



DS6400

QUICK REFERENCE GUIDE



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- **Sales Network**- Listing of Subsidiaries, Repair Centers, Partners
- **Helpdesk**
- **Material Return Authorization**

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DS6400 GENERAL VIEW



Figure A

- ① Laser Beam Output Window
- ② Laser Safety Label

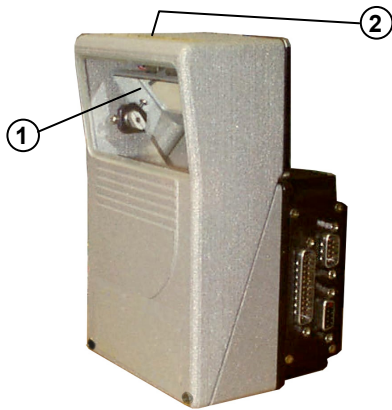


Figure B

- ① Laser Beam Output Window
- ② Laser Safety Label

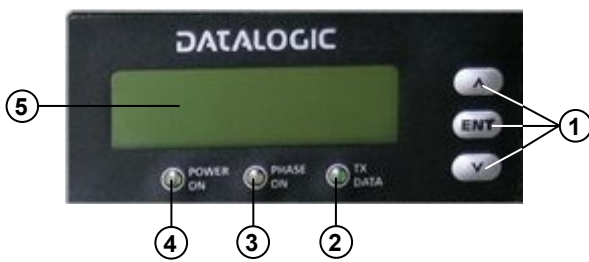
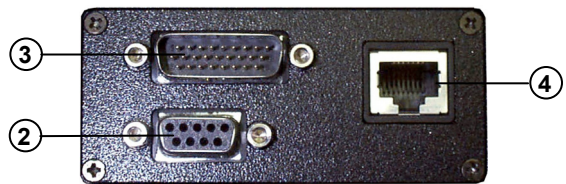


Figure C

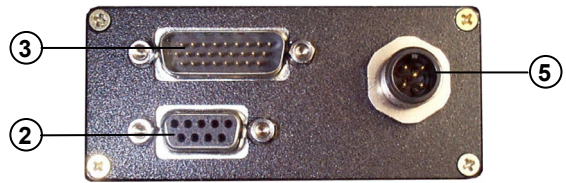
- ① Programming Keypad
- ② TX Data LED (Green)
- ③ Phase On LED (Yellow)
- ④ Power On LED (Red)
- ⑤ LCD Display



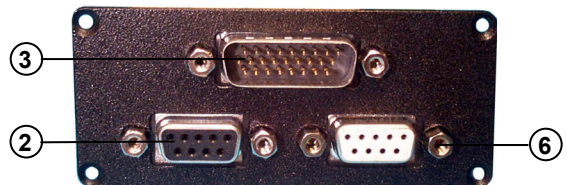
Standard



Ethernet



DeviceNet



Profibus

Figure D

- ① Lonworks 9-pin Male Connector
- ② Lonworks 9-pin Female Connector
- ③ Serial Interface and I/O 25-pin (26-pin) male Connector
- ④ RJ45 Modular Ethernet Connector
- ⑤ DeviceNet 5-pin Male Connector
- ⑥ Profibus 9-pin Female Connector (white)

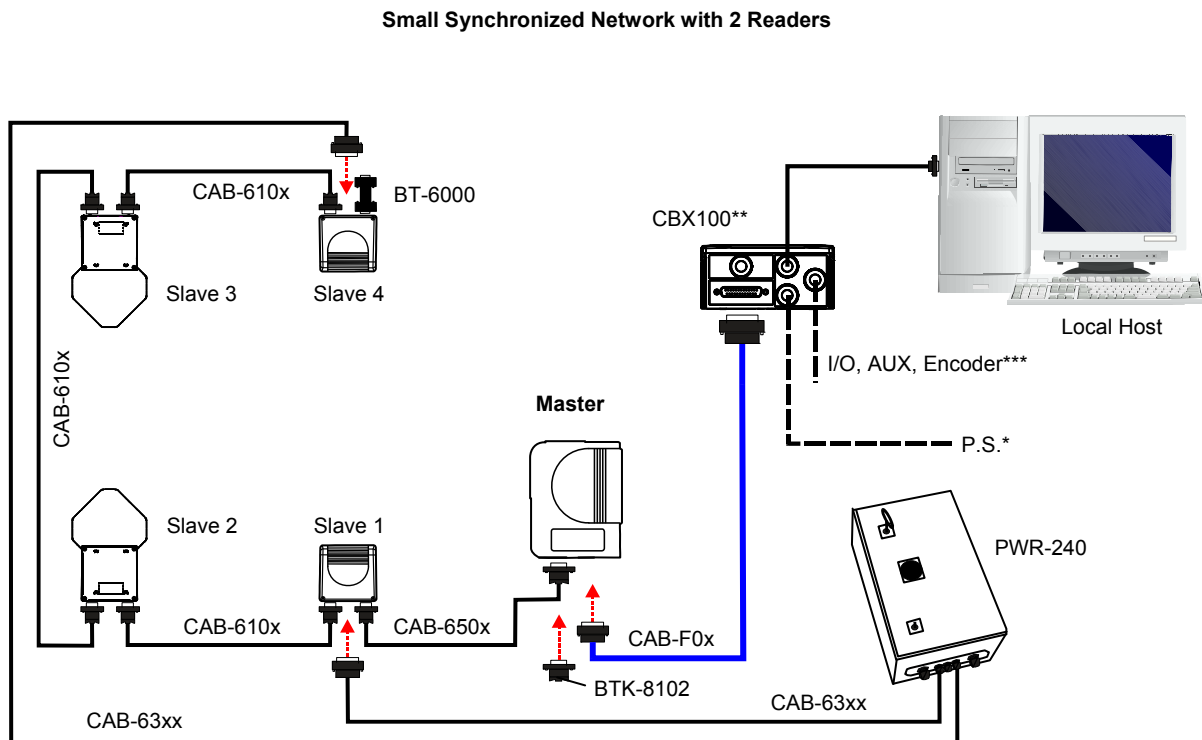
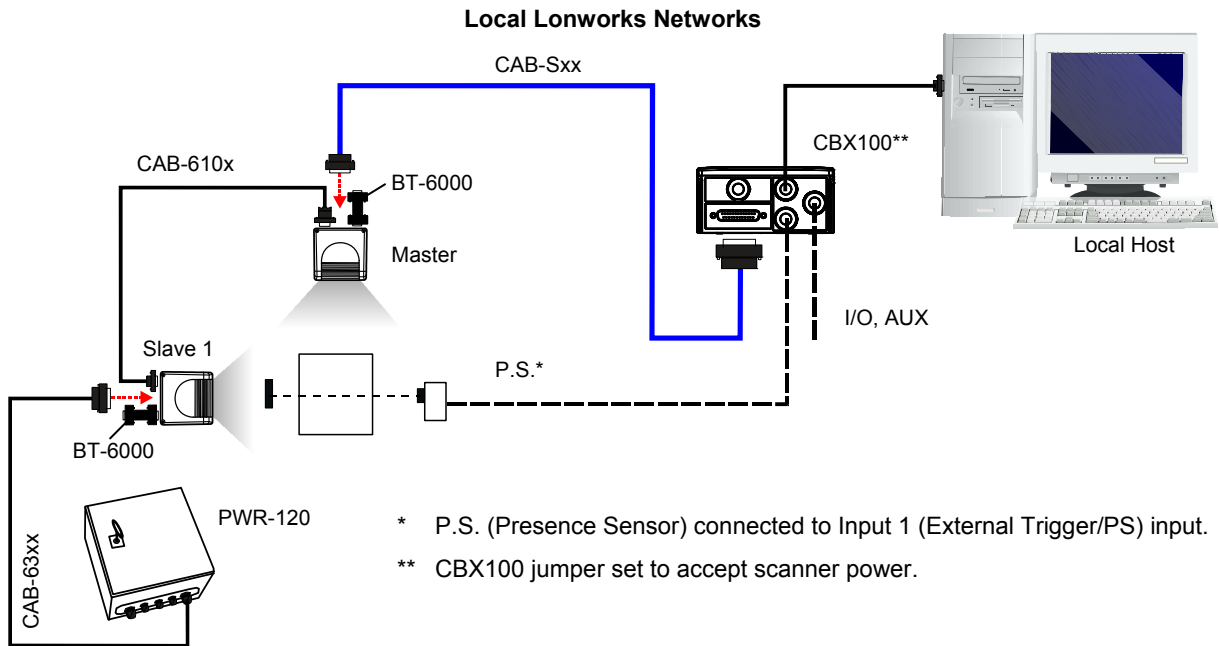


NOTE

For further details on product installation, see the complete Reference Manual available on the configuration CD-ROM included with this product.

CONNECTIVITY

Examples of the most common system layouts are shown in this section, for additional layouts refer to the Reference Manual.



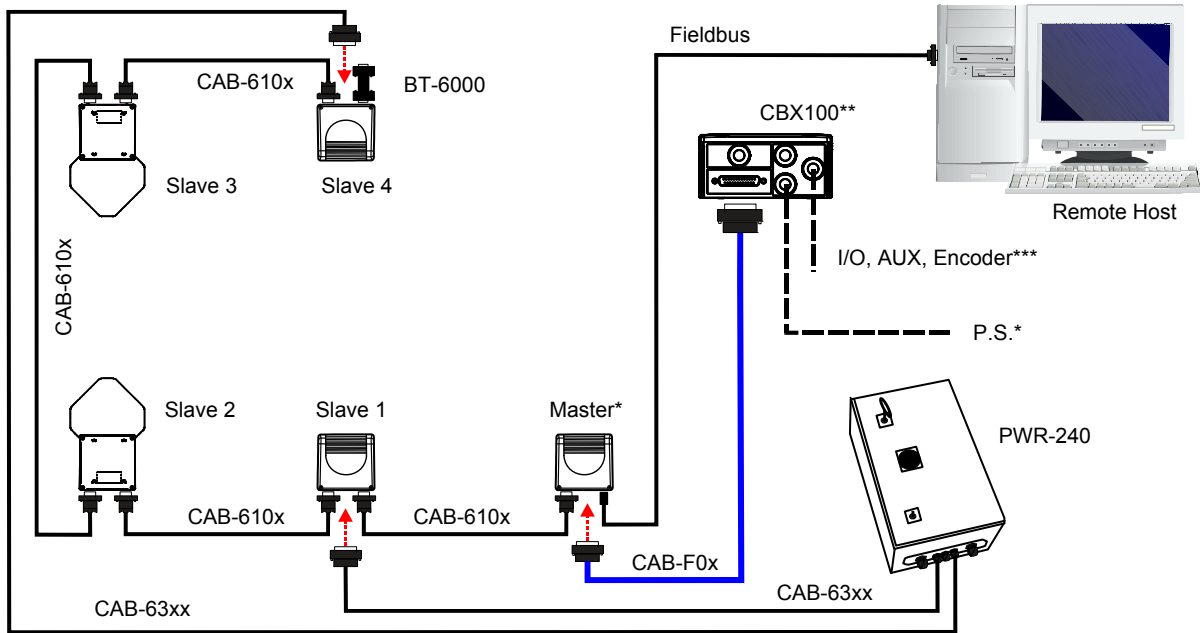
Note: In a mixed 8K and 6K family scanner network, only the 8K family scanner can be Master

* P.S. (Presence Sensor) connected to Input 1 (External Trigger/PS) input.

