

Overview

DESCRIPTION

The MCW100 Time Proportional Rotary Position Controller provides automatic grade or steering control of paving, trenching and curbing machines. The Controller uses a wand follower to sense the grade level or steering command from a stringline or flat surface.

Two modules are housed in the case of the Controller. The grade sensing module electromagnetically measures the deviation between the true grade of the machine through the follower. The amplifier module receives the signal from the sensor module and produces a voltage output to drive solenoid valves which, on a typical paving machine, operate lift cylinders. Within the amplifier's proportional band, the percent of time the output is on is proportional to the grade error. The MCW100 may be used together with the MCW101 Time Proportional Level Controller to control both parameters simultaneously.

FEATURES

- May be mounted on either side of machine.
- Adjustable tracking force.
- Dual UP/DOWN lamps show deviation from setpoint in RUN and STANDBY modes.
- Adjustable deadband varies sensitivity.
- RUN/STANDBY switch permits operator to switch to manual control.
- Flexible joint on follower prevents breakage.
- Rugged aluminum housing.
- 12V_{DC} or 24V_{DC} supply voltage.
- Reverse polarity and short circuit protected.
- Moisture and corrosion resistant.
- Withstands vibration and shock.

ORDERING INFORMATION

Controller	Supply voltage	Type of output	Id. No.
MCW100C1007	12V _{DC}	Ground side switching	679837
MCW100C1015	24V _{DC}	Ground side switching	679845
MCW100E1005E	12V _{DC}	High side switching	730986
MCW100E1013E	24V _{DC}	High side switching	724633

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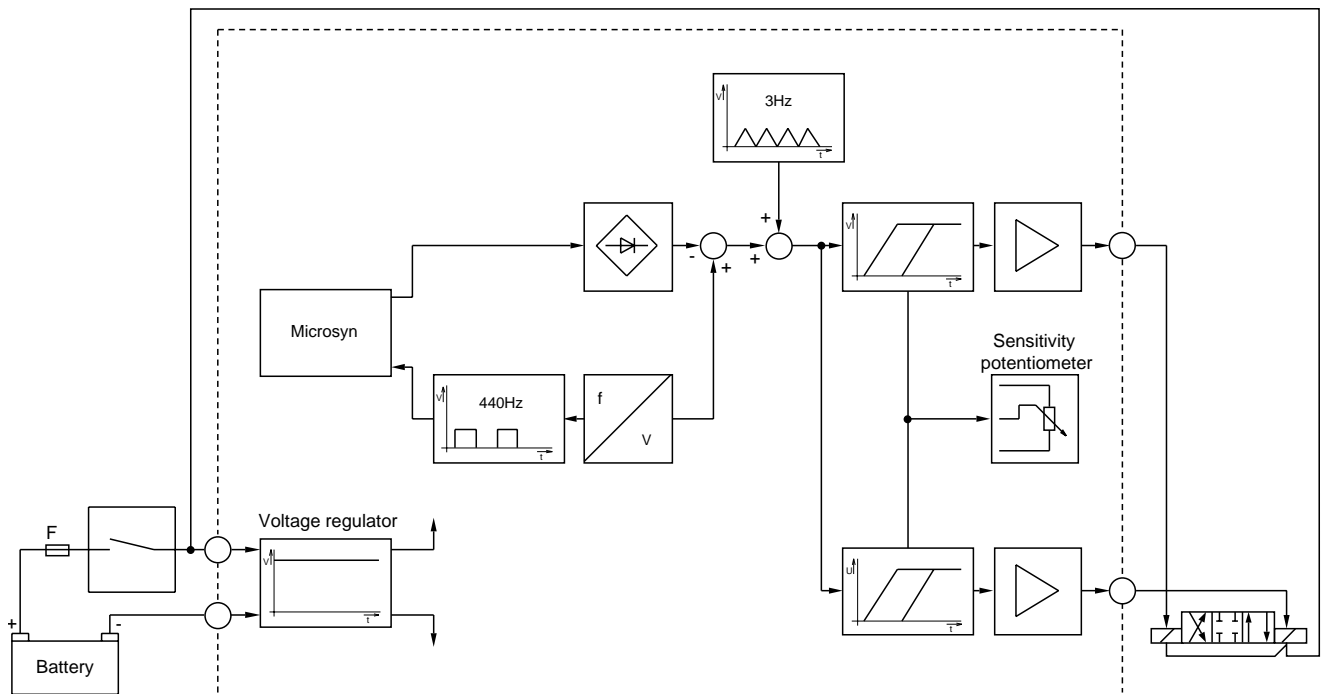
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TECHNICAL DATA

