

# Door Interlock Systems Installation & Operation Manual

(DIS-4X-INTAS; DIS-4SV-INTAS; DIS-2X-INTAS)



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Due to continuous technology up-gradation, product specifications and features are subject to change without notice at any time.

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## **WARNING & CAUTION**

- ∅ Do not open system or places it near other heavy electrical equipments. The system is sensitive to Electro Static Discharge (ESD)
- ∅ Do not power on the system without reading this manual. Ensure proper power supply with Earthing.
- ∅ Note down the serial number and model no. of the device for future reference and quote in all support and service requests.
- ∅ Mounting the unit in strong sunlight may affect user visibility of the LCD. Ensure that the LCD and LED's are clearly visible in all lighting conditions.
- ∅ Do not use this unit near water.
- ∅ Never insert objects of any kind into the unit or through the cabinet slots as they may touch voltage points and/or short circuit parts possibly resulting in fire or electric shock. Never spill liquid of any kind on the unit.
- ∅ Power up the controller only when installation is complete.

## **Important instructions**

- 1. Care should be taken identifying the wires. Improper wiring may render permanent damage to the device or personal injury.**
- 2. Check the earthing at the site before installing the controllers. Normally the earthing should be between 1V to 2V only. Earthing on the higher side may damage the controller or its various other components.**
- 3. Max allowable cable distance between 4- Door Master DIS & Slave DIS is up to 1.5 mtr to 2 mtr.**
- 4. The door which is not in use Magnetic Contacts (MC+ and MC-) should be short circuited using wire for proper functioning of DIS Board.**

## **Introduction**

DIS is designed and manufactured state-of-the-art door interlock/access systems for clean rooms, containment suites, laboratories - in fact any critical area that requires door access control with additional security.

DIS has Master-Slave Configuration and can be configured up to maximum 8 doors in loop.

## **Product Feature**

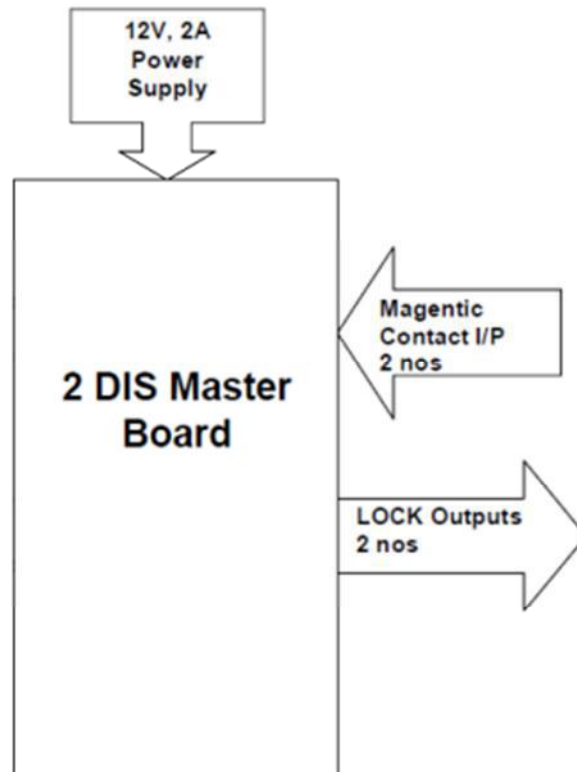
1. Programmable Micro controller based Door Interlock unit
2. One "4 - DIS Master" system can control up to 4 Doors
3. By adding "4-DIS Slave" system can control up to 8 Doors
4. Master & slave configuration. (Max. slaves 1 no.)  
Each Master & slave control 4 Doors in DIS (i.e. totally 8 Doors)
5. One time based Emergency / Fire input is used to open all doors automatically on following events
  - Fire input activated by alarm output of fire panel, connected to only at Master unit
  - Emergency input activated by user, using Emergency button connected to only Master unit

## **Product Specification**

<b>A) Specifications of 4 Door DIS MASTER</b>	
Type	Microcontroller based 4 Door DIS system
Display & Keypad	16 X 2 Alphanumeric display & 12 Keys Keypad using Pro Keypad (Used only in Programming Logic mode)
Outputs	Potential free o/p X4 nos for Lock Contact Rating : 0.5 amp for 230 V AC 1.0 amp for 24 V DC
	Door LOCK LED indication X 4 nos
	Door OPEN LED indication X 4 nos
	DOTL Buzzer X 4nos
Inputs	Total 9 Optically Isolated inputs
	Magnetic contact X 4 nos
	Fire / Emergency I/P X 1nos
Max. Slave Output	One with Parallel Interface ( To make 8 door DIS)
Power supply	12V @ 5A
Dimensions in mm	390 mm (L) X 90 mm (W) X 320 mm (H)
Weight	Approx 3kg

<b>B) Specifications of 4 Door DIS SLAVE</b>	
Type	Digitally control based 4 Door DIS system
Outputs	Potential free o/p X4 nos for Lock Contact Rating 0.5 amp for 230 V AC 1.0 amp for 24 V DC
	Door LOCK LED indication X 4 nos
	Door OPEN LED indication X 4 nos
	DOTL Buzzer X 4nos
Inputs	Total 8 Optically Isolated inputs
	Magnetic contact X 4 nos
Power supply	12V @ 5A
Dimensions in mm	390 mm (L) X 90 mm (W) X 320 mm (H)
Weight	Approx 3kg