** CBX100 jumper set to accept scanner power.

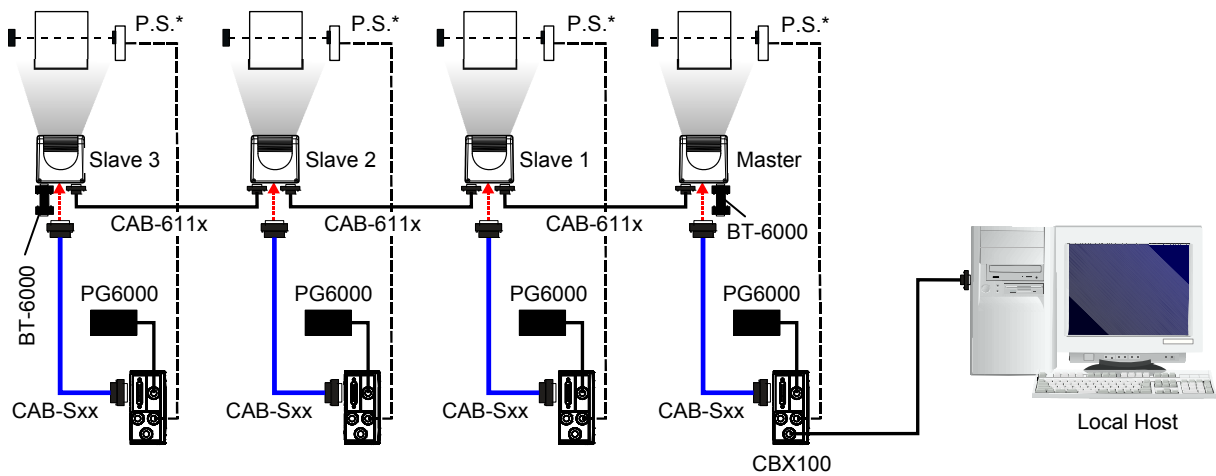
*** Encoder connected to Input 2 (Encoder) input.

Synchronized Network with DS8100A Master and 6K Family Slaves - Serial Host



- * P.S. (Presence Sensor) connected to Input 1 (External Trigger/PS) input.
- ** CBX100 jumper set to accept scanner power.
- *** Encoder connected to Input 2 (Encoder) input.

Synchronized Network with DS6400 Master and 6K Family Slaves - Fieldbus Host



- * Each P.S. (Presence Sensor) connected to Input 1 (External Trigger/PS) input.

Multidata Network

NETWORK TERMINATION

When building a local Lonworks system the network must be properly terminated by positioning a BT-6000 terminator on the DS6400 master reader (BT-6000 female side) and on the last slave reader (BT-6000 male side).



BT-6000 Network Terminator

ELECTRICAL CONNECTIONS

The details of the connector pins are indicated in the following tables:

The table below gives the pinout of the CBX100/CBX500 terminal block connectors. Use this pinout when the DS6400 reader is connected by means of the CBX100/CBX500:

CBX100/500 Terminal Block Connectors			
Power			
Vdc	Power Supply Input Voltage +		
GND	Power Supply Input Voltage -		
Earth	Protection Earth Ground		
Inputs			
+V	Power Source – Inputs		
-V	Power Reference – Inputs		
I1A	EXT TRIG/PS A (polarity insensitive) for PS		
I1B	EXT TRIG/PS B (polarity insensitive) for PS		
I2A	IN 2/ENC A (polarity insensitive) for Encoder		
I2B	IN 2/ENC B (polarity insensitive) for Encoder		
I3A	IN 3A (polarity insensitive) (only with CBX500)		
I4A	IN 4A (polarity insensitive) (only with CBX500)		
I34B	IN 3B/IN 4B Reference (polarity insensitive) (only with CBX500)		
Outputs			
+V	Power Source - Outputs		
-V	Power Reference - Outputs		
O1+	OUT 1+		
O1-	OUT 1-		
O2+	OUT 2+		
O2-	OUT 2-		
O3A	OUT 3A (polarity insensitive) (only with CBX500)		
O3B	OUT 3B (polarity insensitive) (only with CBX500)		
Auxiliary Interface			
TX	Auxiliary Interface TX		
RX	Auxiliary Interface RX		
SGND	Auxiliary Interface Reference		
Shield			
Shield	Network Cable Shield		
Main Interface			
	RS232	RS485 Full-Duplex	RS485 Half-Duplex
	TX	TX+	RTX+
	RTS	TX-	RTX-
	RX	*RX+	
	CTS	*RX-	
	SGND	SGND	SGND

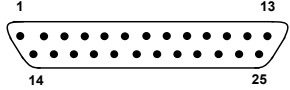
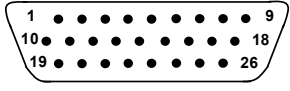
* Do not leave floating, see Reference Manual for connection details.



CAUTION

Do not connect GND and SGND to different (external) ground references. GND and SGND are internally connected through filtering circuitry which can be permanently damaged if subjected to voltage drops over 0.8 Vdc.

The DS6400 scanner provides a 25-pin (26-pin for Fieldbus models) male D-sub connector for connection to power supply, Host interface (Main and Aux), and input/output signals.

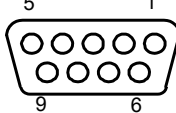
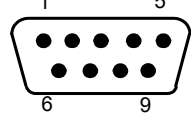
25-pin / 26-pin D-Sub Connector Pinout				
Pin	Name	Function		
1	CHASSIS	Chassis - internally connected to GND Cable shield connected to chassis	 <p>25-pin male D-sub Connector</p>  <p>26-pin male D-sub Connector</p>	
20	RXAUX	Receive data of auxiliary RS232 (referred to GND)		
21	TXAUX	Transmit data of auxiliary RS232 (referred to GND)		
8	OUT 1+	Configurable digital output 1 – positive pin		
22	OUT 1-	Configurable digital output 1 – negative pin		
11	OUT 2+	Configurable digital output 2 – positive pin		
12	OUT 2-	Configurable digital output 2 – negative pin		
16	OUT 3A	Configurable digital output 3 – polarity insensitive		
17	OUT 3B	Configurable digital output 3 – polarity insensitive		
18	EXT_TRIG/PS A	External trigger (polarity insensitive) for PS		
19	EXT_TRIG/PS B	External trigger (polarity insensitive) for PS		
6	IN2/ENC A	Input signal 2 (polarity insensitive) for Encoder		
10	IN2/ENC B	Input signal 2 (polarity insensitive) for Encoder		
14	IN3A	Input signal 3 (polarity insensitive)		
15	IN4A	Input signal 4 (polarity insensitive)		
24	IN_REF	Common reference of IN3 and IN4 (polarity insensitive)		
9, 13	VS	Supply voltage – positive pin		
23, 25, 26	GND	Supply voltage – negative pin		
Main Interface				
Pin	RS232	RS485 Full-Duplex		RS485 Half-Duplex
2	TX	TX485+	RTX485+	
3	RX	* RX485+		
4	RTS	TX485-	RTX485-	
5	CTS	* RX485-		
7	GND_ISO	GND_ISO	GND_ISO	

* Do not leave floating, see Reference Manual for connection details.

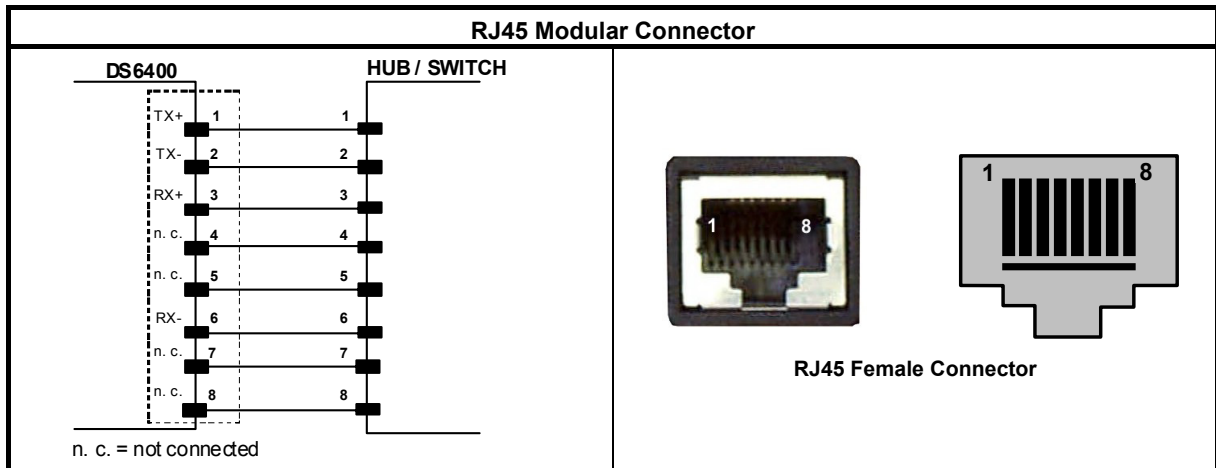
Two 9-pin connector(s) provide access to the scanner’s local Lonworks network.

The Master/Slave model has two Lonworks connectors used for both input and output connections to build a multi-sided or omni-station system.

The Fieldbus models have one Lonworks connector and therefore can be used in a Lonworks network only as a Master.

9-pin Lonworks Connector Pinout			
Pin	Name	Function	
1	CHASSIS	Cable shield internally connected by capacitor to chassis	 <p>Female</p>  <p>Male (M/S model only)</p> <p>9-pin Local Lonworks Connectors</p>
9	VS	Supply voltage – positive pin	
2	GND	Supply voltage – negative pin	
6	VS_I/O	Supply voltage of I/O circuit	
3	Ref_I/O	Reference voltage of I/O circuit	
4	SYS_ENC_I/O	System signal	
5	SYS_I/O	System signal	
7	LON A	Lonworks line (polarity insensitive)	
8	LON B	Lonworks line (polarity insensitive)	

Ethernet Model



DeviceNet Model

When using DeviceNet, the Main serial interface is disabled and must not be physically connected.

NOTE

5-pin DeviceNet Connector Pinout

Pin	Name	Function	
2	V+	Supply voltage – positive pin	<p>5-pin male DeviceNet Connector</p>
5	CAN_L	CAN bus data line – L	
1	SHIELD	Shield	
4	CAN_H	CAN bus data line – H	
3	V-	Supply voltage – negative pin	

The power supplied on pin V+ and V- is used only to propagate power to the section of the DeviceNet board directly connected to the Bus. It is completely isolated from the DS6400 power which must be supplied on pin 9, 13 and pin 23, 25 of the 26-pin Main/Aux connector.

