

*nrg***Max**
9103i

Advanced Universal Oil Furnace
Controller



US Patent Pending

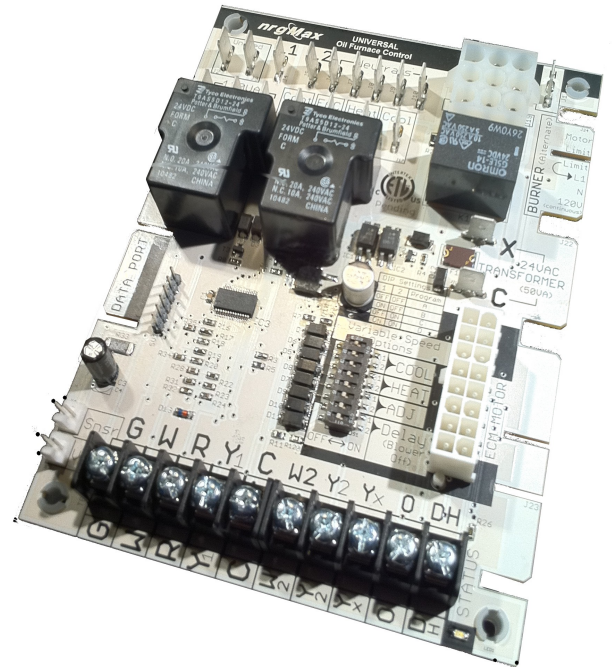


The only control your oil furnace design will ever need (you're welcome)

The nrgMax 9103i is a feature-rich control designed to meet the needs of modern energy-efficient oil furnaces while still offering backwards compatibility with legacy products.

Mounting in the industry-standard footprint with familiar layout and connections this high quality design meets the needs of an entire industry sector. It eliminates the need for additional controls to accommodate Euro-style burners, and offers an array of variable speed options to suit any requirement.

The control is suitable for use with PSC motors and ECM motors. ECM motors can be controlled in the common “thermostat-mode” or with other innovative and optional methods. PSC motors are controlled with traditional heavy-duty relay outputs, but can also be controlled in a variable speed method using the optional low-cost plug-in adaptor.



Rich with features you'd expect from a control designed in this century...

- Industry-standard footprint, mounting and connections
- compatible with American burners (Beckett, Carlin etc) as well as Riello Burners with ***no additional relays required***
- Industry-standard 9-pin burner connection
- 120VAC Connections for:
 - Heat speed motor winding
 - Cool speed Motor winding
 - EAC
 - Humidifier
 - Continuous Fan
- 24VAC Thermostat Connections for:
 - 5-wire (R,C,W,Y,G), plus
 - W2 (Stage 2 Heating)
 - Y2 (Stage 2 cooling)
 - Yx (dummy connection)
 - O/B (Heat Pump reversing valve)
 - DH (Dehumidification)
- 16-pin connection to GE/Beloit-style ECM Motors
- LED Status indicator
- Solid-State resettable fuse for 50VA Transformer protection
- Double-sided Copper-clad PC board, soldered top and bottom for optimum strength and durability
- Multipurpose DIP-switch for field settings

Compatible with all burners, right away. No extra relays required



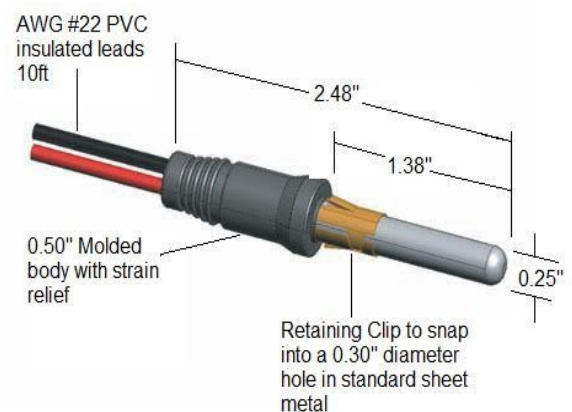
And optional advanced features that give functionality like never before...

- Enhanced operation of Standard PSC Blowers
- Variable speed control of traditional PSC blower motors with plug-in module
- Variable speed control of alternate ECM motors using PWM signal
- Variable speed based on DIP-switch Settings or optional plug-in plenum temperature sensor
- Data-port to allow PC communication to view:
 - Status
 - Plenum temperature
 - Thermostat inputs
 - Limit string status
 - Burner status
 - DIP-switch Settings:
- Alternate Burner Connection (*for those with a sense of adventure*)
- Automatic dehumidification

Seven (*count 'em, 7*) different operating modes...

All modes are built-in, you just select them using the on-board jumper and connect the equipment.

