

## NARDA BROADBAND FIELD METER

**NBM-520**

# Measuring electric and magnetic fields

ranging from high frequency to microwaves

- ▲ **Non-directional measurement using isotropic probes for applications in the frequency range 100 kHz to 60 GHz**
- ▲ **Intelligent probe interface with automatic detection of probe parameters for simple operation**
- ▲ **Extra small and lightweight**
- ▲ **Unbeatably easy 4-button operation**
- ▲ **Auto zero ensures precision measurements**



## DESCRIPTION

The Narda Broadband Field Meter NBM-520 is part of the NBM-500 family of test instruments. It measures non-ionizing radiation with utmost accuracy and incorporates all the major basic measurement modes. In contrast with the larger NBM-550, a memory for measurement results has been deliberately left out of the NBM-520. The result is unbeatably easy operation using just 4 buttons, so referring to the operating manual is all but unnecessary.

Suitable measuring probes for electric and magnetic field strengths are available for the frequency range from about 100 kHz up to 60 GHz. So-called *shaped probes* which have frequency responses that weight the results according to specific human safety standards are available in addition to *flat probes* with flat frequency responses. All probes are calibrated independently from the measuring instrument. They include a non-volatile memory containing the probe parameters and calibration data, so they can be used with any instrument in the NBM-500 family.

## APPLICATIONS

The NBM-520 is used to make precision measurements to establish human safety, particularly in workplace environments where high electric or magnetic field strengths are likely to occur. Some examples are:

- **Measuring field strengths to comply with general safety regulations**
- **Establishing safe zones**
- **Measuring field strengths in the industrial environment, such as plastics welding equipment, RF heating, tempering, and drying equipment**
- **Measuring and monitoring field strengths around broadcasting and radar equipment**
- **Measuring field strengths of cell phone transmitters and satellite communications systems to demonstrate compliance with human safety standard limit values**
- **Measurements for protecting users of diathermy equipment and other medical devices that generate high-frequency radiation**
- **Measuring field strength in TEM cells and absorber chambers to demonstrate electromagnetic compatibility (EMC)**



*Small, lightweight and rugged design – ideal for use in rough environments*



*Changing the probe is quick and easy, with no need to reconfigure the device*

## FEATURES

The Narda Broadband Meter NBM-520 is designed for on-site use. The concept focuses on simple operation and the range of functions has been deliberately kept to the main features necessary for performing precision field measurements.

### Display and operation

- Operated by weatherproof foil keypad using just 4 buttons with perceptible click point
- Backlit monochrome LCD with selectable illumination time, easy to read even in bright daylight

### Result display and evaluation

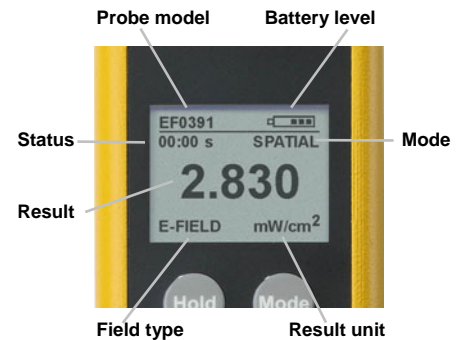
- 4 measurement modes selectable using the Mode button:
  - Instantaneous value (ACT)
  - Maximum (MAX)
  - Time average (AVG)
  - Spatial average (SPATIAL)
- Display units selectable using the Units button:
  - V/m, A/m, mW/cm<sup>2</sup>, W/m<sup>2</sup> when using flat probes,
  - % of limit value when using shaped probes
- Hold button for “freezing” the display value

### Automatic adjustment, application of calibration data

- Intelligent probe interface recognizes the NBM probe type and automatically imports and applies the correction values stored in the probe during calibration
- Fully automatic zero point adjustment with user definable time interval

### Warning functions

- Audible and visible warning signals for high field strengths:
  - Alarm threshold can be set from a PC



*Everything at a glance. The clearly arranged display is easy to read.*



*The optical interface connector and AC adapter / charger connector compartment is sealed with a rubber cap. The tilt stand provided in addition to the tripod bush can be used to place the instrument securely on a flat surface.*

### Operating features

- Standard rechargeable batteries provide long operating life and can be recharged rapidly as needed
- Batteries protected by auto-off function with programmable timer
- Instrument configuration easy to set using the PC software supplied

### Remote control

- PC software NBM-TS allows remote controlled measurements
- PC connected via optical interface to avoid field interference effects
- Optical cable extension allows additional freedom of movement for probes. The NBM-550 controller function enables data communication with the smaller NBM-520 so it can be used as an “extended probe handle”. This means that probes can be situated remotely from the NBM-550 without any metallic cables to adversely affect the measurements



