

Ordering Information

The information in this catalog will, in most cases, be sufficient for you to select a particular Narda product. When additional technical information is required, or for pricing and delivery information, our website contains an actively updated list of our world wide local representative offices. Visit www.nardamicrowave.com or www.narda-sts.us (for RF Safety Instruments) and click on the Reps or Contacts tabs as appropriate. While the factory can be contacted at 631-231-1700, or by email at Nardaeast@L-3com.com, we very much appreciate the involvement of our local representation in meeting your needs. Please see the important note just below for our customers located outside the United States.

Note: For technical assistance and pricing and delivery for our customers residing outside the United States, our International Sales representatives are the single point of contact for our customers and all inquiries should be routed through those International Sales organizations accordingly. For those few regions where we are not represented, direct contact to the factory is acceptable, per the contact information above.

When placing your order, please include the Narda model number, the frequency range of operation and the name of the product as it appears in the catalog. For example: **Model Number 4779-10 DC-18 GHz 10dB Fixed Attenuator.** As Narda can only guarantee the performance stated in the catalog, for the purchase of a catalog part, any non-standard features that may be required should be clearly identified on the purchase order. When such non-standard features are required, a dialog with Narda Sales Engineering must take place to ensure that there are no misunderstandings as to what is being provided, and of course to find the best method of achieving the non-standard feature that is desired.

Submitting Purchase Orders

DOMESTIC UNITED STATES originated orders may be submitted on your Standard Purchase Order Form by phone, fax or email directly to the factory or to the attention of your local representative:

631-231-1700 (Phone)
631-231-1711 (by Fax)
nardaeast@L-3com.com (for components based products)
nardasts@L-3com.com (for RF Safety Instruments)

In either case, all orders should show the Narda Factory information below as the formal supplier of the goods to be purchased:

Narda Microwave-East an L-3 Company
435 Moreland Road
Hauppauge, NY 11788

INTERNATIONAL CUSTOMERS: For those purchase orders submitted from our International Customers, your order placement should be submitted to and in the name of the authorized Sales organization for your geographical area, or directly to the factory when Representation is not present in your area.

Domestic Terms

Net 30 days, Ex-works, subject to credit approval unless otherwise specified. Shipments shall be C.O.D. when made to unrated firms, unless a credit account has been established or when advance payment has been received.

All major credit cards are accepted.



Ordering Information

Export Terms

Full payment in advance of shipment by wire transfer, major credit card or via irrevocable Letter of Credit confirmed by a United States bank. All prices are Ex-works unless otherwise specified.

Shipping Information

All sales are considered Ex-works unless otherwise specified. Any damage incurred during shipment should be settled between the customer and the carrier. Shipments from the point of origin will normally be made by Parcel Post, UPS, Federal Express, or Air Freight. Narda Microwave-East will choose the most appropriate means of transportation when carrier or method has not been otherwise specified.

Additional Information

Delivery on all items quoted stock is subject to prior sale, a quotation indicating an IN STOCK status cannot guarantee that said STOCK is available at the time of order. Quotations, Pro Forma Invoices, Destination prices and shipping information required for Pro Forma invoices or FAS, CIF or C&F quotations or importation assistance can be quickly obtained from your local Sales Representative or from the factory directly as necessary.

Payment of Invoices

US CURRENCY PAYMENTS

Send check to:

L-3 Communications Corporation
Narda Microwave-East
PO Box 13598
Newark, New Jersey 07188-0598

Send wire to:

JPMorgan Chase Bank, NA
1 Bank One Plaza
Chicago, Illinois 60673

Account No.

1039486

ABA No.

Domestic US: 071000013
Foreign: 021000021
SWIFT Code No. CHASUS33

(L-3 Communications, Narda Microwave-East)

EURO PAYMENTS

Send check or wire to:

Bank of America (Branch 6008)
26 Elmfield Road
Bromley, Kent BR1 1WA
United Kingdom

Account No.

600825572018

Sort Code No.

165050

IBAN No.

GB36BOFA16505025572018

SWIFT Code No.

BOFAGB22

(L-3 Communications, Narda Microwave-East)

Certificate of Conformance

A Certificate of Conformance is supplied on our packing list for all shipments. This certification states the following:

"This material was produced in accordance with all applicable drawings and specifications and meets the contractually applicable quality specifications. All inspections and /or tests have been performed using equipment calibrated in accordance with the requirements of ANSI/NCSL Z540-1. Documentary evidence in the form of the test data and/or reports and inspection records are on file and available for examination. Narda Microwave-East components and instruments are mercury free. Mercury is neither utilized nor present in our component or instrument products, production processes or inventory locations."