- **Standard:** this is the traditional operation of an oil furnace; everything you are familiar with. Blower Off delay is adjusted using the multipurpose DIP-switch. No surprises.
- **PSC++:** We call it “Enhanced PSC Mode”. All of the 120VAC connections are traditional, but now all ten (*yes, we said 10*) thermostat connections come in to play. The blower switches between the Cool and Heat speeds to offer 2-stage heating and cooling along with automatic dehumidification.
- **PSC Mod:** When used with our Triac Module this allows most off-the-shelf PSC motors to act like variable speed motors. While it doesn't give you the same energy savings as Brushless DC or ECM motors it does offer increased comfort and equipment versatility. The motor's speeds are controlled using the DIP-switch settings.
- **ECM:** You probably noticed the 16-pin connector over there on the right-hand side. Yup, it's all ready to connect to industry-standard ECM motors. The DIP-switch, to it's immediate left, gives you all the settings that you need. Its ready to go, all the time.
- **BLDC, Standard:** As an alternative to ECM motors that need programming, nrgMax offers a Brushless DC (*hence “BLDC”*) Motor that gives all the savings and performance of the ECM at a lower cost. How? All the brains are in the 9103i so the cost is therefore reduced. It responds to the DIP-switch settings and all 10 thermostat inputs. Did we mention it requires no programming?
- **BLDC eTemp** When the nrgMAX snap-in temperature sensor (*that's it on the right*) is attached to the board and inserted into the supply plenum the BLDC motor is speed-controlled relative to temperature. In this case the DIP-switch settings now get interpreted as temperature-speed adjustments allowing the control to deliver precisely controlled heated or cooled air in every installation.
- **PSC eTemp** Using the nrgMax snap-in temperature sensor along with our Triac Module on most PSC motors (you'll have to test to make sure) the blower speed is varied automatically to maintain a precise speed-to-temperature relationship. Once again, this relationship can be adjusted in the field using the DIP-switch.



Some other stuff you might like to know:

Electrical Ratings:

- Power Requirements:
- Voltage: 24Vac, 50/60 Hz.
- Current: 4 VA at 24 Vac.
- PTC Fuse (resettable) trips at 4.5A
- Contact Ratings:
 - Circulating Fan: 15A Full Load, 30A Locked Rotor at 115 Vac (includes optional EAC load).
 - Burner: 5.8 A Continuous Load (7.4A with interrupted ignition)

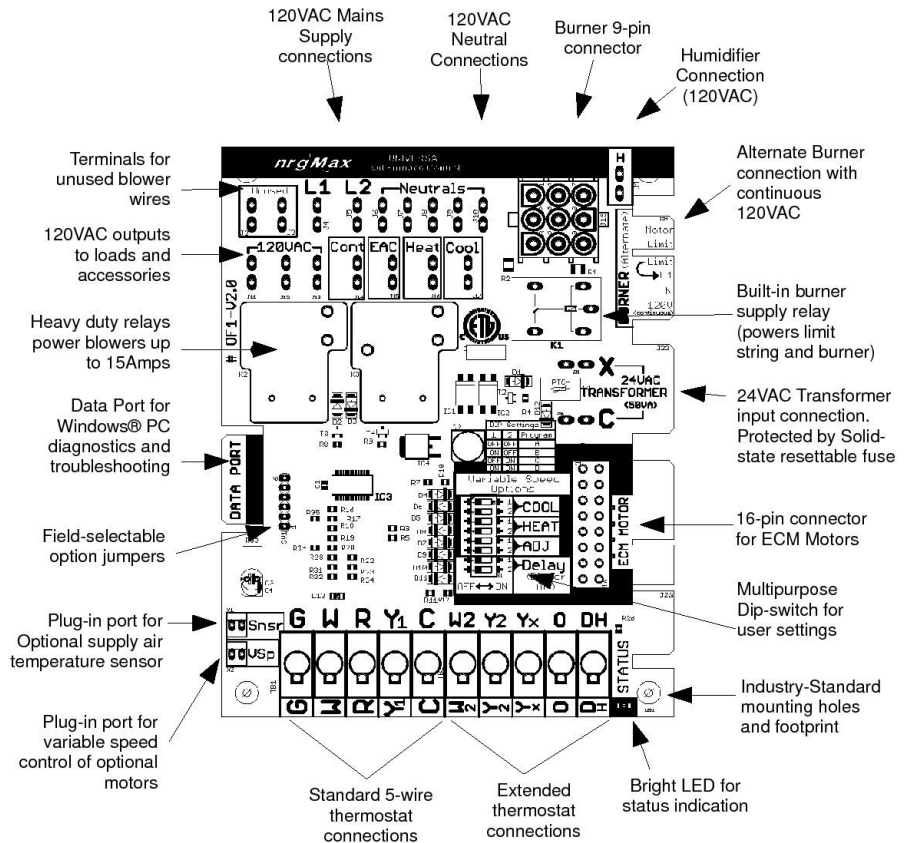
Heat Settings: Standard Configuration

- Blower On Delay: 30 seconds, fixed.
- Blower Off Delay (BOD): 90, 120, 150, 180 seconds, field-adjustable.
- Timing Tolerance: less than 1 second

Environmental Ratings:

- Temperature: -40 to +150° F [-40° to +65° C].
- Humidity: 95% maximum, non-condensing.

Features and Highlights



We know we're not a household name... yet

nrgMax (pronounced “energy-max”) is a Canadian company located near Toronto, Ontario. We have been designing and manufacturing controls for close to twenty years for dozens of companies, and have truck-loads of experience in the oil-heating sector. Many of the advanced features that are now commonplace in the industry were our innovations. We specialize in mission-critical designs and feel strongly about merging creativity, quality and cost-sensitivity.

Our products are completely designed and manufactured in Canada and the USA. Always have been and always will be.



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