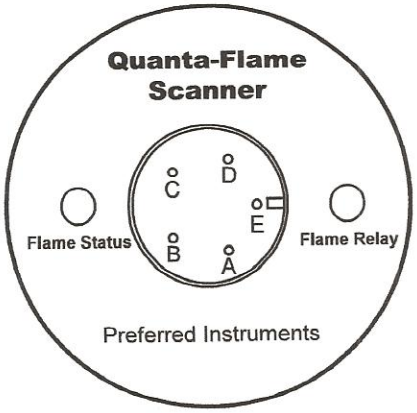
5002-01 ULTRAVIOLET SELF-CHECKING SCANNER
Product Overview

Description
The **Quanta-Flame Series 5002** is intended for monitoring all gas, oil and coal-fired burners. The control is the basis for industrial or commercial burner management systems using microprocessors, PLC or relay-based hardware. All essential circuits are supervised. The 5002-01 scanner is not an approved flame safeguard controller, so it must be used in conjunction with an approved flame safeguard controller.

- 5002-01 interfaces with Preferred, Fireye, Honeywell, and PCI flame safeguard controllers. Model numbers ending in "-C" provide contact closure and 4-20 mA outputs to interface with PLC-based and DCS-based flame safeguard systems
- Internal microcomputer controls internal functions as well as supervising the relay contacts to verify they are always operating correctly
- High quality fused silica quartz lens
- Machined alloy housing with seals
- Detectors and signal processor automatically checked every 10 seconds
- Replacement scanner can be installed without disturbing wiring
- No scheduled replacement parts
- Flame relay contacts and load circuit supervised
- Status LEDs
- Flame intensity
- Output on indicator
- Self-check indicator

LED Indicators
A Flame Status LED and Flame Relay LED provide useful diagnostic information on the front of the scanner.

Flame Status LED
The Flame Status LED (FSL) is a dual-color LED that acts as a multifunctional indicator.



Connector view of 5002-01 scanner showing cable pinouts

5002-01 Series Ultraviolet Self-Checking Scanner

When a flame is detected, the FSL will illuminate with a red color. This light will vary in intensity proportional to the level of flame signal (flame strength) detected. Every 10 seconds, the self-checking mechanism will interrupt the light coming from the flame. This is done to verify that the UV sensing element is still functioning properly. When this check is being performed, the FSL will momentarily turn to a yellow color (when flame present) or green color (when flame is not present). Should the UV sensing element fail to function, the scanner will lockout all the outputs to indicate the failure and the FSL will remain green without blinking for one minute.

After one minute, the control will automatically reset itself. The scanner's microcomputer will then continue to check the sensing element every ten seconds. Should the sensing tube be in a permanent "runaway" condition, the scanner will immediately lock out again for another period of one minute.

Flame Relay LED
The Flame Relay LED (FRL) is a single color LED.
When a flame of sufficient intensity is detected the 5002-01 scanner will activate the output signal. This output may be any one of the possible output forms described above. While the output is activated, the FRL will illuminate. Should the flame signal fall below the minimum threshold, or should one of the internal circuits or sensing elements tests fail, the output will deactivate, and the FRL will shut off.

Specifications

Mechanical	
Length Overall:	7" (177.8 mm)
Diameter:	3.25" (82.5 mm)
Housing:	Machined 5052 Aluminum Alloy
Finish:	Clear Anodized
Sight Tube Entrance:	1" Pipe Thread

Edgemont Precision Rebuilders, Inc
Matlack Industrial Center
207 Carter Dr Suite C
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5002-01 ULTRAVIOLET SELF-CHECKING SCANNER

Product Overview

Purge Air Entrance:	3/8" Pipe Thread
Electrical	
Supply Voltage:	120 VAC 50/60Hz, 230 VAC 50/60Hz 24 VDC (depending on model)
Required power:	2 VA
Output Contact Rating:	230 VAC, 1 A
Available Outputs:	
(-C Models)	Relay Contact & 4 to 20 mA

Other models interface with Preferred and other flame safeguard amplifiers. (see wiring examples)

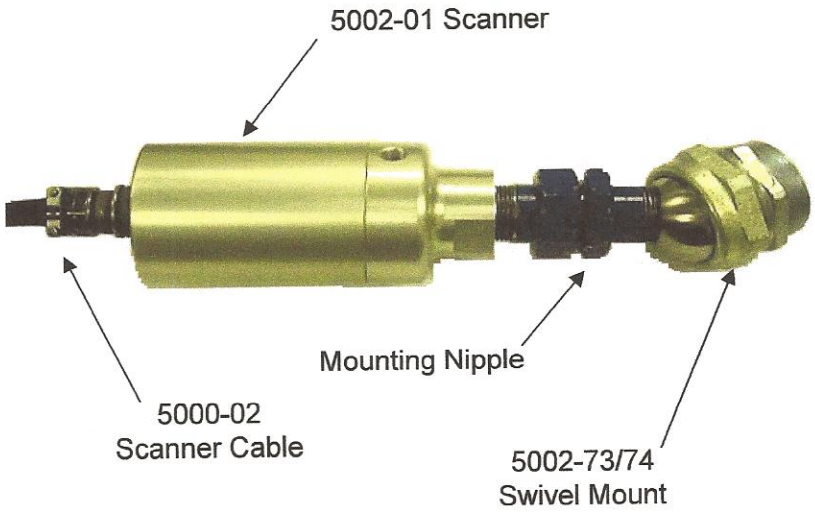
Specifications for 4 to 20 mA output (two-wire current loop)	
Span error:	1%
Non-linearity:	0.1%
Supply required to the loop:	12 to 30 VDC

Environmental	
Class:	NEMA 4
Temperature:	(0° F to 140° F).

