

Millimar Series

N 1700 Modules | Cockpit Software



Millimar N 1700 Modules | Cockpit Software

Solutions for your measuring tasks in production

The ability to freely combine modules, measuring computers and software allows for maximum flexibility. Customized metrology – perfectly equipped for any application.

Flexible measurement in production with the new generation of the Millimar family

The components in the Millimar series are optimized to make measuring processes in production as easy and accurate as possible. This is made possible predominantly by the customized assembly of the measuring devices – because each production environment has different areas of focus, spatial features and requirements relevant to measurement.

Millimar products are specially developed for this type of requirement in modern quality assurance. The focus here is mainly on simplifying handling, speeding up processes and completely integrating into complex working environments.

- Flexible and modular product combinations to tackle customer-specific measuring tasks
- Different modules for a variety of measuring requirements
- A broad selection of measuring sensors makes it possible to perform a variety of measuring tasks
- For use in a wide variety of applications
- Extremely high data transfer rates mean success with highly dynamic measurements

Inhalt

All from one source
for added convenience and safety

Info | Page 4

Customized setup
for different measuring tasks

Info | Page 6

MarWin Millimar
Cockpit Software
Fully universal software for complex measuring tasks



Products | Page 7

Flexible in use,
outstanding in performance

Info | Page 8

The right sensor for
each measuring task

Accessories | Page 10

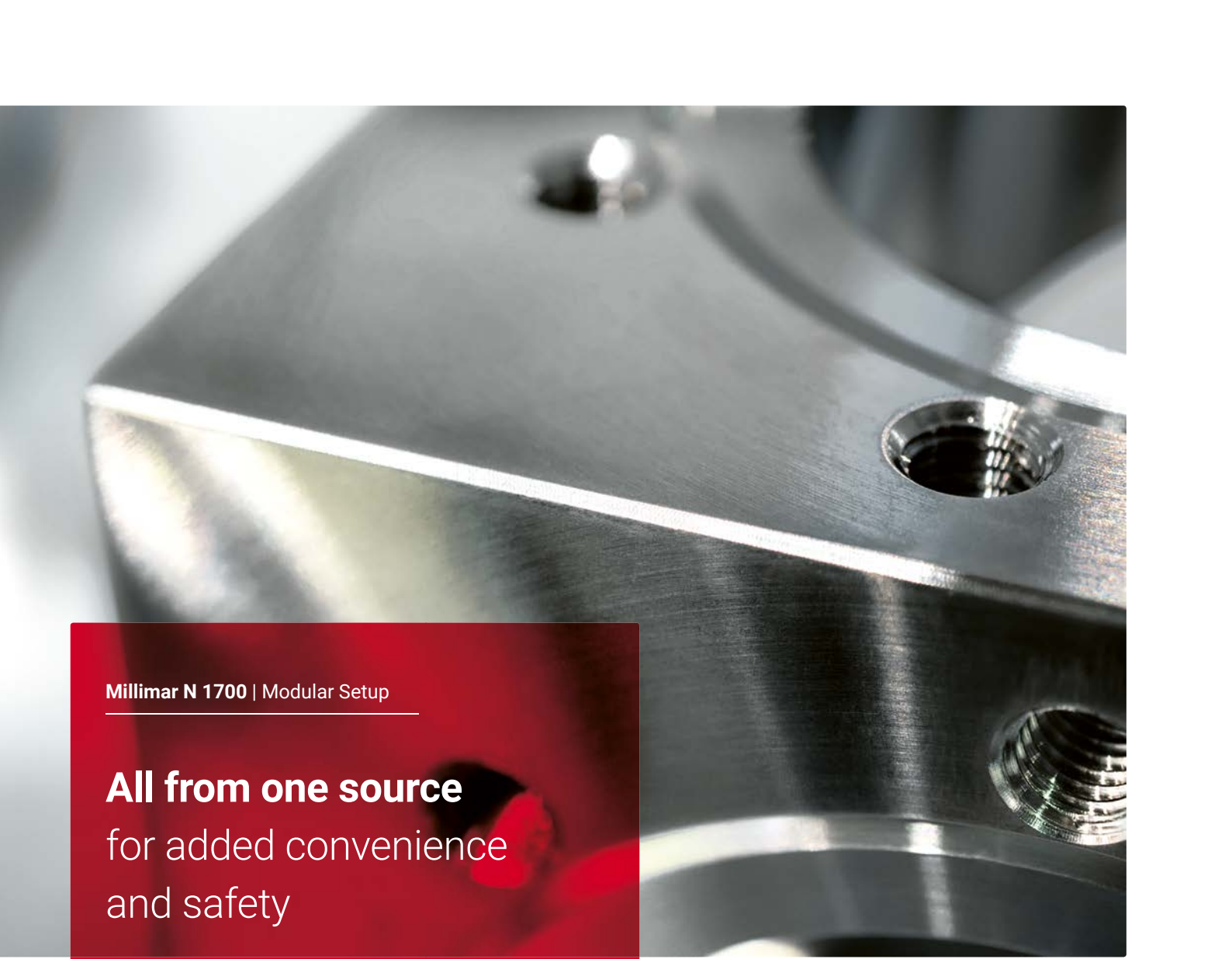
Millimar N 1700
An overview of individual modules
The new Millimar generation for flexible measurement