NOTE

Profibus Model

9-pin Profibus Connector

Pin	Name	Function	
1	Shield	Shield, Protective Ground resp. (optional)	<p>9-pin female Profibus Connector (white)</p>
2	Free		
3	B-LINE (Rx/D/TxD-P)	Received/Transmitted Data-P	
4	CNTR-P	Repeater Control Signal (optional, RS485 level)	
5	DGND	Data Ground (M5V)	
6	+5 V	Voltage Plus (P5V)	
7	Free		
8	A-LINE (Rx/D/TxD-N)	Received/Transmitted Data	
9	CNTR-N	Repeater Control Signal	

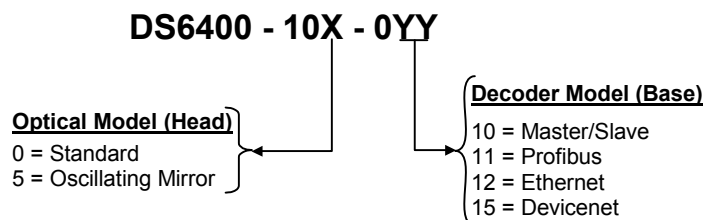
APPENDIX

TECHNICAL FEATURES

ELECTRICAL FEATURES		
Supply Voltage	15 to 30 Vdc	
Power Consumption	1.0 to 0.5 A; 15 W typical 1.5 to 0.7 A; 24 W Max. (including startup current)	
Common Communication Interfaces	Main	Baud Rate
	RS232	1200 to 115200
	RS485 full-duplex	
	RS485 half-duplex	
	Auxiliary	
	RS232	1200 to 115200
	Other	
Lonworks	1.25 Mb/s	
Model-Dependent Communication Interfaces	Ethernet DeviceNet Profibus	100 Mb/s up to 500 Kb/s up to 12 Mb/s
Inputs Ext. Trigger 1, Encoder 2 aux. digital inputs	(optocoupled NPN or PNP)	
Outputs 3 software programmable digital outputs	(optocoupled)	
OPTICAL FEATURES		
Light Receiver	Avalanche photodiode	
Wavelength	630 to 680 nm	
Safety Class	Class 2 - EN60825-1; Class II - CDRH	
Laser Control	Security system to turn laser off in case of motor slow down	
READING FEATURES		
Scan rate	600 to 1200 scans/s	
Maximum Resolution Max. Reading Distance Max. Reading Width Max. Depth of Field	(see reading diagrams)	
USER INTERFACE		
LCD Display	2 lines by 16 characters LCD	
Keypad	3 keys	
LED Indicators	Power On (red) Phase On (yellow) TX Data (green)	

SOFTWARE FEATURES		
Readable Codes	Interleaved 2/5 Code 39 Standard Codabar Code 128 EAN 128 Code 93 (standard and full ASCII) EAN/UPC (including Add-on 2 and Add-on 5) GS1 DataBar (including Limited and Expanded)	
Code Selection	Up to 10 codes during one reading phase	
Headers and Terminators	Up to 128-bytes headers and 128-bytes terminators	
Operating Modes	On Line, Serial On Line, Automatic, Test, PackTrack™, Continuous	
Configuration Modes	Genius™ utility program	
Parameter Storage	Non-volatile internal FLASH	
ENVIRONMENTAL FEATURES		
Operating Temperature	0° to +40 °C (+32° to +104 °F)	
Storage Temperature	-20° to +70 °C (-4° to +158 °F)	
Humidity	90% non condensing	
Ambient Light Immunity	3500 lux	
Vibration Resistance EN 60068-2-6 2 hours on each axis	14 mm @ 2 to 10 Hz; 1.5 mm @ 13 to 55 Hz; 2 g @ 70 to 200 Hz	
Shock Resistance EN 60068-2-27 3 shocks on each axis	30 g; 11 ms	
	Ethernet models	Master/Slave models
Protection Class – EN 60529	IP50	IP64
PHYSICAL FEATURES	Standard models	Oscillating Mirror models
Mechanical Dimensions	110x113x99 (4.33x4.45x3.9)	113x180x104.5 (4.45x7.08x4.11)
Weight	1.5 kg (3.3 lb)	2.0 kg (4.4 lb)

MODEL DESCRIPTION



ACCESSORIES

Name	Description	Part Number
Power Supplies		
PG6002	Single unit power supply (US)	93ACC1718
PG6001	Single unit power supply (UK)	93ACC1719
PG6000	Single unit power supply (EU)	93ACC1720
PWR-120	J-box power unit 110/230 VAC 24 V 120 W	93ACC1530
PWR-240	J-box power unit 110/230 VAC 24 V 240 W	93ACC1070
PWR-480A	J-box power unit 110/230 VAC 24 V 480 W	93ACC1850
Cables and Terminators		
BT-6000	Bus terminator	93A051299
CAB-6101	9-pin scanner/scanner connection cable 1 m	93A051220
CAB-6102	9-pin scanner/scanner connection cable 2 m	93A051230
CAB-6105	9-pin scanner/scanner connection cable 5 m	93A051240
CAB-6112	9-pin scanner to scanner no power cable 2 m	93A051224
CAB-6115	9-pin scanner to scanner no power cable 5 m	93A051225
CAB-6305	25-pin power cable Fam 6k 5 m	93ACC1768
CAB-6310	25-pin power cable Fam 6k 10 m	93ACC1752
CAB-S01	STD cable to CBX 1 m (25-pin to 25-pin)	93A051351
CAB-S02	STD cable to CBX 2 m (25-pin to 25-pin)	93A051352
CAB-S05	STD cable to CBX 5 m (25-pin to 25-pin)	93A051353
CAB-S10	STD cable to CBX 10 m (25-pin to 25-pin)	93A051354
CAB-F01	6K-8K FBUS cable to CBX 1 m (26-pin to 25-pin)	93A051355
CAB-F02	6K-8K FBUS cable to CBX 2 m (26-pin to 25-pin)	93A051356
CAB-F05	6K-8K FBUS cable to CBX 5 m (26-pin to 25-pin)	93A051357
CAB-6502	Fam 6K-8K cross cable 2.5 m (9-pin to 17-pin)	93A051288
CAB-6505	Fam 6K-8K cross cable 5 m (9-pin to 17-pin)	93A051289
Software Management		
Datalogic WebSentinel-005	Supervisor (up to 5 arrays)	93A101014
Datalogic WebSentinel-010	Supervisor (up to 10 arrays)	93A101015
Datalogic WebSentinel-020	Supervisor (up to 20 arrays)	93A101016
Datalogic WebSentinel-032	Supervisor (up to 32 arrays)	93A101017
Datalogic WebSentinel-064	Supervisor (up to 64 arrays)	93A101018
Datalogic WebSentinel-128	Supervisor (up to 128 arrays)	93A101019
Datalogic WebSentinel-256	Supervisor (up to 256 arrays)	93A101020
Mirrors		
GFC-60	90° mirror	93A201100
GFC-600	90° mirror close distance	93A201102
* Connection Boxes		
CBX100	Compact Connection Box	93A301067
CBX500	Modular Connection Box	93A301068
CBX800	Gateway Connection Box	93A301077
BM100	Backup Module	93ACC1808
BA100	DIN Rail Adapters for CBX	93ACC1821
BA200	Bosch Adapters for CBX	93ACC1822
BA900	Two Cable Glands Panel	93ACC1847
Sensors		
MEP-593	Photocell kit – PNP (PH-1)	93ACC1791
MEP-543	Photocell kit – NPN	93ACC1728
OEK-2	Optical encoder kit (10 m cable + spring)	93ACC1770
OEK-1	Optical encoder kit + 10 m cable	93ACC1600
Brackets		
FBK-6000	Fast bracket kit (2 pcs)	93ACC1721
US-60	Mounting bracket kit (5 pcs) for multisided stations	890001020

* DS6400 application software does not support any of the CBX500 Host Interface Module accessories nor the BM150 Display accessory. Use the CBX800 Gateway for Host Interface Applications, (Fieldbus and non Fieldbus).

OSCILLATING MIRROR MODEL

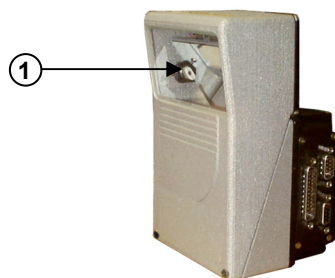


Figure A

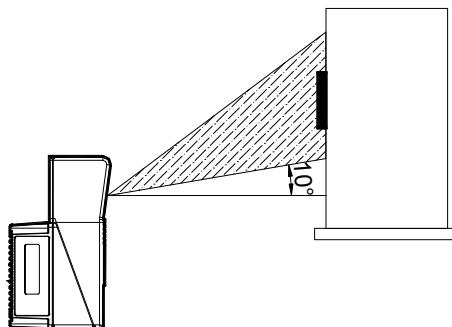
① Laser Beam Output Window

Oscillating mirror models are used when coverage of a large reading area is required, mainly in picket fence applications.

The DS6400 scanner mounts a dedicated optic head with integrated oscillating mirror driven by a linear motor. The speed, precision, repeatability, and reliability of this driving technology assure high level performance.

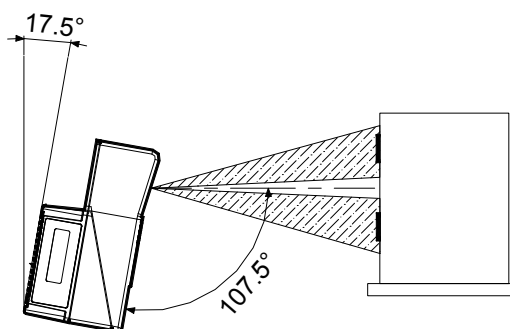
The new oscillating mirror is completely software controlled and software programmable. The Genius™ software tool allows adjusting the linear motor speed (oscillating frequency) and the upper and lower limits of the oscillation by defining the top and bottom line limit angles.

When the oscillating mirror is programmed to read barcode labels at very small angles, position the reader to **assure at least 10°** for the Skew angle (see DS6400 Reference Manual). This angle refers to the most inclined or external laser line, so that all other laser lines assure more than 10° Skew. This avoids the direct reflection of the laser light emitted by the reader.



Oscillating Mirror Skew Angle

Otherwise, the scanner can be mounted at an angle of inclination of 17.5° in order to attain symmetrical deflection ranges.



Oscillating Mirror Reading Position

In the above case, the zone where the scan line is perpendicular to the reflecting surface corresponds to a neutral zone at the center of the reading field.


The mirror can be deflected up to 40°. Oscillation with respect to the output window median axis is asymmetrical (see figure below).



Oscillating Mirror Maximum Aperture and Asymmetry

By configuring the oscillating speed up to the maximum value of 19 Hz, raster emulation can be performed for reading fast moving objects.

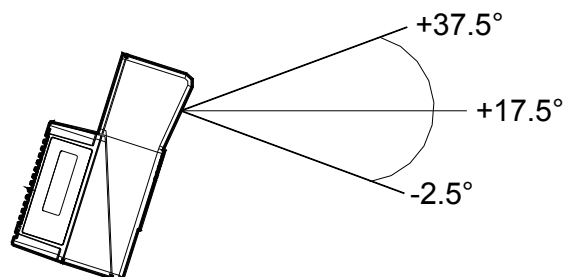
Hz	Max. Aperture
0-5	40°
6-10	30°
11-15	20°
16-19	10°



NOTE *By limiting the raster width to the minimum necessary, the number of scans on the reading surface is increased.*

Oscillating angles are selected in software where the minimum and maximum angles correspond to -2.5° and +37.5°.

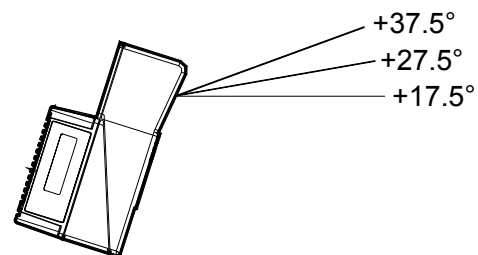
The scanner can be tilted in order for the 17.5° software setting to correspond with the 0° horizontal plane.



Oscillating Mirror Extreme Angle Positions

These models provide higher scanning speed (1200 scans/sec) compared to standard models and the reading performance is not adversely effected by the oscillating mirror.