Optical	
Lens Material:	Fused Silica
Spectral Sensitivity Ultraviolet:	180-230 nanometers

Product Certification
Microcomputer controlled UV Scanner (120VAC) Relay & Flame Amplifier Output FM / UL / CSA / CSAUS

UL file Number: E233069
CSA Certification: File No. 204571 –Project Number 1181621 and 1298906 update to add PCI and Eclipse controls. See attached CSA Certificate of Compliance
FM Approved Report Number: 3009512 and 3013648 (for use specifically with Eclipse Combustion Inc and Protection Controls Combustion Safeguards)
Applicable Requirements: CSA 0.8-M1986, 199-M89, UL 372, UL1998, FM Class 7610
Note: Flame scanners must be used in conjunction with an approved flame safeguard controller.



Typical Scanner Mounting

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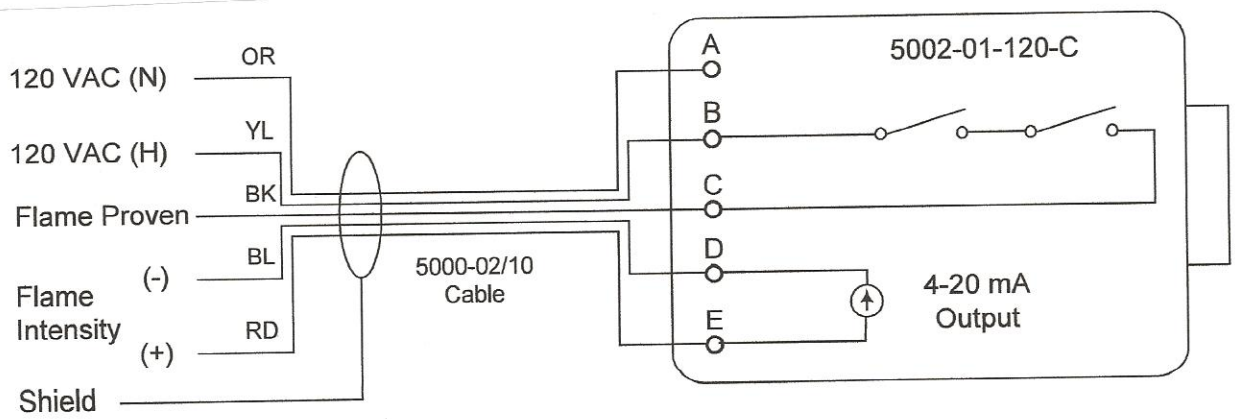
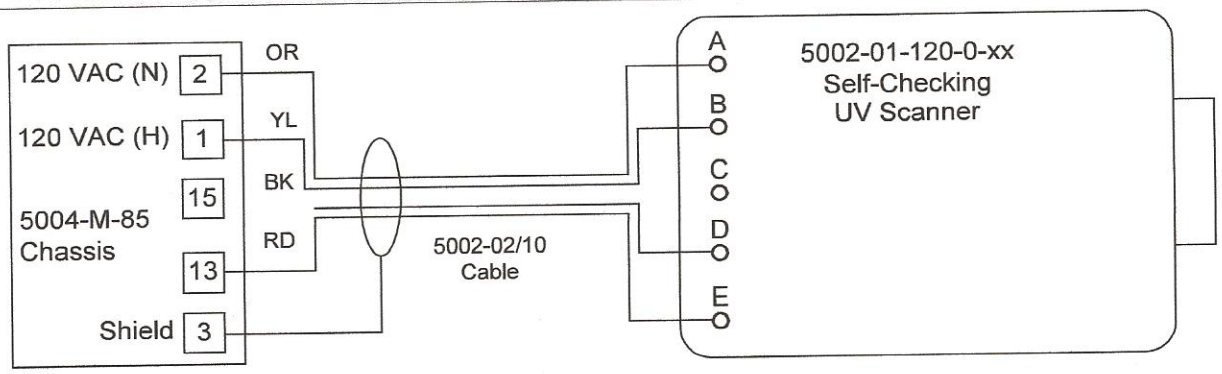


