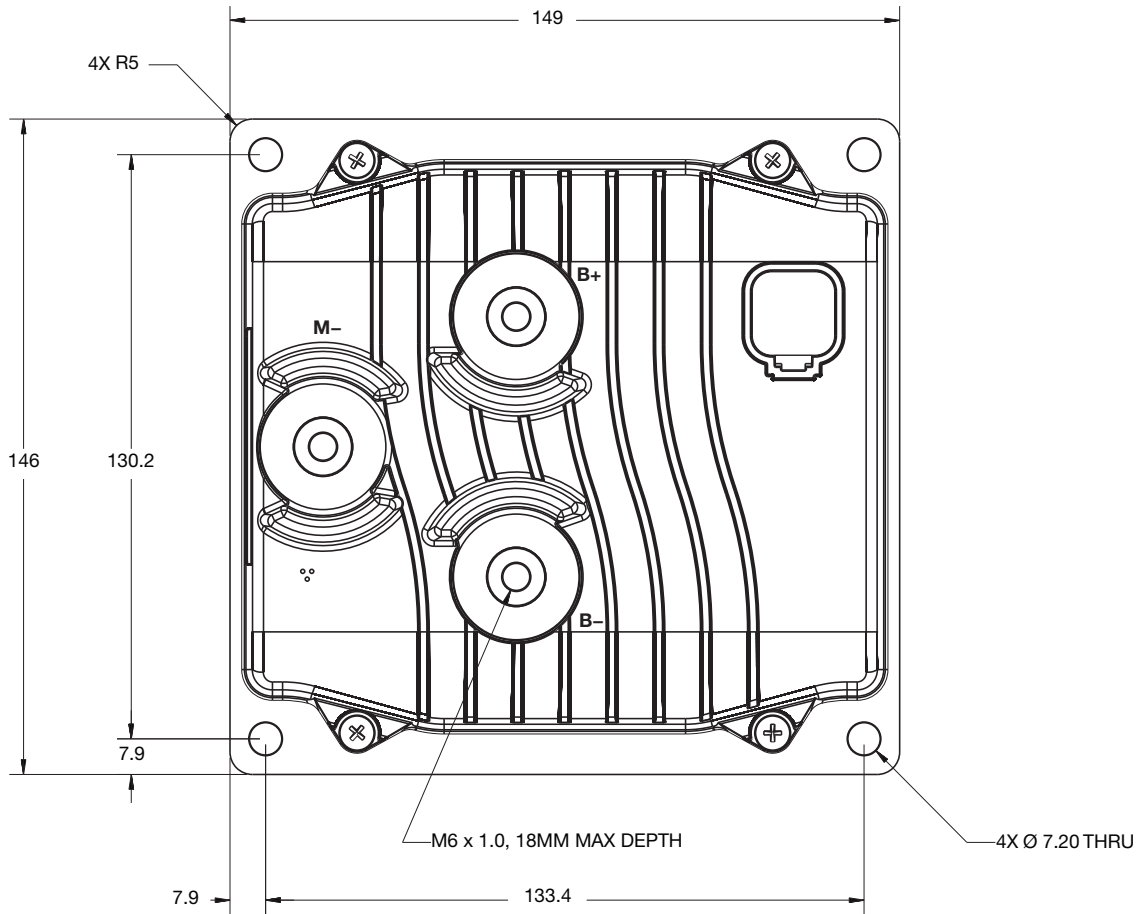
Model	Battery Voltage (V)	2 Minute Current (A)	1 Hour Current (A)
1216-2351	24	300	200
1216-2356	24	360	250

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DIMENSIONS mm (typical)

