





# Clearing the Air

## How the MACH-ProAir will breathe new life into the green building movement

60% of electricity in the United States and 40% worldwide is consumed by commercial buildings. Facility energy costs are on the rise while capital and operating budgets are under increasing scrutiny.

With energy efficiency and green construction near the top of national and global agendas, stringent energy standards were updated and published early this year by both the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) and the International Code Council® (ICC). Each publication committed to rigorous energy efficiency requirements for both residential and commercial buildings.<sup>1</sup>

ANSI/ASHRAE/IES Standard 90.1-2012 and the 2012 International Energy Conservation Code (IECC) have promised a 30% reduction in energy costs over 2004 standards. Many of these cost savings are provided by overhauling traditional design strategies and sequences of control. When a 1°F reduction in mechanical conditioning delivers 2–3% annual energy cost savings, it's easy to see how modifications to the way we used to control our mechanical equipment can have substantial economic impacts.

Some of the changes to fundamental thinking include aggressive changes to temperature and airflow setpoints together with zero-energy deadbands in local zone and terminal unit applications. There are also new requirements for automatic scheduling, optimal start, unoccupied setback, zone isolation, demand control ventilation, and terminal unit discharge air temperature control.

Simple, logical Energy Conservation Measures (ECMs) like these are sure to reduce operating costs for facility executives facing increasing energy costs and poli-public green awareness. As industry leaders, these ASHRAE and IECC standards are sure to garner support among design engineers around the world.

One of the obstacles to this revolution and advancement is the prevalence of configurable DDC devices with “burned-in” specific application profiles. Many configurable devices have rigid, traditional sequences of operation and cannot be freely programmed to embrace new strategies.

Fortunately, the MACH-ProAir™ (MPA) advanced VAV controller continues the tradition of Reliable Controls® MACH-System intrinsic simplicity, flexibility, and cost-effectiveness. The inherent nature of the flexible models, dynamic database and easy, custom programmability make the MACH-ProAir™ an obvious choice for today's energy conscious VAV applications.

To further support the worldwide network of Reliable Controls® Authorized Dealers as they embrace these conscientious changes to traditional methods, the MACH-ProAir™ will be released complete with a library of standard applications that implement the energy conservation requirements and sequences of operation of ANSI/ASHRAE/IES Standard 90.1-2012 and 2012 IECC.

### Product Highlights

- The flow and motor control algorithms are embedded in the MACH-ProAir™ firmware (The parameters used by these algorithms are hard coded into the controller's points.)
- Improved flow sensor can handle +/- 2 inches H<sub>2</sub>O, better resolution and accuracy (Negative pressure is possible which makes new control applications possible.)
- The End-Of-Line (EOL) network terminator is a slide switch, a first for Reliable Controls®, making termination easy – an amber status LED shows the controller is terminated
- The SMART-Net port has the traditional RJ-11 connection and a new 4 pole large screw terminal block
- TRIACs are internally connected to a common terminal labeled “R~” (On MPA-12 models the TRIACs are internally connected to the 24 VAC terminal.)
- No configuration jumpers, all configuration items are handled in software
- Improved Motor Torque increased to 45Nm from 35Nm
- Automatic actuator calibration on power-up can now be disabled



Note: All MACH-ProAir™ certifications are pending.



## New DEALERS

### IFACTS

www.ifacts-llc.com  
Alexandria, Ohio, United States

### Chinacomm System

www.chinacomm.com.cn  
Beijing, China

### Xcell Mechanical Services

www.xcellmechanicalservices.com  
Mackinaw, Illinois, United States

### J & J Air Conditioning

www.jjair.com  
San Jose, California, United States

### RenewAge Energy Solutions

www.renewage.com  
Culver City, California, United States

### Delta T HVAC Solutions

www.deltathvac.ca  
Saint John, New Brunswick, Canada

### Ergon Caribbean

www.ergonpr.com  
San Juan, Puerto Rico

### Shaanxi Yate Installation Engineering

Xi'an, Shaanxi, China



## TRADE SHOWS

Reliable Controls® will have a strong presence at the following trade shows.



