The MaxiScan 3000 Series

Fixed Industrial Scanner

Data Book

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1.0. Introduction

The MaxiScan 3000 series scanners are industrial fixed scanners. The scanners are compact and ruggedised to operate in the following environments:

In	**On**	**Performing**
• Manufacturing Shopfloor • Receiving and despatch • Warehousing • Laboratory • Integrated	• Conveyor • Fixed applications • Processing machines • Lift-truck mount	• Identification • Tracking • Quality control • Process control • Sortation

This data book is designed to explain the many features and benefits of the scanner and to provide information to customers on fixed position scanning, options and specifications. Additional information can be provided by Intermec Technical Product Support.

Figure 1. The M000 range of industrial scanners

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2.0 MaxiScan 3000 Series Key Features

Features of the MaxiScan range:

- Range of Scanners for industrial applications
- EasySet software makes them simple to install
- Compact and rugged metal cases (IP65/Nema12)
- High performance optics and decode
- Common connectivity: 15 Pin D type connector with RS 232, 422, 485 and Current Loop interfaces
- Wide input power range: +7 to 25V unregulated
- Accessories include:
  - MCS connection box and power supply
  - M3010 RS 485 network concentrator
  - Package sensor
  - Adjustable stand

Scanner Range:
- MaxiScan 3100SR - linear
- MaxiScan 3100ST - linear
- MaxiScan 3100ML - linear, fixed raster
- MaxiScan 3300ST - linear, raster, multi line
- MaxiScan 3300HR - linear, raster, multi line
- Maxiscan 3010 network concentrator

The M3100 provides the following key features:
- Cost effective industrial scanning
- Choice of reading distance from 0-10cm (4") or to 35cm (14")
- Auto wake up modes (Sensing of codes M3100SR, sensing of item M3100ST/ML)
- Input and Output synchro signals (voltage or software)
- All main 1D Symbologies and PDF 417
- High ambient light immunity in laser models

The M3300 provides the following key features:
- Very flexible industrial scanning
- Providing Line, Raster and Multi-direction patterns using Active Line Control (ALC).
- Reading distance to 65cm (25")
- Advanced functions easily configured through EasySet

√   **Simplifies industrial fixed scanning**

3.0 Application Areas

3.1. Conveyor reading

A primary application for the M3xxx is reading products on passing conveyors. The M3100ST and M3300 are designed to be fixed to conveyors and to read codes in ladder or picket orientations (see section 5.3 for an explanation of these terms). The M3100SR is best suited to ladder orientations. For this application, the M3000 series is 'ruggedised' and sealed so that it can work near heavy machinery and withstand high levels of dust and moisture. A trigger input allows a signal from a sensor (photo-sensor) on the conveyor to turn the scanner on so that it is ready to read. When used in this way, the life of the scanner is greatly extended. The scanners can also send a trigger out on good read or no read that can be used to operate gates on the conveyor and assist product rejection or sorting.

In this application the scanners may perform identification, tracking or quality control functions and such applications exist in all forms of automated manufacturing, in logistics and in other processing operations (laboratory clinical chemistry, etc.).

3.2. Fixed reading

The M3300 can be used as a fixed reader in industrial environments. A typical application is identifying goods from their shipping labels as they are accepted in a goods receiving area. Here the scanner would be fixed to a surface or wall allowing packages to be presented or passed in front for reading.

3.3. Truck-mount

The M3300 scanner can be mounted to the front of a fork-lift truck in such a way that it automatically scans packages picked by the truck. A raster pattern is normally selected to cover the label area and code data is transmitted to an on-board wireless terminal for sending to the controlling host system. Power would be supplied by the truck's VMT (12 or 24V).

3.4. Integrated

In some special applications the M3100 or M3300 are integrated into other machines to provide process control data. The scanners' compact size, screening and sealing make this application possible. Examples include photo-processing, medical analysis and packaging machines.

4.0 MaxiScan 3000 Series key features

4.1. Active Line Control (ALC) – M3300 only

The MaxiScan 3300 is a multi-functional moving-beam bar code laser scanner providing line, raster and multi-directional scan patterns. The unique scan pattern range stems from Active Line Control (ALC) technology. ALC gives the user complete control of the scan pattern generation via the configuration software.

The M3300 can be described as multi-functional because it is equally suited to line, raster and multi-directional scanning and is capable of working in all main industrial fixed applications: identification, tracking, process control and sortation on all common 1D symbologies. Most other industrial scanners can only produce one set pattern (i.e. simple line) and many scanner types are needed to cover a full range of applications.

The MaxiScan 3300 is easy to install and operate and is supplied with Intermec's EasySet System (ESS), a PC Windows based set-up software to support the multi-functional features. ESS simplifies installation and configuration for both new and advanced users.

The M3300 generates a moving spot by reflecting a laser beam onto two mirrors that are rotated by stepper motors. By rotating these very small mirrors in different directions and speeds, lines and curves can be produced.

- Horizontal Scan lines
  The basic pattern is a horizontal scan line of varying lengths for reading picket codes.

- Angled scan lines
  Lines at different angles can be produced and at around 45° can be used to scan picket and ladder codes by reconstructing the code (from a fixed length, using check digits etc.).

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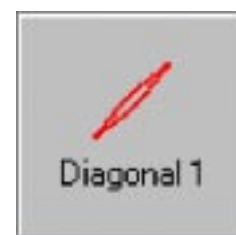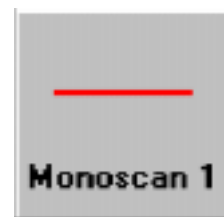
- Vertical scan lines

Vertical lines can be generated without needing to tilt the scanner. These are used for scanning ladder codes.


- Raster patterns

The horizontal or vertical lines can be swept through angles of up to 30° to produce raster patterns. The speed of the raster and length of lines can be varied. Raster patterns are very useful for scanning picket codes that may vary slightly in position as they pass the scanner. Also raster patterns can read multi-code labels and the scanner can sort the data before it is transmitted.

- Multi-direction patterns

The M3300 can produce more complete patterns to read omni-directional codes. Different densities of pattern can be produced depending on the codes to be read.   However it has to be remembered that the more lines the slower the scan rate on each line.

- Circular patterns

Different size circles can be produced to read coded ladder codes passing the scanner at different angles or to read codes randomly placed around a circular object's circumference (such as a tyre wall).
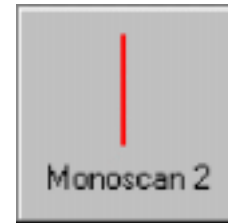
These patterns can be configured using the EasySet setup software supplied. A very useful feature is that a host system/PLC can send the configuration instructions to the scanner to change its pattern (to read codes on different packages on the same conveyor line). It is also possible to set-up a continuously rotating multi-pattern set with the pattern changing at set time intervals.

Through EasySet, custom patterns can be created to suit particular applications and codes. These patterns can be tested and tuned on-line to the scanner to ensure the highest reading efficiency.

Applications often change. ALC allows the scan pattern to be changed to follow the new requirements without hardware updates. This can result in much lower running costs when compared to conventional scanners.
ALC simplifies scanner model selection since many applications can be solved by just one scanner model. This simplifies model selection by the system integrator and the end-user alike. It also reduces the stock levels from what would be necessary if different scanners had to be supplied for different applications

> Key points on ALC :
> - Provides line, angled line, raster and multi-direction patterns
> - Adapts to ladder, picket and omni-directional codes
> - Easy to set-up and customise via EasySet
> - Options include rotating up to 5 patterns continuously or changing patterns under host control

4.2. Optics

The M3100ST and M3300 are equipped with a CPC, a patented light collecting device that improves depth of field and allows the reading of poor quality and very low contrast codes. These scanners therefore have a superior reading range and depth of field (see charts in the Appendix) such that the reading distance of the standard scanner can be compared to other extended range scanners. The CPC allows the scanner to read label contrasts down to 25% (the CPC is protected by INTERMEC patents).

4.3. Decoding

All decoding is performed by the on-board processor and performed in real-time for single codes. The M3000 series can recognise and read all common symbologies including: Code 39, 128, EAN 128, UPC/EAN etc. The M3300 can reconstruct fixed length 39 and 128 codes from partial scans or damaged labels to ensure high read rates even in the toughest of environments. Also multi-code labels, including EAN 128, and the stacked code Codablock can be scanned and sorted. A raster pattern would normally be used to scan these codes.

The M3100 can also read PDF 417.

4.4. Environment

The M3000 series is housed in a tough aluminium case and this is sealed with gaskets to meet the IP65 and Nema 12 standards. The aluminium is epoxy coated to prevent surface corrosion. This makes the scanner suitable for most industrial environments including areas where there are dust particles, water droplets and corrosive chemicals.

The M3300 scanner can operate in a wide temperature range from 0°C to 50°C (32 to 122°F) using an optional thermo-cooling device to regulate the temperature of the laser diode. The thermo-cooler is a solid state device that acts as a heat-pump. The laser diode is attached to a metal heat-sink and then to the thermo-cooler. This in turn is in contact with the outer aluminium case. Heat is thus pumped from the diode to the case for dissipation. Red laser diodes, as used by most laser scanners, are normally life-specified at 25°C. When working above 40°C their life is shortened considerably. The thermo-cooler is designed to keep the diode temperature below this limit even when the ambient temperature is up to 50°C. Because the internal scanner temperature is above ambient it is recommended that the thermo-cooler be selected as an option if the scanner's working ambient temperature is likely to be over 27°C. An alternative way of controlling the diode's temperature is to turn the scanner off after each successful scan and to use an external photo-sensor trigger to wake the scanner up for the next read. Synchronising the scanner in this way will maximise the working life of the unit (see also section 7.7).

4.5 EasySet System configuration software

The configuration, testing and tuning of fixed scanners is simplified by Intermec's EasySet, a Windows based PC configuration software. EasySet is a unique tool that allows you to work off- or on-line.

 In the off-line mode a page is constructed with the configuration codes that specify the desired configuration. This page is printed and used to perform a quick set-up of one or multiple scanners by reading the codes. The embedded concatenation feature (patent pending) allows even complicated configurations to be printed as one bar code. This page can be used to make very fast scanner set-ups in the field and also to provide a way of confirming the set-up or quickly changing it for a new operation. The page could be used by an unskilled operator if required.

When using on-line, different configurations can be downloaded instantly via an RS 232 link, tested, and feedback on efficiency used to aid the selection of the best parameters.

EasySet a revolutionary new way to configure bar code scanners.

See section 6 for a full description of EasySet.

5.0 Fundamentals of Fixed Position Scanning

5.1 The bar code

The M3000 series is principally designed to read linear symbologies (bar codes). A linear bar code is a number of bars and spaces containing data arranged in parallel rows. These codes are usually read in 1D using a scanning line. The scanners can read some stacked codes such as PDF 417 (M3100) and Codablock (M3300). Stacked codes are essentially a number of linear codes stacked on each other with some common organisation. Stacked codes are a type of 2D code but they can be read by 1D readers if the scanning line is swept over the code in such a way that each individual line is read.

123

Codablock

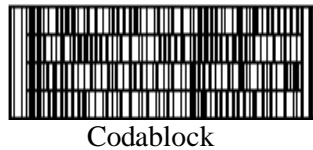Fig 3. A linear bar code (Code 39)   Fig 4. A stacked bar code (Codablock)

For fixed applications it is important to understand the symbology(s) used by the application and also its print specification. It is often useful to get a sample of the code and make some reading tests before attempting to install a scanner.

To understand the bar code it is necessary to know the following details:

- The Symbology
    1. Which symbology, is it available as standard?
    1. If more than one, how many (can influence decoding time if more than two are selected)?
    2. Is it a fixed length or is there a check digit that can be used to speed decoding and maximise security?

- Physical dimensions

    1. Length and height. What size is the code? This is important in calculating the number of times it will be scanned as it passes the scanner in conveyor applications. The height of the bars is important as, depending on the scanning method, it can provide 'redundancy' - damaged areas in one slice (plane) can be read in another slice above or below the damaged area.

    2. What is the X Dimension? The X dimension is the width of the narrowest element and is expressed in mm or mils (1mil=0.254mm). This dimension can be compared against reading zone graphs to see what the depth of field will be for a given code.

3. Quiet Zone. This clear area is required by the specification of most codes. For reliable reading this zone should be equal to 10 * the X Dimension.
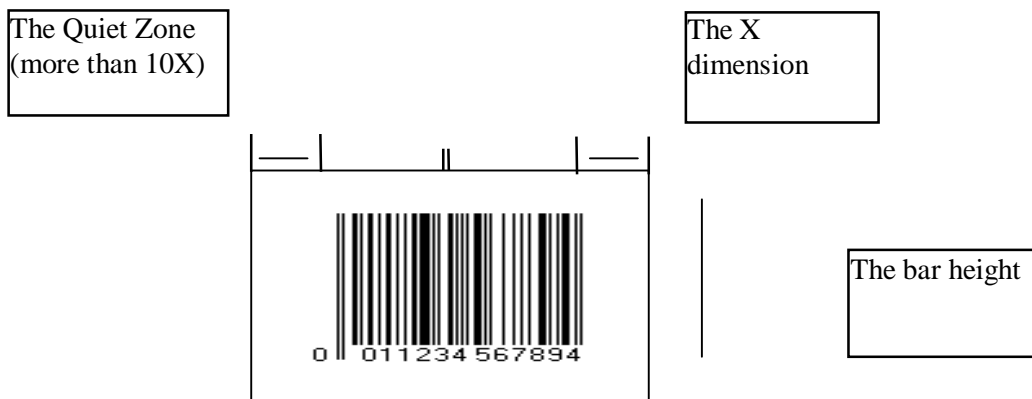

Fig 5. The parts of a code (EAN 13 code)

- Print quality
    1. How is the code printed? Thermal transfer or direct thermal give the best quality although some newer ink-jet printers can give comparable quality. Do the codes range in quality or contrast? samples of the worst quality expected will help to ensure that the scanner is set-up to read all codes.
    2. What is the print media, a pack or label? What is the stock? Is it matt, glossy or reflective. Will it degrade with time?

In general it is useful to use a bar code verifier to check the code sample and compare against the scanner specifications.

