2021/2022 BURNER BOOK

CONTROLS FOR COMMERCIAL & INDUSTRIAL BURNER BOILER APPLICATIONS

OCHRANE SUPPLY



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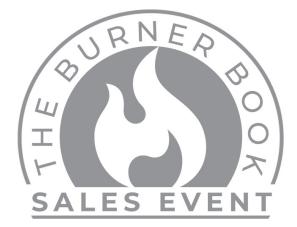
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SHOP IN-STORE, EARN REWARDS!

Earn a variety of prizes when you purchase Flame Safeguard products at any Cochrane Supply counter September 13th, 2021 through February 28th, 2022!* For counter orders:

- Over \$500, get a \$5 McDonalds Gift Card!
- **Over \$1,000,** choose our signature Cochrane Supply camo ball cap or a fleece beanie!
- Over \$1,500, get a Heat-a-Seat cushion!
- Over \$2,000, get a rechargeable hand warmer!



*For the order to qualify, it must contain a Flame Safeguard Product and be purchased in-store. Example of products that qualify: FSG Programmer, FSG Relay, Gas Valves, Pressure Switches, Amp Cards, Flame Sensors. Some prizes have limited quantities available and are while supplies last.

Walk into a boiler room and present yourself as a BurnerPRO professional!

Enroll in our Combustion Controls & Analysis Classes Now!

Cochrane Tech Services provides comprehensive, world-class training programs to provide you with the knowledge you need to succeed. Visit **cochranetechservices.com** to register for a combustion class near you. Training questions? Email training@cochranetechservices.com.

COMBUSTION THEORY ANALYSIS | \$85 per student | 4:30pm-7:30pm EST

This class is geared towards service technicians who test and tune burners for combustion efficiency. Topics include: the combustion process, why it's important to measure, how contractors can make money using an analyzer, how to use an analyzer and more!

- September 14, 2021 | Cochrane Supply Cleveland, OH
- September 15, 2021 | Cochrane Supply Toledo, OH
- October 13, 2021 | Cochrane Tech Center Madison Heights, MI
- October 13, 2021 | Builders Exchange of KY Louisville, KY
- October 14, 2021 | Cochrane Supply Grand Rapids, MI
- October 14, 2021 | Cochrane Supply Indianapolis, IN

FLAME SAFEGUARD SEMINAR | \$85 per student | 4:30pm-7:30pm EST

This class covers applications and troubleshooting. Topics will include: Flame Sensors, Primary Controls and Programming Controls.

- October 5, 2021 | Cochrane Tech Center Madison Heights, MI
- October 12, 2021 | Cochrane Supply Grand Rapids, MI
- October 19, 2021 | Cochrane Supply Toledo, OH
- October 26, 2021 | Cochrane Supply Cleveland, OH
- November 9, 2021 | Builders Exchange of KY Louisville, KY
- November 16, 2021 | Cochrane Supply Indianapolis, IN







PRIMARY FSG RELAYS

RM7890 Primary Controls

Replaces RA890F,G,H, & Requires Q7800 Subbase & R78 Amplifiers

RM7890A1015Automatic Primary RelayRM7890B1014Automatic Primary Relay, Shutter DriveRM7890B1048Enhanced Primary with VPS**

RM7895 Primary Controls

Replaces R7795A,B—R4795A,D & Requires Q7800 Subbase, R78A Amplifiers & ST Purge Cards

RM7895A1014Intermittent Primary RelayRM7895B1013Intermittent Primary Relay with Air Flow Switch CheckRM7895C1012Interrupted Primary RelayRM7898A1000Enhanced Primary with VPS**

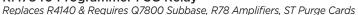
RM7838A and B Semi-Automatic Primary Controls

Replaces R4138, Requires Q7800 Subbase, R78 Amplifiers & ST Purge Cards

RM7838A1014	Semi-Automatic Primary Relay with Display
RM7838B1013	Enhanced Primary Relay with Display

PROGRAMMER FSG RELAYS

RM7840 Programmer FSG Relay



RM7840E1016	Relay Module, 4-Wire Modulation, Proven High/Low Fire, ESP*
RM7840G1014	Relay Module, 4-Wire Modulation, Proven Low Fire
RM7840L1018	Relay Module, 4-Wire Modulation, Proven High/Low Fire
RM7840M1017	Relay Module, On/Off, Proven Low Fire
RM7840L1075	Enhanced Programmer with Purge & VPS**

RM7800 Programmer FSG Relay

Replaces BC7000 (includes keypad) & Requires Q7800 Subbase, R78 Amplifiers, ST Purge Cards

RM7800E1010	Relay Module with Keypad, 4-Wire Modulation, Proven
	High/Low Fire, ESP*
RM7800G1018	Relay Module with Keypad, 4-Wire Modulation, Proven Low Fire
RM7800L1012	Relay Module with Keypad, 4-Wire Modulation, Proven
	High/Low Fire
RM7800M1011	Relay Module with Keypad, On/Off, Proven High/Low Fire
RM7800L1087	Enhanced Programmer with Keypad & VPS**

*ESP = Energy Savings Prepurge **VPS = Valve Proving System



FREE FSG RELAY TESTING

by professionally-trained staff at any Cochrane Supply store counter!







S7800A1142 Enhanced Keyboard

Allows for programming the VPS and post purge as well as configuring of S7830 expanded annunciator terminals to match user system drawings, providing an aid for troubleshooting.



S7800A2142 Display Module

Allows for programming the VPS and post purge. Provides current system status and first-out annunciation and system diagnosis using a five-row by 64-column readout. The KDM is part of the 7800 series of microprocessorbased burner controls for gas/oil/coal or combination fuel single burner applications.



S7810M1003 ControlBus Module-MODBUS

Operates as ModBus RTU slave device with ability to remotely mount the S7800 Keyboard Display Module. It installs directly on the front of 7800 Series Relay Modules and provides ModBus communications bus interface with remote reset option.