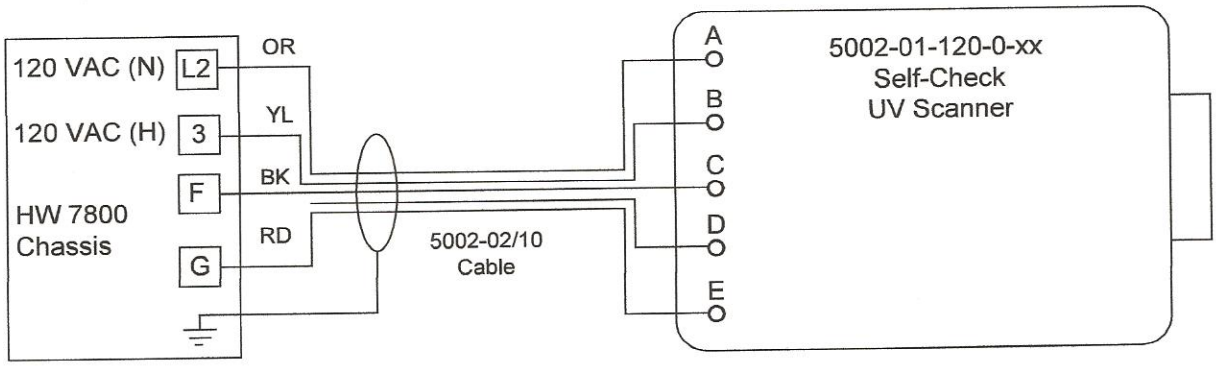
Internal Wiring and Typical Field Wiring of the 5002-01-120-C UV Self-check Scanner with 4-20 mA Output Option

5002-01 ULTRAVIOLET SELF-CHECKING SCANNER

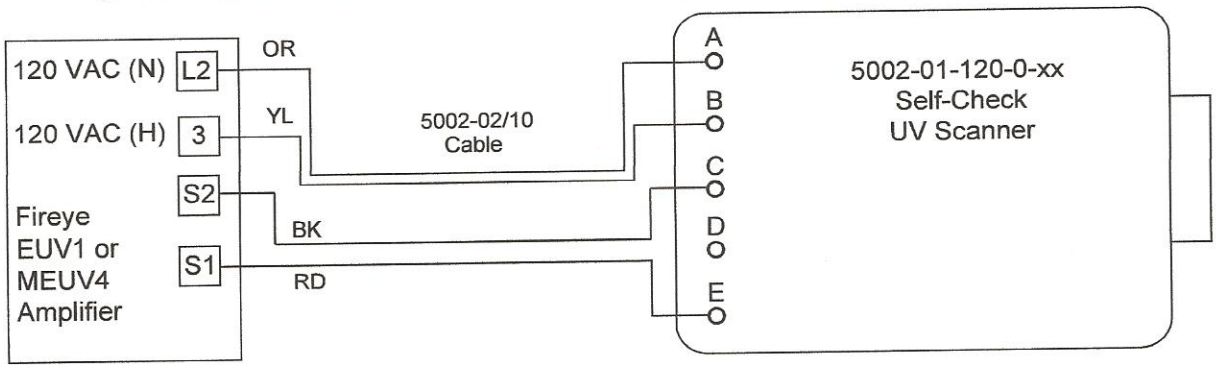
Typical Wiring



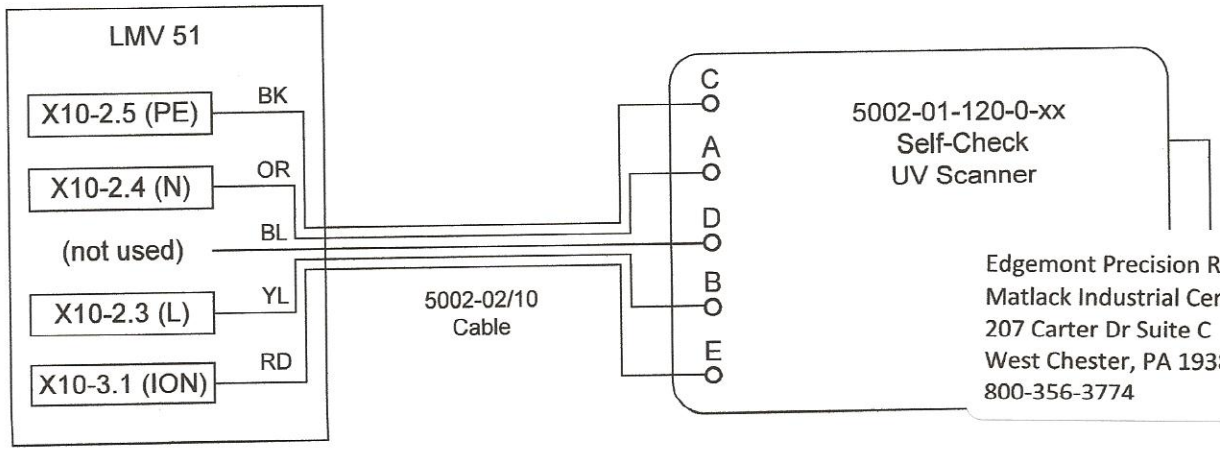
Typical Wiring Schematic--UV Self-check Scanner to Preferred Instruments 5004-M-85 Flame Safeguard Controller



Typical Wiring Schematic--UV Self-check Scanner to HW 7800 Series Flame Safeguard Controller



Typical Wiring Schematic--UV Self-check Scanner to Fireye EUV1 or MEUV4 Flame Safeguard Controller



