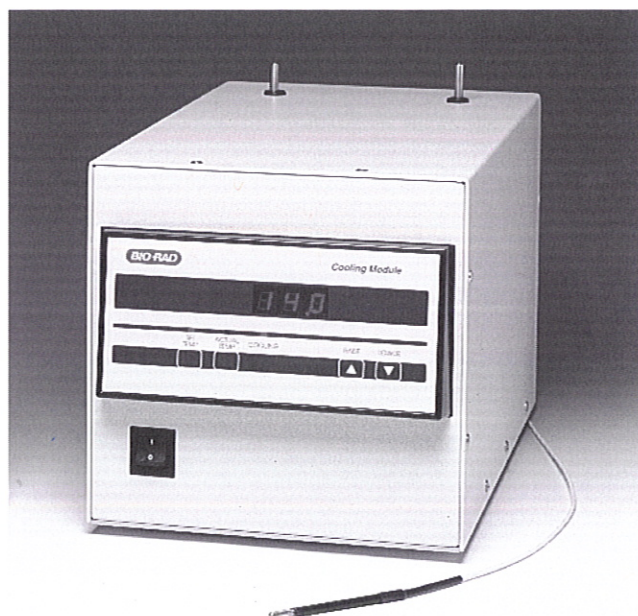


# Cooling Module



## Introduction

Buffer temperature is one of several parameters whose complex interrelationship affects the migration of DNA molecules in agarose gels. Maintenance of optimal buffer temperature is necessary to obtain high resolution separations. Bio-Rad's Cooling Module has been specifically designed as a stand alone, portable refrigerated apparatus for use with the CHEF-DR® II, CHEF-DR III, Gene Path™ and CHEF Mapper® pulsed field electrophoresis instruments. Electrode buffer is circulated through the Cooling Module from the electrophoresis chamber by the recirculating pump (supplied with the CHEF-DR II, CHEF-DR III, Gene Path, and CHEF Mapper systems), cooled directly by the liquid refrigerant in the heat exchanger at a rate of 0.75 °C per minute (from ambient to 14 °C), and returned to the electrophoresis chamber. The Cooling Module is capable of cooling up to 75 watts of input power to the buffer at a set temperature of 14 °C. The Cooling Module can maintain a constant buffer temperature within 1.0 °C of the set temperature in an operating range of 5-25 °C.

## Temperature Sensor

Buffer temperature is monitored by an internal sensor at the outlet port of the Cooling Module, or alternatively, by an embedded temperature probe in the electrophoresis chamber itself. Temperature is monitored at the outlet port, but will automatically shift to the probe in the chamber if it is connected to the Cooling Module. The latter temperature probe is insulated and electrically isolated from the Cooling Module for safety.

## Physical Characteristics

The Cooling Module is equipped with a 1/12 HP compressor with overheat shut-down protection, and a corrosion-resistant stainless steel heat exchanger/evaporator. The heat exchanger is electrically isolated from the chassis, compressor, and plumbing to eliminate shock hazard. The unit is 42 cm long x 23 cm wide x 24 cm high, and weighs 14 kilograms.

## Operator Controls

The Cooling Module is equipped with a main power switch mounted on the front of the unit and protected by a 6.3 (100/120 V), 3.0 (220/240 V) Amp Slo-Blo fuse, which is replaceable. Actual temperature, monitored by either the internal or probe in the chamber, is indicated on a digital display on the front panel (three characters plus decimal point) during operation, while set operating temperature is entered with the raise or lower button. In case of a power outage, the Cooling Module will automatically restart at 14 °C after power is restored. A cooling light indicates that the compressor is running.

The Cooling Module is available in three different operating voltages, and comes with two 60 cm lengths of 1/4" tubing, two 1/4" tubing clamps, and two 3/8" to 1/4" reducers to facilitate connection to the recirculating pump.

## Ordering Information

Catalog Number	Product Description
170-3654	Cooling Module, 120 VAC/60 Hz
170-3655	Cooling Module, 220/240 VAC/50 Hz
170-3688	Cooling Module, 100 VAC/50 Hz

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