FLAME SIGNAL AMPLIFIERS



R7847A1025	Green, Rectification, 0.8 to 1 Second Response Time
R7847A1033	Green, Rectification, 2 to 3 Second Response Time
R7847B1023	Green, Rectification, Dynamic AMPLI-CHECKtm 0.8 to 1 Second Response Time
R7847B1031	Green, Rectification, Dynamic AMPLI-CHECKtm 2 to 3 Second Response Time
R7847C1005	Purple, Ultraviolet, use with Purple-Peeper, Dynamic AMPLI-CHECKtm 2 to 3 Second
	Response Time
R7848A1008	Red, Infrared, 2 to 3 Second Response Time
R7849A1015	Purple, Ultraviolet, 0.8 to 1.0 Second Response Time
R7849A1023	Purple, Ultraviolet, use with Mini-Peeper, 2 to 3 Second Response Time
R7849B1013	Purple, Ultraviolet, use with Mini-Peeper, Dynamic AMPLI-CHECKtm 0.8 to 1 Second
	Response Time
R7849B1021	Purple, Ultraviolet, use with Mini-Peeper, 2 to 3 Second Response Time, Circuitry Self-
	Test
R7851B1000	White, Ultraviolet, Dynamic AMPLI-CHECKtm 2 to 3 Second Response Time
R7852A1001	Red /White, Infrared, 2 to 3 Second Response Time
R7861A1026	Purple, Ultraviolet, 2 to 3 Second Response Time Used With C7061 Detector
R7886A1034	Blue, Ultraviolet, Dynamic SELF-CHECK, 0.8 to 1 Second Response Time, Adjustable
	Sensitivity
R7886A1001	Blue, Ultraviolet, Dynamic SELF-CHECK, 2 to 4 Second Response Time, Adjustable
	Sensitivity

PLUG-IN PURGE TIMER CARD

Q7800A1005Universal Wiring Subbase, Panel MountingQ7800B1003Universal Wiring Subbase, Wall Mounting

Use with RM7800, RM7840, RM7895, RM7838 Relay Modules

Part Number	Prepurge Timing
ST7800A1005	2 seconds
ST7800A1013	7 seconds
ST7800A1021	10 seconds
ST7800A1039	30 seconds
ST7800A1047	40 seconds
ST7800A1054	60 seconds
ST7800A1062	90 seconds
ST7800A1070	2.5 minutes
ST7800A1088	4.0 minutes
ST7800A1096	6.0 minutes
ST7800A1104	9.0 minutes
ST7800A1112	12.0 minutes
ST7800A1120	15.0 minutes
ST7800A1138	22.0 minutes
ST7800A1146	30.0 minutes



vell

1708 1-4755F REV. B

PILOT ASSEMBLIES

Rectification flame sensing can be used with Honeywell and Fireye amplifiers.

Part Number	Description	Application
FRS4-12 FRS4-6	Flame Rod, 1/4" NPT Mount 12" Rod Flame Rod, 1/4" NPT Mount 6" Rod	Standard Flame Rod, cut to length, heat before bending
Q179A1001 Q179A1035 Q179A1050 Q179A1052	l Tip Style 45° RH Tip Style T Tip Style 45° T Tip Style	Flame Rod & Gas Pilot, for intermittent or interrupted ignition
Q179B1042	T Tip Style	Standing Pilot
Q179C1009 Q179C1025	End, Dual Wing, Rear Mount End, Single Wing, Rear Mount	Flame Rod & Gas Pilot, for intermittent or interrupted ignition
Q179D1008	End, Dual Wing, Rear Mount	Standing Pilot

IGNITION TRANSFORMERS

Part	Number
A06	-SA6

A10-LA2

Q624A1014 Q652B1006 Q652B1014

Description 120 VAC Primary, 6000 VAC Secondary, 175 VA, 60 Hz, 1 Phase 120 VAC Primary, 10000 VAC Secondary, 250 VA, 60 Hz 120 VAC, 50/60 Hz 120 VAC, 60 Hz 220 VAC, 50/60 Hz

INFRARED FLAME SENSORS

Part Number C7915A1028

Description 3/4" NPT Mount, 48" Lead Wire with Lead Sulfide Photocell, -20 to 125°



C7915

ULTRAVIOLET FLAME SENSORS

Part Number

C7027A1023
C7027A1031
C7027A1049
C7027A1064
C7027A1072
C7927A1016
C7035A1023
C7012E1112
C7012E1146
C7012A1053
C7961E1014

Description MiniPeeper. 0 to 215°

MiniPeeper, 1/2" Mount, 8' Lead Wire, -40 to 215º MiniPeeper, 1/2" Mount, 8' Lead Wire, 1/2" NPT Conduit, 0 to 215° MiniPeeper, 1/2" Mount, 24' Lead Wire, 1/2" NPT Conduit, -40 to 215° MiniPeeper, 1/2" Mount, 8' Lead Wire, 1/2" NPT Conduit, -40 to 215º MiniPeeper, 1/2" NPT Mount, 48" Lead Wire, -40 to +200° 1" Mount, 6' Lead Wire, Replaceable UV Tube, 0 to 250º 1" NPT Mount, Dynamic Self-Check, 120V

3/4" NPT Mount, Dynamic Self-Check, 208V

1" NPT Mount, Dynamic Self-Check, 120V, Low Temp, -40 to 175° 1" NPT Mount, Dynamic Self-Check, 120V, Low Temp, -40 to 175°





FREE TESTING on RM7800 Series 1000 & the OEM

Series 2000 version controllers at Cochrane Supply counters!

HONEYWELL SLATE - Integrated Combustion Equipment Management!

A single platform for almost any application. With the revolutionary integration of configurable safety and programmable logic, SLATE is easily customized for virtually any commercial or industrial combustion application. In less time, and with far less complexity. With SLATE, your team can engineer custom solutions for a variety of markets without going back to the manufacturer. Purchase only the modules your application requires and choose how to use them.

