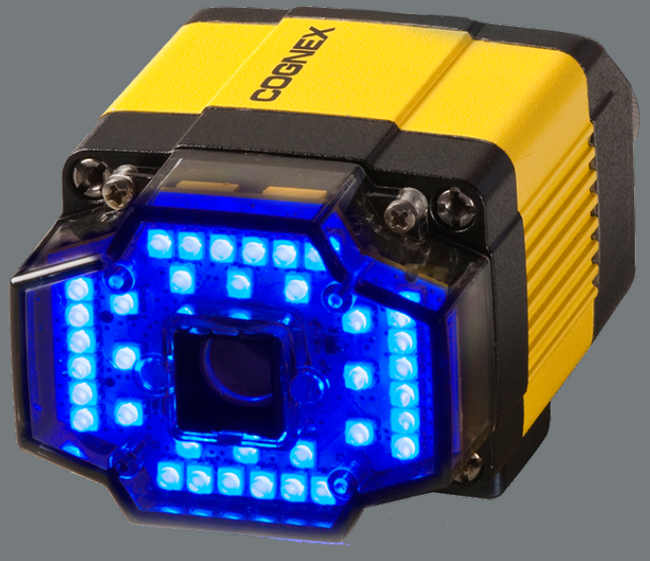
COGNEX

DataMan® 300 Series

Quick Reference Guide



04/26/2017

Version: 5.7.0.361

Precautions

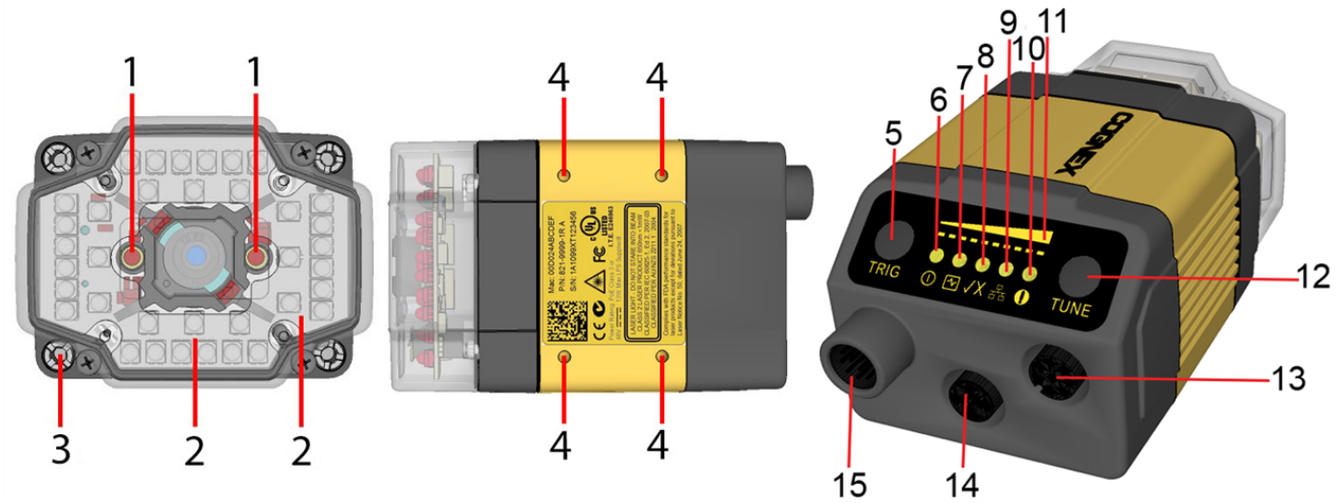
WARNING: LASER LIGHT, DO NOT STARE INTO BEAM: CLASS 2 LASER PRODUCT FAILURE TO FOLLOW THESE INSTRUCTIONS MAY CAUSE SERIOUS INJURY

- CAUTION - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- Do not attempt to service or repair this product -- return it to Cognex for service.
- Do not permit anyone other than Cognex Corporation to service, repair, or adjust this product.
- Do not attempt to open or modify this device except as described in this document.
- Do not direct or reflect laser light toward people or reflective objects.
- Do not operate this device if it is damaged or if the covers or seals are missing or damaged.
- IP protection is ensured only when all connectors are attached to cables or shielded by a sealing cap.

This Laser Product is designated as Class 2 during all procedures of operation.

Wavelength	650 nm
Laser Power for classification	< 1mW
Beam Diameter	< 3mm at aperture
Divergence	< 1.5 mrad

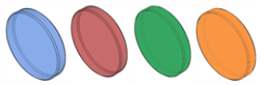
Product Overview



1	Laser aimer
2	Illumination LED clusters
3	External illumination mounting point
4	Mounting holes (M3 x 5mm)
5	Trigger button
6	Power
7	Train status
8	Read/no-read indicator
9	Network
10	Error
11	Peak meter
12	Tuning button
13	Ethernet
14	External light control
15	Power, I/O, and RS232

