

# Case Study

Adani Institute of Infrastructure Management

– AIIM (Ahmedabad, Gujarat)

Access Control Management System





- 9 Controllers Positioned
- 96 Access Control Readers Installed
- 1 Site Utilizing Mantra's ACS Application

## System Overview

An access control system is a system which enables an authority to control the access of people to a building or certain areas. The system identifies, authenticates and authorizes entry of a person into the premises thereby giving complete protection and granting flexible control over who is allowed to enter the environment or a facility.

The access control system is one of the most commonly used systems in electronic door control using a card or a magnetic stripe and/or biometric devices which can be accessed by swiping through a reader on the door.

The general operations in access control include presenting credentials to the reader which further sends the credentials to the control panel (a highly reliable processor). The control panel then compares the credentials with an access control list (ACL) to verify/authenticate an individual for granting/denying the presented request. It then sends the transaction log to the database. If the access is denied based on ACL, then the door remains locked. If there is a match between the credential and ACL, then the control panel operates a relay that in turn unlocks the door. Often the reader provides feedback, such as flashing red LED for an access denied and green LED for an access granted.

### **About Client**

Established in 2009, an infrastructure management educational institute - Adani Institute of Infrastructure Management (AIIM) is located within a sprawling 600-acres area of Adani Shantigram, the largest integrated township in Gujarat. AIIM has been at the forefront of infrastructure management education in a scientific and specialized manner, with its synthesis of research, consulting and education. AIIM campus provides learning ambience for intellectual excitement, fruitful interaction and professional growth. The campus comprises of spacious libraries, labs, workshops, indoor sports facilities, tutorial rooms and spacious canteen within the premises. For any educational institute spread over a vast land it is imperative to keep a track of students, teachers and staff entering or leaving the campus premises, restricting unauthorized entry on the campus and safeguard the people within the premises.

## Challenges

One of the greatest challenges for any education establishment is balancing the need to create an open, stimulating and secure environment, while ensuring that people and equipment are protected from the threat of theft, vandalism and physical attack. In order to safeguard the campus of the university, increase the security and satisfy the need to minimize the complexity of managing access, AIIM decided to implement highly secure and reliable access control solution.



## The Solution

To help AIIM in maintaining and overseeing the entry/exit of an individual within the premises of the university and control the access of students, staff and educators to certain areas, Mantra Softech provided them with an ideal access control system – a combination of both hardware and software.

#### 1. Access Control Hardware

Mantra's access control hardware consists of various components which are positioned at different access control points on the campus. An access control point can be a door or other physical barriers where granting access can be electronically controlled. An electronic access control door can contain several elements. At its most basic there is an electronic lock and to automate this we place card reader. At AIIM only entry is controlled with the help of card readers and exit is done by push button switch.

The access control decisions are made by comparing the credential to an access control list. This lookup is done on the control panel. The communication between access control reader and controller is with the RS485 network, which is most common and widely acceptable communication technology for the access control solutions. Following hardware components have been deployed at AIIMS' facility:

#### 1.1 Controller / Control Panel:

The access control permissions are processed and granted by the controller based on the available access list at the controller. Multiple controllers communicate with central access control software deployed at central server computer via RJ45 network. Controller gets the card number from various readers and it compares the same ID from the access list available in controller. The controller only sends an event to relay and based on an access list, an event can be accepted or denied.



#### 1.2 Power Supply:

A centralized power supply unit has been placed to give proper DC power to all the controllers / readers / relays and locks.

#### 1.3 Mifare Reader:

Reader only read card unique serial number and send the information to control panel. It also flashing LED or sound buzzer based on signal received by controller.

#### 1.4 RelayJunction:

This device gets the signal from the controller and according to the signal; it switches the relay to operate the lock. This really has some self intelligence so it can automatically unlock the door during emergencies.