FEATURES:

- It's modular-buy only the modules you need and choose how to use them with simple wiring commands
- Provides 24 VDC or 24 to 240 VAC flame safeguard
- Dual fuel capability; DIN rail mountable
- Designed to mount inside electrical enclosure as part of a system
- Flexible programming tools help you develop and implement differentiating applications more quickly
- Load your custom application kit with a PC for faster duplication
- SLATEAXTOOL: Complimentary add-on with product for AX license



















Base Unit R8001A1001

R8001B2001

Burner Control UV Flame Amp Fuel Air Ratio R8001S1071 R8001C6001

Safety Limit R8001L8001

Annunciator R8001N7001

Digital I/O R8001D4001

Analog I/O R8001U3001

HONEYWELL SLATE COLOR DISPLAY - 10" Color LCD Display



R8001K1010

The R8001K1010 SLATE 10" Color Touch Screen Display provides users with the ability to create vivid application displays using web technology. The screen is web enabled, and with the SLATE Web Editor tool, creating screens is simple and easy.

FEATURES:

- Display screens are web pages served from SLATE Base Module
- Integrated view of SLATE system
- Standard Honeywell pages for Burner Control, Fuel Air Ratio, Limit and Base Modules

FLAME SCANNERS

QRA2(1) UV Scanner QRA4U UV Scanner QRA10 UV Scanner QRA75 UV Scanner U.V. side-viewing detector with flange and clamp used with LFL Burner Controls QRA4U U.V. detector with NPSM thread conn. for LFL Burner Controls U.V. detector with die cast aluminum housing normal sensor tube U.V. self scanner for LMV

SIEMENS



LME7 BURNER CONTROL



The burner control LME7 is a microprocessor-based unit with matching system components for the control and supervision of forced draft burners of medium to high capacity. Ease of installation, programming and commissioning are incorporated into a reliable, field proven control.

LFL FLAME SAFEGUARD



With an incomparable record for safety and reliability, the globally approved LFL Flame Safeguard continues to be one of the most widely used flame safeguards around the world. Siemens LFL burner controls provide burner sequencing and flame monitoring for the supervision of individual gas, oil, or dual fueled burners.

SQN7 CONTROL MOTOR



Designed to drive gas and air dampers for burners with small to medium capacities, the SQN7 Control Motor provides line voltage, floating control and optional feedback for low torque applications. Features include: line voltage floating or proportional control, optional feedback potentiometer, up to 22 in-lb torque, and an auxiliary switch.

LDU11 VALVE LEAK TEST SYSTEM



The Siemens LDU11 gas valve leak test control checks for leakage through the shutoff valves prior to burner start-up and/or immediately after burner shutdown. The cost-effective, easy to install LDU11 adds a substantial degree of safety to any combustion system.

SIEMENS LMV3

The LMV3 Linkageless Burner Management System sets an industry standard for cost-effective single or dual fuel burner controls-from easy installation, programming and commissioning to reliable, proven control. Effortless commissioning, simple programming, and easy installation allows for maximum ROI.

With the LMV3, Siemens forges new ground delivering a fully-integrated flame safeguard, linkageless system that is not only easy to install and use, but also provides improved burner performance and efficiency and ensures safe operation.



- Single and dual fuel versions
- Programmable overlap of the pilot and main gas valves
- Gas valve leak test on startup. shutdown, both or neither
- Proof of closure switch monitoring
- Programmable stops to pause startup sequence in: pre-
- purge, pre-ignition, pilot ignition, and main flame
- Adjustable purge timing up to 60 minutes

SIEMENS LMV5

The LMV5 Linkageless Burner Management System sets the standard high-from easy installation, programming and commissioning to reliable. proven control. With the LMV5, Siemens forges new ground delivering a fully-integrated system that is not only easy to install and use, but also provides improved burner performance and efficiency and ensures safe operation.

- Fuel to air ratio curve can easily be adjusted at any point in the firing rate
- 15 programmable points, with 4 independent positions including pre-purge, ignition, post-purge and standby
- User friendly menu system for fast programming, commissioning
- Worldwide approvals and technical support



RWF50 TEMPERATURE CONTROLLER

The RWF50 is used mainly for controlling the temperature or pressure in oil- or gas-fired heating plants. It is used either as a 3-position controller without angular positioning feedback or a continuous controller with analog output depending on the version. An external switch can be used to change to a 2-position controller for controlling 2-stage burners. The integrated thermostat function switches the burner on and off.



PRIMARY FSG RELAYS

Micro M Series Replaces UVM, TFM, M Series II

<u>Chassis</u>	
MEC120	VAC with Standard Plug-in Board

Programmer Modules

MEP100	Relight Operation, 10 Second, PTFI
MEP230	Selectable Purge, PTFI Timing, Recycle or Non-Recycle Post Purge, Prove Air Open at Start

Amplifier Modules

MEUVI	Ultraviolet, 0.8 Second Response Time
MEUV4	Ultraviolet, 3 Second Response Time
MERT1	Flame Rod, Photocell, 0.8 Second Response Time
MERT4	Flame Rod, Photocell, 3 Second Response Time

M-Series II

Replaces UVM & TFM

<u>Chassis</u>

MC120	120 VAC, Standard
MC120R	120 VAC with Remote Reset Capability

Programmer Modules

MP100	Relight Function
MP230	Selectable Recycle/Non-Recycle Function, Trial Flame
	Ignition and Purge Timing

Amplifier Modules

MAUV1	Ultraviolet, 2-4 Second Response Time
MAUV1T	Ultraviolet, 0.8 Second Response Time
MART1	Flame Rod, 2-4 Second Response Time
MART1T	Flame Rod, 0.8 Second Response Time

Subbases for Both Micro M and M-Series II

61-3060	Surface Mounting, Closed
61-5042	Cabinet Mounting, Open





FREE FSG RELAY TESTING

by professionally-trained staff at any Cochrane Supply store counter!