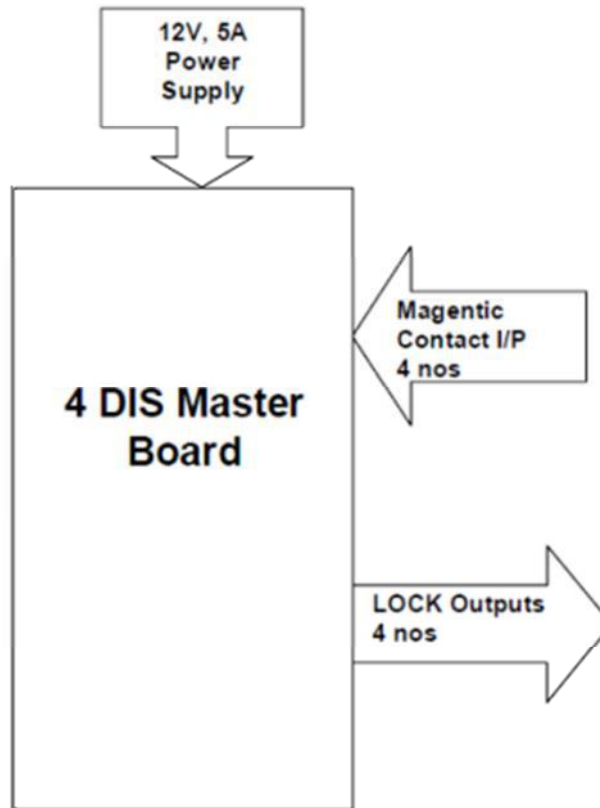
## Block Diagram for 2 Doors DIS



### **System Requirement for 2 Doors**

DIS Board	: 1 No
Power Supply	: 12VDC, @2A
Magnetic contact Switch	: 2 No
Electro-magnetic Lock	: 2 No

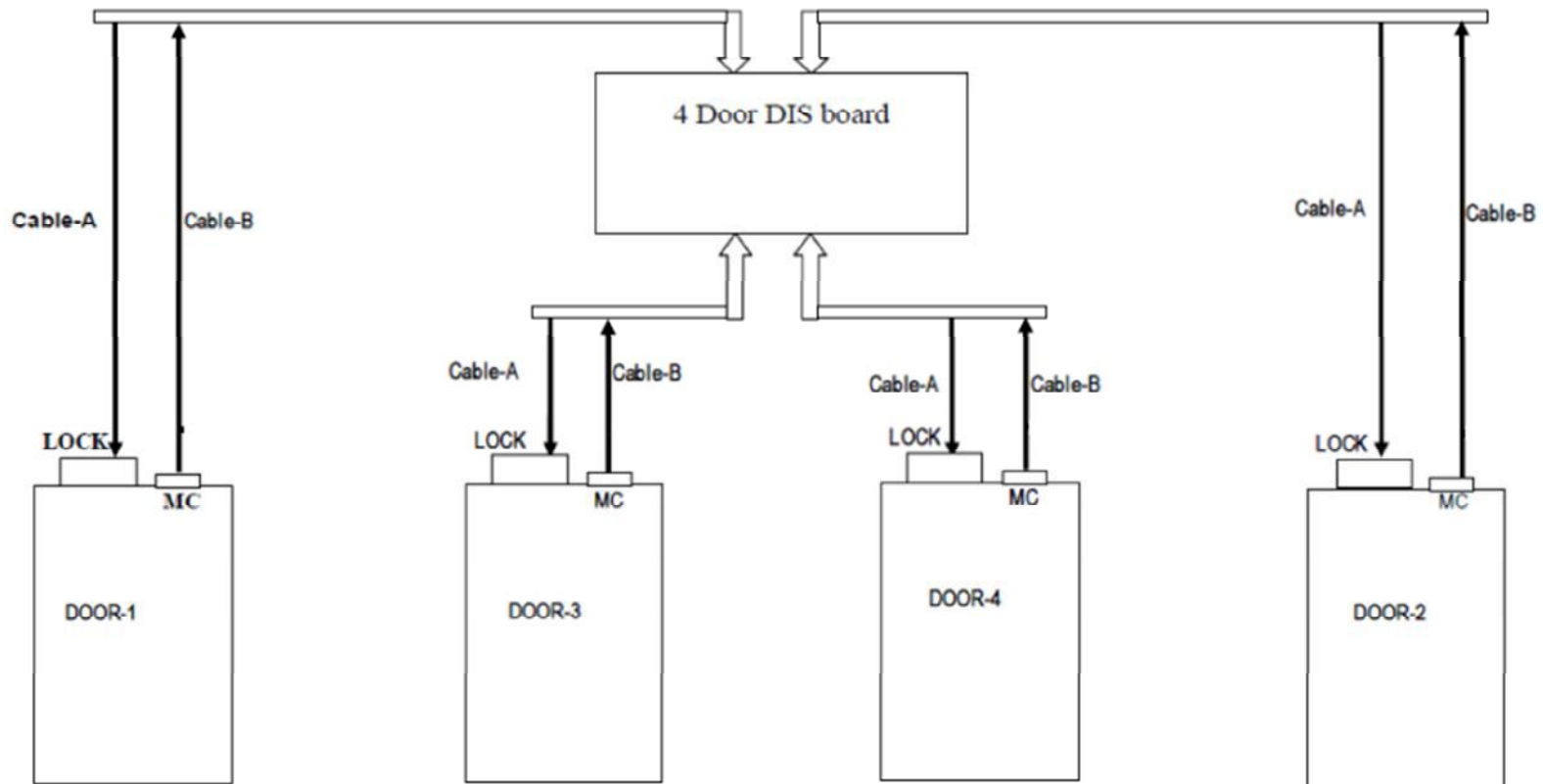
## Block Diagram for 4 Doors DIS



### System Requirement for 4 Doors

DIS Board	: 1 No
Power Supply	: 12VDC, @5A
Magnetic contact Switch	: 4 No
Electro-magnetic Lock	: 4 No