Operating voltage 12V _{DC} :	11V _{DC} to 15V _{DC}
Operating voltage 24V _{DC} :	22V _{DC} to 30V _{DC}
Maximum supply current:	0,6 A (not including output current to the valve)
Maximum voltage droop:	3,5V (3 A load current)
Maximum current output:	3 A
Time proportional output:	f = 3 Hz ± 1 Hz
Minimum pulse width:	t = 37 ms ± 12 ms
Reverse polarity protection:	200V _{DC} maximum
Short circuit protection:	Full, with 0,5Ω maximum resistance

BLOCK DIAGRAM

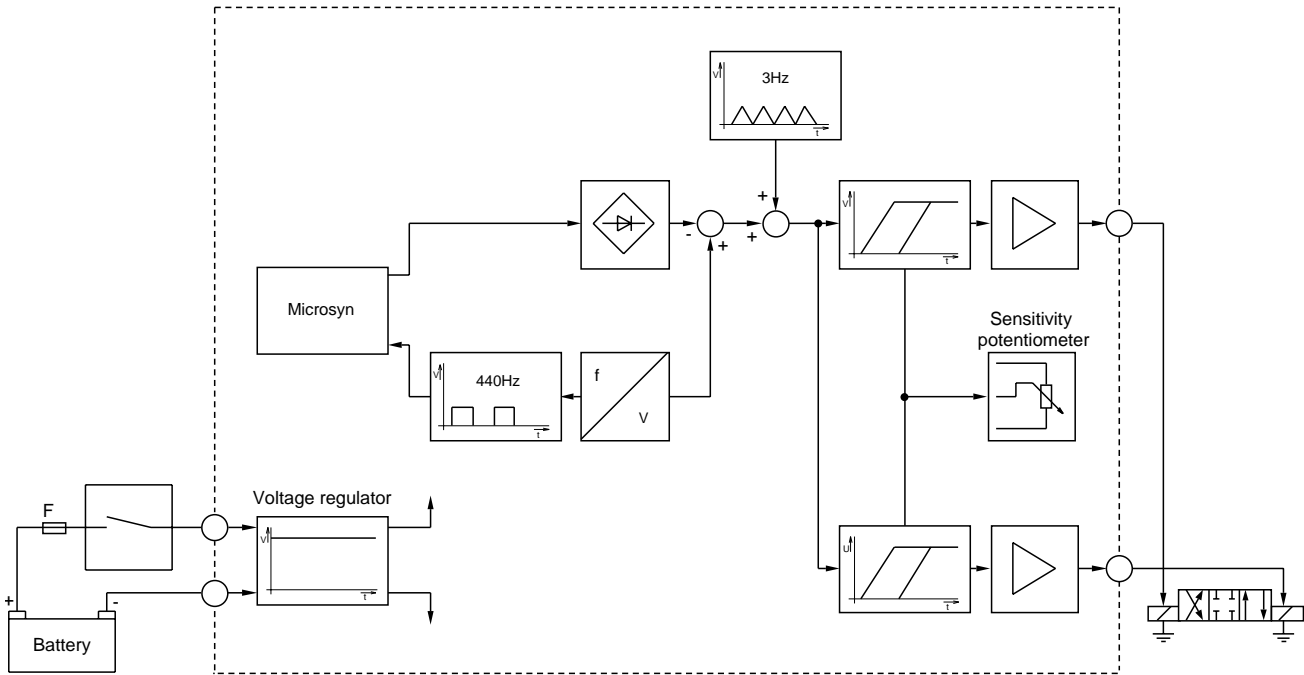