Typical Wiring Schematic--UV Self-check Scanner to Siemens LMV Controllers

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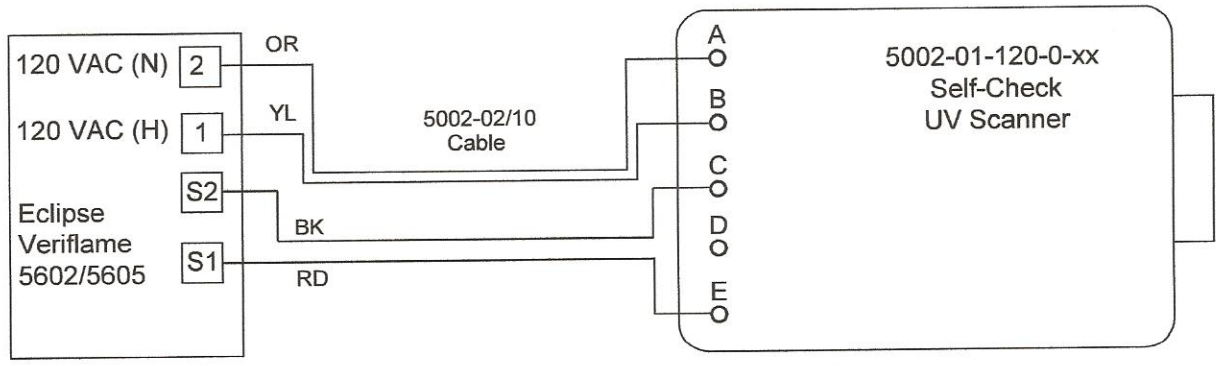
5002-01 ULTRAVIOLET SELF-CHECKING SCANNER
Suggested Specification



Typical Wiring Schematic--UV Self-check Scanner to Eclipse Veriflame Controllers

Suggested Specification:

1. Self-checking UV Scanner

Ultraviolet self-checking flame scanner shall be U.L. listed, FM approved, and CSA certified. Scanner housing shall be made of rugged anodized aluminum, have two status LEDs, and connect by means of a military-style quick disconnect fitting.

2. Physical Desciption

Scanner shall be made of high strength anodized aluminum and mount by means of industry standard 1" NPTF connection and include:

- 3/8" Purge connection
- 5 Pin military-style quick disconnect cable fitting

3. Electrical Characteristics

Scanner shall be powered by 120 VAC, 230 VAC, or 24 VDC input power. A 120/230 VAC relay contact shall be provided to prove flame while a 4-20 mA output shall correspond to flame signal strength (-C models). Alternatively, the 5002-01-(120 or 240)-0-xx shall interface with most existing flame amplifiers.

4. Manufacturer

Self-checking ultraviolet scanner shall be Model 5002-01 series manufactured by Preferred Utilities of Danbury, CT.

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5002-01NC ULTRAVIOLET SCANNER
Product Overview

Description

The **Quanta-Flame Series 5002** is intended for monitoring all gas, oil and coal-fired burners. The control is the basis for industrial or commercial burner management systems using microprocessors, PLC or relay-based hardware. All essential circuits are supervised.

- 5002-01NC interfaces with Preferred, Fireye, Honeywell, and PCI flame safeguard controllers or it is available with contact closure and 4-20 mA outputs interface with PLC-based and DCS-based flame safeguard systems
- High quality fused silica quartz lens
- Machined alloy housing with seals
- Replacement scanner can be installed without disturbing wiring
- No scheduled replacement parts
- Status LEDs
- Flame intensity
- Output On indicator
- Self-Check indicator

5002-01NC Series Ultraviolet Scanner

LED Indicators

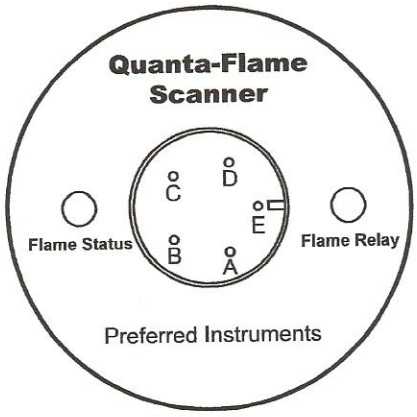
A Flame Status LED and Flame Relay LED provide useful diagnostic information on the front of the scanner.

Flame Status LED

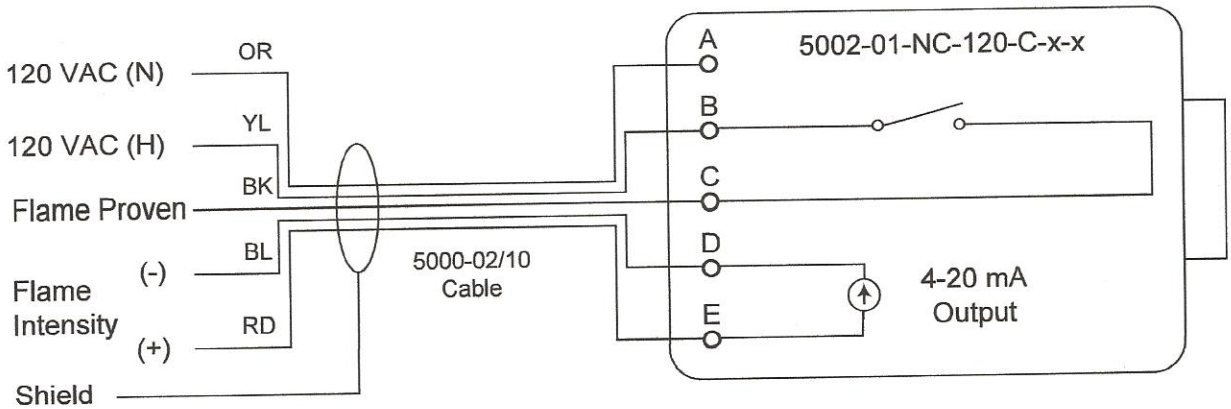
The Flame Status LED (FSL) is a dual color LED that acts as a multifunctional indicator. When a flame is detected, the FSL will illuminate with a red color. This light will vary in intensity proportional to the level of flame signal (flame strength) detected.