PRIMARY FSG RELAY CROSS-REFERENCE

MicroM Replacement from old M-Series and M-Series II

M-Series	M-Series II		MicroM Series			
Assembly	Chassis	Amplifier	Programmer	Chassis	Amplifier	Programme
UVMID	MC120	MAUV1T	MP100	MEC120	MEUV1	MEP100
UVM1F	MC120	MAUV1	MP100	MEC120	MEUV4	MEP100
TFM1D	MC120	MART1T	MP100	MEC120	MERT1	MEP100
TFM1F	MC120	MART1	MP100	MEC120	MERT4	MEP100
UVM2	MC120	MAUV1	MP230	MEC120	MEUV1	MEP230
TFM2	MC120	MART1	MP230	MEC120	MERT4	MEP230
UVM3	MC120	MAUV1	MP230	MEC120	MEUV4	MEP230
TFM3	MC120	MART1	MP230	MEC120	MERT4	MEP230

PROGRAMMER FSG RELAYS

Flame Monitor[®] Control

<u>Chassis</u>

E110Flame Monitor Control, Standard, w/Dust Cover & ScrewED510Display Module, LCD Display w/Keypad, 2 Line x 16
Characters, For Programmers and Primary Relays

Programmer Modules

EP160	30 Second Purge, 10 & 15 Second Trial for Ignition,
	4 Second Response Time, Non-Recycle, Modulation
EP260	30 Second Purge, 10 & 15 Second Trial for Ignition,
	4 Second Response Time, Recycle, Modulation
EP380	30 Second Purge, 5 & 10 Second Trial for Ignition,
	4 Second Response Time, Recycle, On-Off
EP390	90 Second Purge, 5 & 10 Second Trial for Ignition,
	4 Second Response Time, Recycle, On-Off

Amplifier Modules

EUV1	Ultraviolet Amplifiers
EIR1	Infrared Amplifier (High Sensitivity)
ERT1	Flame Rod Amplifier

D & E Series Subbases

60-1386-2	Closed Base	
60-1466-2	Open Base	

EIR1







FIREYE FLAME SCANNERS

UV1A6 48PT2-9003 45UV5-1009 UV Scanner, 1/2" NPT Connector, 6 ft. Cable

Infrared Scanner, 8', 90 Degree Head, D-Series, E-Series, MicroM

UV Self-Check Scanner, 1" NPT, 120 VAC Shutter; Use with 72DUVS4, 72DUVS1T, EUVS4, MicroM, FlameWorx II





45UV5



FIREYE INTEGRATED SCANNERS

Simplicity 65UV5

The Fireye 65UV5 flame scanner is a microprocessor-based flame scanner utilizing an ultraviolet tube-type sensor and an electro-mechanical self-checking shutter mechanism. The Fireye 65UV5 flame scanner incorporates an internal flame relay with a fixed ON/OFF threshold thereby eliminating the need for an external flame amplifier.



65UV5

85UVF

Phoenix 85UVF

The Fireye Phoenix type 85UVF/IRF flame scanners are microprocessor-based devices utilizing a solid state flame detection sensor. The Phoenix flame scanners incorporate an internal flame relay with automatically set ON/OFF thresholds, thereby eliminating the need for a remote flame amplifier or flame switch.

InSight 95IR/95UV/95DS

The Fireye InSight Type 95IR, 95UV, and 95DS flame scanners are microprocessor-based flame scanners utilizing solid state infrared (IR), ultraviolet (UV) or dual (IR and UV) sensors. The Fireye InSight Type 95 flame scanners incorporate an internal flame relay with adjustable ON/OFF thresholds, thereby eliminating the need for a remote flame amplifier.



InSight

INFRARED FLAME SENSORS

Fireye	
Part Number	Description
48PT1-1003	1/2" NPT Straight Mount, 8' Lead Wire, Older Style*
48PT1-9003	1/2" NPT Angle Mount, 8' Lead Wire, Older Style*
48PT1-9007	1/2" NPT Angle Mount, 4' Lead Wire, Older Style*
48PT2-1003	1/2" NPT Straight Mount, 8' Lead Wire
48PT2-1007	1/2" NPT Straight Mount, 4' Lead Wire
48PT2-9003	1/2" NPT Angle Mount, 8' Lead Wire
48PT2-9007	1/2" NPT Angle Mount, 4' Lead Wire

ULTRAVIOLET FLAME SENSORS

Fireye Part Number UV1A6	Description 1/2" NPT Mount, 6' Lead Wire,
	Non-Replaceable Tube
UV2	3/8" NPT Mount, 3' Lead Wire,
	Non-Replaceable Tube
45UV5-1009	1" NPT Mount, 8' Lead Wire, Self-Checking,
	Explosion Proof

*Older Style: P-Series Controls (e.g. 28FJ8, 29RF5)

FIREYE NEXUS - Intregrated Flame Safeguard Capabilities!

NXF4000

The NXF4000 is an electronic parallel positioning and O2 trim combustion control system built into a compact, flexible user-configurable package. This controller will support sequencing/lead lag and up to 10 servo motors.

PPC6000

The Fireye PPC6000 is a state of the art stand-alone parallel positioning system for all types of liquid or gaseous fuel fired combustion systems. When combined with a Fireye flame safeguard system such as the Fireye BurnerLogix control, the PPC6000 offers the most compact and advanced parallel positioning system available.

PPC4000

The PPC4000 is an electronic parallel positioning and O2 trim combustion control system built into a compact, flexible user-configurable package. This controller will support sequencing/lead lag and up to 10 servo motors.

NXD410 Keypad Display

The NXD410 is a full text-based LCD display. Fifteen keys, including fastaccess, one-push keys, provide information at a glance.

Servo Motors

Three servo motor sizes are available for the PPC4000. High accuracy 0.1 degree over 90 degrees resolution.

O2 Probe

Fireye's oxygen probe provides stack temperature and oxygen measurement. Available in three lengths with a low cost replaceable sensor. Oxygen trim automatically and continuously compensates for all the variables that affect efficient combustion.

ABB Variable Frequency Drive

Full range of drives from 208-240, 380-480 and 500-600 volts three-phase. Save time during commissioning while reducing programming errors that can lead to nuisance faults. Additional product features:

- Pre-configured at the factory for use with the Fireye Nexus product line
- Auxiliary contact blocks mounted and wired to terminals for Blower Motor Starter Interlock requirement
- One additional auxiliary contact block for profile selection when applied with the Fireye PPC series, mounted and wired to terminals
- Single line voltage input for start in both VFD and Bypass mode
- Line voltage contactors for drive output and bypass
- Dedicated ABB/Fireye wiring diagram clearly showing all required interconnecting wiring between the Nexus and the drive. Also includes a list of all option parameters changed by the factory for reference.