MCW100C - Ground side switching



501800

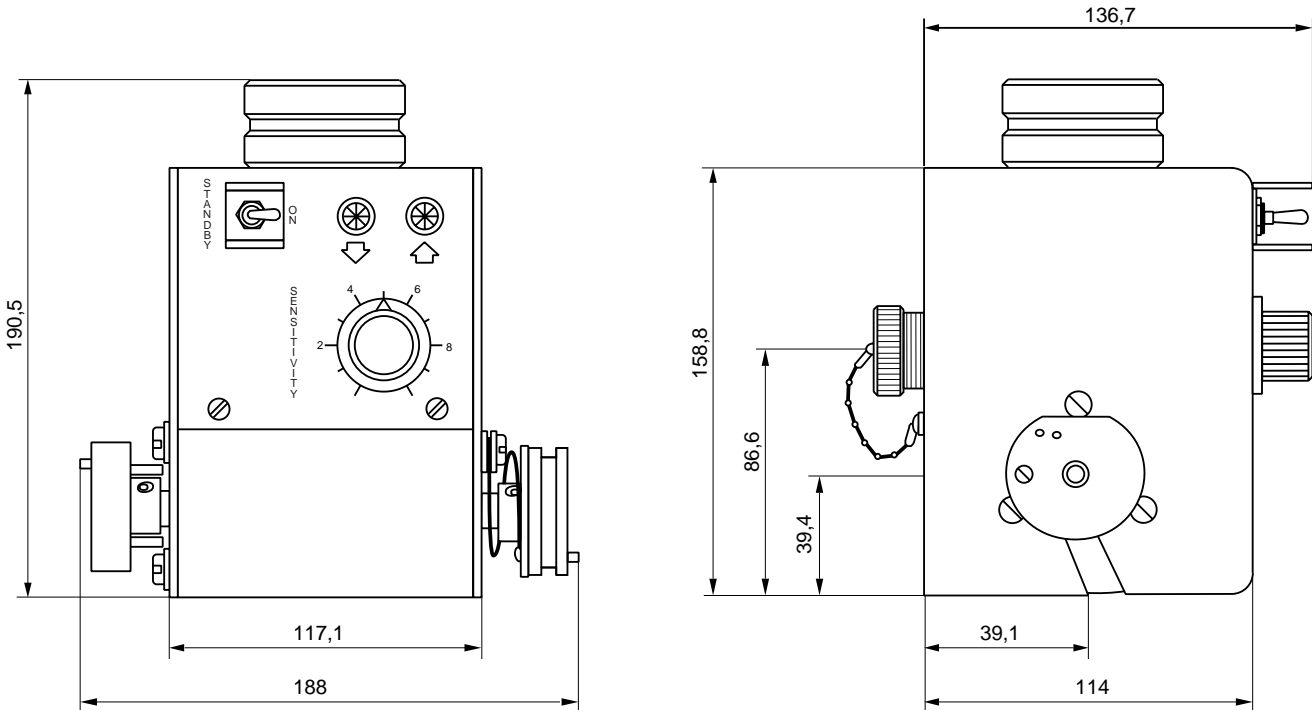
BLOCK DIAGRAM

MCW100E - High side switching



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DIMENSIONS



S00263

THEORY OF OPERATION

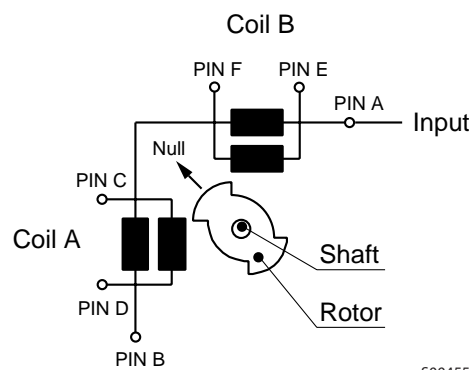
The MCW100 Time Proportional Grade Controller consists of a grade-sensing transducer and an amplifier. The sensor and amplifier are housed in a single aluminum channel and can be removed easily for repair or replacement. They are connected with a MS-connector.