5.2 Bar code scanning

The M3xxx scanners illuminate the bar code with a laser beam produced by a visible red laser diode or, in the case of the M3100SR, an led array. The beam is used to generate a line or pattern to cover the bar code. Reflected light is filtered and captured by a photo-diode or CCD. The resulting signal is optimised, analysed and finally decoded to discover the actual data.

5.3 Orientation

Linear bar codes do not have significant error correction and therefore the scanning line must completely cover the bar code to achieve a successful scan. The size of the code, its Aspect Ratio (ratio of height to length) and orientation to the scanner are critical if the scanner is to be correctly configured for an application.

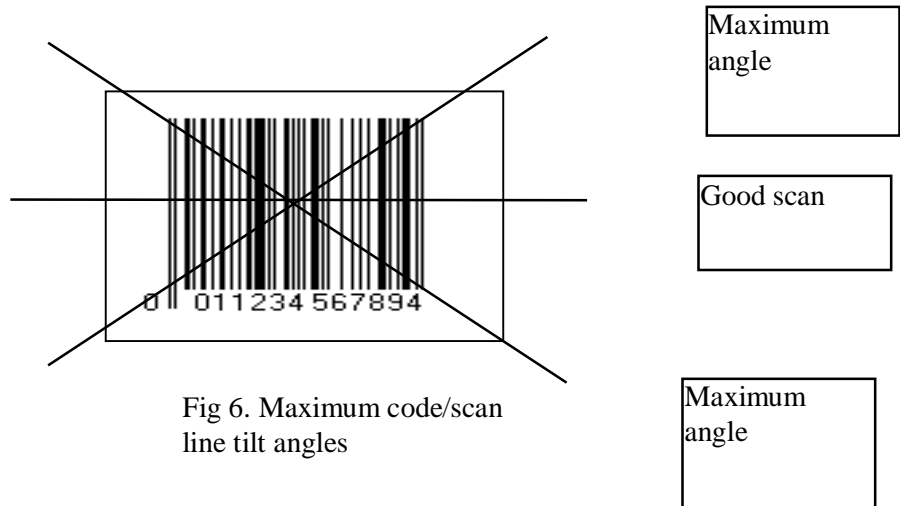| Maximum angle |
| --- |

Good scan

Maximum angle

Fig 6. Maximum code/scan line tilt angles

Two orientations of codes are used: Picket and Ladder:

- Picket Codes

Picket codes are more commonly used as they give the reader more time to see the code (as the code passes along the scan line) and make a number of successful scans. However if a mono line pattern is selected, only a thin slice of the bar code will be used. This wastes the vertical redundancy in the height of the code and if there is a printing error in the slice seen by the scanner the code will not be read. Therefore for picket codes it is preferential to use a slightly tilted line or a raster pattern. Some scanners (M3100ML) use a set number of parallel lines to cover the code.   This is often called a raster but is really a multi-line pattern. The lines are often usually very close (equal to a raster angle of 5-10°). The M3300 is a true raster scanner. A sweeping line covers the codes and can be adjusted depending on the bar-height and any variation in the placement of the label. The whole height of the bars is scanned to ensure maximum read rates.

It is important to know how good the label placement is relative to the scanner. Each scanner has a spec for reading a label and the following terms are used to describe the position of the label relative to the scan:
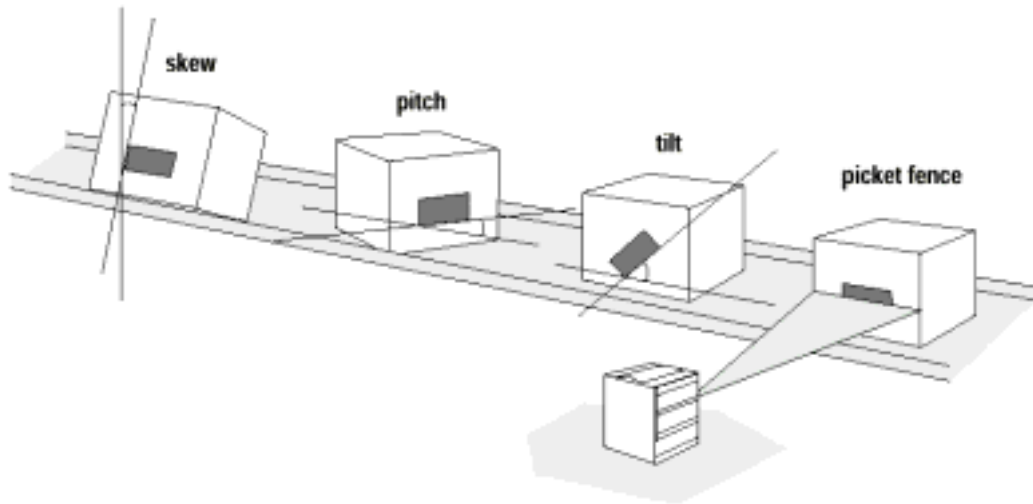

Fig 8 Picket codes - problems and terms

Tilt can severely reduce the number of scans per label by effectively reducing the bar height from the scanners view. Tilt should be avoided as far as possible. If this is not possible then it may be worth trying a multi-direction pattern or alternating pattern to ensure that every code intersects a scan line and is read.

Skew again reduces the bar height when viewed from the scanners position. Varying the pattern will not help improve skew .

Pitch occurs when the label is at an angle to the scanner such that one end is further from the scanner than the other. The effect is the same as reducing the X Dimension to the scanner. The denser the label, the more important it is to eliminate pitch.
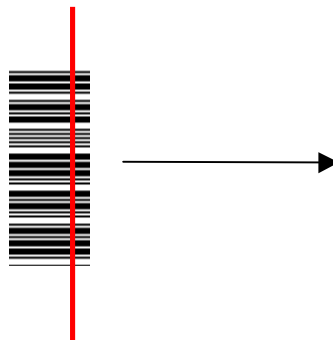
- Ladder Codes

Fig. 9. A ladder code and scan line

Ladder codes can perform well with line scanners and patterns as when the code passes the scan line the whole height of the code is used. However, the time that the code is being read by the line is very short compared to

a picket code and thus the number of scans per code can be very small. This has security problems (see section 7.4 on number of scans per code).

The position of the label relative to the scanner causes similar effects to picket codes. The Pitch and Skew definitions have to be understood since they apply to the label but appear to be different according to the package:
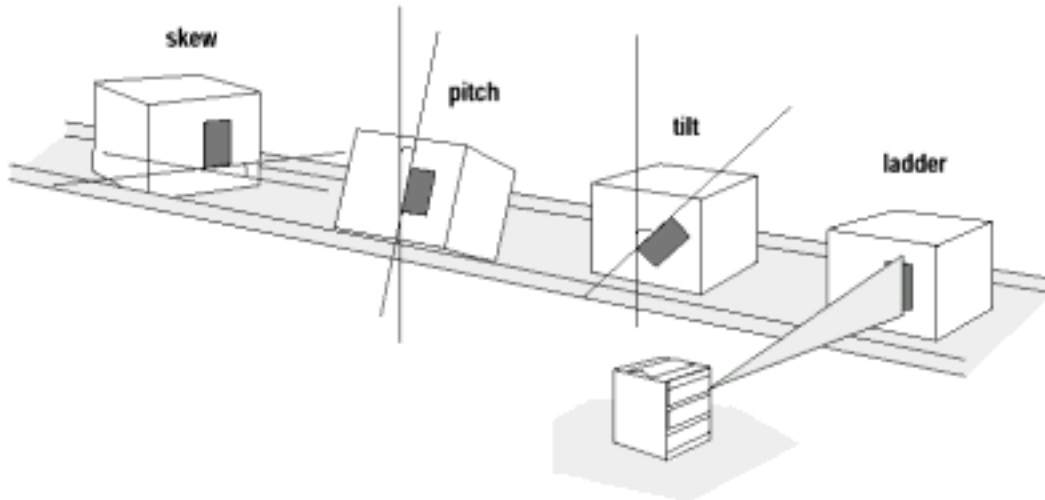
Fig 10. Ladder codes - problems and terms

5.3 Conveyor / code speed

The label orientation, scan line length, scan rate, bar height and conveyor speed should all be adjusted so that the scanner is able to make at least five complete scans (preferably more than 7) as the code passes by. This will guarantee good read rates.

For picket codes the number of scans can be calculated as follows:

$$\text{Number of scans} = ((Ws-Wc) \times Sr/Cs) - 2$$

Where Ws = Width of scan line
         Wc = Width of code
         Sr = Scan rate
         Cs = Conveyor speed

Note: ensure that the units of measurement used are common.

Example :

For a conveyor moving at 5m/s, a code width of 4cm, a scan line of 20cm and a scan rate of 450 scans/sec the number of scans will be

$$((20-4) \times 450/500)-2 = 12 \text{ scans}$$

For angled picket codes, the number of scans should be calculated by reducing the width of scan figure (Ws) in proportion to the tilt angle.

For ladder codes the formula is

$$\textbf{Number of scans } = \textbf{ (Hc/Cs x Sr) - 2}$$

Where Hc = Height of code
Cs = Conveyor speed
Sr = Scan rate

Example :
For a conveyor moving at 5m/s, a code height of 7cm and a scan rate of 450 the number of scans will be :

(7/500 x 450) - 2 = 4.3 scans

This demonstrates how with similar parameters, the number of scans for a ladder code will be smaller than for a picket code. In the above situation the code height would have to be increased or the conveyor speed slowed for the given scan rate.

It can be useful to calculate the minimum height required for a given scan rate and conveyor speed:

$$\textbf{Height of code } = \textbf{Cs x (Ns + 2)/Sr}$$

Where Cs = Conveyor speed
Ns = Number of scans
Sr = Scan rate

6.0 INTERMEC's EasySet System

The M3000 series is supplied with a Windows compatible configuration software package on CD-ROM. This software makes the configuration easy to do and gives two options for communicating to the scanner:

- Off-line mode – by printing a custom configuration card
- On-line mode – by RS 232 link with the scanner

EasySet is in fact common to different Intermec products and when entering the software, the correct product must be selected.   EasySet provides the following features:

6.1 Displays default set-up

The set-up commands are show in a 'command selector' window. Set-up commands selected by default are marked with an asterix.
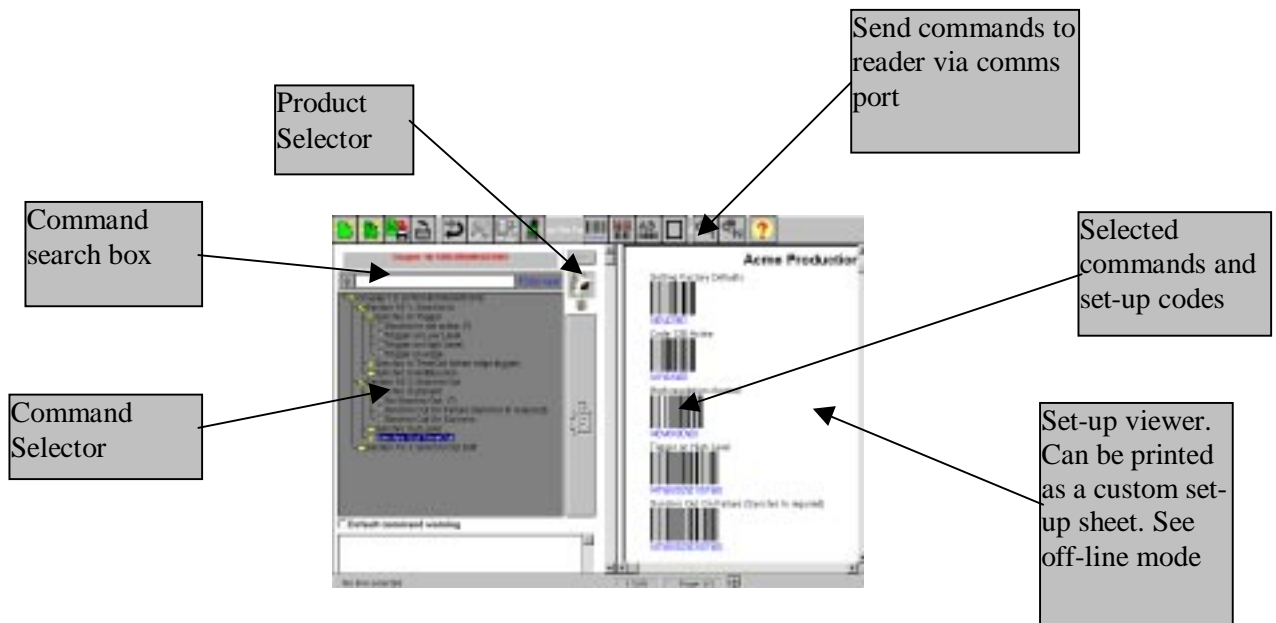

Fig 11. The EasySet System software

6.2 Off-line use

The software can be used off-line to make custom set-up pages including the selected commands as bar codes. This allows a configuration (or several possible configurations) to be made off-site and used on-site to quickly set-up scanners. The set-up page should be kept on-site as a reference. It also makes it possible for untrained staff to change the configuration quickly if required.

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Fig 12. The page viewer showing set-up codes
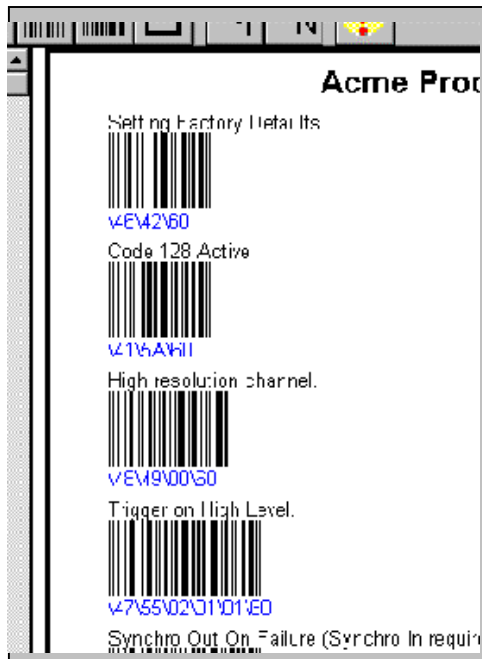
By printing this page the codes can be used as a custom set-up page for configuring one or many scanners. The page also becomes a reference for future use.

A unique concatenation feature makes it possible for the set-up codes to be merged as one code that contains all the information to configure the scanner. This feature is especially useful if the sheet is to be used to set-up many scanners or is to be used by untrained staff.

