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# **METROLOGIC INSTRUMENTS, INC.**

**MH941 Hand-Held  
Laser Scanner**

**Installation and User's Guide**

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## **Locations:**

### **USA Corporate Headquarters**

Metrologic Instruments, Inc.  
90 Coles Road  
Blackwood, NJ 08012  
Customer Service: 1-800-ID-METRO  
Tel: 609-228-8100  
Fax: 609-228-6673  
info@metrologic.com  
www.metrologic.com

### **Europe**

Metrologic Instruments GmbH  
Dornierstrasse 2  
82178 Puchheim b.  
Munich, Germany  
Tel: 49-89-89018-0  
Fax: 49-89-89019-200  
metrologic@europe.metrologic.com

### **South America**

Metrologic Instruments  
Rua Flórida, 1.821-5° Andar-Brooklin  
CEP 04571-090, São Paulo-SP, Brasil  
Outside Brazil:  
Tel: 55-11-5505-6568  
Fax: 55-11-5505-1681  
info@sa.metrologic.com  
In Brazil:  
Tel: 55-11-5505-2396  
Fax: 55-11-5507-2301  
metrolog@br.metrologic.com

### **ASIA**

Metrologic Asia (PTE) Ltd.  
31, Kaki Bukit Road 3  
#05-08 Techlink  
Singapore 417818  
Tel: 65-842-7155  
Fax: 65-842-7166  
ant888@cyberway.com.sg

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## Table of Contents

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Introduction and Identification .....	1
Unpacking List .....	2
Connecting the MH941 Hand-Held Scanner to the Fixed Scanner and Host Device .....	3
Connecting the MH941 Hand-Held Scanner to the Decoder/Controller ....	4
Parts of the MH941 Scanner .....	5
Audible Indicators .....	6-9
Visual Indicators .....	10-13
Labels .....	14
IR Sensor Activation .....	15
Scan Field .....	16
Depth of Field and Symbol Specification .....	17, 18
Maintenance .....	19
<b>Appendix A</b>	
Specifications .....	20, 21
<b>Appendix B</b>	
MH941 Scan Head Pin Assignments .....	22, 23
<b>Appendix C</b>	
Warranty and Disclaimer .....	24, 25
<b>Appendix D</b>	
Notices .....	26, 27
<b>Appendix E</b>	
Patents .....	28
Index .....	29, 30

## **Introduction and Identification**

When using the MH941 scanner with a decoder not manufactured by Metrologic, scanner operation is dependent upon your decoder. Since there are many decoders available, refer to your decoder's documentation concerning scanner requirements and operation.

When using a Metrologic hand-held scanner with one of Metrologic's fixed scanners, the scanner will operate as follows:

- ! The IR signal extends approximately eight (8) inches beyond the output window.
- ! When the unit is activated by the IR sensor, the red LED will remain on. This is a visual indication that the scanner is beginning a sequence of bar code recognition, decoding, and transmission.
- ! When an object is in the scan field, the laser will begin a sweep to determine if a bar code is present. If a bar code is not detected within approximately 2.5 seconds, the red LED will shut off indicating that the laser is no longer on. To reactivate the scanning sequence, remove the object and present another.
- ! When a bar code is recognized, the scanner will decode the bar code and then transmit the data to the host system. When this occurs, the green LED will flash and the scanner will beep when the decoding is complete. At this time, the laser will turn off if the object is removed from the field. However, if the object stays in the field the laser will remain on for up to 2.5 seconds trying to detect another bar code. This feature allows very fast consecutive scans of symbols in close proximity, such as a wall of boxes or cartons, or bar coded menus. If the same symbol stays in the field after a successful scan, the laser will stay on for approximately 3.5 seconds and then turns off. This prevents unintentional reads of the same bar code. To read the same symbol more than once, simply remove the object from the scan field for approximately 1 second and then the scanner can scan the same symbol on the next pass.

## **Unpacking List**

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The following will be found in the shipping carton:

- ! Installation and User's Guide
- ! MH941 Hand-Held Laser Scanner

If anything is missing or to order additional items, contact your dealer, distributor or call Metrologic's Customer Service Department.

## **Connecting the MH941 Hand-Held Scanner to the Fixed Scanner and Host Device**

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In order for the MH941 scanner to maintain compliance with applicable standards, all circuits connected to the scanner (Example: power supply, host system, etc.) must meet the requirements for SELV (Safety Extra Low Voltage) according to EN60950.

1. Make sure the host system is turned off.
2. Connect the head cable of the MH941 hand-held scanner to the cable terminated with a 9-pin connector attached to the fixed scanner.
3. There are two ways to connect the fixed scanner to the host device completely:
  - ! If the fixed scanner will be powered by the host system, connect the communication cable to the host device.
  - ! If the fixed scanner will be powered by an external power supply, the socket-outlet can be installed near the equipment and can be easily accessible. Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet. Connect the scanner's communication cable to the scanner. Connect the cable to the host device. Power up the scanner by plugging in the power supply.
4. Power up the host system.

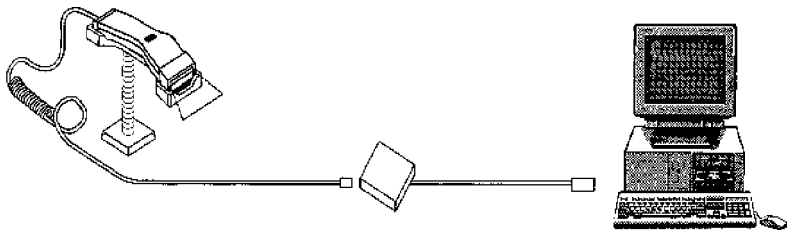
**Note:** When the MH941 scanner first receives power, it will immediately go through a self diagnostic routine, then the green and red LEDs will flash, and the unit will beep once.