Products | Page 12



Balanced arrangement for **optimal power supply**

Info | Page 14



Millimar N 1700 | Modular Setup

All from one source for added convenience and safety

The clever, modular system means that the N 1700 modules for evaluating measuring sensors in any working environment are ready for use. The freedom to combine provides maximum flexibility to guarantee your very own setup for your specific measuring task. The modules can be upgraded as desired, they are independent in terms of order and they occupy very little space thanks to their slim, space-saving design. With this customized metrology at your disposal, you are perfectly equipped for any application.

Ergonomic housing

To ensure simple, precise handling, the housing is equipped with haptic grooves, making it quick and safe to remove and clamp on the modules.

Safe and convenient

Comfortable operation is made possible by the numerous safety functions in the Millimar portfolio. A color signal indicates whether or not the device is ready for data transmission. The easy to handle design and practical locking lever allow for quick and easy installation. The Millimar Cockpit software displays the positions of your modules, giving you an excellent overview of your setup.

Flexible and transparent

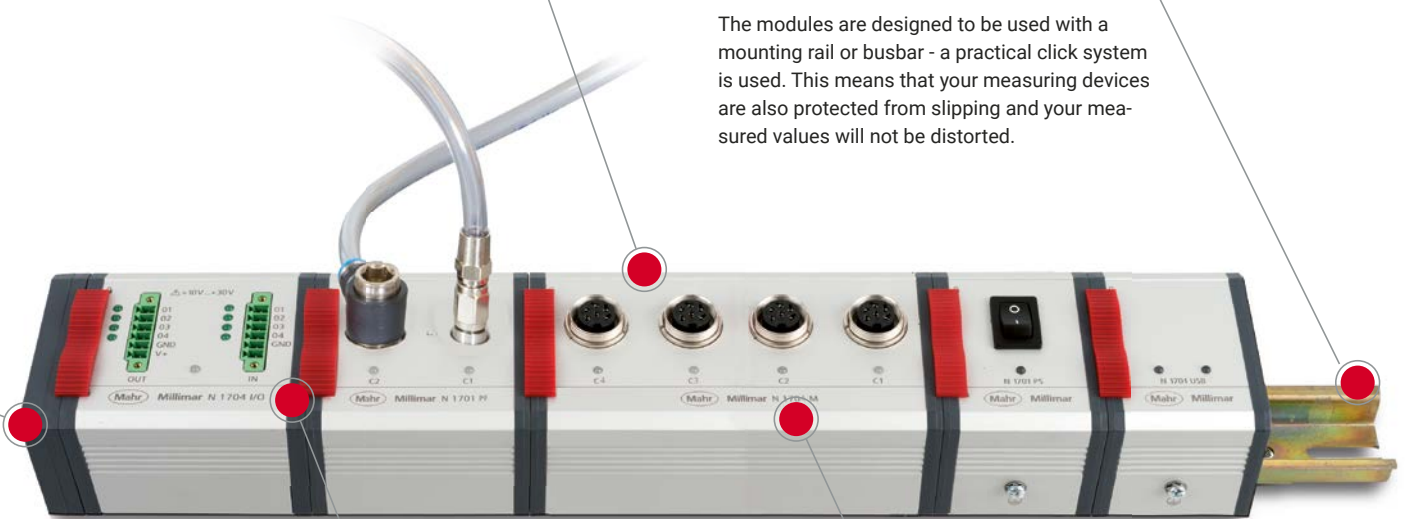
The various possibilities for combining modules and software give you the opportunity to design your work environment and tools in a more customized way than ever before. Use the modules you need and combine them as required – no more, no less. You also have flexibility when it comes to selecting your data output, designing the formulae to be used as the basis for your measurements and selecting your measuring sensors. The history function provides you with full transparency and reproducibility in your valuation.

