MANTRAP

Interlocking Door Control System

Model No. MCIO-IDC

Rev. 4.0

Components Package

Two Door System

Our Two-Door Mantrap Interlocking Door Control System uses one MCIO board monitoring two-door position switches and four access control system inputs to monitor and control two interlocked doors.

Three relay outputs communicate system status to the access control system, two 10 AMP form C relays control the locks, and seven relays control the three displays mounted at the interlocked doors.

Custom configurations and additional interlocked doors are available.

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SYSTEM OPERATION

The Mantrap Control System interlocks two controlled doors allowing only one door to be opened at a time. The mantrap will not unlock a door if the other door is open, or if the tailgate system indicates that there is more than one person inside the mantrap. The interlock alarm relay opens if both doors are open at the same time.

BYPASS BOTH CLOSED - Both doors are unlocked and closed. Both doors may be opened. The bypass relay is closed.

BYPASS OUTER or INNER OPEN - Both doors are unlocked and one is open. Both doors may be opened. The bypass relay is closed.

BYPASS BOTH OPEN - Both doors are unlocked and open. The bypass relay is closed.

ARMED BOTH CLOSED - Both doors are closed and locked.

OUTER or INNER UNLOCKED CLOSED - The VEND for a door is active. The lock is unlocked and the door is closed.

OUTER or INNER UNLOCKED OPEN - The VEND for a door is active. The lock is unlocked and the door is open.

OUTER or INNER LOCKED OPEN - The VEND for a door is not active. The lock is locked and the door is open.

ALARM BOTH OPEN - Both doors are open. Both locks are locked. The alarm relay is open. Activating the BYPASS input changes the state to BYPASS BOTH OPEN.

SYSTEM INPUTS

The Mantrap System is controlled from two different sets of inputs. The Access Control System, the two door position switches, and the tailgate detection system.

The Access Control System provides four contacts to control the mantrap control system.

SYSTEM BYPASS - This maintained N/O input places the system into bypass mode. Both VEND inputs are enabled. Both doors are allowed to be opened. No alarm will be generated, the bypass status relay opens.

INNER DOOR VEND - This maintained N/O input unlocks the inner door if the outer door is not opened, and the outer door VEND is not active. The door is unlocked while the VEND input is active. The door is locked when the VEND input is reset. The outer door VEND is ignored while this input is active.

OUTER DOOR VEND - This maintained N/O input unlocks the outer door if the inner door is not opened, and the inner door VEND is not active. The door is unlocked while the VEND input is active. The door is locked when the VEND input is reset. The inner door VEND is ignored while this input is active.

INTERLOCK LOCKDOWN - This maintained N/O input locks both doors and the system ignores both VEND inputs.

DOOR POSITION SWITCHES - These maintained N/C inputs follow the position of the door. The system uses these inputs to interlock the two doors.

TAILGATE DETECTION SYSTEMS - The tailgate detection system senses the direction and count of persons walking through the mantrap doorway. The mantrap control system compares the number of persons in the mantrap to the number of valid cards presented. If the number of persons inside the mantrap exceed the number of valid cards presented, then an alarm is generated and access to the secured side of the mantrap is prevented

SYSTEM OUTPUTS

The mantrap system has three relay outputs to communicate system status to the access control system.

