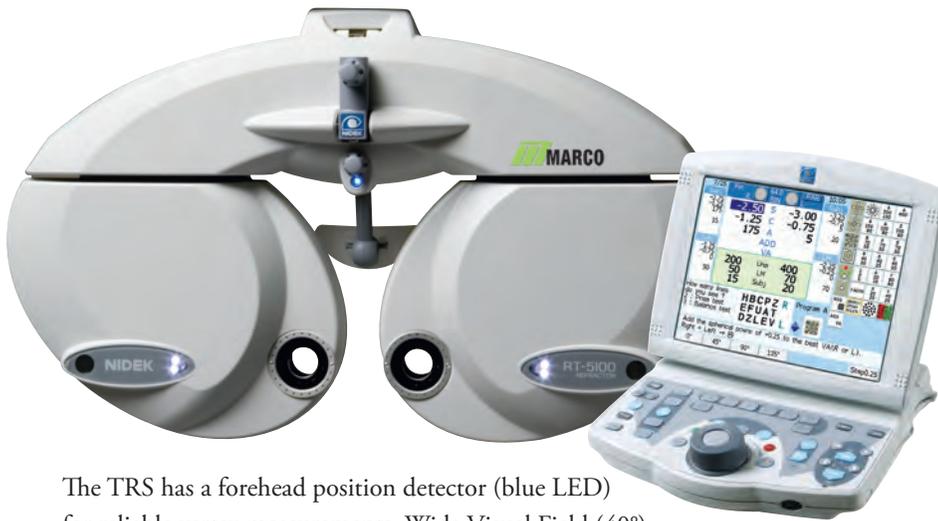


# Marco TOTAL REFRACTION SYSTEM



# TRS-5100: TOTAL REFRACTION SYSTEM



The TRS has a forehead position detector (blue LED) for reliable vertex measurements. Wide Visual Field (40°) apertures provide a natural view of the environment enabling more realistic and accurate refractions

## Easy Maintenance & Upgrades

### How will the TRS-5100 maximize your return on investment?

- Increase patient capacity
- Improve patient flow and reduce wait times
- Decrease testing time, more time available for marketing services
- Spend more quality time with patients
- More time for contact fittings, optical selections and case disposition discussions
- Cut testing times in half, with reliable delegated refractions
- Standardize procedures for reproducible results across all operators
- Reduce the risk of repetitive motion and stress injuries
- Decrease total labor in manual procedures and transcribing data
- Transfer data to EMR without transcription errors
- Increase referrals through enhanced patient experience



The TRS-5100 digital refractor can be employed in either the traditional lane, or on the EPIC™ workstation.

# TRS-5100

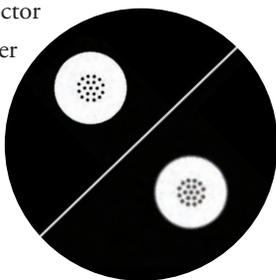
## INTELLIGENT TECHNOLOGY



The **TRS-5100** Total Refraction System generates extremely precise and reliable digital refractions, minimizes staff variables and eliminates transcription errors, while smoothly integrating with EMR systems. The TRS-5100 Digital Refractor replaces the manual refractor and allows the clinical staff to control the refraction process through a touch screen keypad. Through intelligent integration with the OPD, the TRS enhances the patient experience with Optical Path Diagnostics through a faster, more accurate and modern exam. The patient's refraction may be personalized to compensate for lifestyle or different lighting conditions. The entire refraction process can be pre-programmed to standardize the process, improve exam time, increase staff efficiency, and maximize patient flow.