DataMan 300 Accessories

LENS OPTIONS AND COVERS

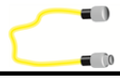
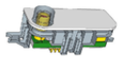
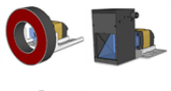
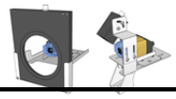
10.3 mm M12 lens with locking (DM300-LENS-10) and 10.3 mm IR M12 lens with locking (DM300-LENS-10-IR)	
Liquid lens module and pre-focused 10.3 mm or 10.3 mm IR M12 lens with wrench (DM300-LENS-10LL), (DM300-LENS-10LL-IR)	
19 mm liquid lens module (DM300-LENS-19LL)	
16 mm M12 lens with locking (DM300-LENS-16)	
24 mm liquid lens module (DM360-LENS-24LL)	
25 mm M12 lens with lens spacer and hex wrench (DM300-LENS-25) (also requires Extension kit)	
Extension kit (DM300-EXT)	
DM500 C-Mount cover (DM500-CMTLC-000) (use with HPIA)	
DM500 Lens cover extender (DM500-LNSEXT-000)	
Blue (CKR-BP470), red (CKR-BP635), green (CKR-BP525), orange (CKR-BP590) bandpass filters	
Clear lens cover (DM300-CLCOV)	
Clear lens cover with white LED illumination (DM300-CLCOV-WHI)	
Diffuse lens cover with red LED illumination (DM300-DLCOV-RE), with blue LED illumination (DM300-DLCOV-BL), with IR LED illumination (DM300-DLCOV-IR), Polarizer lens cover with red LED illumination (DM300-PLCOV-RE)	

Diffuse lens cover, red illumination (assembled), ESD safe (DM300-DLCOV-RE-ESD)	
Red LED high-powered integrated light (DM360-HPIL-RE), Polarized red LED high-powered integrated light, ESD safe (DM360-HPIL-RE-P)	
C-Mount cover for C-Mount lenses (DM300-CMCOV)	
Short C-Mount cover for C-Mount lenses (DM300-CMCOV-SH)	

