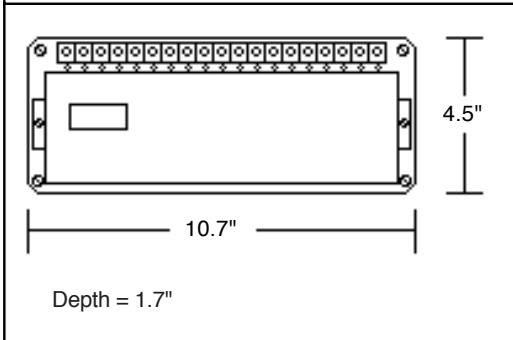
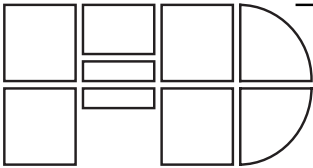


FUNCTIONAL DEVICES INC.

POWER-LINE CARRIER



MODEL CS64DC

1-WAY

COMMAND SYNTHESIZER



DESCRIPTION

The CS64DC Command Synthesizer interfaces with and polls up to 64 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 CS64DC controls only one-way Responders.

The CS64DC 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 indicate which ID is being commanded (4 yellow LEDs = row and 16 red LEDs = column), whether the controller is requesting ON or OFF (green LED = ON when controller desires that load on) and the presence of outgoing PLC (yellow LED).

Normally, when the controller outputs a contact closure, the CS64DC transmits an ON command. There is a provision (close internal DIP switch position 6) for inverting the logic so that a contact closure causes an OFF command to be transmitted.

FEATURES

- Continuous refresh transmission of desired status to all 64 Responder IDs
- Interfaces with controller via direct wires, point per point
- Direct interface to SP64 Switch Panel
- Diagnostic LEDs
- Convenient installation in 4-gang electrical box or inside of EMS controller
- Ability to invert state of sensed contact

SPECIFICATIONS

- Power in = 24 Vac (max = 30, min = 20) from provided 120 to 24 Vac plug-in transformer (150 mA)
- Input = 4 row x 16 column array requiring one diode in series with each contact (diodes can be provided by IM64 and are provided in Switch Panel SP64)
- 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 64 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 LEDs, which indicate ID being commanded (4 yellow LEDs = rows & 16 red LEDs = columns), ON or OFF desired status from EMS (green LED) and presence of outgoing PLC (yellow LED).
- Max delay in commanding any Responder = 32 sec (less if fewer than 4 rows are used—see label for setting of DIP switches 2-4).
- A closed contact from controller causes Responder to be ON (invert by closing DIP switch 6).
- Two-piece aluminum housing 10.7" X 4.5" X 1.7" with face plate for mounting in protected environment or invert to cover a 4-gang electrical box.
- UL listed under standard 916 Energy Management Equipment.

* For voltage input, use an IM24 for each 16 DOs to the CS64DC.

The table of Responder IDs would look the same as the one for the CS8DC (A234 Pg. 13) except it would contain the following 64 addresses:

SWITCH
0 = Open
1 = Closed

TERMINAL	ROW 1 17	ROW 2 18	ROW 3 19	ROW 4 20
1	00000000	00001000	00010000	00011000
2	00000001	00001001	00010001	00011001
3	00000010	00001010	00010010	00011010
4	00000011	00001011	00010011	00011011
5	00000100	000010100	000100100	000110100
6	00000101	000010101	000100101	000110101
7	00000110	000010110	000100110	000110110
8	00000111	000010111	000100111	000110111
9	000001000	000011000	000101000	000111000
10	000001001	000011001	000101001	000111001
11	000001010	000011010	000101010	000111010
12	000001011	000011011	000101011	000111011
13	000001100	000011100	000101100	000111100
14	000001101	000011101	000101101	000111101
15	000001110	000011110	000101110	000111110
16	000001111	000011111	000101111	000111111

RESPONDER IDs TRANSMITTED BY CS64DC

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

