iScan®3
FLAME SCANNER

KEEP THIS MANUAL IN A SAFE PLACE FOR FUTURE REFERENCE!

Read this manual before using this product. Failure to follow the instructions and safety precautions in this manual can result in serious injury or death or damage to equipment.

Applicable Scanner Part Numbers

PART NUMBER	MODEL	AREA CLASSIFICATION	TEMP RATING	FEATURE	CONNECTOR PINS
04004999-MB	iS3-MB	CLASS I/DIVISION II	-40°C to 80°C	Fully Programmable – **Must Be Configured Prior to Use**	16
04004999-SB	iS3-SB	CLASS I/DIVISION II	-40°C to 80°C	Limited Programmability	16

Contact Technical Support +1.866.821.5504 with any questions.

For a list of relevant patents and trademarks, please see http://www.chentronics.com/legal-notices.

Contents

IMPORTANT SAFETY INFORMATION

Read All Instructions before Using Equipment

The instructions provided in this manual have been prepared to serve as a general guide. It is intended for use by qualified personnel with knowledge of equipment of this type. It is not intended to cover all possible variations in equipment or to provide for specific operating problems which may arise.

You are responsible for adhering to all warnings or cautions provided in this Manual.

In addition to any general safety measures provided in this Manual, you must comply with all current national, state, local and company safety regulations at all times.

Safety Symbols used in this manual comply with ISO 3864.

THESE SYMBOLS ARE USED TO ALERT YOU TO POTENTIAL PERSONAL INJURY HAZARDS.

OBEY ALL SAFETY MESSAGES THAT FOLLOW THESE SYMBOLS TO AVOID POSSIBLE INJURY OR DEATH.

 Indicates a hazard with a high level of risk which, if not avoided will result in death or serious injury.

 Indicates a hazard with a medium level of risk which, if not avoided could result in death or serious injury.

 Indicates a hazard with a low level of risk which, if not avoided will result in minor or moderate injury.

⚠ DANGER
EXPLOSION HAZARD

Do not open the equipment cover or service the equipment if an explosive atmosphere may be present. Equipment must be installed and serviced by qualified personnel in accordance with applicable local and national codes, standards, and ordinances.

Lisez toutes les instructions avant d'utiliser l'équipement

Les instructions fournies dans ce manuel ont été préparées pour servir de guide général. Il est destiné à être utilisé par du personnel qualifié connaissant l'équipement de ce type. Il n'est pas destiné à couvrir toutes les variations possibles d'équipement ni à régler les problèmes de fonctionnement spécifiques qui peuvent survenir.

Vous êtes responsable du respect de tous les avertissements ou mises en garde fournis dans ce manuel.

En plus des mesures de sécurité générales fournies dans ce manuel, vous devez respecter à tout moment toutes les réglementations de sécurité nationales, nationales, locales et de l'entreprise.

Les symboles de sécurité utilisés dans ce manuel sont conformes à la norme ISO 3864.

CES SYMBOLES SONT UTILISÉS POUR VOUS AVERTIR DES RISQUES DE BLESSURES POTENTIELS.

RESPECTEZ TOUS LES MESSAGES DE SÉCURITÉ QUI SUIVENT CES SYMBOLES POUR ÉVITER LES BLESSURES POTENTIELLES OU LA MORT.

⚠ DANGER — **Indique un danger avec un niveau élevé de risque qui, s'il n'est pas évité, entraînera la mort ou des blessures graves.**

⚠ WARNING — **Indique un danger avec un niveau de risque moyen qui, s'il n'est pas évité, pourrait entraîner la mort ou des blessures graves.**

⚠ CAUTION — **Indique un danger avec un niveau de risque bas qui, s'il n'est pas évité, entraînera des blessures mineures ou modérées.**

⚠ DANGER
TENSION DANGEREUSE

N'ouvrez pas le capot de l'équipement et ne le réparez pas si une atmosphère explosive peut être présente. L'équipement doit être installé et entretenu par du personnel qualifié conformément aux codes, normes et ordonnances locales et nationales applicables

Customer Support

For Technical Support

Inside USA Call: 866.821.5504

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Product Features

The iScan3 flame scanner is designed to detect flame from fossil fuels such as natural gas, refinery gas, waste gas, fuel oils, biomass and coals. The iScan3 consists of an integrated viewing head and signal processor. No secondary signal processor or amplifier is required.

Ease of Installation
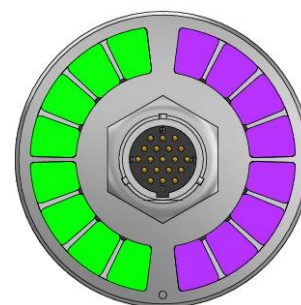
QUICK-CONNECT BURNER MOUNT:

