# The CNS Clock™ Paging Sequencer Module

The CNS Clock™ is a GPS clock with high accuracy one-pulse-per-second outputs and software that manages the clock and keeps your computer's time synchronized to GPS.

The Paging Sequencer Module is designed to control the Active/Busy states of a paging transmitter station as a specific portion of each minute to allow spectrum sharing with adjacent paging systems that have overlapping coverage areas.

Interface: The interface is designed to connect directly to a variety of pager terminals by using the terminal's "Busy" line. This includes thee Zetron 2200, Kantronics Model 2000, Motorola Unipage M15 Paging Terminal and the GlenAyre GL3000.
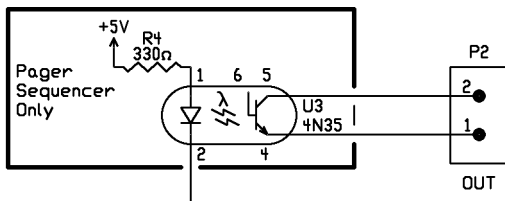

The interface is an opto-isolated solid state switch that operates much like a relay. When closed, the circuit must not draw more than 40ma. When open, the terminal voltage must not exceed 30 volts. The connector on the rear panel of the CNS Clock is an isolated BNC with the emitter of U3 connected to the outer shell and the collector connected to the center pin. This way there can be no ground loops between the paging system and the CNS Clock.

Start and Stop time setup: The start time is the second of each minute at which the interface contact is closed. The stop time is the second of each minute when the contact is opened.

The start and stop times are set using the DIP switches S1 and S2, respectively. To select the time, program the binary equivalent of the second on each switch as shown in Table 1.

- Be sure that the second number is in the range between 0 and 59.
- Be sure to select the appropriate times depending on whether the start/stop sequence is for a "Busy" or an "Active" interface.
- For "normally open" operation set the jumper at J1 to pins 2-3. For "normally closed" set to pins 3-4.
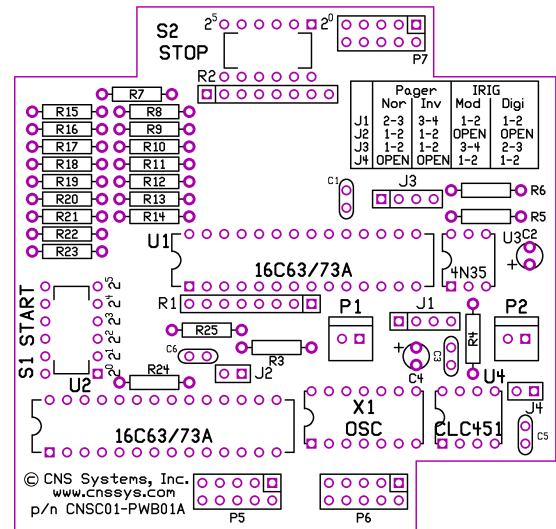
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GlenAyre Interface: The following instructions are provided courtesy of Chuck Moffet of B&M Communications:

1. On the Universal Output Encoder (UOE), move JP10-11 to the JP 10 position. That gives a pull up resistor to the input pin.

2. Go to UOE (Universal Output Encoder) (H-5-6-1) Individual controller parameters (depends on controller) and type the custom user selection, i.e. USRB.

   a. Set field 21 to Interlock RTS/CTS.

   b. Set field 22 RTS Retry to 200 ms or other desired value.

   c. Set field 24 to CTS toggle.

3. On the 25 Pair punch down block, number left top 1 and bottom left as 50. Connect PTT from CNS Clock center BNC to pin 24, and the shield to pins 25 and 38.

Zetron Interface: The Zetron 2200 "Busy" interface is on the Station Card.

Kantronics Interface: The Kantronics Model 2000 is supported by connecting the interface to the External Carrier Detect line.

Unipage Interface: The Motorola Unipage M15 Paging Terminal is supported by connecting the interface to the "Busy Channel Control" and "Ground" (pins 45 and 50) on the standard 25-pair punch block.

Time (sec #)	2^5	2^4	2^3	2^2	2^1	2^0
0	OFF	OFF	OFF	OFF	OFF	OFF
1	OFF	OFF	OFF	OFF	OFF	ON
2	OFF	OFF	OFF	OFF	ON	OFF
3	OFF	OFF	OFF	OFF	ON	ON
4	OFF	OFF	OFF	ON	OFF	OFF
5	OFF	OFF	OFF	ON	OFF	ON
6	OFF	OFF	OFF	ON	ON	OFF
7	OFF	OFF	OFF	ON	ON	ON
8	OFF	OFF	ON	OFF	OFF	OFF
9	OFF	OFF	ON	OFF	OFF	ON
10	OFF	OFF	ON	OFF	ON	OFF
11	OFF	OFF	ON	OFF	ON	ON
12	OFF	OFF	ON	ON	OFF	OFF
13	OFF	OFF	ON	ON	OFF	ON
14	OFF	OFF	ON	ON	ON	OFF
15	OFF	OFF	ON	ON	ON	ON
16	OFF	ON	OFF	OFF	OFF	OFF
17	OFF	ON	OFF	OFF	OFF	ON
18	OFF	ON	OFF	OFF	ON	OFF
19	OFF	ON	OFF	OFF	ON	ON
20	OFF	ON	OFF	ON	OFF	OFF
21	OFF	ON	OFF	ON	OFF	ON
22	OFF	ON	OFF	ON	ON	OFF
23	OFF	ON	OFF	ON	ON	ON
24	OFF	ON	ON	OFF	OFF	OFF
25	OFF	ON	ON	OFF	OFF	ON
26	OFF	ON	ON	OFF	ON	OFF
27	OFF	ON	ON	OFF	ON	ON
28	OFF	ON	ON	ON	OFF	OFF
29	OFF	ON	ON	ON	OFF	ON
30	OFF	ON	ON	ON	ON	OFF
31	OFF	ON	ON	ON	ON	ON
32	ON	OFF	OFF	OFF	OFF	OFF
33	ON	OFF	OFF	OFF	OFF	ON
34	ON	OFF	OFF	OFF	ON	OFF
35	ON	OFF	OFF	OFF	ON	ON
36	ON	OFF	OFF	ON	OFF	OFF
37	ON	OFF	OFF	ON	OFF	ON
38	ON	OFF	OFF	ON	ON	OFF
39	ON	OFF	OFF	ON	ON	ON
40	ON	OFF	ON	OFF	OFF	OFF
41	ON	OFF	ON	OFF	OFF	ON
42	ON	OFF	ON	OFF	ON	OFF
43	ON	OFF	ON	OFF	ON	ON
44	ON	OFF	ON	ON	OFF	OFF
45	ON	OFF	ON	ON	OFF	ON
46	ON	OFF	ON	ON	ON	OFF
47	ON	OFF	ON	ON	ON	ON
48	ON	ON	OFF	OFF	OFF	OFF
49	ON	ON	OFF	OFF	OFF	ON
50	ON	ON	OFF	OFF	ON	OFF
51	ON	ON	OFF	OFF	ON	ON
52	ON	ON	OFF	ON	OFF	OFF
53	ON	ON	OFF	ON	OFF	ON
54	ON	ON	OFF	ON	ON	OFF
55	ON	ON	OFF	ON	ON	ON
56	ON	ON	ON	OFF	OFF	OFF
57	ON	ON	ON	OFF	OFF	ON
58	ON	ON	ON	OFF	ON	OFF
59	ON	ON	ON	OFF	ON	ON