

# Altronic® II-CPU

## HIGH TECHNOLOGY IGNITION SYSTEM FOR LARGE ENGINES

- ACCURATE IGNITION TIMING  
IMPROVES ENGINE PERFORMANCE
- CRANKSHAFT-REFERENCED TIMING  
ELIMINATES MAGNETO DRIVE  
VARIATIONS
- ELECTRONIC VARIABLE TIMING  
UP TO 48 DEGREES FROM  
4-20 MA CONTROL SIGNAL
- UP TO 20-CYLINDERS  
WITH ONE UNIT
- CHOICE OF TWO POWER  
OPTIONS:
  - SELF-CONTAINED  
ALTERNATOR
  - 24 VDC CONVERTER

The Altronic II-CPU ignition system is a microcircuit-based, capacitor discharge system applicable to low and medium speed, high BMEP engines with 3-20 cylinders. This high technology system utilizes crankshaft-referenced timing which provides a new standard of timing accuracy and stability by eliminating dependence on mechanical engine drives, gears, chains, couplings and encoders.

The system also features the capability to precisely control ignition timing electronically as a function of an external 4-20 ma control signal. This signal typically will be generated by a computer to adjust for best engine efficiency as a function of load, speed, ambient temperature and other desired factors.

The features of the Altronic II-CPU ignition system lead to improved engine operation and efficiency. Consistent, accurate ignition timing is essential to achieving more balanced, stable cylinder peak firing pressures. This minimizes detonation while still permitting maximum spark advance settings for best efficiency. Improved efficiency and/or reduced emissions, along with reduced engine maintenance due to a more balanced, consistent combustion process, means lower operating costs for your engine.

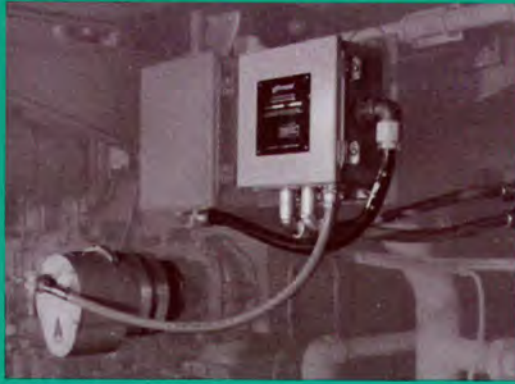


Certified  
CLASS I, GROUP D, DIVISION 2



Approved

## DESCRIPTION & OPERATION:



The Altronic II-CPU system consists of a power source unit (either the Altronic II-CPU alternator unit or a 24 VDC power converter), a CPU control unit, two magnetic pick-ups and cables, two wiring harnesses and an ignition coil for each spark plug.

The two magnetic pick-ups input two external signals:

- counts from a crankshaft mounted gear or holes drilled in the flywheel;
- a reset pulse once per engine revolution.

These two inputs taken from the engine crankshaft provide for the basic accuracy of ignition timing since the normal magneto drive train mechanical variations are eliminated.