## General Arrangement Diagram of system for 4DIS system



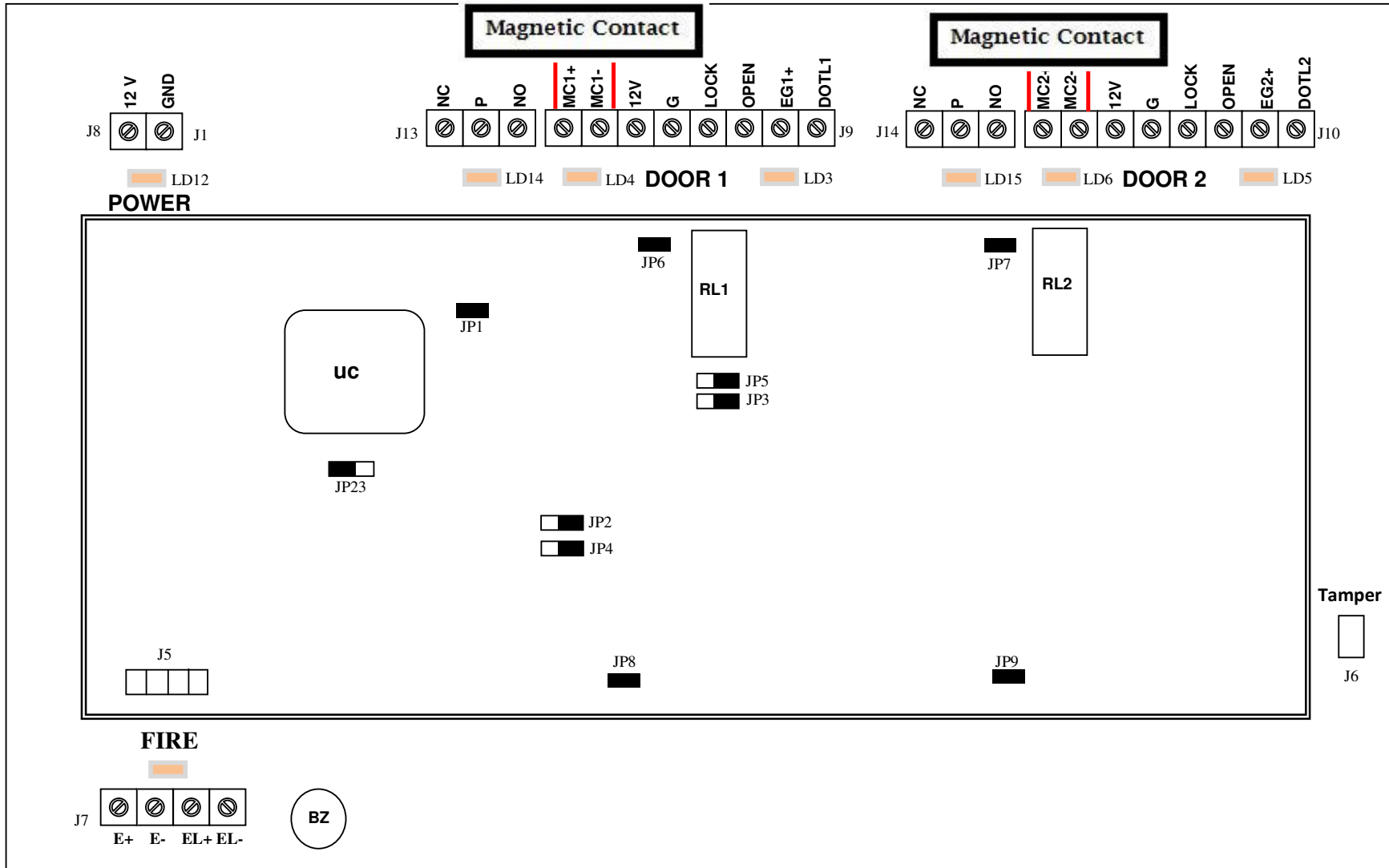
### **Cable Specification**

Cable-A (Lock Cable) => 