
NGI-5000 ADVANCED LARGE ENGINE IGNITION SYSTEM

FOR LARGE GAS ENGINES

V. 1.02

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EXECUTIVE SUMMARY

NGI-5000 ADVANCED IGNITION SYSTEM FOR LARGE GAS ENGINES

- Successor to II-CPU/CPU-2000/CPU-XL
- High-value technology breakthroughs
 - Live spark voltage demand measurement
 - Advanced ion-sense-based detonation/misfire diagnostics
- Configurable dual HMI dashboards
- Varispark® spark energy control
- Optimized system integration



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SYSTEM OVERVIEW

NGI-5000 ADVANCED IGNITION SYSTEM FOR LARGE GAS ENGINES

- State-of-the-art ignition solution designed and built for large gas engines
- Significant performance, control, and accessibility value vs. all legacy ignition systems
- Patented technology to support optimized engine operation, combustion stability, diagnostics, and system access
- Unique, dual seven-inch 1080P user-configurable, HD displays for system monitoring and control



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SYSTEM OVERVIEW

NGI-5000 ADVANCED IGNITION SYSTEM FOR LARGE GAS ENGINES

- Incorporates the revolutionary Altronic Web Interface (AWI) for easy customization of displays
- Simple system configuration and integration with other control systems
- Designed and built for simple, long-term support and functionality additions in the field
- Certified for use in Class I, Division 2, Group C and D hazardous operating areas (Pending)



