# Industrial Bar Code Scanners







## APPLICATIONS

- Automated warehousing
- Medium conveyor sorting
- Reading on forklift trucks
- Picking systems
- Automated shop floor

## ADVANTAGES

- Extended reading range from 300 to 2500 mm thanks to FLASH™ dynamic focus technology
- DIGITECH™ technology permits full software control over signal processing parameters. Scanner setup can therefore be optimized simply loading optimized software recipes, thus enabling excellent performance in all reading conditions
- ACR4™ reconstruction technology increases the maximum tilt angle and overall read rate on damaged barcodes
- Available with integrated software programmable Oscillating Mirror and built-in connectivity to Ethernet, Profibus and DeviceNet
- Easy and simple configuration thanks to Genius™ multi-language software tool

## HIGHLIGHTS

- FLASH™ dynamic focus technology
- Reading range from 300 to 2500 mm
- ACR4™ reconstruction technology improves reading of damaged barcodes
- DIGITECH™ technology enables excellent reading performance
- PACKTRCK™ technology to minimize the gap between objects and increase system productivity
- Linear and integrated Oscillating Mirror versions
- Built-in connectivity to Ethernet / Profibus / DeviceNet
- Display and keyboard for scanner monitoring and diagnostics

## GENERAL DESCRIPTION

DS6400 is an industrial fixed position barcode reader specifically designed for the needs of various Auto ID applications in manufacturing and logistics. DS6400 is based on the same concept as DS6300: a complete modular solution in terms of reading performance, built-in connectivity, ease of use and maintenance.
The DS6400 embeds a linear motor providing a dynamic focus system called FLASH™, fully controlled via software, which covers an impressive reading range of over 2 meters. FLASH™ is capable of moving the focus position from the minimum to the maximum position in less than 10 ms.
DS6400 features a practical display with keyboard that increases the scanner's ease of use by showing barcode data read (local echo), statistics and diagnostic information; moreover, it offers built-in connectivity to Ethernet, DeviceNet and Profibus networks.

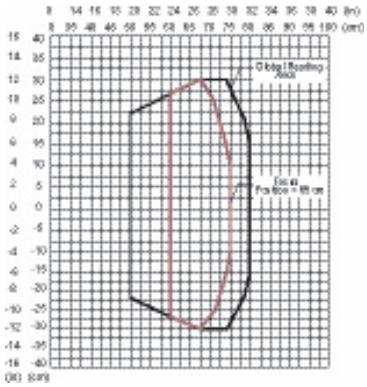


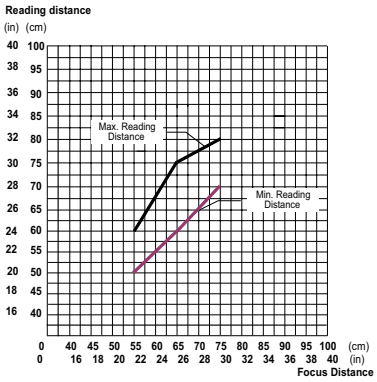




## READING DIAGRAMS

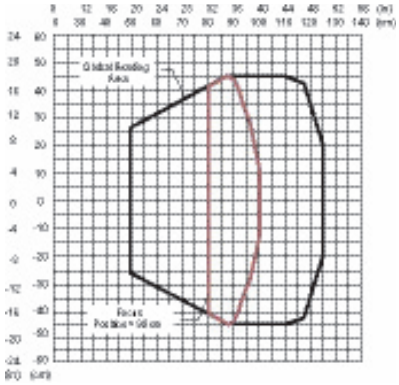
**DS6400-100-0XX**
Resolution: 0.20 mm/8 mils

