

MODELS:
GENIIELD
GENIINLD

GENESIS II Digital Direct Controller

Overview

The Innotech GENESIS II system is a state-of-the-art processing system that has the capability of controlling various types of industrial systems. Although the GENESIS II system is flexible and can be adapted to a variety of applications, it is primarily designed to control large scale heating, ventilation and air conditioning (HVAC) systems. The main unit of the GENESIS II System hardware is the *GENESIS II Controller*, which is operationally tailored to the customer's specific application requirements by GEN2 Software applications and several types of hardware modules. These modules are referred to collectively as Remote Expansion Modules (REMs). Several types of software programs are used to configure the hardware to the customer's intended application and to assist in plant-monitoring, data logging and analysis, data exchange and troubleshooting.

Because of its flexibility, the GENESIS II System can be connected in any of several equipment configurations, based on the system's operational requirements. In the simplest configuration, a single Digital Controller unit acts as the stand-alone controller for the system. More complex installations use multiple digital controllers sharing data between themselves and/or a computer. In these applications, communication between the digital controllers is facilitated by a Global Points link bus system and communication with the computer is by a standard RS-485 network.

Features

- Optional Human Machine Interface (HMI) on a backlit LCD
- Status of up to 256 data points displayed on LCD
- Data logging, up to 1.2 million time stamped readings
- Led Indication of Digital Output status
- Opto isolated Digital Inputs
- Definable Analogue Input types
- Analogue Outputs selectable for 0-10VDC or PWM for solid state relay control
- Pulse Counter Input
- On board speaker
- 1 second scan rate
- 3 x RS485 network ports: Net, Global & Remote Expansion Module communications
- 1 x RS232 comm port
- Optional Ethernet connection for Net communications
- All wire connections by removable terminals
- Program resides in non-volatile Flash RAM.
- Real Time Clock battery backed for approximately 5 years.



Applications

The *GENESIS II Controller* is designed for mounting inside a control panel and offers a large array of inputs and outputs enabling it to monitor and control all types of external plant and equipment.

The creation of control strategies is made simple by the use of the GEN2Config configuration utility, a Personal Computer (PC) resident, Windows®-based software package. This utility with its powerful Graphical User Interface allows the user to create an entire strategy in block-diagram form before downloading it to the *GENESIS II Controller* where it is permanently stored in non-volatile FlashRam.

Access to the *GENESIS II Controller* is via the Human Machine Interface (HMI), or by a PC, either local or remotely via a modem. Up to 256 process constants or variables can be accessed through the HMI. Information can be grouped in any combination on the 8 display pages. Access to the display pages is controlled by a multi-level password system.

The HMI can display a further 32 points or up to 128 Alarms via a flash page.

From a PC, the user can gain access to manipulate and interrogate the controller using tools from the GEN2 family of software products.

Approvals

The Genesis II controller conforms to:

- EN61326:1998 Class A for CE Marking and C-Tick Labelling
- Title 47 CFR, Part 15 Class A for FCC Marking
- UL listed to UL916, File Number E242628

Specifications

Power Supply

- 24VAC \pm 10% @ 50/60 Hz
Power consumption: 15VA
- 24VDC \pm 10%
Power consumption: 8Watts

The operating voltage must meet the requirements of Safety Extra Low Voltage (SELV) to EN60730. The transformer used must be a safety transformer in compliance with EN60742 and be designed for 100% duty. It must also be sized and fused in compliance with local safety regulations.

Battery

Contains a Lithium Battery, dispose of properly
Type CR-2032 Lithium Battery
Nominal voltage 3 Volts
Shelf life - 5 Years dependant on ambient temperature.

CAUTION - Risk of explosion if battery is replaced by an incorrect type.

Inputs

- **Digital Inputs**
8 x Opto Isolated Inputs.
24VAC/DC \pm 15% Trigger signal.
- **Analogue Inputs**
8 x Definable Inputs
The Analogue Inputs require an Analogue Input Signal Conditioner (AISC) to determine the Input type. The AISC's must be ordered seperately.
- **Pulse Input**
1 x pulse input counter
0-10VDC up to 0-24VDC
For pulse frequencies up to 1kHz

Outputs

- **Digital Outputs**
12 x normally open relays (2 Amps @ 24VAC)
Recomended use of pilot relays when switching high voltage/inductive loads.
- **Analogue Outputs**
16 x Selectable Outputs
0-10VDC or PWM for solid state relay control.
Load rating per output: 5mA (2kOhms).