## **Connecting the MH941 Hand-Held Scanner to the Decoder/Controller**

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In order for the MH941 scanner to maintain compliance with applicable standards, all circuits connected to the scanner (Example: power supply, host system, etc.) must meet the requirements for SELV (Safety Extra Low Voltage) according to EN60950.

Since there are many different types of decoders, refer to your decoder's documentation to connect the decoder to your host system. For a listing of the cable pin assignments for the MH941 scanner, refer to the section *MH941 Scan Head Pin Assignments* pages 22 and 23.



**Figure 1**

## Parts of the MH941 Scanner

Becoming familiar with the features of the MH941 scanner will help when operating the scanner. The following illustration and list explain the pertinent parts.

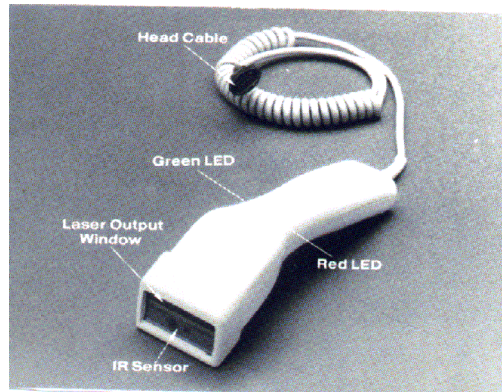


Figure 2

**Laser Output Window** The laser beam emits from this aperture.

**Head Cable** This cable is terminated with a 9-pin squeeze connector.

The following functions are decoder /controller dependent.

**Green LED** When the green light flashes on, the scanner has read the bar code successfully. When the green light turns off, communication to the host is complete.

**Red LED** When the red light is on, the scanner is ready to scan.

**ScanQuest™ Infrared Object Sensor** The scanner has an energy saving feature known as ScanQuest that senses when a specified time has elapsed without any scanning. If the unit remains dormant for this time, the laser and motor will turn off. In this stage, the scanner's computer is on "stand by." To reactivate the unit, wave an object in front of the IR (infrared) sensor or pick up the scanner and direct the scan window downwards. When the red light comes on, the scanner is ready to scan.



## **Audible Indicators**

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There are audible indications that signal the status of your scanner. These indications are dependent upon the decoder being used. The function of these indications may not work as described below if using a decoder not manufactured by Metrologic.

When the scanner is in operation, it will provide warnings with audible indications. These sounds signal the status of the scan and scanner.

### **One Beep**

When the scanner *first* receives power, the red LED will blink, followed by the green LED, and then the scanner will emit one beep. After the scanner performs this startup sequence, the scanner is ready to scan.

The green LED will flash and beep once when the unit *successfully* reads a bar code. If the green LED does not flash or the scanner does not beep once, then the bar code has *not* been successfully read.

### **Razzberry Tone**

If, upon power up, the scanner emits a razzberry tone, then the scanner has failed diagnostics. Report this problem to the company where the scanner was purchased.

## Signaux acoustiques

Il existe des signaux acoustiques qui vous informent sur l'état du scanner. Ces signaux dépendent du décodeur que vous utilisez. Il peut arriver que les fonctions de ces signaux ne correspondent pas à celles qui suivent si vous utilisez un décodeur qui n'a pas été construit par Metrologic.

Quand le scanner est en service, il émet des signaux acoustiques qui vous informent sur l'état de palpation et de scanner.

### **Bip sonore unique**

Quand le scanner reçoit *pour la première fois* de l'énergie, la diode rouge se met d'abord à clignoter, puis la diode verte. Ensuite, le scanner émet un bip sonore unique. Une fois cette séquence de démarrage effectuée, le scanner est prêt à servir.

Après lecture *avec succès* d'un code barres par le scanner, la diode verte se met à clignoter, suivie d'un bip sonore unique. Si la diode verte ne clignote pas ou quand aucun bip sonore n'est émis, cela signifie que le code barres *n'a pas* pu être lu avec succès.

### **Ronflement**

Si le scanner émet un ronflement une fois activé, ceci indique un diagnostic d'erreur. Avisez de ce problème l'entreprise vous ayant vendu le scanner.

## Akustische Anzeigen

Es sind akustische Anzeigen vorhanden, die Ihnen Aufschluß über den Scannerstatus geben. Diese Anzeigen sind abhängig von dem von Ihnen verwendeten Dekodierer. Es kann sein, daß die Funktionen dieser Anzeigen nicht den nachfolgend angegebenen entsprechen, falls Sie einen Dekodierer verwenden, der nicht von Metrologic hergestellt wurde.

Ist der Scanner in Betrieb, so sendet er akustische Signale aus. Diese Signale geben Ihnen Aufschluß über den Abtast- und Scannerstatus.

### **Einmaliges Piep-Signal**

Wenn dem Scanner *erstmalig* Energie zugeführt wird, blinkt zunächst die rote Leuchtdiodenanzeige auf, gefolgt von der grünen Leuchtdiodenanzeige und anschließend sendet der Scanner ein einmaliges Piep-Signal aus. Nach Ausführung dieser Startsequenz durch den Scanner ist der Scanner für den Abtastvorgang bereit.

Nach *erfolgreichem* Lesen eines Barcodes durch das Gerät blinkt die grüne Leuchtdiodenanzeige auf, gefolgt von einem einmaligen Piep-Signal. Falls die grüne Leuchtdiodenanzeige nicht aufblinkt oder der Scanner kein einmaliges Piep-Signal von sich gibt, bedeutet dies, daß der Barcode *nicht* erfolgreich gelesen werden konnte.

### **Brummtton**

Sendet der Scanner in eingeschaltetem Zustand einen Brummtton aus, so deutet dies auf eine Fehlerdiagnose hin. Unterrichten Sie die Firma, bei der Sie den Scanner gekauft haben, über dieses Problem.