The example represents the selection of an angle of +10° for the bottom line and an angle of +20° for the top line (see figure beside).



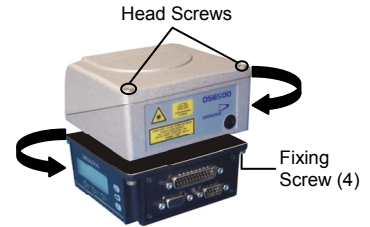
Oscillating Mode

MECHANICAL INSTALLATION

The DS6400 reader can be positioned and installed in the best way possible as a result of the patented Step-A-Head™ feature. Thanks to the separation between Head and Base, you can modify the orientation of the decoder base, and therefore display-keypad and connector panels, while keeping the optic head in the correct reading position. The reading head and the decoder base can be rotated independently from each other allowing the installation even in the most critical locations.

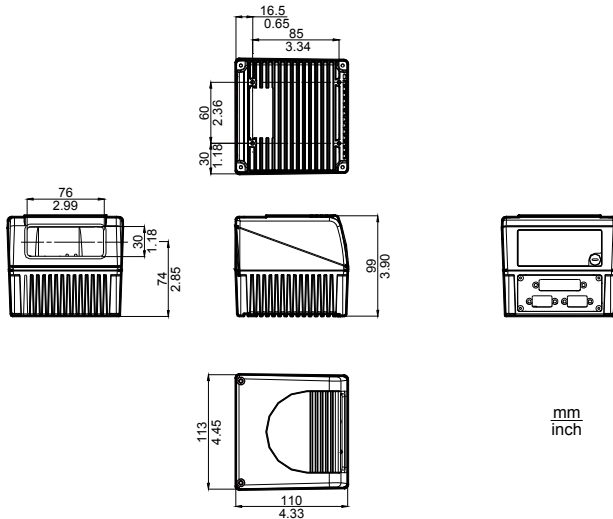
To rotate the head follow the given procedure:

1. detach the head from the base by unscrewing the four fixing screws;
2. rotate the head in the desired position;
3. loosen but don't remove the two screws on top of the head;
4. affix the head onto the base carefully aligning the four fixing screws and progressively tightening them about half-way;
5. completely tighten the two screws on top of the head;
6. completely tighten the four fixing screws.

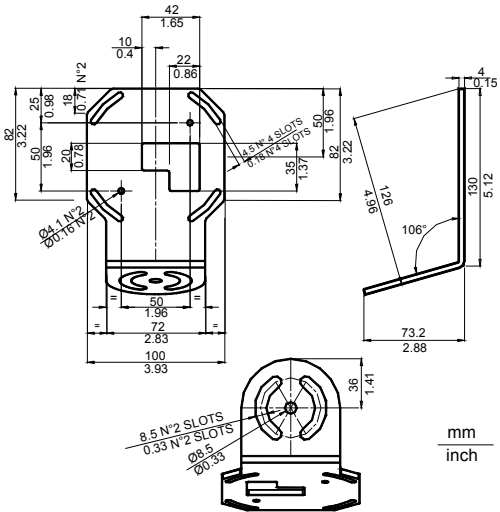


Step-A-Head™ Feature

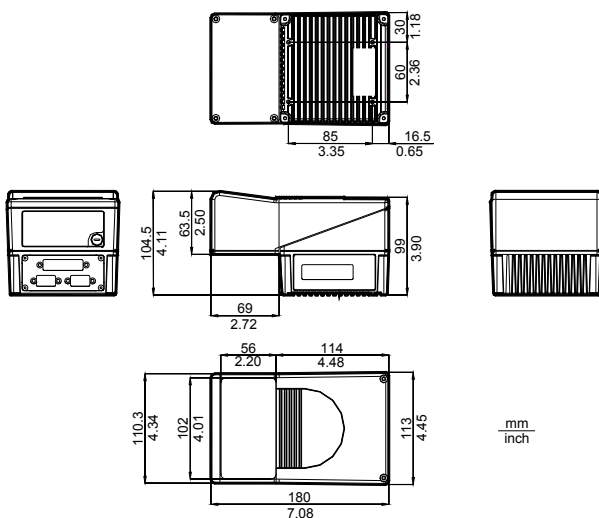
The following diagrams give the overall dimensions of the reader standard model, oscillating mirror model and mounting bracket. They may be used for their installation:



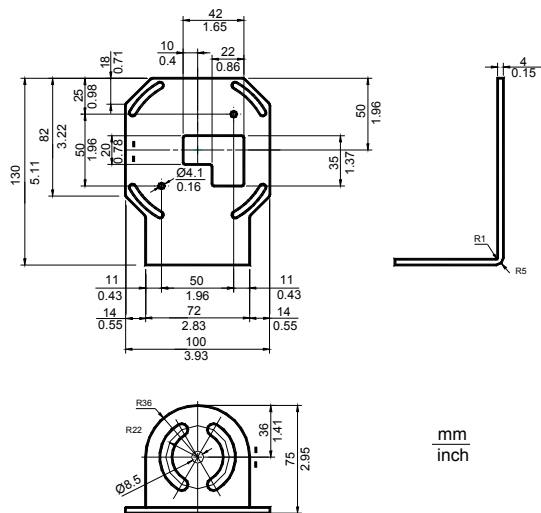
DS6400 Overall Dimensions



ST-237 Mounting Bracket Overall Dimensions



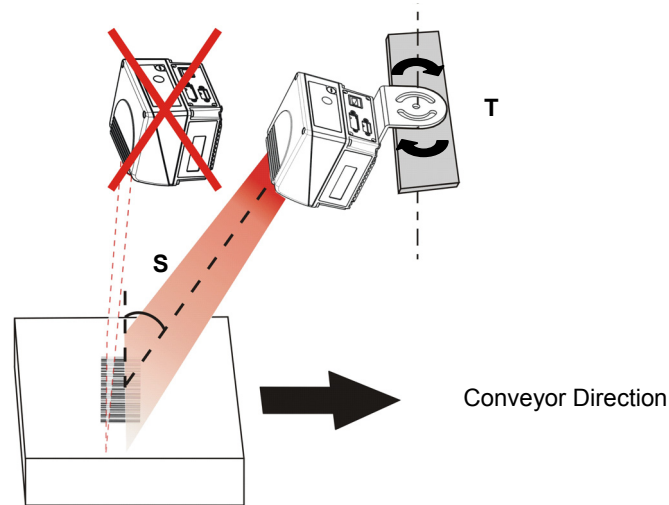
DS6400 Oscillating Mirror Model Overall Dimensions



ST-210 Mounting Bracket Overall Dimensions

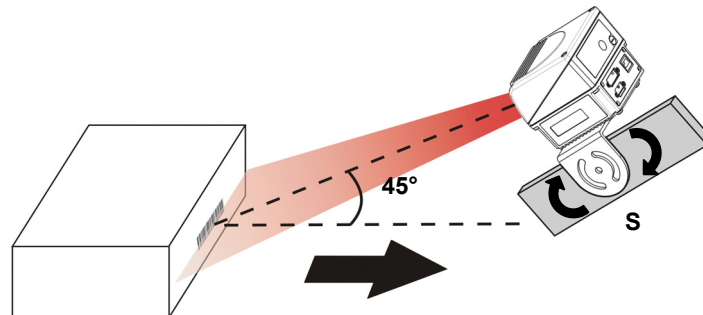
16° Skew Positioning

The DS6400 scanner is mounted on the ST-237 106° mounting bracket which guarantees a built-in Skew angle (**S** in the figure below) of 16° with respect to the frame plane (typically the Skew angle should be between 10° - 20°). This avoids the direct reflection of the laser light emitted by the scanner. Furthermore, the bracket guides allow adjusting the Tilt angle (**T** in the figure below, which is typically 0°) for the best scanner orientation:



45° Skew Positioning

The DS6400 scanner is mounted on the ST-210 90° mounting bracket. By adjusting the mounting bracket guides, reach 45° for the Skew angle (**S** in the figure below) to avoid the direct reflection of the laser light emitted by the scanner:



CAUTION

If using the 45° Skew installation, the scanner reading performance is not guaranteed to match that measured for the standard installation with Skew angle between 10° - 20° (see reading diagrams).



NOTE

The ST-210 mounting bracket is an accessory of the DS6400 standard model available in the US-60 kit (890001020).



WARNING

When installing several scanners, take care to position them correctly so that no laser beam enters the reading window perpendicularly and at the same level of the output beam of the other scanners. This condition could occur more frequently for side mounted applications. If these precautions are not followed, it may occur that the laser of the blinded scanner starts blinking due to an internal circuit which temporarily turns the laser off when detecting a power anomaly. To resolve this problem, it is sufficient to slightly change the inclination and position of one of the two scanners involved.

FLASH™ Dynamic Focus:

The DS6400 has an innovative linear motor designed to control the focus position of the scanner via software. This dynamic system, called FLASH™, is able to move the focus position rail to rail, from the minimum position to the maximum position.

The FLASH™ functionalities (i.e. the driving modes of the linear motor) are programmed via the Genius™ software tool and can operate in the following modes:

- Fixed mode: the focus is set to the desired position via software (expressed in cm);
- Continuous mode: the focus position is continuously running from a minimum position to a maximum position with a defined frequency;
- Triggered mode: the focus position can be set depending on the received external input (photocell, barrier, serial message, etc.);
- D-Flash™ mode: the focus position can be set depending on the measured distance between the scanner and the scanned object. This is the most innovative and flexible function that makes different software implementations possible. The D-Flash™ development has been based on the minimum distance detected. Thus, it can apply to the widest variety of applications. Further developments of D-Flash™ will be provided according to the specific application needs.

READING CONDITIONS

- ANSI Grade B minimum
- 800 scans/sec

The following tables describe the requirements for standard applications.

Conveyor Speed (m/s)		Minimum Code Height for ACR Reading (mm)											
		45°						30°					
		0.5	1	1.5	2	2.5	3	0.5	1	1.5	2	2.5	3
2/5 Interleaved Code Resolution (mm)	0.25	10	12	14	16	18	20	7	9	10	12	13	15
	0.30	12	14	15	17	19	21	8	9	11	12	14	15
	0.33	13	14	16	18	20	22	8	10	11	13	14	16
	0.38	14	16	18	19	21	23	9	11	12	14	15	17
	0.50	18	19	21	23	25	26	11	12	14	15	17	18
	0.72	24	25	27	28	30	32	15	16	17	19	20	22
	1.00	33	34	35	36	38	40	20	21	22	23	25	26

Ratio 3:1

Table 1

Conveyor Speed (m/s)		Minimum Code Height for ACR Reading (mm)											
		45°						30°					
		0.5	1	1.5	2	2.5	3	0.5	1	1.5	2	2.5	3
Code 39 Code Resolution (mm)	0.25	9	10	12	14	16	17	6	7	9	10	12	13
	0.30	10	11	13	15	17	18	7	8	9	11	12	14
	0.33	11	12	13	15	17	19	7	8	10	11	13	14
	0.38	12	13	14	16	18	20	8	9	10	12	13	15
	0.50	15	16	17	18	20	22	10	10	11	13	14	16
	0.72	20	21	22	23	24	26	13	13	14	15	17	18
	1.00	27	28	29	30	31	32	17	17	18	19	20	21