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Altronic II

1962



II-CPU

1984



CPU-2000

1995



CPU-XL

2012

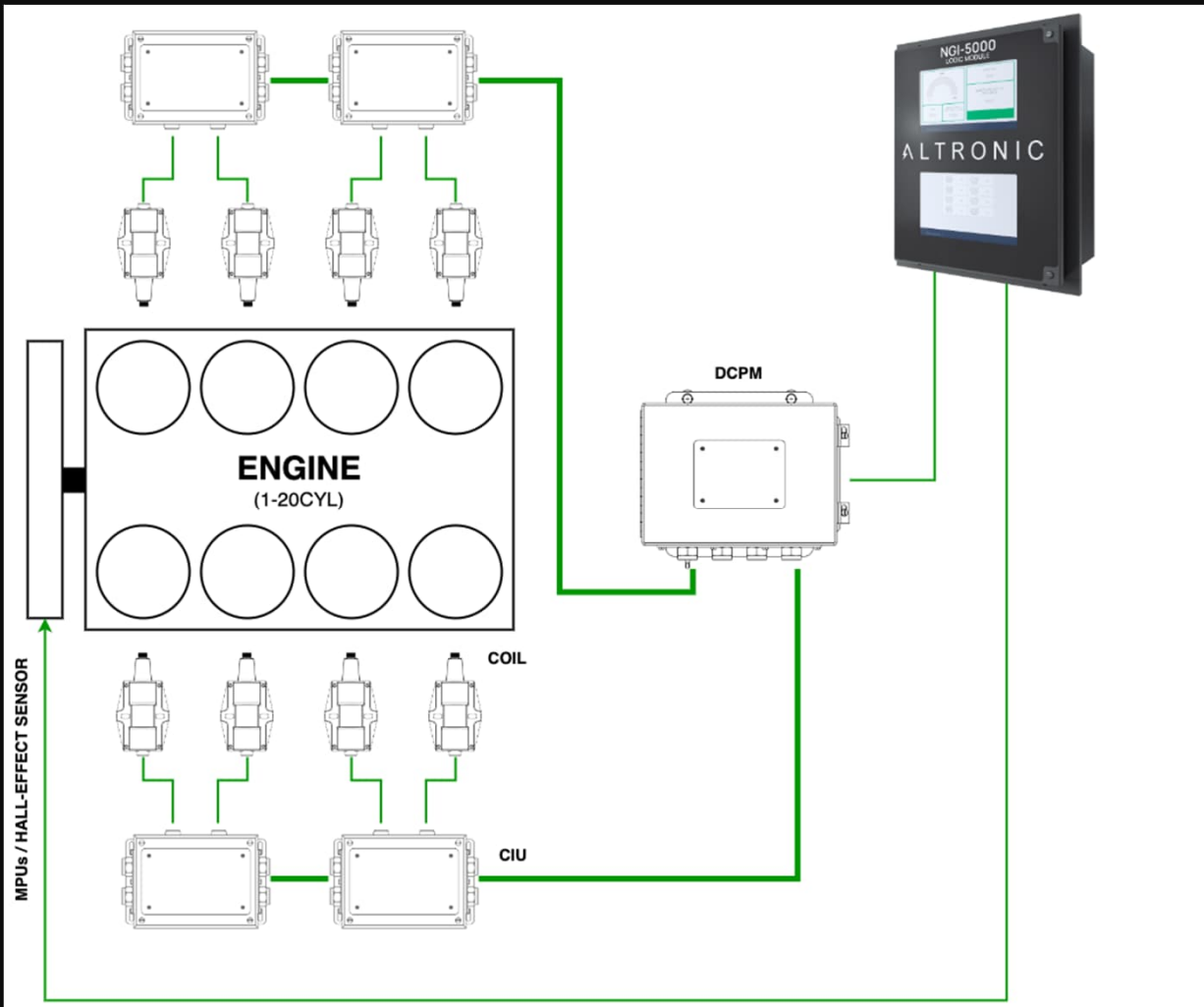


NGI-5000

2023

Operating Value For the User

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**NGI-5000 SYSTEM
DIAGRAM**

MAJOR COMPONENTS

NGI-5000 ADVANCED IGNITION SYSTEM FOR LARGE GAS ENGINES

Logic Module

Provides all of the control and diagnostic functionality, as well connectivity with other system sensors, modules, and external communication devices. It also houses the two system HMIs to support operation and customer interaction.



DCPM Module (Distribution, Control, Power)

Acts as the connection point for the individual CIU (Cylinder Ignition Modules) and the system Logic Module. Mounts in place of existing CPU-2000 Output or Diagnostic Modules.



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MAJOR COMPONENTS

NGI-5000 ADVANCED IGNITION SYSTEM FOR LARGE GAS ENGINES

CIU Module (Cylinder Ignition Module)

With a single unit installed per cylinder to support both ignition coils, this innovative device delivers a precisely-timed, energy-optimized 275VDC ignition pulses to the coils.



NGI Ignition Coil

This state-of-the-art, field-proven coil design delivers the unique capacity to reliably deliver both the spark energy AND advanced ion-sensing technology to support real-time spark voltage demand in kV.



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*What sets the NGI-5000
apart from legacy or
competitive systems?*

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Real-Time kV Spark Diagnostics

Not inferred - directly measured

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US Patent # 9,429,132

*Overcomes traditional
secondary ringing issue*

*Unlocks the practical
application of ion sense*



US009429132B1

(12) **United States Patent**
Lepley et al.

(10) **Patent No.:** US 9,429,132 B1
(45) **Date of Patent:** Aug. 30, 2016

(54) **CAPACITIVE IGNITION SYSTEM WITH ION-SENSING AND SUPPRESSION OF AC RINGING**

(58) **Field of Classification Search**
CPC H05B 41/00; F02P 3/01; F02P 15/10; F02P 15/12; F02P 1/086; F02P 9/002; F02P 17/12; F02P 3/12
USPC 315/209 CD, 209 M, 209 T, 209 SC, 276, 315/277, 279
See application file for complete search history.

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(21) Appl. No.: **15/079,698**

Primary Examiner — Tuyet Vo

(22) Filed: **Mar. 24, 2016**

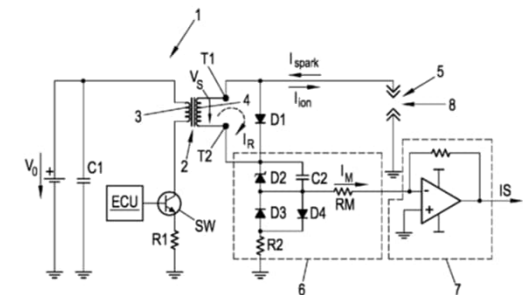
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(51) **Int. Cl.**
F02P 3/01 (2006.01)
F02P 3/09 (2006.01)
F02P 3/08 (2006.01)
F02P 3/12 (2006.01)
F02P 3/04 (2006.01)

(57) **ABSTRACT**
In order to reduce AC ringing of the secondary voltage after the spark event in a capacitive ignition system, which would influence ion-sensing, a secondary winding current (I_s) flowing through the secondary winding (4) after the spark event is forced to flow through a forward-biased muting diode (D1) that is connected across the secondary winding (4).

(52) **U.S. CL.**
CPC **F02P 3/09** (2013.01); **F02P 3/0884** (2013.01); **F02P 3/12** (2013.01); **F02P 3/0435** (2013.01)

4 Claims, 4 Drawing Sheets



A State-of-the-Art User Experience

*User -configurable, dual-HDMI displays,
TCP/IP interface*

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SIMPLE SYSTEM CONFIGURATION, INTEGRATION

NGI-5000 ADVANCED IGNITION SYSTEM FOR LARGE GAS ENGINES

- NGI-5000 Logic Module incorporates two (2), 1080P displays
 - Top display is generally fixed – Status, RPM, timing
 - Both displays are user-configurable with Altronic Web Interface Tool (AWI)
- Engineered to support effective integration with supervisory controls and telemetry systems
 - RS-485 serial communications – ModBusRTU communications
 - 10/100 Ethernet – ModBusTCP, etc.



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Spark Control

*Number/duration/intensity of strikes, as well as
secondary current diagnostics*

*The Result: Unprecedented combustion
assurance and control*

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Today and Tomorrow

*CSA-certified, 40-outputs, direct upgrade
from legacy Altronic systems, purpose-built
for integral compressors*

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*This is just the
beginning...*

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