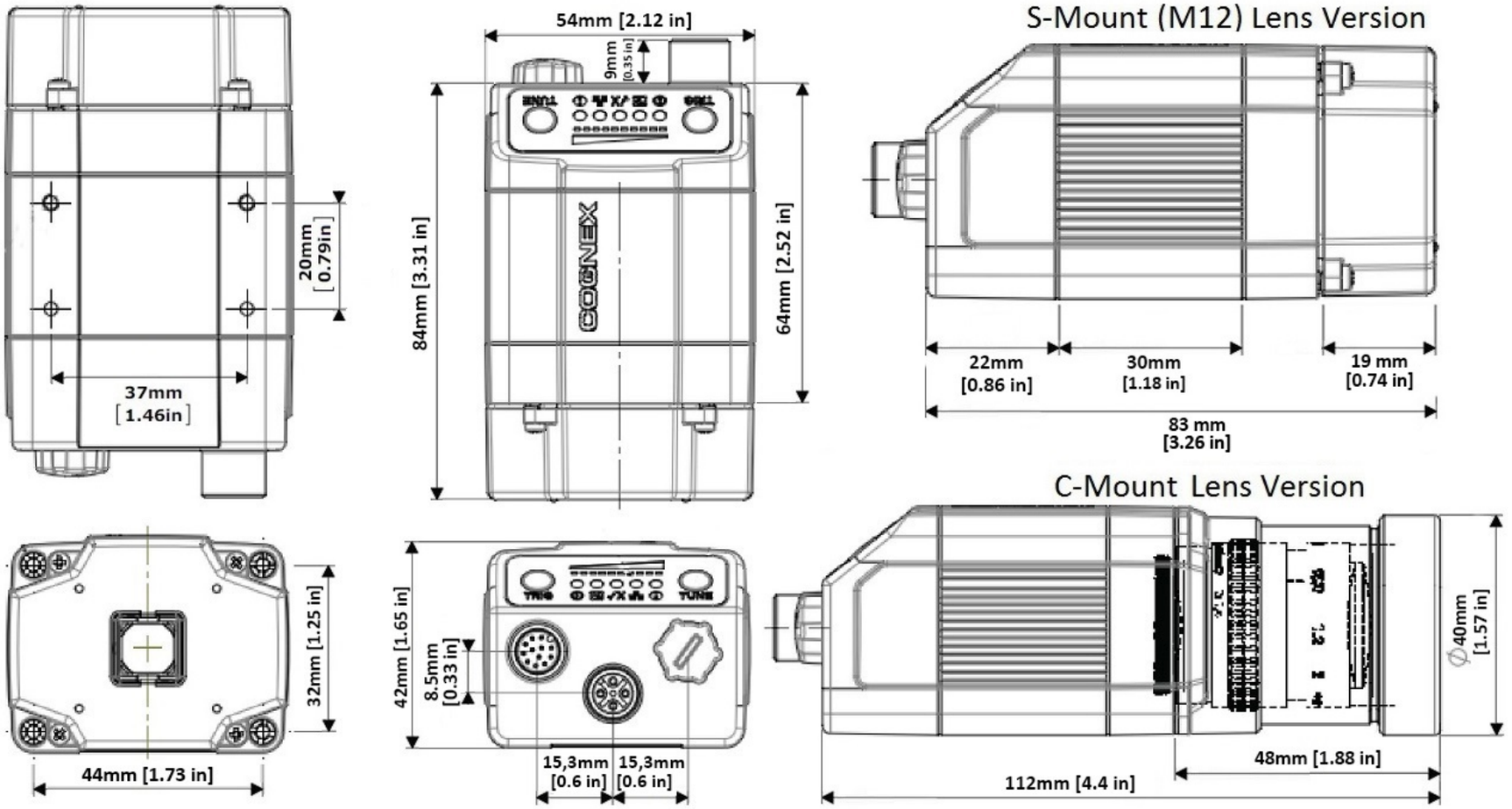
EXTERNAL LIGHTS (RED LED) AND HIGH POWER ILLUMINATIONS

Ring Light (CLRR-R7030G1CLR)	
Back light (CLRB-F100100G1)	
Coaxial (DOAL) light (CLRO-K5050G1)	
Spot light (CLRS-P14G1)	
Dark-field light (CLRD-D120G1)	
Red narrow (DM30X-HPIA-625) or wide (DM30X-HPIA-625-W)	
White narrow (DM30X-HPIA-WHI) or wide (DM30X-HPIA-WHI-W)	
Blue narrow (DM30X-HPIA-470) or wide (DM30X-HPIA-470-W)	
Infrared narrow (DM30X-HPIA-IR) or wide (DM30X-HPIA-IR-W)	