Space-saving design

The modules can be used anywhere thanks to the handy and functional design. They take up very little space and are thus perfectly suited to production environments with limited space.

Installation using the mounting rail

The modules are designed to be used with a mounting rail or busbar - a practical click system is used. This means that your measuring devices are also protected from slipping and your measured values will not be distorted.



Practical locking lever

The locking lever guarantees that the modules are securely fastened. This way, the modules can neither slip nor come unattached from one another due to impact or vibration.

LED color info

Added security through colored signals. In every module colored LEDs are installed to provide information about the status of the connection or the power supply. This way an initial error analysis can be conducted quickly in the case of a disruption.







Customized setup for different measuring tasks

Millimar N 1700 | Cockpit Software



1. Pneumatic module in use with a nozzle ring gage
2. Shaft measurement with inductive modules
3. Radial runout measurement with dial indicator
4. Pneumatic module in use with a nozzle plug gage

Application areas

 Automotive Components	 Aerospace	 Gears	 Bearing Industry	 Containers & Packaging	 Consumer Electronics
---	---	---	--	---	--

Fully universal software for complex measuring tasks

A smart and fully universal interface tool, not only does the Millimar Cockpit software feature default standard formulae for all common measuring tasks but it is also possible to perform complex and customized measurements.

The Millimar C 1700 measuring computer combines everything that you need to carry out professional data evaluation in production. This is how you take quality assurance to the next level.



- Interactive, touch-enabled software
- N 1700 Simulator / Configurator: Offline program creation even without hardware
- Flexible formula editor for complex measuring tasks
- Real time visualization of measured data
- Simultaneous display of 128 digital or analog measurement values
- Data output in Excel or qs-STAT file
- The History View software option accounts for previous measurements

The Cockpit software allows you to access previously saved programs, enabling you to start a measurement without having to input the settings yourself. This saves time while avoiding potential sources of error encountered when carrying out the settings manually.

The default settings currently include nine main measuring task areas. In addition, customized default settings can be stored by the user for subsequent use and repeated measurements.

Millimar C 1700 PC Measuring Computer

Type	C 1700 PC
Compatibility	USB, Intergrated Wireless, Millimar N 1700
Measuring combinations	Predefined formula templates for standard features, links entered via comprehensive formula editor
Dimensions (in mm, W H D)	276 x 192 x 49,5
Included in package	Millimar Cockpit software including 10.1" Touch PC, preinstalled Windows 10 IoT Enterprise, Mahr license key, installation disk, 16 GB recovery stick, AC adapter, VESA 100 standard bracket
Optional accessories	Software option: Measured value/master value history (order no.: 5312802)
Order no.	5312801, 5312803 Cockpit (without PC)

