



Product Information

PRODUCT SERIES: DPG-2302

DYNA Programmable Governor for Off Highway All Speed Applications

The DPG-2302 controller has widespread application for many diesel and gas off-highway applications. This microprocessor based, digital controller performs across a wide speed range offering adjustable engine response to speed or load change and stable isochronous operation.

The controller provides isochronous speed control with both adjustable start up fuel limit and ramp rate. Separately programmable proportional, integral, and derivative gains are provided for tailoring governor response to many engine applications. The LED display shows the parameter number of the parameter to be selected or the selected parameter's current value. The controller provides Automatic Calibration of the Remote Speed Input.

The DPG-2302 has an internal FAILSAFE that instantly reacts to loss of speed reference signal allowing the actuator to return to minimum fuel.



DPG-2302

Actuator Compatibility:

DYNA 2000 DYNA 8000
DYNA 2500 DYNA 8200
DYNA 70025 DYNA 8400
Power Flow valves

Other Models Available:

DPG- 2100 - for Generators
DPG- 2200 - for Load Sharing

Automatic Calibration of Remote Speed Input

Serial Communication Port

Isochronous Speed control

User Friendly/Operator Adjustable

.25% Precision Frequency Control

Superior Temperature Stability

Reverse Battery Protection

9 - 30 VDC Input Voltage Range

Smoke Control on Start Up

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Controller Specifications

Operating Voltages:

9 VDC minimum to 30 VDC maximum

Maximum controlled output current: 7 amps

Maximum surge current: 14 amps for ten seconds

Steady State Speed Band:

± .25% over Ambient Operating Temperature
range of -40°F to +180°F (-40°C to +82°C)

Ambient Operating Temperature:

-40°F to +180°F (-40°C to +82°C)

Sealing: Oil, water, and dust resistant via conformal coating and die cast enclosure

Connections: Terminal Strip

Weight: .75lbs (.34kilograms)

Input signal: 0-1000 Hz startup
1000-11,000 Hz normal operation
1 k – 11k k H z

Mechanical Vibration:

Suitable for mounting per SAE J1455

Input signal voltage from mag pickup:

2.0 VAC RMS minimum during cranking

Input signal frequency from mag pickup: Freq.

(Hz)= (Engine rpm * flywheel teeth) ÷ 60 sec.

Controller Adjustment:

The DPG-2302 governor's built-in user interface provides the means to setup and fine tune its operation. Most user adjustable parameters and features can be selected, displayed and programmed using the built-in keypad and LED display. The keypad is used for both parameter selection and parameter modification. The LED display shows the parameter number of the parameter to be selected or the selected parameter's current value.

User Adjustable Parameters

The following list briefly states the function of each keypad accessible parameter.

1. NUMBER OF FLYWHEEL TEETH - is a factor used to display speeds as RPM values instead of MPU Hertz values

2. REMOTE SET SPEED MIN - is the governor's minimum target speed when PEDAL MODE is active.

3. REMOTE SET SPEED MAX - is the governor's maximum target speed when PEDAL MODE is active.

4. SET SPEED A - Is the governor's target speed when SET SPEED A MODE is active.

5. SET SPEED B - Is the governor's target speed when SET SPEED B MODE is active.

6. PROPORTIONAL - is the gain adjustment used to set the controller's duty cycle response to a step speed change or the difference between the target speed and the measured speed.

7. INTEGRAL - is the gain adjustment for reset time and is used to eliminate the speed error.

8. DERIVATIVE - is the gain adjustment that sets the governor's response to the rate of speed change.

9. OVERALL GAIN @ SET SPEED MIN - is the gain multiplier used to compute a dynamic gain that gets applied to the PID terms when PEDAL MODE is active

10. OVERALL GAIN @ SET SPEED MAX - is the gain multiplier that works with OVG @ SET SPEED MIN to compute the gain applied to the PID terms when PEDAL MODE is active.

11. OVERALL GAIN @ SET SPEED A - is the overall gain multiplier applied to the PID terms when SET SPEED A MODE is active.

12. OVERALL GAIN @ SET SPEED B - is the overall gain multiplier applied to the PID terms when SET SPEED B MODE is active.

13. GAIN FACTOR - is a factor used to give more or less power to the Overall Gain term.

14. SPEED FILTER - is a factor in a filter equation used to smooth out engine speed measurements.

15. ACCEL RATE - is the number of Hertz per second allowed to adjust the rate of engine acceleration applied by the governor when the measured speed is below the target speed.

16. DECEL RATE - is the number of Hertz per second allowed to adjust the rate of engine deceleration applied by the governor when the measured speed is above the target speed.

17. STARTUP RATE - is the number of Hertz per second used to ramp the governor's target speed from the engine crank speed to the selected set speed.