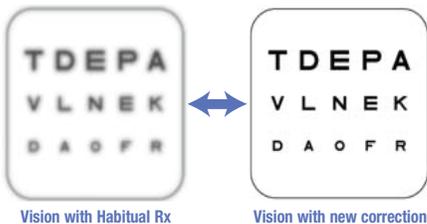
### Intelligent Split Prism is More Precise and Effective

Simultaneous presentation of the two Jackson Cross images with the Split prism makes cylinder power and axis testing much quicker and easier for both the patient and the doctor than with traditional Jackson cross cylinder testing. It makes the choice more obvious for the patient and simpler for the doctor to refine, resulting in quicker refractions and a more satisfying patient experience.



### Compare Old vs. New Rx

With the push of a button, multiple changes can be made allowing the patient to compare their previous Rx to the new prescription. By demonstrating the effect of prescription changes rapidly, patients can decide whether the change is important to their visual performance. Changes previously assumed to be insignificant by the doctor are often considered to be important by patients during this comparison.



### Increase Patient Flow and Revenue

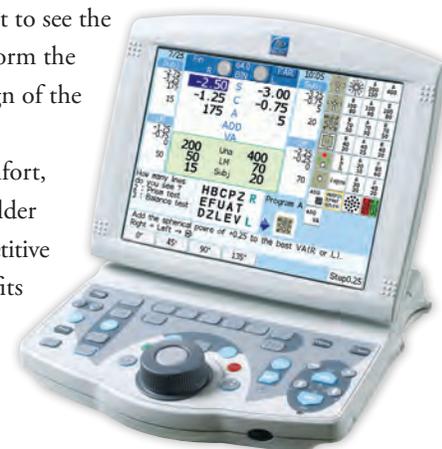


By streamlining the flow of data from pre-test instruments, simplifying the exam process for the patient, linking charts to coordinate with selected tests, and

speeding up the final verification by the patient, significant time can be saved over the entire refraction process. Saving minutes per patient throughout the day allows for increased time spent with patients discussing their care, or additional patients in the schedule.

### 8.4" Color LCD Touch Screen

The 8.4-inch color LCD gives enhanced, illuminated detail with the functionality of a touch screen. No longer does the doctor need to strain in low light to see the refractor in order to perform the exam. The compact design of the keypad maximizes work-space and user comfort, avoiding the risk of shoulder and neck injury from repetitive motion. Additional benefits include:



- Improved Test and Target Design
- Digital Precision
- 5 User defined programs to control refractive sequences
- Linkage: Automatic lens and chart selection for the test selected



### Smooth, Quiet Lens Selection for Faster Examination

Advanced Dial with S/C/A Mode Key in the center allows the doctor to quickly refine sphere, cylinder, and axis using only one hand. This makes it much easier to

perform retinoscopy when necessary. The TRS also provides for near tests automatically adjusting convergence for PD, and activating the built in lights for near chart illumination, insuring that patients can see the chart with any room illumination.

