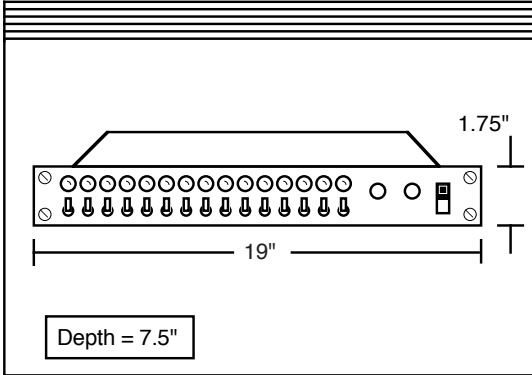
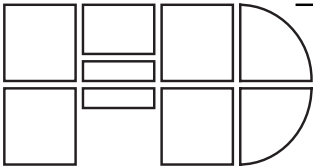


FUNCTIONAL DEVICES INC.
POWER-LINE CARRIER



MODEL CS16DCS
1-WAY
COMMAND SYNTHESIZER



DESCRIPTION

The CS16DCS Command Synthesizer interfaces with and polls up to 16 digital outputs of an EMS controller. It transforms a particular hard-wired EMS output (open or closed 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). Sixteen ON / OFF / AUTOMATIC switches on the front of the CS16DCS determine whether each Responder is to be overridden ON, overridden OFF, or under control of the EMS. The CS16DCS controls only one-way Responders.

The CS16DCS is wired to CTME Command Transmitter, which uses existing ac wires or separate 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 vs. OFF commands are determined by the EMS controller or by the override switches.

Diagnostic LEDs indicate which ID is being commanded, whether the controller (or the override switch) is requesting an ON or OFF and the presence of outgoing PLC.

Normally, when the switch is ON (or if in AUTOMATIC and the EMS controller outputs a contact closure) then CS16DCS transmits an ON command. There is a provision (close internal DIP switch position 6) for inverting the logic so that the above circumstances cause an OFF command to be transmitted.

FEATURES

- Continuous refresh transmission of desired status to all 16 Responder IDs
- Diagnostic LEDs
- Interfaces with controller via direct wires, point per point
- Manual override switches
- Convenient 19" rack mount housing
- Ability to invert state of sensed contact

- Power in is 24 Vac (max. = 30 Vac, min. = 20 Vac), which is wired from provided 120 to 24 Vac plug-in transformer (150 mA).
- Contact inputs are relay, switch, NPN optoisolator or voltage * with open circuit voltage of +5 volts on row connections and 5 mA required to represent a closed contact.
- Controls 16 ID codes for one-way Responders.
- PLC communication has confirmation means, redundancy, and continuous refresh.
- Operating temperature range 32° to 120° F, storage temperature range - 40° to 185° F.
- Humidity range 5 to 95% (noncondensing).
- Contains externally visible LEDs, which indicate ID being commanded, ON or OFF desired status from EMS or override switches and presence of outgoing PLC signal.
- Maximum delay in commanding a Responder = 8 seconds.
- 19" rack mount aluminum cabinet (19" wide x 1.75" high x 7.5" deep).
- UL listed under Standard 916 Energy Management Equipment.

* For voltage input of 16 DOs to CS16DCS use an IM24.

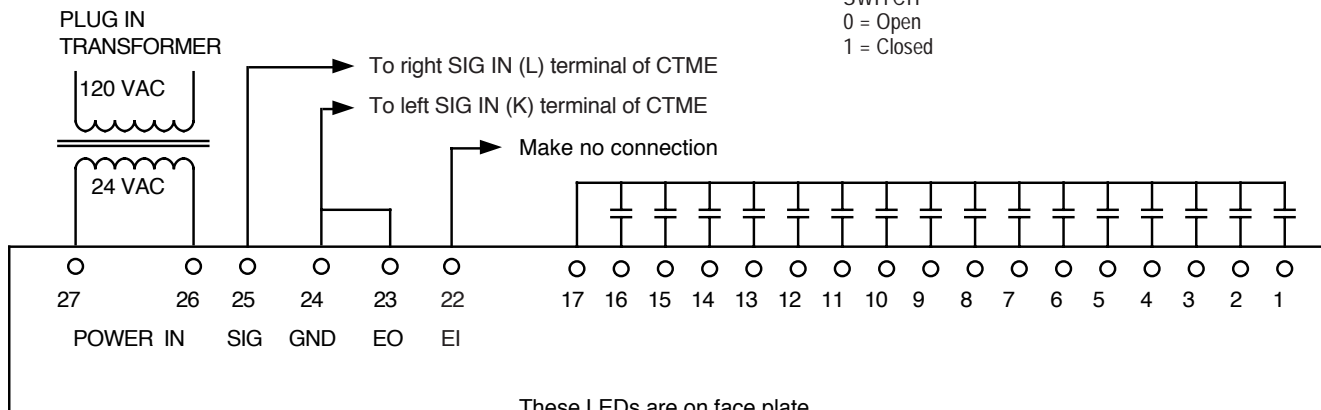
The table of responder IDs would look the same as the one for the CS8DC (D324 Pg. 2) except it would contain the following 16 addresses:

1	00000000
2	00000001
3	00000010
4	00000011
5	00000100
6	00000101
7	00000110
8	00000111
9	00001000
10	00001001
11	00001010
12	00001011
13	00001100
14	00001101
15	00001110
16	00001111

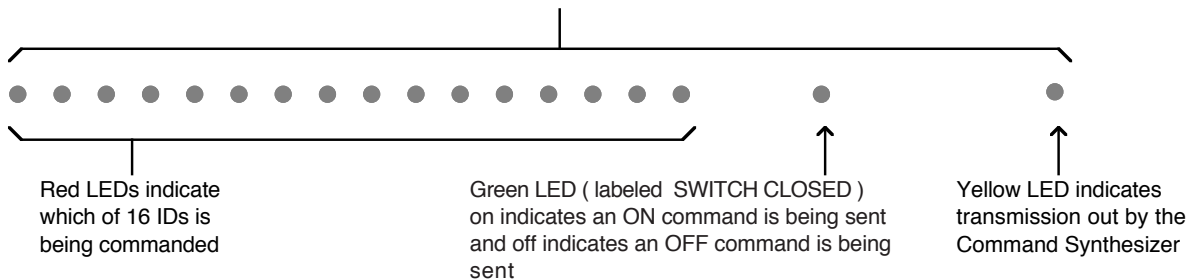
RESPONDER IDs TRANSMITTED BY CS16DCS

The left digit represents the #1 DIP switch position on the responder. The right digit represents the #9 DIP switch position on the responder.

SWITCH
0 = Open
1 = Closed



These LEDs are on face plate



Red LEDs indicate which of 16 IDs is being commanded

Green LED (labeled SWITCH CLOSED) on indicates an ON command is being sent and off indicates an OFF command is being sent

Yellow LED indicates transmission out by the Command Synthesizer sent