DISTECH CONTROLS™

BUILDING OPEN CONTROL PRODUCTS

ECP-500 Series

28-Point Free Programmable Controller

LONMARK

Powered by Niagara AX FRAMEWORK™

Applications

- Control of equipment such as: roof top units, multistage air handling units, chillers, boilers, pumps, cooling towers, lighting systems, refrigeration systems, etc.
- Control of many other types of HVAC and lighting equipment, as well as power measurement applications

Features

Supported Platforms
- LNS®
- Niagara^{AX} Framework®

Interoperability
- Based on LONWORKS® technology for peer-to-peer communication between controllers
- LONMARK certified according to the Interoperability Guidelines Version 3.4

Hardware
- 16 universal inputs (jumper-less selection). Input types include: Resistance, 0-10VDC, 4-20mA, Digital and Pulse
- 12 universal outputs (fuse-protected). Output types include: Digital (0-12VDC), PWM, 0-10VDC, 0-20mA and floating[1]
- Model ECP-510 has HOA switches and pots for output manual override
- 1 Smart-Sensor supported[1]
- 15VDC output that can be used to power sensors
- Separable base plate allows base with connectors to be shipped to site for installation while engineering is done at the office
- Din-rail mounting integrated into the fire retardant plastic enclosure
- Transmit, receive and power LED indicators
- Status indicator on each output
- Battery backed-up clock with a fifteen year lifespan

Software
- Can be programmed by EC-Program or EC-*gfx*Program
- More than 60 network variables
- NVIs & NVOs of changeable type and length
- Support of fan-in binding for zoning applications

Free Programmable Object
- Configuration, code and label stored in the controller itself for advanced backup purposes
- Many programming features available such as PID loops, timers, optimum start, etc.
- View all internal points (e.g. constants, variables,…)

Scheduler Objects
- All schedules are stored in Flash memory
- Schedule network variables are of changeable type and length
- Seven weekday templates per scheduler
- Four holiday templates per scheduler

Real-Time Clock Object
- Allows configuration of Daylight Savings Time
- Accurate timekeeping for controller applications

The ECP-500 Series are microprocessor-based free programmable controllers designed to control various building automation applications. Designed to control equipment such as rooftop units, multistage air handling units, chillers, boilers, pumps and cooling towers, the ECP-500 Series can also be used for any lighting control and power measurement applications. The ECP-500 Series uses the LonTalk® communication protocol and is LONMARK certified using the Sensor profile (#1) for its input objects and the Actuator profile (#3) for its output objects.

The ECP-510 has the added convenience of Hand-Off-Auto (HOA) switches and potentiometers (depending on the model) for output manual override.

Distech Controls' products offer sophisticated features within a user-friendly interface and this is why ease-of-use has been made their primary characteristic. The ECP-500 Series can be programmed by using either the EC-*gfx*Program graphical programming interface or the EC-Program configuration tool. Both programming tools are available as a plug-in used by any LONWORKS-based software such as Distech Controls' Lonwatcher or as a wizard used by a multi-protocol platform software supporting LONWORKS devices such as Distech Controls' EC-Net^{AX} Pro powered by the Niagara^{AX} Framework™.

Distech Controls' EC-*gfx*Program is a state-of-the-art building automation system programming tool that replaces textual coding with object-oriented programming. The block object toolbox is a vast library of components and functions that users can simply "drag and drop" to create a control sequence. EC-*gfx*Program was developed with Windows® user interface (UI) standards using Visual Basic.Net®.

The EC-Program plug-in is unique in the controls industry because it combines a user-friendly interface with the power and flexibility of a code editor and compiler. Distech Controls' EC-Program plug-in uses a unique and simplified version of BASIC that has been developed in-house and that is custom made to suit controls requirements.

1. Available only when programmed with EC-*gfx*Program.

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Product Warranty & Total Quality Commitment

The easyCONTROLS product line is built to meet rigorous quality standards and carries a two-year warranty. Distech Controls is an ISO 9001 registered company. Distech Controls' products provide both the contractor and the end user with the flexibility of using “best-of-breed” products in system design.