Temperature Ratings

- Storage 0 to 50°C non-condensing.
- Operating 0 to 40°C non-condensing.
- **RS485 REM Comms**
4 way terminal connection for data transfer between Remote Expansion Modules and the *GENESIS II*.

Installation and Wiring

Refer to Installation Guide and the Innotech Network Cabling Manual DS 99.04.

- **RS485 Global Comms and Net Comms**
5 way plug in connector for global data transfer between devices on the network and for network interrogation from a central PC.

Communications

- **RS232**
RJ45 connection for modem and local PC access.

Data Logging

The *GENESIS II Controller* is equipped with a powerful Data Logging ability. Data Logging can be assigned to hardware and software points and up to 1.2 million time stamped readings are stored on the *GENESIS II Controller*. All data is stored in non volatile Flash RAM. When the memory is full, new readings replace oldest readings. The *GENESIS II Controller* automatically logs User Access via the HMI, Genesis II Viewport, Softport or Supervisor, and Loss and Resumption of its power supply.

Human Machine Interface

For ease of use the *GENESIS II Controller* is provided with a 4 Line, 20 Character, Backlit LCD Display and Keypad. The HMI allow access to system variables such as Weekly and Annual Time Schedule/Daylight Savings parameters. The HMI also supports eight function pages, each with 32 points of data e.g. status, setpoints etc. Each function page can be designed with information to suit the application. All information displayed on the HMI is in English language and standard engineering units. Access to display pages is controlled by a programmable multi-level password system. The cover of the *GENESIS II Controller* has an insert which allows the identification of each function page.

Enclosure

The *GENESIS II Controller* is housed in a rectangular case suitable for Switchboard Mounting. The housing is made from flame retardant plastics recognised by UL as UL 94-V0.

Colour: Grey
Dimensions: 307(w) x 180(h) x 69(d)

Remote Expansion Modules (REMs)

The *GENESIS II Controller* has the facility for I/O expansion using Remote Expansion Modules (REMs). Each REM provides an array of points which can be connected to a sub network up to 500 metres in length. The fifteen REMs can be made up of any mix of the available types with one exception - the MP REM. The MP REM can only be addressed between 1 and 8 and only 8 MP REMS can be used.

GENIIAIREM	Analogue Input Module
GENIIAOREM	Analogue Output Module
GENIICSREM	Control Station Module
GENIICSAHREM	Control Station A/H REM
GENIICSFCAHREM	Control Station with 3 Speed Fan, A/H REM
GENIIDIREM	Dry Contact Digital Input Module
GENIIDOREM	Digital Output Module
GENIIDIREM	Opto Isolated Digital Input Module
GENIPIREM	Pulse Input Module
GENIIMP050REM	Multipoint Module with 5 Digital Outputs
GENIIMP140REM	Multipoint Module 1 Analogue Outputs, 4 Digital Outputs
GENIIMP230REM	Multipoint Module 2 Analogue Outputs, 3 Digital Outputs
GENIIMP320REM	Multipoint Module 3 Analogue Outputs, 2 Digital Outputs
GENIIMP405REM	Multipoint Module with 5 Digital Outputs
GENIIMP414REM	Multipoint Module 1 Analogue Outputs, 4 Digital Outputs
GENIIMP423REM	Multipoint Module 2 Analogue Outputs, 3 Digital Outputs
GENIIMP432REM	Multipoint Module 3 Analogue Outputs, 2 Digital Outputs
GENIIMZSREM	Multi Zone Station Module
GENIIMZSAHREM	Zone Control Station A/H
GENIPIREM	Pulse Input Module
SEN1*	Wireless Temperature Sensor REM
SEN2*	Wireless Temperature Sensor with Set Point REM
SEN5*	Wireless Temperature Sensor with After Hours REM
SEN6*	Wireless Temperature Sensor with SetPoint and After Hours REM

*Note: The *Genesis II* requires a GENII WMI (Wireless Module Interface) to interface with wireless REMs.

Refer to DS99.03 for details of the Genesis II V4 REM Resource Restrictions.

Ethernet Port Setup

The Ethernet Port requires some initial setup according to the network configuration it is being installed onto. *Ethermate* is capable of configuring the Ethernet via several options using the Ethernet or RS485 interface. Note that an *INNOTECH CONV232* will be required to configure the device if using the RS485 interface and the a PC serial port.