BURNERLOGIX

Chassis/Amplifier	120 VAC, 50/60 Hz YB110UV, YB110UVSC, YB110IR, YB110FR, YB110DC 230 VAC, 50/60 Hz YB230UV, YB230UVSC, YB230IR	BLV512 w/Optional Display
Programmer Module	YP100, YP102, YP200, YP202, YP300, YP302, YP113, YP138, YP118	€ 0 e IL1 **** Protoco
Display Module	BLV512 - Vacuum Flourescent, BLL510 - Liquid Crystal	BLV512 w/Optional Display & Programmer
Wiring Base	60-2814-1 Open Bottom, Cabinet Mount 60-2812-1 Closed Bottom, Conduit Knockout	
Wiring Base	60-2810-1 Pre-Wired, 4-Foot, Color-Coded	
	60-2814-1	



rP100







Note: The Phoenix QDWR models with electrical quick-disconnect have replaced the original WR models equipped with 10 feet of captive cable. The QDWR models (with 59-546-X cables) are also suitable for use in Class I Division 2 hazardous areas, thereby eliminating the need for the "EXWR" models.

VERIS WET DIFFERENTIAL PRESSURE SENSORS

PWLX04S	12 to 30 VDC/24 VAC Input 4 to 20 mA/0 to 5 V/0 to 10 V Output Wet Media Differential Pressure Transducer with LCD Display, 0 to 100 psig	
PW2LX04S	12 to 24 VDC Input 4 to 20 mA Output Wet Media Differential Pressure Transducer with LCD Display, 0 to 100 psig	PWRLX04S006A
PWRLX04S006A	15 to 30 VDC/24 VAC Input 4 to 20 mA/0 to 5 V/0 to 10 V Output Wet Media Differential Pressure Remote Transducer with 6 ft Armored Cable, 0 to 100 psig	
PWXX04S	12 to 30 VDC/24 VAC Input 4 to 20 mA/0 to 5 V/0 to 10 V Output Wet Media Differential Pressure Transducer, 0 to 100 psig	PWLX04S

PHOENIX CONTACT ILC 2050 BI

The ILC 2050 BI is a Niagara-based controller that is ideal for mission-critical applications, including boiler rooms. It is compatible with the existing Niagara workbench used to program any Niagara controller. Its I/O is easily discoverable within the Niagara workbench with free rivers specific to this controller. The ILC 2050 BI includes the following features:

- Industrially-graded hardware
 - UL 508 certification
 - Shock-and-vibration testing
 - I/O port-to-port isolation
- Dense I/O expandability in a small footprint
- Modularity of I/O for mixing and matching signals as needed
- Time-optimized engineering using the Niagara 4 framework
- Support for all the main communication protocols used in building infrastructure automation
- Planning, engineering, and visualization in the Java-based Niagara 4 framework
- Easy extension of the Niagara 4 framework with selfprogrammed functions
- Four LAN, two USB, and two RS-485 interfaces are integrated
- Safe and reliable intelligent safety solutions protect personnel and machinery, and ensure high system availability

YASKAWA MATRIX DRIVE

The HV600 variable-speed drive (3-250 HP) is engineered for use in HVAC building automation applications requiring reliable motor control. The HV600 features your choice of IP20/UL Type 1, IP55/UL Type 12, or IP20/Protected Chassis protection classes. Every HV600 comes with HVAC application-specific software presets, a Hand-Off-Auto LCD keypad, a high-visibility Status Ring for quick visual indication of drive status, and a real-time clock for system accuracy.

- Simple steps for efficient commissioning
- DriveWizard[®] Mobile app for drive management on smart mobile devices
- Safe programming without main three-phase power
- Timer controls for starting, stopping, and speed changes
- Built-in building automation protocols
- Emergency Override for occupant safety in fire events

The Z1000U Matrix Drive incorporates matrix technology to directly convert input AC voltage to output AC voltage. The drive is ideally suited for HVAC applications providing ultra-low harmonic distortion, energy savings, and serviceability in a space-saving design. The Z1000U HVAC Matrix Drive was honored with the Product of the Year Award by Consulting-Specifying Engineer Magazine.

www.cochranesupply.com





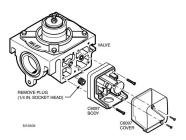
YASKAWA



HŒNI



V5097A, BVALVE



Part Number	Description; Pipe Size
V5097A1004/U	Small Body Low Pressure Integrated Valve; 3/4", 1", 1-1/4", 2"
V5097A1012/U	Large Body Low Pressure Integrated Valve; 2", 2-1/2", 3"
V5097B1002/U	Small Body Low Pressure Integrated Valve; 3/4", 1", 1-1/4", 2"
V5097B1010/U	Large Body Low Pressure Integrated Valve; 2", 2-1/2", 3"

V48/V88 - DIAPHRAGM GAS VALVES

Part Number	Pipe NPT	Pressure
120V		
V48A2151	3/4"	1/2 psi
V48A2169	1"	1/2 psi
V48A2177	1-1/4"	1/2 psi
V48A2185	1-1/2"	1/2 psi
V48A2243	2"	1 psi
V48A2250	2-1/2"	1 psi
V48A2268	3"	1 psi
24V		
V88A1659	3/4"	1/2 psi
V88A1618	1"	1/2 psi
V88A1626	1-1/4"	1/2 psi
V88A1634	1-1/2"	1/2 psi
V88A1709	2"	1 psi
V88A1717	2-1/2"	1 psi
V88A1725	3"	1 psi

REPLACEMENT PARTS

Gas Valve Actuators		
V4055A1064 V4055A1098 V4055D1019 V4062A1131	120V, 5 psi, 26 Sec 120V, 5 psi, 13 Sec 120V, 5 psi, 13 Sec used w/proof of closure 120V, 5 psi, 13 Sec Hi-Lo-OFF	



	Pilot	Valves
V046C	1/8", 1/4" or 3/8'	,
	Main G	as Valves
V5055	1"	
V5055	1-1/4"	
V5055	1-1/2"	
V5055	2-1/2"	
V5055	3"	

HYDRAMOTOR GAS VALVES



The normally-closed aluminum body valves provide main line gas shutoff and control for boilers, furnaces and ovens. Also with flanged cast iron body for pipe sizes up to 6".

