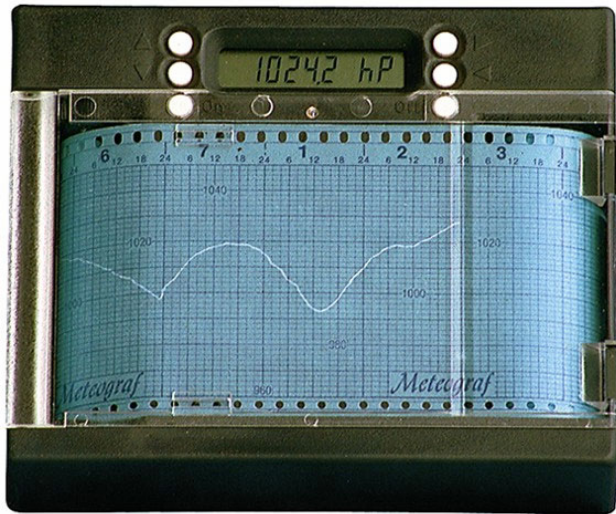


Meteograf

The Marine Barograph, sharing the advantages of mechanical and electronic instruments.



- **4-day Display, rectilinear and ink-free**
- **Numerical display**
- **Zoom function**
- **Storm warning**
- **High precision and resolution: 0.1hPa.**
- **Small dimension light weight**
- **All contact gold-plated**
- **also available with a PC-Interface**

This precision's Barograph runs with a single household battery and one roll of paper for one year. Special construction for on board use. Non influencing of the drawing do to movement ore vibration.

The Meteograf is a precise electronic barograph designed for the observation and recording of climatic pressure changes, which are important indicators of forthcoming wind and weather conditions. The instantaneous air pressure, as shown on a conventional barometer, gives only vague information about imminent weather changes. Only by exactly recording the current air pressure, and the rate at which it is rising or falling, is it possible to make reliable short-term weather predictions and to give prompt warning of dangerous weather conditions..

Thanks to the intelligent use of the most modern technology (microprocessor, surface-mounted electronics, etc.) the barograph, Meteograf is able to combine the advantages of traditional mechanical barographs with those of purely electronic instruments, along with its own merits of small dimensions, low weight and high precision. Ease of operation, good readability and the requirement to reload the recording paper roll only once per year can be taken for granted, Attractive new functions, such as 'Zoom', 'Transport' and 'Time Change' (see below) can be offered for the first time in a unit of this size and price range.

A microprocessor controls all the functions of the barograph, Meteograf. An analogue signal from the internal pressure sensor is amplified in a signal processor, digitalized and input to the microprocessor, which calculates and outputs the air pressure. Linearity and temperature correction factors for the pressure sensor are pre-programmed into the microprocessor, thus making the installation of trim potentiometers unnecessary. This guarantees an extremely high accuracy over the whole operating temperature and pressure range, as well as optimal long-term stability. There are also no positioning or hysteresis errors.

To set up the barograph, Meteograf, the current air pressure is entered using the push-buttons adjacent to the display. If the current air pressure is not known, the local elevation is entered instead. The barograph, Meteograf then automatically converts this to the equivalent air pressure, as defined in the ISAO Standard Atmosphere.

The barograph, Meteograf can be used at any altitude between -500 m and 6'000 m above Sea Level (-1,600 ft to 20,000 ft.) Air pressure in the range 960 mBar to 1055 mBar (28.3 inHg to 31.2 inHg), reduced to Sea Level, will be displayed and recorded.

The scribe point engraves the barogram into the reverse side of the waxed paper roll. The pressure record from the previous four days is shown clearly in the main display window. The continuous rectilinear record (unlike that of many other barographs, which produce a circular barogram) is therefore produced without using felt-tip markers or pens. (There is therefore no dirtying of the fingers or of the apparatus itself, and no requirement to replace or replenish markers or pens.) Because the scribe is behind the paper a new paper roll can be loaded into the apparatus as easily as a film into a camera. One paper roll is sufficient for one year's operation.

The paper movement is controlled to extremely high tolerances by a small servo motor. A second servo motor controls, via a spindle, the movement of the scribe.

Numerical Display

In addition to the linear display in the main window, the barograph, Meteograf has a numerical LCD display. This normally shows the current air pressure, but is also used to select and adjust the barograph, Meteograf's operating functions.



The LCD can be used to observe short-term pressure changes which would be indiscernible on the main display. Together with the current air pressure, the overall change in air pressure (+/- 0.1 mBar) in the last 1, 5, 15, 30 or 60 minutes may be displayed. This enables a uniquely accurate observation of the approaching weather. (Here a change of - 0.1 hPa in 30 minutes)



Other Details

To reduce power consumption the microprocessor is automatically switched to an energy-saving mode between measurements, with only the LCD display and other basic functions operating continuously. The total power consumption is so low that the barograph, Meteograf will run off a single household battery for about 12 months. There is no requirement for any connection to an external power source.