2 core cable (14/36; 22AWG) max 100 meter

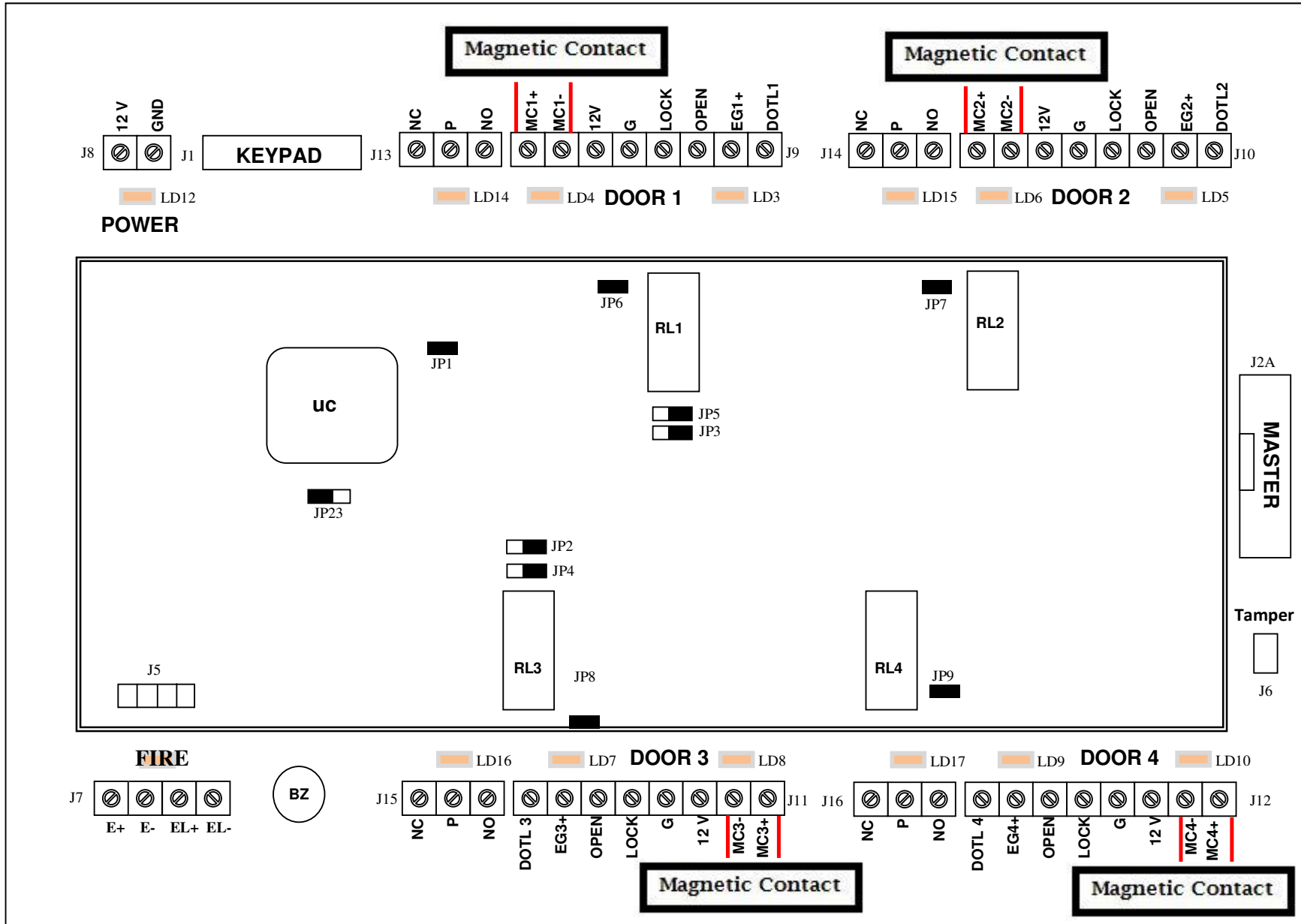
Cable-B (MC Cable) => 2 core cable (14/36; 22AWG) max 100 meter