Test Data Availability

Hard Copy test data as applicable and as available per device type and testing methods may be purchased for an additional \$25.00 per unit. Test data requests must be requested at the time of order and an associated line item(s) with the applicable test data fee should be within the body of your ordering document. *After the fact requests for test data are normally not acceptable.*

Ordering Information

Change Orders and Cancellations

Change Orders regarding price, delivery or any conditions not specified on the original order will be considered in effect after mutual agreement has been affirmed in writing between the customer and Narda Microwave-East. Cancellation of any accepted order shall only be accepted with the written consent of the factory. All cancellations will be dependent upon customer's agreement to satisfy all charges incurred by Narda Microwave-East in the performance of the order. Narda Microwave-East will endeavor to promptly "stop work" upon written notification of a cancellation request.

Repairs / Returns and Calibration Services

Repairs and recalibration of Narda Components and Instruments require that the product is returned to the factory. ***Before returning any component or instrument, the Narda Customer Service Department must be contacted such that a Return Material Authorization (RMA) may be issued for the return and subsequent repair or recalibration of the goods.*** When requesting an RMA, you will be asked to provide the model number, serial number and as much information as possible about the nature of the difficulty or reason for return. Once the repair or return has been approved, an RMA number will be assigned, this RMA number should be clearly denoted on the shipping container for routing on arrival. Estimates of repair and/or calibration charges are provided to the customer before any work is done, unless otherwise directed.

Contact Information for RMA:

nardaservice@L-3com.com
631-231-1700 (Phone)

Returns must be shipped prepaid to:

Narda Microwave-East an L-3 Company
435 Moreland Road
Hauppauge, NY 11788

**PLEASE PLACE RMA REFERENCE NUMBER ON THE
OUTSIDE SHIPPING PACKAGING**

Application Engineering

Convenient local support is provided through Sales Representatives. They are well equipped to provide you with any product assistance you may require and to assist you with your special requirements and applications. In cases where special needs are to be met with special or catalog derivative solutions, the Narda factory shall assign special five digit model numbers so that variations on catalog performance or outline drawings may be properly documented. Additional costs and or lead times are normally associated with special product development and delivery.

Product and Price Changes

Although all information in this catalog was current at the time of publication, our continuing product improvement program requires that we must reserve the right to change specifications and/or pricing without notice. ***The minimum acceptable purchase order amount is \$100.00.***

Narda Microwave East



About Us

Started in 1953, Narda Microwave-East is one of the ten original business units of L-3 Communications, a multi-billion dollar electronics company serving military and commercial markets. For nearly 60 years, Narda has developed and manufactured state-of-the-art RF and microwave components, integrated microwave assemblies, subsystems and RF Safety Instrumentation. The company has positioned itself and maintains its position as a technology leader by offering advanced products in the frequency range of DC to 60 GHz for both commercial and military applications.

We maintain the world's largest inventory of RF and microwave components and instruments for rapid delivery of our products to our customer base. Products manufactured in our production factories include PIN diode switches, switch filter

banks, couplers, power dividers, attenuators and RF mechanical switches that are suitable for myriad RF applications.

Narda also offers custom developed Integrated Microwave Assemblies (IMAs) which integrate and combine active and passive components. These products are typically custom designs for specific customer functionality requirements and include the integration of switches, filters, oscillators, synthesizers, amplifiers and many other components as required.

In addition, to our custom and COTS components and IMAs, Narda manufactures our full line of RF Safety Instrumentation that characterizes RF levels for RF workers and the general public.



Facilities

With our 150,000 square-foot Hauppauge, NY, and 20,000 square-foot offshore facilities, and our dedicated team of engineering, sales, design, production, and quality professionals, the Narda brand continues to be recognized as a trusted and field proven choice for custom or catalog off-the-shelf RF components and instrumentation. All product design/prototyping, production control and procurement originate at the Hauppauge facility, while manufacturing and test utilize the NY and offshore production resources. In addition to its standard production and test environments, clean room manufacturing facilities are maintained at both manufacturing locations. Additional combined capability highlights are described on the following page.

Narda Microwave East



Engineering Design Tools

- Advanced Design and Simulation Software Packages
- High Frequency Structure Simulator
- Component Synthesis Software, Design and System Budget Calculators
- 40 and 60 GHz Vector Network Analyzers with converter group delay module

Special Process Manufacturing

- Automated Ribbon/Wire Bonding
- Automated Epoxy and Die Attach
- Photo Etch of Substrate Circuitry
- Laser Seal (NY facility)
- Sputtering (Gold Germanium)
- Vacuum Deposition
- Paint and Seal
- Environmental Testing Facilities

Test and Measurement Capabilities

- Production in Process Testing DC to 50 GHz
- ATE Suite for Instrument Calibration Services
- IM Test Capability
- Classified and Non-Classified Designated Test Areas

Quality Assurance Management

The Quality Assurance System at Narda is in full conformance with ISO 9001:2008. Originally certified in 1996 to ISO 9001:1994, Narda's registration was upgraded to the ISO 9001:2000 version of the standard in May 2003 and ISO 9001:2008 in 2009. We received our AS 9100 certification in the summer of 2009. Our Quality System's heritage is based upon MIL-Q-9858 and MIL-I-45208. The company also complies with the workmanship standards in MIL-STD-454, and maintains a calibration system to ANSI/NCCL Z540-1-1994. Narda's QA System is approved by over 100 companies including most of the major top tier defense and commercial equipment providers.