Steering and grade information is sent to the Controller through either a right angle or straight tube follower. Right angle followers are used to sense grade, and are either tubular (for stringlines) or skate and ski (for firm reference surfaces). Straight followers are used to sense a steering path and are tubular. As the reference is raised or lowered - left or right for steering - the transducer shaft is rotated so that the follower maintains contact.

The transducer transforms this shaft rotation into an electrical signal through the rotor/stator interaction, shown in Figure 1. A 440 Hz square wave from the amplifier is applied to the primaries of coils A and B. The stator position with respect to the rotor determines the voltages from the coil secondaries.

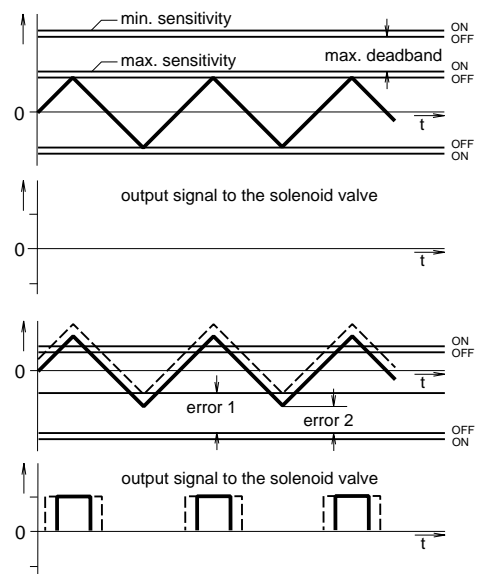
The secondary voltages are demodulated in the amplifier to power a bridge network. A 3 Hz triangular wave is summed with the error signal, defined by the difference between the voltages, to effect the time proportioning. See Figure 2. The sum is compared to a reference voltage by two Schmitt triggers, which drive the output transistors. The separation between the reference voltages (the deadband) is adjustable through a trim potentiometer in the front panel. At minimum sensitivity (wide deadband), a 0,06 inch (six inch grid arm at a 45° angle) error signal will fire the triggers. At maximum sensitivity (narrow deadband), both triggers will fire alternatively at the peaks of the triangular waves, even when the system receives no error signal.

Figure 1: Microsyn transducer representation



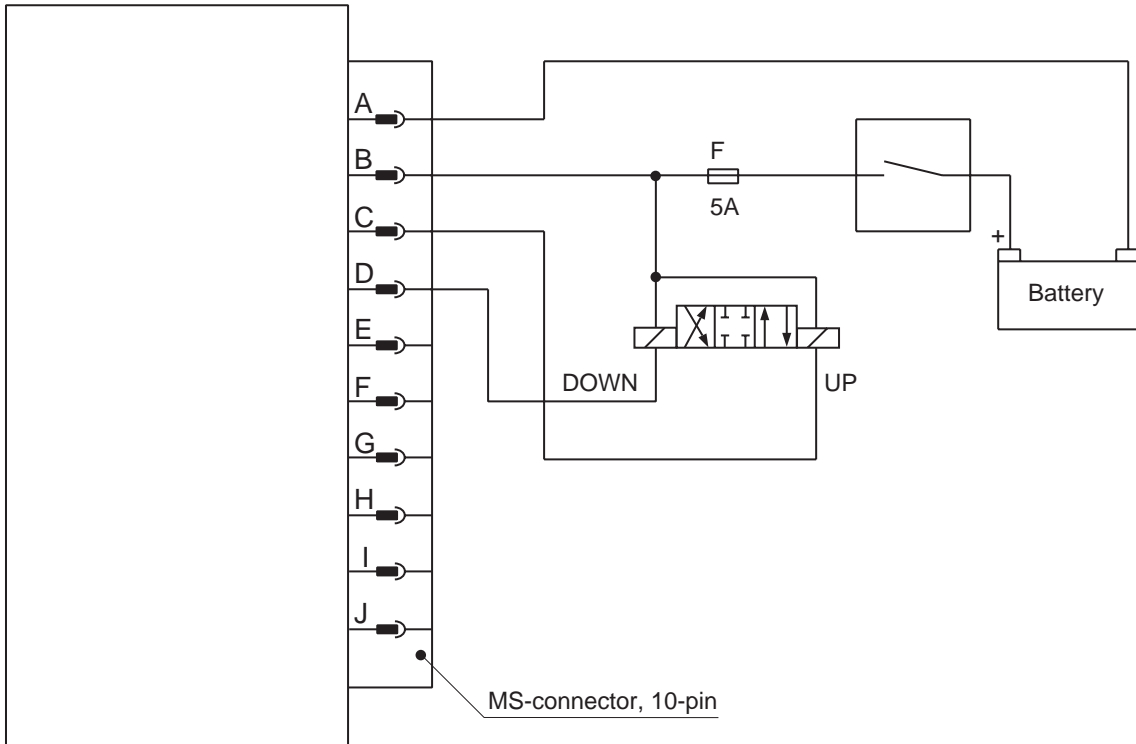
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Figure 2: Deadband



