DIGI-WATT UNIVERSAL RELAY SYSTEM

PN: DW-10

The DIGI-WATT relay system is easy to configure and uses less wires when compared with wirng single relays to control your components. Have patience, plan everything out, and take time to properly wire and test all of your installed components before you button everything up for good.

MOUNTING THE DIGI-WATT



This is the footprint for the DIGI-WATT unit. You may use this to help you locate and mount the unit. We have included mounting screws and vibration isolators or you may use your own hardware for mounting.

Steps for mounting the DIG-WATT:

- 1. Cut and fit the template in the desired location you would like to mount the unit.
- 2. Mark the 2 holes on the left and the single hole on the right.
- 3. Drill all 3 holes to the correct size.
- 4. Loosely screw in the 2 screws on the left side.
- 5. Slide the unit to the left so that the mounting tab slides under the 2 screws.
- 6. Once in position secure the right side of the unit with a third screw.

Reminder:

- The input and output wires will face down and out.
- The power and ground wires come in from the right.
- Wherever you choose to mount the unit, it must be somewhat accessible to configure/reconfigure the channels.

WIRING THE DIGI-WATT



MAIN FEED

Black 8 AWG wire - Main Ground, connect to a good chassis ground.

Red 8 AWG wire – Main power, connect to a good battery power location (starter solenoid, battery lug, power distribution block, etc.)



4 PIN CONNECTOR

Red 20 AWG wire – ignition signal, note this is only required if you wish to have some relayed circuits enabled only when the ignition is on.

Brown 20 AWG wire – accessory signal, to have a relayed circuit enabled only when accessories are on requires the smart phone app.

Yellow 20 AWG wire - not used / for future feature releases



2-PIN CONNECTOR (5 total, 1 for each pair of channels)



Blue 20 AWG wire – trigger for the first channel in the pair (channel 1, 3, 5, 7, or 9)

White 20 AWG wire – trigger for the second channel in the pair (channel 2, 4, 6, 8, or 10)

OUTPUT FEEDS



Blue 14 AWG wire – output wire for an odd channel (channel 1, 3, 5, 7, or 9)

White 14 AWG wire – output wire for an even channel (channel 2, 4, 6, 8, or 10)

USER NOTES

- Terminals are provided for terminating the output wire to make a clean connection to the DIGI-WATT screw terminals.
- Each output is rated for 20A and they can be paired together to achieve a rating of 40A.
- When pairing channels together for 40A either of the inputs will trigger both outputs in the pair.

REVIEWING THE DIGI-WATT

Before configuring a channel on the DIGI-WATT let's go over the basic options of the DIGI-WATT that are done with the four settings buttons:



LATCHING ENABLED determines if the relayed circuit will latch

OFF (red light) – The relayed circuit will behave like a normal automotive relay where the relay is activated as long as the input signal is active.

ON (green light) – The relay circuit will behave as a latching relay. That is, each time the input becomes active the output toggles, so one input pulse would turn the relay on and the next pulse would turn the relay off, etc. This feature is most useful for using momentary buttons to control something that would otherwise need a switch.

If the system power is cycled(powered off, then on) the latched switch will default to being off.

IGNITION ENABLED determines if the circuit will be disabled when the ignition is off

NO (red light) – The output will always be enabled regardless of the ignition input.

YES (green light) - The output will be enabled only when ignition is in the ON position.

INPUT TYPE tells the DIGI-WATT what type of input signal to look for

+ (*red light*) – The input signal will be positive when active (switches power) and open or low when inactive. The input signal can range from 3.3V to 18V.

- (green light) – The input signal will be grounded when active (switches ground) and open or positive when inactive. The signal should be below 1V when active.

<u>OUTPUT TYPE</u> determines if the relay output should switch power, ground, or both

+ (red light) - The output of the relayed circuit will switch +12V when active

- (green light) - The output of the relayed circuit will switch ground when active

(blue light) – [Only works for pairs of outputs] The output pair will reverse polarity depending on which input is active. This is intended for controlling bi-directional electric motors such as window motors, lock/unlock motors, linear actuators, etc.

To view the settings of any of the ten relayed outputs simply press the white button by the output of interest until the corresponding LED turns blue, the settings indicated by the LEDs to the left is the configuration for the output.

CONFIGURING THE DIGI-WATT

Before you begin to configure any of the 10 channels, plan out what you would like each channel to do and how and where the inputs and outputs will be wired. The last page includes a DIGI-WATT layout table with which you can mock up your wiring plans. By previewing what your goals are it will help the task of wiring and configuring the system.

To view the settings of any of the ten relayed outputs simply press the white button by the output of interest until the corresponding LED turns blue, the settings indicated by the LEDs to the left is the configuration for the output.

Each output is rated for 20A and they can be paired together to achieve a rating of 40A.

