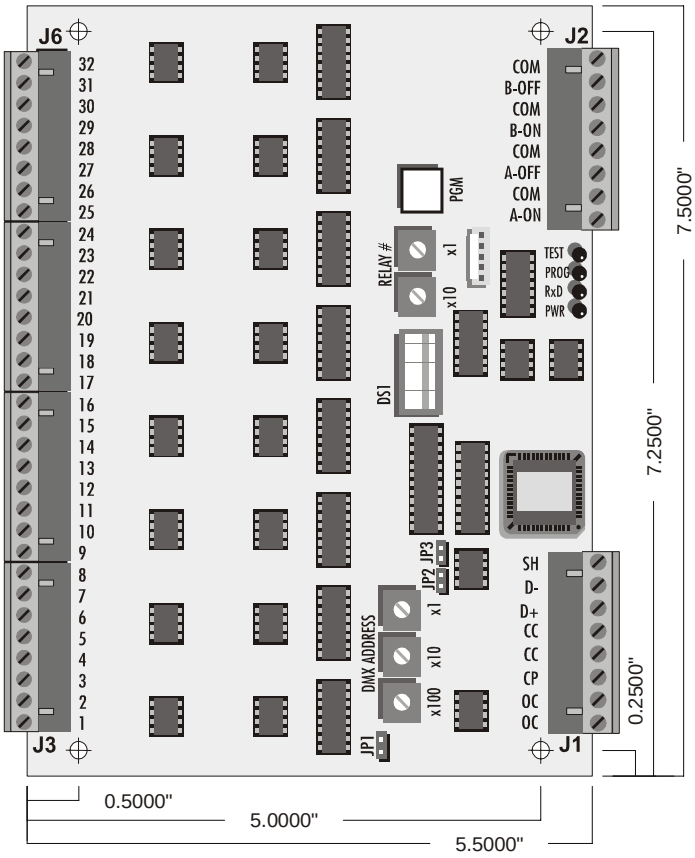
LCDD32 DEVICE DRIVER *Configuration*



CONNECTOR LEGEND

	CONNECTOR J1
SH	DMX Shield
D-	DMX Data-
D+	DMX Data+
CC	Control power supply common
CP	Control power supply 12-24 VAC or DC (+)
OC	Output Common Negative (*DC only*)
	CONNECTOR J2
COM	Master Switch Common (4 positions)
B-OFF	Master Switch “B” input, momentary OFF
B-ON	Master Switch “B” input, momentary ON
A-OFF	Master Switch “A” input, momentary OFF
A-ON	Master Switch “A” input, momentary ON
	CONNECTOR J3-J6
1-32	Open collector device outputs One output wire for each maintained action. Two output wires for each momentary pulse latching relay

CONNECTIONS

LCDD32 Power: With power off, connect your control power supply to the CC and CP terminals on J1. Observe the correct polarity if DC power is used.

Device Power: With power off, connect your device power supply negative to one of the OC terminals on J1. Making sure that the correct polarity is observed.

Input: DMX input lines are connected to SH, D– and D+ on J1 (corresponding to XLR pins 1,2, & 3 respectively).

Output: Both momentary and maintained operation is supported. For **maintained operation**, connect the positive inputs on your DC devices to the positive output on your device power supply. Connect the negative inputs on your DC devices to the corresponding outputs on J3-J6.

For **momentary pulse latching relays**, two signals are required, ON and OFF. Up to 16 relays of this type can be connected, using odd numbered outputs for the ON signal and even numbered outputs for the OFF signal. See the application notes for wiring diagrams.

Daisy Chain: If there are several DMX devices being used, the DMX line can be daisy chained off of J1.

Termination: If this LCDD32 is the last DMX device on the line, JP2 and JP3 should be installed.

OUTPUT DRIVER CAPACITY

The Programmable Device Driver can drive each output with up to 500mA at 5-40VDC. If you exceed this limit, a self-resetting fuse on each output will open.

OUTPUT TYPE

The LCDD32 supports two different types of outputs: 16 momentary pulsed pairs or 32 maintained single outputs. Many devices require a continuously *maintained* signal or supply. Others require only a *momentary* or pulsed ON/OFF signal. You can choose the desired output type by setting the Options DIP switch. Setting switch 1 OFF results in all devices responding with a *maintained* action when addressed. Setting switch 1 ON results in all outputs responding with a *momentary* action . The duration of the momentary pulse is 100 msec. In momentary mode, the LCDD32 operates as a 16 channel device driver. Odd numbered outputs turn on as the DMX level increases, and even numbers turn off as the DMX level decreases.