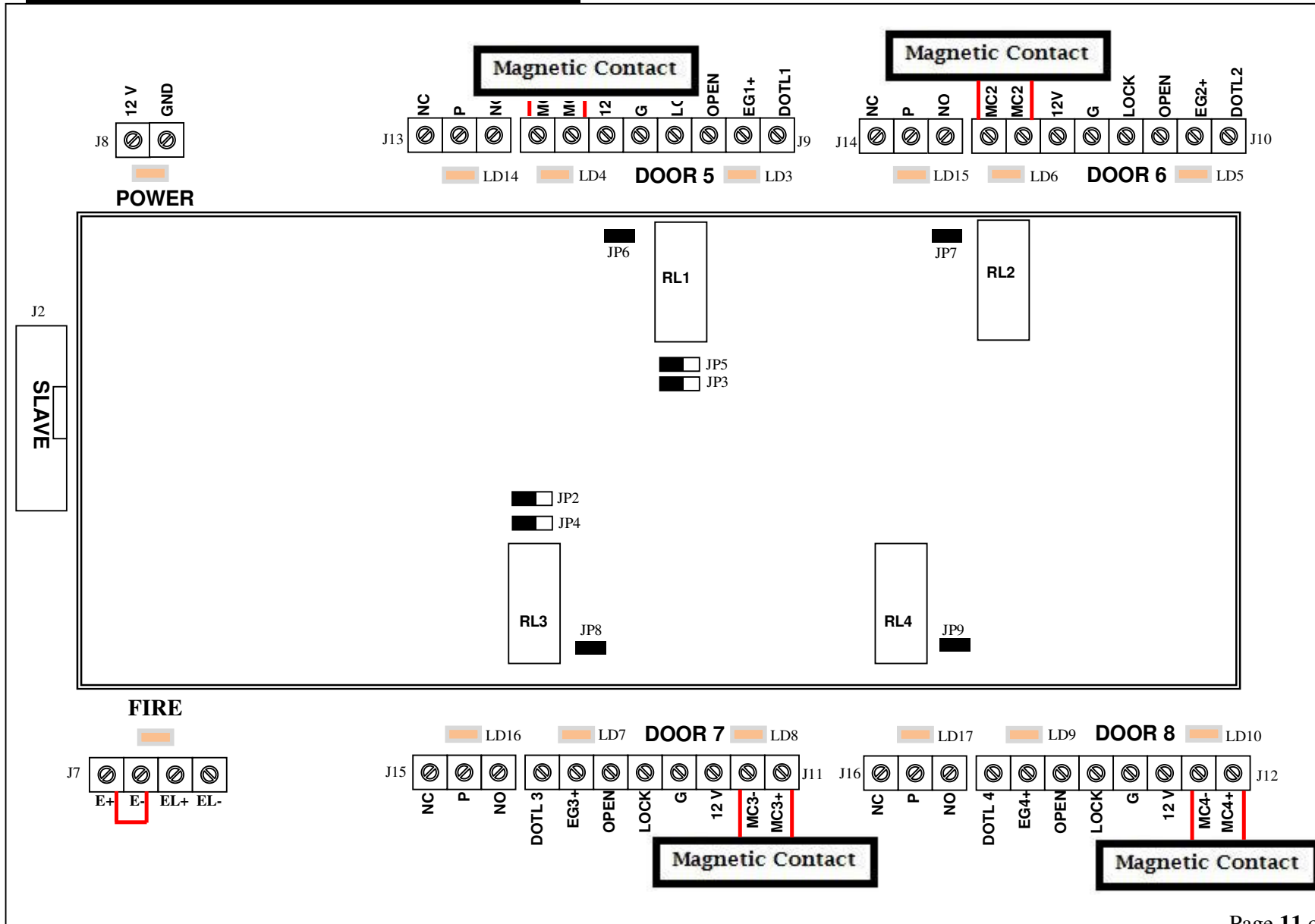
# Master 2-DIS Board Connection Details



# Master 4-DIS Master Board Connection Details



## Slave 4-DIS Slave Board Connection Details



## 4 DIS PCB Connector Details

<b>J1 Connection Details:- (Keypad and Display)</b>	
<b>Pin No.</b>	<b>Description</b>
1 to 16	KEYPAD and DISPLAY

<b>J2 Connection Details:- (Slave)</b>		
<b>Pin No.</b>	<b>Legend</b>	<b>Description</b>
1 to 16	-	FRC cable is connected here which comes from Master board when we have to use it as 8-DIS.(Slave pin) Max distance slave to master 1.5 to 2 meter.

<b>J2A Connection Details:- (Master)</b>		
<b>Pin No.</b>	<b>Legend</b>	<b>Description</b>
1 to 16	-	FRC cable is connected here which other end is connected at Slave board when we have to use it as 8-DIS.(Master pin)

<b>J6 Connection Details:- (Tamper)</b>		
<b>Pin No</b>	<b>Legend</b>	<b>Description</b>
1 to 2	-	TAMPER switch is Connection

<b>J7 Connection Details:- (Fire)</b>		
<b>Pin No.</b>	<b>Legend</b>	<b>Description</b>
	E+	Emergency Switch or Fire Button is Connected or it is Short Circuited using wire for Slave purpose.
	E-	
	EL+	
	EL-	

<b>J8 Connection Details:- (Power Supply)</b>		
<b>Pin No.</b>	<b>Legend</b>	<b>Description</b>
1	VCC	For Power Supply purpose. 12V @ 5A
2	GND	

<b>J9 Connection Details:- (Door 1)</b>		
<b>Pin No.</b>	<b>Legend</b>	<b>Description</b>
1	MC1+	Connect to magnetic contact sensor or in LOCK
2	MC1-	
3	12V	Connect to P of J13
4	GND	Connect to –ve of EML lock.
5	Lock	----
6	Open	----
7	EG1+	----
8	DOTL1	----

<b>J10 Connection Details:- (Door 2)</b>		
<b>Pin No.</b>	<b>Legend</b>	<b>Description</b>
1	MC2+	Connect to magnetic contact sensor or in LOCK
2	MC2-	
3	12V	Connect to P of J14
4	GND	Connect to –ve of EML lock.
5	Lock	----
6	Open	----
7	EG2+	----
8	DOTL2	----

<b>J11 Connection Details:- (Door 3)</b>		
<b>Pin No.</b>	<b>Legend</b>	<b>Description</b>
1	MC3+	Connect to magnetic contact sensor or in LOCK
2	MC3-	
3	12V	Connect to P of J15
4	GND	Connect to –ve of EML lock.
5	Lock	----
6	Open	----
7	EG3+	----
8	DOTL3	----

<b>J12 Connection Details:- (Door 4)</b>		
<b>Pin No.</b>	<b>Legend</b>	<b>Description</b>
1	MC4+	Connect to magnetic contact sensor or in LOCK
2	MC4-	
3	12V	Connect to P of J16
4	GND	Connect to –ve of EML lock.
5	Lock	----
6	Open	----
7	EG4+	----
8	DOTL4	----

<b>J13 Connection Details:- (Door 1)</b>		
<b>Pin No.</b>	<b>Legend</b>	<b>Description</b>
1	NC	Potential free contacts of Relay1.
2	P	
3	NO	