Fig 13. The page viewer with a concatenated code.
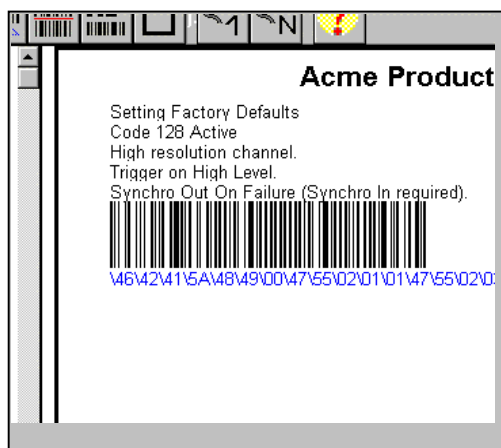
A unique concatenation feature allows the set-up codes to be merged and printed as one code. This makes setting up multiple scanners very fast.

6.3 On-line Mode

In this mode the software communicates directly with a scanner to send set-up information. An advantage of this is that each set-up change can be immediately tested to ensure it works and also to see if it helps reading efficiency.

6 .4 Terminal function

A terminal mode allows the scanner to send data to the PC so that configurations can be tested. The M3300 has a reading efficiency test allows the scanner to be tuned for maximum read rates.

6.5 M3300 Set-up tips using EasySet

Folder 4 in EasySet :
- Select Patterns : Different scan patterns can be selected here. Select a pre-defined pattern or specify a unique pattern for the application. Ensure that the pattern line will intersect the bar code properly and account for any movement in the code relative to the scanner. Limit the area scanned to where the bar code will be and add a 15% tolerance margin. Avoid scanning the area around the bar code (but keep a 15% tolerance zone) as every scan of 'empty space' has the same effect as reducing the scan rate.
- Multi-Pattern Sequence : A number of different patterns can be selected and a duration set for each one. This will make the scanner cycle between patterns and can be useful to cover applications where the bar code placement or orientation varies.
- Contrast Levels : This optimises the scanner to the type of label contrast (or distance) and will improve performance if set correctly. It may be necessary to test different settings to establish the correct setting.
- Resolution adjustment : The M3300 default is to switch between two video channels to ensure that all high and low resolution codes are read. If it is known that all the codes will be high or low resolution then the parameter should be set accordingly. **This could have the same effect of doubling the scan rate on a some codes !**
- Data Decoding security : The scanner can be set to read a code a pre-set number of times before transmission, or to avoid multiple reads of the same code.
- Synchronisation : The hardware synch in and out can be set here. The scanner will have to be wired with the sensor as shown in the installation manual. The software synch out allows the scanner to send a message on successful or unsuccessful reads. The messages may be composed here.
- Filter Masks : This option allows the scanner to be set to read codes with only certain symbologies and/or data strings. This is used in Multi-Code reading.
- Multi-Code Reading : If more than one code is in the scanner's field of view at any one time then these parameters allow the number of codes to be read to be specified. Also the code reading and transmission can be set by symbology or Filter Mask order (see above). The data from all codes can be concatenated if required.
- Reading Count Mode : The number of good reads made by the scanner can be sent as additional data if required.

Folder 5 in EasySet :
- Continuous Configuration Mode : By default, the scanner is set to only read configuration data for one minute after power on. If required this parameter can be activated so that the scanner can always receive configuration data by set-up codes or via the RS232 line. This allows the scanner to be reconfigured at will by the operator or by the host (i.e. Change Scan Pattern). Each new configuration will be stored in EPROM and this process takes about two seconds. Thus the scanner will be unable to read for two seconds after the reconfiguration.
- Temporary Configuration Mode : This mode allows the scanner to read set-up codes or accept host commands at any time but they are not stored. The configuration will reset when power is off. Using this mode enables configuration changes to be made with a time delay of only 0.5 seconds.

7.0 Optimising an application

9.1. Scan line or pattern

Ensure that the scan line or pattern is best suited to the code.

Hints for picket codes :
If a single line is being used, tilt it slightly to allow it to see more of the bar-code height:

Fig. 14. A picket code and scan line
angled to 'see' more of the code height

Also increase the scan width (scan angle) to the maximum for the scanner. If possible reduce the length of the code ensuring that the X dimension is still suitable for the scanner at the range used. Adjusting the range will also help to optimise this label orientation.

If a raster is being used, set the raster angle to cover only the height of the code (allow for maximum label position variation). Do not waste scans outside of the code area.

Hints for ladder codes:
Use a vertical linear pattern and adjust the line length to cover only the length of the code (allow for maximum label position variation). Do not waste scans outside of the code area. If possible increase the height of the code itself to the maximum for the label or package.

9.2. Specula Reflection

If the label is at 90° exactly to the plane of the laser beam then the label (like a mirror) will reflect too much light into the scanner and the code will not be read. The code / scanner should be pitched or skewed slightly to avoid this. When using raster or multi-line patterns ensure that specula reflection is not present in any part of the scan.

9.3 Density

Depending on the code, the scanner can be tuned for particular densities of codes. By default, the scanner is set in an interleaved mode for all densities. On dense codes the high resolution mode should be selected and for low density codes the low resolution mode should be selected through EasySet. This will increase efficiency rates.

9.4 Contrast

Again through EasySet a number of settings may be changed (effectively a noise level adjustment) to optimise the scanner for high or low contrast codes.

9.5 Efficiency

For the M3300 use the terminal efficiency reading in EasySet to test the scanner, code and label set-ups.

9.6 Input Synchronisation

Wherever possible, an input trigger from a sensor (opto) should be used to turn the scanner on to scan. This will ensure that the scanner only scans when an object is present. This reduces the temperature inside the scanner and maximises the scanner's MTBF.

9.7 Thermo-cooler for M3300

Ensure that if the ambient temperature is above 27°C, the thermo-cooler option is selected and/or use the scanner with a sensor as described in point 9.6.

The M3300 scanner should operate with a MTBF of 20 000 hours at 25°C. To maintain this performance at higher ambient temperatures the following is necessary :

- 0 - 27°C standard operation
- 28- 40° use therrmo-cooler option
- 40°- 50° use thermo-cooler and input synchro to reduce duty cycle to <50%

The M3300 is ideally suited to input synchronisation since the moving mass is very small and both the laser and motors can be turned off and on instantaneously (1ms). This greatly increases the working life of the scanner in high temperature environments.

Appendix

A1. Application Checklist
A2. Technical Characteristics &
       Drawings
A3. Connections and Cables
A4. Parts List

A1. Application Checklist

1. Bar Codes

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Symbology(s) Type(s)		
What is the orientation of the code	Ladder	Picket
Are there multiple codes on the same label	Yes Number :	No
What is the code width and height	Width mm/ins	Height mm/ins
What is the X Dimension	mm/ins	
How is the code printed	Label	Direct
What is the contrast	A to F or %	
Samples taken	Yes	No

2. Label or media

Printing	Method :	Media
How is the label applied		
Position variation tolerance	Height +- mm/ins	Lateral +- mm/ins
What is the orientation of the code	Ladder	Picket
Pitch/Skew	Pitch °	Skew °
Tilt	°	
Range from scanner window	Norm mm/ins	Max mm/ins Min mm/ins

3. Packages

Minimum Size	Height : Length : mm/ins	Width : mm/ins
Maximum Size	Height : Length : mm/ins	Width : mm/ins
Separation between packages		
Number per minute		
Label on same sides	Yes	No
Label side justified	to side left/right	to height

3. Conveyor (if present)

Speed of conveyor	m/s ft /sec	
Type	Belt/roller	Tray/other
Width of belt	cm ins	
Clearance	Left cm ins	Right cm ins
Overhead clearance	cm ins	
Opto triggers	Yes No	Possible to use
Power sources	AC/DC V	Distance m/ ft
Distance to host/PLC	m/ ft	

3. Environment

Area	Shopfloor			Warehouse	
Ambient temperature range	Min	Max	°C/ F	Average	°C/F
Humidity			%RH		
Moisture/ Dust			IP		Nema
Proximity to other large machines			m/ ft	Type	

Note : It can be useful to use this section as an application description when discussing with INTERMEC technical support.

A2 Technical Characteristics & Drawings

Technical characteristics are subject to change without prior notice due to continuous product improvement.

M3100 and M3300 Specifications

M3100 Specification

General
The MaxiScan 3100 is a range of high performance bar code scanners for fixed applications Models include M3100SR, M3100ST & M3100ML

Physical Characteristics
Height: 36mm (1.4'')
Width: 56mm (2.2'')
Depth: 75mm (2.9'')
Cable: 1m (3.2'), connector DB 15 pin F
Case: Epoxy coated aluminum

Scanning Performance
Performance: 3100 SR
Scan Rate: 100 to 800 scans /s, default 100 to 400 auto-adaptive
Minimum X dimension: 0.1mm (4 mil)
Depth of field: 0 to 10 cm (4'') depending on code:
0 .1 mm (4 mil): 2-4.4cm (0.78-1.7'')
0.2 mm (8 mil):1-5.8cm (0.39-2.3'')
0.3 mm (12 mil): 1-7cm (0.4-2.7'')
0.5mm (20 mil): 2-8.4cm (0.78-3.3'')

Scan angle: 70°
PCR: 25% minimum
Code Width: 12 cm (4.7".) max (X above .254mm /10 mil)
Skew: +- 65°
Pitch: +- 70°
Performance: 3100 ST/ML
Scan Rate: 200 scans /sec
Minimum X dimension: 0.1 (4 mil)
Depth of field: up to 33cm (13'') depending on code:
0 .1 mm (4 mil): 12-16cm (4.7-6.3'')
0.2 mm (8 mil):7-23cm (2.7-9'')
0.3 mm (12 mil): 4-26cm (1.5-10.2'')
0.5mm (20 mil): 5-35cm (2-14'')

Scan angle: 65°
PCR: 20% minimum
Skew: +- 55°
Pitch: +- 65°

Symbologies
Code 39; Interleaved, Matrix, Industrial and Standard 2 of 5; Code 128, UCC EAN 128, UPC E,A, EAN, Codabar, Code 93, MSI, Plessey, PDF 417

Operator Interface
Power and good read LED. Good read beeper

Design
Processor: Custom chip (ASIC inc. DSP processor) for fast signal processing and decoding. Flash memory
3100 SR Optics: CCD linear image sensor with sharp aiming beam
Light source: red, long life LEDs
3100 ST/ML Light Source: visible laser diode @ 650nm, 0.45mW max output
Laser class: IEC 825 Laser Class 2 / US CDRH 21 CFR (1996) Class II

Environmental Characteristics
Operating temperature: 0° to 40° C (32° to 104° F).
Storage temperature: -25° to 60° C (-13° to 140° F).
Relative humidity: 10% to 90% non-condensing.
Shock resistance: IEC 68.2-27 Test Ea (30G, 11ms) 3 Shock / axis, 3 axis
Vibration resistance: IEC 68-2-6 Test Fc (1.5mm, freq.: 10 to 55Hz) 2 hours /axis, 3axis
Sealing: IP65/ Nema 12

Electrical Characteristics

Power requirements: +7-25 VDC
Power consumption: 2.5W

Advanced Features

Autosensing wake-up modes, variable timeout, input and output synchronization, firmware updates via flash memory, programmable data format (code identification, preambles and postambles, intercharacter and intermessage delays) and many others

Interfaces

RS 232 C, By adapter, RS 485. Direct cable, connection box or Network options.

Accessories
Standard: EasySet CD, horizontal /vertical mounting bracket
Options: Adjustable stand, MCS connection system (with power, host and synchro ports), host RS 232 C cable,Y cable for host port and power input, package sensor, MaxiScan 3010 network, network cables 1m/3m (3.2'/9.6'), RS232 to RS485 adapter, external power supplies
----

Configuration
Setup options include EasySet PC Windows **TM** software, by direct connection & bar code printing (custom setup utility), or by conventional bar code setup manual
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Regulatory Approvals
All models:
Compliant with all European Directives:
CE (EN50081-1/ EN50082-1/ EN60950)
USA:
FCC Part 15 compliant: Class B digital device
Canada:
ICES-003, NMB003: Class B digital apparatus
Australia – New Zealand:
AS/NZS 3548 C tick marked

Other approvals pending

3100 ST version only :
DHHS Standard 21CFR (1996) 1040.10 and 1040.11 Class II Laser Product
IEC 825-1, EN60825-1, Class 2 Laser Product

M3300 Specification

General

The MaxiScan 3300 is a multi-functional moving beam bar code scanner for fixed applications. Models include M3300ST and M3300HR

Physical Characteristics

Height: 100mm (3.9'')
Width: 82mm (3.2'')
Depth: 75mm (2.9'')
Standard cable: 625mm (24.6'').
Case: Epoxy coated aluminium.

Scanning Performance

Scan Rate: 400 to 700 scans /s,
Minimum X dimension: HR: 0.08mm (3 mil) , ST:0.15mm (6mil)
Depth of field: 0 to 65 cm (25'') depending on code (see chart
Scan angle: H45°, V30°
PCR: 25% minimum
Skew: +- 40°
Pitch: +- 70°

Symbologies

UPC E,A, EAN, Code 39; Interleaved, Matrix, Industrial and Standard 2 of 5; Code 128, UCC EAN 128, Codabar,

Code93, MSI, Plessey, Codablock

User Interface

Power and good read LED. Good read beeper.

Design

Processor: Custom chip (ASIC inc. DSP processor) for fast signal processing and decoding.
Light source: visible laser diode @ 660nm
Laser Class 2 IEC 825 / CDRH Class II

Environmental Characteristics

Operating temperature: 0° to 50° C (32° to 122° F).
Storage temperature: -40° to 70° C (-40° to 158° F).

Relative humidity: 10% to 90% non-condensing.

Shock resistance: IEC 68.2-27 Test Ea (30G, 11ms) 3 Shock / axis, 3 axis
Vibration resistance: IEC 68-2-6 Test Fc (1.5mm, freq.: 10 to 55Hz) 2 hours /axis, 3axis

Sealing: IP65/ Nema 12

Electrical Characteristics

Power requirements: +7-25DC, power consumption approx. 3.5-4.75W

Advanced Features

Custom scan patterns, Code reconstruction, multicode reading, code sorting, performance feedback, input and output synchronization, programmable data format (code identification, preambles and postambles, intercharacter and intermessage delays) and many others

Interfaces

RS 232 C, 422 & 485. Current Loop.