LET'S CONFIGURE A CHANNEL:

- 1. To configure an output first set the four settings buttons to select the desired settings.
- 2. Press and hold the blue SAVE button. (Keep holding this button until after step 4)
- 3. Press and hold the *white* button for the output you would like to configure.
- 4. Wait for the output LED to start blinking *blue* which indicates the configuration is saved and release the buttons.

You have now successfully saved that channel's settings. You can reconfigure any channel at any time and as many times as you would like.

If you wish to pair two outputs together (1 & 2 or 3 & 4 or 5 & 6 or 7 & 8 or 9 & 10) for the purpose of reversing polarity or to double the output handling current from 20A to 40A follow similar steps:

- 1. To configure an output first set the four settings buttons to select the desired settings.
- 2. Press and hold the *blue SAVE* button. (Keep holding this button until after step 4)
- 3. Press and hold **BOTH white** buttons for the output you would like to configure.
- 4. Wait for *both* output LEDs to start blinking *blue* which indicates the configuration is saved and release the buttons.

OTHER FEATURES:

When **OUTPUT TYPE** is *up/down (reversing polarity)* a short pulse on the input will initiate an AUTO UP or AUTO DOWN sequence. The automatic feature will be active until one of three things happens:

- 1. The motor reaches its limit (detected by sensing the stall current of the motor)
- 2. One of the inputs is activated again
- 3. The 10 second timeout is reached

EXAMPLE CONFIGURATIONS:

Configure output 1 to control your high beams using a momentary button that switches 12V power.

- 1. Use the LATCHING ENABLED button to turn latching mode ON, indicated by the green LED. Note: if you used a switch or a latching button you would turn this setting OFF, but in this example we are using a momentary button.
- 2. Use the IGNITION ENABLED button to make the output enabled only when ignition is on by selecting YES, indicated by the green LED.
- 3. Use the INPUT TYPE button to select positive (+) triggered input, indicated by the red LED.
- 4. Use the OUTPUT TYPE button to select a +12V output (+), indicated by the red LED.
- 5. Press and hold the blue SAVE button until the end.
- 6. Press and hold the white output 1 button.
- 7. Wait for the output 1 LED to blink blue which indicates the configuration was saved then release both buttons (SAVE and 1).

Configure outputs 7 & 8 to control power windows and use a grounded momentary input signal.

- 1. Use the LATCHING ENABLED button to turn latching mode OFF, indicated by the red LED.
- 2. Use the IGNITION ENABLED button to select whether you want the window to be disabled when ignition is off. NO/red means the window button would work all the time, YES/green means the window button would only work when ignition power is on.
- 3. Use the INPUT TYPE button to select negative (-) triggered input, indicated by the green LED.
- 4. Use the OUTPUT TYPE button to select up/down reversing polarity mode, indicated by the blue LED.
- 5. Press and hold the blue SAVE button until the end.
- 6. Simultaneously press and hold the white 7 and 8 buttons.
- 7. Wait for the 7 and 8 LEDs to blink blue which indicates the configuration was saved then release all three buttons (SAVE, 7, and 8)

Configure output 9 & 10 to control a 40A cooling fan which is switched by a thermostat connected to ground.

- 1. Use the LATCHING ENABLED button to turn latching mode OFF, indicated by the red LED.
- 2. Use the IGNITION ENABLED button to select whether you want the window to be disabled when ignition is off. NO/red means the fan would work all the time, YES/green means the fan would only come on when ignition power is on and the thermostat is tripped.
- 3. Use the INPUT TYPE button to select negative (-) triggered input, indicated by the green LED.
- 4. Use the OUTPUT TYPE button to select a +12V output (+), indicated by the red LED.
- 5. Press and hold the blue SAVE button until the end.
- 6. Simultaneously press and hold the white 9 and 10 buttons.
- 7. Wait for the 9 and 10 LEDs to blink blue which indicates the configuration was saved and then release all three buttons (SAVE, 9, and 10)

OUTPUT LED INDICATION:

BLUE	The output is selected and the configuration is displayed on the LEDs to		
BLUE	the left.		
BLINKING BLUE	IG BLUE The output has been successfully saved with the selected configuration.		
RED	The output is currently connected to 12V power.		
GREEN	The output is current connected to ground.		
	The fuse is blown and the output should be connected to 12V power but		
	is not.		
	The fuse is blown and the output should be connected to ground but is		
DLINKING GREEN	not.		
BLINKING WHITE	IG WHITE The fuse is suspected to be blown, try turning on the output to check.		

CHANNEL LAYOUT TABLE:

Ch IN	WHAT THE INPUT CHANNEL IS BEING USING FOR AND WHERE IT IS COMING FROM.	Ch OUT	WHAT THE OUTPUT CHANNEL IS BEING USING FOR AND WHERE IT IS GOING OUT TO.
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	
8		8	
9		9	
10		10	