An electronic filter cancels out fluctuations in indicated air pressure caused by operation in rough water

Weather conditions, particularly wind strength, are dependent on the rate at which air pressure changes. For any given geographical position, a given rate of change of air pressure may be defined as

indicating an imminent storm. To provide prompt warning of this, the barograph, Meteograf has an aural and a visual alarm, which is activated when the rate of change of atmospheric air pressure exceeds a preset limit. This limit is adjusted by the operator to suit the perceived danger level. (Note that, if required, the operator can turn the aural warning off, leaving only the visual warning active.)

Transporting the barograph, Meteograf usually results in a change in altitude, which in turn produces a change in air pressure unrelated to any meteorological effects. When in 'Transport' mode, the Meteograf ignores these changes and displays the current altitude on its LCD display. When the relocation is complete, the Meteograf can be easily reset to its normal display mode. An overall correction to the display can then be made to account for any weather-related pressure changes whilst the device was in 'Transport' mode..

The battery voltage is continuously monitored. The LCD display indicates battery capacity as one of four levels; Charge sufficient, Charge low, Battery change required and Battery flat.

To ensure maximum reliability and durability when operated at sea, or in any hostile environment, the barograph, Meteograf uses high quality gold-plated electrical contacts throughout. For battery connections, these are duplicated. The electronic parts are lacquered for protection against corrosion. The mechanical parts are manufactured from stainless steel and all other parts are high quality plastic.

PC-Interface

The 'Meteograf' is also available with a PC-Interface if required. The 'Meteograf' contains a memory in which the barometric pressure data recorded over the last ten days is stored. The data is recorded to a tolerance of 0.1 hPa. (Equivalent to 0.1 mBar.)

Using the data transfer cable supplied, this data can be downloaded to a PC for permanent storage or for further manipulation. The software is compatible with Microsoft 'Windows' Versions 95, 98, NT and 2000. Using the 'Excel' program, the data downloaded can be automatically displayed graphically using a Macro function.

As this software is freely available, it can be customised by the operator to suit his or her individual data processing requirement..

Bester Barograph



In several tests, the 'Meteograf' was found to be the best of the tested devices and was highly recommended by the magazines



Meteograf with wooden housings



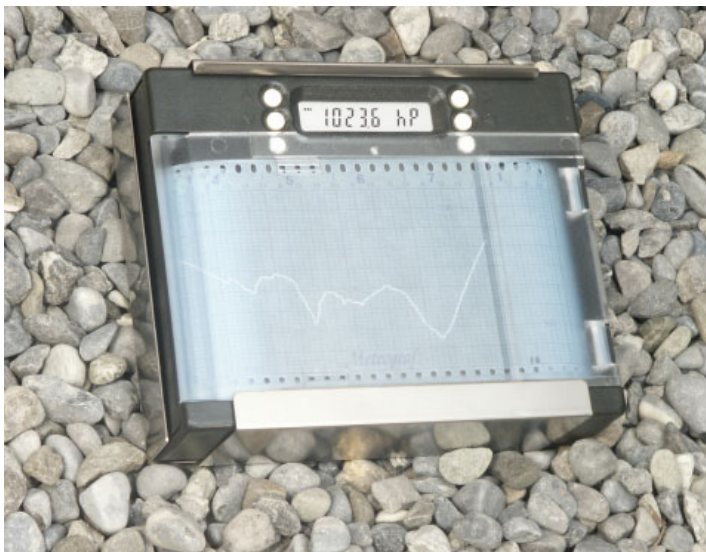
Cherry, Mahogany, Walnut, Black

Meteograf with wooden casings with fittings

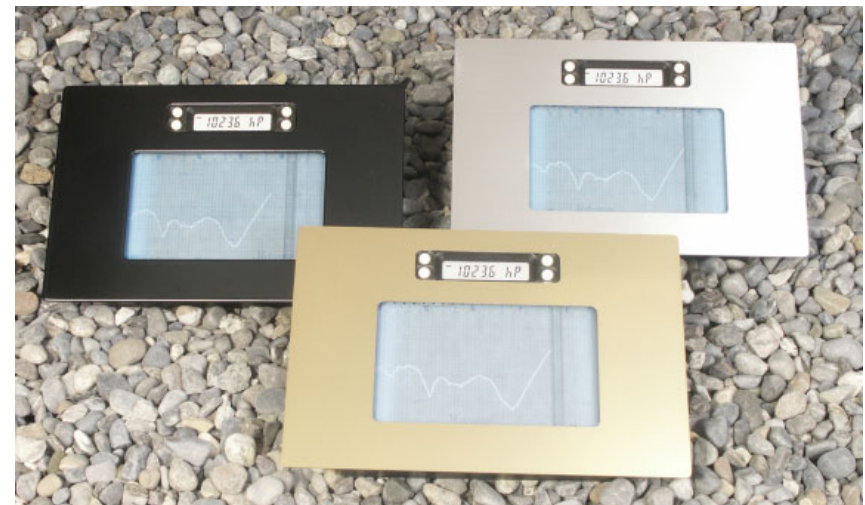


Casing Mahogany, Walnut with Fitting mirror gold, Casing black with Fitting mirror black