- ISO 9001:2008 Certified
- AS 9100:2009 Certified
- Reliability Engineering
- Over 50 Internal Audits Performed Annually by Trained Auditors
- Audit Results Reviewed by ISO Management
- Soldering is performed and inspected by IPC Certified Individuals
- Plating is verified by XRF Technology
- Product Conformance Testing
- Design Verification / Verification Testing
- Special Environmental Testing performed in house, or at approved external facilities
- First Article and Group B Services
- In Process Inspection
- Documentation ESD Control Plan

Design and Drafting

- Manufacturing Engineering
- Dedicated Design Center (CAD/CAM)
- Mechanical Design
- Layout

Material Control and Procurement Systems

Production and material is controlled by the Narda ERP System (Visual Manufacturing) and by a set of defined procedures maintained by department management. The Visual system allows traceability of material throughout the manufacturing process as well as providing historical data via the Visual Manufacturing database. The material flow sequence can be loosely broken up into (3) discrete sections; Front Office (Sales and Contracts), manufacturing operations, and back office (shipping and accounting).

RF and Microwave Components Overview

Catalog Products

We build our catalog products to an industry forecast and inventory over 1000 different models. Most models are in stock and if not, are available on a defined schedule.

Attenuators

- DC - 40 GHz
- Type N Fixed Coaxial
- SMA Fixed
- Type N High and Medium Power
- Thumbwheel and Panel Mount Step
- Commercial Use Step
- Variable

Couplers

- 0.05 - 40 GHz
- Millimeter Wave Ultra-Broadband
- SMA
- Type N Broadband Directional
- Type N Dual Directional Reflectometer
- High Power Directional
- Couplers for Commercial Use / Wireless Applications

Power Dividers and Hybrids

- 0.25 - 45 GHz
- Wireless Band
- SMA 2, 3, 4, 6, 8 and 16-way
- Multi-Octave Type N
- Ultra-Broadband SMA
- SMA and Type N Multi-Octave 90° and 180°
- Specialized Devices for High Power Dividing and Combining Operations

Terminations

- DC - 40 GHz
- Millimeter Wave Ultra-Broadband
- SMA Coaxial Fixed
- Type N Coaxial Fixed

Waveguide Products

- 1.70 - 40 GHz
- Standard Gain Horns
- Wideband Gain Horns
- SMA, 2.92mm, Type N Waveguide-to-Coaxial Adapters (right angle)
- SMA, 2.92mm, Type N Waveguide-to-Coaxial Adapters (end launch)
- Low and Medium Power Terminations
- Cross-Guide Couplers

Additional Passive Components

- Adapters
- Circulators and Isolators
- DC Blocks
- Detectors
- Phase Shifters

Mechanical Switches

- SEM Series - Stocked Electro-Mechanical
 - DC to 18 GHz
 - SPST to SP6T, transfer
- Standard Custom
 - DC to 26.5 GHz
 - SP2T to SP12T, transfer

Control Products

- 0.1 - 40 GHz
- PIN Switches
- High-Speed Switched Bit Attenuators
- Switched Filter Banks
- Custom Switches
- High Power Switches
- PIN Limiters - Narrowband and Wideband

Power Monitors and Sensors

- 0.01 - 26.5 GHz
- Thermocouple Based Power Monitors
- Broadband Power Sensors

RF Safety Overview

About Narda Safety Test Solutions



Narda Safety Test Solutions is the name of the world leader in non-ionizing radiation safety equipment. In February 2000, Narda acquired the Safety Test Solutions business from Wavetek Wandel & Goltermann. To give more focus to the RF safety business and to separate it from Narda's business in components and networks, a new division was formed – Narda Safety Test Solutions – which combines the expertise and complementary product lines of both operations. Narda-STS holds more than 95% of the patents in the industry. Products are now available to accurately measure electromagnetic fields from a few Hertz to over 100 GHz as well as static magnetic fields. RF personal monitors cover 100 kHz to 100 GHz and area monitors detect energy from 50 Hz to 100 GHz.

User Support

Narda-STS User Support Includes:

- Equipment and application consultation by our worldwide sales network
- Repair and calibration service
- Expert advice on standards and recent developments
- Training and measurement services

Just Power-On and Measure

Simple operation is critical when you need dependable results. This requires device technology that simplifies the complex measurements found in EMF (Electro-Magnetic Field) applications. With any device you purchase from Narda-STS, the basic principle is: Just Power-On and Measure.

