Demo Circuit (DC) 192A Quick Start Guide

Description

The DC192 is a collection of subcircuits to support the LT1684 in ring signal generation.
This board contains the hardware to facilitate demonstration of the LT1684 in several different system modes of operation. For ease of use the DC192A is designed to operate from a single 5V input supply.
It utilizes the popular Microchip PIC16C73 microcontroller for the generation of the ring signals, cadence, zero crossing output, connect output, and various other specialized features detailed further in the Step by

Setup 1 Generic mode

Perhaps the most generic setup for the DC192A is the 20Hz 3 REN Cadenced ring. This is the setup the Demo Circuit is shipped with.

In the generic mode the board is configured to demonstrate its ability to ring a phone.
1.   Insure that the jumpers configure the board as setup 1.
2.   Connect +5V and Gnd to the board via J2 (center+) or TP3 +5V and TP5 Gnd.
3.   Plug phone into J1 or attach Tip to TP2 and Ring to TP1. Or
4.   Attach oscilloscope ground lead to TP1 and the probe to TP2.
5.   Power up the board; observe that LED1 and LED4 are illuminated.
6.   Depress SW1 and observe the results:

A.   A cadenced ring signal appears at the output to be seen and/or heard.
B.   LED2 illuminates to indicate the connect condition while TP13 (RELAY) is pulled to ground.
        (Remember this board is isolated so the scope ground on TP1 is not connected to the input ground on TP5, the RELAY signal is pulled to the TP5 ground.)
C.   A short pulse appears on TP14 (ZERO) a few milliseconds prior to each zero crossing.
D.   LED4 twinkles as the duty factor of its drive is modulated with the 20Hz ring signal.

The effect of holding SW1 down continuously can be obtained by emplacing jumper 14 to short its
        terminals, or by shorting TP4 (CADENCE) to ground (TP5).

Other Setups

At present other setups are best described in the jumpers file (appended to the end of this document).
As other modes of operation are incorporated this document, and the firmware will be updated to
        implement, and document the new modes.

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JUMPER CONFIG        OCT 7 99


JP10 IS CW/CADENCED SELECT IN = CW OUT = CADENCED
WHEN IN:
       IF    1)     JP14 IS IN OR
             2)     SW1 IS DEPRESSED OR
             3)     CADENCE IN IS PULLED LOW


       THEN  CONTINOUS SINEWAVE IS OUTPUT.
       ELSE  CONTINOUS ZERO IS OUTPUT


WHEN OUT:
       IF    1)     JP14 IS IN OR
             2)     SW1 IS DEPRESSED OR
             3)     CADENCE IN IS PULLED LOW


       THEN  CADENCED SINEWAVE IS OUTPUT
       ELSE  CONTINOUS ZERO IS OUTPUT
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JP12 IS CONNECT RELAY MODE IN = TEST OUT = NORMAL


     WHEN  JP12 IS IN AND
           JP10 IS IN AND


     IF    1)    JP14 IS IN OR
           2)    SW1 IS DEPRESSED OR
           3)    CADENCE IN IS PULLED LOW


     THEN  CONTINOUS SINEWAVE IS OUTPUT.
           THE CONNECT RELAY (TP13) IS ENERGIZED EVERY EIGHTH CYCLE


     ELSE  CONTINOUS ZERO IS OUTPUT
           THE CONNECT RELAY (TP13) IS DE-ENERGIZED CONTINOUSLY


     WHEN  JP12 IS IN AND
           JP10 IS OUT AND


     IF    1)    JP14 IS IN OR
           2)    SW1 IS DEPRESSED OR
           3)    CADENCE IN IS PULLED LOW


     THEN  CADENCED SINEWAVE IS OUTPUT.
           THE CONNECT RELAY (TP13) IS ENERGIZED EVERY EIGHTH CADENCE


     ELSE  CONTINOUS ZERO IS OUTPUT
           THE CONNECT RELAY (TP13) IS DE-ENERGIZED CONTINOUSLY



     WHEN  JP12 IS OUT AND
           JP10 IS IN AND


     IF    1)    JP14 IS IN OR
           2)    SW1 IS DEPRESSED OR
           3)    CADENCE IN IS PULLED LOW


     THEN  CONTINOUS SINEWAVE IS OUTPUT.
           THE CONNECT RELAY (TP13) IS ENERGIZED CONTINOUSLY


     ELSE  CONTINOUS ZERO IS OUTPUT
           THE CONNECT RELAY (TP13) IS DE-ENERGIZED CONTINOUSLY


     WHEN  JP12 IS OUT AND
           JP10 IS OUT AND


     IF    1)    JP14 IS IN OR
           2)    SW1 IS DEPRESSED OR
           3)    CADENCE IN IS PULLED LOW


     THEN  CADENCED SINEWAVE IS OUTPUT.
           THE CONNECT RELAY (TP13) IS ENERGIZED EVERY CADENCED CYCLE


     ELSE  CONTINOUS ZERO IS OUTPUT
           THE CONNECT RELAY (TP13) IS DE-ENERGIZED CONTINOUSLY
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JUMPER 6:   SOFTSTART AND UNDERVOLTAGE LOCKOUT DISABLE

     WHEN  JP6 IS IN   THERE IS NO SOFTSTART OR UNDERVOLTAGE LOCKOUT\
           JP6 IS OUT  SOFTSTART STARTS @ 4.75V AND
                       UNDERVOLTAGE LOCKOUT SHUTS DOWN AT 4.5V


JUMPERS 4 & 5    HIGH OUTPUT CURRENT / LOW OUTPUT CURRENT

     WHEN  JP4&5 ARE IN     THE OUTPUT CAPACITY OF THE DEMO BOARD IS
10 REN
           JP4&5 ARE OUT    THE OUTPUT CAPACITY IS 1 REN



PATH CONFIGURATION JUMPERS:

JUMPER 15   PWM SOURCE SELECTOR

     WHEN  JP15 IS BRIDGING 1&2   INTERNAL PWM IS SELECTED
           JP15 IS BRIDGING 2&3   EXTERNAL PWM IS SELECTED VIA TP8


JUMPERS 1&2&3     REFERENCE MODE JUMPERS
     THE ORIGIONAL SOFTWARE 10/11/99 DOES NOT SUPPORT VARIABLE
REFERENCE MODE
     SO THE JUMPERS MUST BE PLACED AS FOLLOWS:


           JP1 MUST BRIDGE PINS 2&3
           JP2 MUST BRIDGE PINS 2&3
           JP3 MUST BRIDGE PINS 1&2


UNUSED JUMPERS:
           JP7
           JP8
           JP9
           JP11
           JP13

UNUSED I/O PORTS:
           BNC        ANALOG IN
           J4         RS232 IN
           TP10,11,12  SMBUSS


FOR TEST SET JUMPERS AS FOLLOWS
     JP1   BRIDGE PINS 2&3
     JP2   BRIDGE PINS 2&3
     JP3   BRIDGE PINS 1&2
     JP4   INSTALLED
     JP5   INSTALLED
     JP6   OPEN
     JP7   OMIT
     JP8   OMIT
     JP9   OMIT
     JP10  OPEN
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        JP11  OMIT
        JP12  OPEN
        JP13  OMIT
        JP14  INSTALLED
        JP15  BRIDGE PINS 1&2

APPLY 5V BY J2 (+ IN CENTER)
LOOK AT THE LEDS TWINKLE
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