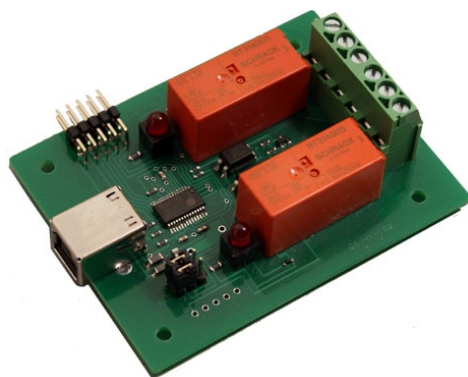


AR-2MF MULTI-FUNCTION RELAY INTERFACE

TECHNICAL REFERENCE



Click for more info: www.eeci.com/ar-2mfp.htm

PHONE..... (937) 349-6000
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SPECIFICATIONS

Power Supply.....	powered from USB port (5 volts DC 160ma)
Relays.....	2 (expandable up to 10 relays using the EX-8M expansion card)
Relay Contacts.....	SPDT
Terminal Block.....	rising cage design allowing wire sizes 30 awg up to 12 awg
USB Connector.....	type B receptacle
Contact Rating (AC).....	16 amp 250 VAC
Contact Rating (DC).....	16 amp 30 VDC
Contact Rating (tungston)....	3 amp 360 watt
Contact Rating (horsepower)	1/2 HP at 120 VAC 1 HP at 240 VAC
Status Inputs.....	optional (8 inputs may be added using the EX-8M expansion card)
Weight.....	2 ounces
Size.....	2.375 inches by 3.125 inches

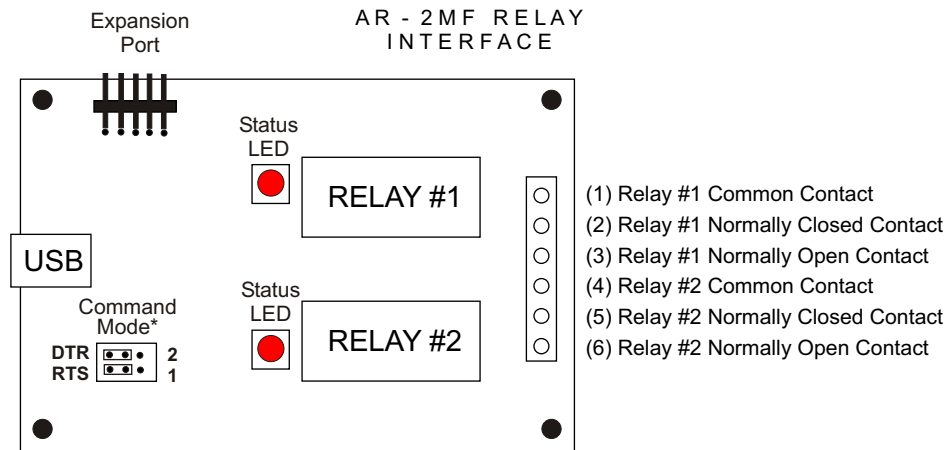
DESCRIPTION

The AR-2MF relay interface provides software control of (2) relays which are included and mounted on the AR-2MF circuit assembly. The relays are energized or de-energized by using the com port control signals DTR and RTS or alternate relay commands. The AR-2MF is for use with USB only. A terminal block is provided for connection to the relay contacts.

24 HOUR TECHNICAL SUPPORT

Technical support for our products is available by calling (937) 349-6000. If a technical adviser is not available, please leave your name, phone number and a time that you can be reached. Your call will be returned as soon as possible and within 8 hours. Calls received during normal business hours are usually returned within minutes.

CONNECTION DIAGRAM



*shown in default DTR/RTS position (Command Mode is enabled by moving the shunts to the 2/1 position)

SET-UP AND TESTING

Upon receiving your AR-2MF, you should connect and test the operation of the hardware to verify proper operation. Please set-up and test the AR-2MF as follows (Windows 2000, XP, Vista, Windows Server, Windows 7, 8.1 or Windows 10). Use of the alternate relay command set requires Windows XP with service pack 3 or later operating system and requires the installation of the Command Mode device driver .