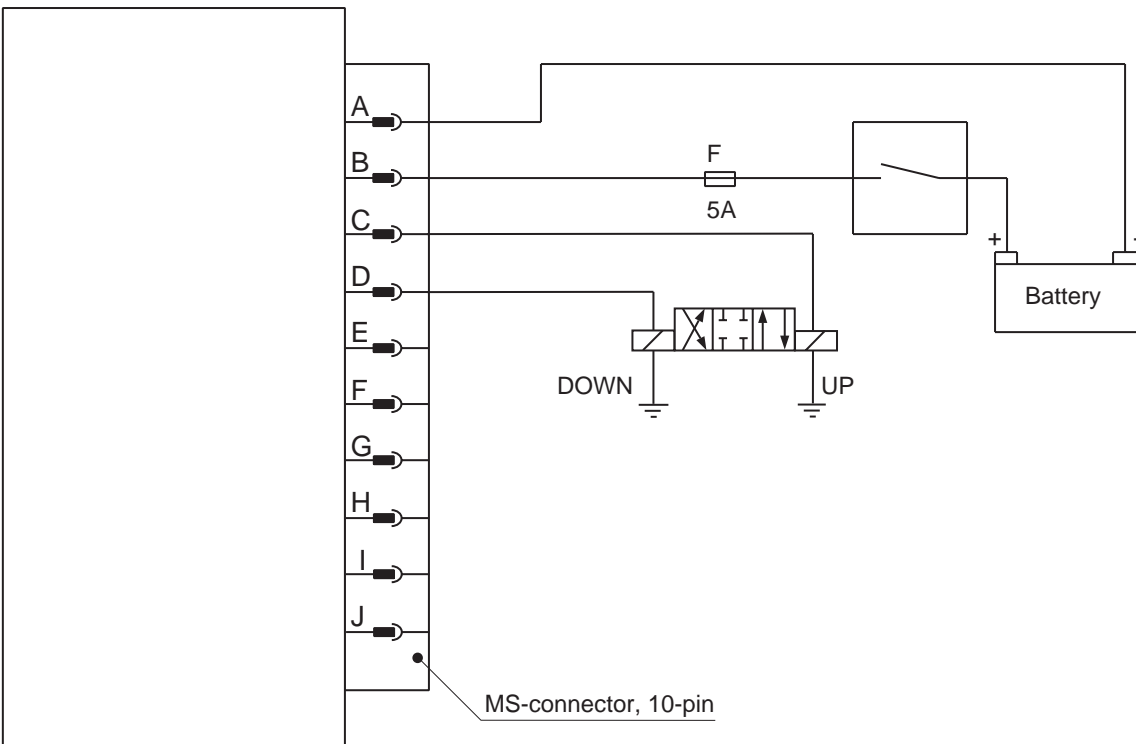
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CONNECTION DIAGRAM MCW100C - Ground side switching



S00371

CONNECTION DIAGRAM MCW100E - High side switching



S00372a



MCW100C, E Time Proportional Rotary Position Controller
Technical Information
Notes



Our Products

Open circuit axial piston pumps
Gear pumps and motors
Fan drive systems
Closed circuit axial piston pumps and motors
Bent axis motors
Hydrostatic transmissions
Transit mixer drives
Hydrostatic transaxles
Electrohydraulics
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Joysticks and control handles
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