Accessories

Standard: EasySet CD
Options: Adjustable stand, MCS connection system (with power, host and synchro ports), host RS 232 C cable ,Y cable for host port and power input, package sensor, MaxiScan 3010 network, network cables 1m/3m (3.2'/9.6'), RS232 to RS485 adapter, external power supplies.

Configuration

Setup options include EasySet PC Windows ™ software, by direct connection & bar code printing (custom setup utility), or by conventional bar code setup manual.

Regulatory Approvals.

All models:
Compliant with all European Directives:
CE (EN50081-2/ EN50082-2/ EN60950)
USA:
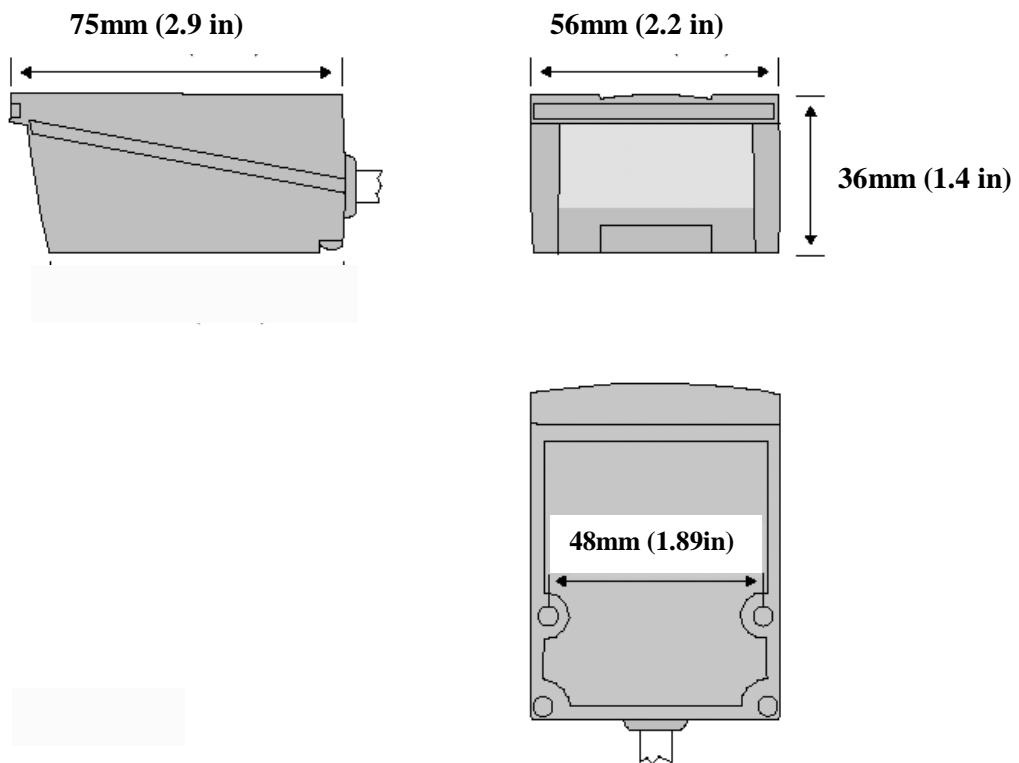FCC Part 15 compliant: Class A digital device
UL recognized component.

Canada:
ICES-003, NMB003: Class A digital apparatus
Australia – New Zealand:
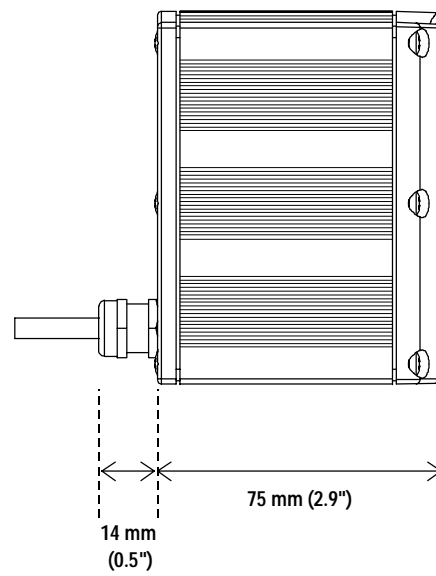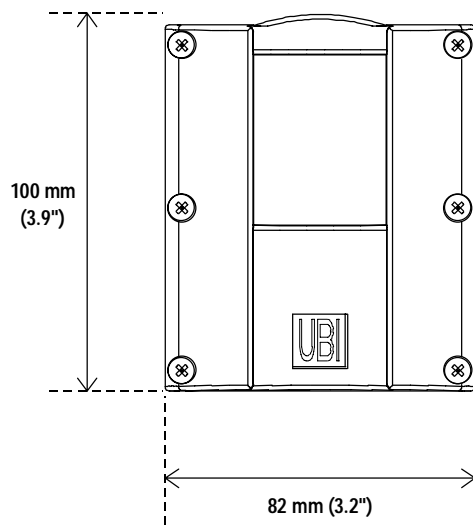Class A, AS/NZS 3548 C tick marked

Laser Safety :
DHHS Standard 21CFR (1996) 1040.10 and 1040.11 Class II Laser Product
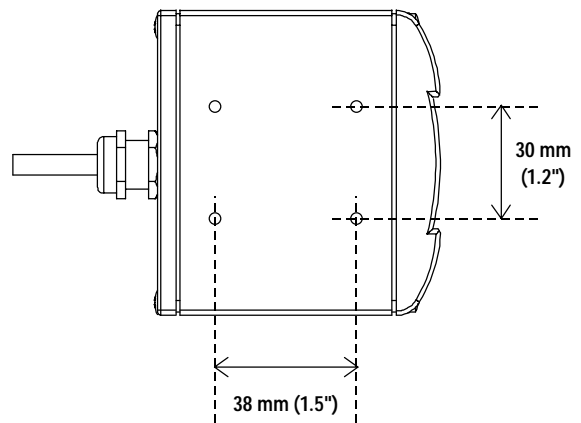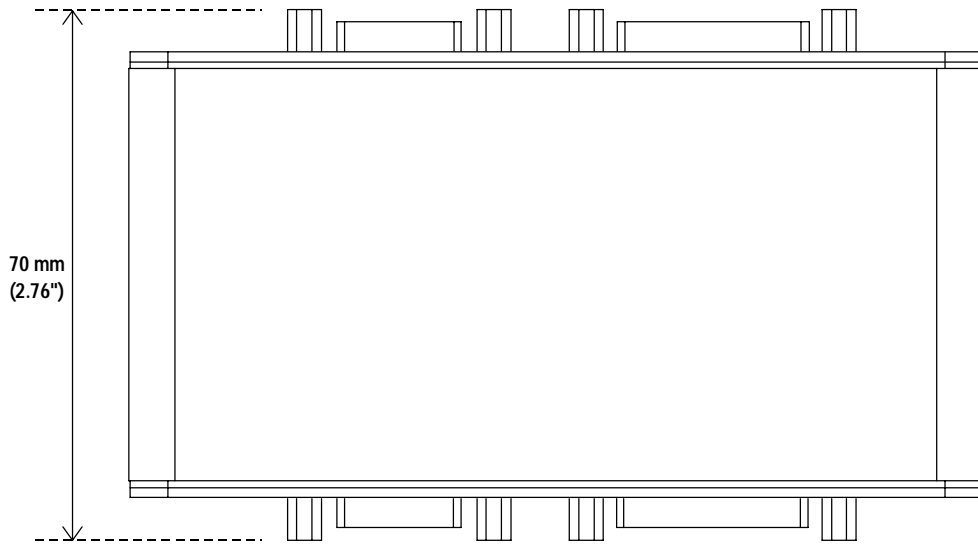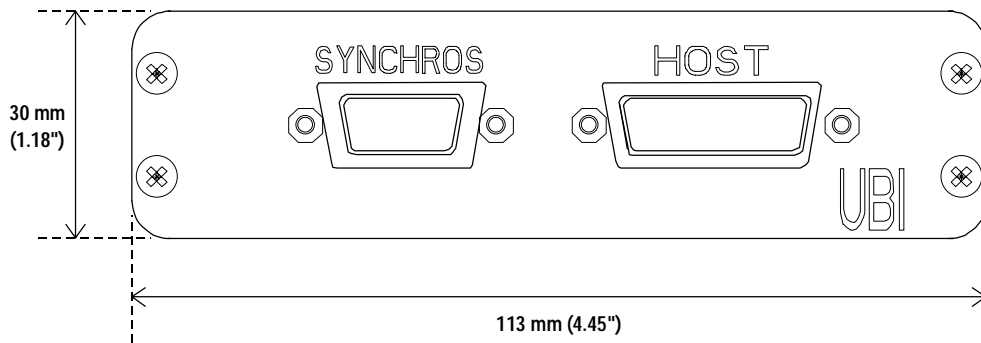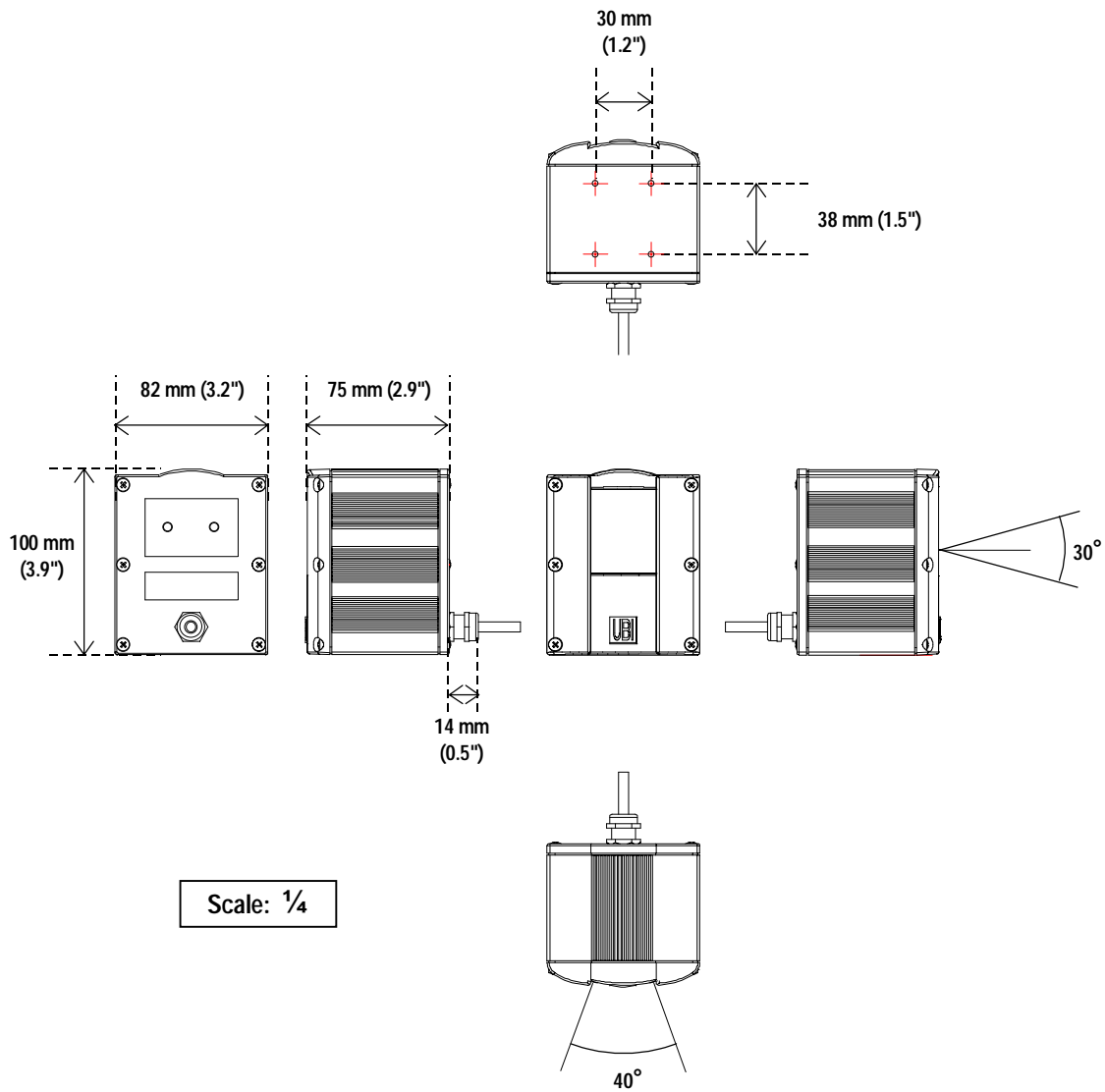IEC 825-1, EN60825-1, Class 2 Laser Product

Dimensions

M3100

75mm (2.9 in)   56mm (2.2 in)

36mm (1.4 in)

48mm (1.89in)

100 mm
(3.9")

82 mm (3.2")

75 mm (2.9")

14 mm
(0.5")

Scale: ½

30 mm
(1.2")

38 mm (1.5")

MaxiScan Connection System (external unit option)

