



METEODIGIT IV

Features

METEODIGIT IV is a hand-held measuring instrument. Optionally it can be connected with sensors for airflow, wind speed, relative humidity or air temperature. It provides a practical and cost-effective solution e.g. for production facilities, quality management, air conditioning technology and ventilating applications, on ships and in scientific laboratories.

- Digital measuring technique
- With null balance
- Averaging, for each sensor individual adjustable and storable
- Threshold value compensation
- Automatic sensor recognition
- Intelligent loading system
- Compact and robust design
- Simple operation
- Fail-safe
- High measuring accuracy

1. OPERATING CONTROLS



① Measuring inputs (M0)

for all LAMBRECHT Sensors

② Connection DC 12V

12V_{DC} Mains adapter

③ LCD-Anzeige

- a Function
- b Measuring point, 2nd meas. value
- c Units for 2nd measured value
- d Units for 1st measured value
- e 1st measured value
- f Operational states:



Battery voltage < 3.6V



Unlocked for adjust. purposes



Measured value corrected



Relative measuring

④ Operating keys

ON OFF

Switch ON, to switch OFF: press long

M▲ M▼

Meas. point selection

MAX MIN

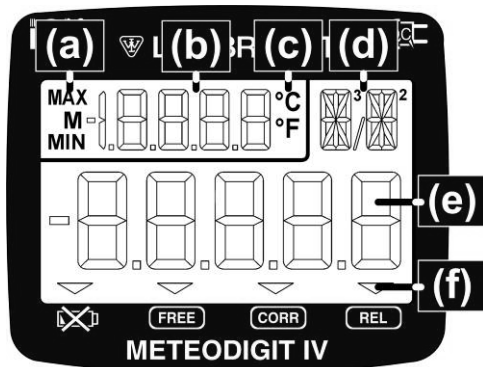
Max. / min. value, clear: press long

MEM

Measured data storage, display value: press long

CLR

Relative measuring, cancel: press long



To switch ON with press keys:

CLR

Reinitialization

MEM

Device configuration

M▲

Software version

MAX

u. **MIN**

unlocking for adjustment

Rear of device

⑤ Battery compartment

3 AA alkaline-manganese batteries

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3. GENERAL

Congratulations on your purchase of this measuring instrument METEODIGIT IV. In order to assure an easy operation, the device configures itself automatically after connecting the sensors. As the device can be connected with a wide range of LAMBRECHT sensors, the operating instructions should be read properly in order to become acquainted with the numerous possibilities and operation mode of the sensors.

3.1.1 Warranty

Each and every device, before leaving our factory, undergoes numerous quality tests. We provide a guarantee, lasting 2 years from delivery date, that your device will function trouble-free. In the unlikely event that the device proves defective and you need to return it please wherever possible use the original packaging material for dispatch and enclose a clear and informative description of the fault and of the conditions in which it occurs.

This guarantee will not apply in the following cases:

- The customer attempts any form of unauthorized tampering and alteration inside the device.
- The device is used in environments and conditions for which it is not suited.
- The device is used with unsuitable power supply equipment and / or peripherals.
- The device is used for any purpose other than that for which it is intended.
- The device is damaged by electrostatic discharge or lightning.
- Improper handling respectively non-observance of the operating instructions

The manufacturer reserves the right to change the product's characteristics in the light of technical progress or to benefit from the introduction of new components.

3.1.2 Scope of delivery

When you unpack the device check carefully for any signs of transport damage and ensure that delivery is complete.

Measuring instrument METEODIGIT IV with
3 alkaline batteries,
operating instructions

In the event of transport damage please retain the packaging material and inform your supplier immediately.

3.1.3 Waste disposal



The crossed symbol of the rubbish bin with wheels means, that a product inside the European Union must be led into a separate refuse collection. This norm is valid for the product itself as well as for all accessories marked with this symbol. It is not allowed to dispose these products together with the unsorted domestic waste.

- Dispose the packaging according to the customary regulations!
- Dispose the cardboard packaging, the plastic protective packaging and the antidegradants separately and professionally!
- The disposal of the device (as well as components and utilities) depends on the local disposal regulation and also on the national environment protection laws.
- Dispose professionally, especially ecologically harmful parts as batteries, accumulators and plastics for example.
- If possible, use the original packing material for the shipping.

