MCC-001, Nitrous Micro Control Center

Installation and Operating Instructions

PN: L460449900

Lingenfelter Performance Engineering
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MCC-001

Nitrous Micro Control Center

Parts List

#	Part Number	Description
1	**L460449900** (MCC-001)	Nitrous Micro Control Center.
1	6x32x1/2”	Mounting hardware.
12	321288	Terminals
12	1/8” x 1”	Shrink Wrap

- **Integrated RPM Window Switch & Trans-brake Input**
- **Throttle Position Sensor Accepts Rising & Falling Signals**
- **Independent Nitrous & Fuel Solenoid Outputs with Programmable Ramps**
- **32-Bit Microprocessor Encased in Billet Aluminum**
- **Compact Direct Sunlight & Low Light Readable LCD Display**

Lingenfelter MCC-001 Nitrous Micro Control Center is a single-stage nitrous controller that utilizes the advanced technology from the very successful Lingenfelter NCC-002 Nitrous Control Center in a more convenient compact design. It has a simple menu-driven interface that delivers quick setup as well as easy adjustments, and the LCD display has a white LED background, so it is readable in direct sunlight as well as low light conditions.

Performance driven engineering incorporates an integrated RPM window switch and trans-brake input as well as a throttle position sensor input that accepts rising and falling signals. It also features separate nitrous and fuel solenoid outputs with independent programmable ramps. The single-stage timing retard control provides a 12-volt output.

To withstand the rigorous racing environment, the 32-bit microprocessor is encased in a billet aluminum enclosure filled with epoxy for durability.

Operating Voltage: 10 to 18 volts
Solenoid Output Max Current: 30 amps
Activation Input: 5 to 18 volts
Tbrake Input: 5 to 18 volts
TPS Input: 0 to 5 volts normal operating voltage, maximum +18 volts with internal active clamp
Retard Control Output: battery voltage - .9 volts @ .250 amp

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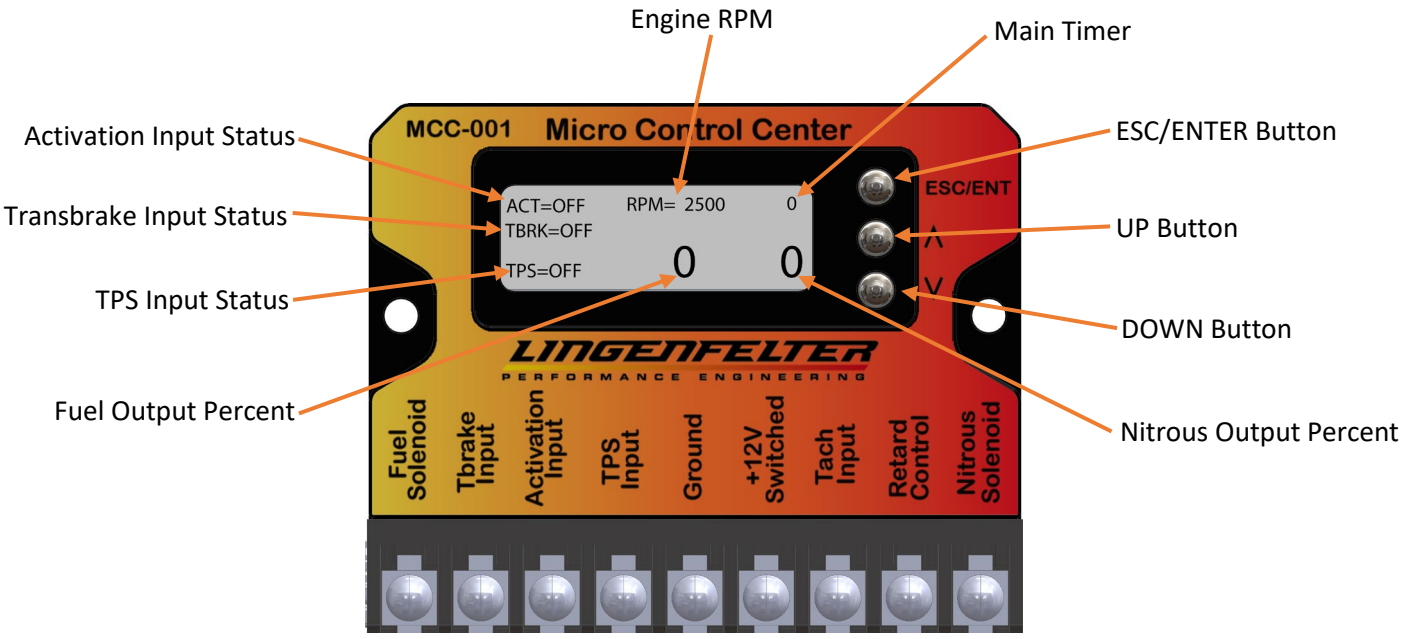