Available Controller Models

ECP-500

ECP-500	**28-Point Free Programmable Controller** - 16 universal inputs - 12 universal outputs
ECP-510	**28-Point Free Programmable Controller with HOA** - 16 universal inputs - 12 universal outputs - HOA switches and pots for output manual override

ECP-510

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Supported Platforms

LONWORKS Network Services (LNS)

LNS is a client-server platform that allows multiple users, running different LNS-compatible applications, to access a common source for directory, installation, management, monitoring and control services for the network system being managed. Distech Controls' Lonwatcher is an example of a LonWorks-based network management tools that can use Plug-Ins to configure and monitor controllers and devices in the control system.

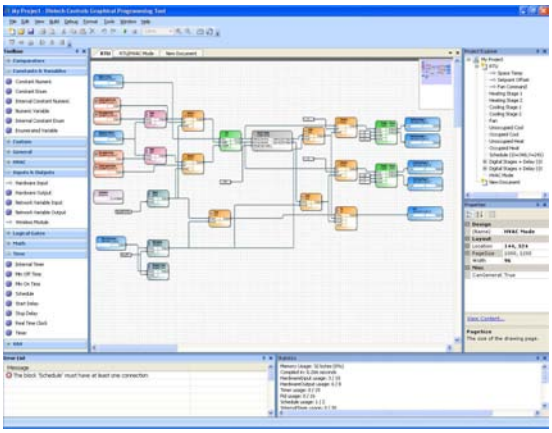
Niagara^{AX} Framework

The Niagara^{AX} Framework is the next generation of Niagara that builds on the multi-protocol, web-based concept of its predecessor. Niagara^{AX} normalizes the development environment for building new software. Distech Controls' EC-Net^{AX} Pro is an example of a multi-protocol software platform that can use Wizards to configure and monitor controllers and devices in the control system.

Distech Controls Software LNS Plug-Ins and EC-Net^{AX} Wizards

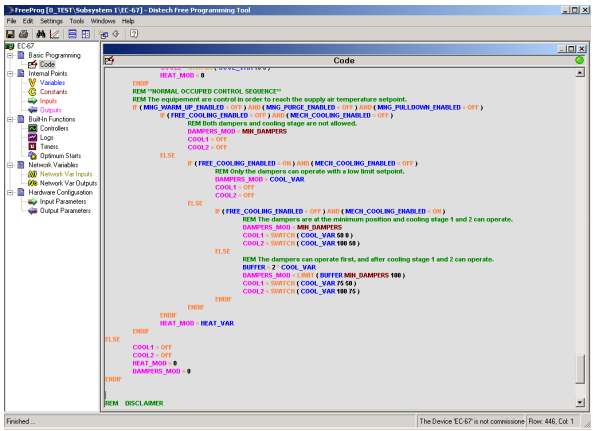
EC-*gfx*Program Graphical Programming Tool

Distech Controls' EC-*gfx*Program is a programming tool that allows for the building of control sequences by "dragging and dropping" block objects and then linking the objects with a simple "click, select and release". Choose the desired block objects from a vast library of commonly used functions as well as designing custom blocks. With a user-friendly interface and intuitive programming environment, EC-*gfx*Program makes HVAC programming easier than ever. Refer to the EC-*gfx*Program datasheet for more information.



EC-Program Programming Tool

Distech Controls' EC-Program is unique in the controls industry because it combines a user-friendly GUI (Graphical User Interface) with the power and flexibility of a code editor and compiler. The EC-Program configuration tool uses a special and simplified version of BASIC that has been developed in-house and that is custom made to suit control requirements. Refer to the EC-Program datasheet for more information.