## Segnali acustici

Sono previsti dei segnali acustici che Vi informano sullo stato dello scanner. Questi segnali dipendono dal decodificatore da Voi utilizzato. Se utilizzate un decodificatore che non è stato fabbricato dalla Metrologic è possibile che le funzioni di questi segnali non corrispondano a quelle qui di seguito indicate.

Se lo scanner è in funzione esso emette segnali acustici. Questi segnali Vi informano sullo stato della scansione e dell'apparecchio.

### **Segnale beep unico**

Quando lo scanner viene alimentato *per la prima volta*, lampeggia dapprima il diodo luminoso rosso e quindi quello verde. Poi lo scanner emette un unico segnale beep. Dopo l'esecuzione di questa sequenza di avvio da parte dello scanner esso è pronto per l'operazione di scansione.

Dopo la lettura *riuscita* di un codice a barre da parte dello scanner il diodo luminoso verde lampeggia e quindi viene emesso un unico segnale beep. Se il diodo luminoso verde non lampeggia oppure lo scanner non emette il segnale beep, ciò significa che la lettura del codice a barre *non* è riuscita.

### **Segnale acustico ronzante**

Se, allo stato inserito, lo scanner emette un segnale ronzante, ciò significa che è stata riconosciuta un'anomalia. Informate la ditta presso la quale avete acquistato lo scanner circa questo problema.

## Visual Indicators

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There are visual indications that signal the status of your scanner. These indications are dependent upon the decoder being used. The function of these indications may not work as described below if a decoder not manufactured by Metrologic is being used.

Located at the top of the scanner are two LEDs: red and green. The flashing or stationary lights of the LEDs signal the status of the scan and scanner.

**No Red or Green Light** There are two reasons why the two LEDs will not be illuminated. If the scanner is not receiving power from the host or transformer, then the lights will not be on. If the scanner is receiving power and the lights are not on, then the scanner has remained dormant for a specified time and the laser and motor has turned off. To reactivate the unit, wave an object in front of the IR sensor or pick up the scanner and direct the scan window downwards.

**Red Flash;  
Green Flash;  
Stationary Red** When the scanner *first* receives power; the red LED will blink, followed by the green LED, and then the scanner will emit one beep. After the scanner performs this startup sequence, the red LED will remain on for a specified time indicating that the scanner is ready to scan. If an object is not presented to the scanner, the red light will turn off.

**Stationary Red** When an object is in front of the output window, the red LED will remain on indicating that the scanner is ready to scan.

**Stationary Red;  
Green Flash** When the scanner *successfully* reads a bar code, the green LED will flash and beep once. If the green LED does not flash or the scanner does not beep once, then the bar code has *not* been successfully read.

**Repetitive Red Flashes** When the red LED flashes several times while it lays upon a stationary surface, then an object is within the scan field and is activating the IR sensor. This can occur even while the scanner is lying upon the counter or cradle. To eliminate this disturbance, direct the scan window toward a different location.

## Signaux optiques

Il existe des signaux optiques qui vous informent sur l'état du scanner. Ces signaux dépendent du décodeur que vous utilisez. Il peut arriver que les fonctions de ces signaux ne correspondent pas à celles qui suivent si vous utilisez un décodeur qui n'a pas été construit par Metrologic.

Sur la partie supérieure du scanner se trouvent une diode LED rouge et une diode LED verte. Les diodes rouge et verte clignotantes ou allumées vous informent sur l'état de palpation et de scanner.

<b>Ni la diode rouge, ni la diode verte n'est allumée</b>	Il arrive fréquemment que les deux diodes ne s'allument pas. Pour deux raisons. Les diodes ne s'allument pas quand le scanner ne reçoit de l'énergie ni de l'ordinateur central, ni du transformateur. Quand le scanner reçoit de l'énergie et ne s'allume cependant pas, le scanner est resté pendant une certaine période sans être utilisé et le laser et le moteur sont désactivés. Pour réactiver l'unité, déplacer un objet devant le palpeur infrarouge ou prendre le scanner et diriger la fenêtre de palpation vers le bas.
<b>Diode rouge clignotante; diode verte clignotante; diode rouge reste allumée</b>	Quand le scanner reçoit <i>pour la première fois</i> de l'énergie, la diode rouge se met d'abord à clignoter, puis la diode verte. Ensuite, le scanner émet un bip sonore unique. Une fois cette séquence de démarrage effectuée, la diode rouge reste allumée pendant un certain temps indiquant que le laser est prêt à servir. Quand le scanner ne détecte aucun objet, la diode rouge s'éteint.
<b>Diode rouge reste allumée</b>	Quand un objet se trouve devant la fenêtre de palpation, la diode rouge reste allumée et indique que le scanner est prêt à servir.
<b>Diode rouge reste allumée; diode verte clignotante</b>	Après lecture <i>avec succès</i> d'un code barres par le scanner, la diode verte se met à clignoter, suivie d'un bip sonore unique. Si la diode verte ne clignote pas ou quand aucun bip sonore n'est émis, cela signifie que le code barres <i>n'a pas</i> pu être lu avec succès.
<b>Clignotement répété de la diode rouge</b>	Quand la diode rouge clignote plusieurs fois pendant que l'appareil repose sur une surface non déplacée, un objet activant le palpeur infrarouge se trouve devant la fenêtre de palpation. Ceci peut se produire même quand le scanner se trouve sur une table ou un repose-pied. Pour éliminer ce défaut, positionner le scanner de façon différente.

## Optische Anzeigen

Es sind optische Anzeigen vorhanden, die Ihnen Aufschluß über den Scannerstatus geben. Diese Anzeigen sind abhängig von dem von Ihnen verwendeten Dekodierer. Es kann sein, daß die Funktionen dieser Anzeigen nicht den nachfolgend angegebenen entsprechen, falls Sie einen Dekodierer verwenden, der nicht von Metrologic hergestellt wurde.

