

14 Output, 10 Input, Universal Hydraulic Controller Specification

Description

The PWM-6A6 Universal Hydraulic Controller is a programmable control of proportional solenoids and additional switching functions. It can therefore be used for both simple and complex open or closed-loop controls, e.g. for hydrostatic travel drives, working hydraulics or transmission control in mobile applications.

The PWM-6A6 controller is specially developed for use in mobile applications, and satisfies the relevant safety requirements with regard to ambient temperature, strong resistance to shock and vibration, as well as electromagnetic compatibility (EMC).

Internally the controller consists of a powerful 32-bit microcontroller and all input and output circuitry. Capable of measuring analog voltages in the range 0 - 15 V, currents from 0 - 20mA, frequencies from 0 Hz - 10 kHz and switched inputs. The inputs are protected against overvoltage and electrical interference. The voltage inputs can be monitored to detect any cable breaks or short circuits. The proportional solenoid outputs are pulse-width-modulated (PWM) and optimally adapted for electric proportional control of axial piston units and valves to ensure high accuracy and minimum hysteresis. The switched outputs are designed for the direct switching of relays, and switching solenoids.

The USB interface enables the connection for service functions, such as operation code revision uploads and parameter setting. These are done with files on standard USB Memory sticks. CAN-bus interfaces are for exchanging data with other bus users or electronic systems (e.g. joystick, ECU, HMI). The CAN-bus interfaces can each be operated with CAN Open or J1939 protocols. There is also an RS232 port for debugging purposes and/or interfacing to other RS232 devices.

Enclosure

Integrated ferrite filtering, Integrated heat sink, vented enclosure, Sealed to IP66

<http://www.cinch.com/products/modular-integrated-connector-enclosure/modice-se-le>



Controller Features

- Robust design meeting specifications for mobile applications
- High electromagnetic compatibility (EMC)
- Inputs and outputs with fault detection
- Frequency inputs capable of measuring any wave shape and 0 crossing or ground referenced
- Safety features such as independent software watchdog, and central safety cut-off for all outputs
- High side switching Pulse-width-modulated (PWM) outputs with current sensing for open or closed loop circuits
- High side digital outputs with current sensing for fault detection and self protection
- 32-bit microcontroller module
- Supply voltage connections for potentiometers and sensors

Specifications

Power supply

- Nominal voltage 12 and 24 V
- Input voltage: 8...32V DC, max load: 16A
- Protection against over current and reverse polarity at the supply input
- Thermally protection

Constant Voltage Source

- 5 V \pm 0.1 V, max 50mA

Microprocessor

- 32 bit Microprocessor
- 512k or higher FLASH memory
- 256K or higher SRAM memory

USB Port

- USB 2.0 compliant , programming and parameter uploading using USB Memory stick

RS232 Port

- 1 Channels
- Full duplex (Rx, Tx, GND)
- Output transceivers conforming to V24

CANBus port

- 2 channels, support both CAN 2.0B and J1939

Frequency Inputs

- 4 channels, 0...10khz
- Can be configured for threshold $>0.5 V_{RMS}$ for zero crossing inputs or $> 1 V_{RMS}$ for ground reference inputs
- Can be configured as switched inputs
- Protected and filtered

Analog Inputs

- 4 channel voltage inputs, 0...12V, 12bits A/D
- 2 channel current inputs, 0...20mA
- Can be configured as switched inputs
- Protected and filtered

PWM Outputs

- Total 6 channels, 2.5A, frequency configurable, 50...250Hz
- 4 of 6 channels with current measuring for current compensation through software
- Outputs are diagnosed for open/short circuit and over current by software

Digital Outputs

- 6 channels, 3A
- Outputs are diagnosed for open/short circuit and over current by software

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Analog Outputs

- 2 channels, 12bit D/A, +/- 10V, max 5mA

Compliant Standards

RF Immunity

RF Immunity ISO 11452-2
400-1000MHz, 80% mod. 1kHz
1 GHz- 2 GHz, 80% mod. 1kHz
25v/m (Level 1 Severity)

Conducted Immunity

ISO 7637-2 (2011)
System Pulse 1, 2a, 2b, 3b, 4, 5a, 5b

RF Emissions

CISPR 25:2002-08
30 MHz-1GHz

Electrostatic Discharge

acc. to 72/245/EC EN 55025

EN61000-4-2 ISO 10605

Contact +/- 8kv, air discharge +/-15kv

Vibration

ISO 16750-3, 10-2000Hz @ 58m/s

IEC 60068-2-72, 40G for 11ms

Temperature

Operating: -30...+85°C

Storage: -40...+85°C

Libraries and Drivers

The unit is programmed with all input and output drivers. Waterloo Controls can program the devices for application specific functionality on a fee basis, or the OEM can write and have responsibility for programming the application. Application code generation is not through a graphical user interface or through parameters. The compiler for this is commercially available and not supplied by Waterloo Controls.

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