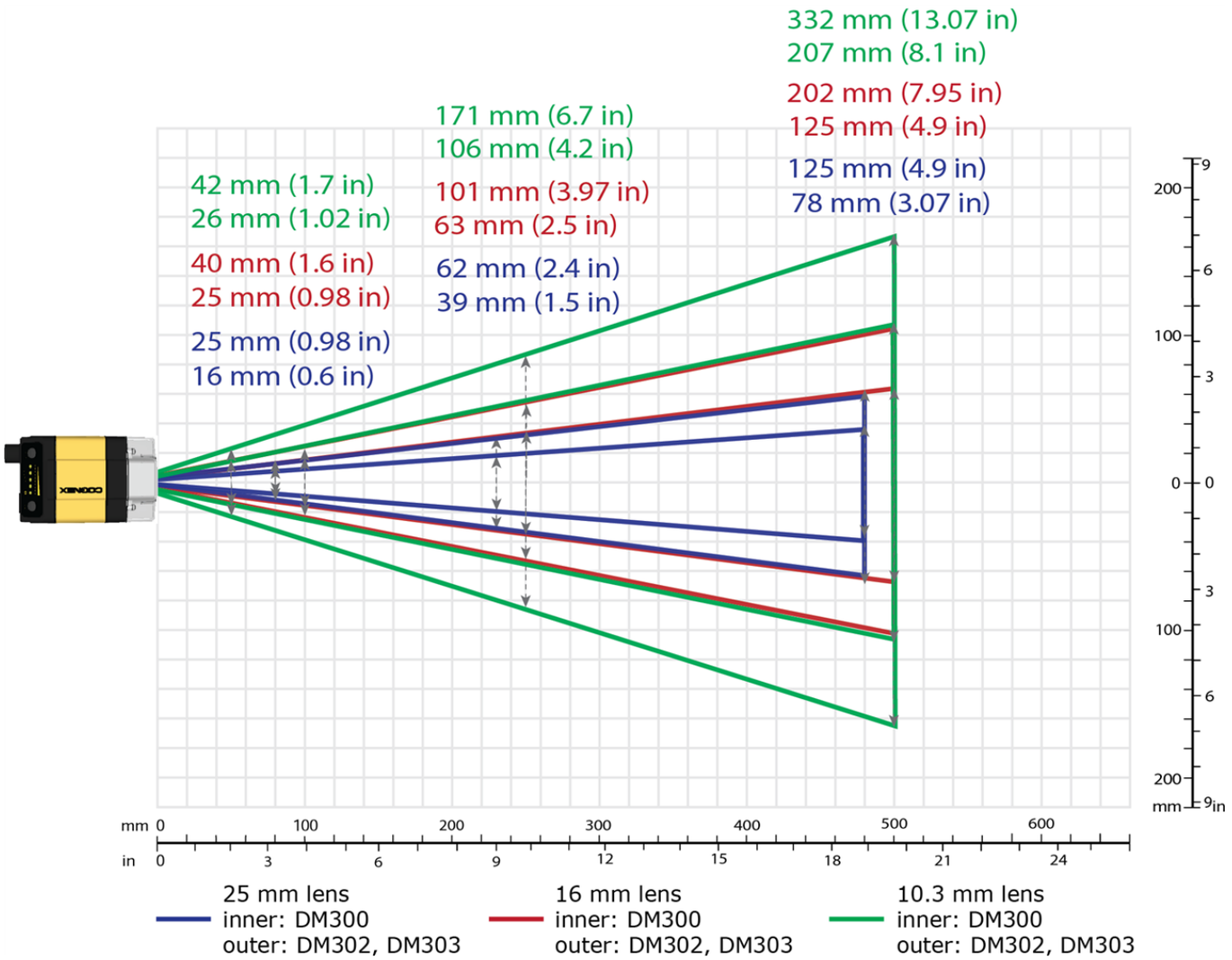
OTHER

Connection cable 24V, I/O, RS-232 (CCB-M12x12Fy-xx) (y straight/angled, xx specifies length), and (CCBL-05-01)	
Power and I/O breakout cable, M12-12 (CCB-PWRIO- xx) (straight, xx specifies length: 5m, 10m, 15m), (CCB-PWRIO-xxR) (angled, xx specifies length: 5m, 10m, 15m)	
Connection cable RS-232 (CCB-M12xDB9Y-05)	
Ethernet M12 to RJ45 cable (CCB-84901-y00x-xx) (y straight/angled, x-xx specifies length)	
External light cable (CCB-M12x4MS-xxx) (xxx specifies length)	
I/O extension cable, 5m straight (CKR-200-CBL-EXT)	
Laser aimer (DM300-AIMER-00) (use with HPIA)	
24V power supply (ACC-24I) or (PS-KIT-1)	 
External light mounting brackets (DM300-ELMB-xx) (xx specifies light type) (may get used in combination with DM500-BRKT-000 if pivoting is required)	 
Universal Mounting Bracket (DM100-UBRK-000)	
Pivot Mounting Bracket (DM100-PIVOTM-00)	

Dimensions


54mm [2.12 in]
9mm [0.35 in]
84mm [3.31 in]
64mm [2.52 in]
20mm [0.79in]
37mm [1.46in]
32mm [1.25 in]
44mm [1.73 in]
42mm [1.65 in]
8.5mm [0.33 in]
15,3mm [0.6 in]
15,3mm [0.6 in]
S-Mount (M12) Lens Version
22mm [0.86 in]
30mm [1.18 in]
19 mm [0.74 in]
83 mm [3.26 in]
C-Mount Lens Version
Ø40mm [1.57 in]
48mm [1.88 in]
112mm [4.4 in]

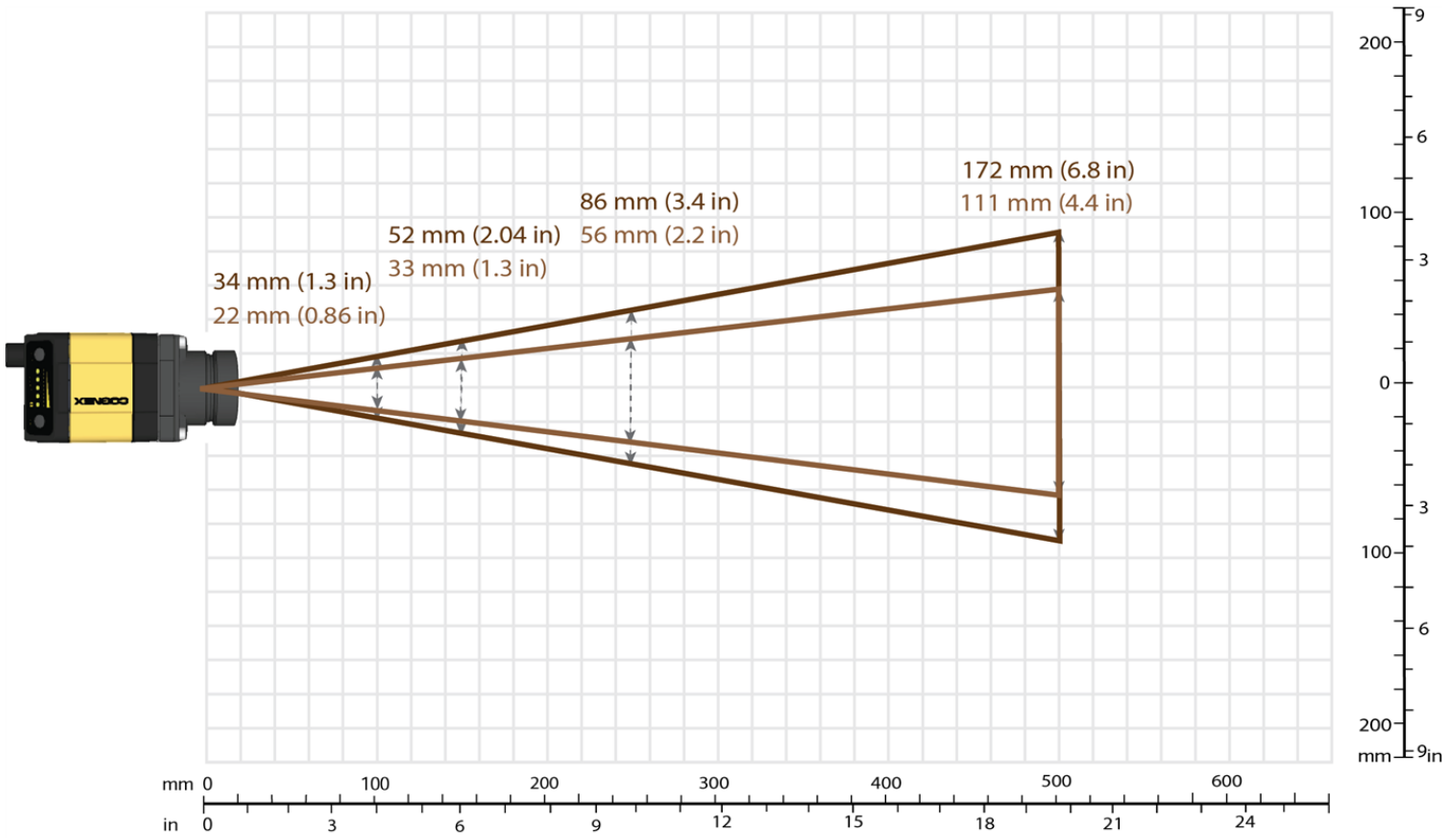
Field of View and Reading Distances



Device	Distances in mm/ 2D min. code 10.3 mm lens		Distances in mm/ 1D min. code 10.3 mm lens	
DM300, DM302	0-75	5 MIL	0-215	7 MIL
	0-210	10 MIL	0-409	13 MIL
	0-374	20 MIL	0-500	18 MIL
DM303	20-110	5 MIL	20-350	7 MIL
	15-325	10 MIL	25-735	13 MIL
	10-580	20 MIL	25-840	18 MIL