<b>J14 Connection Details:- (Door 2)</b>		
<b>Pin No.</b>	<b>Legend</b>	<b>Description</b>
1	NC	Potential free contacts of Relay2.
2	P	
3	NO	

<b>J15 Connection Details:- (Door 3)</b>		
<b>Pin No.</b>	<b>Legend</b>	<b>Description</b>
1	NO	Potential free contacts of Relay3.
2	P	
3	NC	

<b>J16 Connection Details:- (Door 4)</b>		
<b>Pin No.</b>	<b>Legend</b>	<b>Description</b>
1	NO	Potential free contacts of Relay4.
2	P	
3	NC	

## Note

Magnetic Contacts (MC+ and MC-) should be short circuited using wire when the door is not in use for proper functioning of DIS Board.

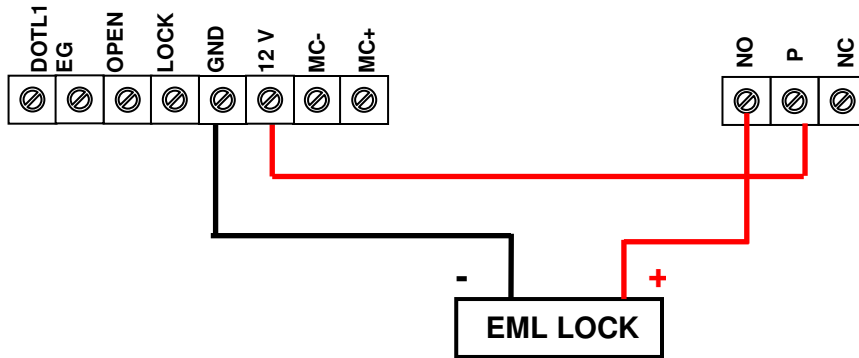
Door 1, Door 2, Door 3 and Door4 will act as Door 5, Door 6, Door7 and Door 8 respectively when it is used as Slave Board.

## 4 DIS PCB LED Details

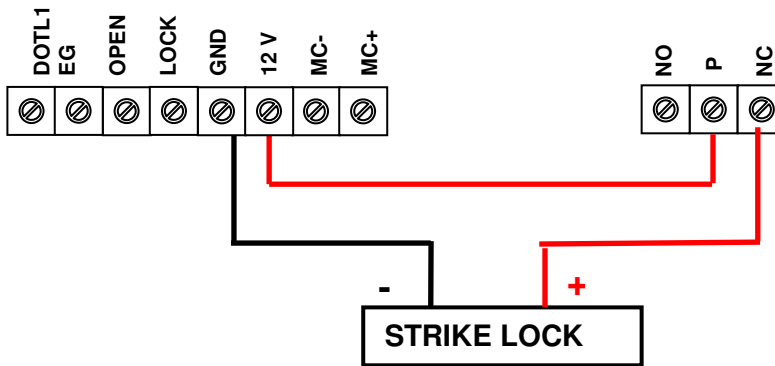
<b>LED'S NUMBER</b>	<b>LABEL</b>	<b>FUNCTION</b>	<b>DESCRIPTION</b>
LD14,LD15, LD16,LD17	LOCK Led's	Door 1, 2, 3, 4 close	Normally off when any other door open then it turns to green
LD4,LD6, LD8,LD10	Magnetic contact	Door 1, 2, 3, 4 Open	Magnetic contact present = Red
LD11	FIRE	FIRE	Normally OFF, When Fire Activated then it turns to Red
LD12	12V	Power Indication	Continuous On

**For trouble shooting you can check this LED's indications on DIS board.**

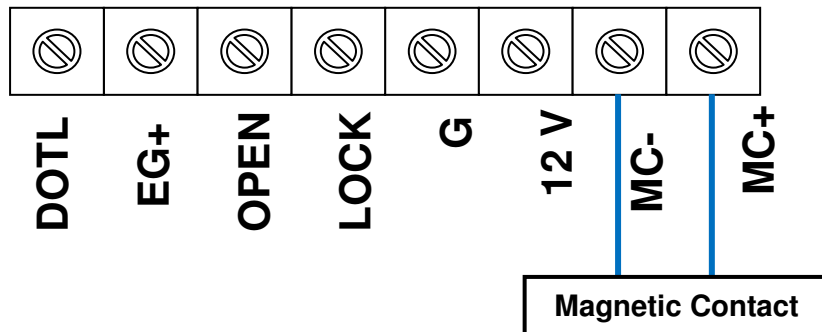
**DOOR CONNECTION FOR EML LOCK**



**DOOR CONNECTION FOR STRIKE LOCK**

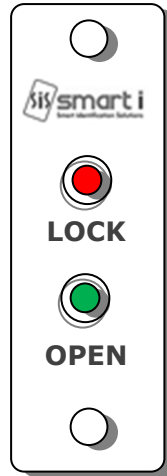


**Door Connection for Magnetic Contact:-**

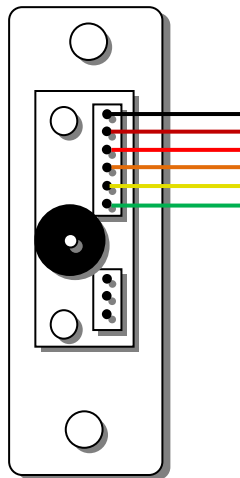


## DIS-FP1-Alembic Connection Details

### Front side of DIS-FP1-Alembic



### Back side of DIS-FP1-Alembic



### 6 Pin Connector Details of DIS-FP1-Alembic

J1 Pin No.	Pin Details	Wire color
1	12V	Green
2	GND	Yellow
3	Door LOCK	Orange
4	Door Open	Red
5	Exit switch	Brown
6	DOTL Buzzer	Black