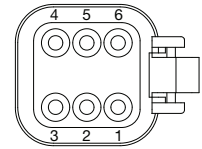
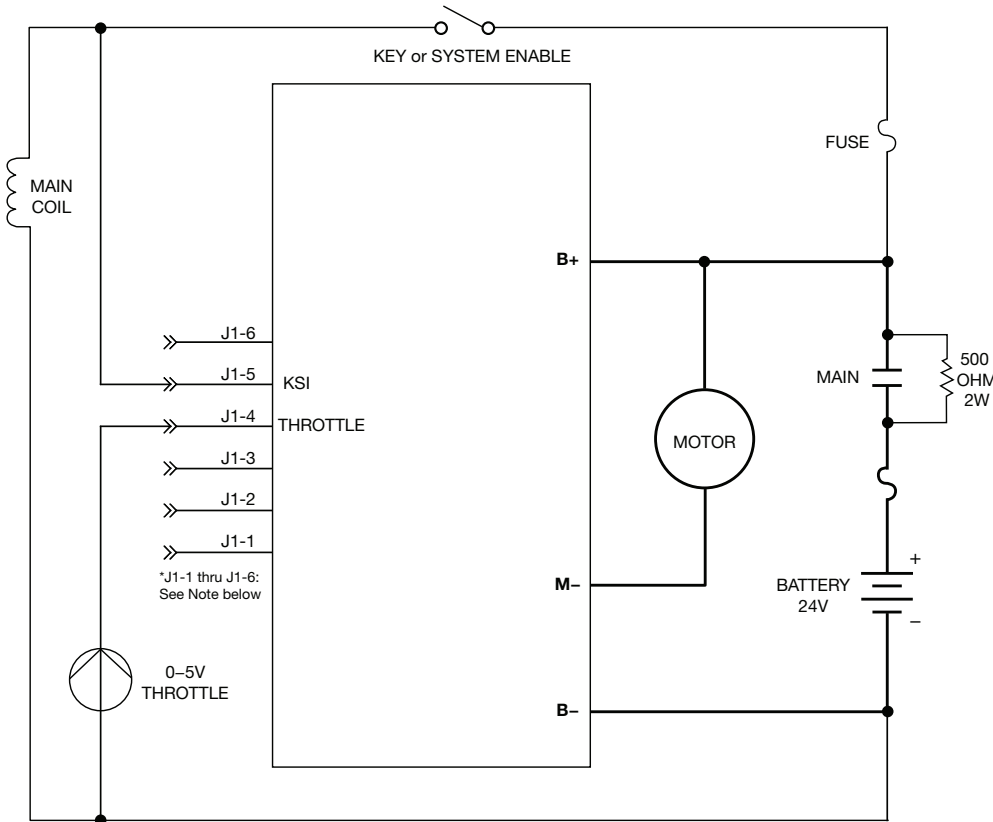


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TYPICAL WIRING DIAGRAM



NOTE: Mating connectors are Deutsch DT06-6S or Amphenol AT06-6S. Also requires associated "plug wedge" and female contact sockets.

SYSTEM ACCESSORIES



The Curtis enGage® II is a dual function, microprocessor based instrument that can be factory or user defined to monitor various functions including fuel, temperature, pressure, voltage, battery state of charge and maintenance/status.



Curtis Albright DC contactors and emergency disconnects are available in a wide range of ratings to suit most industrial electric vehicle applications.



Curtis Model SB beacons are a range of highly reliable multivoltage LED and xenon warning beacons that are suitable for wide variety of industrial applications.

Contact Curtis to obtain the VCL Vehicle Control Language compiler and development tools.

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INSTALLATION

Electrical Specifications

- ▶ Nominal voltage: 24V (current cutback below 12V).
- ▶ Throttle active range: 0.6V to 4.5V (fault condition above 6V).
- ▶ Throttle dead-band: 0V to 0.6V.
- ▶ Throttle input impedance: 14.3k Ω .
- ▶ KSI active range: 12V to 32V (under-over voltage faults).
- ▶ KSI input impedance: 1.2k Ω .
- ▶ One minute timer for maximum current.
- ▶ Current cutback above 85°C.

