narda
Safety Test Solutions

NARDA BROADBAND FIELD METER

NBM-520

Conforms to EMF Directive 2013/35/EU

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 90 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**

5G ready

Narda Broadband Field Meter NBM-520

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 100 kHz up to 90 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.

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

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, such as the EMF Directive 2013/35/EU**
- **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)**

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

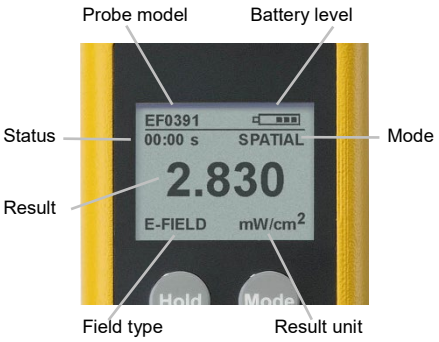
- 4 measurement modes selectable using the Mode button:
  Momentary RMS value (ACT)
  Maximum RMS value (MAX)
  Average RMS value (AVG)
  Spatial average RMS (SPATIAL)
- Display units selectable using the Units button:
  V/m, A/m, mW/cm^2, W/m^2 when using flat probes,
  % of limit value when using shaped 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.

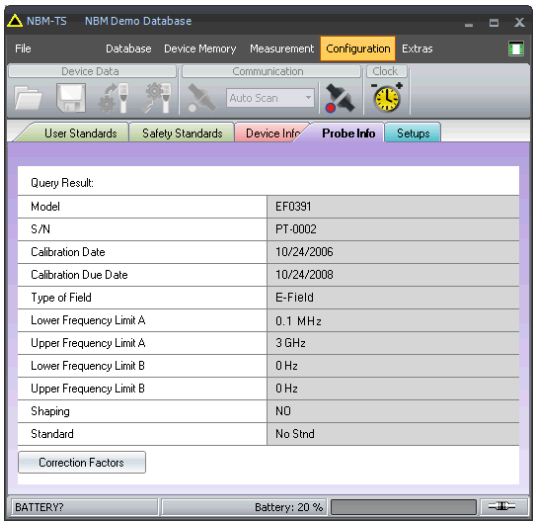
Probe extension using an optical cable: The NBM-550 acts as controller and displays the results. The smaller NBM-520 acts as the optical probe interface. Both devices can also be used separately as measuring devices when fitted with probes.

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 (free download) provides the following functions:

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



NBM-TS for Microsoft® Windows®

PROBES

Frequency range	300 kHz to 30 MHz	27 MHz to 1 GHz	100 kHz to 3 GHz	100 kHz to 6 GHz	3 MHz to 18 GHz	40 MHz to 40 GHz	300 MHz to 50 GHz	100 MHz to 60 GHz	100 MHz to 90 GHz	300 kHz* to 50 GHz
Field type	H	H	E	E	E	E	E	E	E	E Shaped
Probe designation	HF3061	HF0191	EF0391 EF0392	EF0691 EF0692	EF1891	EF4091	EF5091	EF6092	EF9091	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					●	●	●	●	●	○
General public safety	●	○	●	●	●	●	○	●	●	○
Health and safety at work	●	●	●	●	●	●	●	●	●	●

*) EB5091: 3 MHz – 50 GHz ● more important ○ variable importance

SPECIFICATIONS

NBM-520	
DISPLAY	
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
MEASUREMENT FUNCTIONS	
Result units	mW/cm^2, W/m^2, 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^2 0.0001 to 9999 mW/cm^2 0.0001 to 9999 %
Result types (RMS, isotropic)	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
INTERFACES	
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 RMS Integration time for measuring input approx. 270 ms Measurement sampling rate 5 Hz (5/ 50/ 60 Hz for remote operation)
GENERAL SPECIFICATIONS	
Recommended calibration interval	24 months (basic unit only, probes are specified separately)
Battery	NiMH rechargeable batteries, 2 x AA size (Mignon), 2700 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 Non-operating (transport)	 -10 °C to +50 °C -30 °C to +70°C
Humidity	5 to 95%, non condensing ≤29 g/m^3 absolute humidity (IEC 60721-3-2 class 7K2)
Immunity to radiated electromagnetic fields	200 V/m (100 kHz to 60 GHz) Note: The immunity may be less than the specified measurement range of a probe
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, operating manual, certificate of calibration, NBM-TS software (free download)
Country of origin	Germany