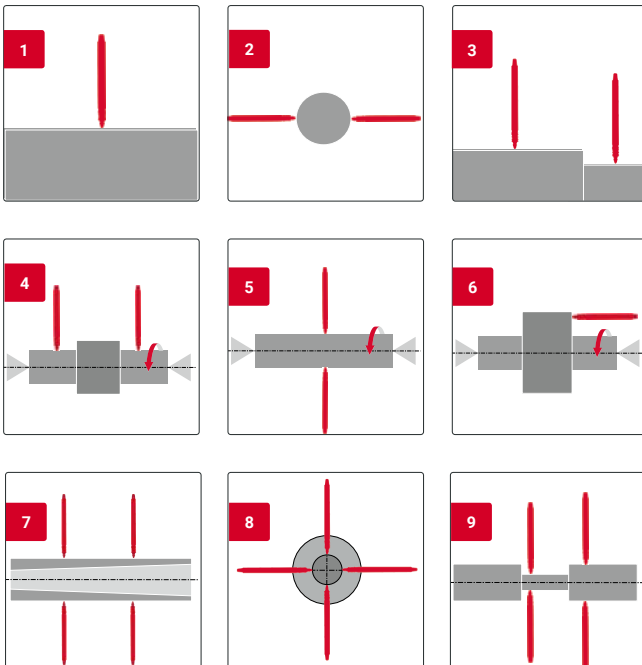
Flexible in use, outstanding in performance

The products in the Millimar portfolio show just how flexible modern metrology can be. The key to this is the modular setup of the N 1700 evaluation units and the fully universal Cockpit software. In addition, the wide range of probes and accessories enables other versatile applications. Specifically designed for your production environment, Millimar products guarantee more efficient work – and more convenient measurement.



Scan code and
watch video

Default application areas



Static measurements

1. Thickness measurement using a measuring sensor
2. Compound measurement
3. Difference measurement

Dynamic measurements

4. Coaxiality
5. Ovality
6. Radial run-out

Multi-gage measurements

7. Conicity
8. Concentricity
9. Symmetry offset

64

Measuring steps
for your measuring tasks

A sensor for every measuring task

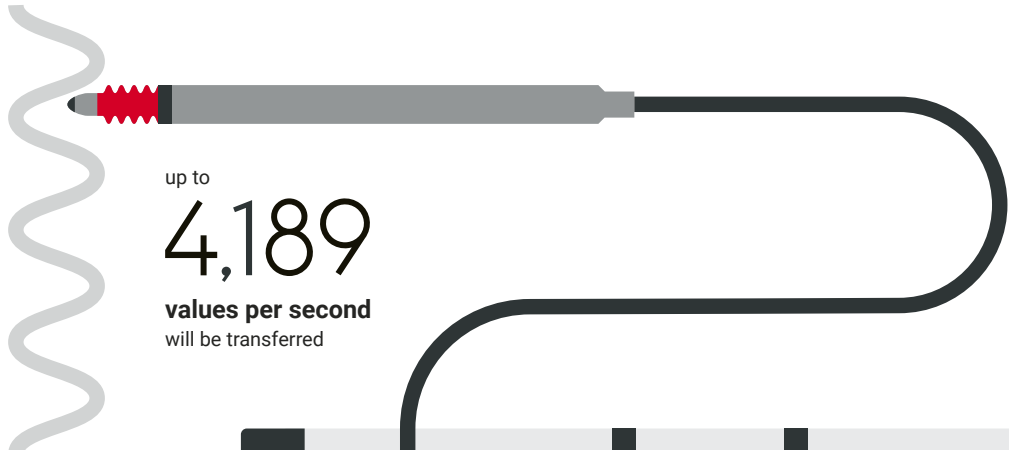
The Mahr portfolio of measuring probes consists of over 100 sensors – that's why you are guaranteed to find the right probe for any measuring task.

Space-saving

The modular setup of the units helps you save space by allowing you to control the modules you want or do not want to work with at any given time. Unused modules can simply be stored in a drawer for later use.