Auf der Oberseite des Scanners befinden sich zwei Leuchtdiodenanzeigen: eine rote und eine grüne. Die blinkenden bzw. feststehenden Leuchtdiodenanzeigen geben Aufschluß über den Abtast- und Scannerstatus.

### **Weder rote noch grüne Leuchtanzeige**

Es kommt häufig vor, daß die beiden Leuchtdiodenanzeigen nicht aufleuchten. Dafür gibt es zwei mögliche Gründe. Die Anzeigen leuchten nicht, wenn der Scanner weder vom Hostrechner noch vom Transformator Energie erhält. Erhält der Scanner Energie, und die Anzeigen leuchten dennoch nicht auf, so ist der Scanner für einen bestimmten Zeitraum untätig geblieben, und Laser und Motor sind abgeschaltet. Zur Reaktivierung der Einheit sollten Sie ein Objekt vor dem Infrarot-Sensor hin- und herbewegen oder den Scanner aufnehmen und das Abtastfenster nach unten richten.

### **Rote Blinkanzeige; Grüne Blinkanzeige; feststehende rote Leuchtanzeige**

Wenn dem Scanner *erstmalig* Energie zugeführt wird, blinkt zunächst die rote Leuchtdiodenanzeige auf, gefolgt von der grünen Leuchtdiodenanzeige, und anschließend sendet der Scanner ein einmaliges Piep-Signal aus. Nach Ausführung dieser Startsequenz leuchtet die rote Leuchtdiodenanzeige für einen bestimmten Zeitraum auf und zeigt an, daß der Scanner zur Durchführung des Scannens bereit ist. Wird dem Scanner kein Objekt präsentiert, so erlischt die rote Leuchtanzeige.

### **Feststehende rote Leuchtanzeige**

Befindet sich ein Objekt vor dem Ausgabefenster, so leuchtet die rote Leuchtdiode weiterhin auf und zeigt an, daß der Scanner zur Durchführung des Abtastvorgangs bereit ist.

### **Feststehende rote Leuchtanzeige; grüne Blinkanzeige**

Nach *erfolgreichem* Lesen eines Barcodes durch den Scanner blinkt die grüne Leuchtdiodenanzeige auf, gefolgt von einem einmaligen Piep-Signal. Falls die grüne Leuchtdiodenanzeige nicht aufblinkt oder der Scanner kein Piep-Signal aussendet, bedeutet dies, daß der Barcode *nicht* erfolgreich gelesen werden konnte.

### **Wiederholte rote Blinkanzeigen**

Blinkt die rote Leuchtdiodenanzeige mehrmals auf, während das Gerät auf einer nichtbewegten Fläche liegt, so befindet sich ein Objekt innerhalb des Abtastfeldes, das den Infrarot-Sensor aktiviert. Dies kann selbst dann vorkommen, wenn der Scanner auf dem Ladentisch oder dem Ablagegestell liegt. Um diese Störung zu beseitigen sollten Sie den Scanner anders positionieren.

## Segnali ottici

Sono previsti dei segnali ottici che Vi informano sullo stato dello scanner. Questi segnali dipendono dal decodificatore da Voi utilizzato. Se utilizzate un decodificatore che non è stato fabbricato dalla Metrologic è possibile che le funzioni di questi segnali non corrispondano a quelle qui di seguito indicate.

Sulla parte superiore dello scanner si trovano due diodi luminosi: uno rosso e uno verde. I diodi luminosi, che possono o essere accesi in continuazione o lampeggiare, Vi informano sullo stato della scansione e dell'apparecchio.

### **Né il diodo luminoso rosso né quello verde sono accesi**

Succede spesso che i due diodi luminosi non siano accesi. Vi sono due cause possibili. Se lo scanner non viene alimentato né dal computer né dal trasformatore, i diodi luminosi non sono accesi. Se invece lo scanner viene alimentato e ciononostante i diodi luminosi non sono accesi, lo scanner è rimasto disattivato per un determinato periodo e laser e motore sono spenti. Per riattivare l'unità dovreste muovere un oggetto davanti al sensore a infrarossi oppure prendere lo scanner e rivolgere il finestrino di scansione verso il basso.

### **Il diodo luminoso rosso lampeggia; il diodo luminoso verde lampeggia; il diodo luminoso verde è acceso**

Quando lo scanner viene alimentato *per la prima volta*, lampeggia dapprima il diodo luminoso rosso e quindi quello verde. Poi lo scanner emette un unico segnale beep. Dopo l'esecuzione di questa sequenza di avvio, il diodo luminoso rosso si accende per un determinato periodo ed indica che il laser è pronto per effettuare una scansione. Se allo scanner non viene presentato nessun oggetto, il diodo luminoso rosso si spegne.

### **Il diodo luminoso rosso è acceso**

Se un oggetto si trova davanti al finestrino di uscita, il diodo luminoso continua ad essere acceso indicando così che lo scanner è pronto per effettuare una scansione.

### **Il diodo luminoso rosso è acceso; il diodo luminoso verde lampeggia**

Dopo la lettura *riuscita* di un codice a barre da parte dello scanner il diodo luminoso verde lampeggia e quindi viene emesso un unico segnale beep. Se il diodo luminoso verde non lampeggia oppure lo scanner non emette un segnale beep, ciò significa che la lettura del codice a barre *non* è riuscita.

### **Il diodo luminoso rosso lampeggia ripetutamente**

Se il diodo luminoso rosso lampeggia ripetutamente mentre l'apparecchio si trova su una superficie immobile, vi è un oggetto all'interno della zona di scansione che attiva il sensore a infrarossi. Ciò può essere addirittura il caso quando lo scanner si trova sul banco oppure nel suo supporto. Per eliminare questa anomalia basta cambiare la posizione dello scanner.