Meteograf with chrome steel carriage



Meteograf Installation panels



Mirror, Black, Silver, Gold, Chrome-plated steel dim, Black dim

Technical Data

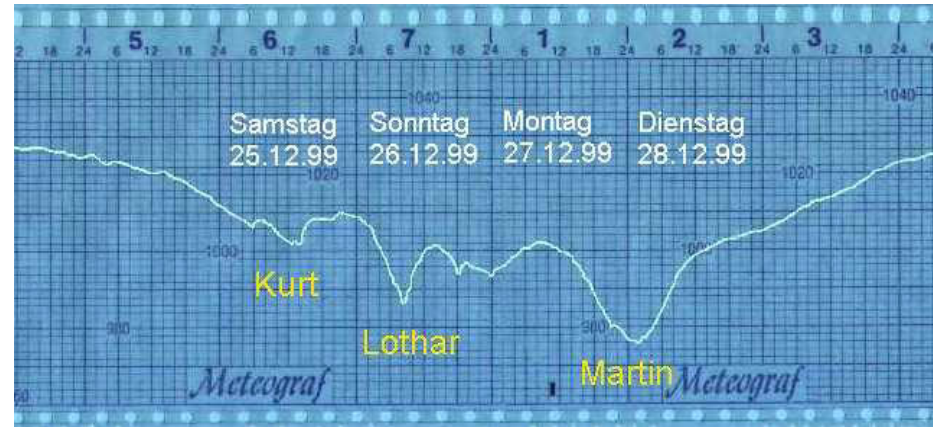
Pressure Range paper record.....	960 to 1055 hPa, 28.35 to 31.15 in Hg
Pressure Range display, memory	940 to 1070 hPa, 27.76 to 31.60 inHg
Altitude Range	-500 to 6'000 m (-1,600 to 20,000 ft)
Resolution	0.1 hPa, (0.003 in Hg)
Linearity.....	< 0.5 hPa, (0.015 in Hg)
Temperature Error	< 0.02 hPa/°C, (0.0006 in Hg/°C)
Temperature Range.....	-10°C to + 50°C, (14°F to 120°F)
Index Rate.....	1 mm/h = 24 mm/day
Display (Main)	Shows recorded pressure from previous 4 days
Recording Method.....	Rectilinear, Maintenance-free
Paper Capacity	1 Year
Display (Secondary).....	8-digit, 7 mm LCD (Liquid Crystal Display)
Filter	Mean value averaging (for compensation of high sea states)
Storm Warning	Aura land visual. Set point adjustable
Memory**	960 Dates, (10 Days), Resolution 0.1 hPa,
PC-Interface**	RS-232, Com1 or Com2
Electricity Supply.....	1 Alkaline 1.5 V battery (1 year's operation)
Dimensions	146 / 120 / 36 mm, (5.75" x 4.75" x 1.4")
Weight.....	500 g (inc. battery and paper.), (1.10 lb)

Typical values
** only PC-Version

The manufacturer reserves the right to make changes to the unit specification

Example

The following example impressively demonstrates the capabilities of the barograph 'Meteograf', showing how it recorded the storms that swept over central Europe during the Christmas holiday of 1999:



- In Switzerland, the deep depression "Kurt" generated storm-strength winds on Saturday December 25th, causing some limited, localized damage
- This was followed on Sunday December 26th by the hurricane "Lothar". Wind speeds of over 200 km/h were recorded. Unprecedented devastation was caused all over Switzerland, with thousands of buildings, boats, etc. being wrecked and an estimated million trees being uprooted
- Further damage was left by the depression "Martin", which passed over Switzerland on Tuesday December 28th.

The barograph, 'Meteograf's storm warning function gave, in each of the three cases above, a warning several hours before the storm hit.



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The Meteograf in the Vendéeglobe race, 2004 / 2005



1: PRB with Vincent Riou



Pro-Form with Marc Thiercelin



2: Bonduelle with Jean Le Cam



4: Temenos with Dominique Wavre



6: Virbac-Paprec, with Jean-Pierre Dick