Flame Relay LED

The Flame Relay LED (FRL) is a single-color LED. When a flame of sufficient intensity is detected, the 5002 control will activate the output signal. This output may be any one of the possible output forms described above.



Connector view of 5002-01NC scanner showing cable pinouts



Internal Wiring and Typical Field Wiring of the 5002-01-NC-120-C-x-x Ultraviolet Scanner.

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5002-01NC ULTRAVIOLET SCANNER
Product Overview

While the output is activated, the FRL will illuminate. Should the flame signal fall below the minimum threshold, or should one of the internal circuits or sensing elements tests fail, the output will deactivate, and the FRL will shut off.

Specifications:

Mechanical	
Length Overall:	3.5" (88.9 mm)
Diameter:	2.25" (57.2 mm)
Housing:	Machined 5052 Aluminum Alloy
Finish:	Clear
Sight Tube Entrance:	1/2" Pipe Thread
Electrical	
Supply Voltage:	120 VAC 50/60 Hz, 24 VDC (depending on model)
Required power:	2 VA
Output Contact Rating:	230 VAC, 1 A
Available Outputs: (-C Models)	Relay Contact & 4 to 20 mA

Other models interface with Preferred and other flame safeguard amplifiers. (see wiring examples)

Specifications for 4 to 20 mA output (two-wire current loop)	
Span error:	1%
Non-linearity:	0.1%
Supply required to the loop:	12 to 30 VDC
Environmental	
Class:	NEMA 4
Temperature:	(0° F to 140° F).
Optical	
Lens Material:	Fused Silica
Spectral Sensitivity	
Ultraviolet:	180-230 nanometers
Product Certification	UL file number: E233069

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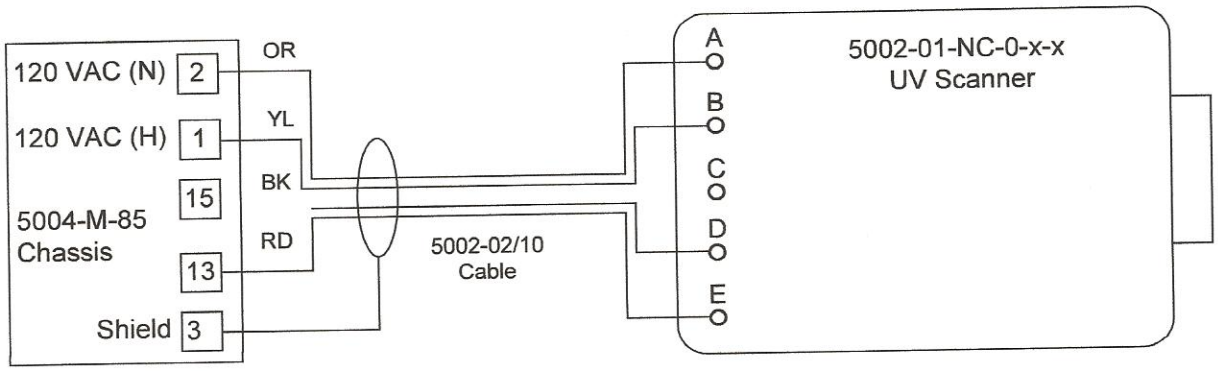
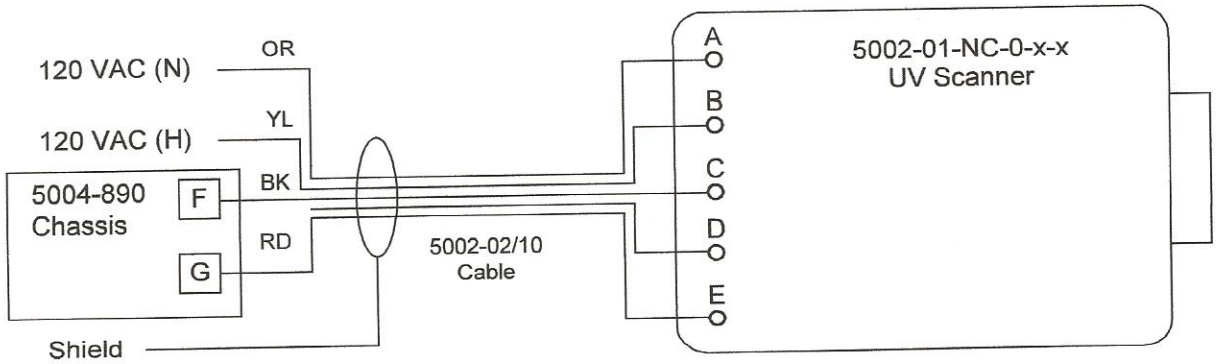
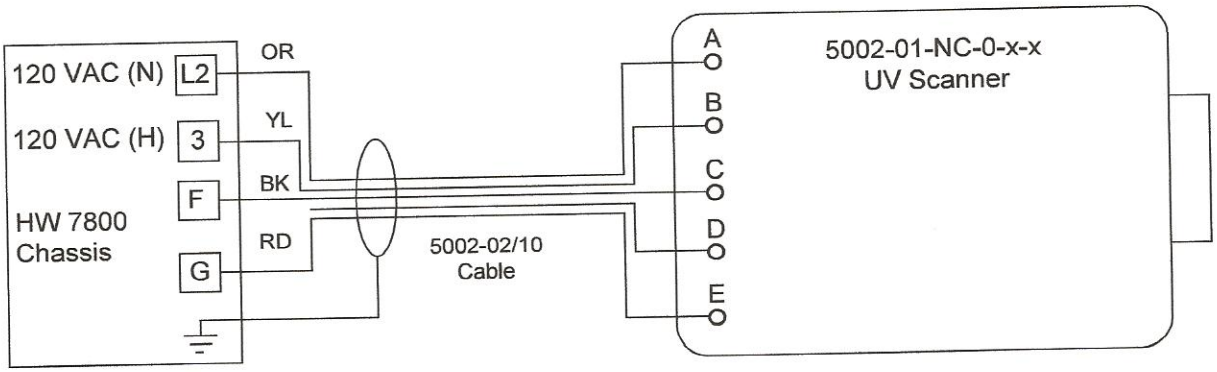