Scale: 1
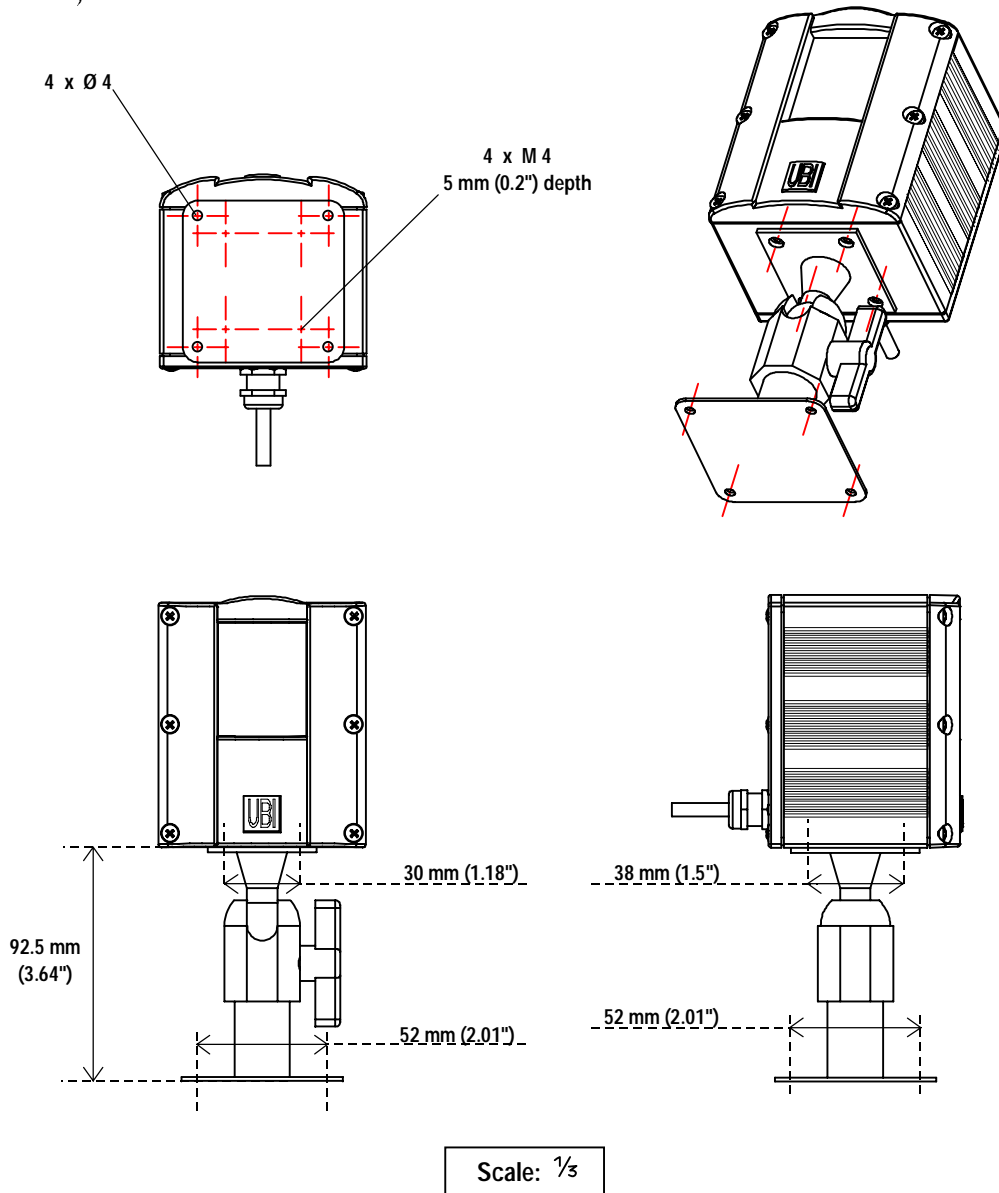
Mounting points / laser light plane

30 mm
(1.2")

38 mm (1.5")

82 mm (3.2")

75 mm (2.9")

100 mm
(3.9")

30°

14 mm
(0.5")

Scale: ¼

40°

Optional adjustable stand

4 x Ø 4

4 x M 4
5 mm (0.2") depth

30 mm (1.18")

38 mm (1.5")

92.5 mm
(3.64")

52 mm (2.01")

52 mm (2.01")
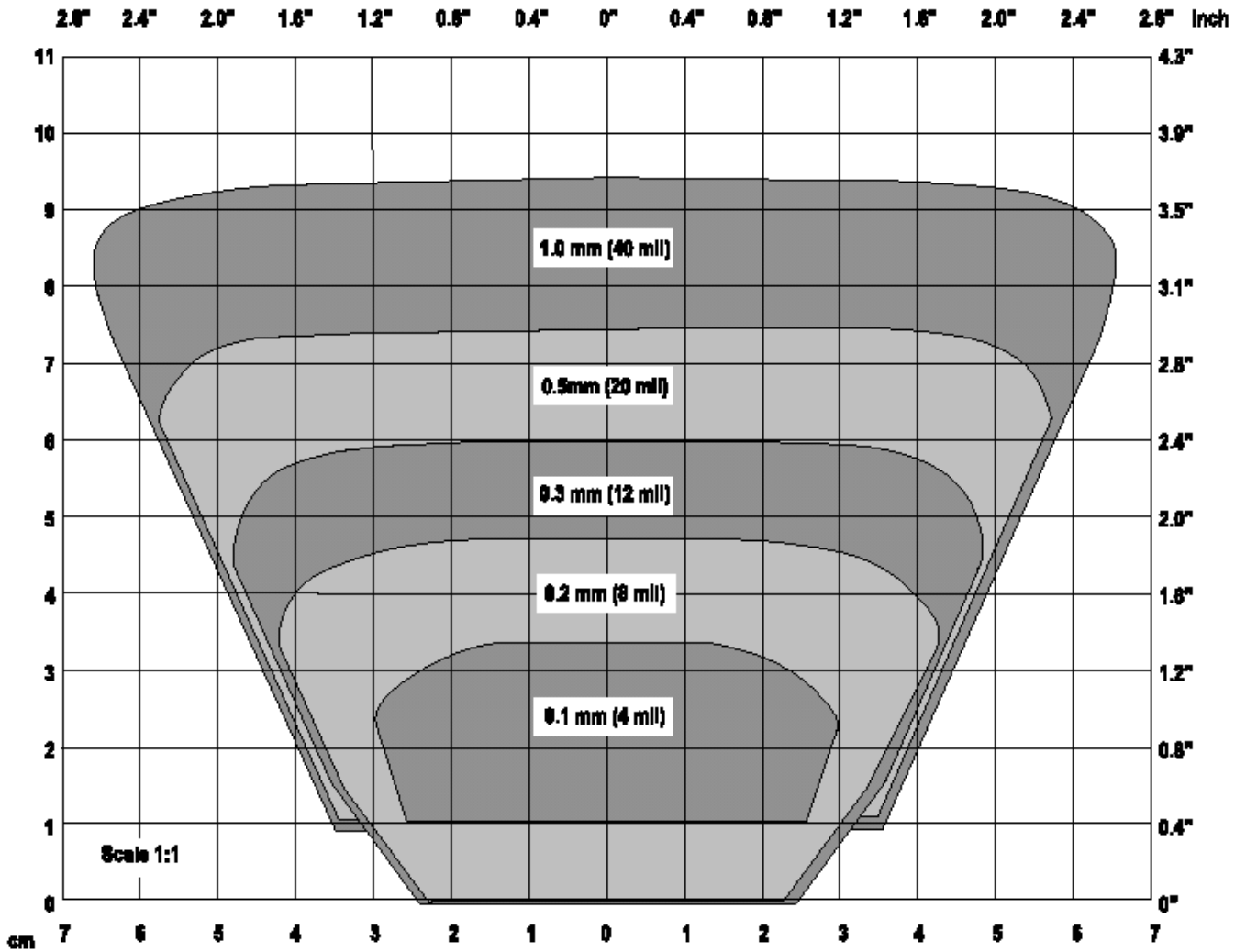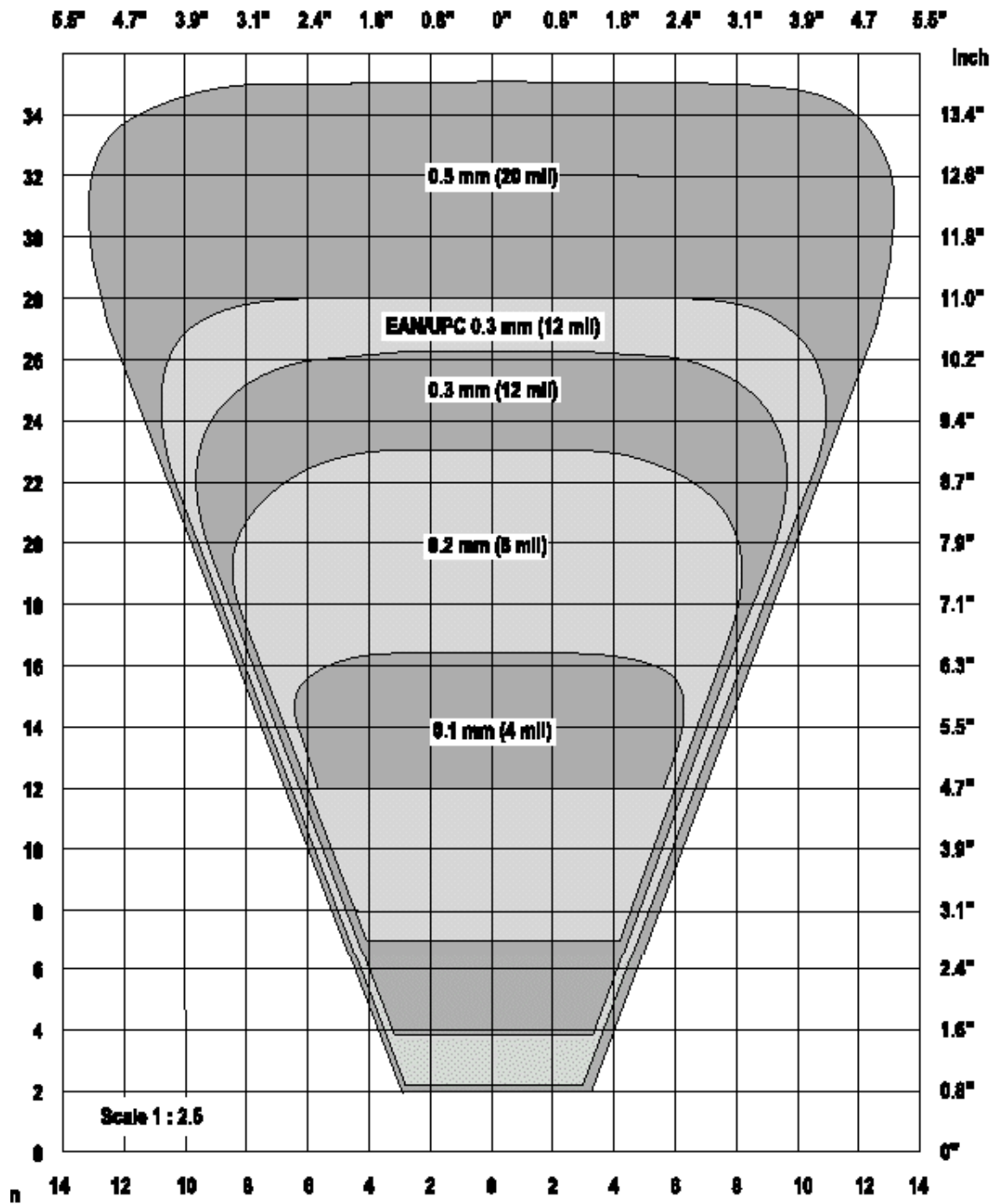
Scale: ⅓

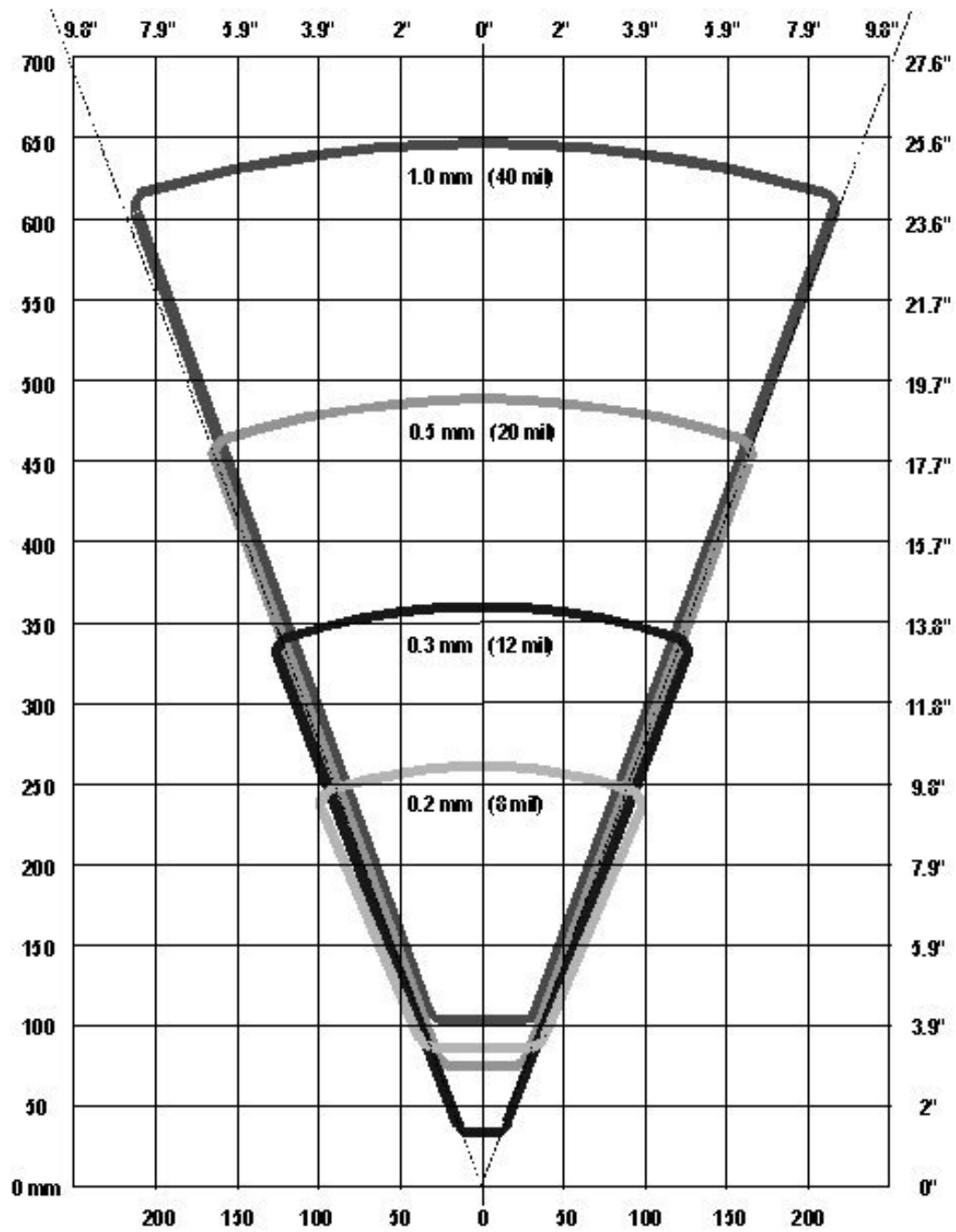# Horizontal scan width / reading distance / barcode density

