

## SOFTWARE FUNCTION & VERIFICATION

# 2V067 F UMX

## VOLTAGE RELAY



Issue	Date	Summary of changes
A	23/05/2003	Initial issue.

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### 3.0 DESCRIPTION – UMX2V067A UMX

#### 3.1 Standard Features

The 2V67 provides a range of standard features as described in the RMS Technical Bulletin which may be downloaded from:

[www.rmspl.com.au/handbook/2V67.pdf](http://www.rmspl.com.au/handbook/2V67.pdf)

#### 3.2 Voltage Set Points

Inputs:	3 phase 110V AC
Setting stages:	4 independent stages
Setting range:	80 to 130V
Hysteresis:	0.2 to 5V
Overvoltage function:	PU at set point DO at set point – hysteresis
Undervoltage function:	PU at set point DO at set point + hysteresis
Undervoltage lockout:	20 to 90V
Setting resolution:	0.1V steps
Measurement resolution:	0.05V (0.1V displayed)
Measurement accuracy:	+/-0.25V

#### 3.3 Voltage Display (Data Page)

Display range:	20-145V	Input voltages < 20V will be displayed as 0V
Display accuracy:	+/-0.3V	
Display resolution:	4.5 digits	

#### 3.4 Status Input Function

The status input function is factory set to enable on the application of a control voltage. It is also possible for the status input to operate on the removal of a control voltage by simply changing a software flag in the PC setup program.

#### 3.5 Time Setting Range

The 2V67 allows for a separate time range for each of the four voltage stage set points. Time delays between 200ms & 320 seconds may be set in 100ms steps.

#### 3.6 Reset Time Delay

Electronic reset time is adjustable between zero & 5 seconds. When the voltage pick up & drop out points are set very close together it is advisable to set a longer reset delay to avoid timer resetting due to transient voltage fluctuations.

#### 3.7 Relay Enable Status Input

The status input on the 2V67 is used to enable the four voltage monitoring stages of the relay. The relay must be “enabled” in order for the time delay stages to operate.

### 3.3 Setting Voltage Stages

The 2V67 relay provides four independent voltage setting stages as follows:

- Set under or over voltage detection
- Voltage set point
- Time delay
- Voltage reset hysteresis
- Voltage reset time delay
- Set under voltage lockout

### **3.4 Voltage Monitoring Functionality**

#### Stage Start

The stage time delay is initiated when the voltage set point is reached.

#### Stage Time Out

Provided the start condition is maintained for the duration of the pre set time delay, the stage output contact will pick up and the front panel LED indicator is illuminated. The output contact is self-reset once the start condition is removed.

#### Stage Output Reset

Reset of the start condition is determined by the hysteresis and the reset time settings. For a stage configured as under voltage detection, reset will occur at the set point plus the hysteresis setting once this condition has been maintained for the duration of the reset delay.

#### Stage Flag Reset

The LED indicator is latched and may be reset at the front panel using the reset button, remotely via the reset flag status input, via the programming port using  $\mu$ MATRIXwin or via the SCADA port.

### **3.5 Undervoltage Lockout**

The 2V67 provides an Undervoltage lockout signal to automatically inhibit stage start conditions, which may be caused due to loss of the input signal. Settings are as follows:

- a) Undervoltage set point
- b) Time delay

#### Undervoltage Start

The time delay is initiated when the undervoltage set point is reached.

#### Undervoltage Time Out

Provided this start condition is maintained for the duration of the pre set time delay, the undervoltage output contact will pick up and the front panel LED indicator illuminated. While the undervoltage contact is picked up all stage start signals are inhibited.

#### Undervoltage Lockout Reset

The output contact and LED indication is self-reset once the start condition is removed.

### **3.6 Relay Enable**

A status input is provided to place the 2V67 in an enabled or inhibited condition.

#### Status Input Sense

The status input may be user configured such that application of a control voltage will enable the relay (Relay normally inhibited).