4. SAFETY INFORMATION

DANGER



Danger of life and injury as well as cause of property damage!

Read the operation instruction carefully before starting-up the device!

Pay attention to the general and the special safety instructions!

There might be danger at:

- Disregard of the operation instruction including all the safety notes.
- Illegal intervention and modifications of the device by the client.
- Use outside the valid surrounding conditions.
- Use of inappropriate current supply and external devices.
- Unintended usage of the device.
- Damage by electrostatic discharge or lightning.

DANGER



Mortal danger by dangerous electrical tension!

There might be danger at:

- Use of inappropriate current supply and external devices.
- Damage by electrostatic discharge or lightning.
- Do not lay the sensor line nearby high voltage current lines.
- Take care of the leakage of the electricity before touching the sensor line.

DANGER



Caution in terms of explosive atmosphere or substances!

There might be danger of explosion nearby fuel or chemicals!



Do not use the device inside detonation areas or filling stations!

4.1.1 Special notes on use

- If the device is brought into the work-room from a cold environment there is a risk that condensation might form on the electronics. You are advised therefore to wait until the device has adjusted to the ambient temperature before starting to use it.
- Be sure to observe the maximum load capacity of the sensor power supply.
- Do not run sensor lines in the vicinity of high-voltage power cables.
- Sensors with integrated power supply are not electrically isolated from one another.

4.1.2 Handling batteries / rechargeable batteries correctly



When inserting batteries / rechargeable batteries ensure that these are correctly polarized.

If the device will probably not be needed for a relatively long period of time or if the batteries are empty remove the batteries; this will prevent battery acid spilling on and damaging the device.

Rechargeable batteries should be recharged as and when necessary.

You should never attempt to recharge an ordinary (non-rechargeable) battery; it may explode!

Batteries / rechargeable batteries must never be short-circuited or thrown on the fire.

Batteries / rechargeable batteries are special waste and must not be discarded together with normal domestic waste.

5. INTRODUCTION

METEODIGIT IV is a new hand-held measuring instrument of LAMBRECHT. The intelligent connector offers decisive advantages when connecting sensors because all parameters are stored in on the connector itself; repeat programming is thus no longer necessary.

5.1 Functions

METEODIGIT IV has one electrically isolated measuring input suitable for all LAMBRECHT sensors. For operation purposes the device incorporates a large LCD display and a keypad.

5.1.1 Sensor programming

The connector programs the measuring channels completely and automatically. Programming of the connector will be done during manufacture.

Accordingly programmed are:

- Measuring ranges
- Dimension (2-digit)
- Correction of measured values
- Scaling

All sensor data stored in the connector can be protected by means of a graduated locking function against undesired access.

5.1.2 Measuring operations

The measurement input can be connected with double sensors, individually scaled sensors and sensors with function channels. You can move forwards or backwards from one measuring channel to the next using the keypad. The data are shown constantly on the display.

Measured values

The measured value for the selected measuring point is shown continuously with autozero and, as and when necessary, with measured value correction.

Measuring functions

With some sensors, to achieve optimal measured value acquisition, certain special measuring functions are required. For certain sensors temperature compensation and atmospheric pressure compensation are available.

Maximum and minimum values

For each measuring operation the maximum value and minimum value are acquired and saved to memory. These values can then be displayed, output, or deleted from memory.


Measured value memory

Up to 99 measured values can be saved manually. These data can be shown successively on the display.

Differential measurement

It is possible, by setting the measured value to zero, to perform relative measuring operations with respect to a reference value.

6. INITIAL COMMISSIONING

1. Connect sensor to socket  (MO) ①
2. Ensure that the power supply is provided with 3 AA batteries
3. Switch ON by pressing key **ON** ④
4. Select measuring channels by pressing key **MA** ④, read out measured values (③e)
5. Save the measured values by pressing key **MEM** ④
6. Relative measuring with respect to a reference value or sensor adjustment by pressing key **CLR** ④, return to normal measured value by pressing and holding down key **CLR**
7. Evaluating a measuring operation


Call up maximum / minimum values by pressing keys **MAX** / **MIN** ④.

