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LNC-2000-2SR Launch Control Module with 2 Stage Retard Installation and Operating Instructions

Adjustable RPM Limiter & Timing Retard Controller

For GM LSx Series Engines

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PN: L460435297

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Parts List

#	Part number	Description
1	LNC-2000-2SR	LPE Launch Controller
1	XX03975-0003	72” trigger wire harness *(part of PN LNC-2000-2SR)*
2		Hook & loop tape, 3.5” length
4	AV16037	Self-tapping screw
3	L450080000	Transient voltage suppression (TVS) diode kit
1	L950050000	LPE technician’s screwdriver
2	L920180000	LPE bumper sticker & sponsor decal
1		Instructions

Specifications:

- Custom molded high temperature glass filled Nylon 6 enclosure with direct access to the controller settings without requiring removal of a cover or access panel
- 40 MHz 16-bit automotive qualified processor with eight channel Enhanced Time Module
- Each coil drive circuit has a dedicated timer to keep the timing accurate over the full RPM range
- Independent coil drive provides Sequential Ignition Kill when RPM limiting is active
- Reverse battery protection
- The activation inputs have active clamps and optical isolation to suppress electrical noise from external solenoids (such as trans brake and line lock)
- Digital noise filtering to isolate the LNC from unwanted electrical signals
- Separate RPM x100, RPM x1000, Max Retard switches for easy setting adjustments
- RPM limiter activation point can be adjusted from 1,500 to 9,900 RPM in 100 RPM increments
- **+12 Volt Activation** inputs are provided for RPM limit activation and Retard activation
- Timing retard capability with up to 15 degrees of timing retard authority per stage (30 total)
- Dedicated timing retard trigger input wires (for nitrous activation or other timing retard activation).
- Analog voltage output wire for sending timing retard information to data acquisition systems (EFILive, HPTuners, DashDAQ, etc.)
- True plug-and-play coil pack connection design for ease of installation and removal
- Fully encapsulated (potted) construction for added durability
- One year warranty (from date of purchase).

Note: The LNC-2000-2SR receives power and ground from the coil pack connectors. The +12V activation wires are not power for the controller.

LNC-2000-2SR description:

Sometimes referred to as a 2-step or launch controller, the LNC-2000-2SR adjustable RPM limiter and timing retard controller can be used to provide consistent launch RPM off the line in drag racing and other standing start racing applications. In turbocharged applications the LNC-2000-2SR can also be used to retard the timing in order to build more boost at the line.

The LNC-2000-2SR can also be used as an adjustable individual cylinder RPM limiter, providing reliable and fast acting spark based engine RPM limit control. This is especially useful in vehicles that have auxiliary fuel control systems where it is not possible to make sure that both the factory ECM/PCM and the auxiliary systems both turn off fuel at exactly the same time. If the two don't completely cut fuel at the same time you will run lean when the one system cuts off the injectors (but not the other), risking severe engine damage.

The Timing Retard capabilities of the LNC-2000-2SR can be used to retard timing by up to 30 degrees. For nitrous oxide applications the timing retard can be activated using the dedicated timing retard activation inputs to the LNC-2000-2SR. These dedicated timing retard activation inputs can be activated using clutch or accelerator pedal position via a micro switch or the Lingenfelter CTAP-001 clutch and throttle activation position switch (PN: L460190108). The LNC-2000-2SR's timing retard activation inputs can also be activated via a +12v activation signal from a nitrous controller.

Please note - although launch controllers like the LNC-2000-2SR are often referred to as 2-step controllers, they are not true 2-step controllers. A true 2-step controller, such as the LNC-003, has a high and a low RPM limit function with a switch of some type enabling one setting or the other. The LNC-2000-2SR only has one RPM limit setting so if you are using the LNC-2000-2SR as a launch control RPM limiter, you will need to use the factory ECM/PCM as the engine maximum RPM limiter (engine speed governor).

WARNINGS:

The RPM limiter function of the LNC-2000-2SR acts by disabling spark to individual cylinders and not fuel like most production RPM limiters so the 2-Step/Launch Control function is not meant for use on the street or for use on cars equipped with catalytic converters. The 2-Step/Launch Control function of the LNC-2000-2SR is only for use at the race track on race vehicles not equipped with catalysts. Failure to follow these precautions can result in premature catalyst failure.