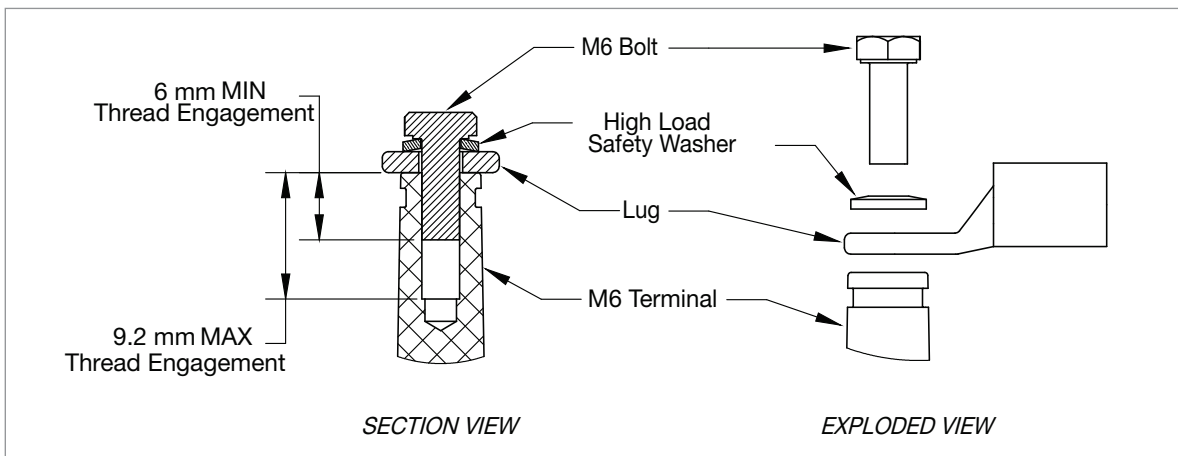
High Current Connections

Three aluminum M6 terminals are provided. Lugs should be installed as follows, using M6 bolts sized to provide proper engagement. (see diagram below).

Place the lug on top of the aluminum terminal, followed by a high-load safety washer with its convex side on top. The washer should be a SCHNORR 416320, or equivalent.

If two lugs are used on the same terminal, stack them so the lug carrying the least current is on top.

Tighten the assembly to 10.2 ± 1.1 N•m (90 ± 10 in-lbs).



Low Current Connections

Pin-4 (Throttle) and pin-5 (KSI) are the only low current connections required for controller operation.

Low current connections are made on the 6-pin connector located on the top side of the controller cover. The appropriate wire size and fuse should be selected, based on the current requirements of the main contactor coil and any other peripheral wiring on the KSI (Key Switch Input) line (refer to typical wiring diagram).

The mating low-current connector should be Deutsch DT06-6S, Amphenol AT06-6S or equivalent. The appropriate female contact sockets along with the connector "wedge lock" should also be selected. The contact sockets may be AWG size dependent.

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CONTROLLER DEFAULT SETTINGS

The 1216 controller settings and performance are optimized for most hydraulic pump motor applications. Controller performance is based on the model selected and a factory programmable parameter set.

The following default settings are provided:

Voltage:

- ▶ Under Voltage Cutback (12V)
- ▶ Under Voltage Cutback Rate (60A)
- ▶ Under Voltage Cutoff (9.6V)
- ▶ Over Voltage Cutoff (33.1V)
- ▶ Over Voltage Hysteresis (0.2V)

Current:

- ▶ Main Current Limit (300 or 360A, model dependent)

Speed:

- ▶ Accel Rate (1.0 sec)
- ▶ Quick Start (0.8 sec)

Throttle:

- ▶ Throttle Deadband (6%)
- ▶ Throttle Max (73%)
- ▶ Creep (4.7%)
- ▶ Max Speed (100%)

Misc:

- ▶ *HPD (On)

*The primary function of the High Pedal Disable (HPD) feature is to prevent the pump motor from turning if the controller is turned on with the throttle already applied.

NOTE: If custom parameter settings are required for your application, please contact your Curtis representative.

TROUBLESHOOTING

Symptom	Possible Cause	Recovery Action
No motor output	Bad connection(s); Maximum current for more than 1-minute; Throttle voltage exceeds 6V; Over-voltage, input exceeds 32V.	Check all power and logic connections; Reduce motor load below controller current limit; Check throttle voltage and lower within range; Check power source and lower within range.
Current cutting back	Supply voltage dropping below 12V; Controller internal temperature exceeds 85°C.	Increase supply voltage to required nominal; Allow controller to cool, may need external cooling.
Current cutting off	Supply voltage dropping below 9V; Controller internal temperature exceeds 109°C.	Increase supply voltage to required nominal; Allow controller to cool, may need external cooling.

WARRANTY Two year limited warranty from time of delivery.



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