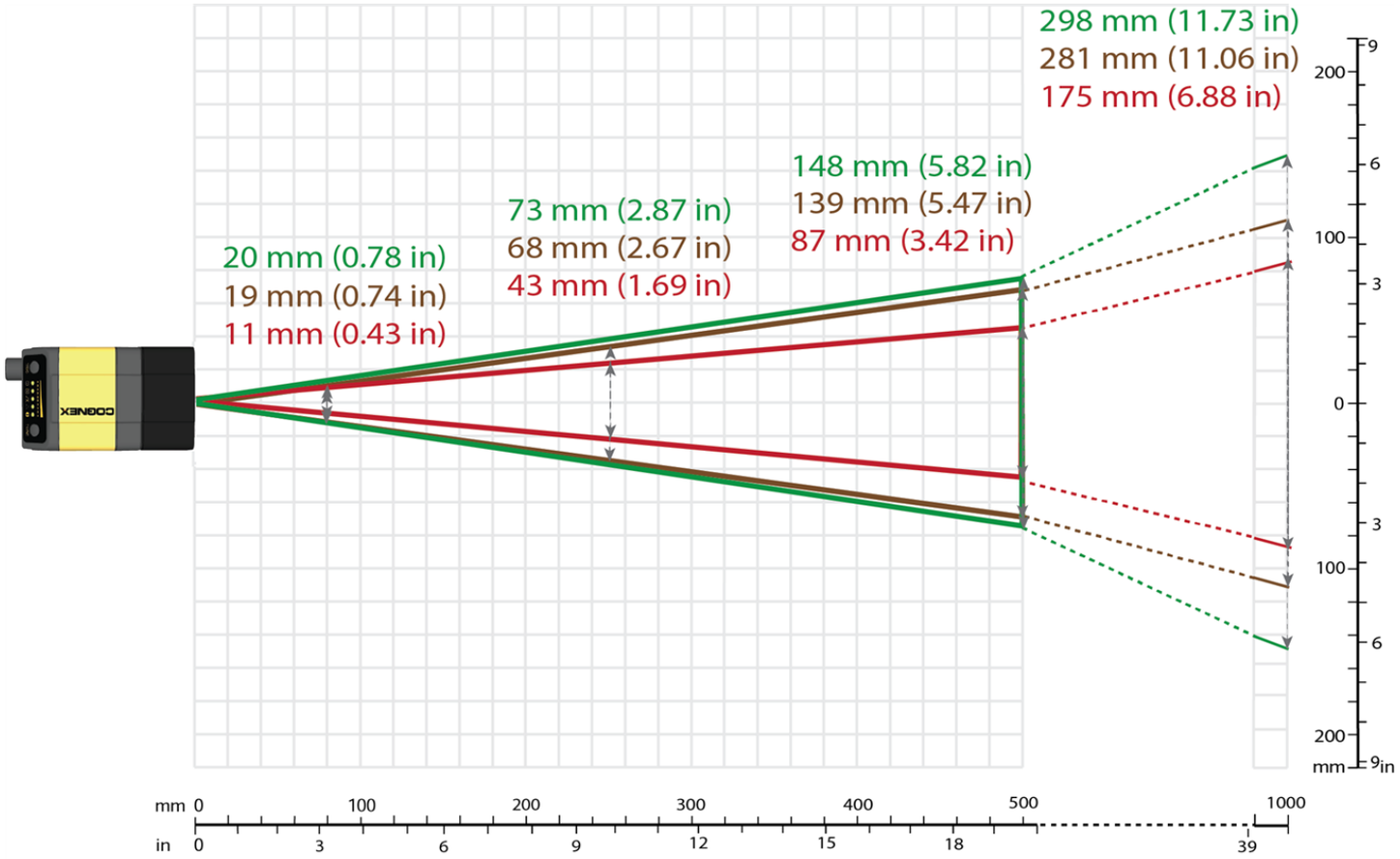
Device	Distances in mm/ 2D min. code 16 mm lens		Distances in mm/ 1D min. code 16 mm lens	
DM300, DM302	59-72	2 MIL	60-125	2 MIL
	55-207	4 MIL	55-270	4 MIL
	49-295	8 MIL	56-400	6 MIL
DM303	35-190	5 MIL	45-400	7 MIL
	30-420	10 MIL	45-495	13 MIL
	25-500	20 MIL	45-540	18 MIL

Device	Distances in mm/ 2D min. code 25 mm lens		Distances in mm/ 1D min. code 25 mm lens	
DM300, DM302	100-155	2 MIL	95-155	2 MIL
	95-350	4 MIL	92-350	4 MIL
	90-470	8 MIL	88-380	6 MIL
DM303	95-155	2 MIL	95-155	2 MIL
	90-350	4 MIL	92-360	4 MIL
	88-385	8 MIL	90-390	6 MIL



