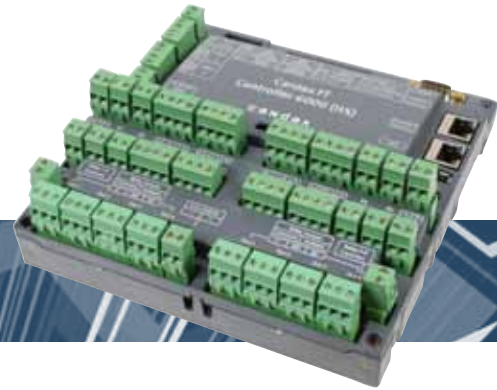


# Cardax FT Controller 6000 (and Reader Modules)

The Cardax FT Controller 6000 is a powerful modular, intelligent field controller for processing, storing and communicating large amounts of data in real time, independently of the Cardax FT Command Centre server.



## Cardax FT Controller 6000

The Cardax FT Controller 6000 is a core component of the Cardax FT platform for integration. It provides distributed intelligence in the field, managing access control and security functions. In addition, it has the ability to physically enforce business rules, be aware of its environment, communicate with other systems nearby and make enriched access decisions based on variables from these systems.

The Cardax FT Controller 6000 is one of the key integrated components for Cardax FT systems.

### Cardax FT Controller 6000 variants and Reader Module hardware:

- Cardax FT Controller 6000
- Cardax FT Controller 6000 High Spec (HS)
- Cardax FT 8R Module
- Cardax FT 4R Module

The Cardax FT Controller 6000 features straightforward system architecture providing powerful and flexible configuration. Relationships can be configured directly between Cardax FT Controllers. For example, inputs on one Controller can be monitored and controlled by another Controller.

The modular design of the Cardax FT Controller 6000 provides a cost-effective approach to engineering a Cardax FT system. Up to ten doors can be controlled with the Controller 6000 dependent on the Reader Module variant, reader technology and site configuration. I/O functionality is provided via the Controller and Reader Modules and expansion options are available.

### The Cardax FT Reader Modules

The Cardax FT 4R Module is capable of supporting up to four Cardax readers. The Cardax FT 8R Module is capable of supporting up to eight Cardax readers.

The Cardax FT Controller 6000 can support up to 16 GBUS devices.

The Cardax FT Controller 6000 architecture supports the Cardax FT Remote Arming Terminal for intruder alarms and the PowerFence™ Trophy FT Fence Controller and Keypad for integrated perimeter security.

### Integrating Cardax Readers

The Cardax FT Controller 6000 supports the following Cardax IV door readers:

- Cardax Prox (Mifare, 125, TIRIS)
- Cardax Prox Plus (Mifare, 125, TIRIS)
- Cardax Prox LR (TIRIS)
- Cardax Swipe (Magstripe)
- Cardax Swipe Plus (Magstripe)

Cardax readers and cards provide superior encryption and communication compared to open industry standard formats.

### **Connecting Third Party Readers**

The Cardax FT 4R Module is capable of supporting two Wiegand format readers directly. The Cardax FT 8R Module is capable of supporting four Wiegand format readers directly.

### **Monitoring Inputs and Controlling Outputs**

The Cardax FT 4R and 8R Modules have on-board inputs and outputs, which can be used for door monitoring and control, or for general I/O functions. The Cardax FT 4R and 8R Modules monitor and report the state of the balanced inputs, and make decisions to switch output relays, if required.

The Cardax FT 4R Module has 12 balanced inputs and 4 relay outputs on-board, which can be expanded with field devices (refer to Input/Output Expansion Options).

The Cardax FT 8R Module has 24 balanced inputs and 8 relay outputs on-board, which can be expanded with field devices (refer to Input/Output Expansion Options).

The four states monitored (using two 4k7 ohm resistors or optional configurable end-of-line resistance) are:

- Open
- Closed
- Short Circuit (Tamper)
- Open Circuit (Tamper).

