



XV488 8-ch Isolated PWM Output Expansion Board

#### **Features**

- 8-channel PWM Output
- Burst Mode and Continuous Mode for PWM Output
- Software Trigger Mode for PWM Output
- Individual and Synchronous PWM Output
- 4 kV ESD and EFT Protection
- Dual Watchdog

CE UK KOHS

Wide Operating Temperature Range: -25 to +75°C

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#### Introduction

The XV488 provides 8-channel PWM (Pulse Width Modulation) Output, and can be used to develop powerful and cost-effective analog control systems. PWM is a powerful technique for controlling analog circuits that uses the Digital Output to generate a waveform with a variable duty cycle and frequency which can then be used to control an analog circuit in applications such as controlling the position or speed of motors, the brightness of lamps, or the speed of fans, etc. Either burst mode or continuous mode can be used for the PWM output depending on the application. In addition, all Digital The XV488 supports both the Modbus RTU and the DCON protocols, which can be configured via software. The XV488 allows the load voltage to be increased from +3.5 to +50 V for the 8-channels PWM (Pulse Width Modulation) output.

#### Specifications

| Isolation                      |               |                                 |                              |  |  |
|--------------------------------|---------------|---------------------------------|------------------------------|--|--|
| Intra-module Isolation         |               | 2000 VDC                        |                              |  |  |
| EMS Prote                      | ection        |                                 |                              |  |  |
| ESD (IEC 61000-4-2)            |               | ±4 kV Contact For Each Terminal |                              |  |  |
|                                |               | ±8 kV Air For Random Terminal   |                              |  |  |
| PWM                            |               | Internal Power                  | External Power               |  |  |
| Channels                       |               | 8                               |                              |  |  |
| Туре                           |               | PWM                             |                              |  |  |
| Sink/Source (NPN/PNP)          |               | Sink                            |                              |  |  |
| Load Voltage                   |               | +5 VDC                          | +3.5 ~ +50 VDC               |  |  |
| Output<br>Max. Load<br>Current | Sink          | +5 VDC @ 10 mA/<br>Channel      | +50 VDC @ 200 mA/<br>Channel |  |  |
|                                | Source        | +5 VDC @ 1 mA/<br>Channel       | -                            |  |  |
| PWM                            | Frequency     | 1 Hz ~ 500 KHz                  |                              |  |  |
|                                | Mode          | Burst, Continuous               |                              |  |  |
|                                | Burst Count   | 1 to 65535                      |                              |  |  |
|                                | Trigger Start | Hardware or Software            |                              |  |  |

| COM Ports                   |                                   |  |  |  |
|-----------------------------|-----------------------------------|--|--|--|
| Ports                       | 1 x RS-232                        |  |  |  |
| Baud Rate                   | 115200 bps                        |  |  |  |
| Data Format                 | N, 8, 1                           |  |  |  |
| Protocol                    | Modbus/RTU                        |  |  |  |
| Power                       |                                   |  |  |  |
| Consumption                 | W Max.                            |  |  |  |
| Powered from Terminal Block | 5 VDC                             |  |  |  |
| Mechanical                  |                                   |  |  |  |
| Dimensions (mm)             | 59 mm x 82 mm x 13 mm (W x L x H) |  |  |  |
| Environmental               |                                   |  |  |  |
| Operating Temperature       | -25 ~ +75°C                       |  |  |  |
| Storage Temperature         | -30 ~ +80°C                       |  |  |  |
| Humidity                    | 10 ~ 90% RH, Non-condensing       |  |  |  |

## Pin Assignments



# Internal I/O Structure



# Wire Connections

| Internal Power |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                |  |  |  |
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| PWM Output     | ON State<br>Readback as 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | OFF State<br>Readback as 0                                     |  |  |  |
| Sink           | ●+5 VDC<br>+<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ● +5 VDC<br>+ ★ □ ← PWMx<br>↓ □ ← GND                          |  |  |  |
| Source         | +<br>-<br>↓<br>□<br>→<br>BND<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>C<br>→<br>→<br>→<br>→<br>→ | +<br>-<br>I ←<br>GND<br>Jumper<br>↓<br>↓<br>↓<br>↓             |  |  |  |
| External Power |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                |  |  |  |
| PWM Output     | ON State<br>Readback as 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | OFF State<br>Readback as 0                                     |  |  |  |
| Sink           | +3.5 to 50 V<br>+ = += += += += += += += += += += += +=                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | +3.5 to 50 V<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+<br>+ |  |  |  |

# Applications



## Ordering Information

| XV488 CR | 8-ch Isolated PWM Output Expansion Board (RoHS) |
|----------|-------------------------------------------------|
|----------|-------------------------------------------------|