Typical Wiring Schematic: UV Scanner to Preferred Instruments 5004-M-85 Flame Safeguard Controller

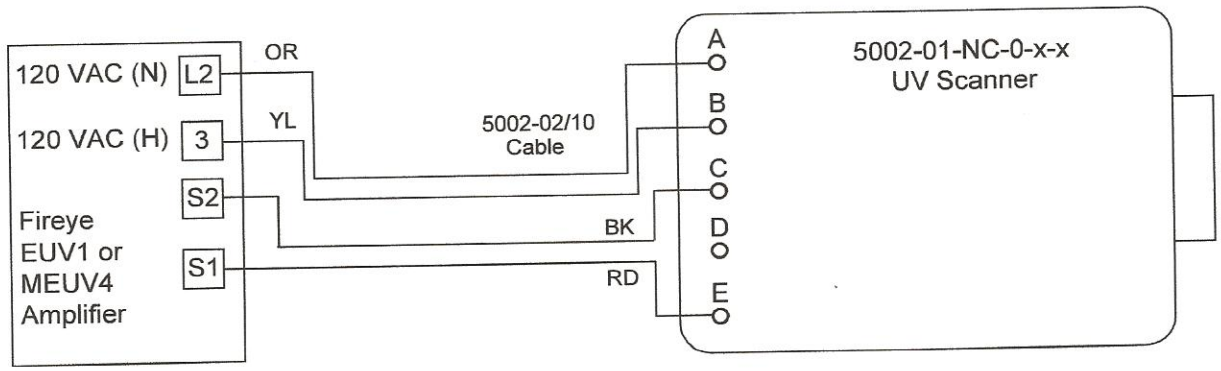


Typical Wiring Schematic: UV Scanner to Preferred Instruments 5004-890 Flame Safeguard Controller

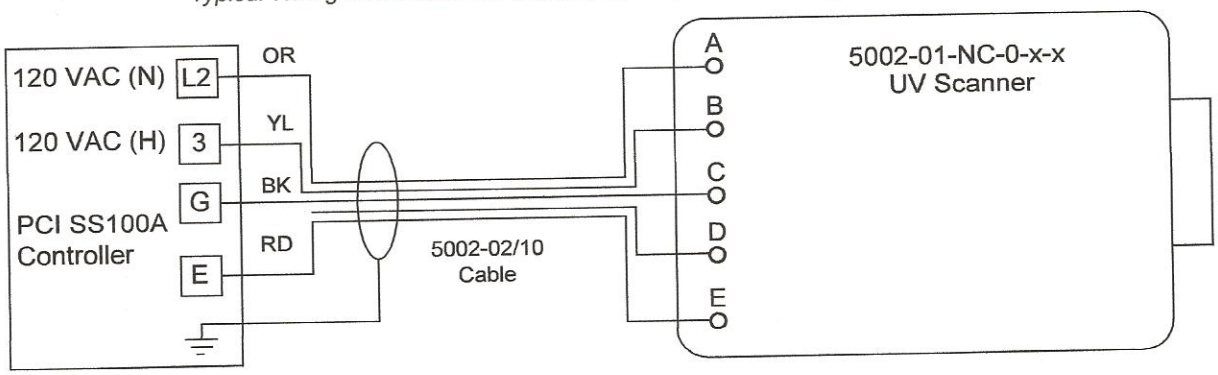
5002-01NC ULTRAVIOLET SCANNER
Typical Wiring



