

# UxV/35 Digital I/O

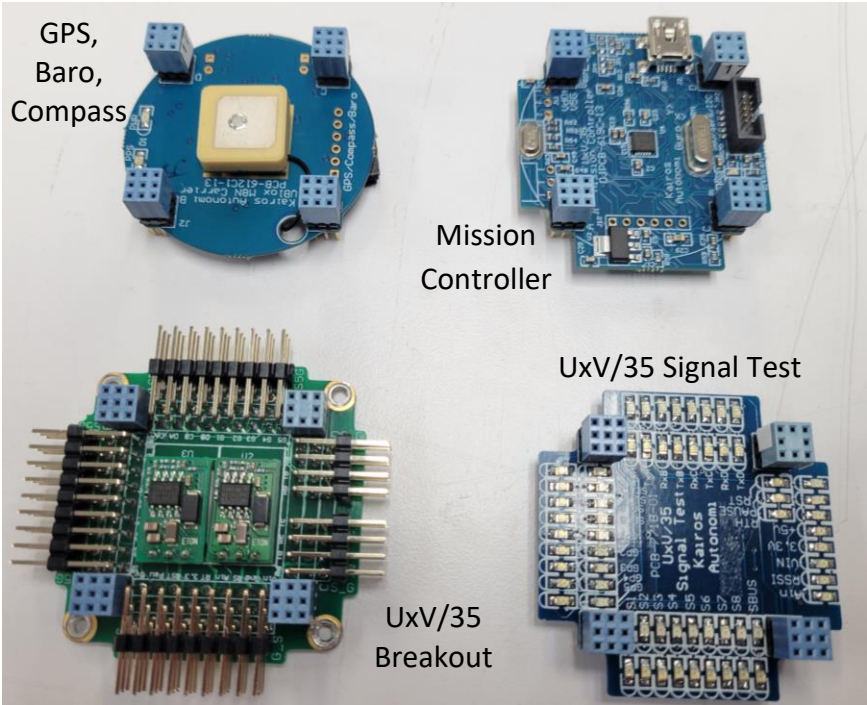
This design note details how to configure a UxV/35 Mission Controller for Digital Inputs or Digital Outputs over the Servo1 to Servo8 lines. This will be presented with several UxV/35 boards using ArduPilot and Mission Planner.

The UxV/35 boards to the right are placed together in a stack. The GPS board is used because it also has a barometer and compass as well as the GPS receiver. The Flight Stack can be configured to ignore the GPS if not required.

The UxV/35 Breakout provides a way for the user to have access to all of the signals on the bus to attach external controls or sensors. For our purposes we will be using the UxV/35 Signal Test board to observe the signal states. The Mission Controller will be attached with USB to Mission Planner for configuration.

This document will assume some working knowledge with Mission Planner and its usage.

Using the UxV/35 Prototyping Board a simple digital input was created with a switch and a 1K pullup resistor. You may want to use a 10K if you are not trying to drive a large load such as an LED.

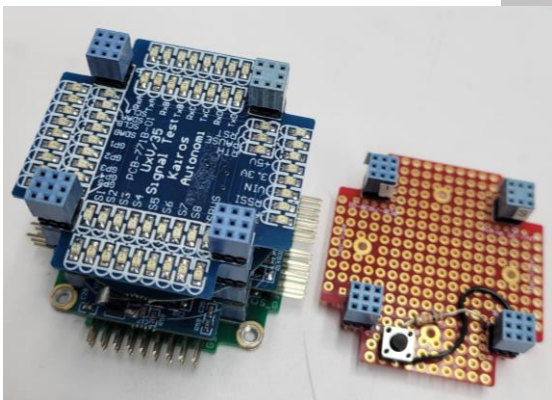


### UxV/35 Digital Input Example

Kairos Autonomi, Cage Code: 4ESW8  
 www.kairosautonomi.com, Sandy, Utah, USA  
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 Patented Technology