(Step 1) Connect to the Internet. This permits any security or software updates to occur during installation. If you do not have an Internet connection, you may skip this step. (please note that if you are not connected to the Internet, the installer will delay for about 30 seconds while attempting to connect).

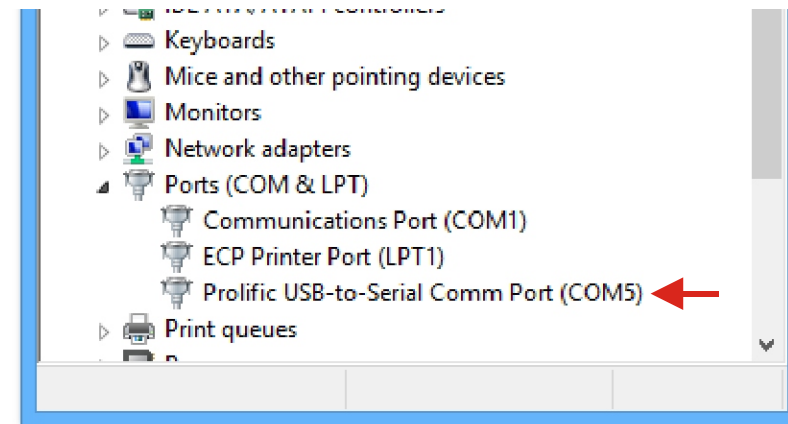
(Step 2) Connect your AR-2MF Relay Interface to any available USB port on your computer using a CC-USB B cable (1 to 15 foot). A high percentage of systems will be up to date and you will not see any activity or a pop-up message (allow up to 30 seconds for any system message). If your USB Com driver is out of date, you may receive a message that your system is being updated or a new driver installed. Allow the update to occur before you move to the next step. If you do not see activity or receive a system message, proceed to step 3.

With Windows 2000 or XP, the "Found New Hardware Wizard" may pop up. If you have an Internet connection, allow the wizard to connect to Windows Update and install the USB com driver, then go to step 2.

(Step 3) Insert the installation CD or USB flash drive and wait for the security message (with a USB flash drive, you may need to browse to the drive icon from the My Computer link). OK or click the startup.exe file to start the installer dialog.

(Step 4) Check your USB Com driver by clicking on the "Open Device Manager" button in the installer dialog window and expanding the "Ports (COM & LPT)" category (expand the category by clicking on the + or arrow). If you have difficulty, go directly to Device Manager from Control Panel. If you see a "Prolific USB-to-Serial Comm Port" entry, this is your USB Com driver* and the com port assigned is to the right of the entry. Right click on the entry and select "Properties" and click the "Driver" tab. Your USB Com driver must be Prolific version 3.4.62.293 or higher (dated 10/17/2013 or later). If your USB Com driver is not up to date, right click on the entry and select "Update Driver Software". If your USB Com driver is up to date then please note the Com port number assigned and jump to step 5.

Before installing a new USB com driver, go to Control Panel/Device Manager/Ports to check if a Prolific driver is shown.



*verify that this is the com port assigned to the AR-2MF by unplugging the AR-2MF from your USB port and watching the entry in device manager. The entry should disappear and then reappear when you plug the AR-2MF back in.

If you do not have an Internet connection or are having problems with the USB Com driver installation, disconnect the AR-2MF USB cable from your computer and install the USB Com driver from your CD by clicking on the "Install USB Com Driver" button. Please note that you may have to remove any out of date Prolific Com drivers on

your system before the current driver will install correctly. It is important that you use the remove feature on your CD (not the remove feature in Device Manager). The remove feature is shown after clicking the "Install USB Com Driver" button from the installer dialog window (allow up to 30 seconds for the installer to load and appear).

