### TRS-3100 SPECIFICATIONS

####**Measuring Range**

<table>
<thead>
<tr>
<th>Sphere</th>
<th>-19.00 to +16.75D (0.25 / 0.50 to 3.00D increments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder</td>
<td>0.00 to ±6.00 D (0.25 / 1.00D increments)</td>
</tr>
<tr>
<td>Axis</td>
<td>0° to 180° (1°/5° increments)</td>
</tr>
<tr>
<td>PD</td>
<td>48.0 to 74.0 mm (far mode)</td>
</tr>
<tr>
<td>PD</td>
<td>50.0 to 74.0 mm (near working distance of 35 cm)</td>
</tr>
<tr>
<td>PD</td>
<td>54.0 to 80.0mm (far PD possible for 100% convergence)</td>
</tr>
</tbody>
</table>

- **Rotary Prism**: 0.0 to 20.0 ∆ (0.1 / 0.5 / 2.0 ∆ increments)
- **Cross Cylinder Lens**: ±0.25D
- **Occluder**: 2.0mm
- **Pinhole Plate**: 2.0mm
- **Red Maddox Rod**: Right eye: horizontal, Left eye: vertical
- **Red/Green Filter**: Right eye: red, Left eye: green
- **Polarizing Filters**: Right eye: 135°, Left eye: 45°; Right eye: 45°, Left eye: 135°
- **Fixed Cross Cylinder Lens**: ±0.50D
- **Spherical Lenses for Retinoscope**: +1.50 / +2.00D
- **Dispersion Prism**: Right eye: 6 ∆ BU, Left eye: 10 ∆ BI

#### Refraction Distance for Near Vision

- 350 to 700mm (selectable in increments of 50mm)

#### Visual Field

- 40° (VD = 12mm)

#### Forehead Rest Adjustment

- 14 ±2mm

#### VD Scale

- 12, 13.75, 16, 18, 20mm

#### General Specifications

- **Horizontal Level Adjustment**: ±2.5°
- **Display**: 5.7-inch color LCD
- **Printer**: Built-in
- **IC Reader/Writer**: Built-in
- **Power Supply**: AC 100 to 240 V
- **Power Consumption**: 80 VA

#### Dimensions and Weight

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refractor Head (Main Body: MB)</td>
<td>13.98 (W) x 3.94 (D) x 10.87 (H)” (without bracket) / 7.72 lbs.</td>
<td></td>
</tr>
<tr>
<td>Control Box (CB)</td>
<td>6.30 (W) x 8.23 (D) x 6.50 (H)” / 3.75 lbs.</td>
<td></td>
</tr>
<tr>
<td>Relay Box (RB)</td>
<td>7.64 (W) x 8.94 (D) x 2.40 (H)” / 4.40 lbs.</td>
<td></td>
</tr>
</tbody>
</table>

#### Standard Accessories

- Near point card, Near point rod, Forehead rest, Face shield, White plastic plate, Black plate, Commemorative CD, C-400, Printer paper (3 rolls), Power cord, Operator’s manual

#### Optional Accessories

- Intelligent Cards (5 cards/set)

*When used with the NIDEK SC-2000, special settings are available.*
The TRS-3100 is manufactured for Marco by Nidek.

**TRS-3100 Benefits**

**ReMarcoble**

**TOTAL REFRACTION SYSTEM: AUTOMATED, WIRELESS, AND EMR CONNECTED.**

**SPEED** of automation, set-up, wireless connections, operational response, patient throughput, and office efficiencies.

**SPECIFICITY** of real-time dedicated microprocessor function, EMR/EHR integration, and target-specific test selection.

**SIMPLICITY** of EMR interface with Marco Connect™, wireless IC Reader connection to other devices, ease of use, and ergonomic design.

**SECURITY** of fast return on investment, accurate measurement, 40 yrs of Marco experience & service, warranty protection, and the assurance of operator well-being – avoiding risks of repetitive shoulder & neck injury.

**MEASUREMENT RANGE**

- **Sphere**
  - -19.00 to +16.75D (0.25 / 0.50 to 3.00D increments)

- **Cylinder**
  - 0.00 to ±6.00D (0.25 / 1.00D increments)

- **Axis**
  - 0° to 180° (1°/5° increments)

- **PD**
  - 48.0 to 80.0mm (far mode)
  - 50.0 to 74.0mm (near working distance of 35 cm)
  - 54.0 to 80.0mm (far PD possible for 100% convergence)

- **Rotary Prism**
  - 0.0 to 20.0 ∆ (0.1 / 0.5 / 2.0 ∆ increments)

**AUXILIARY LENSES**

- **Cross Cylinder Lens**
  - ±0.25D

- **Occluder**

- **Pinhole Plate**
  - 2.0mm

- **Red Maddox Rod**
  - Right eye: horizontal, Left eye: vertical

- **Red/ Green Filter**
  - Right eye: red, Left eye: green

- **Polarizing Filters**
  - Right eye: 135˚, Left eye: 45˚ / Right eye: 45˚, Left eye: 135˚