	Actuators		Valves - Standard for On-Off Applications	
	AHD Series Actuators have been replaced with the E Series. The valve body must be changed as the new style will not fit on the old body style.		V710EBS	3/4"
			V710FBS	1"
	old body style.		V710GBS	1-1/4"
	AH2E102A4	On/Off Slow Opening	V710HBS	1-1/2"
	AH2E112A4	On/Off Fast Opening	V710JBS	2"
	AH2E112S	On/Off, Fast Open, Proof of Closure		-
	AH4E112S4	Hi/Low/Off, Fast Open, Proof of Closure	V710KBS	2-1/2"
	AH4E112A4	Hi/Low/Off, Fast Open	V710LBS	3"
	AH8E112A4	Modulating	V710NBF	4"

C7097A, B INTEGRATED PRESSURE SWITCHES

Can be mounted on V5097 Valve

Part Number	Description	
C7097A3012	3 to 21" WC, Manual Reset, NO, 1/4" NPT	
C7097A3020	3 to 21" WC, Manual Reset, NO, Mounts on V5097 Valve	
C7097B3028	3 to 21" WC, Manual Reset, NC, 1/4" NPT	
C7097B3036	3 to 21" WC, Manual Reset, NO, Mounts on V5097 Valve	
C7097A3004	.4 to 5" WC, Auto Recycle 1/4" NPT, Use with VPS	

SOLENOID VALVES | VENT VALVES

The normally-closed gas valves are used for pilot or main gas shutoff applications. Actuator and valve assemblies - 120V.

V4295A1015 V4295A1023 V4295A1031	1/2" NPT, 2 psi 3/4" NPT, 2 psi 1" NPT, 2 psi
V4295A1049	1-1/4" NPT, 2 psi
V4295A1056	1-1/2" NPT, 2 psi
V4295A1064	2" NPT, 2 psi

Normally-Ope	n Vent Valves
V4295S1005	3/4" NPT, 2 psi
V4295S1013	1" NPT, 2 psi
V4295S1021	1-1/4" NPT, 2 psi



VENT VALVES

2-Way, Normally Open, 120V

8215G033	3/4"
8215C053	1"
8215C063	1-1/4"
8215C073	1-1/2"
8215C083	2"

ACTUATORS AND VALVES

Designed to install faster, operate safer, and deliver proven reliability, Siemens VG Series Single and Double Gas Valves combine with SKP Series Electro-Hydraulic Actuators to provide gas safety shutoff, constant pressure regulation and air/gas ratio control.

To meet all of your application needs, VG Series Gas Valves are available in the following sizes:

- 1-1/2 to 3" threaded double valves
- 4 to 6" flanged double valves
- 1/2 to 3" threaded single valves

VGG10.254U VGG10.404U VGG10.504U VGG10.654U VGG10.804U 1" Gas Valve Body 1-1/2" Gas Valve Body 2" Gas Valve Body 2-1/2" Gas Valve Body 3" Gas Valve Body

Providing gas safety shutoff control for industrial and commercial burner applications, all SKP Actuators deliver reliable and safe on-off control:

- Proof-of-Closure (POC) Over Travel to ensure safety
- Modular design and quick connect wire terminals for fast installations
- Extremely low 13.5 VA power consumption

SKP15.011U1 SKP25.011U1 On/Off Safety Shut Off Valve Actuator On/Off Safety Shut Off Valve Actuator w/(SPDT) Proof Of Closure Switch



SIEMENS



GET EXPERT ADVICE!

Did you know Cochrane Supply has dedicated **Flame Safeguard and Combustion Controls Experts** on staff? Paul Wisnieski (paulw@ cochranesupply.com) and Chris Myers (cmyers@cochranesupply.com) have more than 60 years of combined FSG industry experience and are here to support you! Contact them with your questions today!

GAS TRAIN

SINGLE GAS PRESSURE SWITCHES

Maximum Pressure: 15 PSI, Ambient Temperature: -40° to 170°F

Manual Reset High Range (HGP-G)	8103116101	0.5" to 4" WC
	8101111202	1" to 21" WC
	8101111303	5" to 35" WC
Manual Reset Low Range (LGP-G)	8103116101	0.5" to 4" WC
	8103116202	1" to 21" WC
	8103116303	5" to 30" WC
Auto Reset High Range (RHGP-G)	8102111101	0.2" to 2" WC
	8102111102	0.8" to 4" WC
	8102111304	5" to 35" WC
Auto Reset Low Range (RLGP-G)	8104116304	5" to 30" WC
	8104116102	0.5" to 4" WC
	8104116203	3" to 21" WC





HGP-G/LGP-G

DOUBLE GAS PRESSURE SWITCHES

Maximum Pressure: 10 PSI, Ambient Temperature: -40° to 170°F

Manual Reset	Auto Reset	High Range	Low Range
804111701	804112101	2" to 16" WC	1" to 6" WC
804111702	804112102	5" to 28" WC	1" to 6" WC
804111703	804112103	10" to 50" WC	1" to 6" WC
804111704	804112104	2" to 16" WC	2" to 14" WC
804111705	804112105	5" to 28" WC	2" to 14" WC
804111706	804112106	10" to 50" WC	2" to 14" WC



HGP-A Replacements still available

AIR DIFFERENTIAL VACUUM PRESSURE SWITCHES

Maximum Pressure: 10 PSI, Ambient Temperature: -40° to 170°F

801111301B	JD-2 Blue Spring	0.07" to 1.7" WC
801111302B	JD-2 Gray Spring	0.1" to 4" WC
801111303B	JD-2 Red Spring	0.1" to 24" WC



QP PRESSURE SWITCHES

The QP Pressure Switch is available in a variety of pressure ranges and can be easily automatically or manually reset.