Ratio 3:1; Interdigit = Module Size

Table 2

		Minimum Code Height for ACR Reading (mm)											
		45°						30°					
		0.5	1	1.5	2	2.5	3	0.5	1	1.5	2	2.5	3
Conveyor Speed (m/s)													
Code 128 – Ean 128 Code Resolution (mm)	0.25	8	9	11	13	15	17	5	7	8	10	11	13
	0.30	8	10	12	14	16	18	6	7	9	10	12	13
	0.33	9	11	13	14	16	18	6	8	9	11	12	14
	0.38	10	11	13	15	17	19	7	8	10	11	13	14
	0.50	12	13	15	17	19	21	8	9	11	12	14	15
	0.72	16	17	19	21	22	24	10	11	13	14	16	17
	1.00	22	23	24	25	27	29	13	14	15	17	18	20

Table 3

		Minimum Code Height for ACR Reading (mm)											
		45°						30°					
		0.5	1	1.5	2	2.5	3	0.5	1	1.5	2	2.5	3
Conveyor Speed (m/s)													
Codabar Code Resolution (mm)	0.25	8	9	11	13	15	17	5	7	8	10	11	13
	0.30	9	10	12	14	16	18	6	7	9	10	12	13
	0.33	9	11	13	14	16	18	6	8	9	11	12	14
	0.38	10	11	13	15	17	19	7	8	10	11	13	14
	0.50	13	14	15	17	19	21	8	9	11	12	14	15
	0.72	17	18	19	21	22	24	11	12	13	14	16	17
	1.00	23	24	25	26	27	29	14	15	16	17	18	20

Ratio 3:1; Interdigit = Module Size

Table 4

		Minimum Code Height for ACR Reading (mm)											
		45°						30°					
		0.5	1	1.5	2	2.5	3	0.5	1	1.5	2	2.5	3
Conveyor Speed (m/s)													
EAN 8-13, UPC-A Code Resolution (mm)	0.25	7	9	10	12	14	16	5	6	8	9	11	12
	0.30	8	9	11	13	15	17	6	7	8	10	11	13
	0.33	9	10	11	13	15	17	6	7	9	10	12	13
	0.38	10	11	12	14	16	18	7	7	9	10	12	13
	0.50	12	13	14	15	17	19	8	9	10	11	13	14
	0.72	16	17	18	19	20	22	10	11	12	13	14	16
	1.00	22	23	24	24	25	26	13	14	15	16	16	18

Table 5

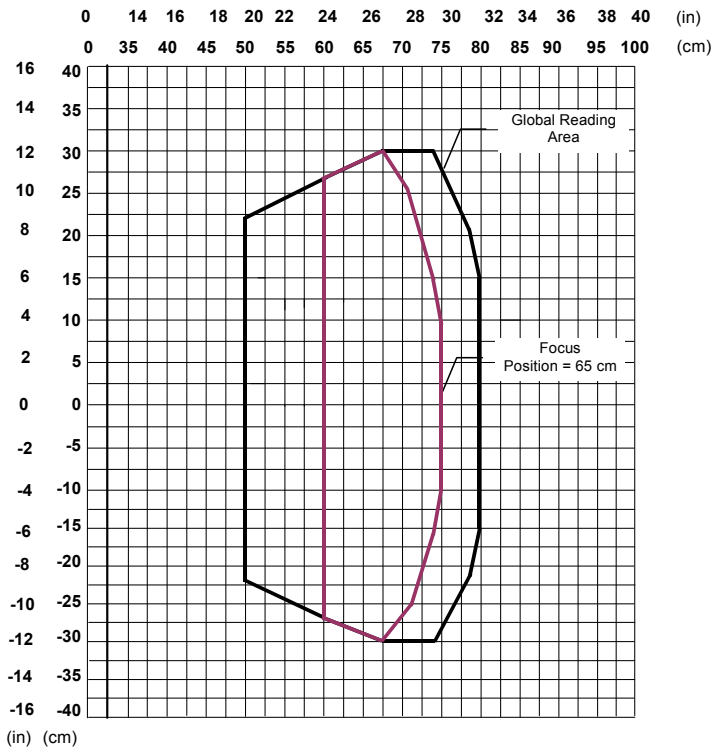
READING DIAGRAMMS

In the following reading diagrams (0,0) is the center of the laser beam output window.

DS6400-100-0XX – Resolution: 0.20 mm/8 mils

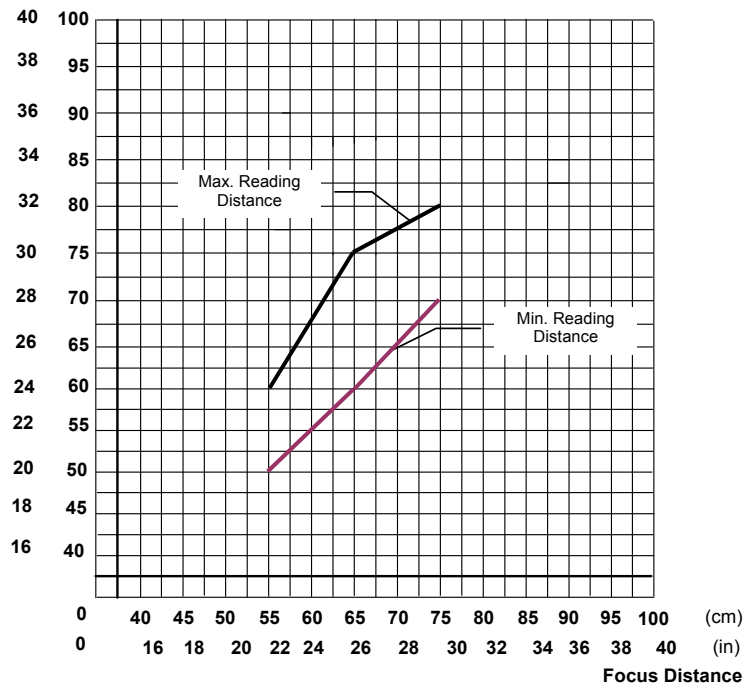
CONDITIONS

- Code = Interleaved 2/5 or Code 39
- PCS = 0.90
- Pitch angle = 0°
- Skew angle = 10° - 20°
- Tilt angle = 0°



Reading distance

(in) (cm)

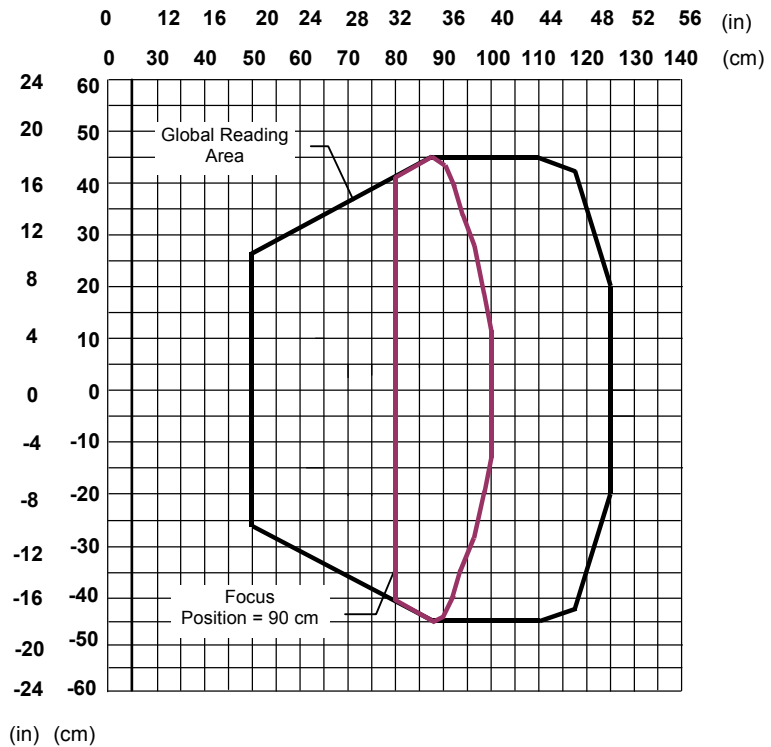


READING DIAGRAMS

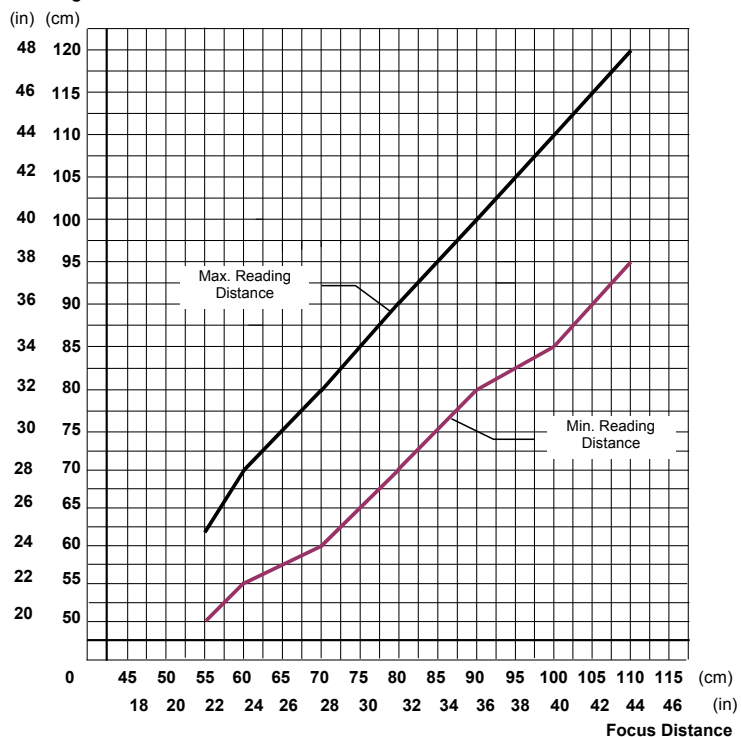
DS6400-100-0XX – Resolution: 0.25 mm/10 mils

CONDITIONS

- Code = Interleaved 2/5 or Code 39
- PCS = 0.90
- Pitch angle = 0°
- Skew angle = 10° - 20°
- Tilt angle = 0°