Fuel Solenoid – provides ground for fuel solenoid.

Tbrake Input – input signal from trans-brake or clutch switch. The activation input and TPS input will be ignored while this input is active. This input is used for launch control. Apply a +12v to this input to activate.

Activation Input – input to start the nitrous progressive ramp and enable the solenoids when the TPS Input function is disabled. (see TPS setup menu to enable/disable) This input MUST be on via an arming switch when the TPS (throttle position sensor) Input is enabled for operation.

TPS Input – throttle position sensor input. This input can accept an analog voltage to control the start/stop of the progressive nitrous ramp and solenoids. This feature can be enabled or disabled with the TPS Menu.

Ground – battery ground.

+12V Switched – switched +12-volt input.

Tach Input – input signal from coil negative terminal or dedicated tach signal from the ignition system.

Retard Control – provides a +12V low amperage signal to control ignition retard when the solenoids are active.

Nitrous Solenoid – provides ground for nitrous solenoid.

Limited Warranty

LPE warrants the MCC-001 Micro Control Center to be free from defects in material and workmanship under normal use and if properly installed for a period of one year from date of purchase. If the module is found to be defective as mentioned above, it will be replaced or repaired if returned prepaid along with proof of date of purchase. This shall constitute the sole remedy of the purchaser and the sole liability of LPE. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall LPE be liable for special or consequential damages.

User Interface

ESC/ENTER – press and release for escape function. Press and hold for 2-seconds for enter function.

UP – use to navigate up menu selections and to increase value of a selected setting.

DOWN – use to select the main menu from the main screen, navigate down menu selections, and to decrease value of a selected setting.

Menu Navigation

Press and release the down button from the main screen. Use the Up/Down button to select the desired menu. Press and hold the Esc/Enter button to enter the selected menu option. Press and release the Esc/Enter key to go back.

How to adjust and program a new setting - Press and hold the Esc/Enter button to access the desired setting. Use the Up/Down buttons to adjust. Press and hold the Esc/Enter button to program the new setting. To exit without saving press and release the Esc/Enter Button.

Nitrous Menu

Nitrous Delay – use this setting to delay the activation of the nitrous and fuel progressive ramp. Setting range is 0.0 to 10.0 seconds in .1 second increments.

Start Percent – this setting controls the start percent of the nitrous ramp. Setting range is 10 to 100 percent in 1 percent increments.

Ramp1 Percent – this setting controls the end percent of the first nitrous ramp. There are two set points available and two ramp times. This setting may be greater than, less than, or equal to the start percent setting, the MCC-001 will either ramp up or down depending on the settings. Setting range is 10 to 100 percent in 1 percent increments.

Ramp1 Time – this setting controls the amount of time to go from the start percent to ramp1 percent on the nitrous output. Setting range is .1 to 10.0 seconds in .1 second increments.

Final Percent – this setting controls the final percent on the nitrous output after both progressive ramps have completed. This setting may be greater than, less than, or equal to the ramp1 percent setting, the MCC-001 will either ramp up or down depending on the settings. Setting range is 10 to 100 percent in 1 percent increments.

Ramp2 Time – this setting controls the amount of time to go from the ramp1 percent to final percent on the nitrous output. Setting range is .1 to 10.0 seconds in .1 second increments.

Fuel Menu

Start Percent – this setting controls the start percent of the fuel ramp. Setting range is 10 to 100 percent in 1 percent increments.

Ramp1 Percent – this setting controls the end percent of the first fuel ramp. There are two set points available and two ramp times. This setting may be greater than, less than, or equal to the start percent setting, the MCC-001 will either ramp up or down depending on the settings. Setting range is 10 to 100 percent in 1 percent increments.