DO NOT operate the engine with the LNC-2000-2SR RPM limit active for extended periods of time. Due to the raw fuel in the exhaust when the RPM limit is active, a risk of backfiring exists if you do so.

DO NOT place in direct exposure to exhaust manifolds, turbocharger turbine housings or other underhood items that are high temperature heat sources (radiated heat sources). The warranty does not cover damage due to melted enclosures or wiring due to improper installation.

Do NOT submerge Controller in liquid or directly wash unit with liquid of any type! The switches on the LNC-2000-2SR are sealed but are NOT rated for high pressure wash, use caution if power washing near the controller.

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Switches and indicator lights:

Red (Power) LED:

- Comes on solid on start-up (power on)
- When active RPM is reached, red LED will blink

(even if activation wire is not triggered)

Green (Activation) LED:

- on steady if Yellow Launch Activation is on and both

retard inputs are off.

- slow blink rate (4 Hz) for Retard Stage1 activation only
- medium blink rate (8 Hz) for Stage2 Retard Activation only
- fast blink rate (16 Hz) for both retard inputs on

Settings:

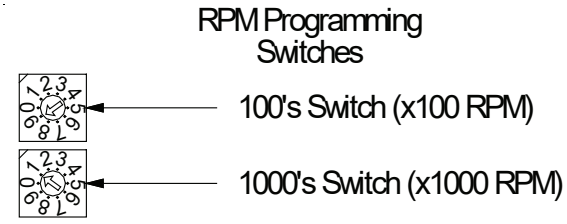
- Controlled by two (2) ten position switches (**RPM**) and two (2) sixteen position switches (**Timing**)
  - Two (2) ten position switches for selecting hundreds of RPM (x100) and thousands of RPM (x1000)
  - Two (2) sixteen position switches for selecting **Max Retard** for each stage

Notes:

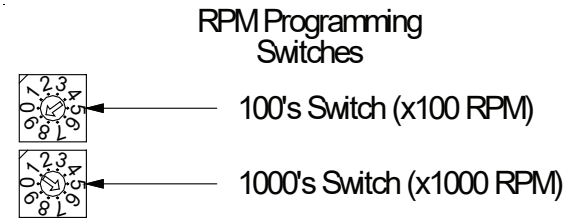
- The LNC-2000-2SR RPM limiter function will not trigger at RPM levels below 1500 RPM
- The LNC-2000-2SR timing retard function will not retard timing below 2500 RPM
- **Changes to the switch point settings (RPM, Max Retard) must be done with the ignition off**
  - **The switch positions are only read on power up**

Example settings:

- 1900 RPM activation point for launch control
  - Upper (x100) RPM switch on position 9
  - Lower (x1000) RPM switch on position 1



- 6900 RPM activation point for RPM limiter
  - Upper (x100) RPM switch on position 9
  - Lower (x1000) RPM switch on position 6



Installation:

- Make sure the ignition is off before beginning installation.
- You can mount the LNC-2000-2SR using the supplied hook and loop tape or the supplied self tapping screws.
- Do NOT mount the LNC-2000-2SR directly on top of the engine or near the exhaust manifolds due to heat concerns.
- Do NOT mount the LNC-2000-2SR in the line of site of high temperature objects such as exhaust manifolds, turbine housings etc. If needed, put a heat shield in between the heat source and the module to protect the plastic case and the wiring.
- Do NOT install within 6" of nitrous solenoids or other devices with strong magnetic fields.
- If you have relocated coil packs, do not run the high voltage spark plug wires alongside the low voltage coil pack wires. Keep the wires as far apart as possible and, if they do have to intersect, have them intersect at right angles.
- Disconnect the pack connectors on each side of the engine and then plug the LNC-2000-2SR wiring harnesses in between on each side. It does not matter which bank of cylinders each side of the LNC-2000-2SR harness connects to.
- The only wiring that is required is for the trigger wire(s) depending on how you want to enable the device. See page 6 for wiring information.

The possible 2-step trigger/activation connection methods are:

- +12 volt activation wire (yellow) - connect this wire to a source that supplies +12 volts when you want the LNC-2000-2SR to become active (i.e. brake light switch, line-lock solenoid)

- Set the desired RPM switch activation point using the two ten position rotary switches for the 1000 RPM increment (x1000) and the 100 RPM increment (x100).

