

# CVF4 Ventilation Unit

## To improve Accuracy and Reduce Maintenance of Radiometer Measurements

Low power and low maintenance  
Can be used under all weather conditions  
Improves accuracy of radiometer data

Reduces frequency of dome cleaning  
Improves stability of measurements  
Prevents dew

### Introduction

Ventilation of radiometers improves the reliability and accuracy of the measurement by reducing dust, raindrops and dew on the dome, which would otherwise affect the measurement. It stabilises the temperature of the radiometer near to that of the ambient air and suppresses the thermal offsets which are produced by cooling down the domes under calm clear sky conditions or by dome heating due to absorption of solar radiation.

CVF4 Ventilation Unit is a low maintenance ventilation unit with a fan and inlet filter that provides a flow of clean air over the dome of a radiometer. The integrated heater allows the air to be warmed when necessary.

The flow that the CVF4 creates is unique. At the top of the pyranometer dome the flow is very high and it swirls to improve the air distribution over the dome. The position of the heaters and the cover material ensures that minimal heating power is needed to melt frost and snow compared to older ventilation units.

The fan of the CVF4 runs continuously to reduce dust and dirt settling, to dissipate rain drops and to stabilise the dome temperature. The tachometer output from the fan gives two pulses per revolution and allows remote monitoring of the fan operation using a data logger.

CVF4 features the waterproof connector and signature yellow cable that are used in our other instruments. This makes installation and servicing easier. Cable lengths of 10, 25 and 50 meters are available or it can be supplied with the connector plug only, for the customer to fit their own cable.

## Applications

CVF4 is designed to operate under all weather conditions and is easy to use. The only part that needs maintenance is the removable air inlet filter, which should be checked at regular intervals and cleaned or replaced when necessary.

A ventilation system does not prevent the radiometer dome becoming dirty, but it can reduce the frequency of cleaning. Typical applications are in locations where frost and snow are frequent or where the site is unmanned and it is necessary to reduce the need for cleaning of the domes.

In top level solar radiation monitoring networks, such as the Baseline Surface Radiation Network (BSRN) of the World Meteorological Organisation, ventilation of pyranometers and pyrgeometers is highly recommended.

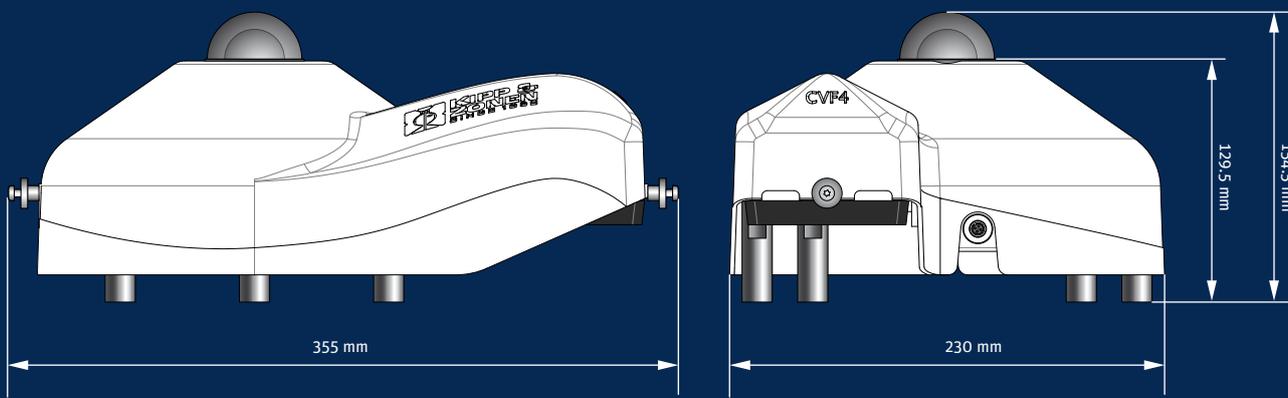
## Building a System

CVF4 is designed to be used with Kipp & Zonen CMP and SMP pyranometers, the CGR 4 pyrgeometer, and the CUV 5 total UV radiometer. Both the CMP 3 and SMP3 fit but due to the larger opening around the dome the efficiency is less.

The instrument bubble level is visible through the ventilator air outlet in the cover, which is easily removed to check the radiometer desiccant. CVF4 is backwards compatible with the older CM and CG series radiometers.

CVF4 can be mounted on the 2AP and SOLYS 2 sun trackers and the CM 121C shadow ring. The ventilation fan and the heater run from 12 VDC. The accessory CVP 2 universal AC-DC power supply can operate up to two CVF4 ventilation units with the heaters on.

Specifications	
Air temperature rise caused by CVF4	< 0.25 K @ 0 Watt (ventilator only) < 1 K @ 5.5 Watt (heater)
Tacho output	5 V, 2 pulses per revolution 8800 pulses per minute (nominal)
Supply voltage	12 VDC, 0.9 A (with heater)
Power consumption ventilator	5 W continuously
Power consumption heater (selectable)	5.5 W
Operational temperature range	-40°C to +70°C
Storage temperature range	-40°C to +70°C
Humidity range	0 to 100 % non-condensing
Ingress Protection (IP) rating	54
<small>Note: The performance specifications quoted are worst-case and/or maximum values</small>	
<small>The CVF4 has a standard cable length of 10 m; optional cable lengths are 25 m and 50 m</small>	



Go to [www.kippzonen.com](http://www.kippzonen.com) for your local distributor

## HEAD OFFICE

**Kipp & Zonen B.V.**  
Delftechpark 36, 2628 XH Delft  
P.O. Box 507, 2600 AM Delft  
The Netherlands  
T: +31 (0) 15 2755 210  
F: +31 (0) 15 2620 351  
[info@kippzonen.com](mailto:info@kippzonen.com)

Kipp & Zonen B.V. reserve the right to alter specifications of the equipment described in this documentation without prior notice