The inputs on the Cardax FT 4R and 8R Modules can be used to monitor:

- Access controlled doors
- Intruder detection (i.e. Passive, Infra-Red detectors, glass break detectors)
- Monitored doors
- Equipment alarms
- Any other devices that provide a clean switch contact.

The on-board relays may be used for:

- Access controlled doors
- Alarm outputs, e.g. to activate sirens
- Control outputs, e.g. to switch on air conditioning
- Time activated outputs, e.g. to switch on lighting.

### **Input/Output Expansion Options**

The on-board number of inputs and outputs can be expanded with the following input-output expansion options:

- Cardax FT 8-Input Expansion
- Cardax FT I/O Expansion
- Cardax FT High Density I/O Expansion
- Cardax FT GBUS URI (Standard or Wiegand variant)

The Cardax FT 8-Input Expansion supports 8 inputs per board while the Cardax FT I/O Expansion supports 8 inputs and 4 outputs per board. The Cardax High Density I/O Expansion supports 16 inputs and 16 outputs per board.

The Cardax FT GBUS URI supports 8 inputs, 2 outputs and 1 Cardax or 1 Wiegand format reader and the GBUS URI Wiegand variant supports 2 Wiegand format readers only.

### **Distributed Intelligence and Data Storage**

Distributed intelligence is a significant feature of the Cardax FT system architecture. All Cardax FT field devices connecting to Cardax FT Controllers can operate independently of the Cardax FT Command Centre Server. This ensures that if the site experiences network communications problems, full operation of access control and alarms management is maintained.

Access decisions are made independently of the Server, based on the individual's identity, the area and time they are attempting to access, as well as what competencies (e.g. inductions, training, licences, security clearances etc) are required for access to that area and whether or not the person holds these competencies.

The relevant fields of the cardholder database, alarm configuration and security parameters are downloaded to the Controllers allowing for instant access and alarm control decisions.

All events and alarms are date and time stamped before being sent to the Cardax FT Command Centre Server. Each Cardax FT Controller 6000 is capable of buffering events should communications with the Command Centre fail. The Cardax FT Controller 6000 will transfer the buffered events to the Command Centre automatically when communications are re-established.

The database is capable of supporting up to a maximum of 500,000 card records and 80,000 events for access control functions.

#### **Communications**

The communications between the Cardax FT Controller 6000 and GBUS Devices use RS485 Cardax GBUS protocol.

The communications between the Cardax FT Controller 6000 and Cardax readers use a proprietary format (Cardax IV) requiring 4-core cable. Third party readers communicating via the Wiegand format use a 6-core cable connection.

The communications between the Cardax FT Controller 6000 and the Cardax FT Command Centre uses TCP/IP over an Ethernet network. The Cardax FT Controller 6000 provides a standard 10/100 connection point. A 1Gb Ethernet support option is available for connection with Cardax FT Command Centre and other Cardax FT Controllers. A Dual Ethernet port option is available for additional Controller network redundancy.

A USB 2.0 expansion port is available for offline software upgrades.

#### **Peer-to-Peer Communications**

The Cardax FT Controller 6000 can communicate directly with other Cardax FT Controllers. The peer-to-peer communications enable the Controllers to communicate with each other over a LAN/WAN using TCP/IP for the purposes of monitoring, back-up and control.

This significant feature provides extensive flexibility and efficient system configuration. For example, a Cardax FT Dialler resident on a Controller 6000 can be configured to transmit events originating from any Cardax FT Controller to a remote alarm monitoring station.

It is recommended that installers attach a back-up power supply to the Cardax FT Controller 6000 so it can continue to operate for at least 24 hours in the event of a mains supply failure. The back-up power supply can be monitored by connecting relay outputs. These can then be monitored using the inputs on a Cardax FT Controller 6000 with a 4R or 8R Module or a connected field device.

#### **Dial-Up**

The Cardax FT Dialler is an additional device that plugs into the Cardax FT Controller 6000 RS232 Port to support dial-up capability.