Reading distance

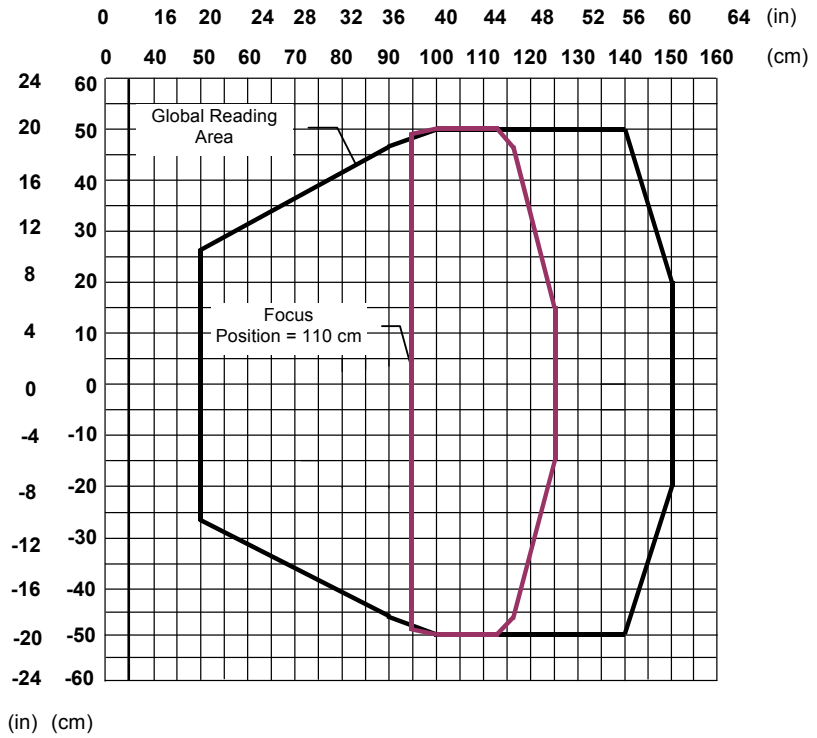


READING DIAGRAMMS

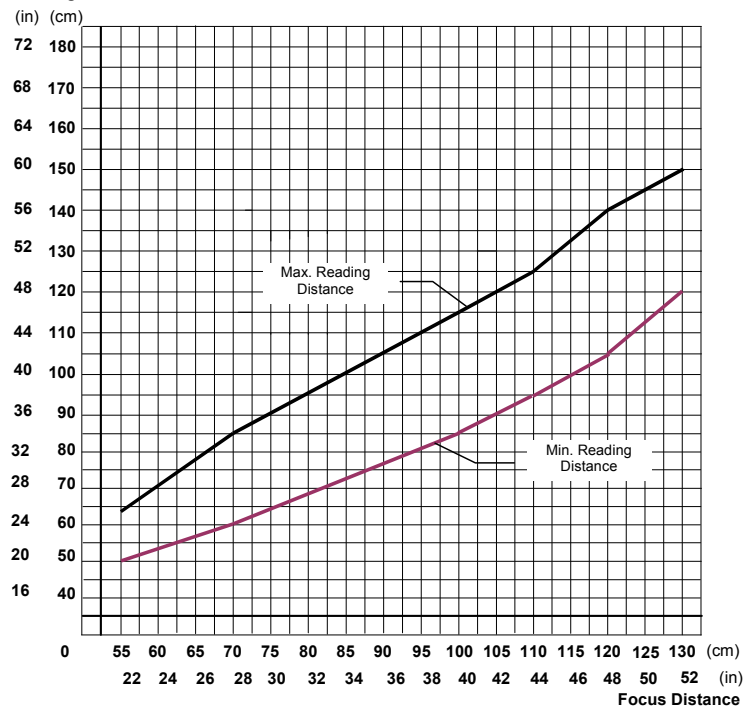
DS6400-100-0XX – Resolution: 0.30 mm/12 mils

CONDITIONS

- Code = Interleaved 2/5 or Code 39
- PCS = 0.90
- Pitch angle = 0°
- Skew angle = 10° - 20°
- Tilt angle = 0°



Reading distance



READING DIAGRAMS

DS6400-100-0XX – Resolution: 0.38 mm/15 mils

CONDITIONS

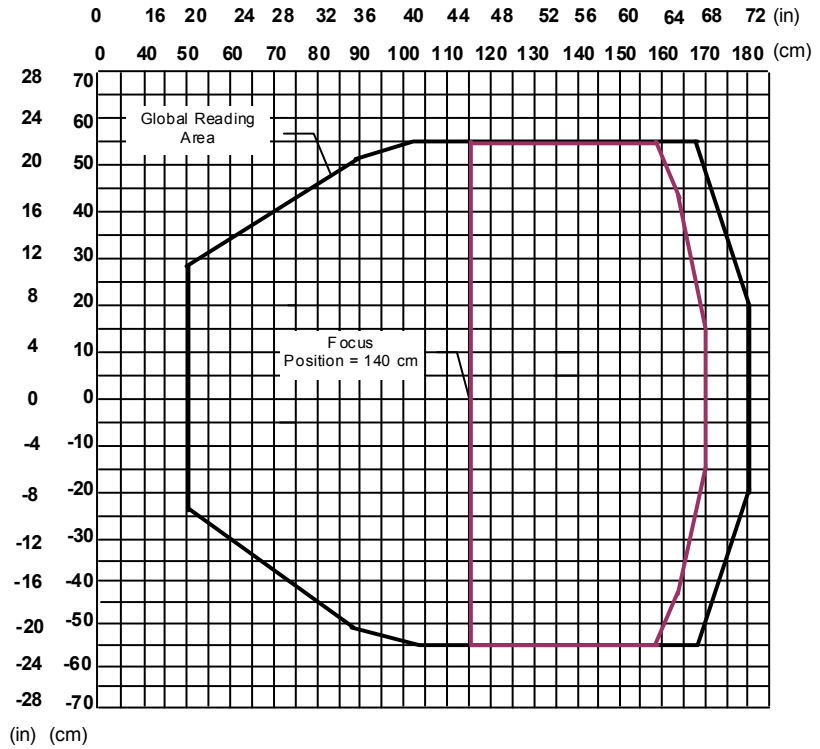
Code = Interleaved 2/5 or Code 39

PCS = 0.90

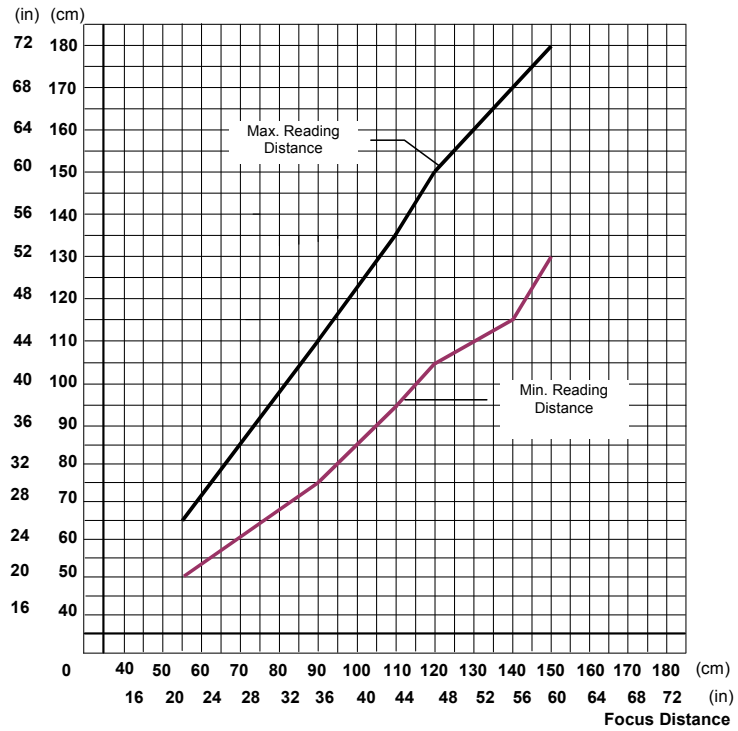
Pitch angle = 0°

Skew angle = 10° - 20°

Tilt angle = 0°



Reading distance

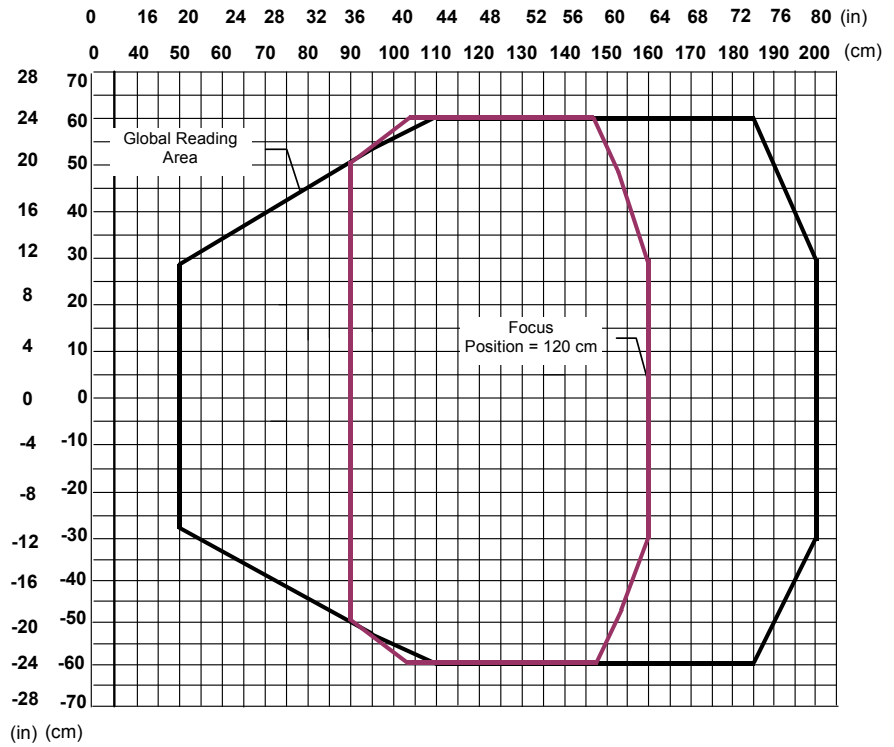


READING DIAGRAMS

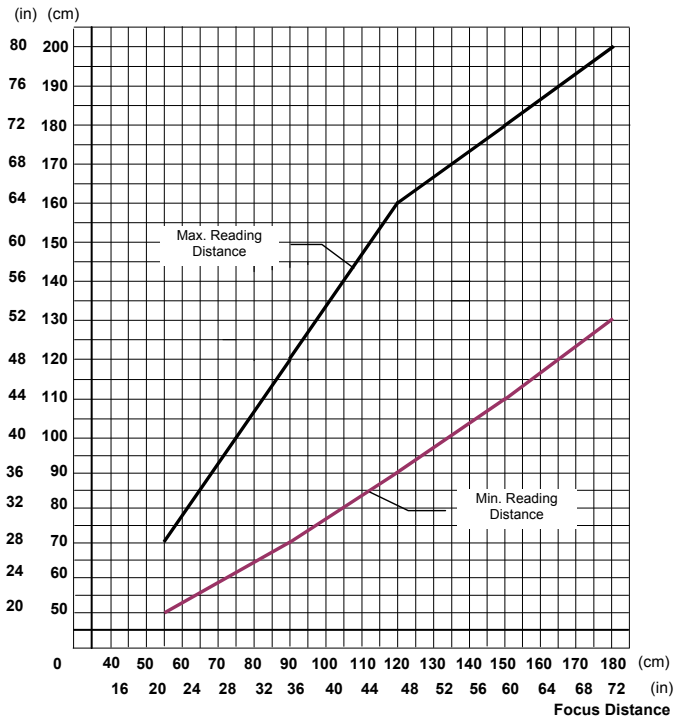
DS6400-100-0XX – Resolution: 0.50 mm/20 mils

CONDITIONS

- Code = Interleaved 2/5 or Code 39
- PCS = 0.90
- Pitch angle = 0°
- Skew angle = 10° - 20°
- Tilt angle = 0°