- **Fixed Cross Cylinder Lens**
  - ±0.50D

- **Spherical Lenses for Retinoscope**
  - +1.50 / +2.00D

- **Dispersion Prism**
  - Right eye: 6∆BU, Left eye: 10∆BI

**Refraction Distance for Near Vision**

- 350 to 700mm (selectable in increments of 50mm)

**Visual Field**

- 40˚ (VD = 12mm)

**Forehead Rest Adjustment**

- 14 ±2mm

**VD Scale**

- 12, 13.75, 16, 18, 20mm

**GENERAL INFORMATION**

- **Horizontal Level Adjustment**
  - ±2.5˚

- **Display**
  - 5.7-inch color LCD

- **Printer**
  - Built-in

- **IC Reader/Writer**
  - Built-in

- **Power Supply**
  - AC 100 to 240 V

**DIMENSIONS AND WEIGHT**

- **Refractor Head:**
  - Main Body (MB): 13.98 (W) x 3.94 (D) x 10.87 (H)” (without bracket) / 7.72 lbs.

- **Control Box (CB):**
  - 6.30 (W) x 8.23 (D) x 6.50 (H)” / 3.75 lbs.

- **Relay Box (RB):**
  - 7.64 (W) x 8.94 (D) x 2.40 (H)” / 4.40 lbs.

**Standard Accessories**

- Near point card, Near point rod, Forehead rest, Face shield, light pen, Disk cover, Communication cable (MB-SC, CB-SC, MB-RB, Power paper (3 roll), Power cord, Operator’s manual, Intelligent Cards (5 set) etc.

**Optional Accessories**

- Intelligent Cards (5 cards/set)

*When used with the NIDEK SC-2000, special settings are available.*
COMPACT DESIGN

The TRS-3100 is compact and the ergonomic design covers less of the patient's face, offering a more comfortable examination.

Whole-Face Hand-Hold

The whole visual field provides unobstructed view of the environment enabling more realistic and accurate measurements.

Faster Examinations

The operator’s ergonomic keypad makes refining sphere, cylinder, and prism lenses smoother and faster than manual examinations. This makes computing prescription easier and reduced chances of errors.

Convergence and PD

During near point tests, power correspondence and PD can be evaluated automatically. PD can be adjusted independently for more accurate and reliable measurements.

SIMPLE

• Easy communication with projectors and peripheral interfaces
• Nearly effortless fingertip setup without locking up or crashing, unlike general operating systems
• Secured data (without added firewalls)
• Complete redundancy: the TRS system shares the same ‘mission specific’, targeted operation as emergency medical and military equipment

SPECIFIC

• Dedicated, real-time operating system with instant response time
• TRS System adapts the same ‘mission specific’, targeted operation as any emergency medical and military equipment (without locking up or crashing, like general operating systems)
• Myriad processing power required (unlike other operating systems that continually use non-essential background functions)

SPEED

• Factor reductions increase throughput and efficiency
• Built-in intelligent Card Reader reader provides immediate data transfer from Marco instruments and peripherals
• RapidFire™ keypad technology speeds up refracting of spheres, cylinder, and prism lenses, with instantaneous compensation to current Rx or lost reports.

SECURITY

• Dedicated, real-time operating system with instant response time
• TRS System adapts the same ‘mission specific’, targeted operation as any emergency medical and military equipment (without locking up or crashing, like general operating systems)
• Myriad processing power required (unlike other operating systems that continually use non-essential background functions)

New TRS-3100 from Marco.

Please send additional materials or publications about the TRS System.

Please provide a list of TRS installed references I may contact.

Please have a Marco Practice Consultant contact my practice.

Name ___________________________________________ Phone ___________________________________________

Address ___________________________________________ Fax ______________________________________________________________________

City __________________________________________________________________________ State ________________________________ Zip__________________________

Please contact Marco to receive the latest updates, information, and resources available for the TRS-3100.

Please send additional materials or publications about the TRS System.

Please provide a list of TRS installed references I may contact.

Please have a Marco Practice Consultant contact my practice.

Secretariat: 157707-08-01 l Fax: 019-95 98 97 70 l info@marco.com l www.marco.com

The leader in vision diagnostics.
Corrected Vision

The NEW TRS-3100 Total Refraction System offers a wireless interface with Marco intraocular and autorefractors. The built-in firewire Card I/O Reader allows seamless integration without cable connectivity and costs.

- Completely wireless interface with Auto, LCA, and LLD acuity output.
- Smaller footprints.
- Ergonomic design.
- Connect software transfers copy back-up.
- All print-outs are only intended to serve as hard copy backup.
- Accurate refractions minimize remake costs.
- Large LCD screen provides logical and clear graphic displays for simple use and easy reading.
- Component integrity maximized (not subjected to firewalls).
- Rapid-reflex display for auto lenses more accurate and faster than subjective with a single push of a button.
- Secured data (without added firewalls).
- Component integrity maximized (not subjected to firewalls).
- EHR stimulus benefits.
- Accurate refractions minimize remake costs.