## Labels

The MH941 is a CDRH Class II laser system and an IEC Class I Laser System. Your unit will have a CDRH Class II caution label and an LASERKLASSE 1 label affixed below the model number. The model number label is found on the bottom of the scanner's head. Found directly below the output window at the front of your unit is a red avoid exposure label. The following are examples of these labels:

Metrologic Instruments, Inc.  
Blackwood, New Jersey, USA  
This device complies with  
FCC/VDE Class A. See manual  
Manufactured Blackwood, NJ.  
April 1996  
Model : MH941L  
Barcode Scanner 5V  
Serial # : YYYYYYYY  
XXXXXXXXXX  
XXXXXXXXXX



UL  
SP  
Listed 94J8NRTL/C



EN60825-1: 94 .90 MILLIWATT (PEAK)  
U.S. Patent 5,340,971; 5,340,973; 5,260,553

AVOID EXPOSURE laser light emitted from this aperture

The model number includes the scanner number and revision level. For example, if the model number is MH941J, the scanner is an MH941 and J is the revision level.

## IR Sensor Activation

This function is decoder/controller dependent.

The scanning process is initiated by an infra red (IR) device that is found below the laser output window. The signal it projects extends approximately eight (8) inches beyond the output window (*Refer to Figure 3*). The IR device remains active as long as power is applied to the unit.

When the unit remains dormant for a time, the laser will turn off. In this stage, the scanner's computer is on "stand by". To reactivate the unit, wave an object in front of the IR sensor or pick up the scanner and direct the output window downwards. The function of the scanning process in conjunction with the IR sensor is known as ScanQuest.

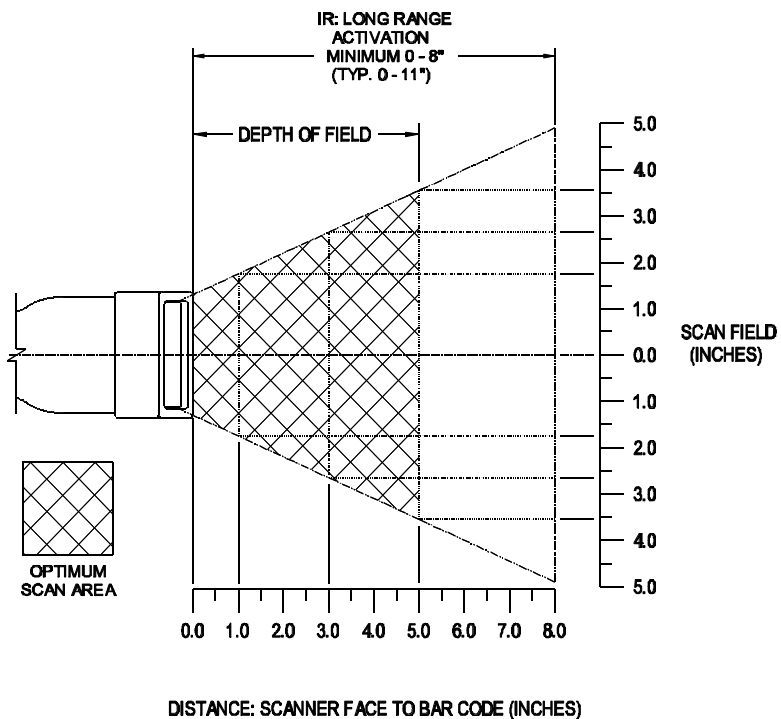


Figure 3

## Scan Field

The depth of field for the scanner is from the face of the output window to five (5) inches (Refer to Figure 4). If the scanner is in the stand, a bar code must be presented to the scanner. When holding the scanner, position the output window within five inches of the bar code.

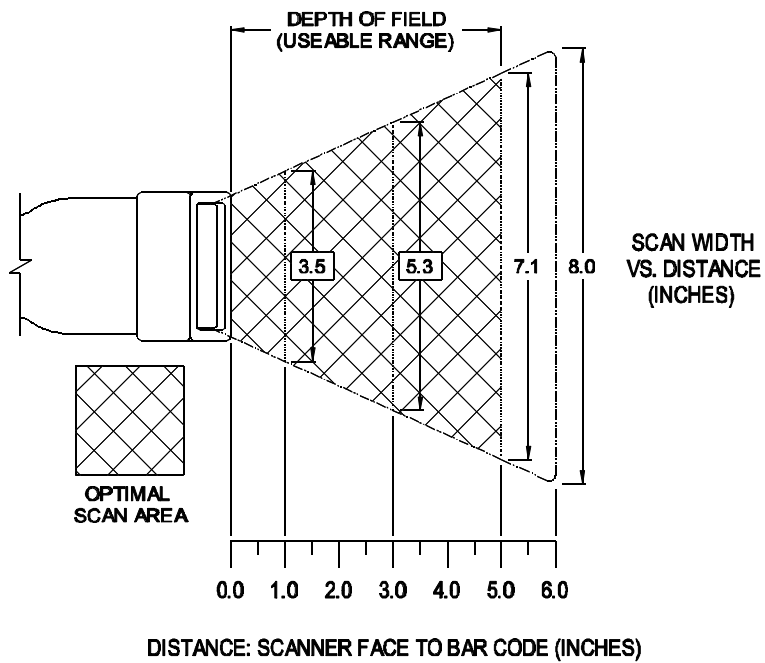


Figure 4

## Depth of Field and Symbol Specification (Refer to Figure 5)

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Code Type	Minimum Small Element Mil. (1/1000")	Code Density	*Depth of Field
UPC/EAN	10.4	80%	0" - 4"
UPC/EAN	13.0	100%	0" - 5"
Code 39	7.5	High	0" - 3"
Code 39	12.0	Medium	1" - 5"
Code 39	21.0	Low	1" - 8"
I 2 of 5	7.5	High	0" - 3"
I 2 of 5	12.0	Medium	0" - 5"
I 2 of 5	21.0	Low	1" - 8"
Codabar	7.5	High	0" - 3"
Codabar	12.0	Medium	0" - 5"
Codabar	21.0	Low	1" - 8"
Code 93	10.4	80%	0" - 4"
Code 93	13.0	100%	0" - 5"
Code 128	10.4	80%	0" - 4"
Code 128	13.0	100%	0" - 5"

Subject to change.