EC-*gfx*Program Software features:

- Block-oriented programming
- Live debugging allows user to view code execution, input/output values and to detect errors in real-time
- High-precision integers with 2 decimals places (±83886.07)
- Direct support of SNVTs of 1 and 2 bytes (17 NVIs & 17 NVOs; changeable type and length)
- 5 NVI Fan-in bindings (changeable type)
  - 3 NVI – Hisel, Lowsel, Sum and Average (up to 85 NVs)
  - 2 NVI – Hisel and Lowsel
- 16 PID loops
- 2 Schedules. 2 changeable type and length NVI and NVO. Supported types are: SNVT_tod_event; SNVT_occupancy; and SNVT_hvac_mode
- Extensive block library of the most commonly used functions divided into 11 convenient categories containing over 80 block objects
- Real-Time Clock that supports Daylight Savings Time
- A code library to store favorite or most commonly used code or code sections

EC-Program Software features:

- Line-by-line programming
- Built-in screen to view and configure internal point values such as variables, constants, etc.
- Uses integers ranging from ±32767
- 18 NVIs and 18 NVOs; changeable type and length
- 2 NVI Fan-in bindings
  - 1 NVI – High and Low selection
  - 1 NVI – Weighted Average
- 10 PID loops
- 4 Schedules. 4 changeable type and length NVO. Supported types are: SNVT_tod_event; SNVT_occupancy; and SNVT_hvac_mode
- Programming functions such as Reserved Words (SQRT, SWITCH, LIMIT, etc.)
- Real-Time Clock that supports Daylight Savings Time
- Up to 24 trend log objects for a total of 12,000 stored events in the controller

Other Configuration Software

EC-Scheduler Tool

Distech Controls' EC-Scheduler allows users to easily configure a week-based schedule and a special day schedule for holidays. Easily add and remove the special day event into the calendar by a simple click of the mouse!

RTC Configuration Tool

Distech Controls RTC Configuration Tool allows users to manage the controllers real-time clock and daylight saving time for use with any device on the network

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Recommended Peripherals

Supported Smart-Sensors (EC-*gfx*Program Only)

EC-Smart-Sensor-100

EC-Smart-Sensor-100:
- Communicating sensor with 2-line LCD
- Setpoint adjustment
- Occupancy override
- Room temperature display

EC-Smart-Sensor-FC

EC-Smart-Sensor-FC:
- Communicating sensor with 2-line LCD
- Setpoint adjustment
- Fan speed control
- Room temperature display

EC-Smart-Sensor-200

EC-Smart-Sensor-200:
- Communicating sensor with 2-line LCD
- Setpoint adjustment
- Fan speed control
- Occupancy override
- HVAC mode selection
- Room temperature display

EC-Smart-Sensor-FC-CF

EC-Smart-Sensor-FC-CF:
- Communicating sensor with 2-line LCD
- Setpoint adjustment
- Fan speed control
- Room temperature display
- Metric/imperial toggle button

Temperature Sensors

EC-SENSOR	Room temperature sensor
EC-SENSOR-LO	Room temperature sensor with LED and override push button
EC-SENSOR-SLO-F	Room temperature sensor with LED, override push button and setpoint adjustment (°F)
EC-SENSOR-SLO-C	Room temperature sensor with LED, override push button and setpoint adjustment (°C)
EC-SENSOR-SLO-CW	Room temperature sensor with LED, override push button and setpoint adjustment (cool/warm)
EC-SENSOR-AVG	Averaging room temperature sensor, no setpoint (Up to 3 in parallel)

Other

07KIT-RELAYUNDI	12VDC coil relay with din-rail mountable socket base (Dry contact NO/NC 8A – 250VA single-pole coil. Consumption < 20mA)

For more information on these or other peripherals please refer to our web site at www.distech-controls.com or contact sales@distech-controls.com.

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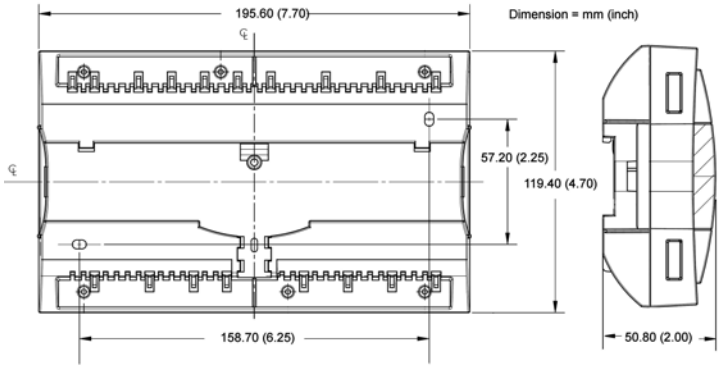
Product Specifications



