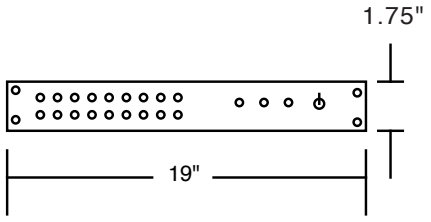
FUNCTIONAL DEVICES INC.

POWER-LINE CARRIER



Depth = 9.5"

MODEL CS512DC

1-WAY
COMMAND SYNTHESIZER

UL® LISTED

DESCRIPTION

The CS512DC Command Synthesizer interfaces with and polls up to 512 digital outputs of an EMS controller. It transforms a particular hard-wired EMS output (relay, switch, NPN optoisolator or voltage *) into an OFF or ON command addressed to a particular Responder (PLC receivers, which are located at the load). The CS512DC controls only one-way Responders.

The CS512DC is wired to CTME Command Transmitter, which uses existing ac wires or a dedicated twisted pair for the PLC communication link to the Responders.

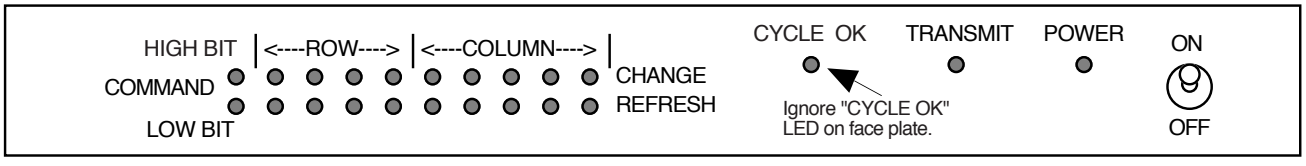
A unique digital code or identity (ID) is assigned to each EMS controller output. These same IDs are assigned to RC-type Responders by setting positions of switches on the Responders. A relay within the Responder ultimately controls the load. The PLC signal put out by the Command Synthesizer contains ON/OFF commands as well as the ID. The requirements for ON/OFF commands are determined by the EMS controller.

Diagnostic LEDs on the front of CS512DC indicate which ID is being commanded, whether the controller is requesting ON (high command bit off and low command bit on) or OFF (both command bits off) for that ID. LEDs also indicate whether the command is a change in state or a routine refresh command and the existence of outgoing PLC signals.

FEATURES

- Immediate transmission to Responders when controller changes an output
- Continuous refresh transmission of desired status to all 512 Responder IDs
- Interfaces with controller via direct wires, point per point
- Direct interface to SP Switch Panels, if used
- Diagnostic LEDs on front of cabinet indicate operation of CS512DC
- Convenient 19" rack mounting
- Ability to override-off Responders in groups of 32