MASTER SWITCH INPUTS

Master switch inputs function in a "highest level takes precedence" (HTP) mode of operation with the DMX signal. If the DMX level for a given device is above the set threshold, the master switch will not turn that device off. Similarly, lowering the DMX signal for a device will not turn that device off if a master switch has previously turned it on. This function allows the user to pre-set devices to the ON state prior to lowering or shutting off the DMX signal. In the absence of a DMX signal, the A and B master switches will operate in a "last action takes precedence" (LTP) mode, that is, either one will turn on or off a device assigned to both switches.

PROGRAMMING

The "PROG" LED is on when Program Mode is enabled.

Program Patch: *DS-5 OFF, DS-6 OFF, JP1 open*
The address switches set the equivalent DMX channel # (001 to 512) and the device switches select the output number (01 to 32). Pressing the program store pushbutton (S6) to store the patch assignment will cause the program (PROG) LED to flash once unless an incorrect DMX # or device # has been selected.
NOTE: Address 000 is used to clear the patch assignment for the selected relay. Each device can be assigned to only one DMX channel. A new assignment for a device overwrites the previous assignment for that device.

Clear Patch: *DS-5 OFF, DS-6 OFF, JP1 shorted*
The entire patch will be cleared when the program pushbutton is pressed. The "PROG" LED will flash once to indicate a successful execution.

Program Master Sw.A: *DS-5 ON, DS-6 OFF, JP1 open*
The OUTPUT# switches select the device number to connect. The program (PGM) pushbutton is pressed to execute. The "PROG" LED will flash once unless an incorrect device number has been selected. The "TEST" LED will illuminate to indicate that the selected device has been assigned to the switch input. Repeat this procedure to add additional devices to this switch.

Program Master Sw.B: *DS-5 OFF, DS-6 ON, JP1 open*
Follow the same procedure as above for Master Switch A.

Verify: To check the connection between a master switch and an assigned device, set the OUTPUT# switches to the desired device and the connect status will be indicated by the "TEST" LED (ON if connected, OFF if not connected). To set or clear the connection, simply toggle the program button. Each master switch can be connected to any combination of valid outputs. Master switches can only be tested while in the program mode.

Clear Master Sw.A: *DS-5 ON, DS-6 OFF, JP1 shorted*
Press the program pushbutton to clear all output connections to master switch A. The "PGM" LED will flash once.

Clear Master Sw.B: *DS-5 OFF, DS-6 ON, JP1 shorted*
Press the program pushbutton to clear all output

RUN (NORMAL) MODE CHECKLIST

- JP1 is removed
- DS-1 set for correct output mode
- DS-2 set for device operating threshold
- DS-3 set for scan or simultaneous device operation
- DS-4 set for patch or offset address mode
- DS-5 and DS1-6 (program select) turned off
- DS-7 (program mode) and DS1-8 (test mode) are off
- JP2 and JP3 (DMX Terminate) installed or removed as required

DIP Switch Settings

OUTPUT MODE	**DS-1**
All Maintained: (32 channels) *Constant output*	OFF
All Momentary: (16 channels) *100 ms pulse for latching relays*	ON
THRESHOLD SELECT	**DS-2**
25% Threshold (on at 30%, off at 20%)	ON
75% Threshold (on at 80%, off at 70%)	OFF
OUTPUT SCAN MODE	**DS-3**
Scan Mode Enabled *Turns outputs on or off in sequence, 10 per second*	ON
Scan Mode Disabled *Turns outputs on or off simultaneously*	OFF
CONTROL MODE	**DS-4**
Patch: Addressing determined by programmed patch	ON
Offset: Addressing determined by card start address	OFF

PROGRAM MASTER SWITCH	**DS-5**	**DS-6**
Program Master Switch "A"	ON	OFF
Program Master Switch "B"	OFF	ON
Program Mode Enabled		ON
Program Mode Disabled		OFF
Test Mode enabled		ON
Normal (RUN) Mode		OFF

NOTES ON CONTROL MODE

Patch Mode Operation: Addressing is determined by the programmed DMX patch assignment for each output. In this mode, any output can be assigned to any DMX channel # in any order. Any number of outputs can be assigned to the same DMX channel, but each output can be assigned to only one DMX channel.
Offset Mode: The card's start address is determined by the DMX address select switches (S1-S3). These switches select the DMX address for the first device and all other devices controlled by the card follow in sequence.

NOTES ON DMX OPERATION

When a DMX signal is used to control devices, on or off operation occurs as signal levels pass through the threshold set. If the DMX signal fails while devices are in the ON state, those devices will turn OFF after a two minute timeout unless they were previously turned on by a master switch.

TEST MODE

DS-7 must be OFF and DS-8 ON. The "TEST" LED will be on.

Output Test: DS-4 must be off. The DMX address switches select the output number to test. The selected device can then be turned on by pressing the program pushbutton. If the number is out of the correct range (000 to 032, or 000 to 016 in momentary mode) the "TEST" LED will flash to indicate an error when the button is pressed.