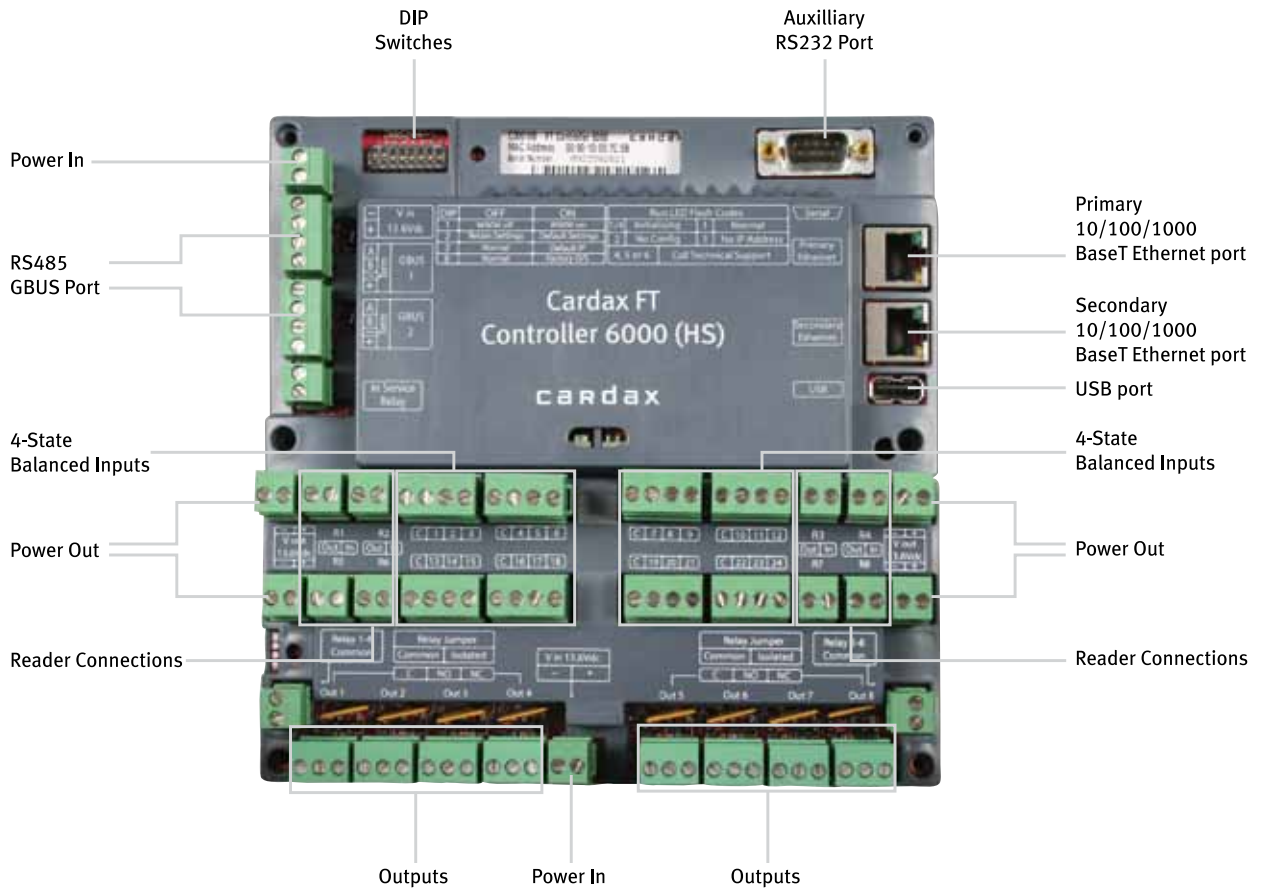
Dial-up enables the Cardax FT Controller 6000 to be located remotely enabling it to transmit information:

- at scheduled times
- when the event buffer is becoming full
- in response to certain events such as alarms for off-site monitoring.

Dial-up can occur via an ISP, reducing communications costs. Likewise, the Cardax FT Command Centre can be programmed to dial a Cardax FT Controller 6000 in response to configuration changes or when an operator initiates a request.