Ramp1 Time – this setting controls the amount of time to go from the start percent to ramp1 percent on the fuel output. Setting range is .1 to 10.0 seconds in .1 second increments.

Final Percent – this setting controls the final percent on the fuel output after both progressive ramps have completed. This setting may be greater than, less than, or equal to the ramp1 percent setting, the MCC-001 will either ramp up or down depending on the settings. Setting range is 10 to 100 percent in 1 percent increments.

Ramp2 Time – this setting controls the amount of time to go from the ramp1 percent to final percent on the fuel output. Setting range is .1 to 10.0 seconds in .1 second increments.

Config Menu

Main Timeout – once the controller is activated a timer is started that controls the maximum amount of time the nitrous and fuel outputs can remain on. This setting controls this duration and the range is 20 to 300 seconds.

Hold & Wait – when this option is ON the progressive ramps and timers will go into a hold state if the activation signal is removed before the main timer expires. When the activation signal is re-applied the outputs and timers will resume. If this option is OFF the progressive ramps and timers will reset each time the activation signal is removed.

Pulse Frequency – this setting controls how many times per second the solenoids turn on and off. The percentage settings set the duty cycle or the amount of time each output is on during each pulse. A lower frequency setting typically allows the solenoids to open at a lower percentage. Each setup is unique and it is up to the user to test and determine the best setting. A good starting point is 20 to 22 pulse per second. Setting range is 10 to 30 pulse per second. When the outputs go to 100 percent the solenoids will not pulse and will be on at a steady state.

Tbrake In Delay – when the trans-brake input is active the activation input and the TPS input is ignored and the solenoid outputs remain off. During launch conditions (before the MCC-001 is activated for the first time) this setting is ignored. After the controller has been activated and this input becomes active by a clutch switch for a manual transmission shift this timer, if enabled will ignore the input for the duration programmed. This keeps the system from going into hold mode or resetting between shifts. Setting range is 0.00 to 1.50 seconds in .01 second increments.

Retard Hold – when this setting is ON the retard control output will remain at +12v if the activation signal is removed. When this setting is OFF the retard control output will turn off if the activation signal is removed and turn back on when the activation signal is re-applied.

Factory Reset – use this option to return the MCC-001 to a default out of the box state. All settings will be returned to default settings. The controller will reboot after the settings are restored. You may exit and skip restoring the settings by using the Esc function, press and release the Esc/Enter button instead of holding it for two seconds.

RPM Menu

RPM Window – when the RPM window feature is enabled the minimum RPM and maximum RPM settings will be available for use. The outputs will remain off if the RPM is below or above the respective settings.

Nitrous On RPM – this is the minimum RPM before the solenoid outputs will become active. Any engine RPM below this setting will disable the solenoid outputs. The setting range is 2000rpm to 1000rpm less than the nitrous off rpm. A minimum rpm window of 1000 will be maintained.

Nitrous Off RPM – this is the maximum RPM before the solenoid outputs will be disabled. Any engine RPM above this setting will disable the solenoid outputs. The setting range is 1000rpm greater than the on rpm and a maximum of 16,000rpm.

Pulse Per Rev – this setting determines how many tach input signals are present for each revolution of the engine. Use the rpm reading on the main display to verify the correct setting.

TPS Menu

TPS input – when this option is enabled a throttle position sensor analog signal can be used to activate the controller. The activation input MUST also be on for operation. The analog signal may be rising or falling and must have a span of at least 2.00 volts. If the programmed settings for idle voltage and wide-open throttle voltage do not have a range of at least 2.00 volts a message will be displayed on the main screen and the controller cannot be activated. See programming instructions below.