43

Inductive probes
in the portfolio



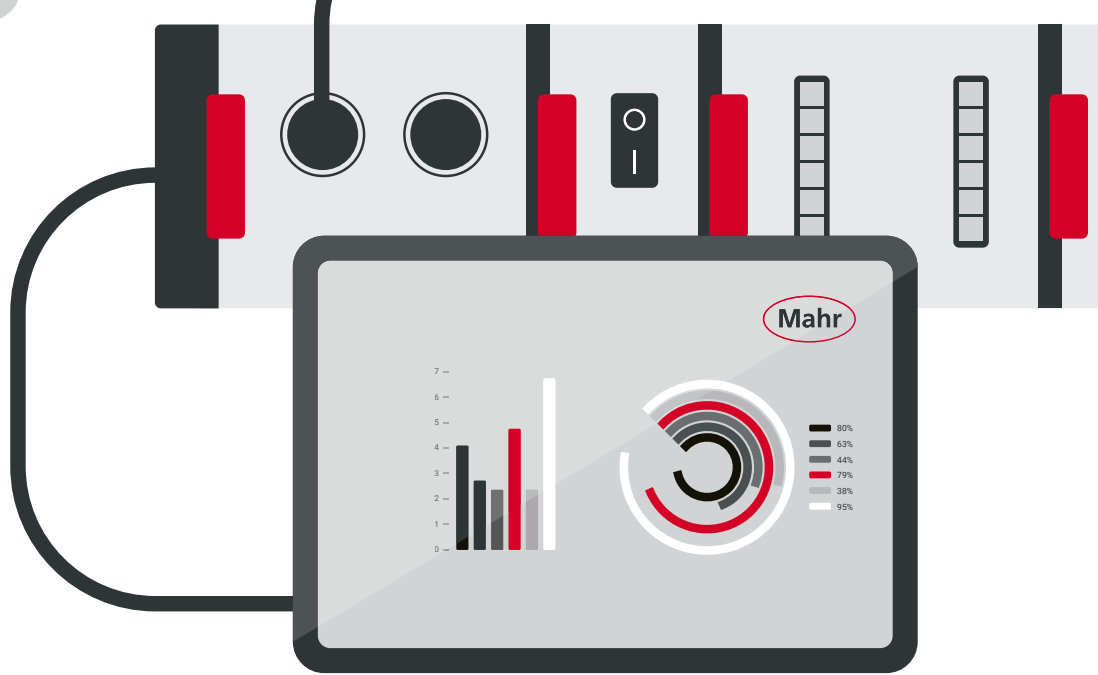
up to
4,189
values per second
will be transferred

Customized use

You can find the right evaluation unit for any application thanks to the versatile products in the Millimar family.

Simple combination

The portfolio of the new Millimar generation consists of thirteen modules, making it easy to choose the right one for your measuring task. The module setup works according to the mix and match principle: Select your modules and combine them at will - all according to your needs.



9

Seconds
on average to replace a module

Intelligent software

The Millimar Cockpit software allows for professional measuring and evaluation.

13

Different modules
for customized combination in the portfolio

The right measuring sensor for any measuring task

Sensors are the most important part of the measuring chain. Their properties determine the quality of the entire measurement.

Just as the N 1700 modules differ as evaluation units, the measuring sensors in the Millimar portfolio also differ depending on the measuring task – this guarantees an exact result at any given time. Mahr inductive probes provide a wide range of linearity and are not susceptible to sources of interference.

Millimar P 2004

The P 2004 probe is our dependable classic; it is perfectly suited to any kind of length measurement.

64

Measuring points enable countless measuring tasks

Choose the measuring sensor that best fits your requirements from our general catalog.

Inductive probes

Whether it's measuring thickness, radial run-out or concentricity: inductive probes allow you to determine measured values and deviations regardless of form, condition or radial run-out deviations. The big advantage for you is the wide range of linearity and the relative insensitivity to sources of interference. The probes are predominantly used for comparative measurements in production, whereby the specific tasks of the sensor may vary.

Pneumatic measuring sensors

Nozzle plug gages and nozzle ring gages measure diameters, conicity, ovality etc. very quickly and accurately. Pneumatic measuring devices can also handle several measuring planes to also test form features. Different diameters can also be measured at the same time this way.