### **DIS-FP1-Alembic connection with 4 Door DIS Board**

<b>Facia Relimate Plate Connector</b>			<b>To 4 Door DIS Board Door-1 to Door-4</b>		
<i>J1 Pin</i>	<i>Pin Details</i>	<i>Wire color</i>	<i>Facia Pin</i>	<i>Pin Details</i>	<i>Wire</i>
1	12V	Green	1	12V	Green
2	GND	Yellow	2	GND	Yellow
3	Door LOCK	Orange	3	LOCK	Orange
4	Door Open	Red	4	Open	Red
5	Exit switch	Brown	5	EG	Brown
6	DOTL Buzzer	Black	6	DOTL	Black

### **DIS-FP1-Alembic LED Details**

<b>LOCK LED</b>	<b>OPEN LED</b>	<b>DESCRIPTION</b>
OFF	GREEN	Normal Mode or Door is open
RED	RED	Door is locked

### **System Operation**

Door Interlock System is designed for door interlocking requirements. The system consists of one Master & one slave connected parallel to control total 8 Doors. Each Master & slave controls 4 doors.

**Operation:** For normal condition all doors are unlock(i.e. Lock is not energized, but door is closed indicated by Magnetic contact of door).When we open any one door then remaining doors are get locked. For Emergency exits then all doors are get open with emergency alarm.

## Keypad Function Details for 4 DIS system



Sr. No.	Function	How to go?	Note	Default Value
1	<b>Normal Mode</b>	Key- *0		
2	<b>Admin Mode</b>	Key- *2 Enter User ID(11111) Press # key Enter Password(12345) Press # Key	To come out from Admin mode press Key – *2 Key – # (Auto logoff after 60sec)	
3	<b>Select Mode</b>	Key- *3 Press- 1 for Default logic Press- 2 for User logic	We can select any one of the logic, depending upon used of it.	
4	<b>Configure Door</b>	Key- *4 Press- 1 for not allowing other door to be used simultaneously. Press- 0 for allowing other door to be used simultaneously. Press- # to enter	We can configure 4 or 8 door, depending upon the units configuration	<b>Refer Annexure:1</b>
5	<b>Fire Tamper</b>	Key- *5 Press-0 for Disable Fire-Tamper Press-1 for Enable Fire Press-2 for Enable Tamper Press-3 for Enable Fire-Tamper Press -# to enter		<b>1 : Enable fire</b>
6	<b>Help Menu</b>	Key – *8 Press – 1 for INC Press – 3 for DEC Press – # to enter	We can directly go in to any menu by pressing “#” key.	
7	<b>Initialize System</b>	Key – *90 Press – 1 for Yes Press – 3 for No Press– # to enter	It initializes the system. All data will deleted	
8	<b>Emergency Buzzer time</b>	Key – *93 Enter required EMRBuzz time Key – #	Emergency buzzer time can be set 1 to 255 sec.	<b>0 secs</b>
9	<b>Emergency Door open time</b>	Key – *94 Enter required door open time Key – #	Emergency Door open time can be set → 1 to 900 sec.(15 Minutes) If it is set to 0 then in emergency all doors remains open till restart the system or press emergency button again.	<b>0 secs</b>
10	<b>Door open time</b>	Key – *95 Enter door open time Key – #	Door open time can be set → 1 to 98 sec. And DOTL sense time is equal to Door open time + 1 sec.	<b>5 secs</b>
11	<b>Switch press time</b>	Key – *96 Enter egress switch press time Key – #	Egress switch press time can be set → 1 to 98 sec.	<b>5 secs</b>

12	<b>Emergency Door open Setting</b>	Key – *97 Enter required emergency door open configuration Key – #	<b>Emergency door open Setting Value = 0</b> - It will open only that single particular door upon long press of egress. <b>Emergency door open Setting Value = 1</b> - It will open all doors	<b>0 secs</b>
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### Annexure: 1 (\*4 menu)

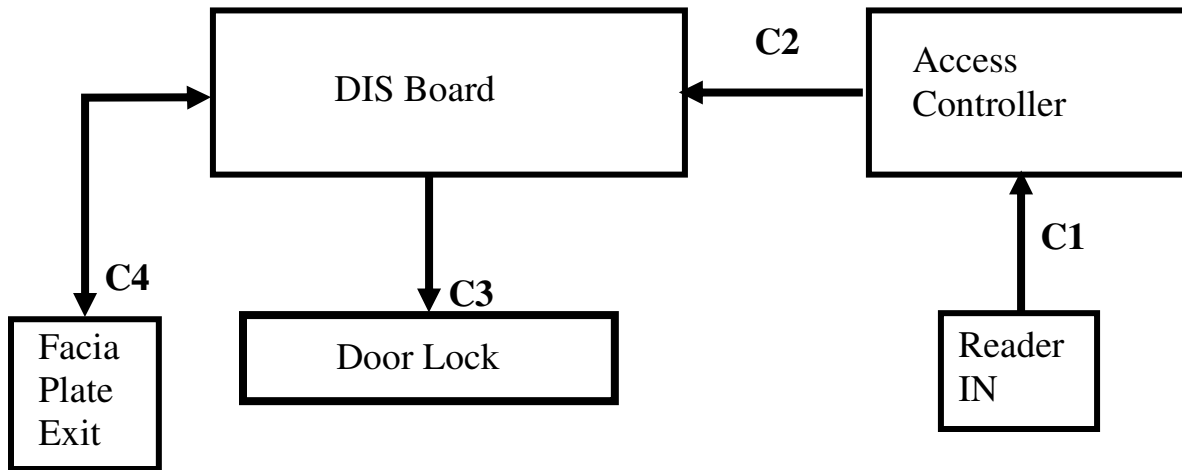
0 = Door Open by Egress (Indication by OPEN LED) on latch.

