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Control Systems Business Group

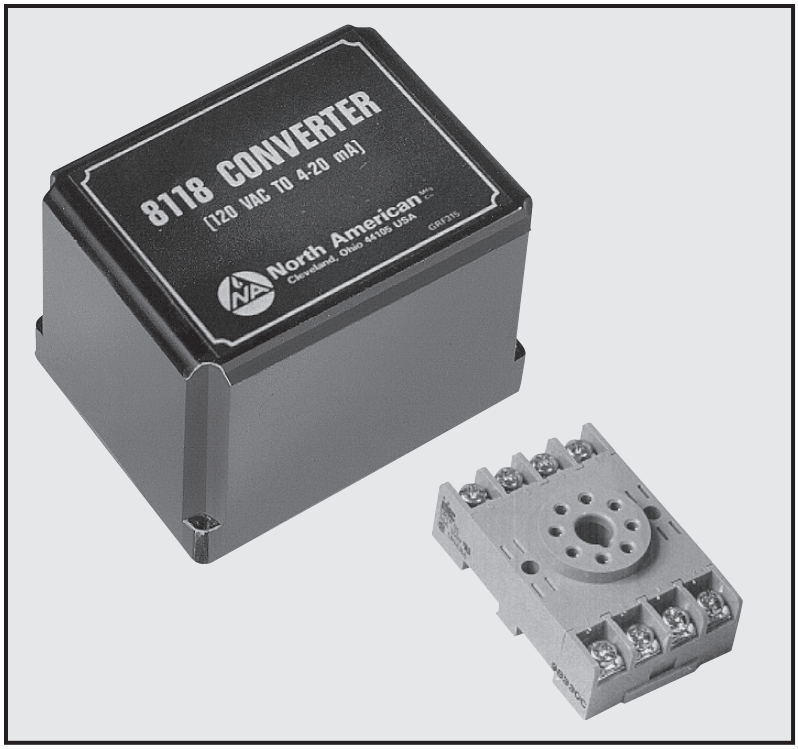
MOTOR DRIVE TO CURRENT CONVERTER

Bulletin 8118

June 1991

The 8118 adapts ac output controllers to 4-20 mA motors. It converts a 120 V ac reversing motor drive control signal to a 4-20 mA control signal. Because it adjusts to varying stroke times, it can be used with a wide range of motor speeds.

To prevent system windup, the 8118 output is automatically reset to 4.0 mA at powerup after a power interruption.



MOUNTING

The 8118 plugs into a standard 8-pin base (included with the unit) and can be DIN rail mounted.

WIRING

Refer to wiring diagram below.

Increase and decrease input neutrals are tied together internally. The output common must be tied to power supply common and is isolated from the input neutral (L2).

All wiring must be in accordance with local and national electrical standards, including the National Electrical Code. Supply power from a switchable fused disconnect or circuit breaker.

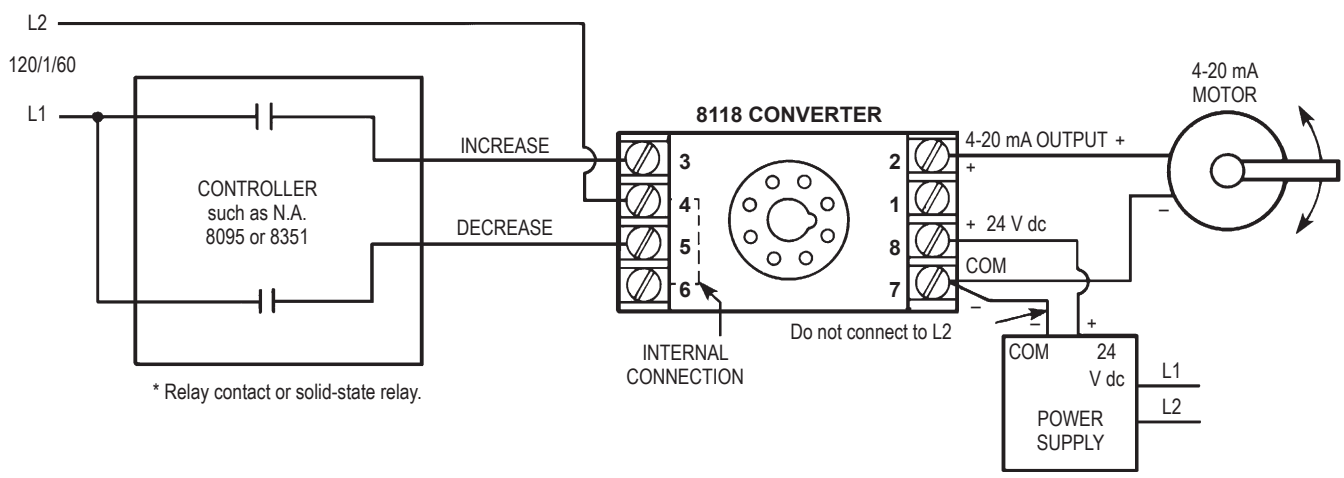
DEFINITION OF TERMS

Conversion Time: Time required for a full scale output change (16 mA) when the input is continuously powered.