\*Decoder/controller dependent.

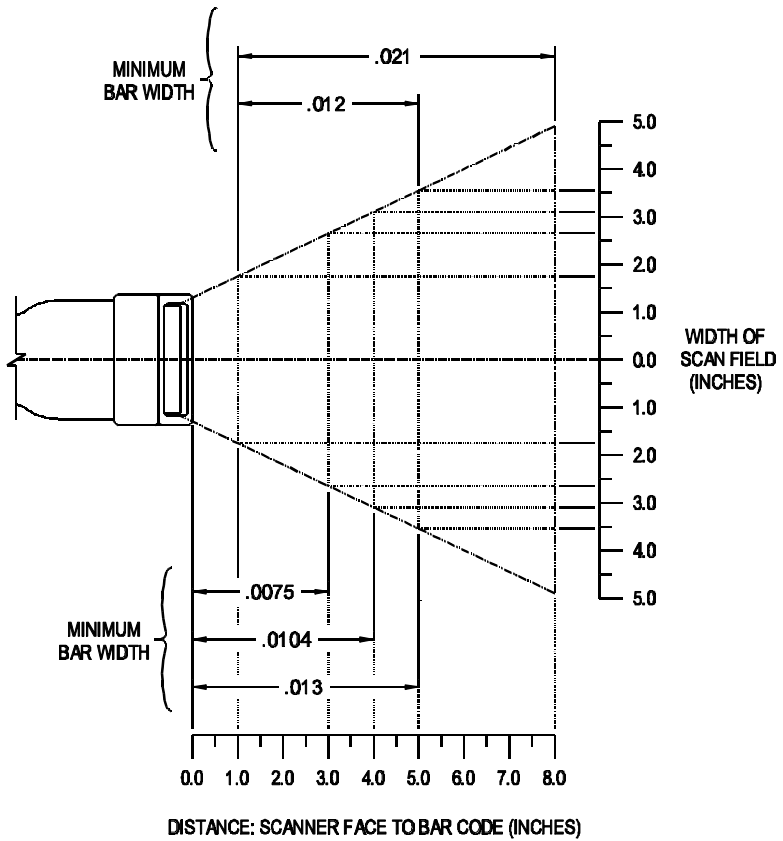


Figure 5

## Maintenance

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Smudges and dirt can interfere with the proper scanning of a bar code. Therefore, the output window will need occasional cleaning.

1. Spray glass cleaner onto lint free, non-abrasive cleaning cloth.
2. Gently wipe the scanner window.

## Appendix A

---

### Specifications

Application:	Hand-Held Laser Scanner
Light Source:	VLD 675 ± 5nm
CDRH:	Registered with CDRH, Class II laser product Maximum radiant power less than 1 mW
IEC:	IEC 825 Class I laser product Maximum radiant power less than 0.5 mW
UL/CSA/TUV:	UL Listed, UL114; CSA certified, C22.2 No. 950, UL 1950 (1989); ]
EMI:	Complies with FCC & VDE Class A

### Mechanical

Dimensions:	205mmL x 63mmW x 24mmD (8"L x 2.5"W x .94"D)
Weight:	.18 kg. (6.4 oz.) without cable
Cable Length:	Coil cord collapsed - 3.5'; Extended - 6'

### Electrical

Power (Watts):	0.5
Input Voltage, DC:	5 V
Operating Current:	.100 Amps
Standby Current:	.025 Amps

## Operational

Depth of Field, UPC 100%:	Up to 125mm (5") from face
Scan Speed:	38 scan lines per second
Scan Pattern:	Single scan line
Maintenance Required:	Clean output window periodically
Print Contrast:	35% minimum reflectance difference
Roll, Pitch, Yaw:	42E, 68E, 52E

The following operations are decoder/controller dependent.

Beeper Operation:	Beeps on "Decode" or "Good Read"
Decode Capability:	Decode controlled by MC941 decoder/controller or host system
Indicators:	LED: red = laser on, ready to scan green = good read, decoding

Specifications subject to change without notice.

U.S. Patent D31590; 5,340,971; 5,340,973 and 5,260,553

## Environmental

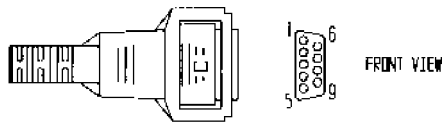
Storage Temperature:	-40EC to 60EC (-40EF to 140EF)
Operating Temperature:	0EC to 35EC (32EF to 95EF)
Humidity:	5% to 95% relative humidity, non-condensing
Light Levels:	Up to 3200 foot candles; works in direct sunlight
Ventilation:	None required
Shock:	Drop of 1.5 meters (5')
ESD:	8 kV IEC 801-2
Contaminants:	Sealed to resist airborne particulate contaminants



## Appendix B

---

### MH941 Scan Head Pin Assignments



Pin	Signal Name	Function
1	Flip Sense	<p>A square wave output signal that changes polarity when the scan mirror drive circuit changes the motor direction. The frequency is approximately 19 Hz to achieve a nominal 38 flips/scan per second.</p> <p><b>Note:</b> The polarity and mirror direction do not necessarily change at the same time.</p> <p>This is an open collector output capable of sinking 25 mA via an external pull up resistor connected to a voltage not to exceed +20 VDC.</p>
2	Data	<p>An output digital representation of the scanned bar code. A low level represents a bar and a high level represents a space.</p> <p>This is an open collector output capable of sinking 25 mA via an external pull up resistor connected to a voltage not to exceed +20 VDC.</p>
3	Decode LED	<p>The scan head is equipped with LED and beeper assemblies. A +5 VDC to 12 VDC input to the head at this pin will light the green LED and if oscillated at about 2 KHz, drive a beeper.</p> <p>This should be supplied with no more than 30mA of current.</p> <p>Typically, this is used to indicate a decode has occurred.</p>

