

# VIKING<sup>TM</sup> SMT-920

DIN Mounted Multistage Commercial HVAC Controller

*Making Life Comfortable*

## General Description

### Advanced Commercial HVAC Control

Smart Temp is pleased to announce the SMT-920 "Viking" commercial HVAC controller. Built using the very powerful and reliable "Chameleon" engine, the Viking is the culmination of many years of experience in designing and building advanced control solutions for the commercial HVAC industry.

In keeping with the Smart Temp tradition, the Viking has been built to be a powerful, feature rich commercial HVAC controller with industry leading functions that is simple to install, commission and use.

### Installer Friendly

Gone are the days of strange function codes with "look up tables", 7 segment displays showing strange hieroglyphic symbols or LEDs flashing some cryptic code to inform you of setup menu options or errors. The Viking simply displays information in clear, precise English that everyone can understand on its bright backlit graphical display.

Great emphasis has been given to making the Viking an installer friendly device. To this end, the Viking features "Smart Tags"; button labels that change to guide you through the various menus thereby reducing the need for complicated manuals and the risk of making setup errors.

### Feature Rich Performance

Smart Temp believe that it's much simpler and more cost effective to manufacture a single device with all the bells and whistles included as standard rather than building a family of very similar devices each with separate functions or an additional output. Building and stocking multiple devices costs more time and money and makes product selection complicated and prone to error for the installer.

At Smart Temp we build the best we can, providing all the options in a single product that can be turned on or off as needed to suit the project at the time. We then pass the savings of a simpler manufacturing and inventorying process on to our customers. The net result is a better product at a lower cost.

Consider the Viking for your next commercial project and see for yourself the exceptional value offered in this product.



## Features

**After Hours Timer**

**RS-485 Communications**

**365 Day, 7 Day or Manual Programming**

**30 Holiday Events**

**No Manual Needed - Simple Menu Logic**

**1 to 4 Stage Compressor Control**

**Compressor Lead Lag Function**

**Integrated Economy Function (Enthalpy Based)\***

**2 Wire Sensors with Multiple Functions**

**Optional 4 Wire Sensor with LCD Available**

**2 Digital Inputs with Library of Functions**

**2 Analogue Outputs with Library of Functions**

**1 Digital Output with Library of Functions**

**5 Dedicated HVAC Equipment Control Relays**

**24VAC or 240VAC Powered**

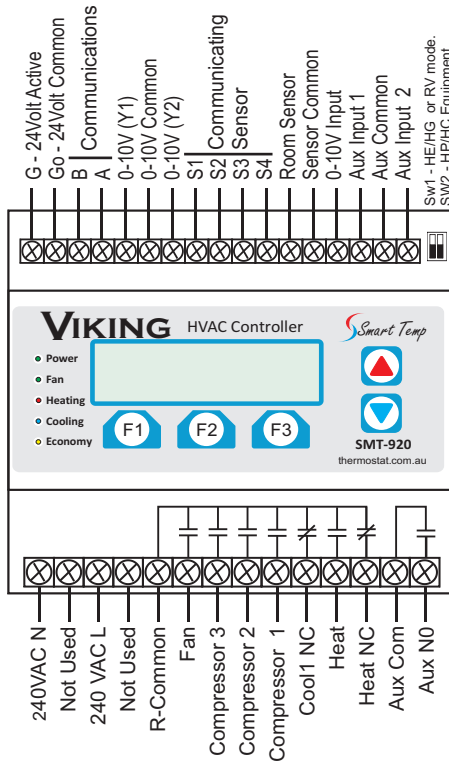
**Volt Free Relay Outputs - 240VAC 10A Max (Fan)**

**Comprehensive 3 Year Warranty RTB**

\*Requires Optional Sensors



# Board Layout



## Installer Options

Smart Temp has researched the industry to find the best default settings for the Viking so that it is set up for perfect temperature control and efficient energy usage right out of the box without the need for installer adjustment. Factory default settings for the start and stop times, temperature set points and compressor controls are all preset for perfect control. However we realised that some projects may have unusual needs so in the unlikely event that the Viking default settings are not perfectly preset for these unusual projects the Viking permits you to adjust its performance as needed.

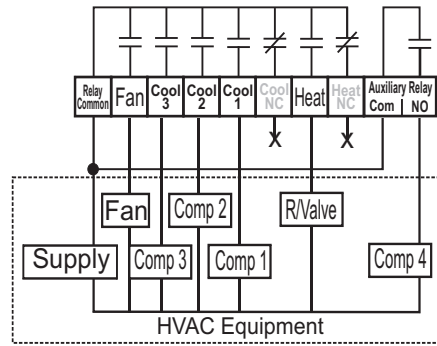
The Viking's "Installer Options Menu" is logical and displayed in clear English. Navigation is simple as the Viking button labels change to indicate their current function as you navigate through the various menus. In most cases you do not need a manual when adjusting the Viking's settings.