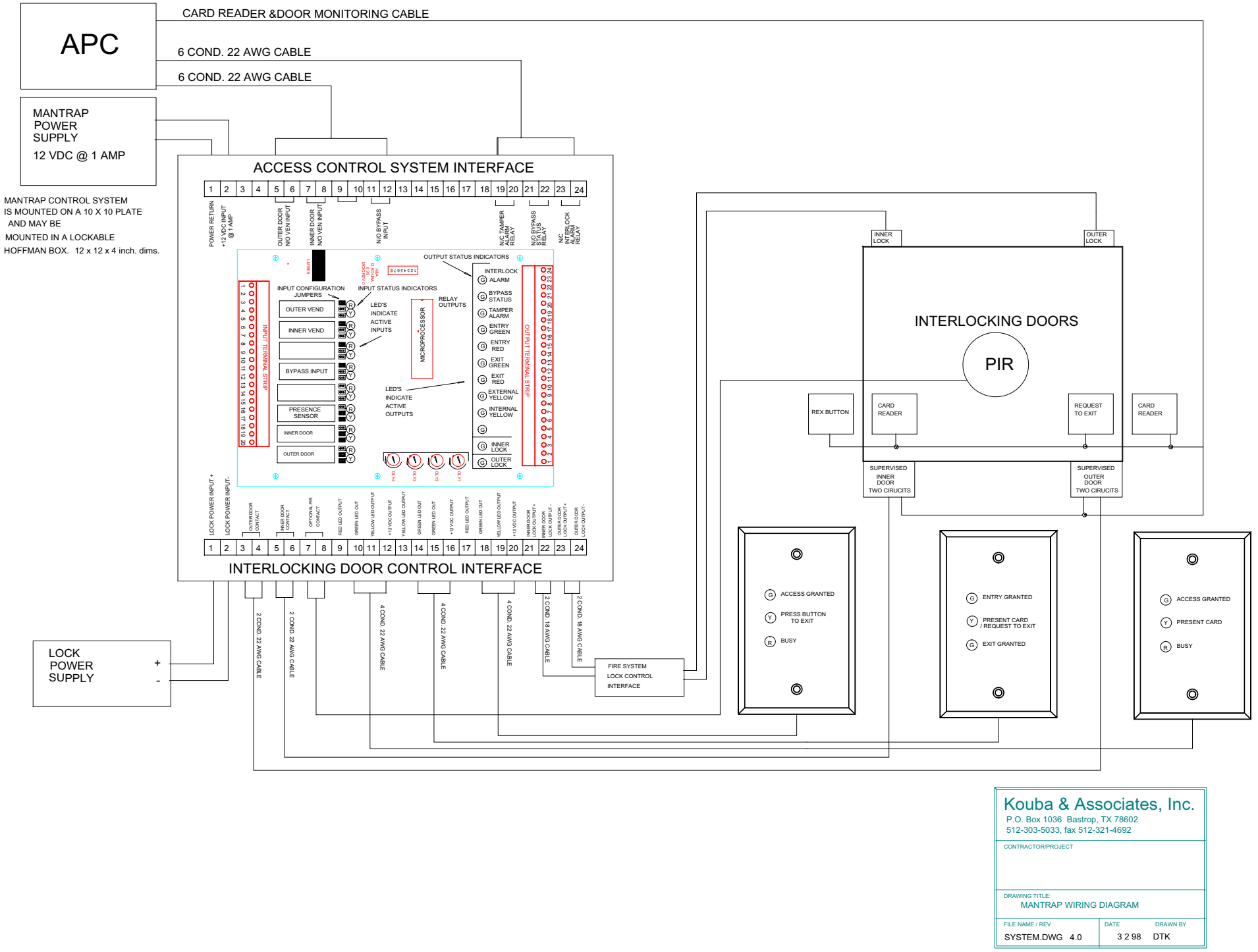
INTERLOCK ALARM - This maintained N/C output opens when both monitored doors are open at the same time.

BYPASS - This maintained N/O output closes when the system is placed into bypass mode by the system bypass input.

TAILGATE ALARM - This maintained N/C output opens when a tailgate violation occurs or the number of persons inside the mantrap exceed the number of valid cards presented.

LOCK OUTPUT - This maintained output activates when the VEND for a door is activated. This form C relay is rated at 10 AMP. This output is field configured for fail-safe or fail secure operation with the MCIO dipswitch.

DISPLAY OUTPUTS - These outputs drive the LED indicators on the displays. Refer to the display reference drawing for details. The external displays indicate “PRESENT CARD”, “ENTRY GRANTED”, and “BUSY” at the mantrap. The internal display indicates “ENTRY GRANTED”, “EXIT GRANTED”, and “PRESENT CARD / REQUEST TO EXIT” inside the mantrap.