To delete max. / min. values press and hold down key **MAX** or **MIN**

7. POWER SUPPLY

Power can be supplied to the measuring instrument with 3 AA alkaline batteries (included in delivery).

7.1 Battery operating and supply voltage monitoring

At a current consumption of approx. 16 mA the operating time will be approx. 150 hours. The current operating voltage is displayed each time the device is switched on; this gives you a basis for estimating the remaining operating time. When the remaining battery capacity drops to approx. 10 percent, the LOBAT arrow  will appear on the display. If the batteries are completely discharged the device will switch off. To replace old batteries first unscrew the battery compartment cover ⑤ on the rear of the device.


7.2 Switching ON / OFF, reinitialization

To switch the device ON briefly press and release the key **ON OFF** ④ in the middle of the keypad; to switch the device OFF press and hold down the key **ON OFF** . After the device is switched off all saved values and settings are retained intact.

If interference (e.g. electrostatic) or a malfunction (e.g. battery failure) causes the device to behave abnormally, the device can be reinitialized.

To activate **RESET** press and hold down the key **CLR** when switching on. This will restore all settings – except the device designation – to the factory default status.

8. CONNECTING THE SENSORS

All LAMBRECHT sensors can be connected to input socket  (MO) at the measuring instrument.

8.1.1 Sensors

All METEODIGIT IV-sensors usually have the measuring range and units already programmed and can thus be connected to any input socket without further adjustment. A mechanical coding system ensures that sensors and output modules can only be connected to the correct sockets. All connectors incorporate two snap-lock levers; these snap into position as soon as the connector is inserted into the socket, thus preventing unintended disconnection if the cable is accidentally pulled. To withdraw the connector, both these levers must be pressed in at the sides.

8.1.2 Measuring inputs and additional channels

The measuring instrument has 1 input socket ①, to which initially measuring channel M0 is assigned. Several sensors can, however, if necessary, provide up to 4 channels. The additional channels are mainly usable for humidity sensors with 4 measuring parameters (temperature/ humidity/ dew point/ mixing ratio) or for function channels.

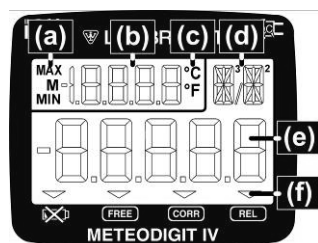
9. DISPLAY AND KEYPAD

9.1.1 Display

The display ② of the METEODIGIT IV is a 2-row LCD arrangement; the main field comprises 5x 7-segment digits (e) plus 2x 16-segment digits (d) for depicting the measured value; the function field comprises 4½ 7-segment digits (b) for depicting various measuring functions (a); there are also 4 arrows (f) for depicting the operating status.

Function field →

Main field →



Display of measuring functions in the function field

Measuring point:

M 0

Maximum value:

MAX 36.5

Minimum value:

MIN 17.3

Saved value:

M 36.2

Memory capacity:

PO 1

Temperature value from double sensors:

26.5 °C

Configuration of locking:

Loc

Configuration of automatic off:

AOFF

Special operating states and faults

Display segment test:

Runs automatically after switch ON

Supply voltage:

Display after segment test

Supply voltage under 3.6 V:

Arrow [X] lights up

Relative measuring with respect to a reference value:

Arrow [REL] lights up

Sensor correction or scaling:

Arrow [CORR] lights up

Unlocked to enable sensor adjustment:

Arrow [FREE] lights up

Checksum error in device calibration:

CALEr

Non-connected sensors; deactivated measuring points:

Measuring range / function not permitted:

Err

Overshoots value range (>65000):

65000 flashes

Overshoots measuring range:

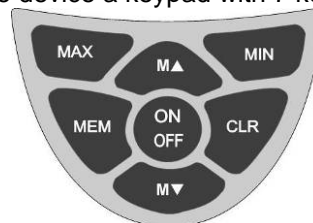
Maximum value flashes

Undershoots measuring range:

Minimum value flashes

9.1.2 Keypad

To operate the device a keypad with 7 keys is provided:



Function:

To switch ON the device:

To switch OFF the device:

Measuring points selection:

Displaying the maximum value:

Displaying the minimum value:

Zero-setting the measured value:

Saving the measured value:

Displaying the battery voltage:

Key

ON OFF

ON OFF

Must be pressed and held down

M▲ or

M▼

MAX

To delete press and hold down

MIN

To delete press and hold down

CLR

To delete press and hold down


MEM

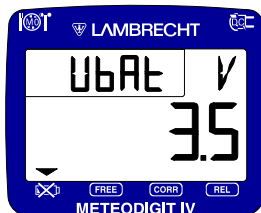
ON OFF

10. MEASURING OPERATIONS

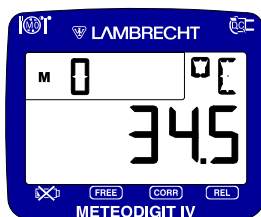
With METEODIGIT IV all available measuring channels are scanned by default semi-continuously; this permits continuous differential measurements. Depending on sensor up to 4 measuring channels can be displayed.

10.1 Measuring value



After switching ON first of all a segment test is performed; the battery voltage appears and if the batteries are almost empty (<3.6V) the LOBAT arrow  also appears.





The measured value is then displayed with the appropriate units in the main field and the measuring point is displayed in the function field. All special operating states possible for the measured value are explained in section 8.4.



10.1.1 Selecting a measuring point

By pressing key  you can select one after the other all active measuring points and have the current measured value displayed for each. By pressing key  you can return to previous channel.

To increment the measuring channel press key: 
To decrement the measuring channel press: 

When switching between channels the abbreviation for the measuring range is briefly displayed.

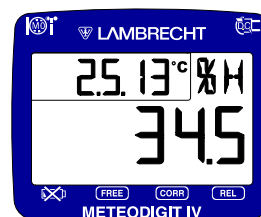
10.1.2 Measuring ranges

With each channel switchover or sensor breakage the abbreviation for the measuring range appears in the display. For identification purposes the following table lists all possible measuring ranges.

Sensors	Dim	Abbr
Millivolt	mV	U 55
Millivolt 1	mV	U 26
Millivolt 2	mV	U260
Volt	V	U2.60
Difference millivolt	mV	d 55
Difference millivolt 1	mV	d 26
Difference millivolt 2	mV	d260
Difference volt	V	d2.60
Sensor voltage	V	UbAt
Frequency	Hz	FrEq
Function channels:		
Maximum value of channel Mb1		Hi
Minimum value of channel Mb1		Lo
Measured value of Mb1		MESS
Cold junction temperature	°C	CJ

10.1.3 Double display

On all double sensors incorporating a temperature sensor on the 1st channel the temperature value can be displayed in the function field at the same time.




Select 2nd channel:

Activate temperature display:

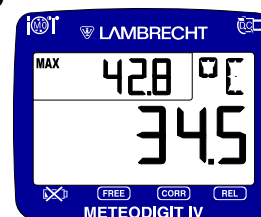
Return to channel display:

 Press and hold down.

 Press and hold down.

10.2 Peak value memory

From the measured values acquired for each measuring point the highest and the lowest values are continuously recorded. To display these high/low peak values first the desired channel must be set and then the **MAX** or **MIN** key must be pressed. As a check the display also includes the associated symbol.




To display the maximum value press: **MAX**

To display the minimum value press: **MIN**

To delete the maximum value press and hold down: **MAX**

To delete the minimum value press and hold down: **MIN**

To return to the measuring point display press key: 

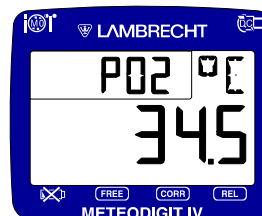
As soon as you clear the memory, the current measured value will appear (because measuring is continuous).

10.3 Measured value memory

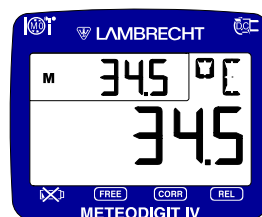
METEODIGIT IV can save 99 measured values in memory locations P01 to P99. The measured data can be shown on the display.

