GLS-1500 Standard Configuration

- GLS-1500 scanner unit
- Target sheet (medium)
- Magnet target (small)
- Magnet target (medium)
- Adhesive target (small) x 5
- Adhesive target (medium) x 10
- BT-65Q battery x 4
- BC-30D dual-battery charger x 2
(with AO-14 AC adapter x 2)
- Tribrach with optical plummet
- Wireless LAN card
- Head cover
- SD memory card (1GB)
- Tools
- Silicone cloth
- F-25 USB cable
- User manual
- Warranty certificate
- Carrying case

Optional Accessories

- Tilts the GLS-1500 unit to scan upper and lower portions of tunnels, buildings and other large structures. Maximum ±90° tilting range with 15° steps.

GLS-1500 SPECIFICATIONS

### SCANNING UNIT
- **Maximum range**
  - 98% reflectivity: 1830m
  - 18% reflectivity: 1850m
- **Minimum range**
  - 1m
- **Single point accuracy**
  - Distance: 4mm at 1 to 150m
  - Angle (max): 6°
- **Target detection accuracy**
  - 3" at 50m (164ft.)
- **Scan rate (maximum)**
  - 30,000 points/second
- **Scan resolution**
  - <6mm at 1 to 40m
- **Sample density (maximum)**
  - 1mm at 20m
- **Field of view (per scan)**
  - Horizontal: 360° (maximum)
  - Vertical: 45° (maximum)

### Laser
- Type: Pulsed (time of flight)
- Wavelength: 1535nm (infrared, eye-safe)
- Laser class: Class 1

### DIGITAL CAMERA
- **Field of view**
  - Approx. 22° (V) x 16.5° (H)
- **Number of pixels**
  - 2 megapixels
- **Type**
  - Dual-axial tilt sensor
- **Compensation range**
  - 4°

### DISPLAY
- **Type**
  - LCD with backlight, 20 characters x 4 lines

### MEMORY
- **Type**
  - SD and SDHC memory cards
- **Wireless LAN**
  - IEEE 802.11b
  - Type mini B Rev. 2.0

### POWER SUPPLY
- **Removable battery (BT-65Q)**
  - 5Ah, 7.4V
- **Operating time**
  - 4 hours per 4 removable batteries
- **Input voltage**
  - 12V DC

### ENVIRONMENTAL
- **Operating temperature**
  - 0°C to +40°C
- **Storage temperature**
  - -10°C to +60°C
- **Dust and water protection**
  - IP52 (IEC 60529)

### PHYSICAL
- **Dimensions (with handle)**
  - 299 (D) x 240 (W) x 566 (H) mm
- **Instrument height**
  - 410 mm
- **Weight (excluding battery and tribrach)**
  - 16kg

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GLS-1500 Stretches the Boundaries of Your Survey Technology

Photo-realistic Point Clouds
The GLS-1500 captures point clouds and picture images simultaneously. The combination of point clouds and RGB picture data generates full-color, photo-realistic 3D point clouds.

Road Surface Profile
Measures Ruts and Bumps for Maintenance Purposes
GLS-1500 captures 3D road surface shapes with exceptional ease and speed. From roadside or other convenient locations, GLS-1500 quickly scans the road surface without an assistant on the road. Highly accurate 3D road surface models facilitate determination of repair locations as well as volume calculation of pavement materials. GLS-1500 dramatically increases work efficiency and safety, and saves material costs. Traffic congestion by blocking a lane is also eliminated.

Volume Measurement
Increases Safety, Efficiency and Accuracy
Volume measurement is indispensable for land preparation, open pit and underground mining, waste landfills and sediment control facilities. GLS-1500 allows the operator to take measurements with an incomparable safety by eliminating the need for working in the midst of heavy machines. High-density point clouds allow for accurate calculations of volume and geometry that no other technology can offer.

Large Structure
Monitoring of Critical Infrastructures such as Bridges, Towers, and Dams
Scan data of large structures allow for early detection of deteriorated areas to be maintained or reinforced. 3D data can be utilized for measurements of size and geometry, as well as volume calculations of necessary materials. Periodic monitoring is one of the most effective methods to prevent collapse of structures.

Disaster and Accident
Detailed Survey with the Fastest Speed
GLS-1500 quickly scans disaster areas or accident scenes. 3D models for computer simulations of disasters and accidents can be easily created from 3D point clouds. High density 3D point clouds can be utilized for creating contour maps and profile drawings, and for volume calculations. Simulation of water flow paths greatly facilitates flood control and disaster prevention planning.

Tunnel
Profile Measurement and Convergence Monitoring
GLS-1500 captures 3D data of tunnel wall surfaces in a short period of time. Even the most complex surface profile can be modeled without difficulty. Monitoring of wall convergence is an essential measure to prevent collapse of tunnels both under construction and in operation.

Historical Architecture
Creation and Preservation of As-built Data
Full color, photorealistic 3D model will be the most valuable record of historical architecture. 2D floor plans and cross-sectional drawings can be easily created from 3D point clouds. Full-color, photorealistic 3D models will be the most valuable record of historical architectures. 2D plans and cross-sectional drawings can be easily created from 3D point clouds.

Archeology
Photorealistic 3D Models of Ruins
Cutting-edge laser scanning technology realizes preservation of valuable ruins in detailed 3D models. GLS-1500 provides archaeologists with full-color, high resolution pictures that have precise 3D coordinate values.