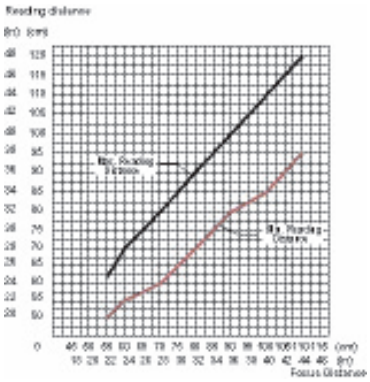





**CONDITIONS**
Code = Interleaved 2/5 or Code 39
PCS = 0.90
Pitch angle = 0°
Skew angle = 10° - 20°
Tilt angle = 0°

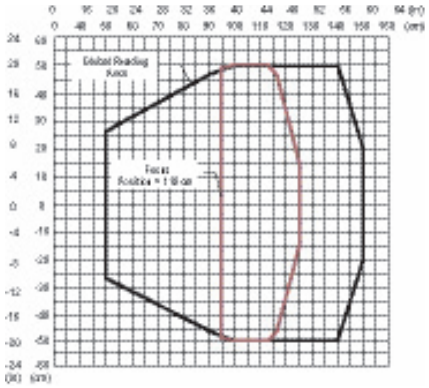
**DS6400-100-0XX**
Resolution: 0.25 mm/10 mils

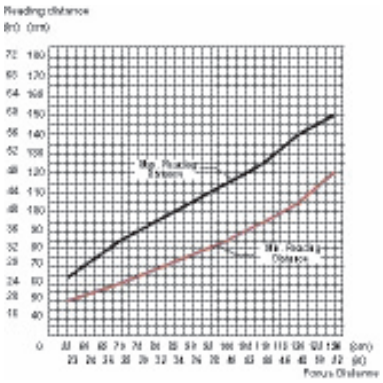




**CONDITIONS**
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Pitch angle = 0°
Skew angle = 10° - 20°
Tilt angle = 0°

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

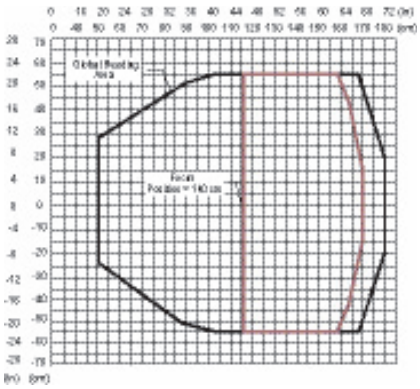


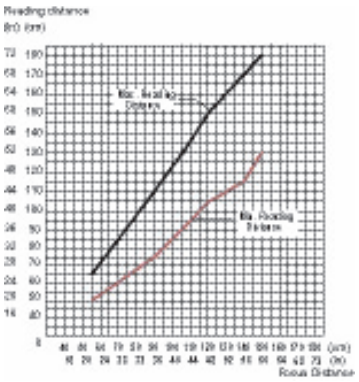


**CONDITIONS**
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## READING DIAGRAMS

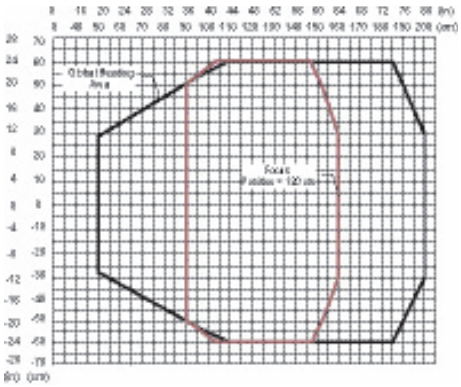
**DS6400-100-0XX**
Resolution: 0.38 mm/15 mils

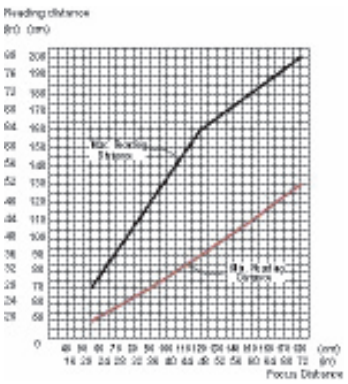




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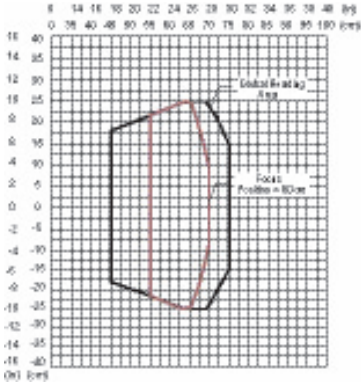
**DS6400-100-0XX**