CS512DC FACE PLATE



SPECIFICATIONS

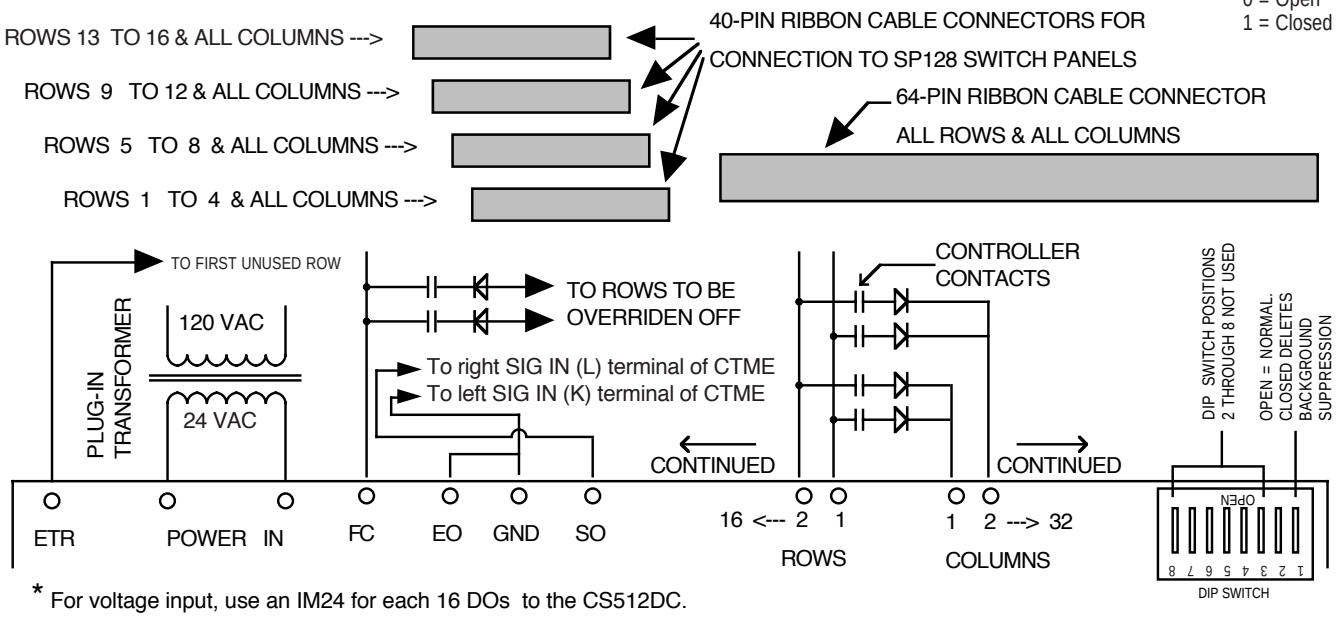
- Power in = 24 Vac (max = 30, min = 20) from provided 120 to 24 Vac plug-in transformer (300 mA)
- Input = 16 row x 32 column array requiring one diode in series with each contact (see below).
- Contact inputs are relay, switch, NPN optoisolator or voltage* with open circuit voltage of +5 volts on row connection and 5 mA required to represent a closed contact.
- Controls 512 ID codes for one-way Responders. (See table below for Responder programming.)
- PLC communication has confirmation means, redundancy and continuous refresh commands.
- Operating temp range = 32° to 120° F, storage temp range = -40° to 185° F.
- Humidity range = 5 to 95% (noncondensing).
- Contains externally visible LEDs, which indicate signal refresh, signal change, status of output command, transmission of PLC signal, and availability of ac power. Ignore "CYCLE OK" LED on face plate.
- Change commands occur within one second. All Responders are refreshed periodically.
- Allows override-off of rows for cycling, demand or time-of-day control by connecting cathode of diode to terminal FC and anode to any or all of 16 row terminals.
- Allows exclusion of high-address rows from normal refresh by connecting first unused row to terminal ETR.
- Has terminals for connection to controller. 64-pin ribbon cable connector contains connections for all IDs. Four 40-pin ribbon cable connectors each contain connections for 128 IDs for connection to SP128 switch panels.
- 19" rack mount aluminum cabinet (19" wide x 1.75" high x 9" deep).
- UL listed under standard 916 Energy Management Equipment.

RELATIONSHIP BETWEEN ID (DIP SWITCHES 1 THRU 9 OF RESPONDER) AND POSITION IN ROWS AND COLUMNS

The table of Responder IDs would look the same as the one for the CS8DC (A234 Pg. 13) except it would contain the following 512 addresses:

ROW 1 TO 16 TOP TO BOTTOM	RESONDER DIP SWITCH 1234	COLUMN 1 TO 16 LEFT TO RIGHT	RESONDER DIP SWITCH 56789	COLUMN 17 TO 32 LEFT TO RIGHT	BITS 56789
1	0000	1	00000	17	10000
2	0001	2	00001	18	10001
3	0010	3	00010	19	10010
4	0011	4	00011	20	10011
5	0100	5	00100	21	10100
6	0101	6	00101	22	10101
7	0110	7	00110	23	10110
8	0111	8	00111	24	10111
9	1000	9	01000	25	11000
10	1001	10	01001	26	11001
11	1010	11	01010	27	11010
12	1011	12	01011	28	11011
13	1100	13	01100	29	11100
14	1101	14	01101	30	11101
15	1110	15	01110	31	11110
16	1111	16	01111	32	11111

SWITCH
0 = Open
1 = Closed



* For voltage input, use an IM24 for each 16 DOs to the CS512DC.