(Step 5) After you have verified or installed the up to date USB Com driver, reconnect (if not already connected*) your AR-2MF Relay Interface to the same USB port and insert the AR-2MF installation CD or flash drive. If the AR-2MF is not connected to a USB port the installer will be unable to detect the AR-2MF. Install the AR-2MF App by clicking the "Install App" button in the installer dialog (if you have auto start disabled, you may browse to the Windows Test Program folder and double click on setup.exe). The Universal App is for Windows 2000/ME or older systems that do not have the Microsoft .Net Framework installed (EX-8M expansion card will not function without .Net). *if you reconnect your AR-2MF to a different USB port, a different com port may be assigned.

**Please note that the Microsoft .Net Framework must be installed on your system for the EX-8M expansion card to function. The .Net Framework is already installed if you have Windows 7 or higher. If the .Net Framework is not installed on your computer, the installation program will attempt to download and install the .Net Framework from the Microsoft web site through your internet connection. This may take 5 minutes or longer. In order for the .Net Framework to install correctly, your computer must be up to date with Windows update. This is especially important with Windows XP* and Vista. You may update your computer by clicking on the start button, All Programs, Windows Update and clicking on "Check for updates".

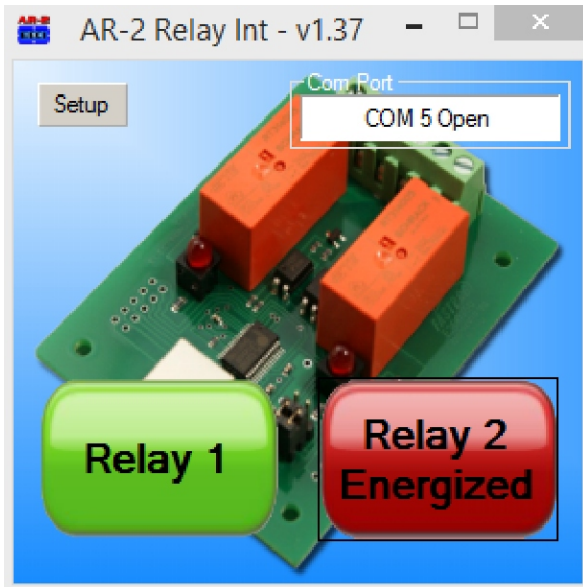
*for XP, Service Pack 3 must be installed for .Net to install correctly.

(Step 6) After the AR-2MF App is installed, a pop-up will prompt you for the Com port to be used with the AR-2MF Relay Interface. The Com port that was assigned in step 4 should be shown (edit if incorrect). Click OK. The AR-2MF App is started by double clicking on the AR-2MF desktop icon. You should see the correct Com port displayed at the top of the App. You may label the buttons by clicking setup . This App does not support Command Mode.

(Step 7) Test your relays by clicking the relay buttons for each relay. The relay should energize when the button is red and de-energize when the button is green. The LED for the relay will light when the relay is energized (NO contact closed). The Command Mode shunts on the AR-2MF must be in the default DTR/RTS position.

The input lines DCD, DSR and CTS may be tested if you have the EX-8M expansion card installed (.Net not required for these 3 inputs). See EX-8M Technical Reference guide for more information.

If your operating system is Windows 2000 or you are unable to install the Microsoft .Net Framework, you may install the older AR-2 Software App that may be used to test your AR-2MF without installing the .Net Framework (DTR/RTS command set only). Please review the readme.txt file for more information (in the AR-2MF folder).



HOW TO OPEN DEVICE MANAGER

Windows XP, VISTA or Windows 7

Click the Start Button (lower left of screen), then Control Panel (right side). With the view set to classic view, small or large icons, click (or double click) the Device Manager icon. With Windows XP you will need to click the System icon (in Control Panel) then the Hardware Tab then the Device Manager button. You may also use the supplied CD to open Device Manager by clicking the "Open Device Manager" button when the CD auto starts.

Windows 8.1, Windows 10 and Windows Server

Move your mouse cursor to the lower right side of your screen and click on Settings. Click on Control Panel near the top and click on the Device Manager icon. You may also use the supplied CD to open Device Manager by clicking the "Open Device Manager" button when the CD auto starts.