Marco Connect  is a proprietary software program that is provided to all EMR (Electronic Medical Record) companies that integrate with our products—ordering updated interface for all Marco instruments. With the IC Reader and Marco Connect it is easier than ever to transfer data from pre-test equipment to the TRS-3100 and download all the data into an EMR system.

Features

- Compact Design
- High-Speed Printer with Automatic Cutter
- High-Speed Printer with Automatic Cutter
- ISO CE certified

Compact Design

The TRS-3100 is compact and the ergonomic design creates less of the patient’s load, offering a more comfortable experience.

Marco Connect

Marco Connect® is a proprietary software program that is provided to all EMR (Electronic Medical Record) companies that integrate with our products—ordering updated interface for all Marco instruments. With the IC Reader and Marco Connect it is easier than ever to transfer data from pre-test equipment to the TRS-3100 and download all the data into an EMR system.

Software Updates with Flash drive

Software updates can be performed simply using a flash drive.

Compact Design

The TRS-3100 is compact and the ergonomic design creates less of the patient's load, offering a more comfortable experience.

Marco Connect

Marco Connect® is a proprietary software program that is provided to all EMR (Electronic Medical Record) companies that integrate with our products—ordering updated interface for all Marco instruments. With the IC Reader and Marco Connect it is easier than ever to transfer data from pre-test equipment to the TRS-3100 and download all the data into an EMR system.

Software Updates with Flash drive

Software updates can be performed simply using a flash drive.

High-Speed Printer with Automatic Cutter

The TRS-3100 keypad includes a built in high-speed printer that automatically prints thermal tape. The data on the printout is sent to the desk, simply laid out, and helpful for explanation to patient. Paper replacement takes only seconds. The automatic cutter leaves one edge of the paper intact to prevent dropped or lost reports.

Auto lenses are only intended to serve as hard copy backup.

The automatic Marco Connect software transmits all data directly to your EMR system.

Three patient test examples only intended to serve as hard copy backup.
**SPEEDY**

- Faster refractions increase throughput and efficiency
- Built-in intelligent Card Reader provides immediate data transfer from Marco instrument and accessories

**SPECIFIC**

- Rapid-fire lens technology speeds up refracting of spheres, cylinders, and prisms, with instantaneous compensation to correct for unaided to corrected vision

**SPEED**

- Interface with all EMR (Electronic Medical Records) companies that support Marco Connect software

**SPECIFIC**

- Fully integrated EMR system with EHR (Electronic Health Records) benefits

**SECURITY**

- Dedicated, real-time operating system with instant response time
- TRS System shares the same 'mission specific', targeted operation as emergency medical and military equipment (without locking up, or crashing, like general operating systems)
### TRS-3100 Benefits

#### ReMarcoble

**TOTAL REFRACTION SYSTEM:**
- AUTOMATED, WIRELESS, AND EMR CONNECTED.
- **Speed:** Fast real-time, dedicated microprocessor function.
- **Specificity:** Real-time dedicated microprocessor function, EMR/EHR integration.
- **Simplicity:** EMR interface with Marco Connect™, wireless IC Reader connection.
- **Security:**‘Return on investment’, accurate measurement, 40 yrs of Marco experience & service.

**TRS-3100 SPECIFICATIONS**

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<td>Refraction Distance for Near Vision</td>
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<td>Visual Field</td>
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<td>VR Scale</td>
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<td>Horizontal Level</td>
<td>±2.5˚</td>
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<td>Power Supply</td>
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<tr>
<td>Power Consumption</td>
<td>80 VA</td>
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<td>Refractor Head</td>
<td>12 16 20 / 3 16 20 / 0.07 0.1 0.17 (without bracket) / 7.73 lbs.</td>
</tr>
<tr>
<td>Control Box (DR)</td>
<td>6.0 8.0 / 6.20 6.40 / 0.07 0.1 0.17 0.36 lbs.</td>
</tr>
<tr>
<td>Printer Box (RB)</td>
<td>7.4 8.0 / 6.40 6.40 / 0.07 0.1 0.17 0.36 lbs.</td>
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**General Information**

- Chart Projector (Option)
- Refractor Head (Main Body : MB)
- Control Box (CB)
- IC Reader (Option)

**Dimensions & Weight**

- Refractor Head:
  - Main Body (MB): 13.98 (W) x 3.94 (D) x 10.87 (H)” (without bracket) / 7.73 lbs.
  - Control Box (DR): 6.0 8.0 / 6.20 6.40 / 0.07 0.1 0.17 0.36 lbs.
  - Printer Box (RB): 7.4 8.0 / 6.40 6.40 / 0.07 0.1 0.17 0.36 lbs.

- Standard Accessories:
  - Pole stand, Base, Distance Rods, Black coated, Sticker, Lead cable, Communication cable, Card, Reader, Power Supply (3 rolls), Power cord, Operator’s manual. Intelligent Cards (DR included).

- Optional Accessories:
  - Your local representative will assist you.

*Limitations apply. Consult with Marco Connection and/or Marco representatives for detailed specifications.*