QPH31.050M00
QPH31.150M00
QPH31.050A00
QPL31.010M00
QPL31.050M00
QPL31.010A00

High Pressure Switch 2-20" wc Manual Reset High Pressure Switch 10-60" wc Manual Reset High Pressure Switch 2-20" wc Auto Reset Low Pressure Switch 1/2-4" wc Manual Reset Low Pressure Switch 1-20" wc Manual Reset Low Pressure Switch 1/2-4" wc Auto Reset



LEVER ACTING REGULATORS

Operating inlet pressure certified up to 2 psi, $8''\,\rm wc,$ come with 7'' to $11''\,\rm wc$ spring

Part Number	Pipe Size	Capacities to
325-3L-44	1/2" NPT	250 CFH
325-5L-66	3/4" NPT	600 CFH
325-5L-88	1" NPT	600 CFH
325-7L-1010	1-1/4" NPT	1,250 CFH
325-7L-1212	1-1/2" NPT	1,250 CFH
325-9L-1212	1-1/2" NPT	2,250 CFH
325-9L-1616	2" NPT	2,250 CFH
325-11L-2020-NG02	2-1/2" NPT	4,500 CFH

BALANCE VALVE REGULATORS

Operating pressure up to 10 psi, outlet pressure 1" wc to 42" wc, comes with 3" to 6" wc

Part Number	Pipe Size	Capacities to
210D-88	1" NPT	5,000 CFH
210D-1010	1-1/4" NPT	6,500 CFH
210D-1212	1-1/2" NPT	6,500 CFH
210E-1616	2" NPT	12,000 CFH
210G-2020	2-1/2" NPT	24,000 CFH
210G-2424	3" NPT	27,000 CFH

SELECTRA - GAS FLAME MODULATION SYSTEM

For use with direct fired burners - standard temperature adjustment range 55° to 90°F, capacities to 30,000,000 BTU/H

Valves and Ac	Valves and Accessories for Both Series					
M411-44	1/2" Modulating Gas Valve					
M511-34	1/2" x 3/4" Modulating Gas Valve					
M611-88	1" Modulating Gas Valve					
SC10C-B651	Signal Conditioner (4 to 20 mA to Valve)					
MT1-9	Mixing Tube and Sensor (9" Length)					
	Aurona (1997)					

Series 14 System - Used in Make-Up Air Applications

A1014R	Amplifier (Used with All Temperature Ranges)
A1014L	Amplifier (All Ranges - Low Fire Start)
TD114	Remote Temperature Selector (55° to 90°F)
TD114A	Remote Temperature Selector (80° to 130°F)
TS114	Discharge Air Temp Sensor (55° to 90°F)
TS114A	Discharge Air Temp Sensor (80° to 130°F)
	J.

Series 44 System - Used in Space Heating ApplicationsA1044RAmplifier (Min 40° to 80°F, Max 80° to 140°F)T244Selectrastat (Senses & Selects; 55° to 90°F)TS144Discharge Air Temp Sensor (Min 40° to 80°F, Max 80° to 140°F)

MAXITROL



325-3L ISA Certified for 2 psi (LP) and 5 psi (natural)



A1014R

NORGAS QUICK SELECTION GUIDE

1) Choose regulator type by inlet PSI and SCFH capacity Flow CFH of Natural Gas 7" w.c. Outlet

	7" w.c. Set Point - 1" Pressure Drop						
	Inlet	let ORIFICE					
	Pressure	1/8"	3/16"	1/4"	3/8"	1/2"	
	0.5	117	101	169	203	242	
	1	136	148	210	260	571	
	2	221	210	296	377	1039	
	3	234	257	460	468	1429	
	5	292	351	649	1169	1558	
	10	338	545	1091	1748	1740	
	15	390	701	1481	2104		
	20	491	818	1870	2403		
	30	619	1286	2571			
	40	717	2260	3251			
	50	805	2494	3636			
	60	997	2571	4052			
	80	1403	3696				
02	100	1675	4595				
NGR02	125	1850	4812				
N		Green SC	2A used t	o develop	table		

	7" w.c. Set Point - 1" Pressure Drop								
	Inlet		ORIFICE						
	Pressure	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"		
	1	390	1130	2338	2805	3312	4052		
	2	662	2065	3584	3390	5649	6273		
	3	857	2416	3896	4208	6701	8805		
	5	1130	3039	5299	5297	8961	12831		
	8	1442	3701	6390	6701	12234	15195		
	10	1558	4052	6857	7052	15506	15584		
	15	1948	4870	8182	8416	21569	23616		
	25	2649	6156	10909	12952	25650	26598		
	35	3273	6390	14776	16782	28273			
	50	4325	6244	19455	22492	32338			
	60	5206	8522	22585	26304	34117			
	75	6000	9780						
06	100	7286	11927						
NGR06	125	9402	13988						
N		Blac	k S0608C	used to	develop	table			

2) Choose spring - Spring Selection Guide

		Spring Chart	
	Color	Outlet Range	P/N
	Green	6.5"wc - 16"wc	S02A
2	Silver	14"wc - 1psig	S02B
0	Yellow/Black	26"wc - 1.5psig	S02C
38	Yellow	1psig - 3psig	\$02D
NGR02	White (HP)	2psig - 5psig	S0204E

		Spring Chart	
	Color	Outlet Range	P/N
	Orange	2"wc - 4"wc	S0608A
	Green	3"wc - 7"wc	S0608B
	Black	5"wc - 13"wc	\$0608C
٥	Purple	7"wc - 20" wc	S0608D
Õ	Silver	19"wc - 2 psig	S0608E
NGR06	Yellow	1.5 psig - 3 psig	\$0608F
ž	White	2.5 psig - 7 psig	S0608G