TROUBLE-SHOOTING THE AR-2MF

- (1) Verify that your USB com driver is installed by going to Device Manager and checking for the Prolific USB to Serial Comm Port entry. Right click on the entry, then Properties, select the Driver tab and verify that the driver is dated 8/15/2014 or later. If the driver is out of date, connect to the Internet and click the Update Driver button. Please note that an out of date driver may allow the AR-2MF to partially function and/or with erratic operation.
- (2) Verify that the Prolific USB to Serial Comm Port entry is the com port used by your AR-2MF. You may do this by watching the entry in Device Manager and unplugging your AR-2MF from your computer USB port. The entry should disappear and then re-appear when you plug the AR-2MF back in to your computer USB port.
- (3) If you are having a com port issue, check for another program that may be using the com port. You may right click the taskbar at the bottom of your screen, then Task Manager to view running applications.
- (4) Remove the AR-2MF USB cable from your computer, wait 10 seconds and plug back in. Go to device manager and verify that the com port shown is the com port that you have assigned to the AR-2MF. Repeat step 2.
- (5) Try replacing the USB cable and/or using a different USB port. Command Mode shunts must be in the DTR/RTS position if your software does not support Command Mode.

SHARED USE

The AR-2MF may share a com port with the AR-16, ADC-4, ADC-16 or STA-16 (or other device, if the device does not use the RS-232 control lines in use by the AR-2MF).

THE AR-2MF EXPANSION PORT

The EX-8M Expansion card is used to add 8 relay outputs, 8 inputs or combinations of outputs and inputs. The EX-8M will also permit the control signals DCD, DSR & CTS to be monitored (making the AR-2MF a direct replacement for the AR-2S when connected to USB). Please see the EX-8M documentation for more information.

SETTING THE RELAY COMMAND SET

The default relay command setting for the AR-2MF is RTS/DTR which allows the relays to be directly controlled from almost all programming languages. The AR-2MF may be set to use the alternate relay command set by changing the shunts on the AR-2MF as follows:

DTR		2
RTS		1

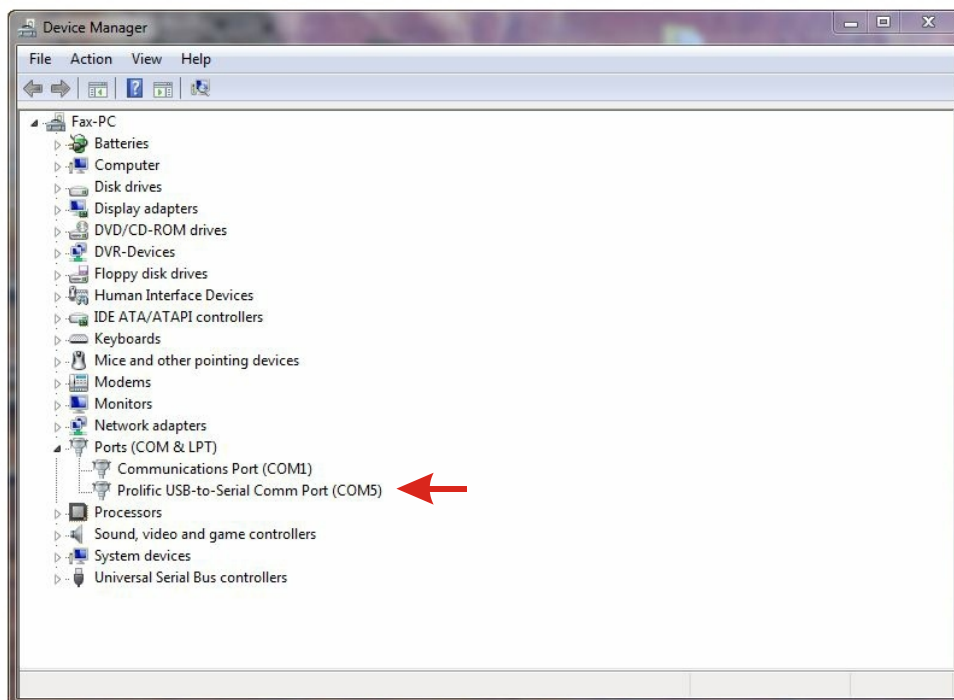
 Command Mode
set to RTS/DTR

DTR		2
RTS		1

 Command Mode
set to Relay 1/Relay 2

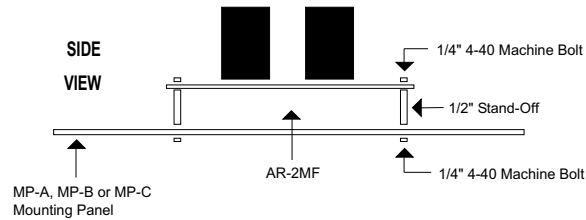
CONTROL SOFTWARE

The relays on the AR-2MF are controlled with RTS and DTR which are com port control lines that are primarily used for controlling a modem (RTS=request to send and DTR=data terminal ready). The number 1 relay is energized by placing RTS high. The number 2 relay is energized by placing DTR high. Setting RTS or DTR low will de-energize the relay. The AR-2MF has an alternate relay command setting that will permit you to control the AR-2MF relays without the use of RTS/DTR. Use of the alternate relay command set requires the installation of the AR-2MF device driver (provided on the AR-2MF installation CD). The EX-8M Expansion card (when attached) may be used to monitor the control lines DCD, DSR & CTS allowing the use of these signals for status input. One of these inputs may be used as a supervisory signal to sound an alarm on your PC in the event that the AR-2MF is disconnected. The AR-2MF may be used with any USB port on your PC and any USB com port supported by your system. Software examples (for both RTS/DTR and alt command) are provided on the CD supplied with your AR-2MF Relay Interface. Examples are provided in Visual Basic 6, Visual Basic .Net, Visual C#.Net, ASP .Net, Python, LabView and others. These examples will run in all Versions of Microsoft Visual Studio including Visual Studio Express.

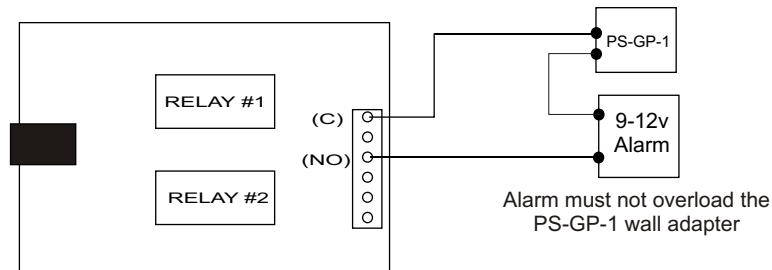


MOUNTING OF THE AR-2MF

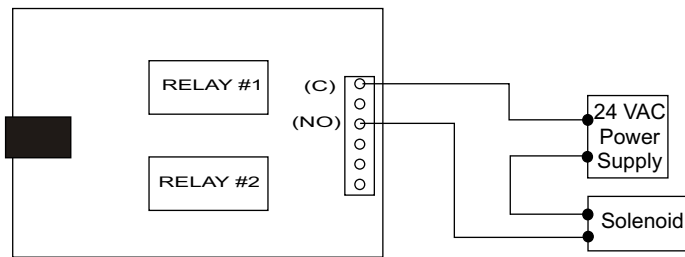
Four mounting holes are provided on the AR-2MF for mounting to stand-off hardware and an enclosure. The MT-1 stand-off kit is available for this purpose.



CONNECTION TO A LOW VOLTAGE ALARM



CONNECTION TO A 24 VOLT AC GATE SOLENOID



WARRANTY AND CARE OF THE AR-2MF

The AR-2MF Relay Interface is warranted against factory defects for a period of 90 days from the date of purchase. The AR-2MF has proven to be extremely reliable in actual operation during field tests. We recommend that the AR-2MF and associated hardware be installed in a suitable enclosure (4 mounting holes are provided on the circuit board).



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