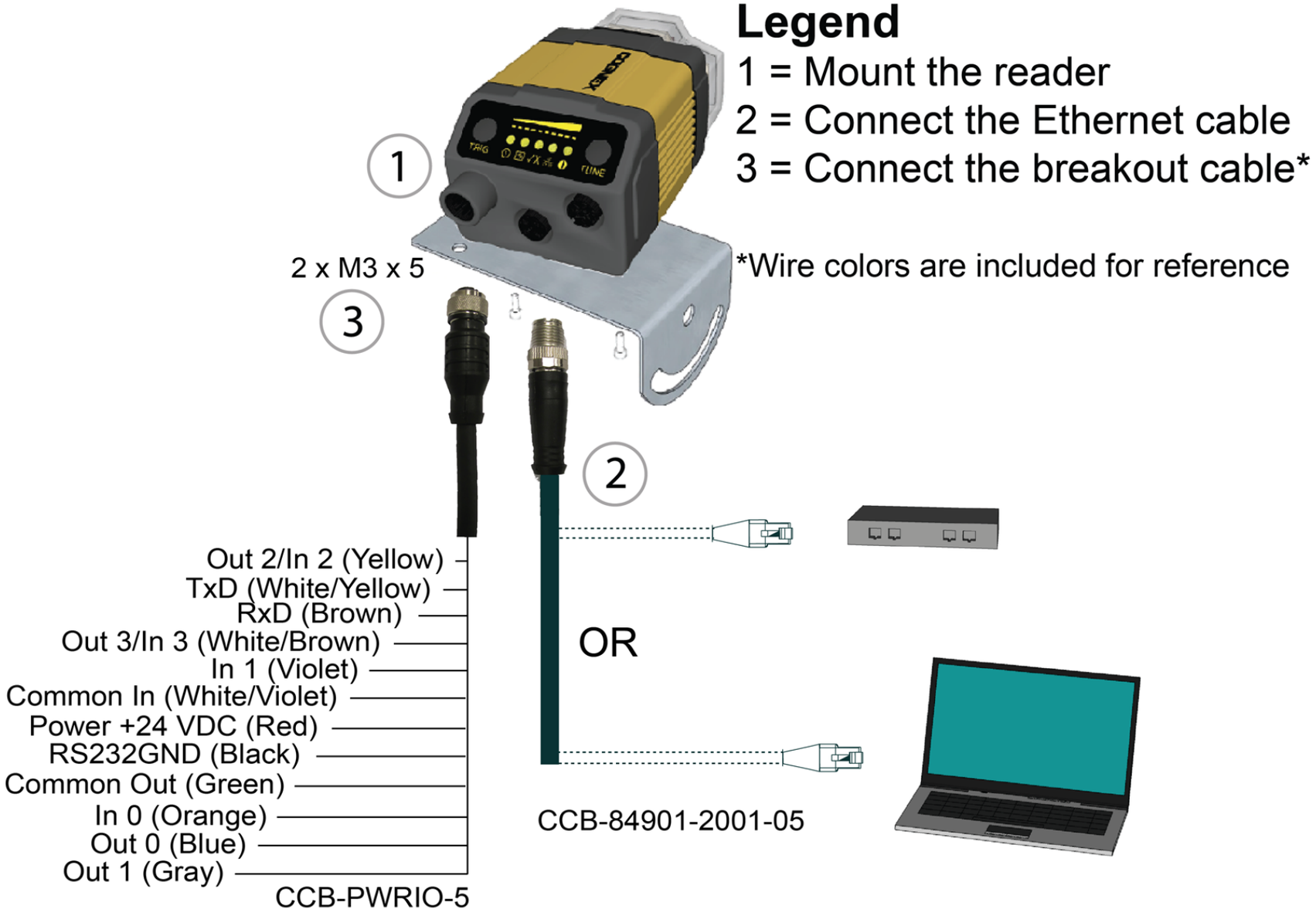
19 mm lens
inner: DM300
outer: DM302, DM303

Device	Distances in mm/ 2D min. code 19 mm lens		Distances in mm/ 1D min. code 19 mm lens	
DM300, DM302	61-97	2 MIL	59-173	2 MIL
	58-167	4 MIL	56-322	4 MIL
	58-310	8 MIL	56-471	6 MIL
DM303	61-109	2 MIL	29-199	2 MIL
	58-192	4 MIL	56-375	4 MIL
	58-361	8 MIL	56-551	6 MIL



Device	Distances in mm/ 2D min. code 24 mm lens		Distances in mm/ 1D min. code 24 mm lens	
DM300, DM302	80-120	2 MIL	80-230	2 MIL
	80-230	4 MIL	80-460	4 MIL
	80-460	8 MIL	80-690	6 MIL
DM303	80-150	2 MIL	80-270	2 MIL
	80-300	4 MIL	80-540	4 MIL
	80-600	8 MIL	80-810	6 MIL

Connecting the Reader



Installation

Installation procedures and specifications are presented in detail in the DataMan 300 *Reference Manual*, which is installed with the DataMan Setup Tool. From the Windows Start menu, select the following to access the manual: *All Programs* > *Cognex* > *DataMan Software vx.x.x* > *Documentation*.