1.0 M3100SR

2.0 M3100ST

3.0 ST

The values shown are for high-contrast Code 39 with a ratio of 1:3 and correspond to the product default settings.
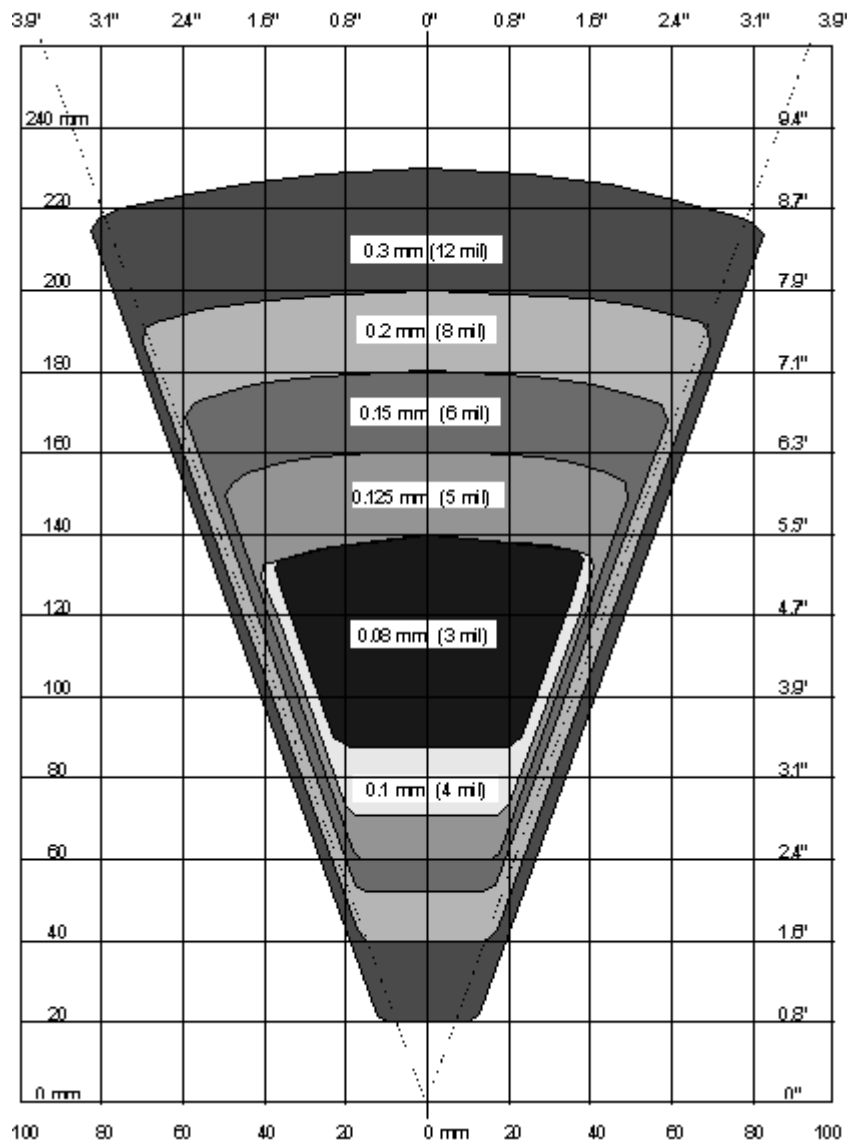
Horizontal scan width / reading distance / barcode density

HR

The values shown are for high-contrast Code 39 with a ratio of 1:3 and correspond to the product default settings.

A3 Connections and Cables

M3100 Connection options

1 Y cable

Power

Y Cable
Part No.0-530062-02

2 MCS Box

Host Cable
PN. 0-530062-01

MCS
PN. 0-531029-06

Synchro
PN. 3-500029-03

Power Supply
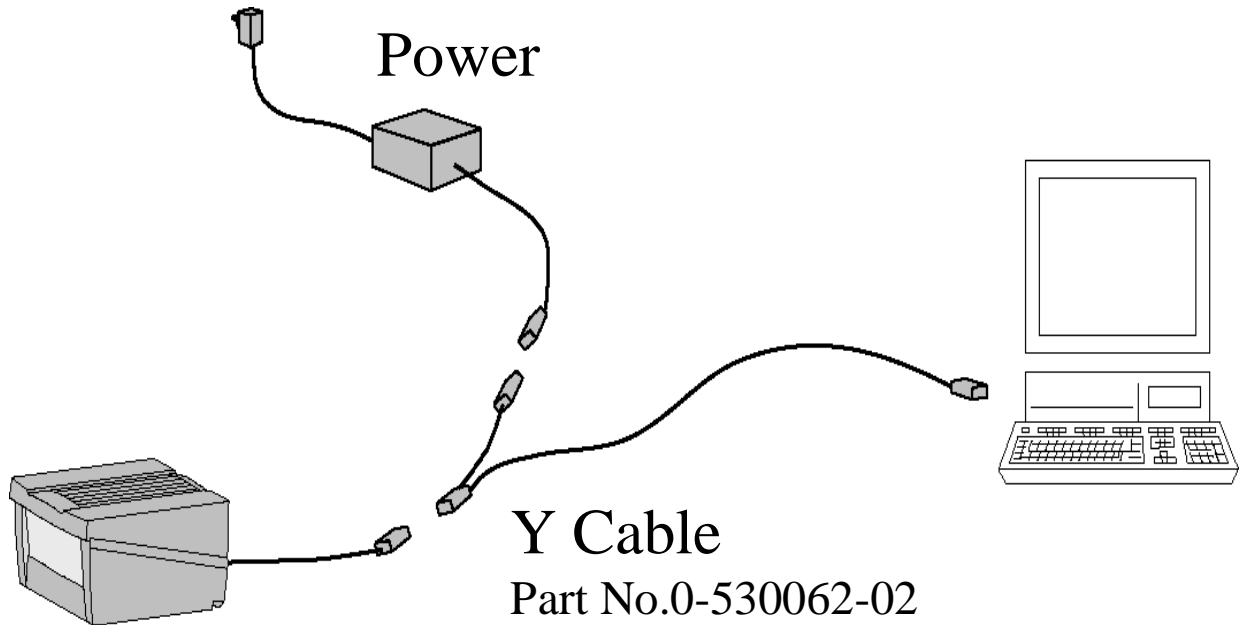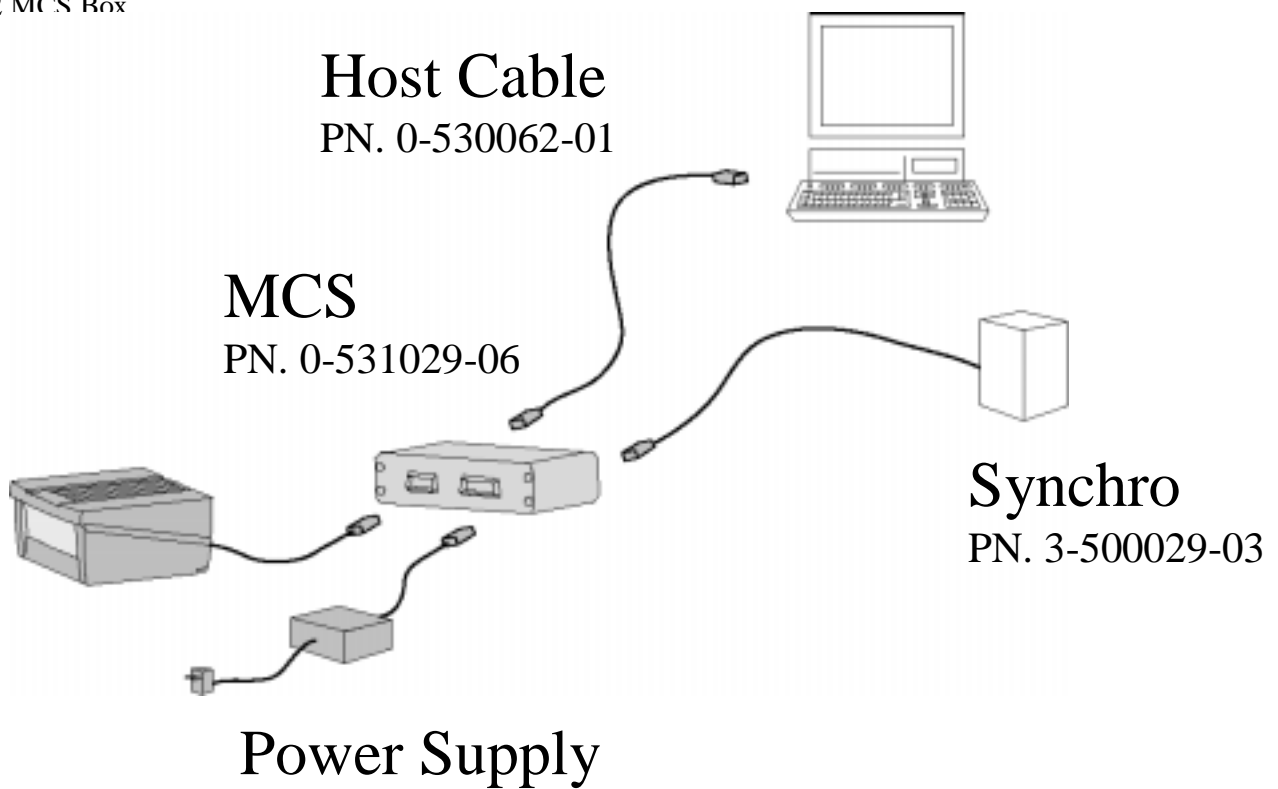
MaxiScan 3300 Connection Options

1 Y Cable

Power

Y Cable
Part No.0-530062-02

2 MCS Box

Host Cable
PN. 0-530062-01

MCS
PN. 0-531029-06

Synchro
PN. 3-500029-03

Power Supply

M3100 cable output

15-pin subD female connector
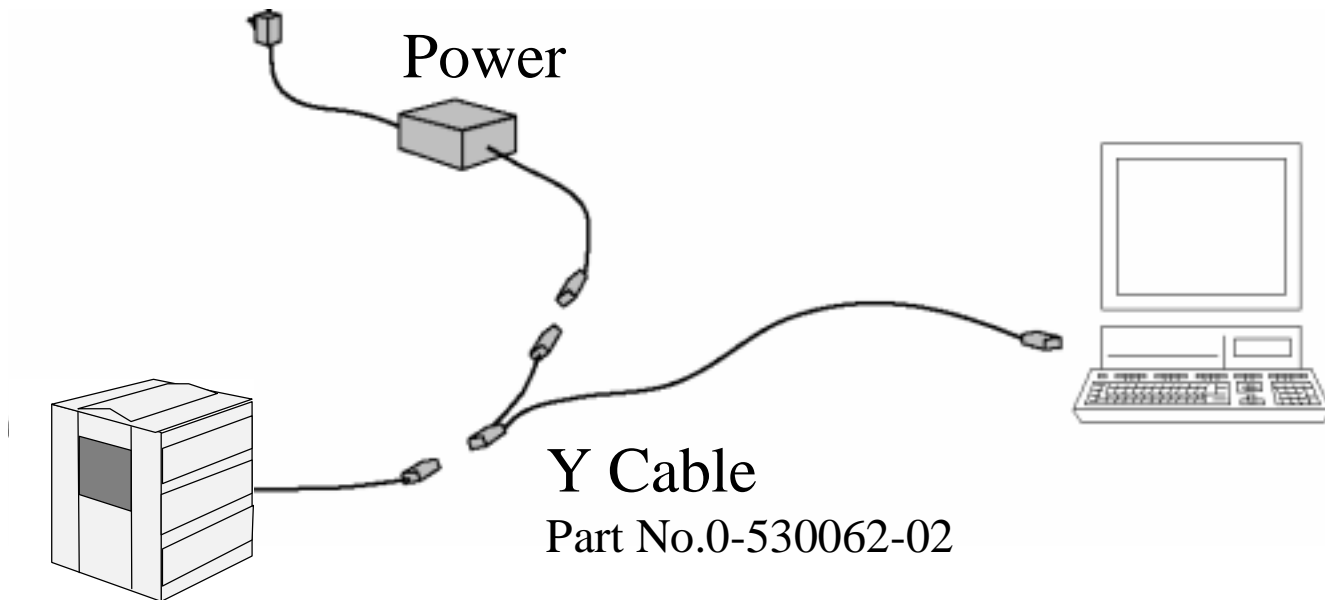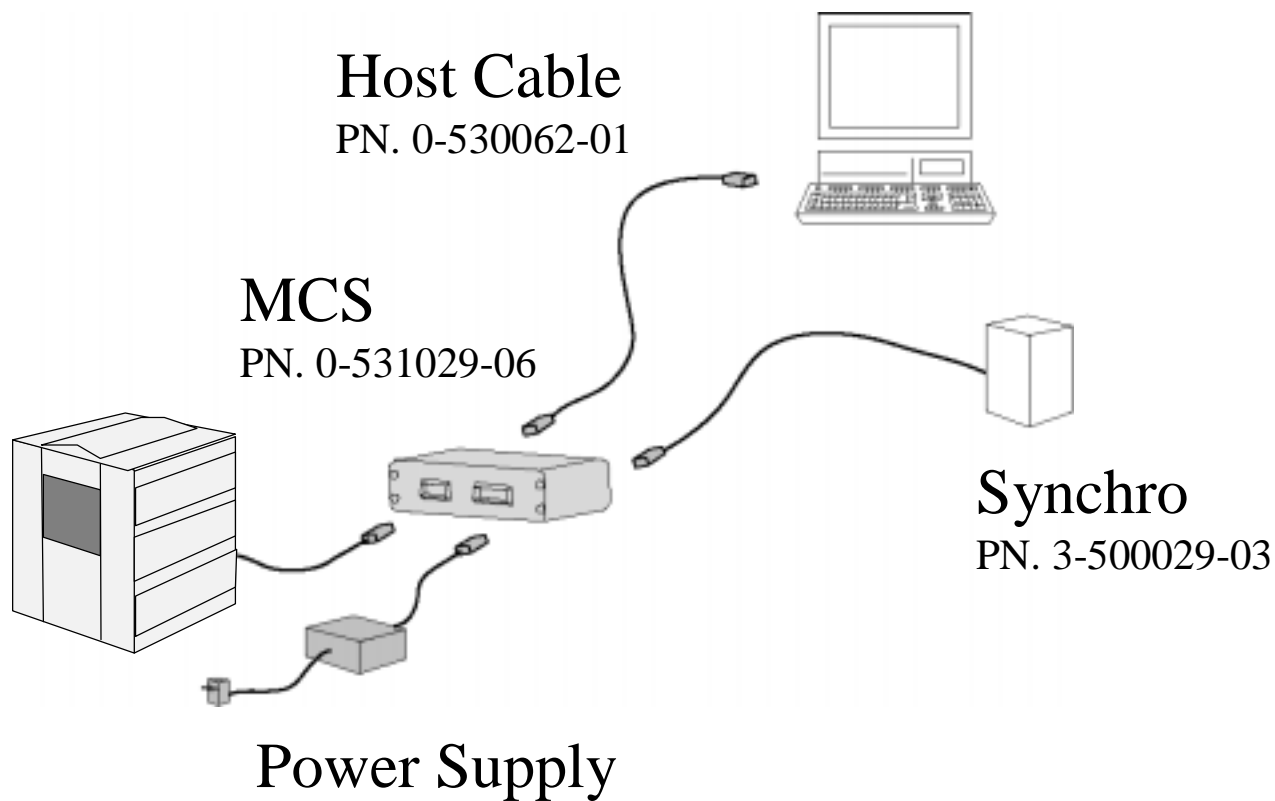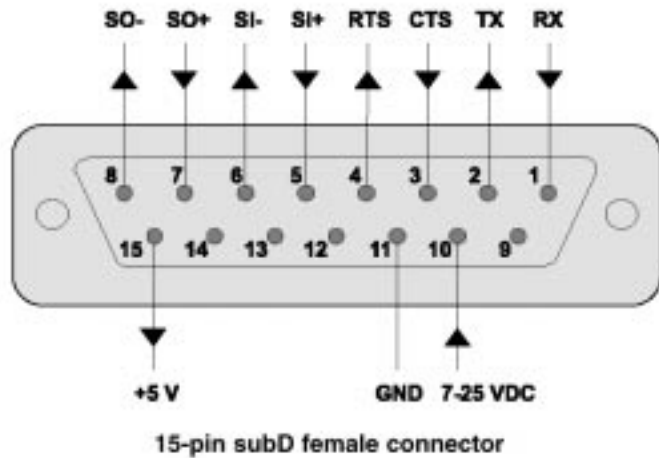
Pin	Function
1	Receive data
2	Transmit data
3	Clear to send
4	Request to send
5	Positive synchronization input (SI+)
6	Negative synchronization input (SI-)
7	Positive synchronization output (SO+)
8	Negative synchronization output (SO-)
9	Not connected
10	Power in (7 to 25 VDC unregulated)
11	Ground
12	Reserved
13	Not connected
14	Not connected
15	+5 VDC out (65 mA max)