Alternatively the status input may be user configured such that removal of a control voltage will enable the relay (Relay normally enabled).

#### 2V67 Enabled

The stage start conditions are only active when while the 2V67 relay is enabled. The "enable" output relay and front panel LED will pickup when the 2V67 is enabled.

#### 2V67 Inhibited

The stage start conditions are not active when the 2V67 is inhibited. The undervoltage lockout function remains active to detect loss of the input signal.

### **3.1 Special Features of this Software UMX Version**

This UMX version operates as per the standard A UMX except that the “ENABLE” / “DISABLE” LED on the front panel is now energised when the relay in “DISABLED”. The front panel label is designated accordingly.

### **4.0 USER INTERFACE**

Refer to the  $\mu$ MATRIX Users Guide for detailed instructions on the operation of the user interface.

To download a PDF version of the guide:  
[www.rmspl.com.au/digital/uMATRIXInfo.pdf](http://www.rmspl.com.au/digital/uMATRIXInfo.pdf)

To download further  $\mu$ MATRIX software & documentation:  
[www.rmspl.com.au/uMATRIX.htm](http://www.rmspl.com.au/uMATRIX.htm)

## 5.0 Loading software, Calibration & Test

This section requires at least the following:  
A PC with Windows 98 or later and at least one COM port.  
UMatrixWin software.  
The correct serial cable.  
The ability to interrogate the relay via the front panel buttons.  
A general understanding of how UMX and UMP files work with the relay.

*Settable parameters will be overwritten by loading a new UMX file. They can however, be saved to a UMP file and then returned to the relay later. To learn how to do this, refer to the uMatrix User Guide.*

### 5.1 Loading the UMX

Before loading the UMX2V067A software, ensure that it is compatible with your hardware. Download the compatibility list from the RMS website at:

[www.rmspl.com.au/digital/compatibility.pdf](http://www.rmspl.com.au/digital/compatibility.pdf)

Now ensure that the bios version in the relay matches the table in section 2.0 of this document. (If the bios version is different, you may not be able to load this UMX. Contact RMS for support.)

Load the UMX via the front panel COM port using the 'uMatrixWin' software. Now ensure that the UMX version matches the table in section 2.0.

*To interrogate for versions, press 'SET' and 'DATA' buttons simultaneously, then select 'Version Page'. Alternatively, use uMatrixWin – Options – Utilities.*

Check versions

The relay is now ready to calibrate. *Note: calibration is a factory function. If you are simply changing or re-loading a UMX, re-calibration is not necessary. The relay is deemed to be fully operational.*

**5.2 Calibration using 'WinCal'**

Test equipment required:

As 5.0 plus

Calibrated Test Set (Volts, Amps, Timing & Phase Angle)