1/ The Ethernet Port will require an IP Address. The factory settings enable the device to acquire an IP Address from a DHCP server. If there is no DHCP server on the network then the device will need a static IP address assigned. *ETHERMATE* can configure the IP address using the Ethernet interface.

2/ The Serial Port will need to be configured to match the RS485 network settings. The default is 9600bps, No Parity, 8 data bits and 1 stop bit.

3/ The Port number used for the Ethernet connection will need to be configured to match the setting used in *iComm*. The default is 20000.

See *ETHERMATE* on-line help for more information

Model Number Designations

	Ethernet	Logging	Display
GENII	E	L	D
GENII	E	L	N
GENII	N	L	D
GENII	N	L	N

Associated Software

Alert is a utility that reports on alarms generated by GENESIS II Controllers. A GENII MPI (Modem/Printer Interface) is required to capture the alarms and forward the details directly, or via modem, to a PC running this utility. Once an alarm has been received, **Alert** can immediately notify the PC user through its pop-up and sound facilities, or at a later time through its logging facilities.

AutoStart is an automatic program launching utility specifically designed for use with **Gen2Xtract**. It allows any number of Windows batch programs to be automatically started at regular time intervals. It is aimed at users who wish to regularly extract log data from a *Genesis II Range* Controller.

EasyBill is an automatic charging utility program for use with Innotech's GENESIS II Controller. Using EasyBill in conjunction with GENESIS II Controllers, a plant administrator is able to analyse plant usage and automatically calculate charges for that usage.

EtherMate is a specialised configuration tool for Ethernet enabled Innotech devices. It provides the functionality to set the RS485 baud rate, serial format and TCP/IP settings. Although the device is setup using the Ethernet interface it is possible to configure using the serial port from Terminal function.

GEN2Config is the configuration tool for Innotech's GENESIS II Controller. It allows you to internally configure a GENESIS II Controller by using a simple point-and-click approach on a PC running Windows.

GEN2Mon is a monitoring and debugging utility designed to help with commissioning and trouble-shooting a GENESIS II Controller. It displays the configuration which resides on a GENESIS II Controller and allows the user to inspect or trend the value at any of the points in the configuration while the controller is running.

Gen2Simulator is a Windows-based software program that simulates an Innotech GENESIS II Controller. The Virtual GENESIS II Controller can be powered on, configured and interrogated in the same way as a physical GENESIS II Controller. Configurations can be downloaded and checked without any hardware installation. You can even simulate a GENESIS II Controller network in order to test global points processing. **Gen2Simulator** can be used in conjunction with any product from the Gen2 Software range.

GENXtract is the data log extraction utility for Innotech's GENESIS II Controller. It allows extraction of all or part of the history log data residing on a GENESIS II Controller into a specified data format.

iComm is a communications server used by application software to communicate with Innotech digital controllers. It supports multiple concurrent applications communicating to multiple device networks and serves as the communications hub of any HMI-integrated device network.

InnoGraph is Innotech's data log graphing and analysis tool. It has been designed to specifically cater for the data log graphing capabilities of the GENESIS II Controller, and it has the flexibility to display data log graphing information from other sources. **InnoGraph** allows multiple graphs to be displayed in multiple windows simultaneously. Complete with a host of configurable display options, statistical analysis of data points, analogue and digital value support, active cursors, colour printing capability, and comprehensive zooming and panning features, **InnoGraph** is your complete graphing package.

Magellan is an event-driven, object oriented real-time Supervisory Control and Data Acquisition package. It provides a simple, intuitive mechanism to effortlessly design either trivial or sophisticated supervisory or control programs using a drag-and-drop approach.

NetScan is a network scanning utility designed to help with commissioning & trouble-shooting of a *Genesis* or *Maxim* network. It displays real-time information about data on the Global Points network. Current and previous point values are displayed along with the point name and corresponding controller address. History data can be automatically logged to a text file for later viewing.

Softport allows a user to access the Human Machine Interface (HMI) of a *Genesis* or *Maxim* network from a PC connected to the controller network. It can be used to search for controllers present on the network, then log onto any one of the available devices.

Supervisor is a dynamic monitoring utility for the GENESIS II Controller. It provides all the functionality that is available from the GENESIS II Controller display panel with greater ease-of-use and flexibility. It is aimed at those users who require some feedback or control of the GENESIS II system, but have no desire to be immersed in the technical details of a GENESIS II configuration.

