



# 2V164A Software

## Voltage Regulating & Control Relay

relay monitoring systems pty ltd

### **Advanced Protection Devices**



User Guide



Test Manual



Relay Software



MATRIXwin



# 2V164A Relay Software

## Links to Other Documents

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User Guide: [http://www.rmspl.com.au/userguide/2v164\\_user\\_guide.pdf](http://www.rmspl.com.au/userguide/2v164_user_guide.pdf)

Software Downloads: <http://www.rmspl.com.au/digital/umatrix.htm>

## Version Control

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Issue	Date	Summary of changes
F	27/05/2003	Calibration procedure revised.
G	25/06/2003	UMX update
H	06/09/2007	UMX update
I	25/09/2008	UMX update
J	21/08/2009	UMX update

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## 1.0 OVERVIEW

The 2V164 Voltage Regulator Relay continuously monitors the transformer output voltage & current. It provides "RAISE" & "LOWER" control commands to the on-load tap changer such that the load centre is automatically maintained within acceptable limits. Small variations in supply frequency will not affect the system performance.

The 2V164 relay is built on the Micro MATRIX digital platform. The standard Micro MATRIX human machine interface (HMI) is combined with fully solid-state voltage sensing & measuring circuitry to provide high accuracy, simple set up & flexible operation. Self-monitoring is carried out by hardware & software watchdogs.

The TPI inputs, output relays & opto isolated status inputs form the essential barriers against high voltage line transients while a switchmode auxiliary supply provides a wide operating range.

A programming port is provided for ease of establishing relay settings using a PC &  $\mu$ MATRIXwin.

## 2.0 SOFTWARE VERSION CONTROL REGISTER

The following table is a register of the changes for the **UMX2V164A.umx** file.

DATE	SOFTWARE	CHANGES	BIOS	FIRST HARDWARE
21/01/2002	02.13	Initial release of A UMX.	03.11+	2V164K1
18/07/2002	02.14	Over current block added	03.11+	2V164K1
28/08/2002	02.15	LDC function revised	03.11+	2V164K1
07/09/2002	02.16	uMatrixWin display Tap Rate in floating point	03.11 – 03.14+	2V164K1
04/01/2003	04.10	Put elapsed time in live CDB	04.xx	2V164K1
21/05/2003	05.00	Feature upgrade	05.xx	2V164K1
20/06/2003	05.01	Delay timing reset revised	05.xx	2V164K1
28/06/2007	05.10	TPI display added. Voltage calibration adjust added	05.xx	2V164K1
16/09/2008	05.11	Fix TPI Tap Range display	05.xx	
19/08/2009	05.12	Update Phase correction algorithm	05.xx	



### 3.0 DESCRIPTION – UMX2V164A.UMX

#### 3.1 Standard Features

The 2V164 provides a range of standard features as described in the RMS Technical Bulletin that may be downloaded from:

[www.rmspl.com.au/handbook/2v164.pdf](http://www.rmspl.com.au/handbook/2v164.pdf)

#### 3.2 Special Features of this Software UMX Version

TPI feedback mode:

When a tap change command is output to the OLTC, the tap change fail timer is started. If a single tap change restores the sensed voltage to a balanced condition the relay is reset. If the sensed voltage remains in error the interval time delay will start based on one of the three methods described below: The required operating mode is selected using the UMX order code.

VOLTAGE MONITORING (Automatic mode)      UMX2V164A

In this mode the 2V164 provides a 1s output pulse to initiate a tap change. This output pulse is then repeated at a rate set by the Interval Timer setting until the sensed voltage has moved back to a balanced condition. This is the simplest connection method as it does not require a hard-wired contact between the OLTC & the VRR.

The output pulse may be selected as continuous for application with linear voltage regulators. The output pulse is reset once the sensed voltage moves back to the balanced condition & the interval timer delay does not function.

For information on the two other methods, see the 2V164 data sheet or the UMX2V164B & UMX2V164C documents.



#### 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 uMatrix: [www.rmspl.com.au/digital/umatrixinfo.pdf](http://www.rmspl.com.au/digital/umatrixinfo.pdf)

To download a PDF version of the guide uMatrix-S: [www.rmspl.com.au/digital/umatrix-s\\_info.pdf](http://www.rmspl.com.au/digital/umatrix-s_info.pdf)

To download USB VCP drivers for uMatrix-S: [www.rmspl.com.au/umatrix.htm](http://www.rmspl.com.au/umatrix.htm)

#### 5.0 LOAD SOFTWARE

Loading a UMX requires at least the following:

A PC with Windows 2000 or later and at least one COM (uMatrix) or USB (uMatrix-S) port.

*(Note: USB comms require drivers to be installed on your PC. See section 4.0 downloads.)*

UMatrixWin software.

The correct communications cable.

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 Userguide.*

#### 5.1 Loading the UMX

Before loading the UMX2V164A 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)

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.

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

#### 5.2 Customer Default UMP

Load customer UMP file as per the Job Card. If no UMP file is requested, write N/A in check box.

UMP file name

The Relay is now ready for field use.

SOFTWARE INSTALLED BY

DATE :

6.0 CONNECTION DIAGRAM