- 1.5 Electric Strike: An electric strike is an access control device used for doors and is intended for door security. It provides remote electrical control to unlock a door. It generally comes with two configurations like fail safe and fail secure. The fail-safe configuration locks the door when the electric current is applied to the strike. With the fail-secure configuration the door is locked until an electric current is applied to unlock the door.
- 1.6 Bolt Lock: The bolt lock is a locking mechanism distinct from a spring bolt lock because a deadbolt cannot be moved to open position except by rotating the lock cylinder. The common bolt uses a spring to hold a bolt in place, allowing retraction by applying force to the bolt itself. A deadbolt can, therefore, make a door more resistant to entry without a valid card.
- 1.7 Magnetic Lock: The magnetic lock is a simple locking device that consists of an electromagnet and armature plate. The electromagnet portion of the lock is attached to the door frame and a mating armature plate is attached to the door.
- 1.8 Double Magnetic Lock: It has the same functionality of the magnetic lock with an additional feature of being mounted on double sized door.

## 2. Access Control Sofware

Mantra's access control software is a centralized access control application, which provides an upload access control list to the control panel. It also maintains access control permission based on user rights as well as authorized and unauthorized access permission. Mantra's access control software can show all the log transactions made at access control readers in the appropriate reporting format. ACS application collects data from various access control readers or doors and sends it to the central database at AIIM. Then it uploads an access control rights list to the controllers.



## **Application Login screen**



### **Application Master Menu**

### **Building Master**

And and a second s	
Provide the second seco	
the local data has been as a second data and the second data and t	
Contraction of the second s	
Faller States	
the fit and the second	
2 m m m	
E-M (manufacture)	
2184	
Care .	
	Address of the local division of the local d

### **Floor Master**



#### **Controller Master**

	-		
and the local division in which the local division in the local di	the second second		
	-		
	and the second second		
	and the first		
		_	
	-	-	-
	1222		
	1222		
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
	1		1
			1 40 1 900 1 9
			No.   1 Mark Schwarz   0 4782   3 4782   4 4782   4 4782   4 4782   4 4782   4 4782   4 4782   4 4782   4 4782   4 4782   4 4782   4 4782   4 4782   4 4782   4 4782

### Door Master

Name and a second secon	(1) (1) here				
	and the second second	Successive Street, or other			
		Justice - Statement			
	in The		(I) r		
			D		
Norm <th< th=""><th></th><th></th><th></th><th></th><th></th></th<>					
NUMBER NUMBER<					
Image: Control Image:					
North <th< th=""><th></th><th></th><th></th><th></th><th></th></th<>					
Norm <th< th=""><th></th><th></th><th></th><th></th><th></th></th<>					
Intelligence Participa					
Bit Mark	the second second	Server.	and the second s		
2013년 1월 12일 2013년 20	1	4/11/1	processing to be		and the second se
International Sectional	ante-this .	10070100	presenting a select	where .	
11 150/06 2000 2000 2000 2000 2000 2000 2000	5111440194F	1984.07	Concepting and	7181.0	
Di Bandhi Di Sandhi Sandhi Sandhi Robel Ro	111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	#1000001	insummer and	10000	
Distriction Data Data Data   Distriction Data Data Data   Recht Recht Data Data Data   Recht Recht Data Data Data Data   Recht Recht Recht Data <	per a la seconda de la seconda d	104440		0.089.65	_
해외하지 않고 2012년 2012	211146-2962	a large of the	descent films and a		
REINAL ATTEL SALATING AND	Indente i sedi	1000.000	1000	0.000	
DALAS Dist Section 2000 400 500	ME 0.064	- 441010	descention descent	344	
Terrinol Brief day Bri Marinol With Annu Bri Malana Brief Marine Bri Malana Brief Marine Brief Malana Brief Marine Brief Malana Brief Marine Brief Marine Brief Marine Brief	BLANK .	- April 10	And The Local	- 2011	
ALL'EN PER ANNU CALLAND PER CA	alari terti	-	10.00	- 881	
Alline All Sectores Al Annes Mit Sectores Mit Allines Mit Sectores Mit	NAME OF TAXABLE	1000	aniantha palate	1000	
antina ania balkata an	California I	400	- Contribution and a	-	
and and an a	Landonia I	and the second second	includes a state	min.	
		-	delegation and delegation	1000	

### Role Master/User Master



### Time Set Master

\varTheta	The Diffusion Acoustics with the
An or have Qual Price An or a An or	<b>d</b> ++
Para la la	Ber Ine 80.00 10.00