UxV/35 Digital Input Example			
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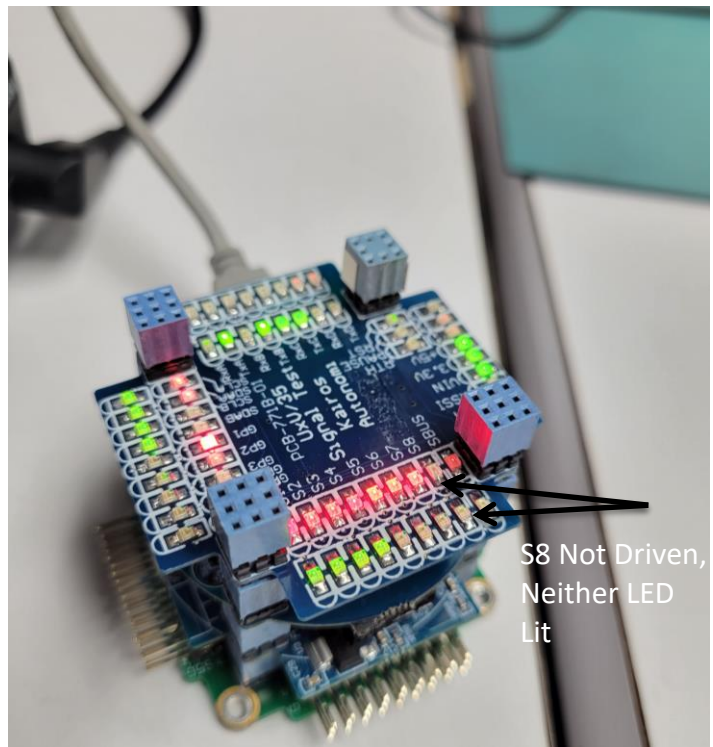
The flight stack is assembled as shown. The Digital Input board we created will be added after we perform the Digital Output demonstration.



# UxV/35 Digital I/O

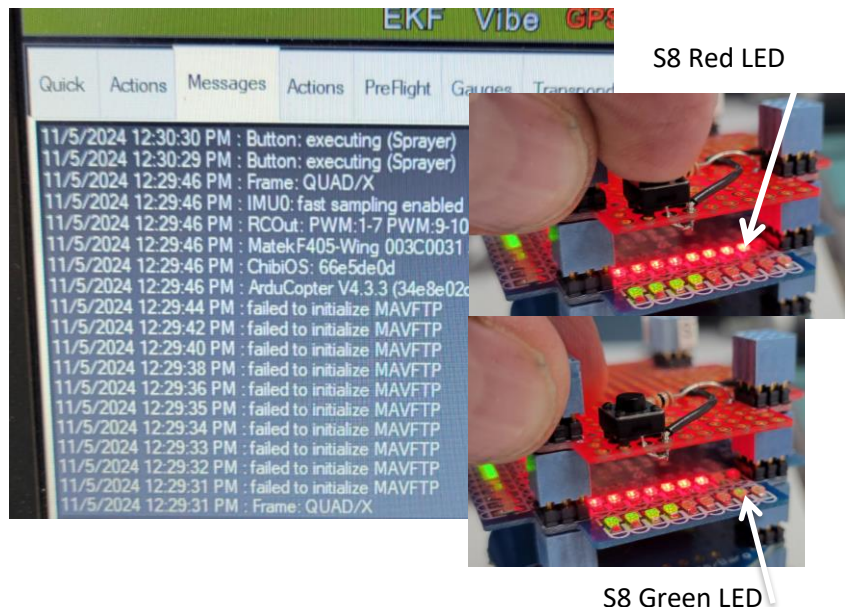
Take the assembled stack and attach it to the USB port of a PC. The USB will provide power to the stack as well as create a communications port. The following MavLink parameters will be used for this demo. More detail is available online.

SERVO8	-1	GPIO
	0	Disabled
	Xx	many others
BTN_ENABLE	1	Use Button Inputs
	0	Disable
BTN_FUNC1	-1	No Usage
	15	Sprayer
	Xx	many others
BTN_PIN1	-1	Unused
	57	Assign to Servo8 Pin
	56	Assign to Servo7 Pin
	Xx	Many others
RELAY_PIN2	-1	Unused
	57	Assign to Servo8 Pin
	56	Assign to Servo7 Pin
	Xx	Many others



Configure the MavLink parameters to the following values to enable the Digital Input demonstration. The input will be seen in the MavLink messages tab messages. A Mission Planner Plugin in Lua can be created to perform more useful functions with these inputs. The Sprayer Input was used as it is easy to identify. Enter the following to make Servo8 or UxV/35 Pin A8, S8 a Digital Input

