



Brewer Spectrophotometer

Laboratory Thermopile

For the highest accuracy observations of uv and ozone

A major health concern in many parts of the world is the amount of harmful ultraviolet radiation from the sun and sky that people are exposed to. 'Holes in the Ozone layer' are areas of stratospheric Ozone depletion and are not confined to the North and South Poles. They are indicators of the general health of the atmosphere, and a reduction in Ozone means that more harmful UV reaches the ground.

To accurately measure stratospheric Ozone, and solar UV radiation, requires a sophisticated instrument that can also act as a reference for networks of lower performance instruments.

In 1988 the 'Brewer' became the World Meteorological Organisation (WMO) Global Atmosphere Watch (GAW) standard for stratospheric Ozone measurement. Today, the Kipp & Zonen Brewer MkIII spectrophotometer is the only instrument in current production sanctioned by the WMO for making total column Ozone measurements and provides much of the data for the World Ozone and UV Data Centre (WOUDC).

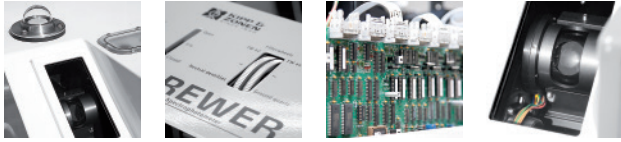
The Brewer is unique, designed by Environment Canada specifically for operating automatically with high accuracy over long periods of time, in all climates and environments from the tropics to Antarctica.

There have been several versions of the Brewer since its introduction in 1981, but the only model now in production is the MkIII 'double' Brewer because its two spectrometers in series provide superior UV measurement capability, compared to the single spectrometer MkII and MKIV. There are over 220 Brewers around the world, in more than 40 countries.

The Brewer MkIII is manufactured exclusively by Kipp & Zonen under licence of Environment Canada. We provide a full range of calibration, spares, repairs and support services for the MkIII and for older models.

More information about the Brewer can be found on the dedicated Brewer website at www.kippzonen-brewer.com.

Brewer MkIII



Brewer MkIII has a unique design of spectrometer that is self-compensating for the expansion and contraction of components caused by changes in temperature. This means that it can be used around the world outdoors without the need for complex temperature stabilisation. There are built-in wavelength and sensitivity check lamps, fan, heater and humidity sensor.

The MkIII 'double' Brewer uses two of these spectrometers in series for improved ultraviolet measurement accuracy, particularly when the sun is low. This gives the MkIII a significant advantage over the single spectrometer MkII and MkIV Brewers, which are no longer manufactured.

The Brewer is mounted on a dedicated azimuth tracker and makes measurements of the direct solar radiation at specific wavelengths to determine the total column Ozone and Sulphur Dioxide in the atmosphere. It also has the capability to make high resolution UV spectral scans of either the direct or global solar radiation. The software can accurately calculate UVA, UVB, UVE (Erythemal) and UVI (Index). The Brewer must be connected to a PC running the operating software in order to make measurements and store data.

Included with the Brewer is a desk-top computer (with a display, keyboard and mouse) that is designed for continuous operation. The computer is pre-loaded with the operating software, configuration files and calibration data for the specific Brewer. To avoid potential compatibility issues with the operating software, an English version of Windows™ is installed, with the regional formatting set for English.

The spectrophotometer is supplied in a foam-lined aluminium transit case, for protection when transporting the instrument. The azimuth tracker is shipped in a substantial wooden crate.

Regular use of the stability kit is recommended to check that the UV response is not changing. This is important to report UV irradiance in W/m². The kit is not a calibration standard as used in the factory and is not required for Ozone and Sulphur Dioxide measurements, which are ratiometric in nature.

Part number	Instrument
0361900	Brewer MkIII • 230 VAC
0361901	Brewer MkIII • 115 VAC

Specifications	
Measurement principle	Unique self-compensating dual Ebert spectrometers
UV measurement	Direct sun or global radiation, UVA, UVB, UVE and UVI
Sun Tracker	Integrated, includes heavy duty tripod stand
Spectral range	286.5 to 363 nm
Resolution	0.6 nm ±0.01 nm
Ozone and SO ₂ measurement wavelengths	303.2 nm • 306.3 nm • 310.1 nm 313.5 nm • 316.8 • nm • 320.1 nm
Column Ozone measurement uncertainty	< 1%
Serial output	RS-422, Supplied with isolated RS-422 to RS-232C converter with AC power adaptor for connection to PC running operating software, PC included
Operational temperature range	-20 °C to +50 °C -50 °C to +50 °C (with optional insulated cold cover)
Storage temperature range	-20 °C to +40 °C
Supply voltage	115 or 230 VAC, 50/60 Hz
Detector type	UV-enhanced photo-multiplier tube (PMT)
Software, GW-BASIC	Operation of Brewer, data storage and analysis

Part number	Accessories
3315001	UV Stability Kit and Precision Power Supply Higher accuracy, with 3 x 200 W calibrated quartz halogen lamps mounted in adapters for accurate optical alignment. Ventilated lamp housing with mounting frame for precise location over Brewer dome Very stable AC-DC power supply can be remote controlled via USB
BA-C 210	Insulated Cold Cover For the spectrophotometer (not the azimuth tracker). Keeps optical and electro-mechanical parts warm to extend operation from -20°C to -50°C. For locations regularly below 0°C and/or with high wind-chill factor.