Millimar P 1300

Due to the plug-in cable, this probe is particularly service friendly when it comes to replacement.

Millimar P 1303

This probe is particularly robust, featuring a hardened clamping shaft. The cable output on the side offers additional flexibility when placing the probes.



Nozzle plug gage DP50

Nozzle plug gages are ideally suited for drill holes with tight tolerances.

Nozzle ring gage DR50

Nozzle ring gages are designed to measure shafts with a tight tolerance range.



When to measure inductively – when to measure pneumatically?

Inductive probes are suitable for all tactile length measurements such as when measuring thickness, radial run-out and concentricity.

Our wide range of probe types and linearity mean that we have the right probe for any measuring task. Pneumatic sensors are predominantly in demand when precise measuring results

must be achieved during production. Thanks to the self-cleaning property, a wetted tool does not pose any problems for correct measurement. Sensitive surfaces can be measured with virtually no contact.

Millimar N 1700

All RS-485 bus modules in the Millimar N 1700 series can be individually combined with one another. The modules can be connected to all probe types in the Mahr portfolio and can transfer up to 4189 values per second to the software. Measurement uncertainty is considerably reduced thanks to the high rate of data transfer, enabling highly dynamic measurements to be completed.

Accessories

Air filter/precision pressure regulator kit

Recommended for N 1701 PF-2500/5000

Order no.: 2258471

Foot-operated switch for acceptance of measured values, 16 ESf

Recommended for N 1701 USB

Order no. 4102058



N 1701 USB | USB Connection Module

Order number: 5331130

- Configuration: Millimar Cockpit software
- Power supply: 430 mA
- Dimensions (L x W x H in mm): 54 x 54 x 66
- Terminal module, operating instructions, USB cable included in package



N 1701 PF / PN | Module for Pneumatic Measuring Device

Order number: 5331155 (PF-2500/5000), 5331150 (PM-2500), 5331151 (PM-5000), 5331152 (PM-10000), 5331157 (PF-10000)

- Configuration: Millimar Cockpit software
- Power consumption: 32 mA
- Compatibility: Mahr Federal, Mahr
- Dimensions (L x W x H in mm): 90 x 50x 66
- Measuring range (independent from measuring sensor):
 - $\pm 40 \mu\text{m}$ / $\pm 20 \mu\text{m}$ / $\pm 10 \mu\text{m}$
- Inputs for pneumatic measuring device: 1
- Operating instructions included in package



N 1704 M / N 1704 T / N 1704 U | Quadruple module

Order number: 5331140 / 5331141 / 5331142

- Configuration: Millimar Cockpit software
- Power consumption: 170 mA
- Compatibility: Mahr, Mahr half bridge, Mahr LVDT (N 1704 M), Tesa (N 1704 T), Marpross (N 1704 U)
- Dimensions (L x W x H in mm): 116.5 x 54.8 x 66
- Measuring range inductive probe: $\pm 500 \mu\text{m}$ / $\pm 1,000 \mu\text{m}$ / $\pm 2,000 \mu\text{m}$ / $\pm 5,000 \mu\text{m}$
- Probe inputs: 4
- Operating instructions included in package



N 1702 M | Modules for inductive probes

Order number: 5331120

- Configuration: Millimar Cockpit software
- Power consumption: 110 mA
- Compatibility: MAHR, Mahr 1340, Mahr half bridge, Mahr LVDT, Mahr VLDT
- Dimensions (L x W x H in mm): 77 x 54.8 x 66
- Measuring range inductive probe: $\pm 500 \mu\text{m}$ / $\pm 1,000 \mu\text{m}$ / $\pm 2,000 \mu\text{m}$ / $\pm 5,000 \mu\text{m}$
- Probe inputs: 2
- Operating instructions included in package



N 1704 I/O | Input/output module

Order number: 5331134

- Configuration: Millimar Cockpit software
- Power consumption: 170 mA
- Dimensions (L x W x H in mm): 77 x 54 x 66
- Control inputs: 4 inputs, 10 – 30 V
- Control outputs: 4 outputs, 10 – 30 V
- Operating instructions included in package