Some of the features and functions of the Viking that you can adjust as an installer are listed below:

- Select Program Type - Manual Operation, 7 Day or 365 Day Programming
  - Keyboard Locks and Temperature Control Limits
  - After Hours Run Period - 0 to 12 Hours
  - Adjustable Sensor Performance - Response Speed & Calibration
  - Individual Compressor Control and Staging (0.5°C to 5°C With Smart Upstage)
  - Compressor Timing - Minimum Run Time and Anti Cycle Protection Etc
  - Advanced Compressor Controls Such As Lead Lag Function
  - Communications Settings - Address, Speed and Parity Etc
  - Commissioning Mode & Diagnostics Functions
  - Auxiliary Relay Functions - Currently More Than 13 Definable Functions Such As:
    - Economy Output
    - Hi or Low Temperature Alarm
    - Heat, Cool or Economy Running Indication
  - 2 Analogue (0-10V) Outputs Each with a Library of Defined Functions Such As:
    - Inside or Outside Economy Damper Control
    - Heating or Cooling Valve Control
    - Capacity Control for Digital Scrolls
  - 2 Auxiliary (Digital) Inputs Each With a Library of Defined Functions Such As:
    - Fire and Fault - Normally Open or Closed Logic on Fault
    - Force Viking On or Off or Initiate/Cancel After Hours Timer
    - Force Ventilation - If Economy Mode Active
- Plus Much More

# Wiring Examples

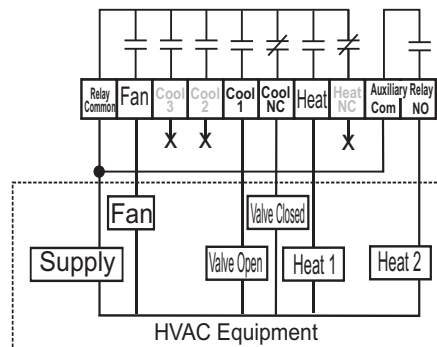
## Typical 4 Stage Heat Pump



Sw1 = Off - RV in Heat  
 Sw1 = On - RV in Cool  
 Sw 2= Off - HP Mode (Heat Pump)  
 Aux Relay Mode = Comp 4

Relay Common = Active Voltage  
 Fan = Indoor Fan  
 Cool 1 = Compressor 1  
 Cool 2 = Compressor 2  
 Cool 3 = Compressor 3  
 Aux Relay NO = Compressor 4  
 O/B = Reversing Valve  
 Aux Com = Aux Input Voltage

## Typical Chilled Water With Electric Heat



Sw 1 = Off - HE (Fan on With Heat)  
 Sw 2 = On - HC (Heat/Cool)  
 Aux Relay Mode = Aux Heat

*0-10V output can also be used for cooling (or heating) valve control if modulating output is required.*

Relay Common = Active Voltage  
 Fan = Indoor Fan  
 Heat = Heat Stage 1  
 Aux Relay NO = Heat Stage2  
 Cool 1 = Valve - Drive Open  
 Cool NC = Valve - Drive Closed  
 Aux Com = Aux Input Voltage

## Specifications

Input Voltage	24VAC / 240 VAC +/- 15%. 50/60 Htz
Operating Temperature	0 - 50°C (32°F to 122°F)
Operating RH	0 - 95% (Non Condensing)
Storage Temperature	0 - 65°C (32°F to 150°F)
Size	110mm x 110mm x 65mm 110 x 180 x 65mm with Terminal Covers Fitted
Control Range	0 - 50°C
Maximum Equipment Stages	4 Compressors ( HC Mode =2 Heat 3 Cool)
Anti Cycle Timer	Off, 2, 3, 4 or 5 Minutes (Installer Adjustable)
After Hours Timer	Off to 12 Hours (Installer Adjustable)
Memory Type	Non Volatile 128K
Clock	12/24 Hour 7 Day with 365 Day Calendar Backup Battery for Clock (CR1220)
Backup Battery Life	4 to 6 Year
Holiday Events	30 - (Perpetual and/or Self Expiring)
LCD	32 x 132 Graphical - LED Backlight
Relays	Fan 10A 240VAC Max - Volt Free All Others 5A 240VAC Max - Volt Free
0 - 10V Output	10mA Max Each
Digital Input	Volt Free
0 - 10V Input	Max Voltage 17V DC
Room & Outside Air Sensor	10K NTC Type II (2 Wire Screened)
Communicating Sensor	4 Wire - 400m Maximum With Control Function 10K NTC Type II / RH 10 - 98% RH 2%
Optional RF Sensor	2xAAA Batteries 18 Mth Life 10K NTC Type II Range - 150m Open Air (40m Indoors Typical)
Communications	Frequency 433Mhz - 2 Way With Error Checking Modbus RTU Baud Rate 4.8 / 9.6 / 19.2K Address Range 1 - 255
Warranty	3 Year RTB

