



***LaserWeld™***  
***Pricing Proposal***  
**Quote # 144244**

**Customer:** Lucent Technologies

**Date:** June 30, 1999

**Revision 2 6/30/99**

**I. *LaserWeld™* Series 4500 Laser Welding Workstation Platform , including:**

**LW4500-SYS\*\*      SI#:990628-RAH-001**

**25080-01 Laser Workstation Assembly, including**

- **PM500 Ultra-Precision Alignment Engine Configuration (27677-02):**
  - 80mm x 80mm x 360° ( $\theta$ ) lower stage, 50nm/1 arcsec bi-directional repeatability
  - 100mm upper stage, 50nm bi-directional repeatability
  - Absolute and relative positioning robotic control on all axes
- **Fully Automated/ Adjustable Welding Laser Positioning and Configuration Control (25004-02):**
  - 3-Beam Adjustable Fiber-Optic Beam Delivery (FOBD) system
  - Automated **Variable Beam Angle of Incidence (BAI)** control, adjustable between 25° and 90° (from optical axis)
  - Manual **Variable Beam Angle of Separation (BAS)** adjustable between 120° and 180° (around optical axis) for front two beams
  - Automated Radial and Vertical positioning control for all three beams
  - Automated Tangential positioning control for two beams, manual control for third beam (for butterfly applications)
  - $\pm 5 \mu$  global positional repeatability,  $\pm 0.1 \mu$  incremental motion
  - Absolute and relative positioning robotic control on all motorized axes
- **Granite Bridge and Vibration Isolation System**
  - Precision lapped granite bridge platform
  - Custom IsoStation Vibration Isolation Workstation with integrated Pneumatic Control Unit (PCU-2)
  - Vertical and Horizontal Isolation < 2 Hz

**25003-01 Laser Safety Enclosure, including:**

- Class 1 Light-tight enclosure design
- Pneumatically Controlled Laser Safety Window with Dual-Button Actuation Control
- Gas-Assisted Lift Mechanism
- Integrated System Status Indicator Lights and Emergency Stop
- Exhaust Port Access

**23320-01 System Process Controller and Electronics, including**

- ***LaserWeld PCS™* Process Control System with Password Security:**
  - Pentium-based Computer Platform (400+ MHz)
  - Fully Automated 3-D and 4-D ( $\theta$ z) alignment algorithms
  - Automated Optical and Electrical Metrology Functionality, including spatial power distribution and L-I Characterization
  - *SequenceBuilder™* Process Automation Capability
  - Complete alignment engine, laser positioning, laser welder, power meter, current source and TE cooler control interfaces
  - Automated *LaserHammer™* Process Capability (dependent on package design and welding process)
  - Statistical Analysis and Process Control Datafiling
- **Precision Instrumentation:**
  - Qty. 2 PM500-C Precision Motion Controllers
  - Model 6000 Precision Current Driver and Bi-polar TE Cooler Controller (22610-01)
  - Model IAC-2 Multi-channel DIO Integrated Automation Controller (27673-02)
  - Un-interruptable Power Supply (UPS) with software control
- **EMI Protected Electronics Cabinet Enclosure**
  - 52" High Rack-mount protective enclosure

**25000--01 Power Meter and Detectors, including:**

- Model 1835-C Calibrated Optical Power Meter
- Model 818-IS-1 Integrating Sphere detector (for device measurements)
- Model 818-T Thermopile detector (for welding laser energy measurements)

**II. Welding Laser, Accessories, and System Integration; including:**

**LW4500-SYS\*\*      SI#:990628-RAH-002**

**23753-02 50W Nd:YAG Welding Laser with Fiber-optic Beam Delivery System, including:**

- 3-beam configuration
- beam balance  $< \pm 3\%$
- energy share resolution  $\pm 1\%$
- individual beam shutters and integrated visible diode laser positioning beam
- DIO computer interface
- Qty. 3 300  $\mu$  Graded-index Fibers (23311-03)
- Laser Pulse Shaping Capability
- Software and Hardware Integration