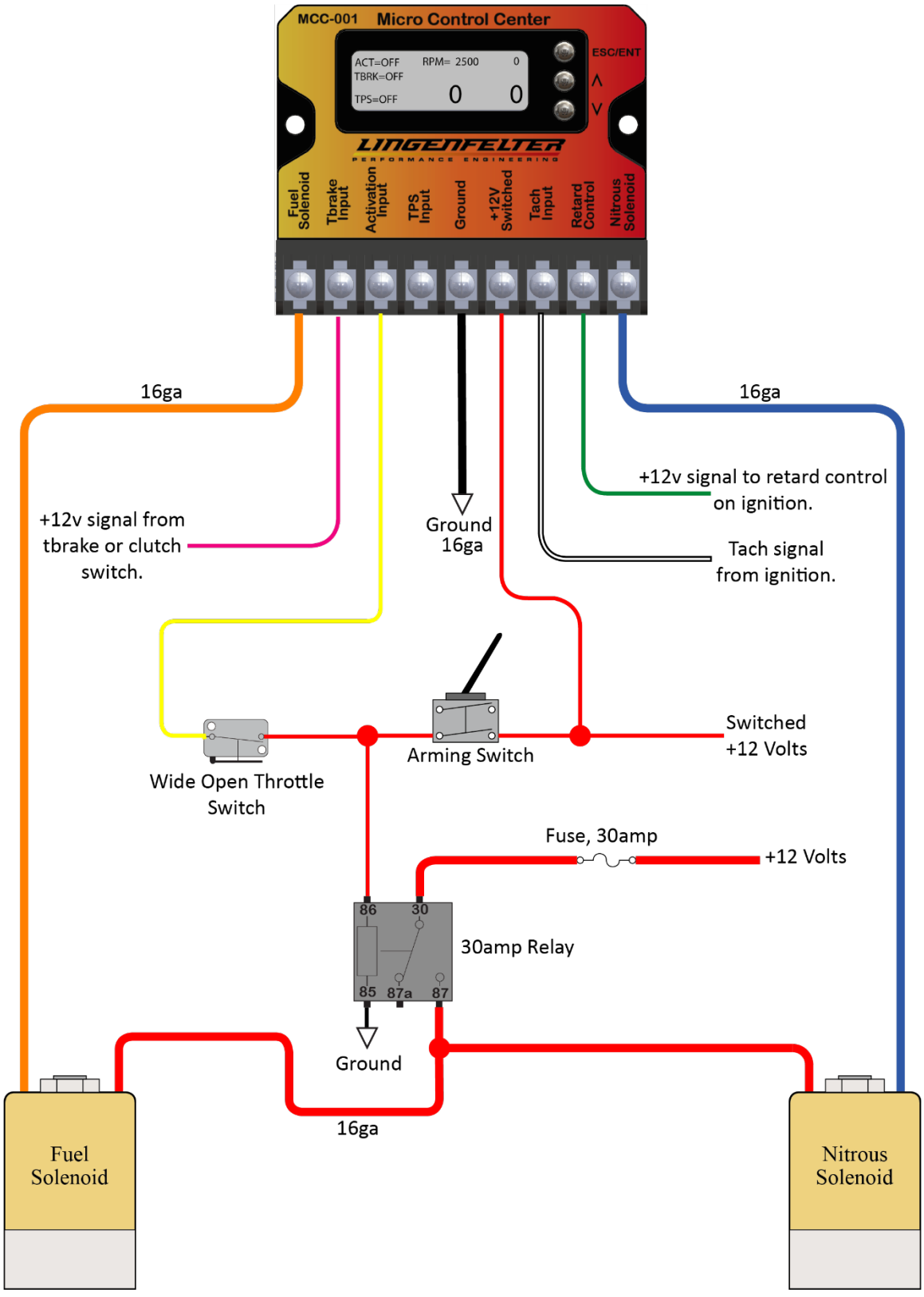
IMPORTANT – it is up to the technician installing the controller to verify proper connection to the sensor. Some sensors do NOT provide an analog signal and cannot be used for this application.

TPS Activation% - this setting determines the throttle percentage for activation. The current percentage is calculated by the MCC-001 based on the programmed idle and WOT settings. The setting range is 80 to 95 percent in 1 percent increments.

TPS Voltage Range – use this menu selection to set the voltage1 (idle voltage) and the voltage2 (WOT voltage) settings using live readings from the throttle position sensor. Highlight the desired setting and press and hold the Esc/Enter button to program. Press and release the Esc/Enter button to exit without saving the settings.

TPS Idle Voltage & TPS WOT Voltage – use these menu selections to manually adjust the idle and wot throttle voltage settings.

Wiring Diagram, no Throttle Position Sensor



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Wiring Diagram, with Throttle Position Sensor