RF Radiation Safety Training

Narda-STS can provide unequalled educational materials and training for your company. You will find public seminars and courses that address different industries as well as custom corporate training programs using live instruction or CD, VCR, and DVD based content.



Contact Us for your Copy of the Full
**RF Radiation Safety
 Products and Services Catalog**
 at www.narda-sts.us/contact_form.php

Narda RF Safety Products

Low Frequency – DC Static Fields (0 Hz) to 400 kHz

Like all Narda-STS equipment, the low frequency product line delivers excellent measurement reliability. All instrument functions were designed for direct and reliable testing to domestic and international standards such as IEEE and ICNIRP.



THM1176-PDA

- Precision measurements of low frequency fields are required in the following industries:
- Power Generation and Delivery (50/60 Hz)
- Electric Railway Lines
- Smelting Furnaces
- Welding Systems
- Medical Systems (e.g., MRI)

THM1176-PDA - Our complete Magnetic Flux density measurement system including a full featured PDA computer. A Three-axis Hall Magnetometer is used to measure the magnetic flux density, from DC to 1 kHz. Its unique, extraordinarily compact design allows it to be used as a portable instrument or directly connected to a PC.

EHP-50D – High Precision measurement of E and β fields from 5 Hz to 100 kHz. This field analyzer can operate in a data logging mode or with the supplied software, through a 10m fiber optic cable to display real-time spectrum information on a PC. With it's wide dynamic range and exceptional accuracy, ELF/VLF fields are easily measured.

ELT-400 – The first low frequency measurement device that can be used by engineering and safety personnel. This new system measures the magnetic field required for certification of products destined for Europe. Safety personnel can use the ELT-400 to verify magnetic field limits recommended by the new IEEE C95.6 standard.



ELT-400

EFA-300 – The EFA-300 (Electric and Magnetic) Field Analyzer sets the testing standard for low frequency devices. These units offer exceptional accuracy and overall performance for testing occupational exposures to ELF/VLF frequencies.

EHP-200A – A stand-alone solution for measurements of fields from 9 kHz to 30 MHz is the new EHP-200. This fiber-optically isolated sensor measures both E and H fields over a wide dynamic range and displays them on a computer through a 10-meter cable. This design allows repeatable field measurements thanks to the supplied non-metallic stand, and the EHP-200 also features excellent accuracy.



EHP-50D with NBM-550



EFA-300

RF Safety Overview

Meters

SRM-3006 – The Selective Radiation Meter, covering 9 kHz to 6 GHz, is unlike any previous designs to detect RF and microwave fields. With its outstanding sensitivity and dynamic range added to simple operation, surveyors can now detect emitters separately in a multiple emitter field.

NIM Series – Features digital meters and dual-field probes. The NIM-513 is excellent for measurements on heat sealers and vinyl welders, while the NIM-511 covers a wider frequency range for testing most semiconductor systems.

NBM Series – Narda's new NBM series of meters and probes provide unequalled performance for broadband measurements. Either the NBM-520 or -550 meters can be used with 11 different E or H field probes.



NBM Series

Personal Monitors

Narda offers two families of RF/microwave personal monitors – The RadMan and Nardalert S3 series. These products perform similar tasks in different ways.

RadMan – The RadMan offers broad frequency coverage for both the electric (E) and magnetic (H) fields. Narda recommends the RadMan to technicians and engineers for off-body use.



Nardalert S3

NEW Nardalert S3 – The new Nardalert S3 (NS3) Series features an updated design with field replaceable sensors, color LCD display and comprehensive software. The NS3 is packaged in a new case with lanyard and belt clips, protective cover, USB charging/data connection port and rechargeable battery.

Area Monitors

Narda STS now offers our standard SMARTS II monitors and we also have the capability of supplying innovative NBM-580/NS3 and 8060 Series, broadband and narrowband monitors.

SMARTS II – The SMARTS II monitors feature wideband operation (2 MHz to 100 GHz) that is ideally suited to high power, indoor applications, such as satellite uplink amplifier rooms, industrial process machines employing high power RF, and military system test stands.

NBM-580/NS3 – Narda has updated and expanded area monitoring with a new system based on the NBM-580, that accepts inputs from up to 8 sensors which can be NBM meters / probes or NS3 monitors. Additionally, the NS3 monitors can be powered from AC/DC power for internal applications or solar power for outdoor installations.

Model 8061 Area Monitor – can be configured for indoor or outdoor applications, with a GSM communications modem built-in and narrowband detection to provide spectral plots.

Narrowband Systems – Narda-STS can also supply designs based on the upcoming 8060 Series of narrowband monitors. Contact the factory for more details.



NBM-580 / NS3 System:
NS3 in solar powered outdoor
enclosure (right) remotely
connected to NBM-580 (left)