Reading distance

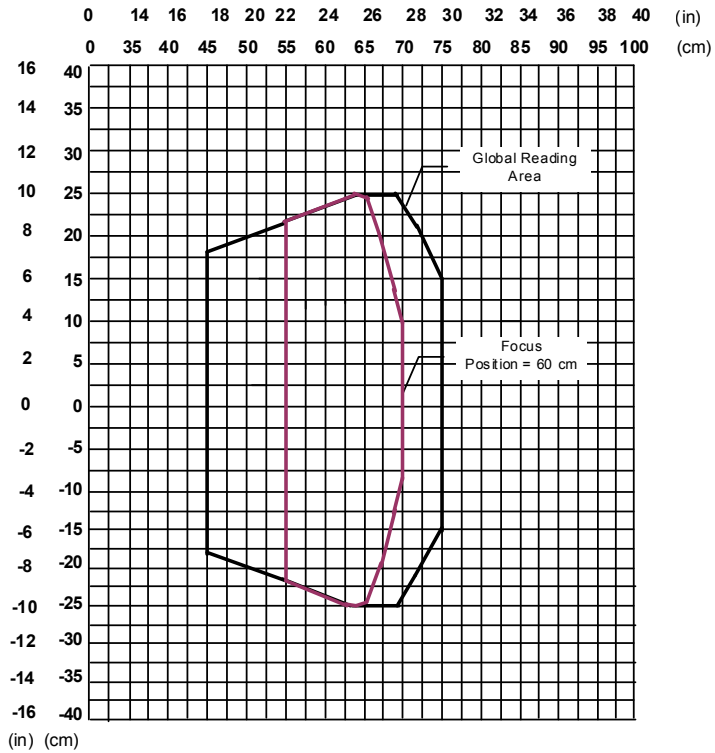


READING DIAGRAMS

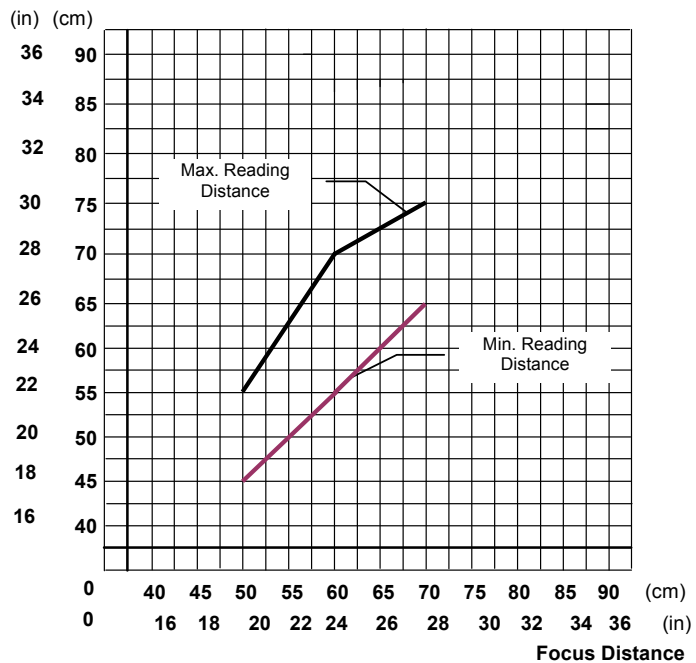
DS6400-105-0XX (Oscillating Mirror) – Resolution: 0.20 mm/8 mils

CONDITIONS

- Code = Interleaved 2/5 or Code 39
- PCS = 0.90
- Pitch angle = 0°
- Skew angle = 10° - 20°
- Tilt angle = 0°



Reading distance

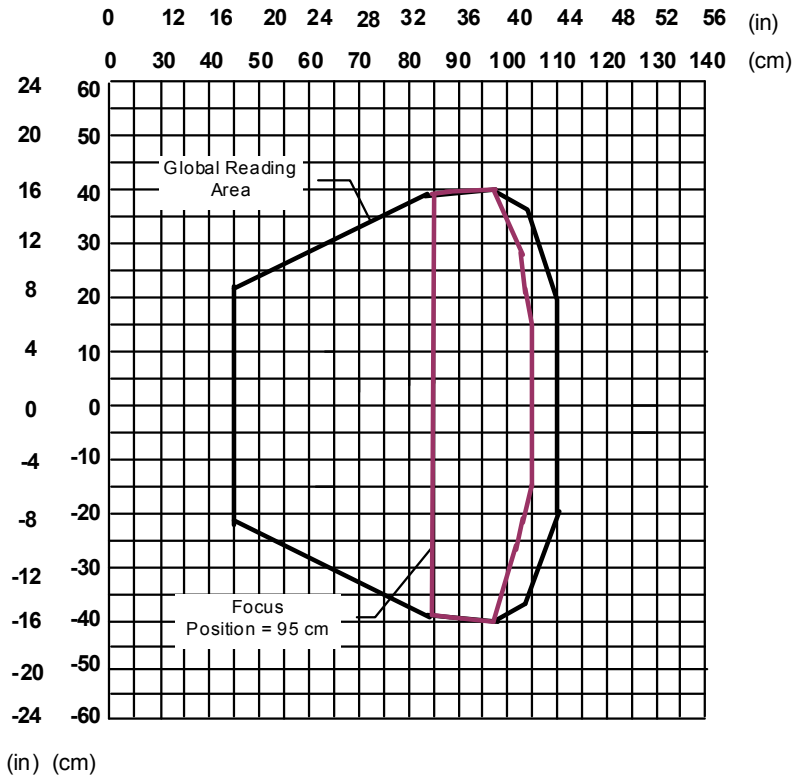


READING DIAGRAMS

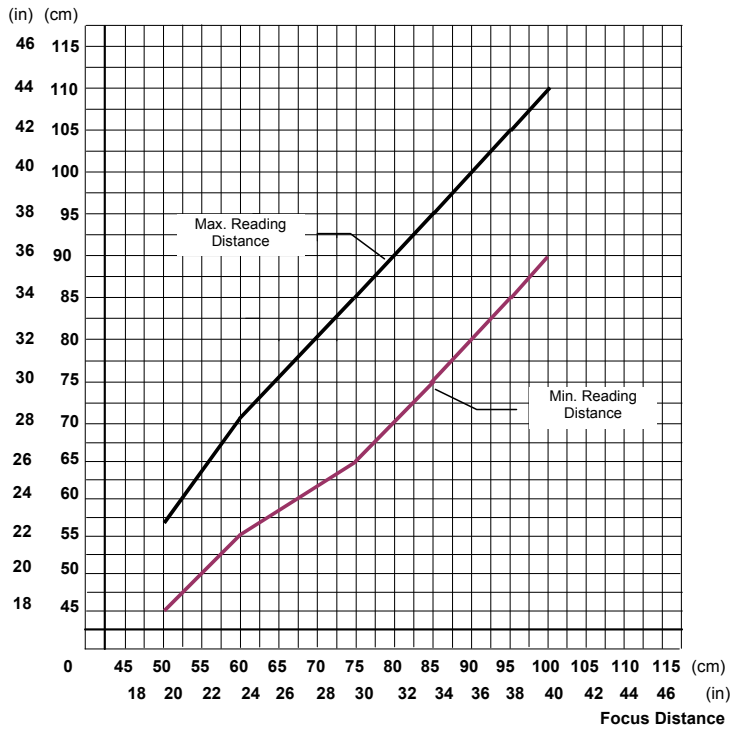
DS6400-105-0XX (Oscillating Mirror) – Resolution: 0.25 mm/10 mils

CONDITIONS

- Code = Interleaved 2/5 or Code 39
- PCS = 0.90
- Pitch angle = 0°
- Skew angle = 10° - 20°
- Tilt angle = 0°



Reading distance

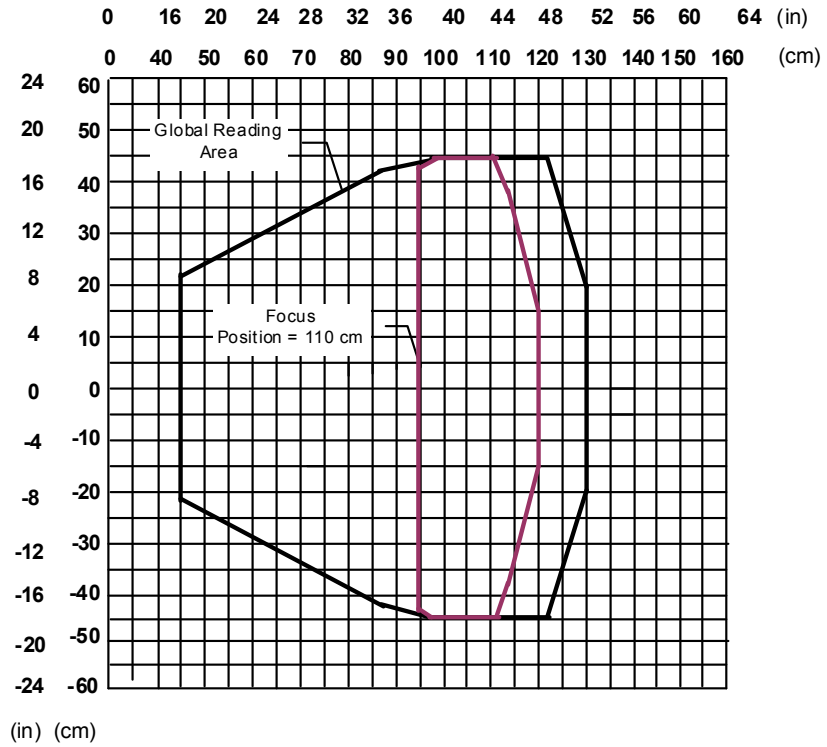


READING DIAGRAMS

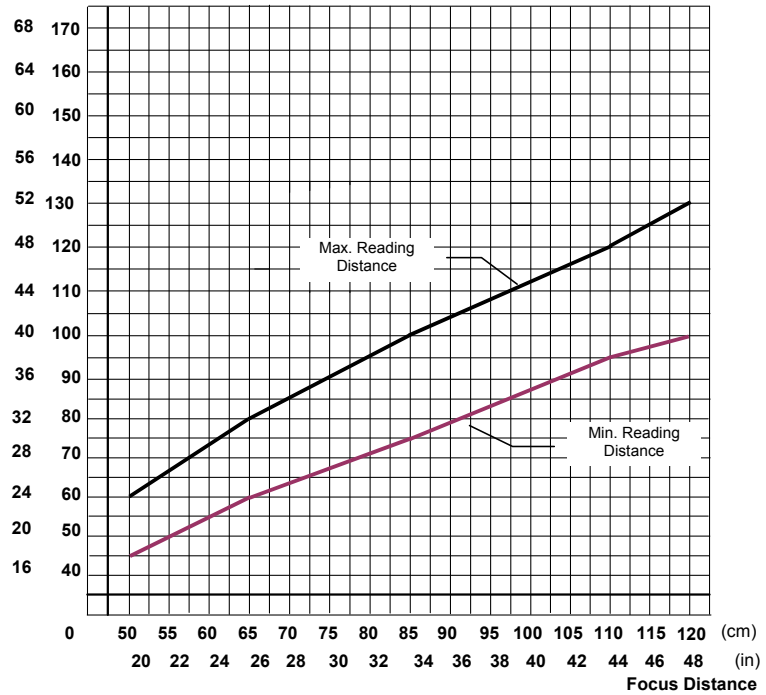
DS6400-105-0XX (Oscillating Mirror) – Resolution: 0.30 mm/12 mils

CONDITIONS

- Code = Interleaved 2/5 or Code 39
- PCS = 0.90
- Pitch angle = 0°
- Skew angle = 10° - 20°
- Tilt angle = 0°



Reading distance
(in) (cm)