Note:

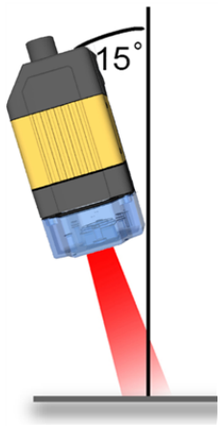
- Cables are sold separately.
- If any of the standard components appear to be missing or damaged, immediately contact your Cognex Authorized Service Provider (ASP) or Cognex Technical Support.

CAUTION: All cable connectors are "keyed" to fit the connectors on the DataMan system; do not force the connectors or damage may occur.

Mounting

Mounting the DataMan reader at a slight angle (15°) can reduce reflections and improve performance.

Use the set of mounting holes on the rear part to mount the DataMan reader.



Connect the Ethernet Cable

1. Connect the Ethernet cable's M12 connector to the DataMan system's ENET connector.
2. Connect the Ethernet cable's RJ-45 connector to a switch/router or PC, as applicable.

Connect the Breakout Cable

Note: Unused wires can be clipped short or tied back using a tie made of non-conductive material. Keep all bare wires separated from the +24VDC wire.

1. Verify that the 24VDC power supply being used is unplugged and not receiving power.
2. Attach the Breakout cable's +24VDC and Ground to the corresponding terminals on the power supply.

CAUTION: Never connect voltages other than 24VDC. Always observe the polarity shown.

3. Attach the Breakout cable's M12 connector to the DataMan 300 reader's 24VDC connector.
4. Restore power to the 24VDC power supply and turn it on if necessary.

Install Software and Documentation and Connect the Reader

Follow the steps below to connect your reader to power and network:

1. Connect the I/O+RS232+24V cable to your reader.
2. For a network connection, connect your reader through an Ethernet cable to your network.
3. Connect the cable to a 24V power supply.

To configure a DataMan 300 reader, the DataMan Setup Tool software must be installed on a networked PC. The DataMan Setup Tool is available from the DataMan support site: http://www.cognex.com/support/dataman.

1. After installing the software, connect the DataMan 300 Series reader to your PC.
2. Launch the DataMan Setup Tool and click **Refresh**.
3. Select your DataMan 300 Series reader from the list and click **Connect**.

DataMan 300 Series Specifications

Weight	165 g			
Operating Temperature	0ºC — 45ºC (+32ºF — 113ºF)			
Storage Temperature	-10ºC — +60ºC (+14ºF — +140ºF)			
Maximum Humidity	< 95% (non-condensing)			
Environmental	IP65 (with cable or protection cap attached to all connectors, front cover properly installed)			
LED Safety	IEC62471: red illumination: Exempt Risk Group, blue and white illuminations: Risk Group 1 (Low-Risk). No further labeling is required.			
RS-232	RxD, TxD according to TIA/EIA-232-F			
Codes	1-D barcodes: Codabar, Code 39, Code 128, and Code 93, Interleaved 2 of 5, MSI, Pharma, Postal, UPC/EAN/JAN 2-D codes: Data Matrix™ (IDMax and IDQuick: ECC 0, 50, 80, 100, 140, and 200), QR Code and microQR Code, MaxiCode, DotCode, Aztec Code, RSS/CS Stacked codes: PDF 417, MicroPDF 417			
Discrete I/O operating limits	HS Output 0,1,2,3	I_{MAX}		50 mA
		R_{MIN}	@ 12 VDC	200 Ω
	Input 0 (Trigger)	V_{IH}	±12 — ±28 V	
	Input 1,2,3	V_{IL}	0 — ±8 V	
		I_{TYP}	@ 12 VDC	2.0 mA
			@ 24 VDC	4.2 mA

Power Supply Requirements	24V +/- 10% Options: • Internal illumination (non-HPIL*): 250 mA maximum, 5 W • Internal illumination (HPIL*): 2.2 A maximum, 6 W • External illumination: up to 800 mA average, 20 W, peak current according to illumination, these values depend on the illumination and its configuration Supplied by LPS or NEC class 2 only *HPIL denotes one of the DM360-HPIL-RE or DM360-HPIL-RE-P accessories
Light Connector	Current load up to 630 mA average
Ethernet Speed	10/100
Duplex Mode	Full duplex or half duplex

DataMan 300 Series Imager Specifications

Specification	DataMan 300 Series Imager
Image Sensor	1/1.8 inch CMOS
Image Sensor Properties	6.9 mm x 5.5 mm (H x V); 5.3 µm square pixels (DataMan 300 and 302), 4.5 µm square pixels (DataMan 303)
Image Resolution (pixels)	• DataMan 300: 800 x 600 • DataMan 302: 1280 x 1024 • DataMan 303: 1600 x 1200
Electronic Shutter Speed	• minimum exposure: 5 µs (DataMan 300 and 302), 12 µs (DataMan 303) • maximum exposure: 1000 µs with internal illumination/100000 µs with external illumination
Image Acquisition at Full Resolution	• DataMan 300 and 302: up to 60 fps • DataMan 303: up to 40 fps
Lens Type	• S-Mount 10.3 mm F:5 (with optional liquid lens) with IR blocking filter • S-Mount 16 mm F:9, no IR blocking filter • C-Mount 24 mm F:6 (with liquid lens only) with IR blocking filter • S-Mount 25 mm M12 lens, no IR blocking filter • C-Mount lenses (with limitations, see below)

Limitations to C-Mount lenses:

- The length of the thread may not exceed 5.4 mm.
- The back side of the lens may not exceed beyond the C-Mount threads. Possibly a lens spacer is required.
- When using the C-Mount lens cover, lens dimensions including spacer and filters may not exceed 32 x 42 mm (diameter x length).