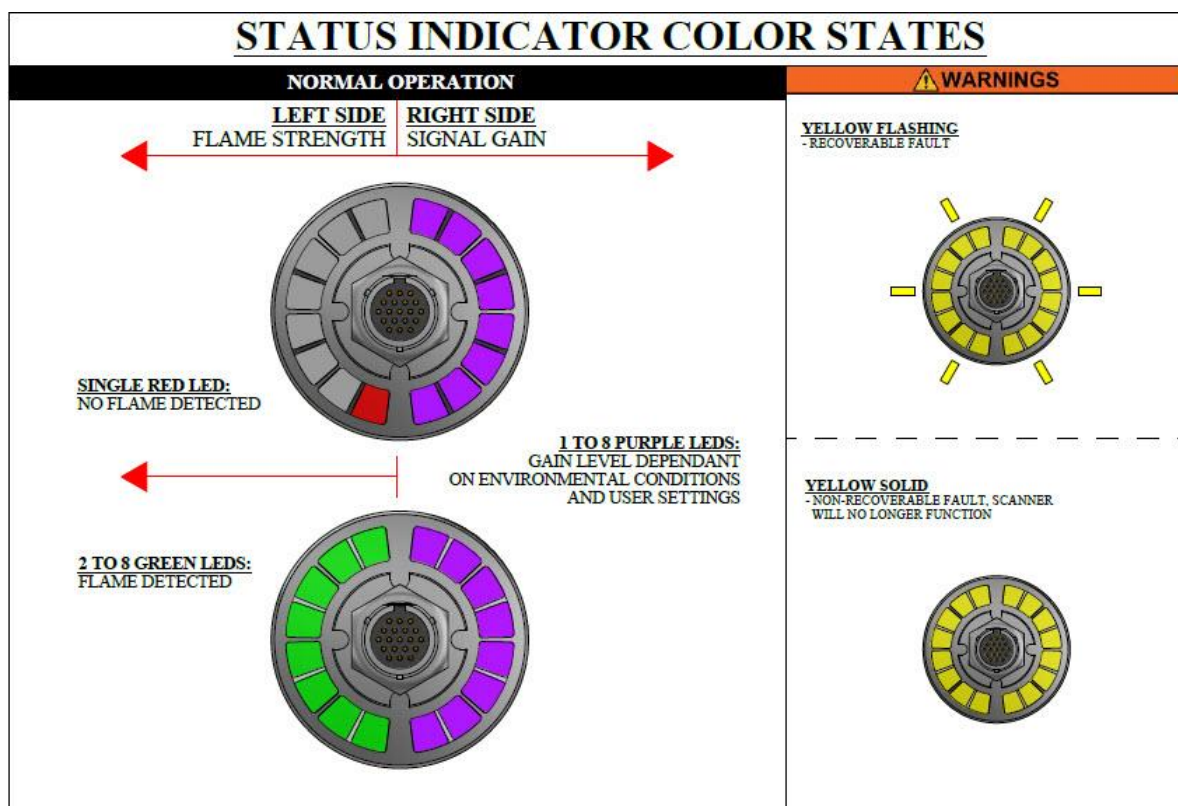 The simple cam-and-groove mechanism allows for quick mounting, release, and rotation of the scanner.

QUICK CONNECT I/O CABLE:

The iScan3 input connector allows quick disconnect even in hazardous areas

LED STATUS INDICATORS; "Ring of Light":

The iScan3 is equipped with a highly visible LED status indicator ring. This "Ring of Light" communicates the scanner's operating modes including FLAME SIGNAL STRENGTH, GAIN LEVEL (the amount of signal amplification), and WARNINGS/FAULTS. This ring aids with "sighting" the flame; or in other words: proper aiming of the scanner. This must be done with care to ensure that a good flame signal is present over a range of operating conditions. With the "Ring of Light", the operator can quickly recognize marginal conditions (such as low flame strength and/or high gain).

REMOTE FILE SELECT

The Remote File Select feature provides a means for selecting one[A1] of the configuration files resident within the scanner. Single-Burner, "SB", models have limited programmability while Multi-Burner, "MB", models have a high degree of programmability, as outlined in the table below.

SCANNER PART NUMBER	USER PROGRAMMABLE FEATURES (with iScan Software)						
	4-20 mA SIGNAL MAPPING	4-20 mA Calibrate	4-20 mA Gain	SECONDARY RELAY: Redundant Flame N.O. or N.C. -or- Fault N.O. or N.C.	DETECTION SETTINGS: Gain, Freq, Threshold	MULTIPLE SETUP FILES (max of 4)	RESPONSE TIMES (FLAME ON/ FLAME OFF)
04004999-SB	YES	YES	YES	YES	NO	NO	NO
04004999-MB	YES	YES	YES	YES	YES	YES	YES

Thermal Protection

The iScan3 Flame Scanner has redundant safety features for exposure above the maximum temperature rating. The modes of operation are described below:

Mode	Internal Temperature (T_{INT})	4-20 Output Setting	Indicator Light Setting	Relay Operation
Normal	$T_{INT} \leq 95°C$	Normal (4-20 mA)	Normal	Normal
Warning	$95°C < T_{INT} < 100°C$	3mA steady	Alternate left half yellow 0.5s / right half yellow 0.5s	Normal
Fault	$100°C < T_{INT} \leq 105°C$	2mA steady	Blink yellow 0.5s on 0.5s off	Relays Open and will not Close
Disable	$T_{INT} > 105°C$	1mA steady	Yellow Solid	Relays **Permanently** Open and will not Close

Technical Specifications

Definitions

FLICKER – Flicker or Flicker Frequency refers to the modulation of flame intensity due to micro-explosions.

FDORT – *Flame Detector ON Response Time* **–** the period of time from flame intensity rising above the user adjustable threshold to flame relay contacts closed.

FDRT – *Flame Detector Response Time* **–**the period of time between the loss of a sensed flame and the signal indicating the absence of flame.

MFFRT – *Marginal Flame Fail Response Time* **–** period of time from flame intensity falling below the the user adjustable threshold to the flame relay contacts open.

ROL – *Ring of Light* **–** multi-colored LED status indication on the back of the scanner.

iScan Software – Flame Scanner Communications software used to monitor and configure the iScan3 device.

GAIN – When a signal is amplified, GAIN is the ratio of the amplified signal relative to the original.

DISCRIMINATION – The ability to distinguish between multiple flames. An example of good discrimination is when the MB scanner is able to recognize a pilot flame with other burner's main fuel flame in the background. The status of the background Flames[A2] does not affect the ability to detect the pilot flame (ON or OFF).