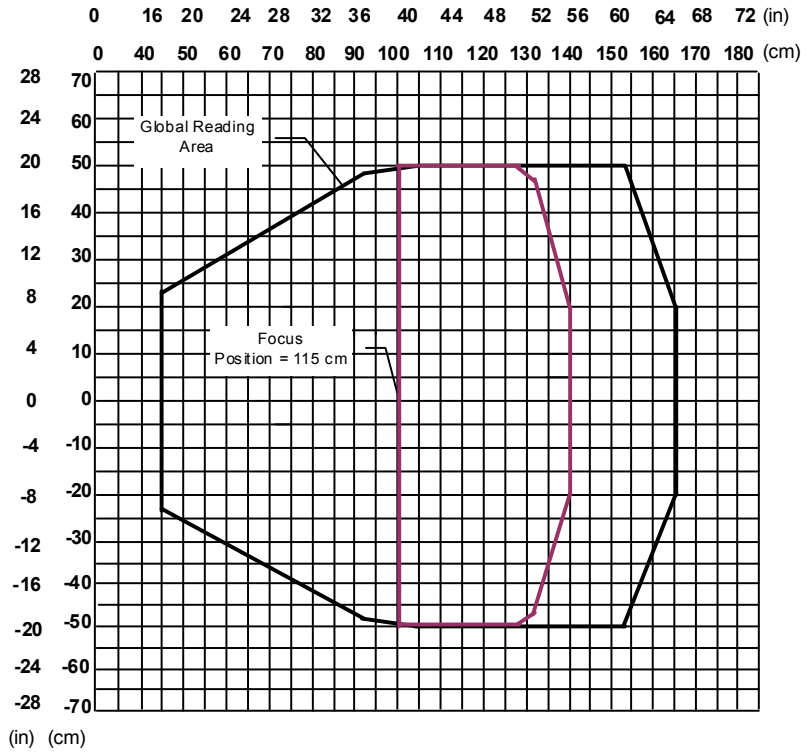


READING DIAGRAMS

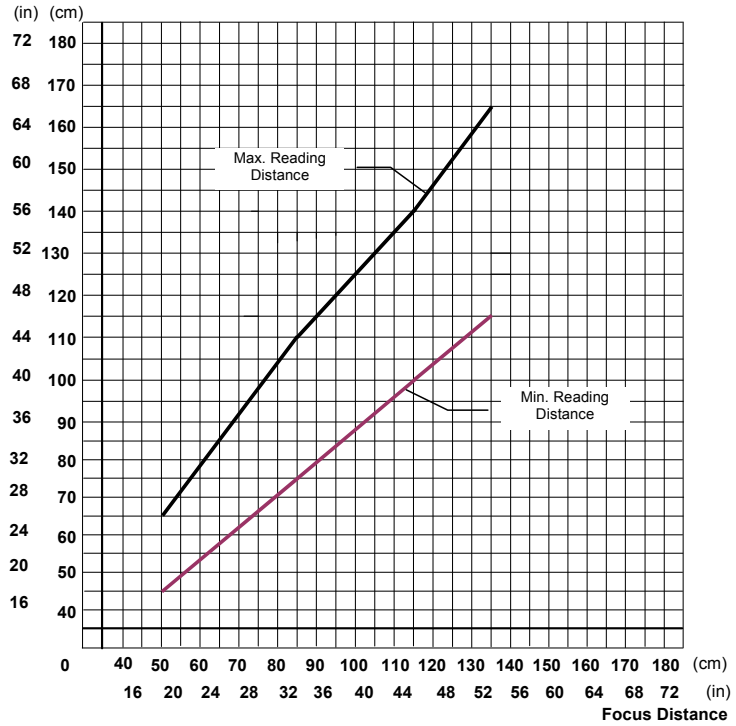
DS6400-105-0XX (Oscillating Mirror) – Resolution: 0.38 mm/15 mils

CONDITIONS

- Code = Interleaved 2/5 or Code 39
- PCS = 0.90
- Pitch angle = 0°
- Skew angle = 10° - 20°
- Tilt angle = 0°



Reading distance

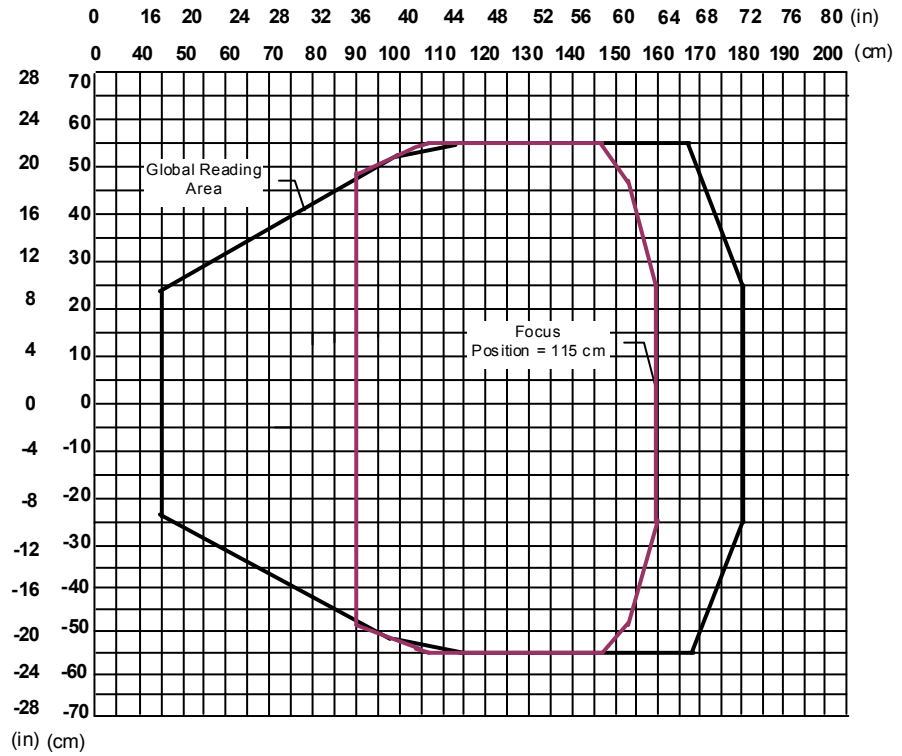


READING DIAGRAMS

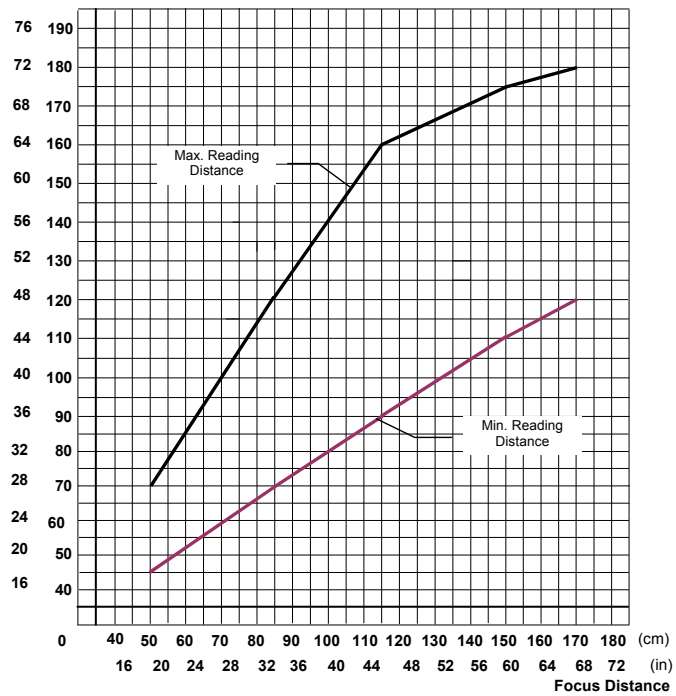
DS6400-105-0XX (Oscillating Mirror) – Resolution: 0.50 mm/20 mils

CONDITIONS

- Code = Interleaved 2/5 or Code 39
- PCS = 0.90
- Pitch angle = 0°
- Skew angle = 10° - 20°
- Tilt angle = 0°



Reading distance
(in) (cm)



COMPLIANCE

See the DS6400 Reference Manual for the Declaration of Conformity.

LASER SAFETY



Figure A

① Laser Beam Output Window ② Laser Safety Label

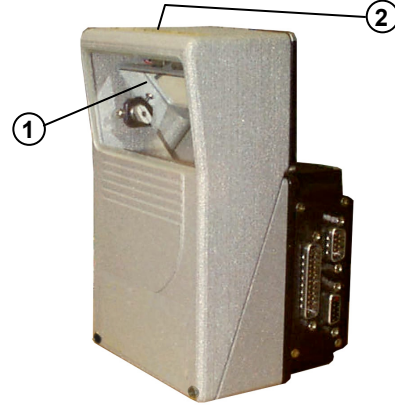


Figure B

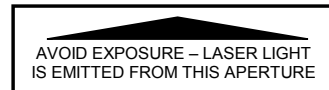
① Laser Beam Output Window ② Laser Safety Label

The scanner is classified as a Class 2 laser product according to EN 60825-1 regulations and as a Class II laser product according to CDRH regulations.

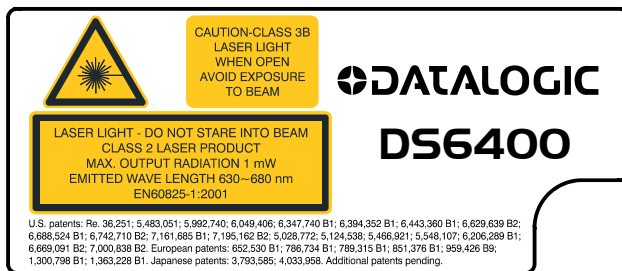
Disconnect the power supply when opening the device during maintenance or installation to avoid exposure to hazardous laser light.

There is a safety device which allows the laser to be switched on only if the motor is rotating above the threshold for its correct scanning speed.

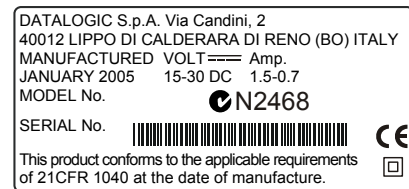
The laser beam can be switched off through a software command (see also the Genius™ Help On-Line).



Laser Safety Label for Oscillating Mirror and Standard Models



Warning and Device Class Label



Device Identification Label

The laser diode used in this device is classified as a Class 3B laser product according to EN 60825-1 regulations and as a Class IIIb laser product according to CDRH regulations. Any violation of the optic parts in particular can cause radiation up to the maximum level of the laser diode (35 mW at 630 ~ 680 nm).

POWER SUPPLY

This product is intended to be installed by Qualified Personnel only.

- **All DS6400 Models:**

This device is intended to be supplied by a UL Listed Power Unit marked "Class 2" or LPS power source which supplies power directly to the scanner via the 25/26-pin connector.

CE COMPLIANCE

Warning:

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC COMPLIANCE

Modifications or changes to this equipment without the expressed written approval of Datalogic could void the authority to use the equipment.

This device complies with PART 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference which may cause undesired operation.

This equipment has been tested and found to comply with the 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.

PATENTS

This product is covered by one or more of the following patents.

U.S. patents: Re. 36,251; 5,483,051; 5,992,740; 6,049,406; 6,347,740 B1; 6,394,352 B1; 6,443,360 B1; 6,629,639 B2; 6,688,524 B1; 6,742,710 B2; 7,161,685 B1; 7,195,162 B2; 5,028,772; 5,124,538; 5,466,921; 5,548,107; 6,206,289 B1; 6,669,091 B2; 7,000,838 B2.

European patents: 652,530 B1; 786,734 B1; 789,315 B1; 851,376 B1; 959,426 B9; 1,096,416 B1; 1,300,798 B1; 1,217,571 B1; 1,363,228 B1; 1,607,901 B1.

Japanese patents: 3,793,585; 4,033,958; 4,129,302; 4,376,353.

Additional patents pending.