1 = Door Locked (Indication by LOCK LED) on latch

\* = Door programming

	Door1	Door2	Door3	Door4	Door5	Door6	Door7	Door8
1	*	1	0	1	0	1	0	1
2	1	*	1	0	1	0	1	0
3	0	1	*	1	0	1	0	1
4	1	0	1	*	1	0	1	0
5	0	1	0	1	*	1	0	1
6	1	0	1	0	1	*	1	0
7	0	1	0	1	0	1	*	1
8	1	0	1	0	1	0	1	*

## DIS Integration with Access Controller System



C1: Reader is connected to Access controller (as IN Reader).

**C2: Potential free contact o/p of Lock from Access controller is connected to egress I/P of DIS system.**

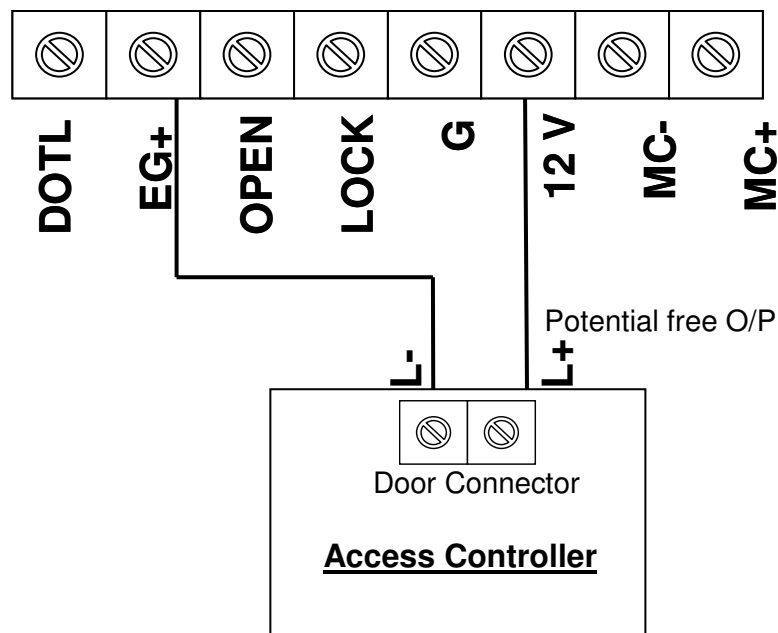
C3: Lock output from DIS system is connected to Door Lock.

C4: Facia plate is connected to DIS system (as Egress switch for Exit).

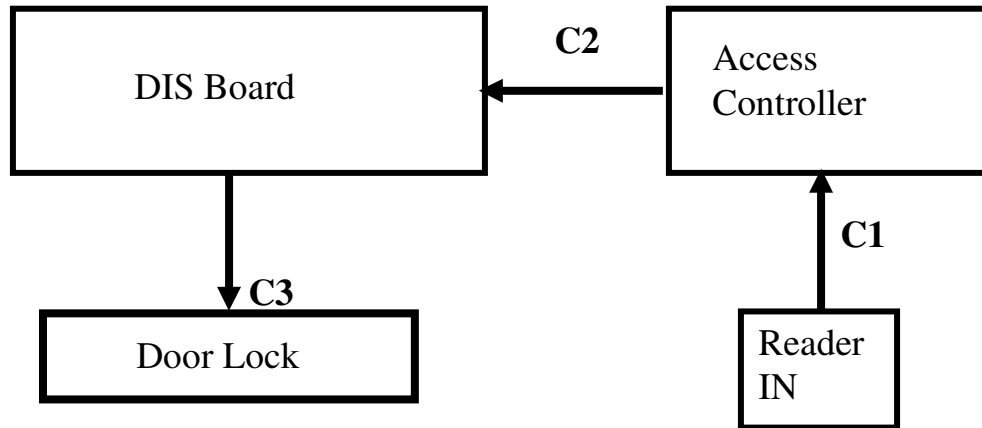
C5: For Potential free contact O/P refer respective Access controller installation Guide.

## **Connection DIS with Old Access Controller:-**

### **DIS Door Connector**



## DIS Integration with Access Controller System



C1: Reader is connected to Access controller (as IN Reader).

C2: Potential free contact o/p of Lock from Access controller is connected to magnetic contact I/P of DIS system.

C3: Lock output from DIS system is connected to Door Lock.

C5: For Potential free contact O/P refer respective Access controller installation Guide.

### **Connection DIS with Access Control:-**

