



## GS-2002 AUTOMATIC ALIGNMENT SYSTEM

The GS-2002 Automatic Alignment System is a transportable system originally developed for the accurate alignment of shipboard weapon systems and equipment.

The same alignment principles can be used in construction and real-time monitoring of parallelism, distortion and movement in large structures, like heavy machinery, bridges, marine platforms, tall structures road surfaces, supports, etc.

### Features

- No dry-docking required
- Non-compromising accuracy
- A complete range of functions for static alignment
- Covers all aspects of calibration of tilt sensors, adapters etc.
- Azimuth measurement between stations even if not within line-of-sight
- True gun barrel axis measurement
- Ship's gyro performance test
- User-friendly AAS software provides real-time absolute and relative vector indications on a polar diagram
- Supports the following sensors:
  - LEICA TDA5005, T-1800 Theodolite
  - GYROMAT 2000 Gyroscope
  - SPERRY MK-29/39 Gyro Compass
  - SAGEM Gyro Compasses
- Coarse/Fine operation
- Platform information for report generation
- Variable measurement integration time
- Calibration aids
- MIL-C-4150J cases used for transportation

### Standard Equipment

GS-2002-1370	Power Supply Unit
GS-2002-1130	Interface Unit
GS-2002-1100	Notebook Computer
GS-2002-1110	GS-2002 AAS Software
GS-2002-1140	Dual Axis Clinometer Set
GS-2002-1120	Portable Color printer
GS-2002-1170	AAS Field Wires

### Optional Equipment

GS-2002-1470-xx	Weapon System Adapters (System Specifications)
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### Services

GS-2002 CUST	GS-2002 CUSTOMIZATION <ul style="list-style-type: none"><li>- Special adapters</li><li>- Automation of specific tasks</li><li>- New sensors/interfaces</li></ul>
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### Application

The GS-2002 Automatic Alignment System is able to perform 3 and 4 – plane and line parallelism measurements in real time employing dual-axis clinometers. Additional tasks include angle estimation, slope comparison, azimuth alignment, clinometer calibration.

The GS-2002 features a number of electrical interfaces to accommodate various sensors and equipment on large platforms, such as ships and large fixed structures.

RS-232 to RS-485 interfaces guarantee noise-free sampling of instrument data, while a Synchro to Digital Converter handle shipboard equipment, such as gyro compasses.

Information for Tilt (2 axes) from clinometers, Elevation – Bearing – Distance from Theodolites, Roll – Pitch – Heading from Gyros, is processed by the interface unit and displayed on the portable computer screen, in real time.

Clinometer temperatures are also available, in real time.

### Custom Applications

The GS-2002 can be customized to meet specific customer requirements (clinometer fixtures, further automation of specific measuring tasks, reports, instrument interfaces).

## GS-2002 Automatic Alignment System Specifications

**Interfaces** V.24/V.28 (RS-232) and RS-485 Asynchronous ports  
Transformer-isolated Synchro/Resolver-to-Digital Converter  
Ethernet port

**Clinometers** IP65 (aluminum dome), temperature sensor  
Angular range  $\pm 5$  degrees  
Resolution  $< 10$   $\mu$ radians  
Repeatability 10  $\mu$ radians (static)  
Temperature Coefficient  $\pm 3.5$   $\mu$ radians/ $^{\circ}$ C  
RS-485

**Weapon System Adapters** GS-2002-1470-01 - OTO MELARA 76/62  
GS-2002-1470-02 - OTO MELARA 5/54  
GS-2002-1470-03 - OERLIKON 35mm  
GS-2002-1470-04 - EMERLEC 30mm  
GS-2002-1470-05 - EMERLEC DS30  
GS-2002-1470-06 - OTO BRED A 30mm  
GS-2002-1470-07 - POLLUX  
GS-2002-1470-08 - NA-21  
GS-2002-1470-09 - STIR  
GS-2002-1470-10 - WM-25  
GS-2002-1470-11 - MW-08  
GS-2002-1470-12 - SPG-51  
GS-2002-1470-13 - CASTOR  
GS-2002-1470-14 - STING EO  
GS-2002-1470-15 - MIRADOR  
GS-2002-1470-16 - LIROD

**Synchro/Resolver** 47Hz to 10 kHz  
12-16 bit resolution, up to 150 RPS at 16 bit, Coarse/Fine operation  
1 arc minute accuracy for single

**Interface Unit Power Supply** Operating Voltage: 90-132 / 180-265 VAC @47-440 Hz, 300 VDC  
Operating Temperature Range:  $0^{\circ}$ C to  $+50^{\circ}$ C

**Interface Unit Indicators** Indicators: Fan 1, Fan 2, HDD +5V

**Maintenance port** Ethernet 10/100 (RJ-45),

**Power Supply** Input: 90-265 VAC 150W

**Environmental** 5 -  $35^{\circ}$ C, 20- 80% relative humidity, non-condensing

**MTBF** 25,000 hrs

**Physical** 2 MIL-C-4150J  
Total Weight: 100 kg

**Safety** UL / TUV / NEMKO / CCC / BSMI / CE FCC

**EMC** FCC/CE

## List of Services Offered

<b>Training</b>	Maintenance Personnel.
<b>Pre-Installation</b>	Application planning, installation study.
<b>Installation</b>	Installation, Setting to work.
<b>Post-Installation</b>	After sales technical support.



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