To save each such measured value press key **MEM**

The function field will show the memory location for about 1 second e.g.: P02



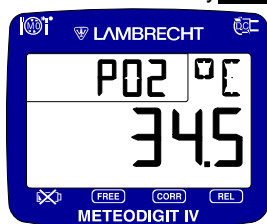
The value most recently saved then appears in the function field preceded by the symbol 'M'.



To return to the channel display press: 

To **display all memory data** press and hold down key **MEM**

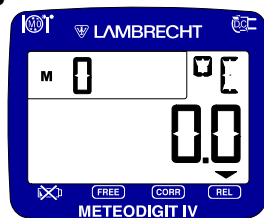
The function field displays the last memory location; the main field displays the measured value.



To select the first memory location press: **MIN**
 To select the last memory location press: **MAX**
 To increment the memory location press: **M▲**
 To decrement the memory location press: **M▼**
 To clear the memory press: **CLR**
 To terminate memory display press: **MEM**

10.4 Relative measuring

For certain measuring tasks it is very useful to zero the measured value in order to observe just the subsequent deviations. It is obligatory to set zero for air flow measurements by means of Pitot tubes according to Prandtl.



This function is independent of the locking status and does not modify the programming parameters in the connector.

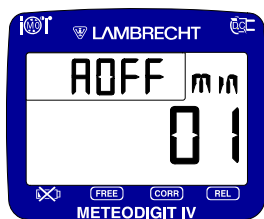
To zero-set the measured value press key: **CLR**
 To display relative measuring with arrow: **REL**
 Return to normal measured value press and hold down **CLR**

⚠ Setting to zero automatically deletes the maximum and minimum values for this channel. The **MAX**, **MIN**, and **MEM** functions are thus also available for relative measurement.

11. DEVICE CONFIGURATION

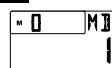
On METEODIGIT IV a number of parameters can be configured. For doing this press and hold down key **MEM** when switching ON.

The function field should then show an abbreviation for the parameter and the main field should show the value currently set.

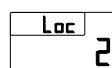


To **select from all possible parameters**, press keys: **M▲** or **M▼**

Averaging time for measuring (MD)



Locking the **CLR**-key :



Automatic switch OFF time in minutes:



Air pressure for measuring value compensation:



To **enter a value**

first press: **ON** and the value starts flashing

To modify the value press keys:

M▲ or **M▼**

To delete parameters press:

CLR

Select the next digit or entry is completed:

ON

To **terminate or cancel configuration**:

MEM

11.1 Moving average

METEODIGIT IV offers all the possibilities to calculate the average value. In the first menu item the averaging term "MD" can be adjusted for the moving average (in the example the measuring point M0). Possible values for the averaging term are 1, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120 s. The calculation of average values will just be effected for the displayed channel. The adjusted averaging term will be memorized inside the plug of the sensor and is available again after switching on the METEODIGIT IV or after connecting to another METEODIGIT IV.

11.2 Device locking

The measured value in the main field of the display can be manipulated by pressing key **CLR** and setting it to zero. This function can be evaluated in different ways or even switched off in cases where there is a risk of accidentally activating relative measuring by zero-setting the measured value.

Loc **parameter**:

- 0 The offset is saved in RAM, base of zero-point – depending on locking
- 1 The offset is saved in RAM only.
- 2 Relative measuring is locked

11.3 Automatic switch OFF

In menu item 'AQOFF' an automatic device switch OFF time can be programmed in minutes; this will help to save the batteries. This automatic device switch OFF will not take effect if the setting is '-' or if a mains adapter or an interface cable is connected.

11.4 Atmospheric pressure compensation

Measured variables dependent on the ambient atmospheric pressure may, in the event of large deviations from normal pressure (1013 mbar), involve certain measuring errors.

It is advisable therefore, especially when taking measurements at appreciable heights above sea level to take due account of the atmospheric pressure (approx. -11 mbar / 100 meters above mean sea level, MSL).

The appropriate atmospheric pressure can be entered in parameter 'mb' in device programming.