- Return Output Parameters to nominal
- SERVO8 = -1
- BTN\_ENABLE = 1
- BTN\_PIN1 = 57 // 50-57, S1-S8
- BTN\_FUNC1 = 15 // sprayer input
- Reboot UxV/35 Stack
- Open Messages Tab on Mission Planner
- Press Test Button and S8 will go low, Red LED if using a UxV/35 Signal Test Board
- Messages will show a Sprayer Action on Press
- Release Test Button and S8 will go high, Green using a UxV/35 Signal Test Board
- Messages will show a Sprayer Action on Release



# UxV/35 Digital I/O

After configuring for Digital Output on Servo8, go to the Aux Functions Tab in Mission Planner and configure one function as Relay2. We use Relay2 because Relay1 is mostly already configured for Camera operations.

The following parameters are to be configured on Mission Planner.

The detail of configuration is not shown here because there are many excellent documents available online.

Make Servo8 or UxV/35 Pin A8, S8 a Digital Output

SERV08 = -1

RELAY\_PIN2 = 57 //50-57, S1-S8

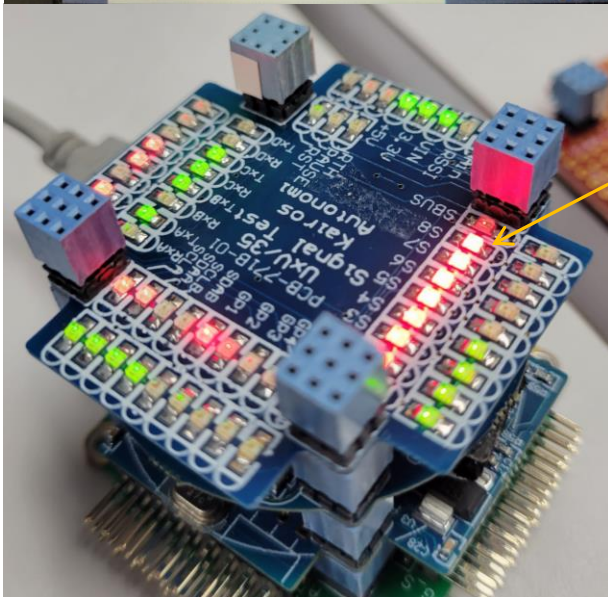
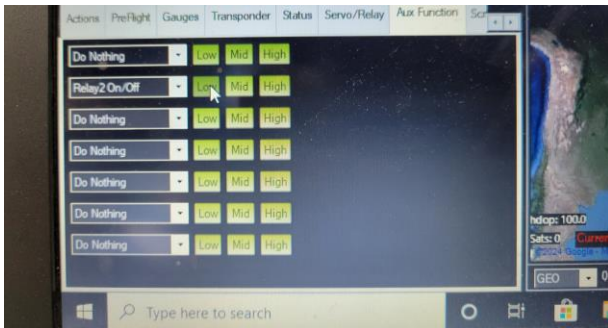
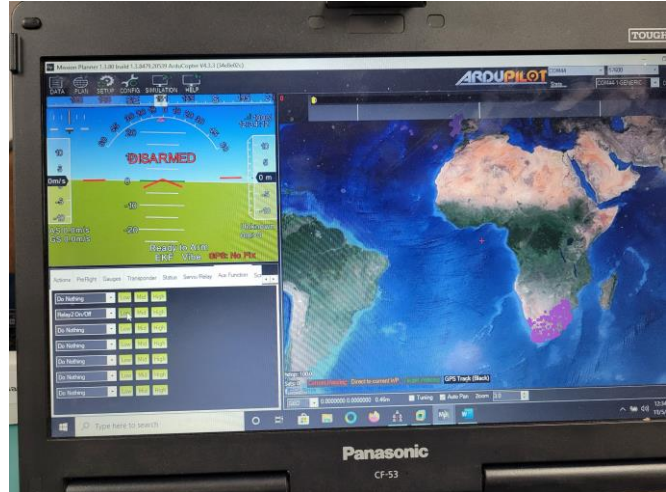
Reboot UxV/35 Stack

Open Aux Function Tab on Mission Planner

Set Dropdown to Relay2 On/Off

Press Low and S8 will go low, Red LED if using a UxV/35 Signal Test Board

Press High and S8 will go high, Green LED if using a UxV/35 Signal Test Board



S8 LEDs  
Red Low  
Green High