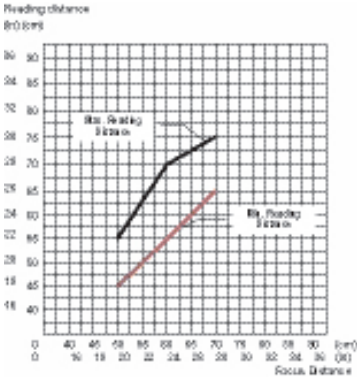




**CONDITIONS**
Code = Interleaved 2/5 or Code 39
PCS = 0.90
Pitch angle = 0°
Skew angle = 10° - 20°
Tilt angle = 0°

(Oscillating Mirror)
Resolution: 0.20 mm/8 mils

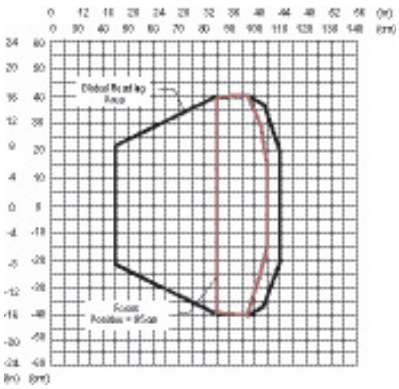


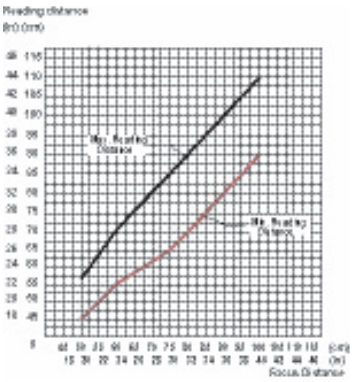


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## READING DIAGRAMS

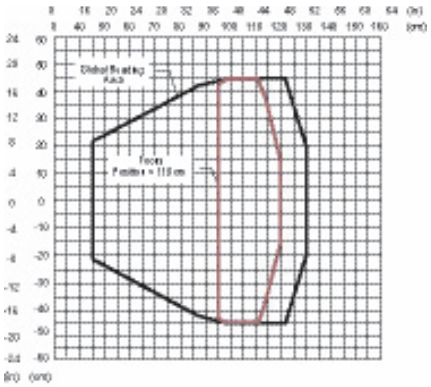
**DS6400-105-0XX** (Oscillating Mirror)
Resolution: 0.25 mm/10 mils

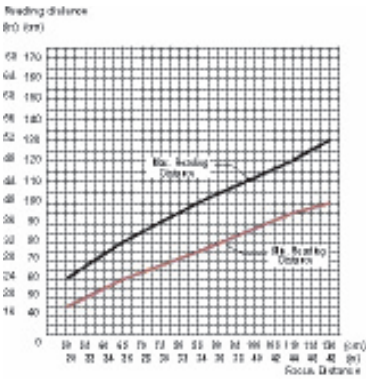




**CONDITIONS**
Code = Interleaved 2/5 or Code 39
PCS = 0.90
Pitch angle = 0°
Skew angle = 10° - 20°
Tilt angle = 0°

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

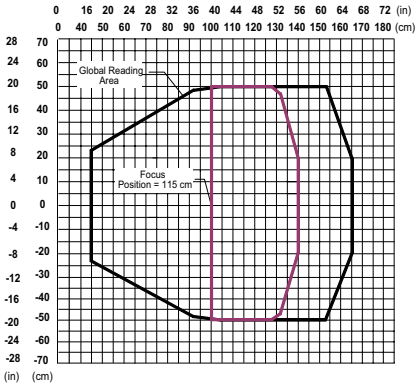


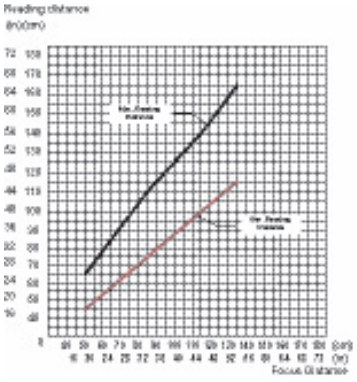


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## READING DIAGRAMS

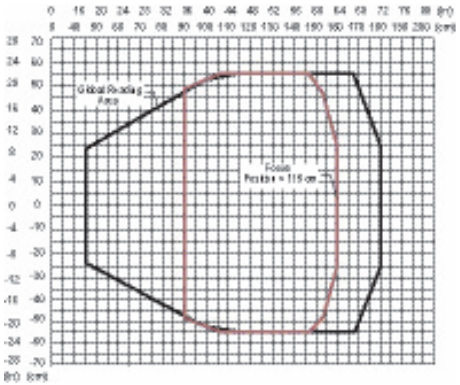
**DS6400-105-0XX** (Oscillating Mirror)
Resolution: 0.38 mm/15 mils