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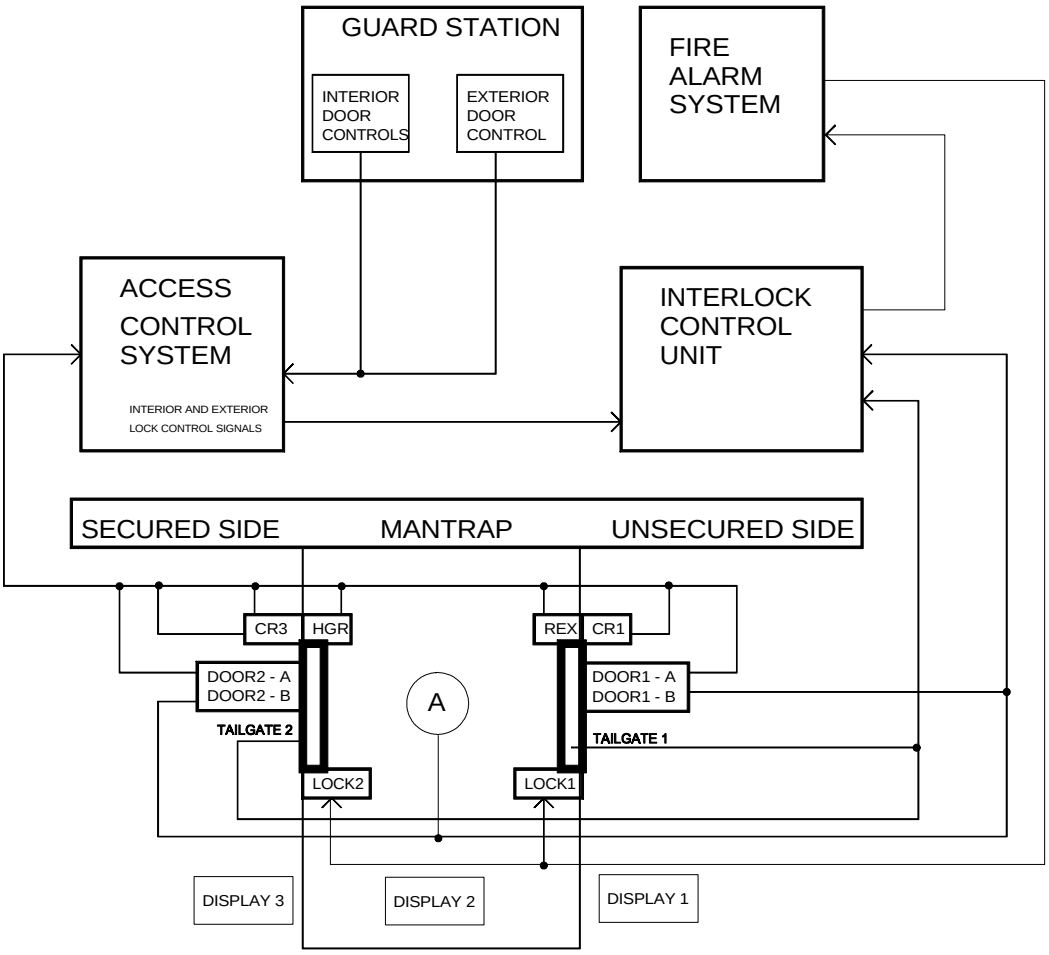
CONTRACTOR/PROJECT

DRAWING TITLE:
MANTRAP WIRING DIAGRAM

FILE NAME / REV	DATE	DRAWN BY
SYSTEM.DWG 4.0	3 2 98	DTK



A: PIR INTERNAL PRESENCE SENSOR - OPTIONAL INPUT

LOCK1 FAIL SAFE - UNSECURED SIDE LOCK
LOCK2 FAIL SAFE - SECURED SIDE LOCK A

DOOR 1-A N/C UNSECURED SIDE DOOR CONTACT TO ACS
DOOR 1-B N/C UNSECURED SIDE DOOR CONTACT TO ICU

DOOR 2-A N/C SECURED SIDE DOOR CONTACT TO ACS
DOOR 2-B N/C SECURED SIDE DOOR CONTACT TO ICU

REX - REQUEST TO EXIT TO ACS

CR1 - UNSECURED SIDE ENTRY CARD READER TO ACS
CR2 - SECURED SIDE EXIT CARD READER TO ACS

HGR - HANDPRINT READER TO ACS

DISPLAY 1,2,&3 SHOW MANTRAP OPERATIONAL STATUS

TAILGATE 1 - UNSECURED SIDE TAILGATE SENSOR TO ICU
TAILGATE 2 - SECURED SIDE EXIT TAILGATE TO ICU

Approved By: _____

Date: _____

- ☐ As Is
- ☐ With Noted Changes
- ☐ Change & Resubmit
- ☐ Other _____

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CONTRACTOR/PROJECT

DRAWING TITLE:
2 DOOR MANTRAP SYSTEM OVERVIEW

FILE NAME / REV	DATE	DRAWN BY
	10-5-2001	DTK