Supervisor is a user-oriented product: no specialised knowledge of the GENESIS II Controller is required for its use. It allows the user to view the values of points of interest on a GENESIS II Controller, change its schedule information, or modify values accessible to the user.

FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

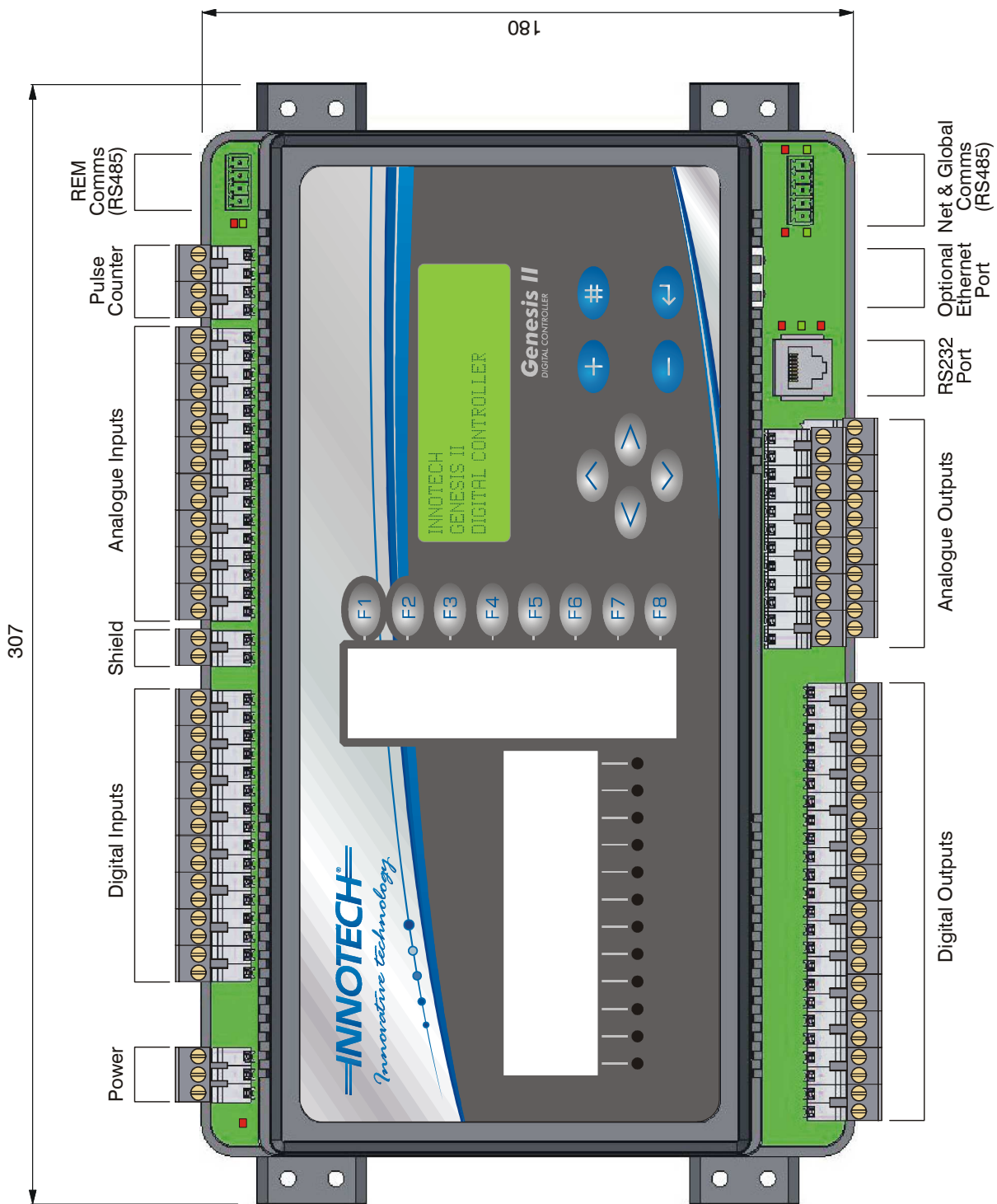
1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note – This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Modifications to this device, may void the authority granted to the user by the FCC to operate this equipment.

Genesis II Controller : Connection Diagram



Refer to the Gen2Config tools automatically generated Connection Diagram for details of programme I/O



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