18. START UP LIMIT – is the percentage of full-scale actuator current the actuator drive circuit is limited to during engine starting.

19. TORQUE LIMIT – is the percentage of full-scale actuator current the actuator drive circuit is limited to after completion of the startup ramp.

20. INT LOW LIMIT - is the duty cycle percentage where integration stops when trying to decrease speed

21. INT HIGH LIMIT - is the duty cycle percentage where integration stops when trying to increase speed.

22. PASSWORD PROTECT - is a key used to lock or unlock the capability to modify the parameters listed above

23. OVER SPEED LIMIT – is a percentage of the selected set speed that when exceeded for .25 seconds will cause the engine to shut down.

24. MINIMUM SET SPEED – is the absolute minimum allowable set speed value for the controller's range of operation.

25. MAXIMUM SET SPEED – is the absolute maximum allowable set speed value for the controller's range of operation.

26. %DUTY CYCLE – sets the maximum level of electrical current allowed to flow through the actuator during normal operation. This value represents a percentage of the maximum steady state electrical current (7 amps) allowed by the governor to flow through the actuator.

27. SPEED POT ACTION – determines how the controller interprets the REMOTE SET SPEED

SIG input. A value of zero represents a forward acting (CW) pot, a value of one a reverse acting (CCW) pot.

28. SPEED POT MIN – is the remote speed pot's minimum position recorded while in the learn mode.

29. SPEED POT MAX – is the remote speed pot's maximum position recorded while in the learn mode.

30. INPUT POLARITY – determines how the controller interprets the logic states of the DIG IN A and B inputs.

31. E1 HANDLER SELECT – determines how the governor will handle clearing the E1 error. Upon detecting an E1 error condition the governor automatically returns to the Remote Speed Min value.

Governor's COMM Port

The DPG-2302 governor's serial port provides access to the same user adjustable parameters described above. In addition, the serial port provides access to the diagnostic information listed below.

MPU FREQUENCY – is the frequency in Hertz at the controller's magnetic pickup (MPU) terminals.

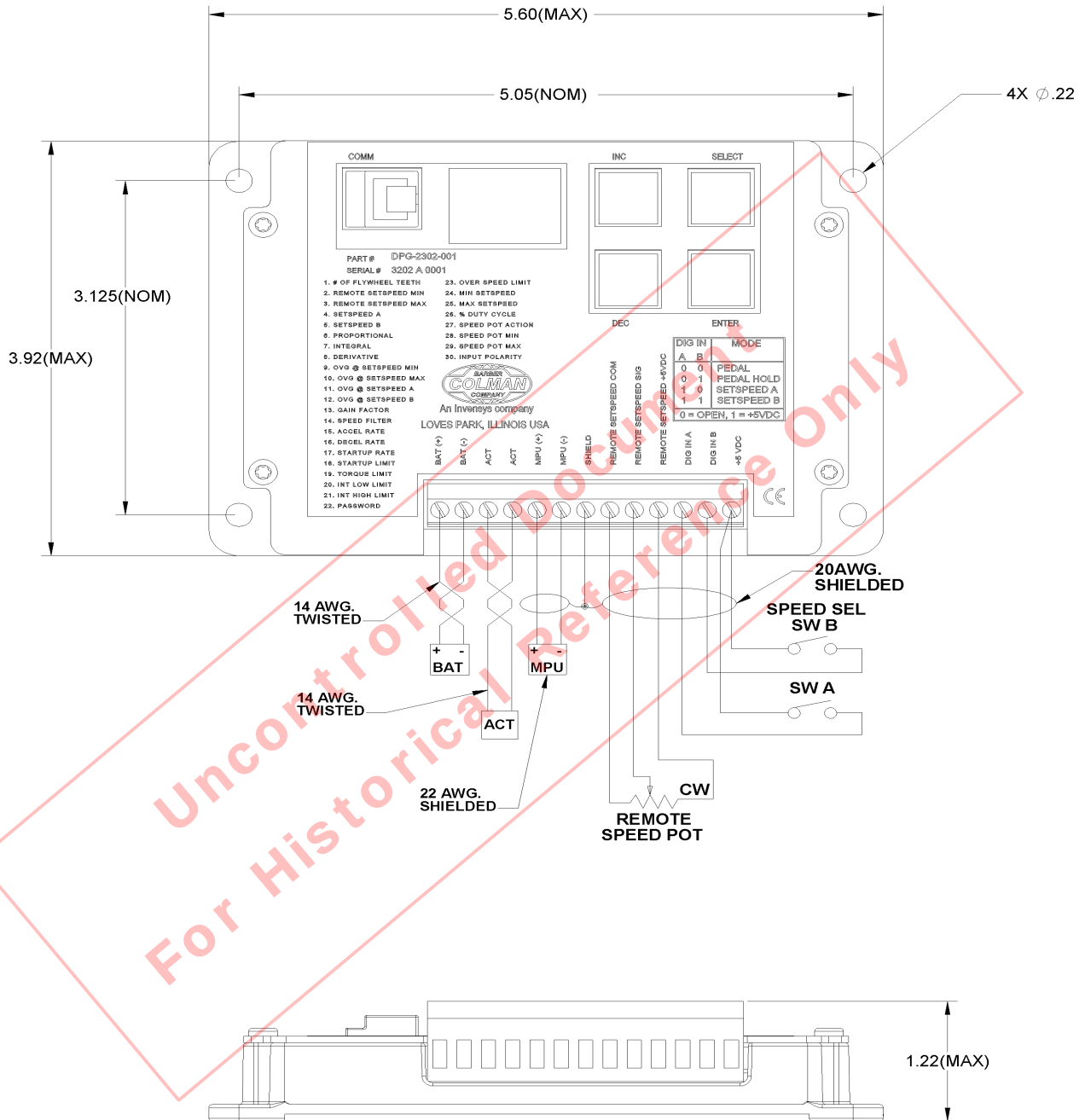
ACTUATOR CURRENT – is the percent of allowed electrical current flowing through the actuator.