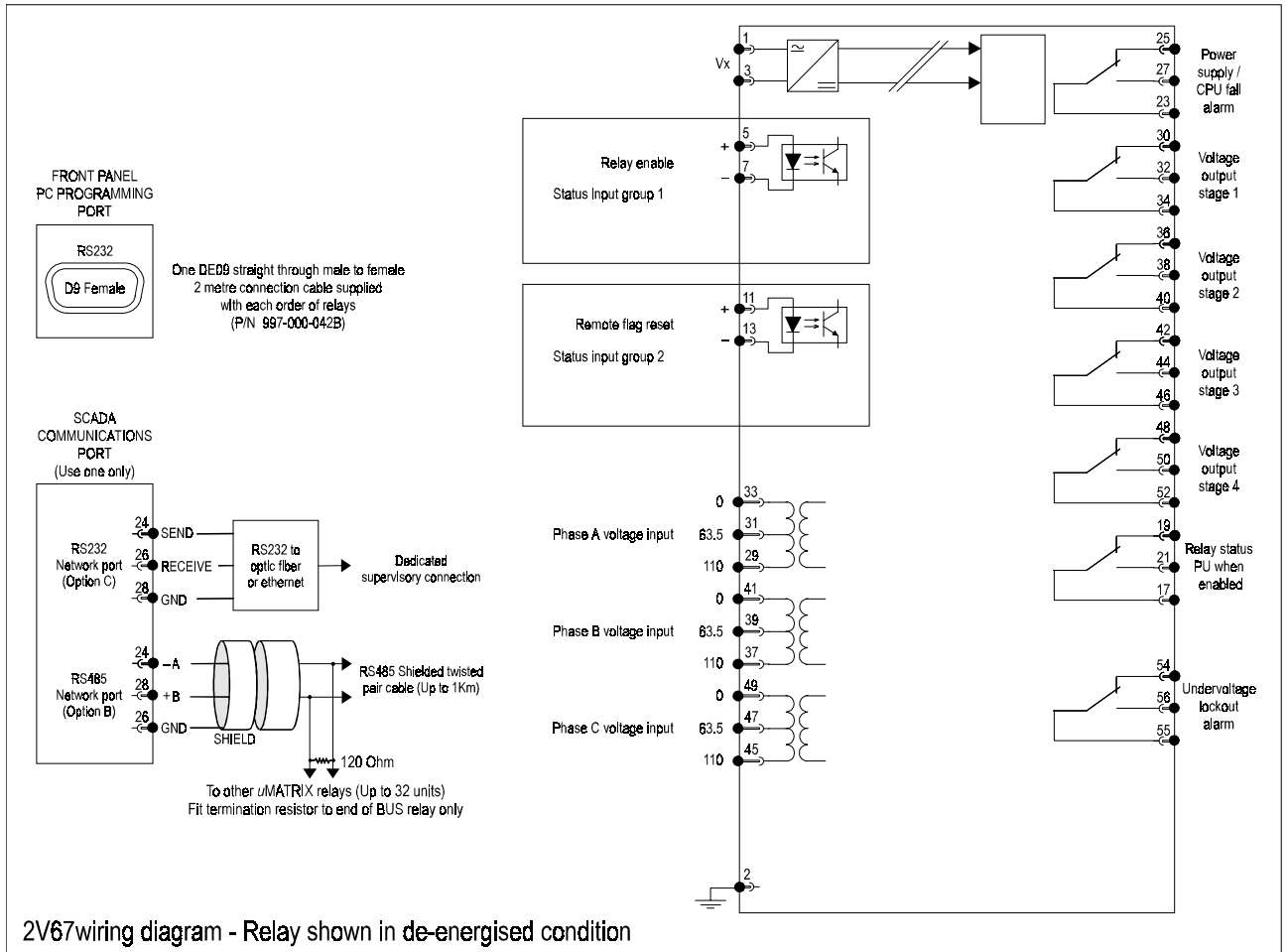
- a) With the test set and PC connected to the relay, start Wincal, select uMatrix – Connect.
- b) Select uMatrix – Calibrate and follow the prompts. When completed, verify the following parameters.
- c) Check Voltage display reading accuracy:

<b>MINIMUM</b> 79.8	<b>MAXIMUM</b> 80.2	<b>NOMINAL VDC</b> 80.0	<b>ACTUAL A</b>	<b>ACTUAL B</b>	<b>ACTUAL C</b>
<b>MINIMUM</b> 99.8	<b>MAXIMUM</b> 100.2	<b>NOMINAL VDC</b> 100.0	<b>ACTUAL A</b>	<b>ACTUAL B</b>	<b>ACTUAL C</b>
<b>MINIMUM</b> 129.8	<b>MAXIMUM</b> 130.2	<b>NOMINAL VDC</b> 130.0	<b>ACTUAL A</b>	<b>ACTUAL B</b>	<b>ACTUAL C</b>

If the relay settings in the above are correct, the relay is deemed to be fully operational.

TESTED BY : \_\_\_\_\_ DATE : \_\_\_\_\_

7.0 CONNECTION DIAGRAM



2V67 wiring diagram - Relay shown in de-energised condition