4	Reserved	
5	Proximity Detect	<p>The proximity detect is a momentary grounding switch. The controlling computer should provide a <math>+5\pm.25</math> VDC pull up which can be grounded when the proximity detect activates.</p> <p>This indicates that an object has moved within scanning range. It is recommended that this signal be debounced for approximately 30 milliseconds.</p> <p><b>Note:</b> This scan head was not designed to have the laser enabled continuously as might be desired if the scanner was in a permanent mounting fixture.</p>
6	Laser/Motor Control	A +5 VDC input to the head which is used to start the flipper motor and signal processor, and enable the visible laser diode (VLD). This can be a TTL level signal and requires less than 1 milliampere of current.
7	Ground	A power ground capable of handling a 500 milliampere load.
8	SHIELD	Cable shield to chassis ground (no load).
9	Scanner VCC	Primary laser diode/motor power input. +5 VDC should be present at this pin and capable of supplying up to 125 mA when enabled by the signal at pin 6.

## Appendix C

---

### Warranty and Disclaimer

#### Limited Warranty

Products manufactured by Metrologic have a 2-year limited warranty from date of manufacture.

This warranty is limited to repair, replacement or refund at Metrologic's discretion. Faulty equipment must be returned to the Metrologic facility in Blackwood, New Jersey or Puchheim, Germany. To do this, contact Metrologic Customer Service/Repair for a Returned Material Authorization (RMA) number.

In the event that it is determined that the equipment failure is covered under the warranty, Metrologic shall, as its sole option, repair, replace with a functionally equivalent unit, or refund an amount equal to the purchase price to the original purchaser, whether distributor, dealer/reseller, or retail consumer, and return the equipment to the customer without charge for service or return freight.

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**Metrologic Instruments, Inc.**  
90 Coles Road  
Blackwood, NJ 08012

**Customer Service Department**  
1-800-ID-METRO (1-800-436-3876)  
TEL: 609-228-8100  
FAX: 609-228-6673

**Metrologic Instruments GmbH**  
Dornierstrasse 2  
82178 Puchheim b.  
Munich, Germany  
TEL: 49-89-89019-0  
FAX: 49-89-89019-200

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## Appendix D

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### Notices

#### Notice

This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense. Any unauthorized changes or modifications to this equipment could void the users authority to operate this device.

#### Notice

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Industry and Canada.

#### Caution

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light. Under no circumstances should the customer attempt to service the laser scanner. Never attempt to look at the laser beam, even if the scanner appears to be nonfunctional. Never open the scanner in an attempt to look into the device. Doing so could result in hazardous laser light exposure. The use of optical instruments with the laser equipment will increase eye hazard.

#### Remarque

Après contrôle de cet appareil, on a noté qu'il répondait aux valeurs limites de la classe A, conformément à la partie 15 des directives de l'administration fédérale américaine pour les télécommunications. Ces valeurs limites ont été prévues pour garantir une protection suffisante contre les effets nocifs dus à l'emploi de l'appareil dans un magasin. L'appareil génère et utilise une énergie haute fréquence et peut, s'il n'est pas installé et utilisé conformément aux instructions mentionnées dans le guide d'utilisation, entraîner des perturbations dans la radiocommunications. L'utilisation de cet appareil dans une zone d'habitation entraînera très vraisemblablement des perturbations. Dans ce cas, l'utilisateur est tenu de remédier à ces perturbations à ses propres frais. Toute modification ou remplacement non autorisé sur cet appareil peut entraîner l'invalidité de l'autorisation d'utilisation de l'appareil.

#### Remarque

Cet appareil numérique ne va pas contre les valeurs limites pour émissions de bruits radios des appareils numérique de la classe A, conformément aux directives relatives aux perturbations des radiocommunications du ministère canadien pour l'industrie.

#### Attention

L'emploi de commandes, réglages ou procédés autres que ceux décrits ici peut entraîner de graves irradiations. Le client ne doit en aucun cas essayer d'entretenir lui-même le scanner ou le laser. Ne regardez jamais directement le rayon laser, même si vous croyez que le scanner est inactif. N'ouvrez jamais le scanner pour regarder dans l'appareil. Ce faisant, vous vous exposez à une rayonnement laser mortel. L'emploi d'appareils optiques avec cet équipement laser augmente le risque d'endommagement de la vision.

**Anmerkung**

Nach Überprüfung dieses Geräts wurde festgestellt, daß es den Grenzwerten für Digitalgeräte der Klasse A gemäß Teil 15 der Richtlinien der US-amerikanischen Bundesbehörde für das Fernmeldewesen entspricht. Diese Grenzwerte wurden festgelegt, um einen angemessenen Schutz gegen schädliche Auswirkungen bei Einsatz des Geräts in einer Ladenumgebung zu gewähren. Das Gerät erzeugt und verwendet Hochfrequenzenergie und kann diese ausstrahlen, und kann, falls es nicht gemäß den im Bedienerhandbuch enthaltenen Anweisungen installiert und verwendet wird, zu einer Störung des Funkverkehrs führen. Der Betrieb dieses Geräts in einem Wohngebiet führt höchstwahrscheinlich zu Störungen. In diesem Fall ist der Bediener verpflichtet, die Störung auf eigene Kosten zu beseitigen. Durch jegliche unerlaubte Auswechslung oder Änderung an diesem Gerät könnte die Genehmigung des Bedieners zur Verwendung dieses Geräts ungültig werden.

**Anmerkung**

Dieses Digitalgerät verstößt nicht gegen die Grenzwerte für Funkrauschemissionen von Digitalgeräten der Klasse A gemäß den Richtlinien für Funkstörungen des kanadischen Ministeriums für Industrie.