ORDERING INFORMATION

NBM-520	Part Number (P/N)
NBM-500 Set 2, Narda Broadband Field Meter *- Probes are not included -* Includes: - NBM-520 Basic unit (2403/01B) - Hard case, holds field meter and up to 2 probes (2400/90.07) - Power supply, 9VDC, 100V-240VAC (2259/92.06) - Battery, Rechargeable AA-Size, NiMH (2 pcs. 1001-0000-471) - Shoulder strap, 1 m (2244/90.49) - O/E converter USB (2260/90.07) - Cable, fiber optic, duplex (1000 µm), RP-02, 2 m (2260/91.02) - Operating manual - Certificate of calibration - Software, NBM-TS, PC Transfer (free download)	**2400/102B**
NBM-500 Set 4, Narda Broadband Field Meter *- identical to NBM-500 Set 2 (2400/102B) but with a larger case (2400/90.06) for up to 5 probes*	**2400/104B**
PROBES	
Probe HF 3061, H-Field, for NBM, 300kHz-30MHz	**2402/05B**
Probe HF 0191, H-Field, for NBM, 27MHz-1GHz	**2402/06B**
Probe EF 0391, E-Field, for NBM, 100kHz-3GHz	**2402/01B**
Probe EF 0392, E-Field, HiPow, for NBM, 100kHz-3GHz	**2402/12B**
Probe EF 0691, E-Field, for NBM, 100kHz-6GHz	**2402/14B**
Probe EF 0692, E-Field, for NBM, 600MHz-6GHz	**2402/20B**
Probe EF 1891, E-Field, for NBM, 3MHz-18GHz	**2402/02B**
Probe EF 4091, E-Field, for NBM, 40MHz-40GHz	**2402/19B**
Probe EF 5091, E-Field, for NBM, 300MHz-50GHz, Thermo.	**2402/03D**
Probe EF 6092, E-Field, for NBM, 100MHz-60GHz	**2402/17B**
Probe EF 9091, E-Field, for NBM, 100MHz-90GHz	**2402/18B**
Probe EA 5091, FCC 1997 Controlled Shaped for NBM, 300 kHz - 50 GHz, E-Field	**2402/07D**
Probe EB 5091, IEEE 2019 Restricted Shaped for NBM, 3 MHz - 50 GHz, E-Field	**2402/21B**
Probe EC 5091, SC 6 2015 Controlled Shaped for NBM, 300 kHz - 50 GHz, E-Field	**2402/16D**
Probe ED 5091, ICNIRP 1998 Occ Shaped for NBM, 300 kHz - 50 GHz, E-Field (compliant with ICNIRP 2020 above 30 MHz)	**2402/10D**
ACCESSORIES	
Test-Generator 27 MHz	**2244/90.38**
Tripod, Non-Conductive, 1.65m, with Carrying Bag	**2244/90.31**
Tripod Extension, 0.50m, Non-Conductive (for 2244/90.31)	**2244/90.45**
Handle, Non-Conductive, 0.42m	**2250/92.02**
Cable, FO Duplex (1000 µm) RP-02, 2 m (included in Set 2400/102B and 2400/104B)	**2260/91.02**
Cable, FO Duplex (1000 µm) RP-02, 5 m	**2260/91.09**
Cable, FO Duplex (1000 µm) RP-02, 10 m	**2260/91.07**
Cable, FO Duplex (1000 µm) RP-02, 20 m	**2260/91.03**
Cable, FO Duplex (1000 µm) RP-02, 50 m	**2260/91.04**
Cable, FO Duplex, F-SMA to RP-02, 0.3 m	**2260/91.01**
O/E Converter RS232, RP-02/DB9	**2260/90.06**
O/E Converter USB, RP-02/USB (included in Set 2400/102B and 2400/104B)	**2260/90.07**
Cable, Adapter USB 2.0 - RS232, 0.8 m	**2260/90.53**

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