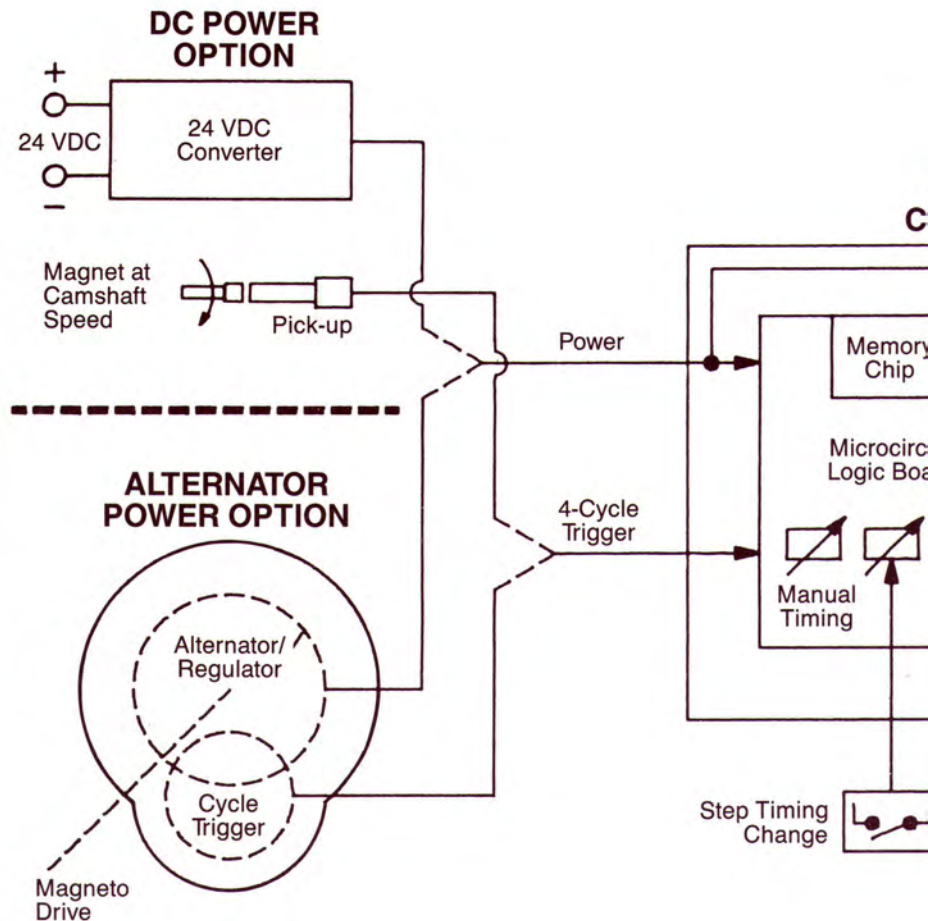
The CPU control unit consists of a Microcircuit Logic Board (including the system memory chip), and an Energy Storage/Distribution section. The memory is programmed with the engine firing angle sequence and the number of crankshaft reference teeth or holes (180 or greater). The logic circuit outputs trigger pulses in precise, "real time" relationship with crankshaft rotation to the solid state distribution section which routes the stored primary energy to the ignition coils in accordance with the engine's firing sequence. The "real time" counting system insures accurate timing regardless of engine speed variations.

## TWO POWER OPTIONS:



### SELF-CONTAINED ALTERNATOR

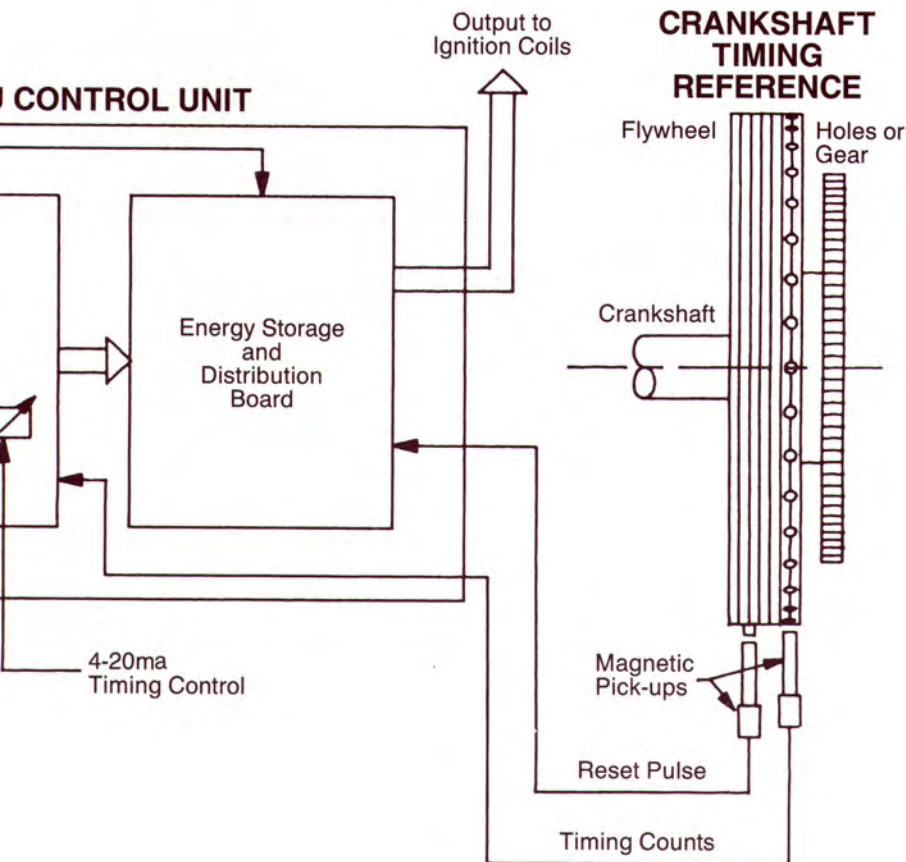
Provides the ignition system power and the cycle trigger on 4-cycle applications. The basic ignition system has no dependence on outside power sources. In most cases, the original Altronic II alternator can be used with a back cover change to convert to the CPU system.