**26536-01 Qty. 3 CCD Output Housings, including:**

- Simultaneous visual/visible-diode beam/Welding beam focus design
- Dual Cross-hair Generator
- Integral mini-CCD color camera and fiber-optic illuminator
- 13" color monitor

**23340-01/23350-01 Left and Right Companion Workbenches, including:**

- ESD-protected laminate surface
- Integral Ground straps
- Built-in accessory and monitor shelves (23864-01/02)

**LW-TEST System Assembly, Integration and Functional Testing**

**III. SYSTEM OPTIONS:**

**25450- 01 Far-field Camera System**

- 40x Magnification for remote horizontal viewing of coaxial components
- 13" color monitor

**25048- 01 High-Magnification Video Probe Camera System**

- 60x-350x Zoom Magnification with right-angle probe for viewing inside flat packages (recommended for butterfly and DIL packaging applications)
- Integrated coaxial illuminator and external lighting
- Motorized Focusing and x-y positioning
- Pneumatic retraction feature
- Cross-hair generator and color monitor

**27316-01 Model EPOC-1 Electronic Pin-out Configurator**

- 14-pin cross-connect switch
- Multi-position rotary switch for each channel (Device Current, Monitor Photodiode, TE current, Thermistor, ground, open)
- Rack mount enclosure and integration into Electronics Cabinet

**IV. TOOLING OPTIONS:**

**DOCKING STATIONS**

1. Upper Tooling Dock (required for all upper docking tools )
2. Lower "Active Device" Tooling Dock (26525-02)
3. Lower "Passive Device" Tooling Dock (26525-02)

**COAXIAL LD TOOLING (for Newport LD Module)**

4. Fiber Collet Upper Tooling Docking Assembly (27637-01)
5. Coaxial LD Lower Tooling Assembly w/ collet (26890-02)

**BUTTERFLY TOOLING**

6. Fiber Tweezers Upper Tooling Docking Assembly (27320-01)
7. Butterfly Module Lower Tooling Assembly (27170-01)
8. Fiber Loader Shuttle Assembly (26169-01)
9. Fiber Loader (customized to fiber ferrule assy)

**PASSIVE COAXIAL DEVICE (2-Port/3-Port)**

- 10. Passive Device Lower Tooling Assembly (26890-01)
- 11. Fiber Collet Upper Tooling Docking Assembly (27637-01)

**RISER KITS (for Paassive Device Tooling)**

- 12. Workstation Riser Kit (bridge and lower stage risers 27308-01)
- 13. Fiber Loader Riser Kit (if butterfly tooling option ordered 27613-01)
- 14. Hi-Mag Camera Riser Kit (if Hi-Mag. option ordered 27381-01)

**V. System Certification, Acceptance Testing and Training**

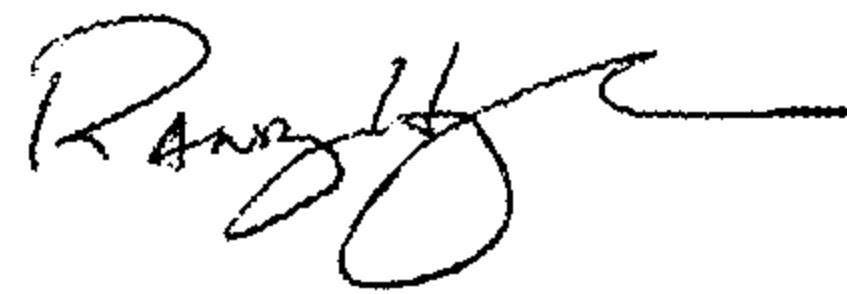
**Service 14-03**

- Factory System Certification and Acceptance Testing

**VI. System Installation**

**Service 14-05**

- Installation and re-certification at Customer Site (for US Domestic locations, does not include travel expenses)



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