**CHES NATIONAL CONFERENCE**  
Palais de Congres de Montreal, Intercontinental Hotel  
Montreal, QC, Canada  
September 23–25, 2012  
**Booth #700**  
(www.ches.org/en/conferences-events/2012-conference.html)



**NFMT VEGAS**  
**BUILDING OPERATING MANAGEMENT NFMT**  
Mirage Event Center, Las Vegas, NV, USA  
October 02–03, 2012  
**Booth #424**  
(www.nfmt.com/vegas)



**Healthcare Facilities Management Conference**  
Hotel Grande Chancellor  
Hobart, TAS, Australia  
October 03–06, 2012  
**Booth #TBA**  
(www.icebergevents.com/IHEA2012/)



**BUILD Eco XPO ASIA 2012**  
Marina Bay Sands Convention Centre  
Marina Bay Sands, Singapore  
October 10–12, 2012  
**Booth #J25**  
(www.efmabc.com)



**TBIX EXPO 2012**  
Place Bonaventure  
Montreal, QC, Canada  
October 24–25, 2012  
**Booth #108**  
(www.tbix.ca)



**GREENBUILD 2012**  
Moscone Center  
San Francisco, CA, USA  
July 11–12, 2012  
**Booth #TBA**  
(www.oasbo.org/default/index/)



# nationwide network



**ISAS**  
Integrated Switchgear And Systems  
www.isas.com.au  
Tony Pearce  
08.8947.2313

DARWIN

**environment & energy systems**  
www.enviroenergysys.com.au  
Richard Kowalski  
0488.393.334

CAIRNS

**AUSTEC**  
building automation  
www.austec-automation.com.au  
Graeme Edwards  
07.3807.4322

BRISBANE

**rega**  
www.rega-controls.com.au  
Ramsey Franjeh  
02.9568.4255

SYDNEY

**Environmental Automation**  
www.environmental-automation.com.au  
Robert Calo  
02.8568.5150

CANBERRA

**innovative electrical**  
www.innovative-electrical.com.au  
Justin Arnold  
02.6297.0053

ADELAIDE

MELBOURNE

**AUSTEC**  
building automation  
www.austec-automation.com.au  
Matt Coad  
08.8363.0959

PERTH

**HEXAGON SERVICES**  
www.hex.com.au  
Richard Udinga  
08.9472.7000

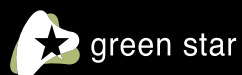
**Environmental Automation**  
www.environmental-automation.com.au  
Mark Griggs  
03.8645.3905

**ElectCon**  
www.electcon.com.au  
Scott Donaldson  
03.9336.0049



Our nationwide network of Reliable Controls® Authorized Dealers covers all of the major centers in Australia.

With the country focusing its attention on energy efficiency and sustainability, now would be a great time to discuss your green building needs with a Reliable Controls® Authorized Dealer near you.



[New Zealand] **CALLANDER Control**  
www.callander.co.nz  
Dean Walter  
09.846.0154

**AUCKLAND**

**NAPIER**

[New Zealand] **Electrotech CONTROLS LTD**  
www.electrotech.co.nz  
Paul Reynolds  
06.835.2260

people and technology  
you can rely on™



## RC-STUDIO INSTRUCTIONAL VIDEOS



We are excited to post the first three videos in a new series dedicated to explaining day-to-day operation and configuration of specific MACH-System features. Ideal for customers, operators, and new technicians, these videos provide a succinct description of the feature and simple step-by-step instructions for configuration.

The first three videos focus on Direct Access, BACnet® Schedules, and BACnet® Trend Logs, and are available online in the Customer Training Center by following the Training Videos > RC-Studio link. Enjoy.

## OPERATOR TRAINING CLASS

The Operator Training class is a two-day course, ideal for facility managers and operators who wish to derive maximum benefit from their MACH-System installations. Attendees should have computer experience and have regular operation of an RC-Studio® 2.0 workstation as part of their job description. The course includes database entry, alarm management, Control-BASIC programming, scheduling, Trend Logs, Runtime Logs, System Group graphics, and much more.