12. TROUBLE SHOOTING

The METEODIGIT IV measuring instrument can be configured and programmed in many versatile ways. It is suitable for connecting a wide variety of different sensors. Given these numerous possibilities the device may in certain circumstances not behave quite as expected. The cause of such unexpected behaviour is only very rarely a device defect; more usually it is incorrect operation by the user, an invalid setting, or unsuitable cabling. In such event try to pinpoint and clear the problem with the aid of the following tests.

Error: No display, display malfunction, keys do not react

Remedy: Check the power supply; replace the batteries; switch off and then on again; if necessary re-initialize (see 7.3).

Error: Measured values are incorrect.

Remedy: Switch Device OFF / ON, press key and hold **CLR**. Check the entire sensor programming very carefully, especially the base value and zero-point.

Error: 'CALEr' is displayed when the device is switched on

Remedy: The calibration of a measuring range may have become misadjusted. The device must be recalibrated at the factory.

If, after performing the above-listed checks and remedial steps, the device still fails to behave as described in the operating instructions, it must be returned to our factory in Goettingen with error description.

13. DECLARATION OF CONFORMITY

Hereby we declare, that the METEODIGIT IV has got the CE-Sign and that it meets the settlements of the low voltage guideline as well as the essential protection requirements regarding electromagnetical tolerance 89/336/EWG.

The following standards have been consulted for the assessment:

EMC:	IEC 61326:1997+A1:1998+A2:2000 IEC 61000-6-3:1996 IEC 61000-6-1:1997 IEC 61000-4-2: 1995+A1:1998+A2:2000
8kV	IEC 61000-4-4: 1995+A1:2000 2kV IEC 61000-4-3: 1995+A1:1998+A2:2000
3V/m	IEC 61000-4-5: 1995+A1:2000 IEC 61000-4-6: 1996+A1:2000 IEC 61000-4-11: 1994+A1:2000

By undertaking any kind of non-agreed modification, this declaration is no longer valid.

While extending the sensor line it is important to install the sensor line separate from high voltage currant lines or to install them together but professionally shielded in order to avoid a coupling of interfering signals.

In operation it is important to pay attention to the following lead:

While running the device in strong electromagnetical fields, additional measurement errors can occur (<50 μ V at 3 V/m). After the irradiation the device operates again inside it's technical specification.

14. TECHNICAL DATA

Measuring inputs:	1 socket for all LAMBRECHT sensors
Measuring channels:	4 channels for double sensors, function channels
A/D converter:	Delta-Sigma 16-bit, 2.5 M/s, adj. 1...100
Sensor power supply:	9 V, max. 150 mA
Standard equipment:	
LC-display:	Measured value: 5x 7-segment 15mm, 2x 16-segment 9 mm Function: 4½ x 7-segment 9 mm, 9 symbols
Operation:	7 silicone keys
Memory:	99 measured values on the RAM
Power supply:	
Batteries:	3 AA alkaline batteries
Current consumption:	approx. 16 mA (without sensor)
DC-input:	10 ...30 V galvanically not separated
Housing:	L 127 x B 83 x H 42 mm, ABS, weight: approx. 260 g
Suitable conditions:	
Operating temperature:	-10...+50 °C (storage temperature: -20 ...+60 °C)
Ambient relative humidity:	10...90 % r.h. (non-condensating)

14.1.1 Product overview

Product	Id-No.:
Hand-held measuring instrument METEODIGIT IV for air flow and wind speed, relative humidity and air temperature	00.09164.000 000
Sensor	Id-No.:
Cup Anemometer	00.14423.490 000
Vane Generator Anemometer	00.14433.420 000
Vane Reed Contact Anemometer	00.14143.420 000
Differential pressure module for Pitot tubes acc. to Prandtl 0.5...40 m/s	32.09164.004 010
Differential pressure module for Pitot tubes acc. to Prandtl 1.8...90 m/s	32.09164.004 020
Accessories	Id-No.:
Adapter for mains supply	32.09164.012 000
Transport case for one METEODIGIT IV and the sensors 00.14164.450 000 and 00.08163.420 000 as well as either 00.14423.490 000 or 00.14143.420 000 or 00.14433.4200 000	50.09164.002 000
Pitot tubes according to Prandtl, see manual or leaflet	(628-631)