Specification Table

AREA CLASSIFICATION	Hazardous/Non-Hazardous Area
Part Number	PN 04004999-SB, 04004999-MB
Area Classification	ETL Listed c US Intertek 3079125 USA: Class I, Division 2 Groups ABCD CANADA: Class I, Division 2 Groups ABCD Ambient Temperature Range: -40°C to +80°C SIL3 TYPE 4X TESTED PER THE FOLLOWING STANDARDS: USA» UL 60730-1, UL 60730-2-5, ISA 12.12.01, ANSI Z21.20, NEMA 250 CANADA» CSA C22.2#213, CSA E60730-1, CSA C22.2#60730-2-5
Input Cable	Quick Disconnect - Separate Cable
Weight	2.25 lb. (1.02 kg)
Mounting	1" NPT(F)

Purge Air NOTE 1
    Flow
    Pressure
	
	5 scfm (8.5 Nm³/hr)
	5" w.c. (13 mbar)

ROL - Ring of Light Status Indicator	Color Coded Status
Field of View	6 Degrees
Optics	Quartz Lens
Sensor Type	Solid-State
Sensor Range	300 nm 750 nm
Communication	USB/RS485: up to 127 up to a distance of 4000 Ft. (1200 M).
Temperature	-40°C to 80°C
Humidity	0 to 100% Relative Humidity, Condensing
Input Power NOTE 2	24 VDC, +10%/-15%, 5.28 W (220 mA)
Relay Contacts NOTE 3	Primary Relay with Normally Open and Normally Closed Voltage Free Contacts (i.e. NO contact closes when flame is detected, NC opens when flame is detected) Secondary Relay with Voltage Free Contacts (configurable as NO Flame Relay or Fault Relay configurable as NO or NC contacts) 0.125A @ 250 VAC Resistive Load 0.250A @ 125 VAC Resistive Load 1.0 A @ 24 VDC Resistive Load
Signal Output NOTES 4,5	Output #1, 4–20 mA, Flame Signal Output # 2, 4-20 mA, Selectable as Gain or Internal Temperature Maximum Current Loop Resistance = 750 ohms
FDORT (FLAME ON)	Configurable from 1-4 seconds in 1 second increments
FDRT (FLAME OFF)	Configurable from 1-4 seconds in 1 second increments
MFRRT	Configurable from 1-6 seconds in 1 second increments

AREA CLASSIFICATION	Hazardous/Non-Hazardous Area
Part Number	PN 04004999-SB, 04004999-MB
Safety Integrity Level (SIL3) Data	PFDavg = 938.369 X 10^{-6} λS = 1.14 X 10^{-6} λDD = 2.1705 X 10^{-6} λDU = 0.0219 X 10^{-6} SFF = 99.1% Proof Test Interval time = 1 year (8760 Hrs) [NOTE 6]

Technical Specification NOTES

Note 1 Purge air pressure is the minimum differential pressure required between the purge air supply pressure at "Y" (scanner connection) and the back pressure.

Note 2 24 VDC Power supply to iScan3 must not include any inductive load.

Note 3 To achieve higher relay contact voltages, use iScan3 relay contacts to energize the coil of an interstitial relay.

Note 4 Output for monitoring only. Not to be used to prove flame.

Note 5 4-20 mA outputs are calibrated at the factory to a known load. Monitoring hardware will have an impact of the current output. For accurate readings, 4-20 mA output(s) should be calibrated using a milli-ammeter between the scanner's 4-20 mA output and the monitoring hardware. Refer to the 4-20 ma Settings section MNL- iScan Software for details on how to execute the calibration procedure.

Note 6

SUGGESTED SIL3 PROOF TESTS:
An annual proof test is good practice to meet the requirements in terms of IEC61508. According to section 7.4.3.2.2 f of IEC61508 proof tests shall be undertaken to reveal dangerous faults which may be undetected by diagnostics test.

Flame OFF: Shutdown the burner and ensure that the flame off condition is detected and signaled by the flame detector as a flame off condition.

False Flame: Verify that prior to start up (no flame present) there is no indication of a flame on condition (false flame signal) on the flame scanner (this is typically integrated within the BMS as a pre-start permissive to prevent start up if a false flame condition is detected. This should not be considered a replacement for recommended testing of the scanner adjustments which are required to be verified each time the scanner is commissioned, adjusted, settings are changed or re-commissioning takes place. In these cases, only qualified personnel who have been trained and are experienced should make such adjustments.

Default Configuration (Settings)

As part of setup in iScanSoftware, each scanner is assigned unique addresses.

|	
Flame Detector On Response Time (FDORT)	2 seconds nominal
Flame Detector Response Time (FDRT)	1 second nominal
Marginal Flame Failure Response Time (MFFRT)	2 seconds nominal
Gain Configuration	Manual
Gain Channel	High
Signal Gain	3.5
Flame Flicker Frequency	26 Hz
Flame Flicker Bandwidth	12 Hz
Flame Flicker Threshold	-45 dB
Mains Filter	Enabled
Rail Filter	Enabled
Solar Filter	Enabled
Flame Filter	Enabled

The following settings apply to the overall scanner and not to an individual scanner file:

Communications Address	COMM 1 [NOTE 1]
Active File	A
Remote File Select	Disabled
Multiple Fuels	Disabled
4 To 20 mA Gain	1 mA/dB above threshold

Wiring Instructions

All wiring shall be done in accordance with all applicable local and national codes, standards, and ordinances. The scanner has a quick connect cable. This cable does not require a flexible conduit if permitted by local authority. **Connections for power, Earth Ground, and Flame Relay (N.O. and Common) are required for all applications**. Use of the 4-20 mA outputs, Communications, and connections are "as-required" for each application.