*The battery compartment is opened easily using a coin. Two replaceable NiMH rechargeable batteries (AA size) are used to power the device.*



*Probe extension using an optical cable: The NBM-550 acts as controller and displays the results. The smaller NBM-520 acts as the optical probe interface. Both devices can also be used separately as measuring devices when fitted with probes.*

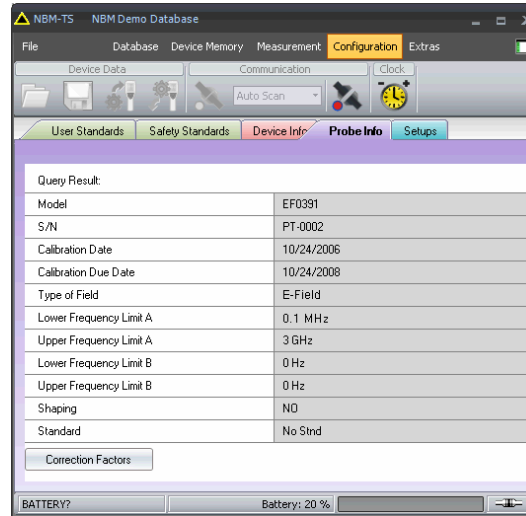


*A rugged transport case is included. This provides ideal protection for the instrument, together with up to two probes and all accessories.*

## PC SOFTWARE

The easy to use “NBM-TS” PC software (included) provides the following functions:

- Remote controlled measurements
- Device configuration management
- Firmware update control



*Compatible with the following operating systems: Microsoft® Windows® 2000 SP4, Windows® XP SP2, Windows Vista™*

## PROBES

Frequency range	100 kHz – 3 GHz	100 kHz – 6 GHz	3 MHz -18 GHz	300 MHz – 50 GHz	100 MHz – 60 GHz	300 kHz – 30 MHz	27 MHz – 1 GHz	300 kHz – 50 GHz EB5091: 3 MHz – 60 GHz
Field type	E	E	E	E	E	H	H	E Shaped
Probe designation	EF0391 EF0392	EF0691	EF1891	EF5091 EF5092	EF6091	HF3061	HF0191	EA ... ED5091
Mobile radio / telecommunications	●	●	●			●	●	●
Radio / TV broadcasting	●	●	●			●	●	●
Satellite communications			●	●	●			○
Radar			○	●	○			○
Industry: Heating and tempering	●	●				●		
Industry: Plastics welding	●	●				●		
Industry: Semiconductor production	●	●				○		
Medicine: Diathermy, hyperthermy	●	●						○
Leak detection			●	●	●			○
Human safety (general public safety)	●	●	●	○	●	●	○	○
Health and safety at work (occupational safety)	●	●	●	●	●	●	●	●

● more important      ○ variable importance

## SPECIFICATIONS

<b>NBM-520</b>	
<b>DISPLAY</b>	
Display type	Transflective LCD, monochrome
Display size	4 cm (1.5"), 128 x 64 dots
Backlight	LEDs, selectable illumination time (OFF, 5s, 10s, 30s, 60s, PERMANENT)
Refresh rate	400 ms
<b>MEASUREMENT FUNCTIONS</b>	
Result units	mW/cm <sup>2</sup> , W/m <sup>2</sup> , V/m, A/m (for flat probes) % (for shaped probes)
Display range	0.01 to 9999 V/m 0.0001 to 265.3 A/m 0.0001 to 9999 W/m <sup>2</sup> 0.0001 to 9999 mW/cm <sup>2</sup> 0.0001 to 9999 %
Result types (isotropic, RSS)	Actual (ACT), Maximum (MAX), Average (AVG), Spatial Averaging (SPATIAL)
Averaging time	4 s to 30 min (2 s steps), selectable by PC software
Spatial averaging	discrete or continuously, selectable by PC software
Alarm function	2 kHz audible signal (4 Hz repetition), threshold adjustable by PC software
<b>INTERFACES</b>	
Optical interface	Serial, full duplex, 115200 baud, no parity, 1 start and 1 stop bit
Probe interface	Plug-and-play auto detection, compatible with all NBM series probes Integration time for measuring input approx. 270 ms Measurement sampling rate 5 Hz (5/ 50/ 60 Hz for remote operation)
<b>GENERAL SPECIFICATIONS</b>	
Recommended calibration interval	24 months (basic unit only, probes are specified separately)
Battery	NiMH rechargeable batteries, 2 x AA size (Mignon), 2500 mAh, included
Operation time	Approx. 22 hours (backlight off) Approx. 16 hours (permanent backlight)
Charging time	2 hours
Battery level display	100%, 80%, 60%, 40%, 20%, 10%, low level (< 5%)
Temperature range	Operating -10 °C to +50 °C Non-operating (transport) -30 °C to +70 °C
Humidity	5 to 95%, non condensing ≤29 g/m <sup>3</sup> absolute humidity (IEC 60721-3-2 class 7K2)
Size (h x w x d)	38 x 52 x 195 mm (without probe)
Weight	300 g (without probe)
Accessories (included)	Hard case, power supply, rechargeable batteries, shoulder strap, NBM-TS software, operating manual, certificate of calibration
Country of origin	Germany