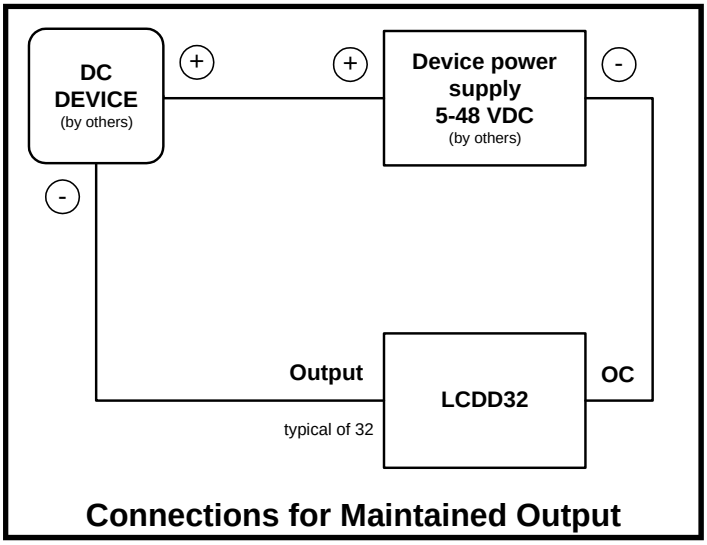
DMX Test Function: The DMX receive LED (RxD) will be on and steady if a valid DMX signal is received. If no DMX signal is present the LED will be off, and if the DMX signal is not valid the LED will flash continuously.

Patch Testing Mode: DS-4 must be on. The address switches select the DMX channel #. When the program pushbutton is pressed, devices assigned to that DMX channel # will turn ON. When the pushbutton is released those devices will turn OFF. The "TEST" LED will flash once if there is an error in the address range selection.

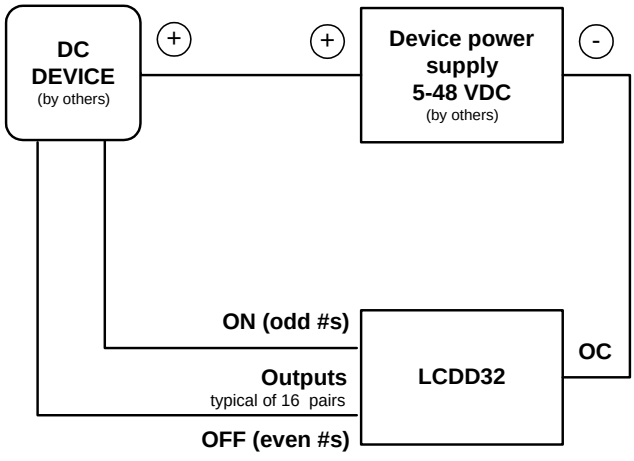
APPLICATION NOTES

The LCDD32 Programmable Device Driver can be used to operate a wide variety of on/off (non-dim) DC devices. It can control maintained action devices include solid state relays, electrically held (maintained action) relays, contactors and solenoids, LED and lamp displays. It can also be used to control mechanically latching (momentary pulsed) devices, such as GE RR series relays. All of these devices can be placed under DMX512 or optional master switch control.

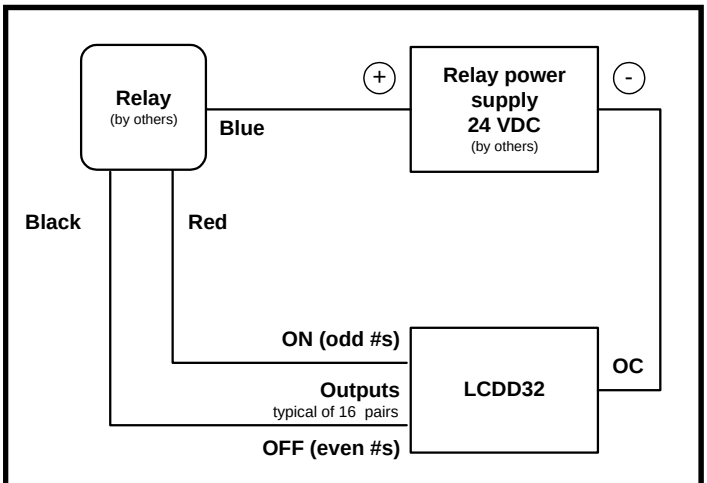
The following illustrations show typical connection details.



Connections for Maintained Output



Connections for Momentary Output



Connections for GE RR Series relays

WARRANTY

The Gray LCCDD32P Device Driver is covered by a one year warranty against defective parts and labor. If you need to return anything for any reason, contact the factory in advance for return instructions.

SUPPORT

Technical support is available from Pathway Connectivity at +1 (403) 243-8110, Monday to Friday, from 9 a.m. to 5 p.m. Mountain time. Please have the unit model number and serial number ready when you call.

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