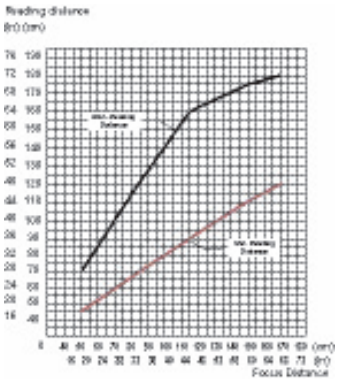



**CONDITIONS**
Code = Interleaved 2/5 or Code 39
PCS = 0.90
Pitch angle = 0°
Skew angle = 10° - 20°
Tilt angle = 0°

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

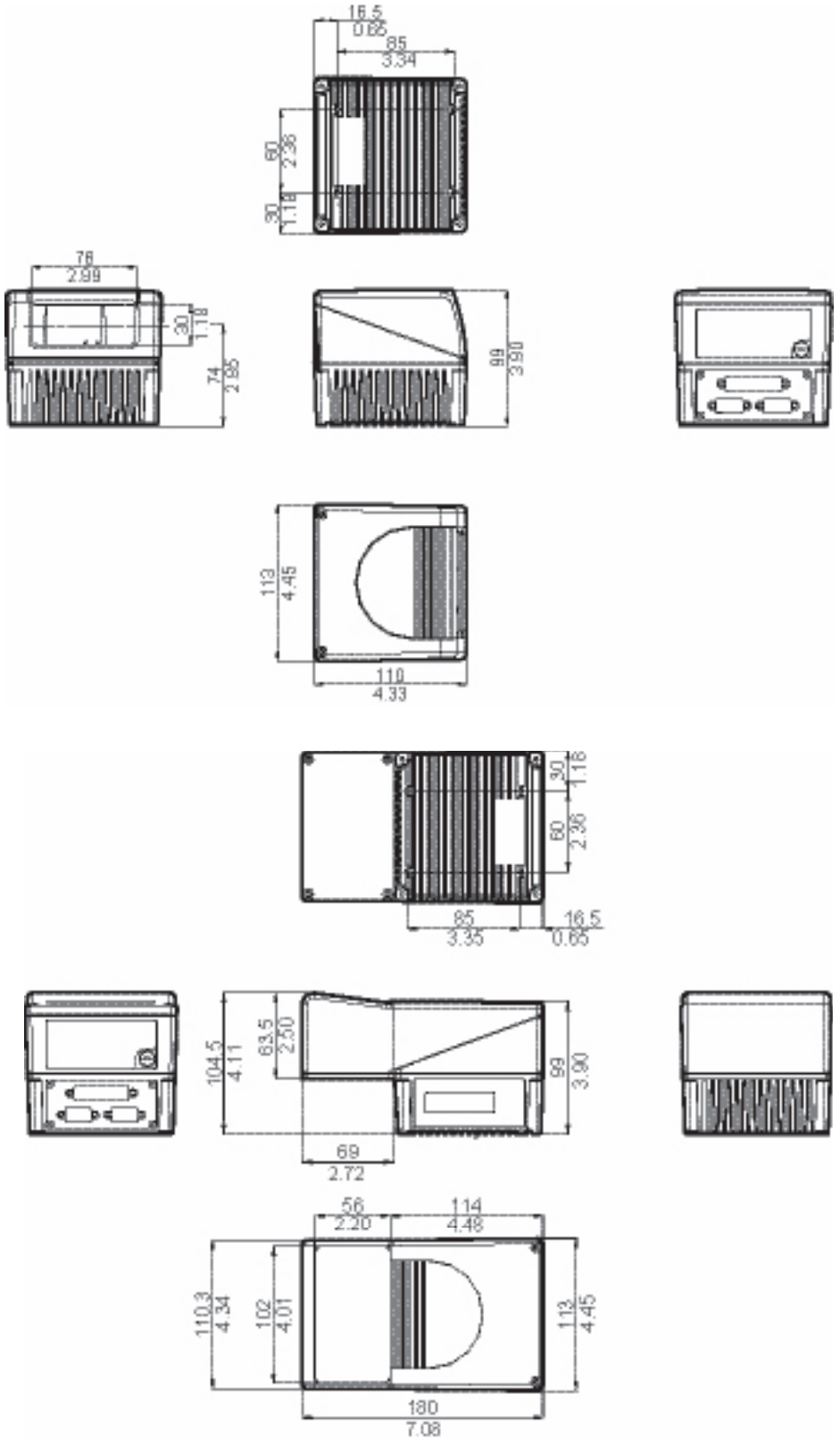



**CONDITIONS**
Code = Interleaved 2/5 or Code 39
PCS = 0.90
Pitch angle = 0°
Skew angle = 10° - 20°
Tilt angle = 0°

## DIMENSIONS

### OSCILLATING MIRROR VERSION



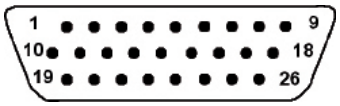

mm / inch

## ELECTRICAL CONNECTIONS

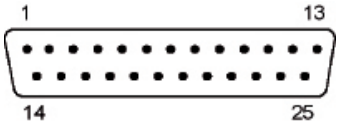
All the connectors available for each DS6400 model are the following:

| SCANNER MODEL | CONNECTORS |
|---|---|
| Master/Slave | 25-pin male serial interface and I/O connector<br>9-pin male Lonworks connector*<br>9-pin female Lonworks connector |
| Ethernet | 26-pin male serial interface and I/O connector<br>9-pin female Lonworks connector<br>RJ45 modular connector |

The DS6400 Master/Slave models are equipped with a 25-pin male D-sub connector for connection to the host computer, power supply and input/output signals. The DS6400 Ethernet models adopt a 26-pin male connector instead of the 25-pin one.




26-pin Connector

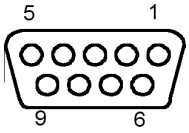



25-pin Connector

| 25-PIN/26-PIN D-SUB CONNECTOR PINOUT | | | | |
|---|---|---|---|---|
| **Pin** | **Name** | | **Function** | |