Contact your local Authorized Dealer to inquire about scheduling Operator Training in your area, or to participate in existing course dates.

**October 12–13**  
**Victoria, British Columbia, Canada**

**November 15–16**  
**Vancouver, British Columbia, Canada**

## BUILDING CUSTOMER SATISFACTION

Reliable Controls® objective is to have the most satisfied dealers in our industry, and by extension, to have the most satisfied customers in our industry. To gauge our success with our customers, we use customer loyalty as our measuring stick, and by all accounts, we're building loyal relationships.

Our outstanding customer loyalty stems from our ability to be good listeners and to deliver practical, easy-to-use building solutions that are flexible, economical, and an excellent return on investment, year over year. Ultimately, it is our commitment to customer support that maintains customer satisfaction - projects completed by the Reliable Controls® Authorized Dealer network are backed by the best support in the industry. To create outstanding support, we begin with establishing a strong Authorized Dealer in your local area and provide uncluttered, customer-related communication channels.

**DEALER TRAINING PROGRAM** One of the requirements of the Authorized Dealer program is to keep technical staff trained on the use of Reliable Controls® products. To meet this requirement, technical staff need to be enrolled in the Reliable Controls® Certification Program, and maintain a minimum Level 3 certification.

**REGIONAL SALES SUPPORT** Reliable Controls® helps all dealers to succeed via Regional Sales Manager visits, consultant and end-user presentations, trade shows, and advertisements in national magazines.

**PRODUCT USER GUIDES** Each product released by Reliable Controls® is accompanied by a professionally crafted User Guide that walks the user through the product's capabilities.

**ENGINEERING AND TECHNICAL SUPPORT** All customers are only a phone call away from accessing the very engineers who designed and built the product installed at their facility.

All this to say... your environment is in good hands.





# Controlling the BIG Ideas

In greater Melbourne, Australia, the 18 million dollar Hume Global Learning Centre – Craigieburn recently opened for business to provide and improve access to learning and employment opportunities in the local community. The two story centre is home to the Craigieburn Library, a café, gallery, occasional childcare facilities, Craigieburn Council’s Customer Service Centre on the ground level, and a conference and training centre on the upper level. The centre will surely be a lively hub of activity for learning, socializing, sharing knowledge, and inspiring creativity.

Reliable Controls® Authorized Dealer, ElectCon, was awarded the contract to install the Building Automation System into the Hume Global Learning Centre – Craigieburn. The MACH-System installed by ElectCon features 630 points networked across three main controllers. The main floor is controlled by a MACH-ProWebCom™ controller that acts as the HTTP system server and quarterbacks two streams of functionality, each responsible for conditioning the main floor space by using a combination of MACH1™ and MACH-Air™ Variable Air Volume (VAV) controllers. Also present in the installation are two MACH-ProSys™ (MPS) controllers, one dedicated to the main floor plant and the other dedicated to the second floor. The main floor plant MPS employs Modbus to connect to both Mechanical Service Switch Board (MSSB) power meters that connect the ground and level 1 power meters – each meter measures power usage in its MSSB High Level Interface (HLI) and also connects to three MACH-ProPoint™ I/O modules for Chillers with two Variable Speed Drive (VSD) pumps and two boilers with two VSDs. The second floor MPS connects to nine MACH1™ controllers that are in turn connected to Air Handler Units (AHUs), as well as four MACH-ProPoint™ I/O modules for three Air Handler Units, 1 Plant Air Conditioner, 1 Air Conditioner, 1 Evaporative Cooler, two Kitchen Exhaust Fans (KEFs), and 1 Toilet Exhaust Fan (TEF). The entire facility is monitored through one Operator Work Station (OWS) using RC-Studio®.