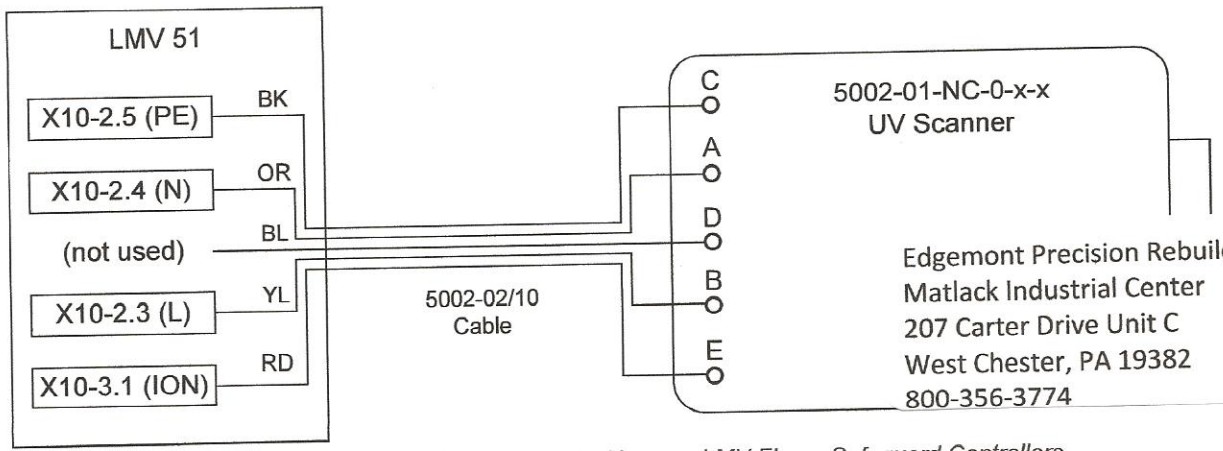
Typical Wiring Schematic: UV Scanner to Honeywell 7800 Series Flame Safeguard Controllers



Typical Wiring Schematic: UV Scanner to Fireye Flame Safeguard Controllers



Typical Wiring Schematic: UV Scanner to PCI Flame Safeguard Controllers



Typical Wiring Schematic: UV Scanner to Siemens LMV Flame Safeguard Controllers

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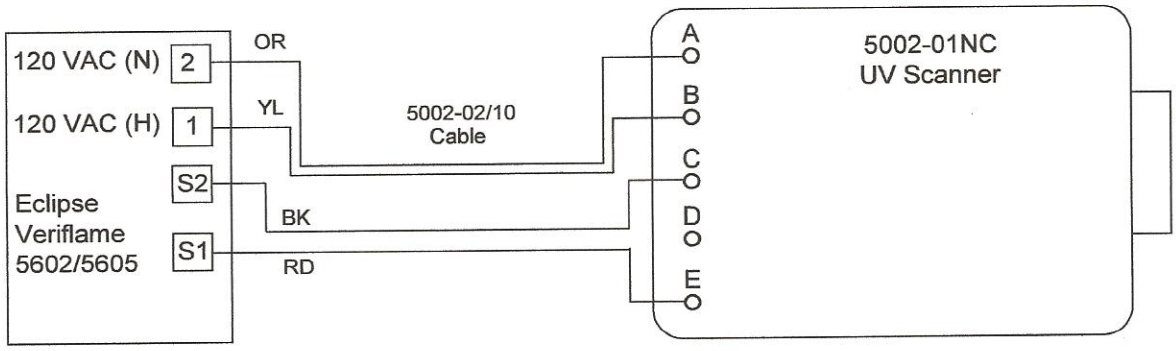
5002-01NC ULTRAVIOLET SCANNER
Suggested Specification



Typical Wiring Schematic 5002-01NC Scanner to Eclipse Veriflame Controllers

Suggested Specifications

1. UV Scanner

Flame scanner shall be U.L. recognized. Scanner housing shall be made of rugged anodized aluminum, have two status LEDs, and connect by means of a military-style quick disconnect fitting.

2. Physical Desciption

Scanner shall be made of high strength anodized aluminum and mount by means of industry standard 1/2" NPTF connection and include:

- 3/8" Purge connection
- 5 Pin military-style quick disconnect cable fitting

3. Electrical Characteristics

Scanner shall be powered by 120 VAC, 230 VAC, or 24 VDC input power. A 120/230 VAC relay contact shall be provided to prove flame while a 4-20 mA output shall correspond to flame signal strength (-C models). Alternatively, the 5002-01-(120 or 240)-0-xx shall interface with most existing flame amplifiers.

4. Manufacturer

Scanner shall be model 5002-01NC manufactured by Preferred Instruments of Danbury, CT.