M3100 cable converter cable (to 422/485) pn 3-510022-00
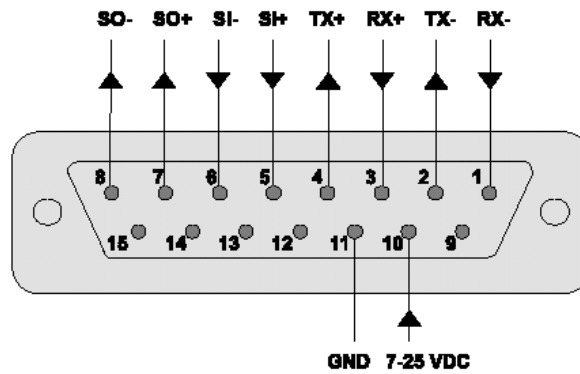
Host side - 15-pin subD female connector

Pin	Function
1	Receive / transmit data RX- / TX- (RS-485) Receive data RX- (RS-422)
2	Receive / transmit data RX- / TX- (RS-485) Transmit data TX- (RS-422)
3	Receive / transmit data RX+ / TX+ (RS-485) Receive data RX+ (RS-422)
4	Receive / transmit data RX+ / TX+ (RS-485) Transmit data TX+ (RS-422)
5	Positive synchronization input (SI+)
6	Negative synchronization input (SI-)
7	Positive synchronization output (SO+)
8	Negative synchronization output (SO-)
9	Not connected
10	Power in (7 to 25 VDC unregulated)
11	Ground
12	Reserved
13, 14, 15	Not connected

M3300 cable connector

15-pin subD female connector

pin	function
1	receive data (RS-232 C) / RX- (RS-422 / 485)
2	transmit data (RS-232 C) / TX- (RS-422 / 485)
3	clear to send (RS-232 C) / RX+ (RS-422 / 485)
4	request to send (RS-232 C) / TX+ (RS-422 / 485)
5	positive synchronization input (SI+)
6	negative synchronization input (SI-)
7	positive synchronization output (SO+)
8	negative synchronization output (SO-)
9	not connected
10	power in (7 to 25 VDC 10 Watt unregulated)
11	power ground
12	shield
13	power ground
14	power in (7 to 25 VDC 10 Watt unregulated)
15	not connected

RS-232 C

I/O sync max current 50 mA

SO- SO+ SI- SI+ RTS CTS TX RX

8 7 6 5 4 3 2 1

15 14 13 12 11 10 9

NC SHIELD NC

7-25 VDC GND GND 7-25 VDC
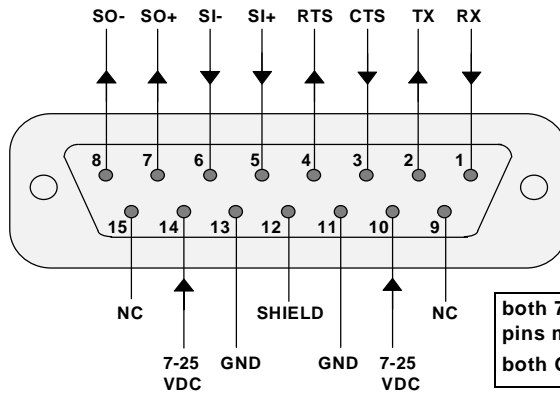
both 7-25 VDC power supply pins must be powered
both GND pins must be used

15-pin subD female connector

pin	function
1	receive data (RS-232 C)
2	transmit data (RS-232 C)
3	clear to send (RS-232 C)
4	request to send (RS-232 C)
5	positive synchronization input (SI+)
6	negative synchronization input (SI-)
7	positive synchronization output (SO+)
8	negative synchronization output (SO-)
9	not connected
10	power in (7 to 25 VDC 10 Watt unregulated)
11	power ground
12	shield
13	power ground
14	power in (7 to 25 VDC 10 Watt unregulated)
15	not connected

RS-422

RS-422: install resistor = 100 Ohm

I/O sync max current 50 mA

SO- SO+ SI- SI+ TX+ RX+ TX- RX-

both 7-25 VDC power supply pins must be powered

both GND pins must be used

NC   7-25 VDC   GND   SHIELD   GND   7-25 VDC   NC

host male subD cable connector

15-pin subD female connector

pin	function
1	receive data RX- (RS-422)
2	transmit data TX- (RS-422)
3	receive data RX+ (RS-422)
4	transmit data TX+ (RS-422)
5	positive synchronization input (SI+)
6	negative synchronization input (SI-)
7	positive synchronization output (SO+)
8	negative synchronization output (SO-)
9	not connected
10	power in (7 to 25 VDC 10 Watt unregulated)
11	power ground
12	shield
13	power ground
14	power in (7 to 25 VDC 10 Watt unregulated)
15	not connected

RS-485

RS-485: connect pins 1 and 2 and connect pins 3 and 4
install resistor = 120 Ohm between pins 1 and 3

host male subD cable connector

I/O sync max current 50 mA

both 7-25 VDC power supply pins must be powered
both GND pins must be used

MaxiScan 3300 15-pin subD female connector

pin	function
1	receive / transmit data RX- / TX- (RS-485)
2	receive / transmit data RX- / TX- (RS-485)
3	receive / transmit data RX+ / TX+ (RS-485)
4	receive / transmit data RX+ / TX+ (RS-485)
5	positive synchronization input (SI+)
6	negative synchronization input (SI-)
7	positive synchronization output (SO+)
8	negative synchronization output (SO-)
9	not connected
10	power in (7 to 25 VDC 10 Watt unregulated)
11	power ground
12	shield
13	power ground
14	power in (7 to 25 VDC 10 Watt unregulated)
15	not connected

MaxiScan Connection System (MCS) Option
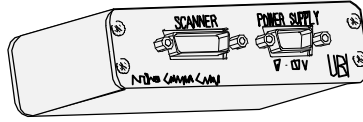
port	type	connection	remarks
SCANNER	15-pin subD male		-
POWER SUPPLY 7-25 V	9-pin subD male	external power supply	7-25 V 10 Watt full-wave rectified unregulated power
HOST	15-pin subD female	host computer	• RS-232 C (standard configuration) • RS-422 (use cable convert M3100) • RS-485 (use cable convert M3100) • Current Loop (requires MCS) each host system interface is software programmable and requires a different cable
SYNCHROS	9-pin subD female	I/O synchronization cable	• input synchronization—reading can be triggered by an external cell, automatic machine, electrical control device • output synchronization—an external device (switch, alarm, indicator light) can be triggered by a good read or unsuccessful read as required

SCANNER port

RS-232 C   **RX   TX   CTS   RTS**

RS-422 / 485   **RX-   TX-   RX+   TX+   SI+   SI-   SO+   SO-**

CHASSIS GND

7-25 VDC   PWR GND   7-25 VDC

15-pin subD male connector

pin	function
1	receive data (RS-232 C) / RX- (RS-422 / 485)
2	transmit data (RS-232 C) / TX- (RS-422 / 485)
3	clear to send (RS-232 C) / RX+ (RS-422 / 485)
4	request to send (RS-232 C) / TX+ (RS-422 / 485)
5	positive synchronization input (SI+)
6	negative synchronization input (SI-)
7	positive synchronization output (SO+)
8	negative synchronization output (SO-)
9	not connected
10	power in (7 to 25 VDC 10 Watt unregulated)
11	power ground
12	shield
13	power ground
14	power in (7 to 25 VDC 10 Watt unregulated))
15	not connected

POWER SUPPLY 7-25V port

**7-25 VDC
(2 wires)**

**GND
(2 wires)**
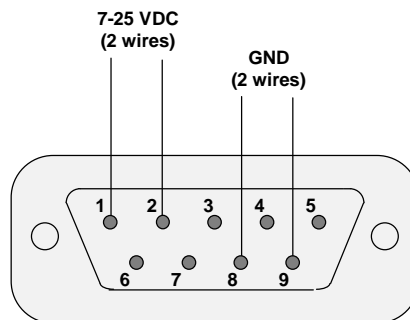
9-pin subD male connector

pin	function
1	**power in (7 to 25 VDC 10 Watt unregulated)**
2	**power in (7 to 25 VDC 10 Watt unregulated)**
3	not connected
4	not connected
5	not connected
6	not connected
7	not connected
8	**power ground**
9	**power ground**

HOST port—RS-232 C
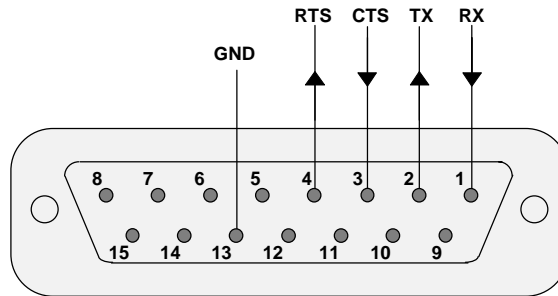
MCS 15-pin subD female connector

pin	function
1	**receive data (RS-232 C)**
2	**transmit data (RS-232 C)**
3	**clear to send (RS-232 C)**
4	**request to send (RS-232 C)**
5	not connected
6	not connected
7	not connected
8	not connected
9	not connected
10	reserved Current Loop
11	reserved Current Loop
12	reserved Current Loop
13	**signal ground (RS-232 C)**
14	reserved Current Loop
15	reserved Current Loop

HOST port—RS-422 (use converter cable for M3100)
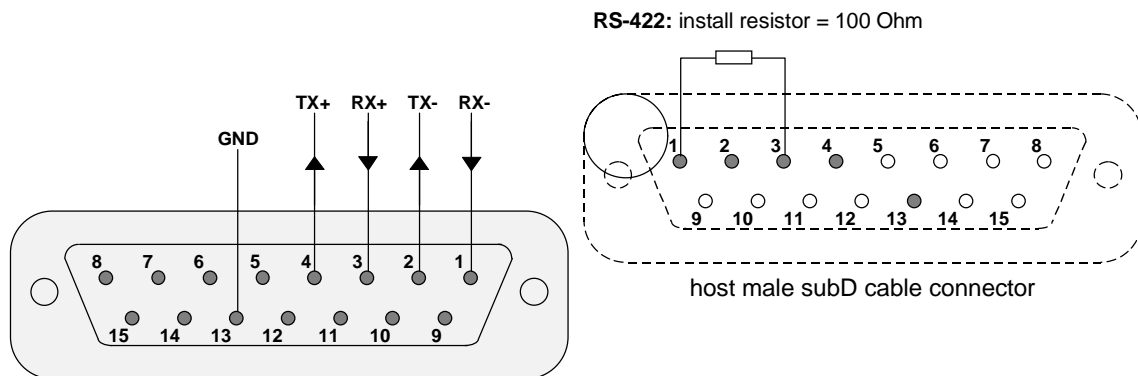
RS-422: install resistor = 100 Ohm

host male subD cable connector

MCS 15-pin subD female connector

pin	function
1	**receive data RX- (RS-422)**
2	**transmit data TX- (RS-422)**
3	**receive data RX+ (RS-422)**
4	**transmit data TX+ (RS-422)**
5	not connected
6	not connected
7	not connected
8	not connected
9	not connected
10	reserved Current Loop
11	reserved Current Loop
12	reserved Current Loop
13	**signal ground (RS-422)**
14	reserved Current Loop
15	reserved Current Loop