N 1701 PS | Power supply module

Order number: 5331133

- Configuration: Millimar Cockpit software
- Power supply: 2,000 mA
- Dimensions (L x W x H in mm): 57 x 55 x 66
- AC adapter, operating instructions included in package

Balanced arrangement for **optimal** **power supply**

The chain of modules can be arranged according to individual need. There is no limit to the number or type of modules but you should ensure that there are enough power supplying modules upstream from the power consuming modules to guarantee that your measurements run smoothly.

The N 1701 USB module serves as a connecting module to the measuring computer and simultaneously provides sufficient power for smaller module combinations. An additional N 1701 PS supply module is required for larger module setups. You can figure out the ideal arrangement for your application based on the respective values for power consumption and supply.



Millimar modules



Millimar N 1701 USB
 USB connection module
 Power supply: +430 mA



Millimar N 1701 PS
 Power supply module
 Power supply: +2000 mA



Millimar N 1704 I/O
 Input/output module
 Power consumption: -70 mA



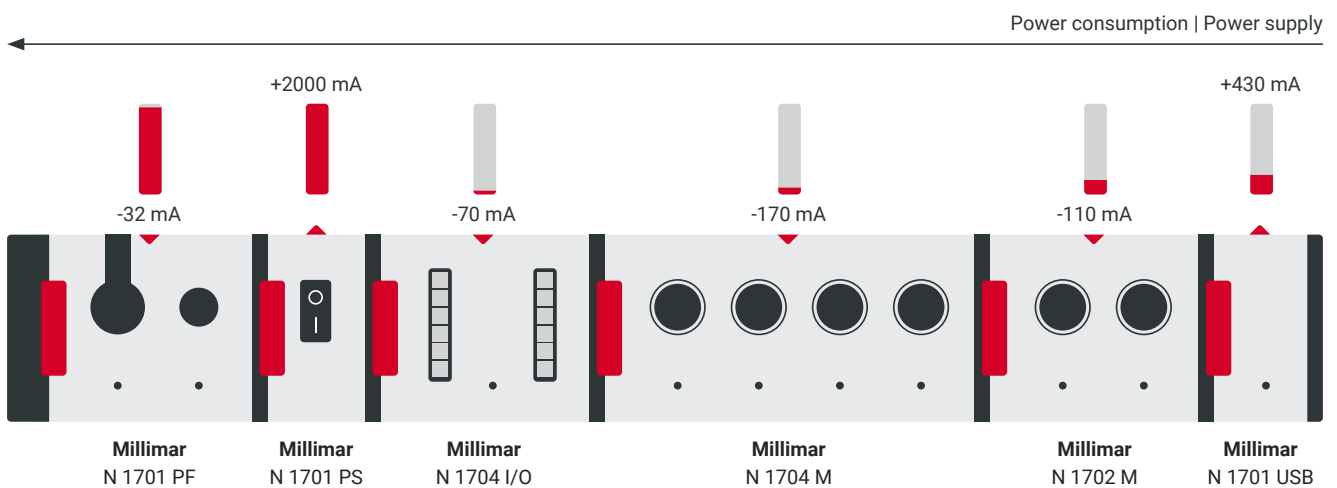
Millimar N 1702 M
 Module for inductive measuring device
 Power consumption: -110 mA



Millimar N 1701 PF
 Module for pneumatic measuring device
 Power consumption: -32 mA



Millimar N 1704 M
 Module for inductive measuring device
 Power consumption: -170 mA



Note:
 Each module setup always starts with a Millimar N 1701 USB connection module. Only one USB connection module is installed per module chain. Generally the modules are connected from right to left.



Mahr GmbH
Carl-Mahr-Straße 1
37073 Göttingen
Deutschland

Reutlinger Straße 48
73728 Esslingen
Deutschland

Tel.: +49 551 7073 800
info@mahr.com
www.mahr.com