Power	
Voltage:	24VAC/DC; ±15%; 50/60HZ; Class 2
Protection:	2.5A auto-reset fuse
Typical Consumption:	25VA; All outputs with 20mA load @ 12VDC & 15VDC output: 80mA (4 x 20mA)
Maximum Consumption:	50VA
Environmental	
Operating Temperature:	0°C to 70°C; 32°F to 158°F
Storage Temperature:	-20°C to 70°C; -4°F to 158°F
Relative Humidity:	0 to 90% Non-condensing
General	
Processor:	Neuron® 3150; 8 bits; 10MHZ
Memory:	Non-volatile Flash 64K (APB application) Non-volatile Flash 128K (Storage)
Communication:	LonTalk protocol
Channel:	TP/FT-10; 78Kbps
Clock:	Real-time clock chip
Battery (for clock only):	CR2032 lithium battery
Status Indicator:	Green LEDs: power status & LON TX Orange LEDs: service & LON RX
Communication Jack:	LON® audio jack mono 1/8" (3.5mm)
Enclosure	
Material:	ABS type PA-765A
Color:	Blue casing & grey connectors
Dimensions overall:	7.7" x 4.7" x 2.0" (195.6mm x 119.4mm x 50.8mm)
Shipping Weight:	1.17lbs (0.53kg)
Installation:	Direct din-rail mounting or wall mounting through mounting holes (see figure above for hole positions)
Electromagnetic Compatibility	
CE -Emission:	EN61000-6-3: 2001; Generic standards for residential, commercial and light-industrial environments
-Immunity:	EN61000-6-1: 2001; Generic standards for residential, commercial and light-industrial environments
FCC:	This device complies with FCC rules part 15, subpart B, class B
Agency Approvals	
UL Listed (CDN & US):	UL916 Energy management equipment
Material[3]:	UL94-5VA

Inputs	
Quantity:	16
Input Types::	Universal (software configurable)
-Voltage:	0-10VDC
-Current:	4-20mA with 249Ω external resistor (wired in parallel)
-Digital:	Dry contact
-Pulse:	Dry contact; 500ms minimum ON/OFF
-Resistor:	
Thermistor[1]:	10KΩ Type 2, 3 Range: -40°C to 150°C; -40°F to 302°F
Platinum:	Pt1000 (1KΩ) Range: -40°C to 150°C; -40°F to 302°F Pt100 (100Ω) Range: -40°C to 135°C; -40°F to 275°F
Nickel[2]:	Ni1000 (1KΩ) Range: -40°C to 150°C; -40°F to 302°F
Potentiometer:	Translation table configurable on several points
Input Resolution:	16-bit analog / digital converter
Outputs	
Quantity:	12 universal (software configurable) - 0-10VDC, digital 0-12VDC (on/off), floating[2] or PWM - PWM control: adjustable period from 2 seconds to 15 minutes - Floating control: requires two consecutive outputs[2] - Min pulse on/off: 500msec. - Adjustable drive time period - 60mA max. @ 12VDC (60°C; 140°F) - Minimum resistance 200Ω - Auto-reset fuse - 60mA @ 60°C; 140°F - 100mA @ 20°C; 68°F
Output Resolution:	10-bit digital / analog converter
Power Supply Output:	15VDC; maximum 240mA

1. For temperature type inputs it is recommended that a 10KΩ thermistor be used due to better accuracy over the Pt1000, Pt100 or Ni1000.
2. Available only when programmed with EC-*gfx*Program.
3. All materials and manufacturing processes comply with the Waste Electrical and Electronic Equipment (WEEE) directive and the RoHS directive.