If you are using the timing retard feature, do one of the following:

- Stage1Timing Retard - Connect a +12 vdc trigger wire from a +12 vdc output source (such as the Nitrous WOT switch signal or a output signal from a nitrous controller) to the orange Retard Activation wire on the LNC-2000-2SR. This will allow the +12V retard activation signal to force the retard to the maximum retard setting for Stage1 on the LNC-2000-2SR.

- Stage2 Timing Retard - Connect a +12 vdc trigger wire from a +12 vdc output source (such as timer signal or a output signal from a nitrous controller) to the green Retard Activation wire on the LNC-2000-2SR. This will allow the +12V retard activation signal to force the retard to the maximum retard setting for Stage2 on the LNC-2000-2SR.

- **Note-Stage1 and Stage2 retard are combined for a total maximum of 30 degrees.**

Setting The Spark Timing Retard Value

The spark retard amount is set with the **Timing Retard** dials on the box. The settings are as follows:

Position	Degrees
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
A	10
B	11
C	12
D	13
E	14
F	15

The amount of spark retard for each stage is determined by the appropriate switch for each stage. Example - 8 degrees at launch set Stage1 switch to “A” and apply an activation signal to the Orange wire at launch. 6 degrees for Stage2, set Stage2 switch to “6” and activate the second stage with a timer or output from a nitrous controller. This would result in a total of 14 degrees of retard once both stages are activated.

When the timing retard becomes active the LNC-2000-2SR will change the timing by 1 degree per cylinder firing event until the amount of desired retard has been pulled and then will hold this amount of retard until the activation is released. The timing will advance by 1 degree per cylinder firing event until the timing has been restored to normal.

The Gray wire provides a 0 to 3.0 volt signal in reference to the amount of timing retard being applied. This voltage will follow the timing as outlined above. Each deggree of timing retard applied will increase the voltage output by .1 volt. This voltage output may be connected to a data recording device or it may be used to increase fuel if the EFi system being used is capable of this function.

Note - the Gray analog output wire is a low current source. The output is supplied through a 1k ohm impedance.

Activation Wiring Information

- Yellow - apply +12 volts to this input to activate the RPM limit function.
  See page 4

- Orange - apply +12 volts to this input to activate the Stage1 timing retard function.
  See page 4

- Green - apply +12 volts to this input to activate the Stage2 timing retard function.
  See page 4

- Gray - provides 0 to 3.0 volts in relation to the amount of timing retard.
  See page 5

For additional wiring information and diagrams please refer to the following document.

- Go to https://www.lingenfelter.com/
- Hover mouse cursor over “Parts” and then select “Parts by Catagory”
- Select “Electrical”, and then select “Engine & Transmission Controllers”
- Navigate and find the link for LNC-2000 or LNC-2001 controller and select
- Scroll down and find “Product Instructions” and select to view pdf file.

NOTICES:

It is the responsibility of the purchaser to follow all guidelines and safety procedures supplied with this product and any other manufacture's product used with this product.

Lingenfelter Performance Engineering assumes no responsibility for damages resulting from accident, improper installation, misuse, abuse, improper operation, lack of reasonable care, or all previously stated reasons due to incompatibility with other manufacturer's products.

Lingenfelter Performance Engineering assumes no responsibility or liability for damages incurred from the use of products manufactured or sold by Lingenfelter Performance Engineering on vehicles used for competition racing.

It is the purchaser's responsibility to check the state and local laws and sanctioning body requirements pertaining to the use of this product for racing applications. Lingenfelter Performance Engineering does not recommend nor condone the use of its products for illegal street racing.

DISCLAIMER:

The information provided in this document is intended for informational purposes only and is subject to change without notice. Lingenfelter Performance Engineering also reserves the right to make improvements and/or changes to the product described at any time without notice.

For additional product installation information and technical support, contact LPE or your LPE products distributor. You can also find technical support and usage discussions regarding this product and many other LPE products in our Internet forums:

http://www.lingenfelter.com/forum_lingenfelter/index.php

Follow us on Facebook!

http://www.facebook.com/home.php#!/lpehp

Limited Warranty:

LPE warrants the Lingenfelter LNC-2000-2SR Launch Control Module 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.

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