The mechanical equipment installed at the Hume Global Learning Centre – Craigieburn consists of two York Air Cooled Chillers, two pumps to run water through the chillers, two pumps dedicated for the Heating Hot Water (HHW) of the AHUs, two pumps for the slab heating, two Laars Mighty Therm Non Condensing Boilers with two pumps, and 15 G.W. Walker Air Handling Units (AHUs). Variable Frequency Drives (VFDs) reside on the supply side fans for the AHUs which have fixed minimum air dampers, operate in economy cycles when appropriate, and maintain a static pressure, a dirty filter, a spill air fan, and PID looped HHW and Chiller Water (CHW), which gives run and fault status back from the Variable Speed Drive (VSD) and measures Supply Air Temperature (SAT), Return Air Temperature (RAT), and Room Temperature (RMT). All zoning is under floor. The floor diffusers allow the air to circulate into the space. MACH-Air™ (MA) controllers are mounted in this space and the air is then sent to a contained “open plenum”.

In the main library, where there is no under floor, there are linear ceiling diffusers. Each zone is monitored for both temperature and CO<sub>2</sub> by Reliable Controls® SMART-Space Temperature devices (SST-CO2-O). Perimeter heating for the facility uses hot water coils connected to MA controllers. The computer room air conditioned and temperature monitored by a Variable Refrigerant Volume (VRV) split unit.

The facility features several innovative refinements that add to the building’s efficiency. To start, the structure’s external North side wall (summer sun) and an inside East wall of the library are made from rammed earth. Although the rammed earth walls delayed the project’s completion by 4 months, their passive solar heating properties (a seemingly limitless capacity to absorb heat during the day and slowly release it during the night) have proven to be significant contributors to the building’s overall energy-efficiency. The facility also features radiant floor heating in the main entrance lobby. Issues initially occurred with air movement when both the North and South doors were opened at the same time, but the radiant floor tempered this anomaly via the SSTs installed in the main lobby.



[www.electcon.com.au](http://www.electcon.com.au)

Reliable Controls® equipment installed at Craigieburn Library, Learning Centre and Gallery includes:

1	MPWC	4	SST
1	SST-O-L	7	MPP
2	MPS	15	M1
2	SST-O	24	MAH
		36	SST-CO2





# INSURANCE AUSTRALIA GROUP

SYDNEY, NSW, AUSTRALIA

CORPORATE

## PEOPLE AND TECHNOLOGY

The operational headquarters for Insurance Australia Group (IAG) is an eight-storey office building in Greater Sydney. The 4.5 Star NABERS project consists of 14,000 square metres of Grade-A office space with five retail areas on the ground floor.

## PROJECT DETAILS

The Reliable Controls® MACH-System installed on the project was originally intended to help earn the building a coveted Green Star 5 star energy rating. However, as the project progressed, the building's tenants, Insurance Australia Group, believed that the system's versatility could also allow for a 4.5 Star NABERS rating as well.

Reliable Controls® Authorized Dealer, Rega Controls, used the BACnet® capabilities of the MACH-Global™ and MACH-ProSys™ controllers along with the versatility of the MODBUS-Link™ and ETHER-Link™ portals to connect third-party equipment and achieve the building's goal of certifiable energy savings.

The customer is very happy with the controls system performance and their energy savings.

To learn more about projects using Reliable Controls® visit  
[www.reliablecontrols.com/projects/overview](http://www.reliablecontrols.com/projects/overview)



**PROJECT TYPE:**  
**New Construction**

**INSTALLATION TYPE:**  
**Boiler, Chiller, CO<sub>2</sub> Monitoring, HVAC, Lighting, VAV**

**TOTAL AREA:**  
**14,000 m<sup>2</sup> (150,640 ft<sup>2</sup>)**

**EQUIPMENT INSTALLED:**  
**1 MACH-Global™**  
**1 MODBUS-Link™**  
**2 MACH-ProSys™**  
**2 ETHER-Link™**  
**7 MACH2™**  
**22 MACH1™**  
**150 MACH-Air™**

**NETWORK:**  
**EIA-485, Ethernet**

**INTEGRATION:**  
**BACnet®, Modbus**

**TOTAL SYSTEM POINTS:**  
**1,850 points**

**ENGINEERING CONSULTANT:**  
**George Floth**

**RELIABLE CONTROLS® DEALER:**  
**Rega Controls**

www.reliablecontrols.com