| 1 | CHASSIS | | Chassis - internally connected to GND | |
| | | | Cable connected to chassis | |
| 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 | IN 2/ENC A | | Input signal 2 (polarity insensitive) for Encoder | |
| 10 | IN 2/ENC B | | Input signal 2 (polarity insensitive) for Encoder | |
| 14 | IN 3A | | Input signal 3 (polarity insensitive) | |
| 15 | IN 4A | | 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 | |
| **Pin** | **RS232** | **RS232** | **RS485 Full-Duplex** | **RS485 Half-Duplex** |
| 2 | Main Interface Signals (SW Selectable) | TX | TX485 + | RTX485 + |
| 3 | | RX | * RX485 + | |
| 4 | | RTS | TX485 - | RTX485 - |
| 5 | | CTS | * RX485 - | |
| 7 | | GND_ISO | GND_ISO | GND_ISO |

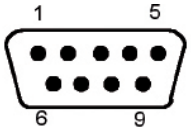
* Do not leave floating, see DS6400 Reference Manual for connection details.

## ELECTRICAL CONNECTIONS




Female (all models)

9-pin Local Lonworks Connectors




Male (Master/Slave model)

9-pin Local Lonworks Connectors

| | | |
|---|---|---|
| | | |
| 1 | CHASSIS | Cable shield internally connected by capacitor to chassis |
| 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) |

In DS6400 Ethernet models a RJ45 Modular Jack is provided for Ethernet connection. This interface and the connector pinout are IEEE 802.3 10 BaseT and IEEE 802.3u 100 BaseTX compliant.