Stroke Time: Time required for the motor to drive through its full operating travel range (4-20 mA). It is not always the same as the motor speed. Stroke time is dependent upon the zero and span of the motor electronics.

Response Time: The time required to accumulate enough pulses to increment the mA output. Normally, more than one pulse is required to increment the output. If pulses are widely spaced, it may take several seconds for enough pulses to accumulate. If this is too slow, the fast rate minimally increments the mA output for any input pulse without affecting overall conversion times. Fast response may be desired for applications using high speed motors or tight control.

CAUTION: Interrupting the 4-20 mA signal to the motor may cause system windup. Manual control can be implemented using the increase/decrease inputs.



SETUP

Prior to setup, remove power to the 8118 and unplug it from its socket. Remove the four screws from the enclosure bottom. Remove cover.

Setup consists of setting five switches, located on the front edge of the lower circuit board (see below).

Switches 1 and 2 determine the response time. For start-up, set to Normal as indicated in Table 1.

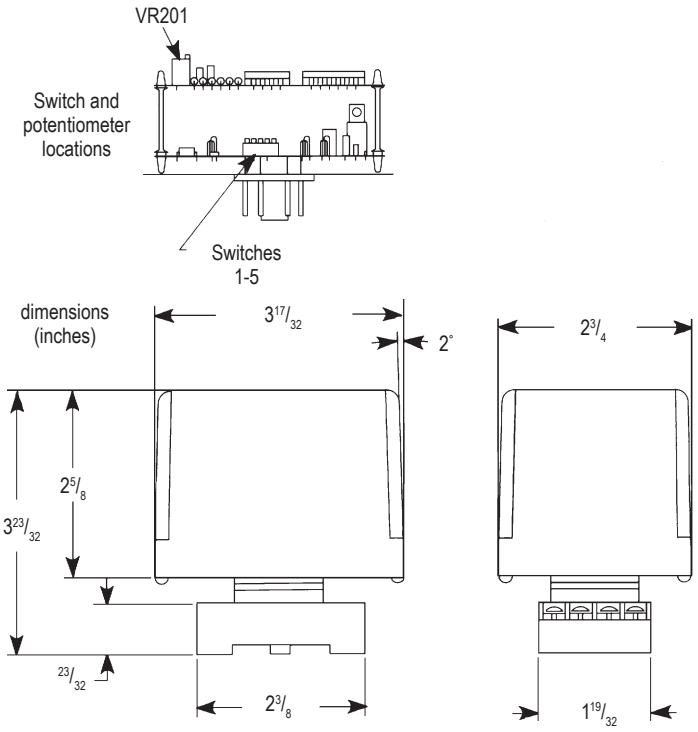
Switches 3, 4, and 5 set conversion time, which should be slightly longer than the stroke time of the motor. If conversion time is too short, control may overshoot or hunting may occur. See Table 2 for conversion time switch settings.

When setup is completed, replace the cover and screws. Do not overtighten the screws. Replace the unit in its socket and restore power.

Run control through a full cycle. If initial response seems slow or delayed, the faster response time may be required. Repeat setup, with switches 1 and 2 OFF.

TROUBLE-SHOOTING

If calibration appears to be off, check it by placing a 120 V ac input on the increase terminal and measuring the maximum output current (terminal 2) into a 100 ohm load. Allow at least two minutes for the output to reach its maximum, which should be 20 mA ±0.05 mA. If calibration is off, correct it by adjusting the VR201 potentiometer located on the upper board. There are no other adjustments.



SPECIFICATIONS

Inputs: 120 V ac (102 to 132 V ac)

Input Threshold: 6 mA rms (compatible with solid-state relays)

Output Range: 4.0 to 20.0 mA into 0-500 ohms

Output Resolution: Better than 0.1% (0.02 mA)

Selectable Conversion Times: 10, 15, 20, 25, 30, 45, 60, or 75 seconds

Ambient Temperature Limits: 32-150 F (0-65 C)

Mounting: Octal socket base

Power Requirements: Nominal 24 V dc at 40 mA (20 V dc min.; 28 V dc max.)

Inputs are optically isolated and compatible with solid- state or electro-mechanical outputs.

Base (NA Part No.): R680-1311

SWITCH SETTINGS

TABLE 1

Response	SW1	SW2
Normal	ON	ON
Fast	OFF	OFF

TABLE 2

Conversion Time (in seconds)	SW3	SW4	SW5
10	OFF	ON	ON
15	OFF	OFF	ON
20	OFF	ON	OFF
25	OFF	OFF	OFF
30	ON	ON	ON
45	ON	OFF	ON
60	ON	ON	OFF
75	ON	OFF	OFF

WARNING: Situations dangerous to personnel and property may exist with the operation and maintenance of an combustion equipment.The presence of fuels, oxidents, hot and cold combustion products, hot surfaces, electrical power in control and ignition circuits, etc.,are inherent with any combustion application. Parts of this product may exceed 160F in operation and present a contact hazard. Fives North American urges compliance with National Safety Standards and insurance Underwriters recommendations, and care in operation.

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