# UNIQUE FEATURES/BENEFITS

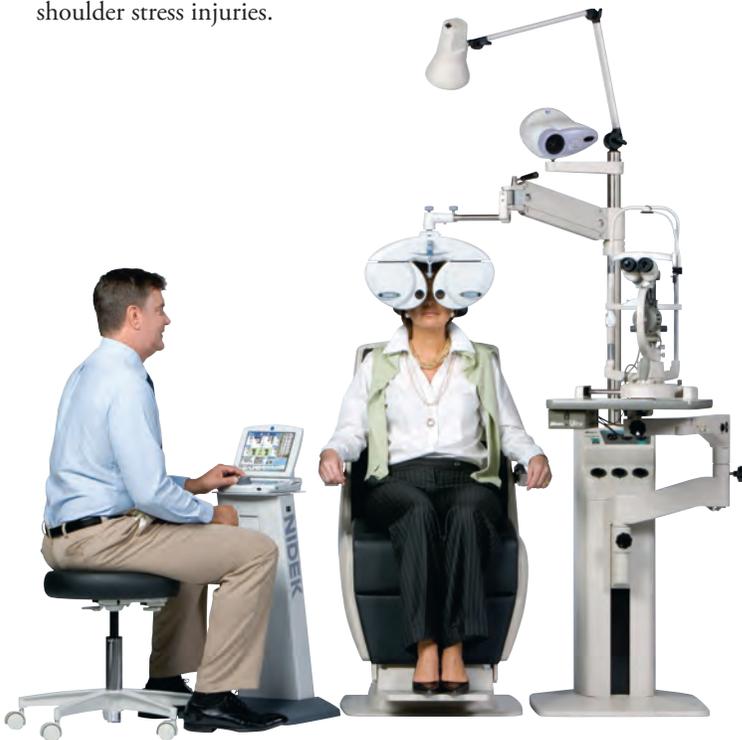
## Tilt Screen for Near Testing

When used for near testing the displayed contents will automatically be rotated to the correct orientation.



## Compact Ergonomic Design and Function

The TRS-5100's compact and ergonomic design presents a modern high-tech appearance which enhances the patient's perception of the practice. With the TRS, the operator can remain comfortably seated throughout the entire exam, eliminating repetitive neck and shoulder stress injuries.



**Eliminate repetitive stress injuries.\***  
\*Controller and tower sold separately.

## Reduce Transcription Error with Instant EMR Transfer

Marco's proprietary Marco Connect Software simplifies the integration and transfer of data to any company's EMR. Transfer data



into the patient's EMR at the push of a button, eliminating transcription errors and the need to manually input data, giving you more time with your patients. The TRS incorporates an intelligent IC card system that provides easy wireless data transfers from auto-refractors, auto-lensmeters, and the OPD-Scan III.

## XFRACTION<sup>SM</sup> Process

XFRACTION<sup>SM</sup> is the refractive process created when OPD wavefront technology is combined with automated digital refraction. Far superior understanding of the patient's total visual system (physiological optics), is achieved in a fraction of the time required to complete manual refraction. Benefits include superior diagnostic data, profitable practice efficiencies across myriad metrics, optimized outcomes, and enhanced patient experience.



# SAMPLE PRINTOUTS

## High-Speed Printer with Automatic Cutter



The TRS-5100 includes a built-in high-speed printer that automatically prints thermal tape. Print-outs are intended to serve

as hard-copy back-ups to the data sent electronically to the EMR.

## Training

For many offices, Marco's highly trained sales staff is qualified to train doctors and staff how to realize the full benefits of the TRS system. In addition to this on-site training, Marco offers JCAHPO-certified training in the state-of-the-art Marco Institute of Vision Technology. Marco's online training center is available on demand 24 hours a day, seven days a week.



```

ID #
NAME: M/F
JAN/6/2012 1:39 pm
WD=40cm

--<R>---< VA >---<L>---
1 FAR
2 30 60
3 --<R>---< LM >---<L>---
4 FAR
5 + 0.25 SPH - 0.25
6 - 0.75 CYL - 1.25
7 159 AXS 19
8 < 25 > VA < 30 >
9 PD
10 62.0
11 --<R>---< AR >---<L>---
12 FAR
13 + 1.25 SPH + 0.25
14 - 0.75 CYL - 1.00
15 158 AXS 9
16 --<R>---< SUBJ >---<L>---
17 FAR
18 + 1.25 SPH + 0.25
19 - 0.75 CYL - 1.00
20 158 AXS 9
21 + 1.25 ADD + 1.25
22 VA
23 < 15 > < 15 > < 20 >
24 PD
25 60.0
26 --<R>---< FINAL >---<L>---
27 FAR
28 + 1.00 SPH + 0.25
29 - 0.75 CYL - 1.00
30 160 AXS 10
31 + 1.25 ADD + 1.25
32 VA
33 < 15 > < 15 > < 20 >
34 NEAR
35 + 2.25 SPH + 1.50
36 - 0.75 CYL - 1.00
37 160 AXS 10
38 < 20 > < 20 > < 20 >
39 --<R>---< KM >---<L>---
40 7.85 R1 7.81
41 43.00 43.25
42 7.68 R2 7.55
43 44.00 44.75
44 171 AXS 180

Test time 3:17
NIDEK RT-5100
    
```

```

1 BO 2.50 PRSM BO 2.50
2 B 0.00 B 0.00
3 Div 5.00/ 6.00/ 4.00
4 Conv 8.00/13.00/10.00
5 NEAR
6 + 2.50 SPH + 1.50
7 - 0.75 CYL - 1.00
8 158 AXS 9
9 VA
10 < 20 > < 20 > < 20 >
11 BI 1.50 PRSM BI 1.50
12 B 0.00 B 0.00
13 -----< NPC >-----
14 10cm 8.0MA 48.0Prism
15 -----< NPA >-----
16 BIN: 20cm 3.75D
17 -----< NRA >-----
18 BIN: +2.25/ -
19 -----< PRA >-----
20 BIN: -2.50/ -
21 Fusion Check :
22 4(Fusion)
23 Stereo Check : 1'
24 Aniseikonia(U) : OK

NIDEK RT-5100
    
```