HOST port—RS-485 (use converter cable for M3100)

RS-485: connect pins 1 and 2 and connect pins 3 and 4

install resistor = 120 Ohm between pins 1 and 3

host male subD cable connector
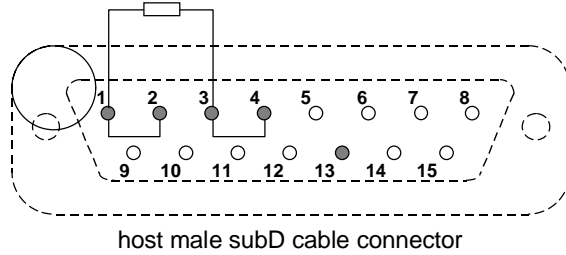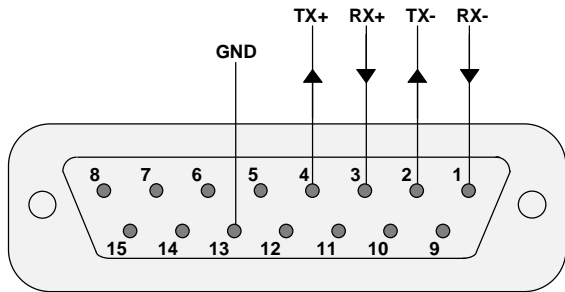
MCS 15-pin subD female connector

pin	function
1	**receive / transmit data RX- / TX- (RS-485)**
2	**receive / transmit data RX- / TX- (RS-485)**
3	**receive / transmit data RX+ / TX+ (RS-485)**
4	**receive / transmit data RX+ / TX+ (RS-485)**
5	not connected
6	not connected
7	not connected
8	not connected
9	not connected
10	reserved Current Loop
11	reserved Current Loop
12	reserved Current Loop
13	**signal ground (RS-485)**
14	reserved Current Loop
15	reserved Current Loop

HOST port—Current Loop (passive type)

Current Loop: connect pins 1 and 10

host male subD cable connector
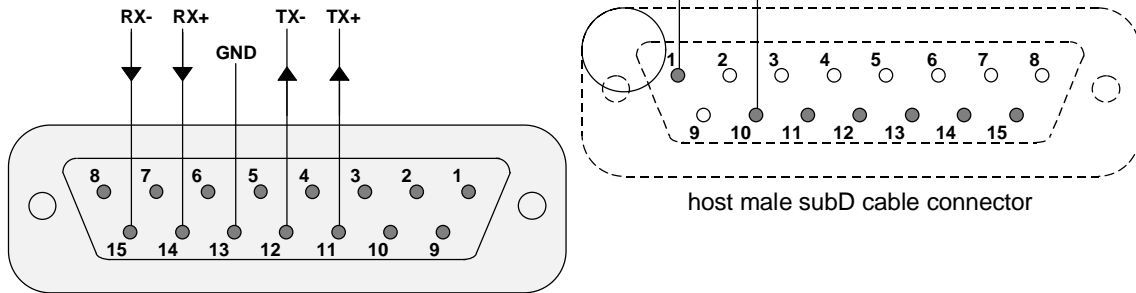
MCS 15-pin subD female connector

pin	function
1	**Reserved**
2	reserved RS-232 C / RS-422 / 485
3	reserved RS-232 C / RS-422 / 485
4	reserved RS-232 C / RS-422 / 485
5	not connected
6	not connected
7	not connected
8	not connected
9	not connected
10	**Reserved**
11	**TX+ (Current Loop)**
12	**TX- (Current Loop)**
13	**signal ground (Current Loop)**
14	**RX+ (Current Loop)**
15	**RX- (Current Loop)**

SYNCHROS port

In all cases, the synchronization current provided by the external input/output device must be limited to 50 mA max (20 mA is a good average value).
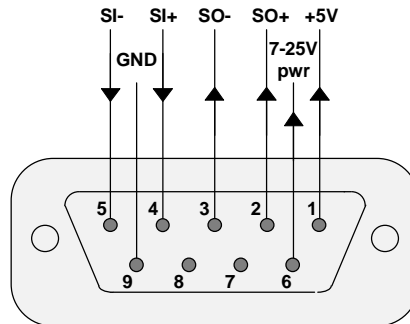
9-pin subD female connector

pin	function
1	+5 VDC out (65 mA max)
2	positive synchronization output (SO+) (50 mA max)
3	negative synchronization output (SO-) (50 mA max)
4	positive synchronization input (SI+) (50 mA max)
5	negative synchronization input (SI-) (50 mA max)
6	7-25 VDC 10 Watt
7	not connected
8	not connected
9	power ground

Standard RS-232 C cable

cable connector - 15-pin subD male
MaxiScan Connexion System side

RX   TX   CTS   RTS
                 GND

RS-232 C shielded cable
(shielding connected to
casing of cable connectors)

cable connector - 9-pin subD female
PC side
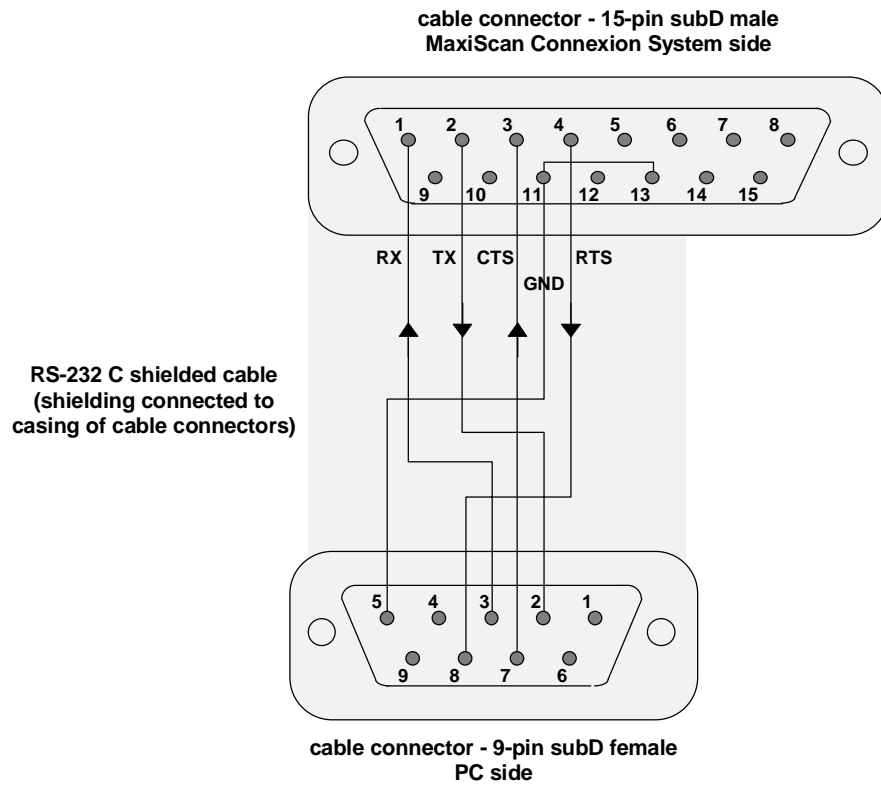
DB 15 male MaxiScan Connexion System side	Signal	DB 9 female PC side
1	RX	3
2	TX	2
3	CTS	7
4	RTS	8
11-13	GND	5
connector casing	shielding	connector casing

A4. Parts List for M3000 Series

Ordering Number	Product Description

MaxiScan 3100 SR (Short Range)
Type: Fixed Industrial linear CCD scanner, **Scan Rate**: 400 nom. 800 max scans/second.
Reading Distance: 0-10cm(0-4"), **Symbologies**: 1D and PDF 417, **Resolution**: 0.1-1.3mm (4-50mil)
Cable Length: fixed cable 1m (3,2') with Sub D15 Female, **Sealing:** IP65/Nema 12, Power 7-25V

MaxiScan 3100 SR Scanner Only
Includes: Scanner, Fixed cable, Mounting bracket,
Getting Started Guide and CD (with EasySet)

3-510012-00	CCD scanner with RS 232 interface, fixed cable and Sub D 15 Pin female connector.

MaxiScan 3100 ST (Standard Range)
Type: IEC Class 2 Fixed Industrial Laser scanner, **Scan Rate**: 200 scans/second.
Reading Distance: 5-35cm (2-14"), **Symbologies**: 1D and PDF 417, **Resolution**: 0.1-1.3mm (4-50mil)
Cable Length: fixed cable 1m (3,2') with Sub D15 Female, **Sealing:** IP65/Nema 12, Power 7-25V

MaxiScan 3100 ST Scanner only
Includes: Scanner, Fixed cable, Mounting bracket,
Getting Started Guide and CD (with EasySet)

3-516012-00	Laser scanner , single line with RS 232 interface, fixed cable and Sub D 15 Pin female connector.

MaxiScan 3100 ML (Multi-line)
Type: IEC Class 2 Fixed Industrial Laser scanner, 10 line, 10° Raster, **Scan Rate:** 200 scans/second.
Reading Distance: 5-35cm (2-14"), **Symbologies**: 1D and PDF 417, **Resolution**: 0.1-1.3mm (4-50mil)
Cable Length: fixed cable 1m (3,2') with Sub D15 Female, **Sealing:** IP65/Nema 12, Power 7-25V

MaxiScan 3100 ML Scanner only
Includes: Scanner, Fixed cable, Mounting bracket,
Getting Started Guide and CD (with EasySet).

3-517012-00	Laser scanner, multi-line with RS 232 interface, fixed cable and Sub D 15 Pin female connector.

MaxiScan 3300 ST (Standard Range)
Type: IEC Class 2 Fixed Industrial Laser scanner, Line, Raster, Pattern, **Scan Rate: 400-700** scans/second.
Reading Distance: 0-65cm (0-25"), **Symbologies**: 1D, **Resolution**: 0.15-1.3mm (6-50mil)
Cable Length: fixed cable 1m (3,2') with Sub D15 Female, **Sealing:** IP65/Nema 12, Power 7-25V

MaxiScan 3300 Standard Range Scanner only
Includes: RS 232 /422/485 Scanner, Fixed Cable,
Install Guide and CD (with EasySet).

0-531052-07	Standard range Kit 7 - With head (0-531012-00) w/o thermo-cooler - with install man. and EasySet
0-531052-08	Standard range Kit 8- With head (0-531012-01) with thermo-cooler - with install man. and EasySet

MaxiScan 3300 Standard Range, Kits with MCS boxes and power units.
Includes: RS 232 /422/485 Scanner w. Thermo-Cooler, Fixed Cable, MCS connection box, power unit,
Install Guide and CD (with EasySet).

0-531052-13	Standard range Kit 13 - With head (0-531012-01),with connection box (0-531029-06) - With Thermo Cooler - With European power unit (0-531029-02) & docs
0-531052-14	Standard range Kit 14 - With head (0-531012-01),with connection box (0-531029-06) - With Thermo Cooler - With US power unit (0-531029-03) & docs
0-531052-15	Standard range Kit 15 - With head (0-531012-01),with connection box (0-531029-06) - With Thermo Cooler - With UK power unit (0-531029-04) & docs

MaxiScan 3300 HR (High Resolution)
Type: IEC Class 2 Fixed Industrial Laser scanner, Line, Raster, Pattern, **Scan Rate: 400-700** scans/second.
Reading Distance: 2-23cm (0,8-9")**, Symbologies**: 1D, **Resolution**: 0.8-1.3mm (3-50mil)
Cable Length: fixed cable 1m (3,2') with Sub D15 Female, **Sealing:** IP65/Nema 12, Power 7-25V

MaxiScan 3300 HR, Scanner only
Includes: RS 232 /422/485 Scanner, Fixed Cable,
Install Guide and CD (with EasySet).

0-532052-09	High Resolution Kit 9 - With head (0-532012-00) w/o thermo-cooler - with install man. and EasySet
0-532052-10	High Resolution Kit 10 - With head (0-532012-01) with thermo-cooler - with install man. and EasySet

MaxiScan 3300 HR, Kits with MCS boxes and power units.
Includes: RS 232 /422/485 Scanner w. Thermo-Cooler, Fixed Cable, MCS connection box, power unit,
Install Guide and CD (with EasySet).

0-532052-16	High Res. Kit 16 - With head (0-532012-01),with connection box (0-531029-06) - With Thermo Cooler - With European power unit (0-531029-02) &docs
0-532052-17	High Res. Kit 17 - With head (0-532012-01), with connection box (0-531029-06) -- With Thermo Cooler - With US power unit (0-531029-03) & docs
0-532052-18	High Res. Kit 18 - With head (0-532012-01), with connection box (0-531029-06) - - With Thermo Cooler - With UK power unit (0-531029-04) & docs

Accessories & Cables

0-531029-06	Connection box - MCS standard
0-531029-07	Connection box - MCS - IP65/ Nema 12 version
0-530062-01	Rs 232 cable output to Host system/PC from MCS box
3-500029-00	M3010 - Network module includes one 3-500029-01 Terminator for Network cables
3-504039-00	M3010 network cable - 1m long
3-504039-01	M3010 network cable - 3m long
3-500029-01	M3010 - Terminator for Network cables
3-510022-00	Cable for M3100 ONLY to convert RS 232 C to RS 422/485 for MaxiScan M3010 network system
0-530062-02	Cable, Rs 232 Y cable output for Host system with power input and reader configuration M3100 & M3300 (alternative to MCS box)

Intermec Data Capture

0-900029-01	CD ROM (in kit packs as standard)
3-510029-00	Mounting bracket, M3100 ONLY - metal for horiz. & vert. surfaces
0-531029-05	Adjustable stand - M3100 & M3300
3-500029-03	Optical package sensor for input synchro, connects to MCS synchro port
3-514022-00	Cable, M3100 ONLY for download of EasySet/ Flash firmware to M3100
3-510049-01	M3100 Installation Guide, (Included with scanners)
0-530049-01	M3300 Installation Guide (included with scanner)
3-500049-01	M3010 Installation Guide (included with network module)

Power Supplies

Necessary unless 7-25V power supply available from other source.

0-531029-02	European power unit
3-531029-08	US Power unit, UL approved
0-531029-04	UK power unit

end