To avoid accelerated aging of built-in illumination LEDs, which results in light intensity degradation, consider the following duty cycle limits above 25°C (77°F):

- at 35°C (95°F): 4% duty cycle, for example, 750 µs exposure and 18493 µs interval
- at 45°C (113°F): 2% duty cycle, for example, 350 µs exposure and 18093 µs interval or 1000 µs exposure and 50000 µs interval

Regulations/Conformity

DataMan 300 readers meet or exceed the requirements of all applicable standards organizations for safe operation. However, as with any electrical equipment, the best way to ensure safe operation is to operate them according to the agency guidelines that follow. Please read these guidelines carefully before using your device.

Manufacturer:

Cognex Corporation

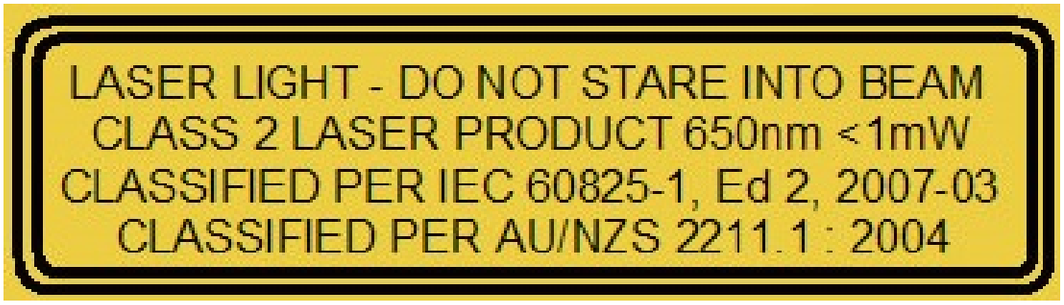
Regulator	Specification
USA	FCC Part 15, Class A FDA/CDRH Laser Notice No 50
Canada	ICES-003
European Community	EN55022, Class A
	EN55024 EN60950
	EN60825-1
Australia	AS/NZS 3548 Class A Equipment
Japan	VCCI-3 Class A
Korea	KCC-REM-CGX-DM300

Safety and Regulatory	
European Compliance CE	**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. The CE mark on the product indicates that the system has been tested to and conforms to the provisions noted within the 2014/30/EU Electromagnetic Compatibility Directive. For further information please contact: Cognex Corporation, One Vision Drive, Natick, MA 01760, USA . Cognex Corporation shall not be liable for use of our product with equipment (i.e., power supplies, personal computers, etc.) that is not CE.
FCC Class A Compliance Statement FC	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 commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, 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 personal expense.
Canadian Compliance	This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.
C-Tick Statement	Conforms to AS/NZS CISPR 22/ EN 55022 for Class A Equipment.
UL and cUL Statement	UL and cUL listed: UL60950-1 2nd ed. and CSA C22.2 No.60950-1 2nd ed.

Laser Safety Statement

Compliance with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.

This device has been tested in accordance with IEC60825-1 2nd ed., and has been certified to be under the limits of a Class 2 Laser device.



Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

LED Safety Statement

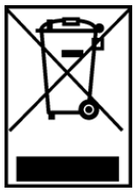
This device has been tested in accordance with IEC62471, and red illumination has been certified to be under the limits of Exempt Risk Group, blue and white illuminations have been certified to be under the limits of Risk Group 1 (Low-Risk). No further labeling is required.

For European Community Users

Cognex complies with Directive 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 on waste electrical and electronic equipment (WEEE).

This product has required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment, if not properly disposed.

In order to avoid the dissemination of those substances in our environment and to diminish the pressure on the natural resources, we encourage you to use the appropriate take-back systems for product disposal. Those systems will reuse or recycle most of the materials of the product you are disposing in a sound way.


The crossed out wheeled bin symbol informs you that the product should not be disposed of along with municipal waste and invites you to use the appropriate separate take-back systems for product disposal.

If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You may also contact your supplier for more information on the environmental performance of this product.

China RoHS

	Hazardous Substances 有害物质					
Part Name 部件名称	Lead (Pb) 铅	Mercury (Hg) 汞	Cadmium (Cd) 镉	Hexavalent Chromium (Cr (VI)) 六价铬	Polybrominated biphenyls (PBB) 多溴联苯	Polybrominated diphenyl ethers (PBDE) 多溴二苯醚
DM300	X	O	O	O	O	O

This table is prepared in accordance with the provisions of SJ/T 11364.
这个标签是根据SJ / T 11364 的规定准备的。

O: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB / T26572 - 2011.
表示本部件所有均质材料中含有的有害物质低于GB / T26572 - 2011 的限量要求。

X: Indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB / T26572 - 2011.
表示用于本部件的至少一种均质材料中所含的危害物质超过GB / T26572 - 2011 的限制要求。