Edgemont Precision Rebuilders, Inc
Matlack Industrial Center
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800-356-3774

FLAME SCANNERS
Ordering Information

UV Non Self-Check Scanners

Description	Catalog Number
5004-01 UV Scanner with 90 degree angle mount, no cable included	5004-01-0-0
5004-01 UV Scanner with 90 degree angle mount, 5 feet of cable included	5004-01-0-C
5004-01 UV Scanner with straight mount, no cable included	5004-01-S-0
5004-01 UV Scanner with straight mount, 5 feet of cable included	5004-01-S-C
5 feet of cable with connector	5004-00

UV Self-Check Scanners

Description	Catalog Number
Aluminum Alloy Body	
UV or Flame Rod output; 120 VAC input	5002-01-120-0-00
4-20 mA DC output; 120 VAC input	5002-01-120-C-00
UV or Flame Rod output; 24 VDC input	5002-01-024-0-00
4-20 mA DC output; 24 VDC input	5002-01-024-C-00
UV or Flame Rod output; 240 VAC input	5002-01-240-0-00
4-20 mA DC output; 240 VAC input	5002-01-240-C-00
Stainless Steel Body	
UV or Flame Rod output; 120 VAC input	5002-01-120-0-SS
4-20 mA DC output; 120 VAC input	5002-01-120-C-SS
UV or Flame Rod output; 24 VDC input	5002-01-024-0-SS
4-20 mA DC output; 24 VDC input	5002-01-024-C-SS
UV or Flame Rod output; 240 VAC input	5002-01-240-0-SS
4-20 mA DC output; 240 VAC input	5002-01-240-C-SS

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FLAME SCANNERS
Ordering Information

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Infrared Flame Scanners

Description	Catalog Number
Aluminum Alloy Body	
Contact closure output only	5002-11-NC-xxx-R-00-00
4-20 mA DC signal & contact closure output	5002-11-NC-xxx-C-00-00
UV/Flame Rod signal only	5002-11-NC-xxx-F-00-00
Contact closure output only. High Sensitivity	5002-11-NC-xxx-R-00-HS
4-20 mA DC signal & contact closure output. High Sensitivity	5002-11-NC-xxx-C-00-HS
UV/Flame Rod signal only. High Sensitivity.	5002-11-NC-xxx-F-00-HS
Stainless Steel Body	
Contact closure output only	5002-11-NC-xxx-R-SS-00
4-20 mA DC signal & contact closure output	5002-11-NC-xxx-C-SS-00
UV/Flame Rod signal only	5002-11-NC-xxx-F-SS-00
Contact closure output only. High Sensitivity	5002-11-NC-xxx-R-SS-HS
4-20 mA DC signal & contact closure output. High Sensitivity	5002-11-NC-xxx-C-SS-HS
UV/Flame Rod signal only. High Sensitivity.	5002-11-NC-xxx-F-SS-HS

"-xxx-" Suffix: "-012-" 12 VDC input; "-024-" 24 VDC input; "-120-" 120 VAC input;

Scanner Accessories

Description	Catalog Number
Replacement quartz lens for mtg nipple 5000-01-00.	5000-01-00L
Swivel mount, 2" NPT x 1" NPTF, Stainless steel.	5000-73/74-SS
Single piece nipple, 1" NPT x 4" long with quartz lens and purge connection.	5000-475
Mounting nipple for 5000-001 scanner including quartz lens, 1" NPT x 4" long. Stainless steel.	5000-01-00-SS
Mounting nipple for 5000-001 scanner including glass lens, 1" NPT x 4" long. Stainless steel.	5000-11-00-SS
Stainless Steel mtg. nipple for 5000-001 scanner with insert quartz lens for higher pressure applications.	5000-01-00A
Mtg nipple for scanners with 1" threads, carbon Teflon for 450 deg. F service. 1" NPT x 4" long.	5000-01-04-CT
Scanner Cable 5 feet – with connector	5000-02-05
Scanner Cable 10 feet – with connector	5000-02-10
Scanner Cable – Specify Length – connector not included.	5000-02-xx
5002 scanner line filter	5000-01UFL
1/2" NPT Scanner Nipples with Quartz Lenses	
Insulator with Flat Quartz Lens; no Purge connection; 200°F Rating	7077-17-FP-0-200
Insulator with Flat Quartz Lens; with Purge connection; 200°F Rating	7077-17-FP-P-200
Insulator with Flat Quartz Lens; no Purge connection; 450°F Rating	7077-17-FP-0-450
Insulator with Flat Quartz Lens; with Purge connection; 450°F Rating	7077-17-FP-P-450
Insulator with Magnifying Quartz Lens; no Purge connection; 200°F Rating	7077-17-MP-0-200
Insulator with Magnifying Quartz Lens; with Purge connection; 200°F Rating	7077-17-MP-P-200
Insulator with Magnifying Quartz Lens; no Purge connection; 450°F Rating	7077-17-MP-0-450
Insulator with Magnifying Quartz Lens; with Purge connection; 450°F Rating	7077-17-MP-P-450
1/2" NPT Scanner Nipples without Quartz Lenses	
Nipple, ½" NPT; with Purge connection; 200°F Rating	7077-17PN-200
Nipple, ½" NPT; no Purge connection; 200°F Rating	7077-17EN-200
Nipple, ½" NPT; with Purge connection; 450°F Rating	7077-17PN-450
Nipple, ½" NPT; no Purge connection; 450°F Rating	7077-17EN-450