Scanning Procedures
A laser scanner captures object surface with a huge number of points, each one with 3D coordinate values. Scans at multiple positions are needed to capture the entire shape of objects. Multiple scan data can be docked and aligned by using common tie-points which are separately scanned with retro-reflective targets. Geo-referenced 3D point clouds and mesh objects created by Topcon ScanMaster software can be exported to users’ software, allowing for 3D measurement, 3D modeling, displacement observation, as-built survey, and other applications.

Aligning Point Clouds
Targets for tie-points
A+B
GLS-1500
GLS-1500 Stretches the Boundaries of Your Survey Technology

It’s time.
Topcon Precise Scan Technology Quickly Acquires Ultra-Low-Noise, High-Precision 3D Data!

Increased Scanning Speed!
30,000 points per second

GLS-1500 incorporates a newly developed laser diode that constantly emits laser beams at 30,000 times per second, 10 times faster than the previous model. Higher density point clouds can be captured in a shorter time, increasing productivity and the quality of laser scanning.

Topcon Precise Scan Technology!
Ultra-Low-Noise, High-Precision, High-Quality Scanning

Topcon Precise Scan Technology maximizes the accuracy and the data quality by minimizing noise and measurement deviation.

Distance accuracy: ±1mm
Angle accuracy (H&V): ±6 arc-seconds

Topcon Precise Scan Technology integrates two distance measurement methods, the Time of Flight and the Phase Shift. Time of Flight technology utilizes an instantaneous emission of pulse laser. Measurement accuracy tends to be affected by a slight fluctuation of the waveform. Topcon Precise Scan Technology resolves the pulse waveform and processes the filtered signals with a Phase Shift algorithm to achieve the highest possible accuracy and data quality.

Outline of Topcon Precise Scan Technology

On-site Verification of Increased Scan Speed

GLS-1500 3D Laser Scanner

Ultra-Low-Noise Data!
The most crucial technological challenge in scanning technology is how to minimize the noise included in the captured data. Topcon Precise Scan Technology achieves dramatic noise reduction that makes it possible to present the finest texture of scanned objects.
3D Laser Scanner Best Suited for Surveying, Civil Engineering, and Construction Applications

Sighting collimator / Mirror
Wireless LAN
SD card slot
USB connector

Vertical jog
Horizontal jog
Display
Keyboard
Removable batteries

All-in-One, Stand-alone Scanner Unit Provides Easy Operation and Superior Portability, Similar to the Total Stations

GLS-1500 can be operated in a similar manner to total stations. A tripod is the only external device needed.

Level & center: Set the scanner unit right above the instrument point using a tripod, then level. Instrument tilt is automatically compensated within ±6' range.

Collimate: Using sighting collimator and jog dials, specify the scan area or sight the targets.

Scan Backsight: GLS-1500 can set the geographical coordinate system using instrument point and backsight data just as total stations do.

Store data: Scanned data are stored in the SD cards for easy transfer to computers.

Shift position: Simple system configuration allows for easy shifting of instrument positions.

GLS-1500 can be fully operated by all users who are familiar with total stations.

Dual-axis Tilt Sensor!
GLS-1500 automatically compensates the instrument tilt within ±6' using a built-in dual-axis tilt sensor. This capability increases accuracy of station setting using instrument point and backsight data.

Station Setting with Backsight Coordinates!
In addition to orientation using geo-referenced 5-point target, GLS-1500 can determine the coordinate system using instrument point and backsight data, thanks to the high accuracies in distance, angles and tilt compensation. This capability increases work efficiency by minimizing number of targets needed for orientation.

Powerful! User-friendly! ScanMaster Office Software

Rich Functions with Intuitive User-interface! Multiple Viewer Window for Easy Data Alignment
Scan data captured from multiple positions can be easily integrated into one 3D-data. Two or more point clouds are shown on the computer screen at the same time, facilitating data docking and aligning procedures. Supports most major data formats.

Easy Target Scan! Automatically determines target center
Target scan is initiated either by manual aiming or by clicking an image on a PC screen. The ScanMaster automatically identifies the target shape and calculates the target center coordinates.

Remote Control Using Video Images
ScanMaster controls the GLS-1500 scanner unit via wireless LAN. Scan area can be easily specified on video or picture images on a computer screen. The built-in digital camera takes a picture of scan area on which scanned points are shown in real-time, allowing you to check the status.

Pre-programming capability allows for automatic multiple scans at one instrument position.

Various Software Solutions from Topcon Partners

POINTOOLS
POINTOOLS HD PRO A point clouds viewer software
POINTOOLS EDIT Filtering software
POINTOOLS 4 RHINO 3D modeling software operating on Rhinoceros
POINTOOLS MODEL 3D modeling software operating on AutoCAD

GEOKOSMOS
Terrain data processing software with a style similar to AutoCAD. Provides filtering capability and creates topo-model, contour, cross section, DTM, DSM, 3D model with photos, and structural object.

POINTOOLS®
PointCloud Adds point cloud management and post-processing capability to AutoCAD.

GEOKOSMOS

RAPIDFORM
3D reverse engineering software that creates CAD models from 3D scan data.

XOS Post-processing software for 3D scan data, ideal for reverse engineering. Handles point clouds, mesh, color texture, curve, and surface.

CLEAREDGE
Automatically creates 3D CAD models using patented computer vision algorithm that automatically identifies the surfaces in point clouds. Processes huge data in a few hours while ordinary software takes several days to process.

Export Format
- Topcon point cloud file CL3 (Topcon)
- ASCII (XYZ, Intensity, RGB)
- PTS  PTX  LAS  VRML  OBJ  DXF  DWG

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