## ORDERING INFORMATION

NBM-520	Part Number (P/N)
NBM-500 Set 2, Narda Broadband Field Meter Includes: - NBM-520 Basic unit (2403/01) - Hard case, holds field meter and up to 2 probes (2400/90.07) - Power supply, 9VDC, 100V-240VAC (2259/92.06) - Shoulder strap, 1 m (2244/90.49) - O/E converter USB (2260/90.07) - Cable, fiber optic, duplex (1000 m), RP-02, 2 m (2260/91.02) - Software, NBM-TS, PC transfer (2400/93.01) - Operating manual - Certificate of calibration  <i>Probes are not included</i>	2400/102
NBM-500 Set 4, Narda Broadband Field Meter - identical to NBM-500 Set 2 (2400/102) but with a larger case (2400/90.06) for up to 4 probes	2400/104
<b>PROBES</b>	
Probe EF0391, E-field for NBM, 100 kHz - 3 GHz, isotropic	2402/01
Probe EF1891, E-field for NBM, 3 MHz - 18 GHz, isotropic	2402/02
Probe EF5091, E-field for NBM, thermocouple, 300 MHz - 50 GHz, isotropic	2402/03
Probe EF6091, E-field for NBM, 100 MHz - 60 GHz, isotropic	2402/04
Probe HF3061, H-field for NBM, 300 kHz - 30 MHz, isotropic	2402/05
Probe HF0191, H-field for NBM, 27 MHz - 1 GHz, isotropic	2402/06
Probe EA5091, Shaped E-field, FCC for NBM, 300 kHz - 50 GHz, isotropic	2402/07
Probe EB5091, Shaped E-field, IEEE for NBM, 3 MHz - 50 GHz, isotropic	2402/08
Probe EC5091, Shaped E-field, SC6 Canada for NBM, 300 kHz - 50 GHz, isotropic	2402/09
Probe ED5091, Shaped E-field, ICNIRP for NBM, 300 kHz - 50 GHz, isotropic	2402/10
Probe EF5092, E-field for NBM, thermocouple, 300 MHz - 50 GHz, high power, isotropic	2402/11
Probe EF0392, E-field for NBM, 100 kHz - 3 GHz, high power, isotropic	2402/12
Probe EF0691, E-field for NBM, 100 kHz - 6 GHz, isotropic	2402/14
<b>ACCESSORIES</b>	
Test generator, 27 MHz, hand-held	2244/90.38
Tripod, non-conductive, 1.65 m with carrying bag	2244/90.31
Tripod extension, 0.50 m, non-conductive (for 2244/90.31)	2244/90.45
Handle, non-conductive extension, 0.42 m	2250/92.02
Carrying Strap for Hardcase SRM/ NBM	3001/90.04
Cable, Probe Extension 1.25m	2244/90.35
Cable, fiber optic, duplex, F-SMA to RP-02, 0.3 m	2260/91.01
Cable, fiber optic, duplex (1000 m), RP-02, 2 m	2260/91.02
Cable, fiber optic, duplex (1000 m), RP-02, 20 m	2260/91.03
O/E converter, RS232, RP-02 / DB9	2260/90.06
Protective pouch for NBM-520	2403/90.01
Protective pouch for NBM probe (compatible with all NBM probes except 2402/05)	2402/90.01

**Narda Safety Test Solutions GmbH**  
 Sandwiesenstrasse 7  
 72793 Pfullingen, Germany  
 Phone: +49 (0) 7121-97 32-777  
 Fax: +49 (0) 7121-97 32-790  
 E-Mail: support@narda-sts.de  
 www.narda-sts.de

**Narda Safety Test Solutions**  
 435 Moreland Road  
 Hauppauge, NY 11788, USA  
 Phone: +1 631 231-1700  
 Fax: +1 631 231-1711  
 E-Mail: NardaSTS@L-3COM.com  
 www.narda-sts.com

**Narda Safety Test Solutions Srl**  
 Via Leonardo da Vinci, 21/23  
 20090 Segrate (Milano), Italy  
 Phone: +39 02 2699871  
 Fax: +39 02 26998700  
 E-mail: support@narda-sts.it  
 www.narda-sts.it

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