Wiring Diagram
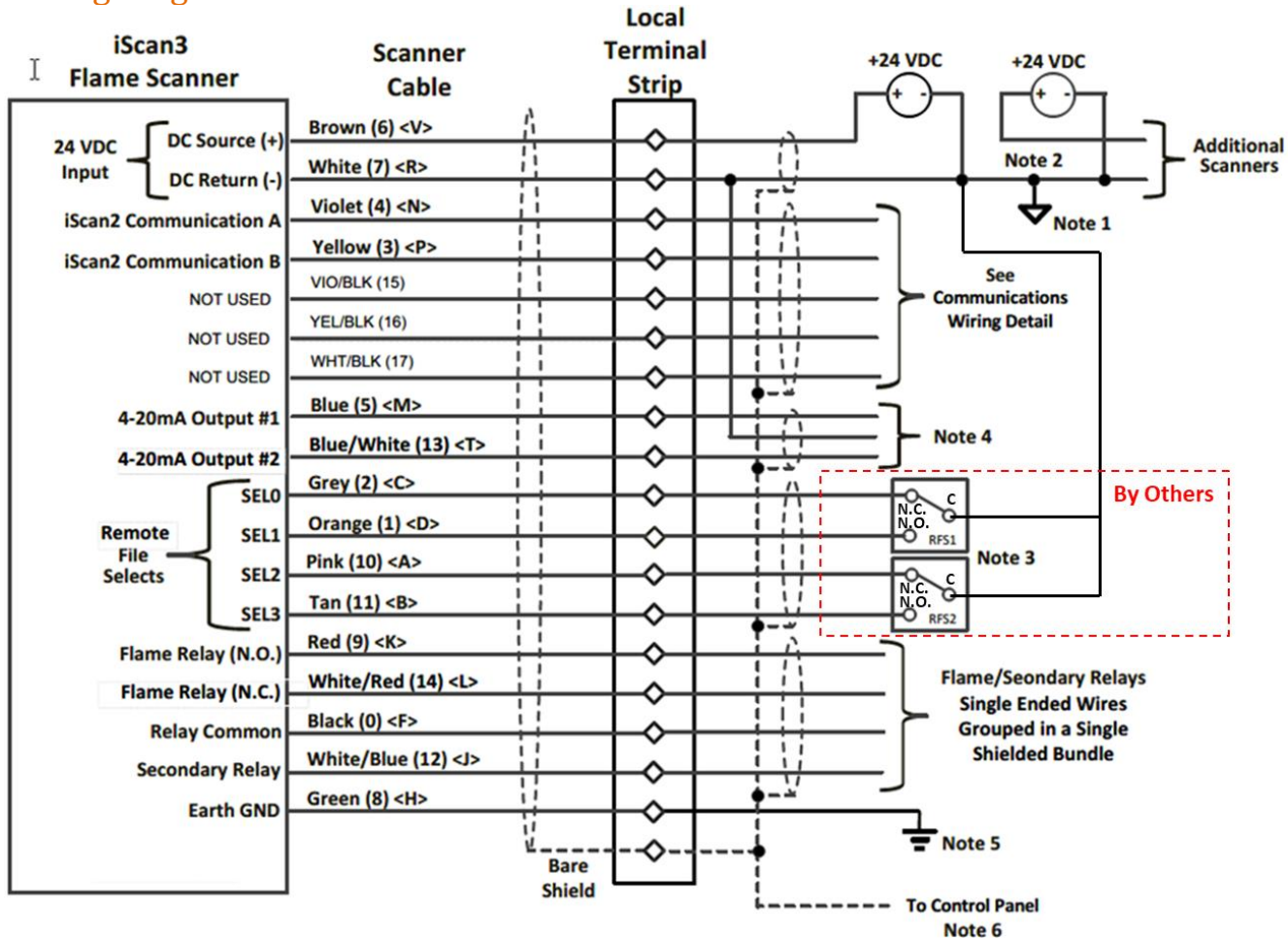
Wiring Notes

Note 1 If more than one 24 VDC supply is required, the 24 VDC returns labeled as "DC (-)" shall be connected to each other.

Note 2 If more than one 24 VDC supply is required, the 24 VDC source connections labeled as "DC (+)" shall be isolated from all other power supplies. If switching power supplies are used the supplies may be connected via a wired OR diode configuration. NOTE: the BLOCKING DIODE must be rated for a minimum of 50 volts and 10 Amps.

Note 3 The 24 VDC return, "DC (-)", shall be used as the low side of the File Select relays.

Note 4 The 24 VDC return, "DC (-)", is the return for the 4–20 mA output loop(s). Input must be isolated type. Maximum current loop resistance is 750 ohms.

Note 5 Connect the scanner Earth GND (Green/Yellow, 8, <H>) to EARTH GROUND. A short BRAIDED CONDUCTOR (alternately a short AWG #12 wire) is recommended.

Note 6 All shields are tied to Earth Ground in the Control Panel only.

ALL OTHER CONNECTIONS

Earth GND

GREEN/YELLOW (8) <H> CONNECT TO EARTH GROUND. (See section on grounding methods)

Earth Ground

Located at CONTROL PANEL

CONNECT ALL SHIELDS AT ONE END ONLY TO EARTH GROUND.
DO NOT GROUND SHIELDS AT THE LOCAL JUNCTION BOX.
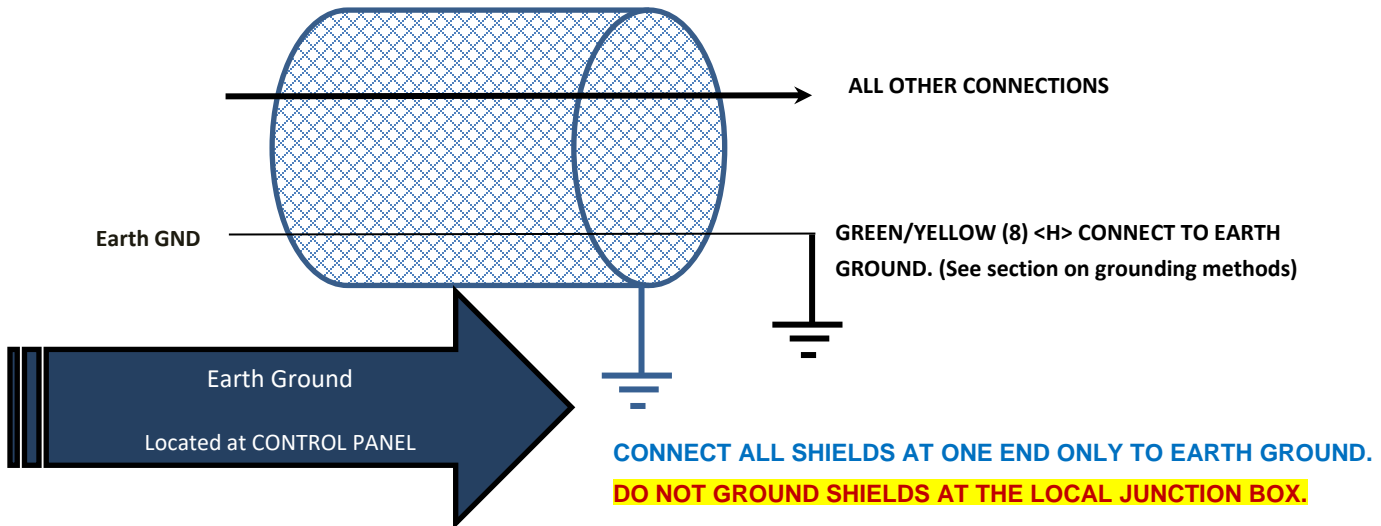
⚠ CAUTION