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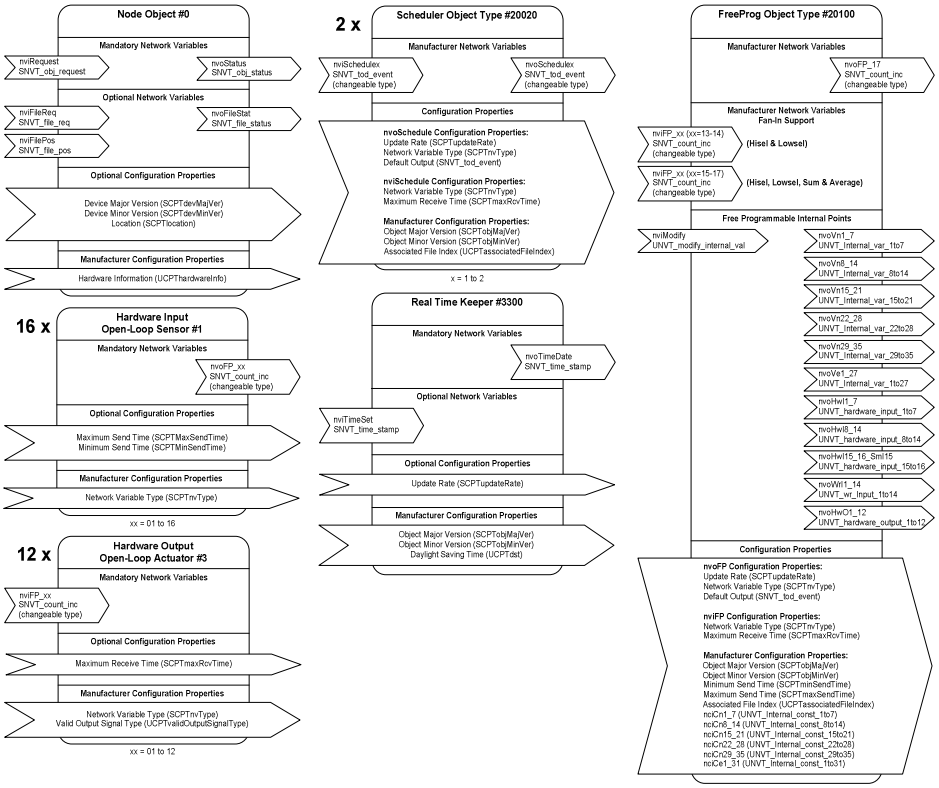
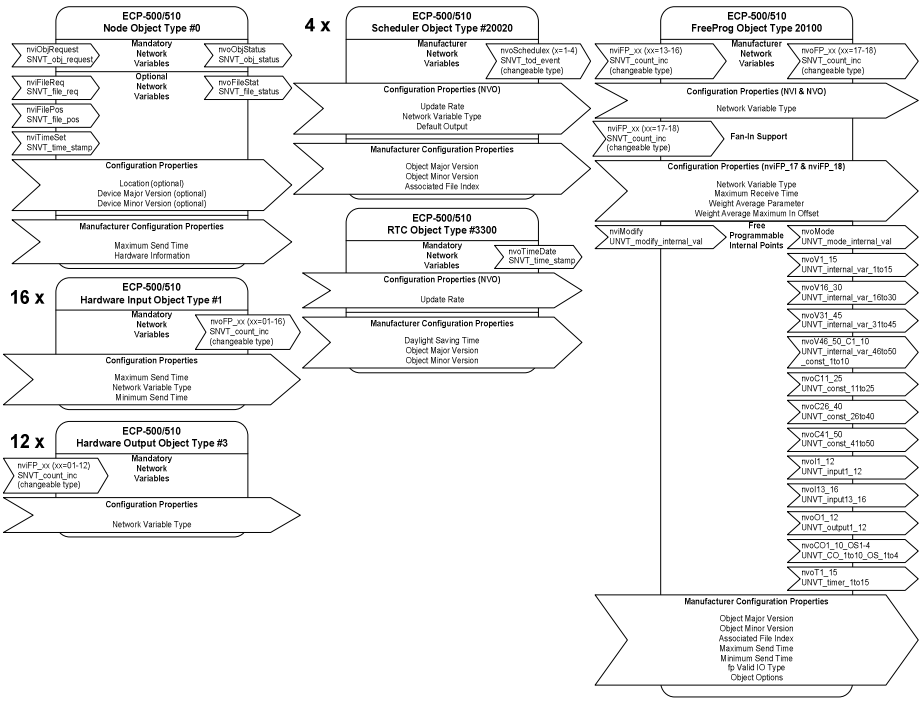
Functional Profile (with EC-*gfx*Program)



Functional Profile (with EC-Program)



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