### Transaction Menu

P.1 /									
A Common Co.	Income of the local division of the local di	-							
and brandsome		_							
	and shall be a series								
		-							
100	100								
	- Class								
	10.000.0	- Hill	-			College and the			
	101.01984	100.00							
1.0		- 101-	·	-					
11111	1.000	1000		- 10.0	1.7.16.4	The party of		1.1	
	a statistical	100				the local division of the			
110.0		·		1.000		-			
4.01				1.000.000		and party			
11111	4.404.40		w.,	N. Annual		day has			
4. 14	- Independent			1 70.00		Arr. 1948		-	. *
	4.4000-02			1.000	- 10	ALC: YES			
1.00	444.64			0.000 M	141	day free			
- P	And in case of	· •		1.000		and party			
1 T	And Deep-			al borer	140	they bear			
				11 POINTS	10	they live			
11.72	and store and			strategies,	100	days from			
1.2.1	and the second s			1.2 1010816		only Their			
1.1.0.1	A Province of the			pa possession	- 10-	min line			
1.0	10000			ri nomumul		And they			
	111000-000		w.,	No. Monitripe		and here	1.0	1.00	
	******			p) postition -	14	day late			
1.0.0	#1080-91			ALCOHOLD .		my here		1.00	
1.47	paneter.			11 DOCTOR COMMENT	141	and the			
	A DOM NOT	100		al alors and	10	they live	100	1.0	
	and the second second			ALCOURAGE.	140	And Tax			۰.
	- Internet	100		in house and	100	And Dist.			
	-			51 C C C C C C C C C C C C C C C C C C C		1000			

#### Member Master

Birmon					
	and the second se				
	and the second second				
States States 11.					
star man		-			
_					
-					
-	-		-		_
-	-	-	-	14	-
-	-		-	ž.	
-	-	141 14100 14100		1	-
-	-	- 111	-	1	
-	-	1111	-	1 1 1 1 1 1	
		11111	-		
	The second secon	HIII.		1111111	
	an a a a a a a a a a a	ullill.		1	
	State 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	111111.		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
in the	an O D D D D D D D D D D D D D D D D D D	111111.		1 1 1 1 1 1 1 1	
	90 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1111111.		100 100 100 100 100 100 100 100 100 100	

### Edit Enrollment

			_		
And the Party of Spinster,					
Internet States of States					
New York					
	0403				
	-	-	-10-1	-	
Contract of the local division of the local	1.5				1000
Contraction of Street,	1.000	a sumation	a state of the second		1.000
Contraction of Second					
Chimmen & brann	A state	a hand	A 144		1.000
Advanced and a lot of the			CONTRACTOR OF		
Cardinal C. Same	1.000	1 1000	1	1.0.00	a part of
States and Contract					
difference print.					
-boston of becaulus	in the last	a second	1 - 2488 (14)	the second second	the second se
	1	To Bookers	11 +104-10	1. Horsenant	1 females 1
A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER OWNER OWNER OWNER OWNER OWNE OWNER OWNE OWNER OWNE OWNE OWNE OWNE OWNE OWNE OWNE OWNE					
Contraction of Streeters					1.000
and the second s					- / / T T
Contract of Contract			1 1040	1.000	1.000
TABLE & STREET	a straight and	-	A straighter	a second	1.00
Through the second second	a destant	a similar	a summer		
statement would					Contraction of the local distance of the loc
			A	1000	
	_			_	



## Benefits of Electronic and Card-Based Access Control System

#### 1. Difficult to Duplicate

While physical keys can be copied very easily, duplicating electronic keys requires a much higher degree of sophistication. This makes your access system much more secure than it could ever be with physical keys.

#### 2. Never have to change the locks

An electronic user database means that you never have to change locks at your premises or facilities. If a key card is ever lost, it can be removed from the database and a new one can be issued. If a person is no longer associated with the organization, site or campus, then his or her access rights can be deleted within seconds. This greatly lowers your overall exposure to risk.

#### 3. Monitoring Reports

When someone tries to use a key in a lock and fails, you can never tell that the event happened, unless you catch them in the act. Someone can use a stolen key on several occasions, until the time is right or to get into a forbidden company area, thus causing damage more than once.

Since electronic access control systems record each transaction, you can keep an audit trail of all access attempts, and print out reports for specific areas, times and dates.