BATTERY VOLTAGE – is the voltage measured across the battery terminals.

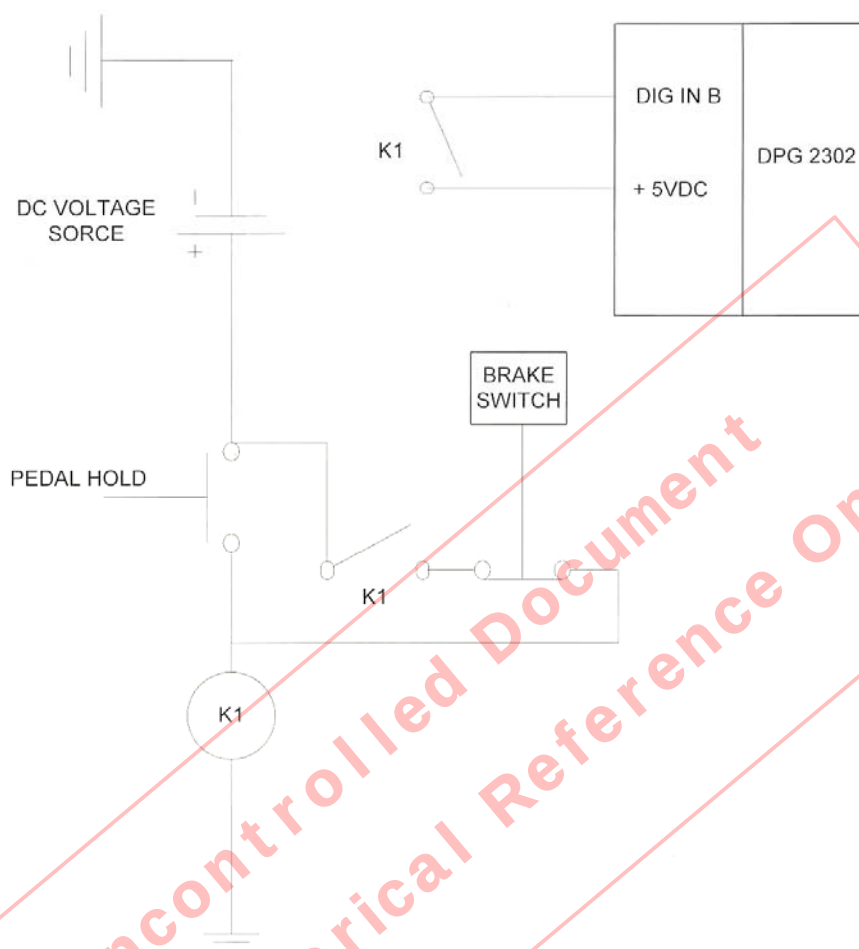
KEYPAD STATUS – is the state of the switches that make up the keypad.

DIGITAL INPUT – is the state of the controller's Digital in A and Digital in B inputs.

The controller's serial port hardware is compatible with the RS232 port on most computers. Parameter values are read from or written to the DPG-2302 using the MODBUS communications protocol. Refer to the DPG-2302 Technical Manual for information on how to use the controller's serial interface.



Preferred wiring for cruise control.



- CAUTION -

As a safety measure, the engine should be equipped with an independent overspeed shutdown device in the event of failure which may render the governor inoperative.

- NOTE -

Barber-Colman believes that all information provided herein is correct and reliable but reserves the right to update at any time. Barber-Colman does not assume any responsibility for its use unless otherwise expressly undertaken.