	7" w.c. Set Point - 1" Pressure Drop							
	Inlet		ORIFICE					
	Pressure	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	
	1	377	740	1013	1039	2065	2078	
	2	623	1140	1636	1818	3740	3896	
	3	805	1299	2143	2961	4948	5610	
	5	935	2104	4403	5000	6935	8571	
	8	1325	3000	5844	6429	9195	10987	
	10	1558	3299	6390	7052	10286	11065	
	15	2026	3896	8104	8571			
	25	2610	4156	11610				
	35	3195	4909					
	50	4286	5961					
	75	6234						
2	100	7247						
NGR04	125	9399						
۶I		Gra	iy SO4B u	sed to d	evelop ta	ble		

		7" w.c. Set Point - 1" Pressure Drop							
	Inlet ORIFICE								
	Pressure	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"	1-3/8"
	1	390	857	982	2104	2961	4208	4286	6234
	2	545	1403	1543	3039	3818	5143	7636	8961
	3	701	1714	1964	3896	4831	5766	9039	9896
	5	1013	2494	2665	5455	6390	6701	11610	12779
	8	1247	3195	5844	7169	9662	12857	16364	17532
	10	1558	3662	6468	8961	11065	15662	18701	21662
	20	2182	5377	9818	14182	19558	20260	26883	37403
	30	3117	7013	12779	19481	25169	25714	32338	
	40	3896	8416	16753	23377	27273	27662	37403	
	50	4831	9818	21506	25325	28501	28675		
	60	5922	11221	27273	33662	33850	34121		
	70	6692	13372						
08	90	8446	16626						
NGR08	125	11512	22308						
ž		G	reen S	0608B	used to	o devel	op tab	le	

- 1		Spring Chart	
	Color	Outlet Range	P/N
	Brown	3"wc - 7"wc	\$04A
	Gray	4"wc - 13"wc	S04B
	Black	9"wc - 14"wc	\$04C
	Blue	9"wc - 15"wc	\$04D
	Silver	12"wc - 20" wc	S04E
4	Red/Gray (HP)	13"wc - 28"wc	S04F
NGR04	Yellow (HP)	1psig - 2psig	\$04G
	Red (HP)	Red (HP) 1psig - 2.5psig	
ž	White (HP)	1psig - 3psig	S0204E

		Spring Chart	
	Color	Outlet Range	P/N
	Orange	2"wc - 4"wc	\$0608A
	Green	5"wc - 8"wc	S0608B
	Black	8"wc - 18"wc	\$0608C
8	Purple	13"wc - 24"wc	\$0608D
	Silver	1 psig - 2 psig	S0608E
0	Yellow	2 psig - 4 psig	\$0608F
NGR08	White	4 psig - 7 psig	\$0608G





NGR02

• 1/2" to 1-1/4" NPT

- Inlet 10 to 125 psi
 Outlet 6.5" WC to 5 psi



NGR04

- 1-1/4" NPT to 3" FL ٠
- Inlet 10 to 125 psi
- Outlet 3" WC to 3 psi



NGR06

- 1-1/4" to 3" FL Inlet 25 to 125 psi •
- Outlet 2" WC to 7 psi •



NGR08 • 1-1/4" NPT to 3" FL • Inlet 25 to 125 psi • Outlet 2" WC to 7 psi

GAS TRAIN

SEITRON AMERICAS EMISSIONS ANALYZERS

S1500-P Portable Combustion Analyzer with Built-In Printer

S1500-P Analyzer with O2, CO, CO2, Efficiency, Excess Air, Draft, Pressure, Temp, Rechargeable Battery and AC Plug, 12" (300mm) Probe with 5' (1.5m) Dual Hose, ABS Case, Calibration Certificate, Operating Manual, Cheat Sheet, Water Trap, Paper Roll, 2000 Internal Data Storage, PC Software, Bluetooth TM Connectivity, Differential Pressure Manometer Kit (1 Hose), Automatic Outdoor Air Temperature Saving for ALL 90%+ Systems and Condensing Systems for TRUE Efficiency Calculations + iOS and Android App Included.

S4500-3 Portable Commercial/Industrial Emissions Analyzer

S4500-3 Analyzer with 02, CO, Standard NO/NOx Gas Sensors, Upgradable to 4th Gas Sensor. Efficiency, Excess Air, Draft, Pressure, Temp, Rechargeable Battery and AC Plug, 12" (300mm) Probe with 5' (1.5m) Dual hose, ABS Case, Calibration Certificate, Operating Manual, Cheat Sheet, Water Trap, Paper Roll, 2000 Internal Data Storage, PC Software, Bluetooth TM Connectivity, Differential Pressure Manometer Kit (1 Hose), Automatic Outdoor Air Temperature Saving for ALL 90%+ Systems and Condensing Systems for TRUE Efficiency Calculations + iOS and Android App Included.

All-New Novo Portable Combustion Analyzer

The new Novo Combustion Analyzer is designed to make combustion analysis quick and intuitive. Robust, reliable, precise. The new Novo inherits the tradition of the Seitron analyzers and joins it with renewed software and hardware in order to offer a device easier to use. Main Features: With or Without Build-In Printer, 7" Touch Display for Easy Menu Navigation, Up to 4 Gas Sensors Including Low NOx, Long-Life O2 Sensor and High-Range CO With Dilution Pump, Dedicated Probe With One Simple Connection, Integrated Water Trap with LED Backlight for Easy Maintenance, Simultaneous Measurement of Gas and Combustion Results, New Dual Range Sensor Technology, and More.

TESTO COMBUSTION ANALYZERS

300 Combustion Analyzer

The user-friendly and highly efficient testo 300 with smart-touch technology has numerous advantages, including but not limited to:

FEATURES:

- Operation via smart-touch The smart-touch display responds immediately without any delay, allowing intuitive operation.
- Emailing of reports The testo 300 enables the convenient creation of documentation directly on site, and the dictation function even saves you typing in the process. Send reports immediately via Wi-Fi.
- Keep an eye on all measuring values You can see the system's parameters right away on the large 5" HD display.
- · Get the results faster Clearly structured menus for all relevant measurements are already stored in the measuring instrument and guide you efficiently through the application.
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S1500-P



Novo Series



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