Electrical noise interference from high voltage/energy ignition sources can adversely affect the operation of the flame scanner. To minimize the possibility of electrical noise interfering with the operation of the flame scanner:

- Do **not** install ignition wires in the same conduit as the scanner wires.

- Ignition Systems shall have a dedicated return.

- Do **not** mount an ignition transformer in the same enclosure where the flame scanner wiring is terminated.

- Ignition cables shall be routed a minimum of 12" (305mm) from scanner wiring at all times.

- iScan3 complies with IEC 61000-4-3 (RF Radiated Immunity).

> **⚠ CAUTION**
>
> - Les interférences électriques provenant de sources d'allumage haute tension / énergie peuvent nuire au bon fonctionnement du scanner à flamme. Pour minimiser les risques d'interférences électriques avec le fonctionnement du scanner à flamme:
> - Ne pas installer les câbles d'allumage dans le même conduit que les câbles du scanner
> - Les systèmes d'allumage doivent avoir un retour dédié
> - Ne montez pas de transformateur d'allumage dans le même boîtier que le câblage du scanner à flamme
> - Les câbles d'allumage doivent être acheminés à au moins 12 pouces (305 mm) du câblage du scanner en tout temps.
> - iScan3 est conforme à la norme IEC 61000-4-3 (Immunité par rayonnement RF).

Cable Connection

Scanner

Locking nut

PN: 03005000

Power/Control Cable Installation

The iScan3 system utilizes a quick disconnect connector to connect the power/control cable to the electronics.

To connect the power cable to the electronics, first turn the locking nut clockwise by hand until it is seated against the electronics. This will ensure the locking nut is not too far out and will allow the connector to properly seat. Then, align the connector on the cable with the connector on the electronics, insert the connector, and turn the outer barrel clockwise until the banjo fittings on the connector are seated and latched.

① LOCKING NUT
(TURN CLOCKWISE
UNTIL SEATED)

FIGURE A : CLEAR THE LOCKING NUT THEN ALIGN AND INSERT THE CABLE CONNECTOR.

Locking Nut Installation

The equipment features a locking nut that locks the cable to the equipment so that it may not be removed without the use of a tool. This feature is required for some hazardous area installations. To lock the connector in place, turn the locking nut *counter-clockwise* tighten to a torque of 10ftlbs using a wrench. See Figure B and Figure C for illustration of locking nut tightening.To remove the cable, turn the locking nut clockwise until it is seated against the electronics, then remove the cable connector by turning the outer barrel counter clockwise until the banjo fittings unseat and the connector unseatS[A3] and can be removed.

FIGURE B: SEAT THE CONNECTOR AND SEAT THE LOCKNUT AGAINST THE CONNECTOR BARREL.

FIGURE C: TIGHTEN LOCKING NUT AGAINST CONNECTOR BARREL.

⚠ **DANGER**
EXPLOSION HAZARD

DO NOT CONNECT OR DISCONNECT WHEN ENERGIZED

⚠ **DANGER**
TENSION DANGEREUSE

NE PAS CONNECTER OU DÉBRANCHER LORSQUE ÉNERGÉ

Communications Wiring

RS-485

Communication with the iScan3 is RS-485 via a USB to RS-485 Converter (PN 3425-057-01). RS-485 is a differential multi-drop network. For iScan3, the network is a half-duplex, 2-wire, echo-off configuration operating at 19200 KBAUD. The maximum allowable number of nodes on a given section of the network is 32 including the USB to RS-485 converter and any repeaters. If more than 32 loads are connected (1 USB converter, 1 RS-485 repeater and 30 iScan3s) then an RS-485 repeater is required between sections to boost the signal. The repeater must be compatible with the EIA-485 standard, must have input to output DC isolation, must operate on 24VDC over the operating temperature range of -30°C to +70°C and must have agency approvals sufficient to meet the area classification.

> **NOTE:** When calculating 32 loads, include the USB to RS-485 converter and the number of repeaters in a section). For the extended sections, up to 30 iScan3s may be connected. The maximum length of any given section is 4000 FT (1200 M).

B&B Electronics 485 repeater model 485OPDRI-PH meets these requirements. Additional repeaters may be added to extend the network to 127 scanners. If[A4] using the B&B Electronics 485 repeater model mentioned above, configure the DIP switches on ports as follows:

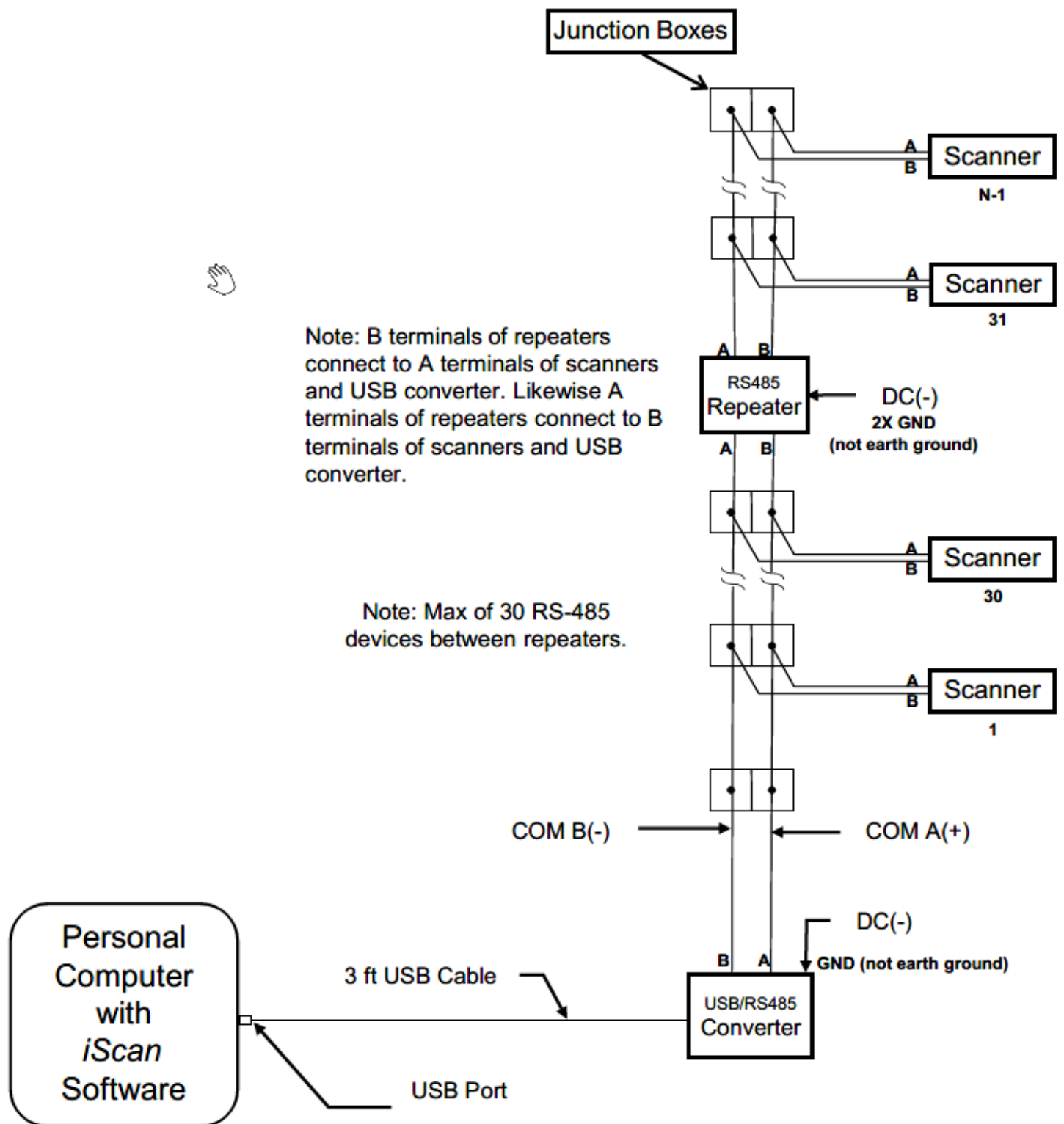| 1	2	3	4	5	6	7	8
ON	ON	ON	ON	OFF	OFF	ON	OFF

Since there is no dedicated signal reference, the 24 VDC return labeled as DC (-) is used. The USB to RS-485 and the Repeaters must have their GND terminals connected to the DC (-) as well. Failure to provide the signal reference may result in communication errors and potentially damage the iScan3.

The recommended topology is "Daisy Chain" as shown in the wiring diagrams below. A split or Y configuration is acceptable. **NO OTHER CONFIGURATION IS ACCEPTABLE**. Please refer to the EIA-485 specification for further information on RS-485 networks.

COMMUNICATION WIRING SUMMARY:

- Wiring must be twisted pair shielded cable. Ground the shield only at the control panel to prevent ground loops.
- Use only "Daisy Chain" or "Y" configurations. Connect all of the "Com A" wires together. Connect all of the "Com B" wires together. Make sure that the "Com A" and "Com B" wires are connected to the correct terminals on the converter.
- An RS-485 repeater is required for every 30 scanners or 4000 ft (1200 m) of length for a maximum of 127 scanners in a network.
- Ensure the DC (-) of all scanners are tied together as a reference for RS-485 communications. The GND terminal of the USB to RS-485 converter and the repeaters must also be connected to the DC (-) of the scanners.

"Daisy Chain" Configuration

Junction Boxes

Scanner N-1

Scanner 31

Note: B terminals of repeaters connect to A terminals of scanners and USB converter. Likewise A terminals of repeaters connect to B terminals of scanners and USB converter.

A B
RS485 Repeater
A B

DC(-)
2X GND
(not earth ground)

Scanner 30

Note: Max of 30 RS-485 devices between repeaters.

Scanner 1

COM B(-) → ← COM A(+)

DC(-)
GND (not earth ground)

B A
USB/RS485 Converter

Personal Computer with iScan Software

3 ft USB Cable

USB Port

Split or "Y" Configuration

Junction Boxes

Scanner N — B, A

Scanner A, B — Scanner N-1

Scanner 32 — B, A

Scanner A, B — Scanner 31

Note: B terminals of repeaters connect to A terminals of scanners and USB converter. Likewise A terminals of repeaters connect to B terminals of scanners and USB converter.

DC(-)
2X GND
(not earth ground)

A B
RS485
Repeater
A B

A B
RS485
Repeater
A B

DC(-)
2X GND
(not earth ground)

Note: Max of 30 RS-485 devices between repeaters.

