



Field Installed Economizer for 100% outside air

Designed for field retrofit to Marvair ComPac I air conditioners, models AVP42, 48 & 60 (R-22 models) and AVPA42-48-60 (R-410A models)

General Description

The Marvair field installed economizer can introduce 100% of the air conditioner's rated air flow of outside air to provide free cooling when outside conditions are suitable. The rated air flow of the air conditioner is determined when testing to the ANSI/AHRI standard 390 for efficiency and cooling performance of single packaged vertical air conditioners. By bringing in 100% of rated air flow, the cooling capacity when using outside air is identical to the cooling capacity when in mechanical cooling (compressor is operating).

As with all Marvair economizers, the field installed Marvair economizer has integral pressure relief – **no openings or modifications** to the shelter are required for the exhaust air.



In most climates, telecom shelters require year round cooling. By using outside air (when the air is suitable) to cool the shelter, electrical consumption can be dramatically reduced. In addition to energy savings, the life of the air conditioner is significantly extended and service costs lowered due to the reduction of compressor and condenser fan motor run time. The chart below shows the potential savings with an economizer for eight cities in the U.S.A.

	Atlanta	Boston	Chicago	Dallas	St. Louis	Pittsburg	Denver	Phoenix
Without Economizer	\$4,100	\$3,985	\$4,792	\$4,161	\$4,063	\$4,009	\$3,657	\$4,247
With Economizer	\$2,686	\$1,784	\$2,315	\$2,671	\$2,090	\$1,667	\$940	\$2,315
Savings	\$1,415	\$2,201	\$2,477	\$1,490	\$1,973	\$2,342	\$2,717	\$1,932

Savings calculated based upon:

- Internal heat gain of 12,000 watts
- Internal shelter temperature of 75°F
- Efficiency Rating (EER) of 9.00
- Electrical cost of \$.10 /kwh

Installation

The economizer is designed to be installed in the field to Marvair's ComPac I air conditioners, models AVP42, 48 & 60 (R-22 models) and AVPA42-48-60 (R-410A models). The retrofit allows Marvair's units without an economizer -ComPac I's- to be upgraded to provide the substantial benefits that economizers provide on a telecom shelter. **No modifications** to the shelter are required.

The economizer damper motor and controls operate on 24 VAC. All power for the economizer is provided from the air conditioner- **no additional power** is required.

The existing filters in the ComPac I air conditioner must be removed since the economizer hood includes new filters. Complete installation instructions for the field installed economizer can be found and downloaded from: <http://www.marvair.com/categories/Economizer-Installation/>.

Operation

The Marvair field installed economizer, part number K/04180, consists of:

- the painted sheet metal enclosure (hood),
- a damper and damper motor,
- a mixed air sensor,
- a dry bulb sensor, and
- two 2" pleated filters (16" x 16" x 2").

On a signal from the wall mounted indoor thermostat that cooling is required, either mechanical cooling with the compressor or free cooling with the economizer is provided. The dry bulb sensor determines whether the outside air is sufficiently cool to be used for cooling. If suitable, the compressor is locked out and the economizer damper opens to bring in outside air. Integral pressure relief allows the interior air to exit the shelter, permitting outside air to enter the shelter. The temperature at which the economizer opens is adjustable from 40°F to 80°F. After the dry bulb sensor has activated and outside air is being brought into the building, the mixed air sensor measures the temperature of the air entering the indoor blower and modulates the economizer

damper to mix the right proportion of cool outside air with warm indoor air to maintain 38°F to 70°F air being delivered to the building. This prevents shocking the electronic components with cold outside air.

The compressor is not permitted to operate when the economizer is functioning. If the outside air becomes too hot, the economizer damper closes completely.