1	Phoria
2	Divergence
3	Convergence
4	Near Acuties
5	Near Phoria
6	Near Point Convergence
7	Near Point of Accommodation
8	Negative Relative Accommodation
9	Positive Relative Accommodation
10	Worth 4 Dot
11	Distance Stereopsis
12	Aniseikonia Result

1	Unaided Acuties
2	Lensmeter Readings
3	Acuity with Glasses
4	Auto Refractor Readings
5	Subjective Values
6	Acuties with Subjective
7	Final Rx (If entered)
8	VA with Final Rx
9	Near Rx (If entered)
10	VA with NEAR Rx
11	Keratometer Readings

# TRS-5100 SPECIFICATIONS



MEASUREMENT RANGE	
Sphere	-29.00 to +26.75D (0.12D / 0.25D / 1D / 2D / 3D steps)
Cylinder	0 to ±8.75 D (0.25D / 1D / 2D / 3D steps)
Axis	0 to 180° (1° / 5° / 15° steps)
PD	48 to 80mm (far vision) 50 to 74mm (near vision) (0.5 / 1mm steps) 54 to 80mm (Far PD at which both batteries can converge)
Rotary Prism	0 to 20D (0.1 / 0.5 / 2D increments) 0 – 20D (0.5D, 1D, 2D steps)
Auxiliary Lenses	Occluder, Polarizing Lenses, Pin Hole (1mm), 10 base-in prism, Red Maddox Horizontal (right eye), 6 base-up prism, Red Maddox Vertical (left eye), Cross mark for P.D., Red Lens (right eye), .50 fixed cross cylinder, Green Lens (left eye), Retinoscopic Lens, (+1.5D, +2.0D)
Refraction Distance for Near Vision	350 to 700mm (50mm increments)
Visual Field	40° (VD = 12mm) 39° (VD = 13.75mm)
Forehead Rest Adjustment	14±2mm
Vertex Distance	12-20mm (12, 13.75, 16, 18, 20mm)
GENERAL INFORMATION	
Horizontal Level Adjustment	±2.5°
Display	8.4-inch color LCD with touch screen
Printer	Built-in
IC Reader/Writer	Built-in
Power Supply	AC 100 / 120 / 230V 50 / 60Hz
Power Consumption	120 VAC
DIMENSIONS AND WEIGHT	
Refractor Head	
Main Body	15.94 x 4.0 x 10.86" / 12.8" with bracket / 7.7 lbs.
Control Box	8.66 x 8.1 x 7.87" / 4.2 lbs.
Relay Box	7.63 x 8.93 x 2.83" / 8.8 lbs.
Printer	4.0 x 3.38 x 4.76" / 0.66 lbs.
TRS Arm	Electromagnetic lock, fully moveable up/down and back/forth



Marco technologies integrate with Marco Connect software