Scanner 30 — B, A

Scanner A, B — Scanner 29

Scanner 2 — B, A

Scanner A, B — Scanner 1

COM B(-) →   ← COM A(+)

DC(-)
GND (not earth ground)

Personal Computer with iScan3 Software

3 ft USB Cable

B A
USB/RS485
Converter

USB Port

MNL-ISCAN3, REVB
DCO #12743

INSTALLATION & OPERATION MANUAL
For Technical Support Call: +1.866.821.5504

Page 20 of 25
Schedule Document

Remote File Select

The Remote File Select feature provides a means for automatically selecting one the configuration files resident within the scanner. iScan3 has a two wire or four wire option to remotely select files. File select configurations are wire fault protected; [A5]meaning if any wire combination is broken, i.e. loose wire connection or a wire gets cut, the scanner will fault. Switching must occur in less thatn 800ms. Per NFPA, file selects should not be used to "blind" scanner from seeing flame, to obtain a start permissive.

FOUR WIRE CONFIGURATION: USES TWO RELAYS

File Select	SEL 3	SEL 2	SEL 1	SEL 0
A	N.O. CLOSED to C	OPEN	N.O. CLOSED to C	OPEN
B	OPEN	N.C. CLOSED to C	N.O. CLOSED to C	OPEN
C	OPEN	N.C. CLOSED to C	OPEN	N.C. CLOSED to C
D	N.O. CLOSED to C	OPEN	OPEN	N.C. CLOSED to C
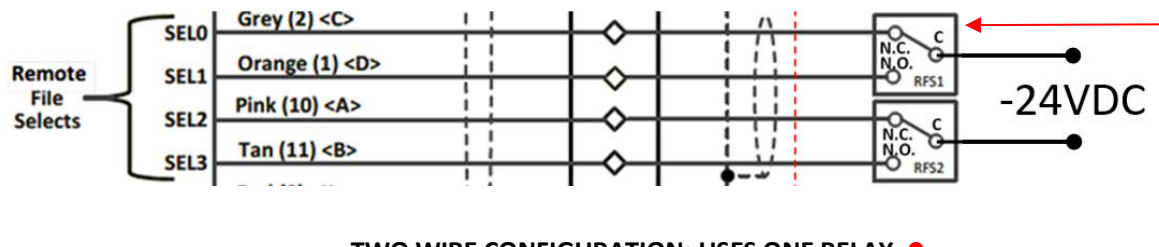
TWO WIRE CONFIGURATION: USES ONE RELAY

File Select	SEL 1	SEL 0
B	N.O. CLOSED to C	OPEN
C	OPEN	N.C. CLOSED to C

Note: Connect iScan3 SEL (File Select) wires via dry relays contacts (supplied by others) per above. Connect the common (C) side of the File Select relays to -24 VDC return. Remote File Select must be enabled otherwise SEL inputs are ignored. Refer to Remote File Select (RFS) section of MNL-iSCAN for instructions on setting up and using the Remote File Select feature

Sighting the Scanner

⚠️ **DANGER**

EXPLOSION HAZARD

Failure to sight the scanner properly can cause an explosion. This Equipment must be installed and serviced by qualified personnel in accordance with applicable local and national codes, standards, and ordinances.

⚠️ **DANGER**

TENSION DANGEREUSE

N'ouvrez pas le capot de l'équipement et ne le réparez pas si une atmosphère explosive peut être présente. L'équipement doit être installé et entretenu par du personnel qualifié conformément aux codes, normes et ordonnances locales et nationales applicables

Proper sighting of the flame is required for proper flame scanner detection and discrimination. The view through the sighting port should be full flame, as illustrated below.
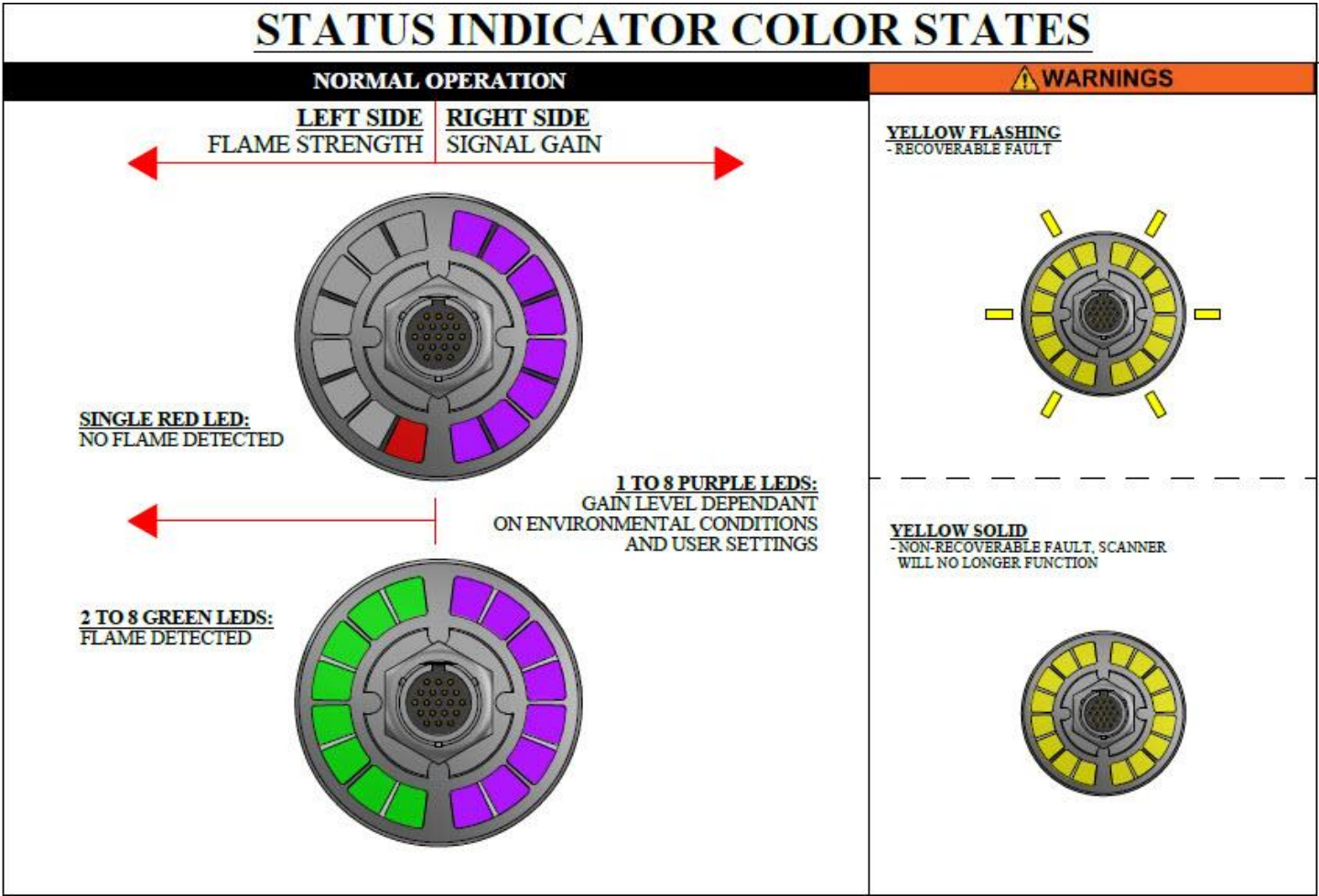
CORRECT