## 24 VDC CONVERTER

Provides an ignition system which adds *no moving parts* to the engine. Altronic's DC-powered CPU system does not require mechanical parts (such as encoders) to be added to the engine. A cycle trigger package consisting of a magnet and Hall-effect pick-up is furnished for 4-cycle applications. The efficient Altronic DC converter draws only about 1 amp at 24 VDC and allows application of the CPU system to higher speed engines.



## TIMING CONTROL FEATURES:

The Altronic II-CPU system implements timing changes by counting pulses from the crankshaft reference teeth or holes. Three ways are provided to vary ignition timing:

### MANUAL INITIAL SETTING

An internal 16 position switch in the CPU Control Unit controls the maximum advance point of the ignition system. This is equivalent to the manual timing adjustment of older systems.

### SIMPLE CONTROL

A second 16-position switch allows a user-selected timing step-change to be introduced upon actuation of a set of external switch contacts. This feature is provided for use in simple timing control systems to switch between two selected settings to adjust, for example, for temperature or fuel variations.

### FULL CONTROL

Full electronic ignition timing control from engine start-up through full load can be implemented by an externally supplied 4-20 ma control loop signal. The system has an adjustment range of up to 48 engine degrees. Altronic offers a full range of control devices including a manually-operated potentiometer and electronic transmitters sensing individual engine parameters such as manifold pressure, temperature or RPM. More comprehensive systems utilize an engine performance control computer such as the Altronic EPC-200C which replaces pneumatic and mechanical control elements with the accuracy, repeatability and reliability of electronic control.

# ALTRONIC II IGNITION COILS

Altronic ignition coils cover all application requirements, unshielded or shielded. Shielded coils are available in the external type and the integral coil series mounting directly to 1"-20 spark plugs.

**NOTE:** See the Altronic II brochure (form All) for information on Altronic's complete selection of shielded primary and spark plug lead assemblies.

## UNSHIELDED COIL

291 001



## SHIELDED COIL

291 001-S



## INTEGRAL COIL

591 008



# ALTRONIC II-CPU SPECIFICATIONS:

**POWER OPTIONS** ..... Altronic II-CPU Alternator  
..... DC Converter - 24 VDC, 1 amp

## VOLTAGE OUTPUT

Single coil/cyl. .... 38-45 KV  
Dual coils/cyl. .... 30-35 KV

**SPARK DURATION** ..... 250-400 microseconds

## TYPICAL ENGINE STARTING SPEED

With Alternator Power Option:

Single coil/cyl. .... 35 rpm  
Dual coils/cyl. .... 50 rpm

With DC Power Option:

Single coil/cyl. .... 15 rpm typ.\*  
Dual coils/cyl. .... 15 rpm typ.\*

\*Dependent on minimum trigger speed from pick-ups.

**ELECTRONIC TIMING RANGE** ..... 24, 36 or 48 degrees  
(customer specified)

# ACCESSORY EQUIPMENT

## DI-1401P DIGITAL TIMING INDICATOR WITH 4-20 MA OUTPUT

Displays ignition timing and outputs 4-20 ma signal for remote display or input to central computer.



## DPHL-1501DAP DIGITAL PRESSURE GAUGE WITH 4-20 MA OUTPUT

Kit available with special CPU memory to vary ignition timing vs. engine air manifold pressure. Also available for timing vs. temperature (DPYH-1301DP) or timing vs. RPM (DTO-1201P).



**altronic<sup>®</sup>  
inc.**

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