**Achtung**

Die Verwendung anderer als der hierin beschriebenen Steuerungen, Einstellungen oder Verfahren kann eine lebensgefährliche Laserstrahlung hervorrufen. Der Kunde sollte unter keinen Umständen versuchen, den Laser-Scanner selbst zu warten. Sehen Sie niemals in den Laserstrahl, selbst wenn Sie glauben, daß der Scanner nicht aktiv ist. Öffnen Sie niemals den Scanner, um in das Gerät hineinzusehen. Wenn Sie dies tun, können Sie sich einer lebensgefährlichen Laserstrahlung aussetzen. Der Einsatz optischer Geräte mit dieser Laserausrüstung erhöht das Risiko einer Sehschädigung.

**N.B.**

Dal controllo di questo apparecchio risulta che esso risponde ai valori limite per apparecchi digitali della classe A conf. parte 15 delle direttive sulle telecomunicazioni dell'Autorità federale statunitense. Questi valori limite sono stati fissati per garantire una protezione adeguata contro gli effetti nocivi se questo apparecchio viene usato all'intero di un negozio. L'apparecchio genera, utilizza e può emettere energia ad alta frequenza e, se non viene installato ed utilizzato conformemente alle indicazioni fornite nel Manuale utente, può provocare disturbi al servizio radiofonico. L'uso di questo apparecchio in zone residenziali causa molto probabilmente dei disturbi. In questo caso l'utente è obbligato ad eliminare questi disturbi a sue spese. Qualsiasi sostituzione o modifica non autorizzata all'apparecchio potrebbe rendere invalida l'autorizzazione dell'utente all'uso dell'apparecchio.

**N.B.**

Questo apparecchio digitale non supera i valori limite per l'emissione di radiorumori da parte di apparecchi digitali della classe A conformemente alle direttive per radiodisturbi del Ministero canadese per l'Industria.

**Attenzione**

L'utilizzo di sistemi di controllo, di regolazioni o di procedimenti diversi da quelli decritti nel presente Manuale può provocare dei raggi laser pericolosi per la vita. Il cliente non deve assolutamente tentare di riparare egli stesso lo scanner laser. Non guardate mai nel raggio laser, anche se credete che lo scanner non sia attivo. Non aprite mai lo scanner per guardare dentro l'apparecchio. Se tuttavia lo fate, potete esporvi a dei raggi laser pericolosi per la vita. L'uso di apparecchi ottici con questo equipaggiamento laser aumenta il rischio di danni alla vista.

## Appendix E

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### Patents

“Patent Information

This METROLOGIC product may be covered by one or more of the following U.S. Patents:

U.S. Patent No. 4,360,798; 4,369,361; 4,387,297; 4,460,120; 4,496,831; 4,593,186; 4,607,156; 4,673,805; 4,736,095; 4,758,717; 4,816,660; 4,845,350; 4,896,026; 4,923,281; 4,933,538; 4,992,717; 5,015,833; 5,017,765; 5,059,779; 5,117,098; 5,124,539; 5,130,520; 5,132,525; 5,140,144; 5,149,950; 5,180,904; 5,200,599; 5,229,591; 5,247,162; 5,250,790; 5,250,791; 5,250,792; 5,262,628; 5,280,162; 5,280,164; 5,304,788; 5,321,246; 5,324,924; 5,396,053; 5,396,055; 5,408,081; 5,410,139; 5,436,440; 5,449,891; 5,468,949; 5,479,000; 5,532,469; 5,545,889

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## Index

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### A

AC input/outlet 3  
Application 20  
Asia ii  
Assignments  
    pin 22, 23

### B

Beep 1, 3, 6, 21  
Beeper operation 21

### C

Cable  
    communication 3  
    head 3, 5  
    shield 23  
CDRH Class II 14, 20  
Clean 19, 21  
Compliance 3, 4  
Contrast 21  
Copyright ii  
Current 20, 22, 23  
Customer Service ii, 24

### D

Decode capability 21  
Depth of field 17, 18  
Dimensions 20  
Disclaimer 25

### E

Electrical 20  
Email ii  
Environmental 21  
ESD 21  
Europe ii  
External Power supply 3

### F

Faulty equipment 24  
Fax ii  
Functions 5

### G

Germany (GmbH) ii, 24  
Good read 21  
Green LED 1, 5, 6, 10, 22

### H

Headquarters ii  
Host 1, 3-5, 10, 21  
Humidity 21

### I

Indicators  
    LEDs 1, 3, 5, 6, 10, 21, 22  
    Visual 10-13  
Internet ii  
Introduction 1

### L

Labels 14  
LASERKLASSE 1 14  
LEDs 1, 3, 5, 6, 10, 21, 22  
Light levels 21  
Light source 20  
Limited warranty 24  
List 2  
Locations ii

### M

Maintenance 19, 21  
Mechanical 20  
Model number 14

### N

Notices 26, 27

### O

Operating current 20  
Operating temperature 21  
Operation 1, 21  
Operational 21  
Output window 1, 5, 10, 14-16,  
    19, 21



## **P**

Parts 5  
Patents 28  
Pin assignments 22, 23  
Power supply 3, 4  
Print contrast 21

## **R**

Red LED 1, 3, 5, 6, 10  
Repair 24  
Rights  
    property 28  
    warranty 24  
RMA 24  
Roll, pitch, yaw 21

## **S**

Scan field 1, 10, 16  
Scan lines 21  
Scan speed 21  
Service 24  
Shipping carton 2  
South America ii  
Specifications 20, 21  
Storage temperature 21

## **T**

Temperature 21  
Transformer 10

## **U**

UL/CSA/TUV 20  
USA corporate headquarters  
ii

## **V**

Ventilation 21  
Voltage 3, 4, 20, 22

## **W**

Warranty 24  
Watt(s) 20  
Weight 20  
Window 1, 5, 10, 14-16,  
19, 21

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