RJ45 Modular Jack

| RJ45 MODULAR JACK PINOUT | | |
|---|---|---|
| **Pin** | **Name** | **Function** |
| 1 | TX + | Transmitted data (+) |
| 2 | TX - | Transmitted data (-) |
| 3 | RX + | Received data (+) |
| 6 | RX - | Received data (-) |
| 4,5,7,8 | NC | Not connected |

## MODELS AND ACCESSORIES

| MODELS | |
|---|---|
| **Order No.** | **Description** |
| 931351093 | DS6400-100-010 DYN. FOCUS, LINEAR, M/S |
| 931351095 | DS6400-100-011 DYN. FOCUS, LINEAR, PROFIBUS |
| 931351097 | DS6400-100-012 DYN. FOCUS, LINEAR, ETHERNET |
| 931351099 | DS6400-100-015 DYN. FOCUS, LINEAR, DEVICENET |
| 931351103 | DS6400-105-010 DYN. FOCUS, OSC. MIRROR, M/S |
| 931351105 | DS6400-105-011 DYN. FOCUS, OSC. MIRROR, PROFIBUS |
| 931351107 | DS6400-105-012 DYN. FOCUS, OSC. MIRROR, ETHERNET |
| 931351109 | DS6400-105-015 DYN. FOCUS, OSC. MIRROR, DEVICENET |

| ACCESSORIES | |
|---|---|
| **Order No.** | **Description** |
| 93A201100 | GFC-60 90° MIRROR |
| 93A201102 | GFC-600 90° MIRROR CLOSE DISTANCE |
| 93ACC1721 | FBK-6000 FAST BRACKET KIT (2 PCS) |

## TECHNICAL DATA

| | DS6400-100-01X | DS6400-105-01X |
|---|---|---|
| DIMENSIONS | 110 x 113 x 99 mm (4.33 x 4.45 x 3.9 in) | 113 x 180 x 104.5 mm (4.45 x 7.08 x 4.11 in) |
| WEIGHT | 1.5 kg. (3.3 lb) | 2.0 kg. (4.4 lb) |
| CASE MATERIAL | Aluminum | |
| OPERATING TEMPERATURE | 0 to 40 °C (32 to 104 °F), | |
| STORAGE TEMPERATURE | -20 to 70 °C (-4 to 158 °F) | |
| HUMIDITY | 90% non condensing | |
| VIBRATION RESISTANCE | IEC 68-2-6 test FC 1.5mm; 10 to 55 Hz; 2 hours on each axis | |
| SHOCK RESISTANCE | IEC 68-2-27 test EA 30 G; 11 ms; 3 shocks on each axis | |
| PROTECTION CLASS | IP64 for standard models; IP65 on request | |
| LIGHT SOURCE | Visible laser diode (630 to 680 nm) | |
| SCANNING SPEED | 600 to 1200 scan/s SW programmable | |
| RESOLUTION | Down to 0.20 mm (8 mils) | |
| READABLE SYMBOLOGIES | Code 2/5, Code39, Code93, Code128, EAN/UPC, EAN128, Codabar, Pharmacode, ISBN128 | |
| MULTILABEL READING | Up to 10 different symbologies during the same reading phase | |
| COMMUNICATION INTERFACES | Main Port: RS232/RS485 up to 115.2 Kbit/s | |
| | Auxiliary Port: RS232 up to 115.2 Kbit/s | |
| OTHER AVAILABLE INTERFACES | Lonworks (Master/Slave), Ethernet, Profibus, DeviceNet | |
| DIGITAL INPUTS | Three SW programmable and One “Encoder”, optocoupled, NPN/PNP | |
| DIGITAL OUTPUTS | Three SW programmable, optocoupled, event driven | |
| DISPLAY & KEYPAD | LCD 16 x 2 characters & 3 keys | |
| LED INDICATORS | Power On, Phase On, Data Tx | |
| DEVICE PROGRAMMING | Windows™ based SW (Genius™) via serial or Ethernet link | |
| | Serial Host Mode Programming sequences | |
| OPERATING MODES | ‘On-line’, ‘Serial On-line’, ‘Continuous’, ‘Test’, ‘PackTrack™’ | |
| LASER CLASSIFICATION | Class 2 - EN60825-1; Class II - CDRH | |
| LASER CONTROL | Safety system to turn laser off in cases of motor slowdown or failure | |
| POWER SUPPLY | 15 to 30 VDC | |
| POWER CONSUMPTION | 15 W typical, 20 W max | |