INCORRECT

Flame Line of Sight
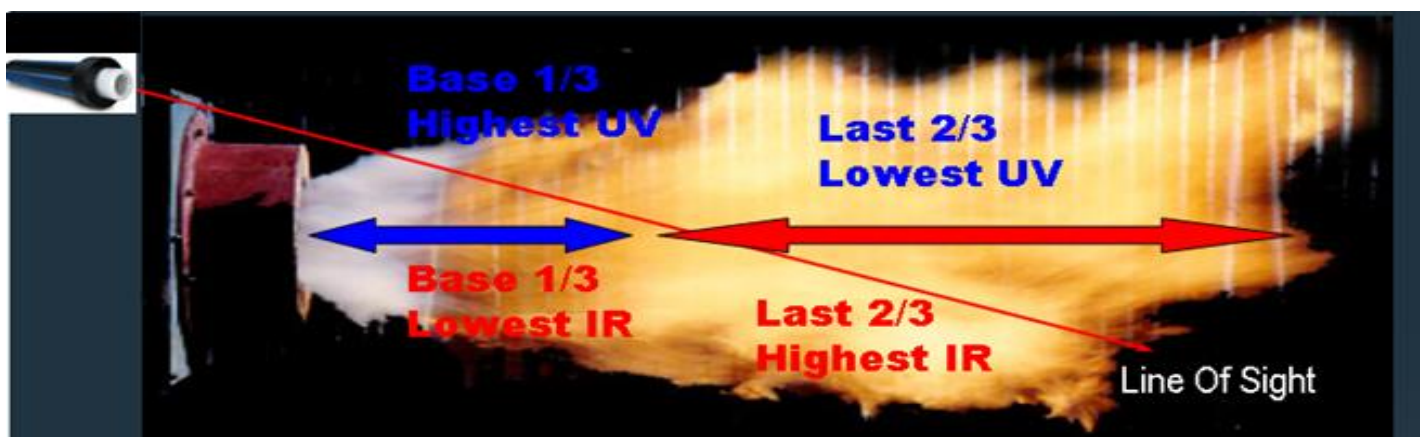
Ring of Light Scanner Status Display

Move the scanner while observing the LEDs[A6] on the back of the scanner. The left LEDs will turn red and light up just 1 bar when no flame is detected, when running under auto gain mode, the right LEDs will show purple color and the bar number will increase until it reaches to half ring. For optimal flame sighting, the left LEDs will light up multiple bars to green color.

STATUS INDICATOR COLOR STATES

NORMAL OPERATION

LEFT SIDE FLAME STRENGTH | **RIGHT SIDE** SIGNAL GAIN

SINGLE RED LED: NO FLAME DETECTED

1 TO 8 PURPLE LEDS: GAIN LEVEL DEPENDANT ON ENVIRONMENTAL CONDITIONS AND USER SETTINGS

2 TO 8 GREEN LEDS: FLAME DETECTED

⚠ WARNINGS

YELLOW FLASHING - RECOVERABLE FAULT

YELLOW SOLID - NON-RECOVERABLE FAULT, SCANNER WILL NO LONGER FUNCTION

⚠ CAUTION

DO NOT use the scanner if the LEDs are all Yellow and flashing.

⚠ CAUTION

NE PAS utiliser le scanner si les voyants sont tous jaunes et clignotants.

Maintenance

The scanner is a rugged, high temperature device, and contains no moving parts.

⚠ **CAUTION**
NEVER open the scanner housing. Doing so may damage the scanner and will void the warranty.

⚠ **CAUTION**
N'ouvrez JAMAIS le boîtier du scanner. Cela pourrait endommager le scanner et annuler la garantie

Cleaning the Lens

The only maintenance that may be required is periodic cleaning of the **outside** of the quartz glass lens. To clean the lens:

Step 1: Remove the scanner from the scanner mount and unscrew (counter clockwise) to remove the black Delrin Camlock from the stainless steel body.

Step 2: Clean the lens with a clean lint free cloth

Step 3: Replace the black Delrin Camlock and Reinstall the scanner.

⚠ **CAUTION**
Do not remove the lens from the scanner housing. Doing so may damage the scanner and will void the warranty.

⚠CAUTION

Ne retirez pas l'objectif du boîtier du scanner. Cela pourrait endommager le scanner et annuler la garantie

Special, "X", Conditions of Use

- The equipment should only be used in an area that has low risk of impact.
- The equipment should be used in area that is free from falling debris.
- The equipment should be placed in an area that do not have any mechanical hazard.
- The equipment shall not be subjected to human abuse.
- The equipment shall only be wiped/clean with a damp cloth or when in a non-hazardous area.