Refer to the Cardax FT Dialler section later in this datasheet.

## Key Features of the Cardax FT Controller 6000 High Spec and 8R Module



### **Software Upgrades**

The Cardax FT Controller 6000 can be enhanced in the future via software upgrades. These software upgrades can be implemented through Cardax FT Command Centre. Cardax FT Controller 6000 software upgrades do not noticeably affect door access.

The ability to download software over the network means enhancements can be easily and quickly installed in the future.

A USB 2.0 full speed port provides the option of securely loading an offline Controller's software via USB memory stick.

### **Data Security**

All data over the network between the Cardax FT Controller 6000s (inter-controller) and the Cardax FT Command Centre server uses 128 bit AES symmetric encryption and RSA-1024 bit authentication.

Cardax FT XtraSec features 2048 bit RSA key length for secure authentication and 256 bit AES symmetric encryption for Controller to Server and inter-controller communications. Refer to the Cardax FT XtraSec System Catalogue.

### **Intruder Alarms**

The Cardax FT Controller 6000 provides sophisticated intruder alarm management, making separate intruder alarm systems unnecessary. Intruder detectors connect directly to the I/O devices supported by the Controller 6000 so alarms can be raised at the Cardax FT Command Centre. Outputs can trigger actions such as switching on lights when an intruder is detected.

Arming (setting) and disarming (unsetting) of alarms can be implemented according to a time schedule, via operator overrides, by authorised cardholders at Cardax readers, by keyswitch control, or by the Cardax FT Remote Arming Terminal.

The Cardax FT Remote Arming Terminal also enables users to monitor alarms in the field. Refer to the Cardax FT Remote Arming Terminal datasheet for more information.

Entry and exit delays can be configured to give the cardholder time to enter or leave the premises. Full event details, including the cardholder's name, are recorded for arm/disarm operations at the Command Centre.

A relay output may be used to indicate the arm / disarm status of a particular alarm zone.

### **Elevator Control**

The Cardax FT Controller 6000 provides elevator access control. Card readers may be installed in elevator cars to provide restricted access to floors. When a Cardax Prox Plus reader is installed, the cardholder can be prompted to enter their PIN before access is granted. Floors may be 'unlocked' (i.e. the elevator floor select button enabled) on a time schedule.

Relay outputs on the Cardax FT High Density Expansion board can be configured to enable the elevator floor select buttons in an elevator car. Inputs on a Cardax FT Reader I/O Interface or Cardax FT I/O Interface can be configured to monitor which floor is selected providing destination reporting to minimise the opportunity of more than one floor being selected.

The flexible design of the Cardax FT Controller 6000 enables it to be configured for almost any elevator control situation.

The configuration is limited only by combinations of the following:

- Up to 75 elevator levels per elevator shaft
- Up to 2 elevator shafts per Cardax FT Controller 6000.

Typically each elevator car requires one card reader and one relay output for each floor select button. If destination reporting is required then one input is required for each floor select button in each elevator car.

High level elevator interfaces are also available.

#### **Cardax FT Controller API**

Events can be sent to and received from third party systems within the Cardax FT Controller 6000 using the Cardax FT Controller Application Programming Interface (API). It is ideal for interfaces to third party systems such as DVR, and duress systems. Refer to the Cardax FT Controller Application Programming Interfaces datasheet.

#### **Clock**

The Cardax FT Controller 6000 contains its own battery backed real-time clock. The clock is synchronised with Cardax FT Command Centre at least once per hour.

#### **Managing Different Time Zones and Daylight Savings**

When the system is configured, each Cardax FT Controller 6000 is assigned an local time zone, relative to Co-ordinated Universal Time (UTC). This includes daylight savings settings.

#### **Power Supply Required**

The Cardax FT Controller 6000 runs on 13.6V DC+-15% allowing a standard battery backed 12V power supply to be used. The system monitors the power supply for power low, power high and power fail.

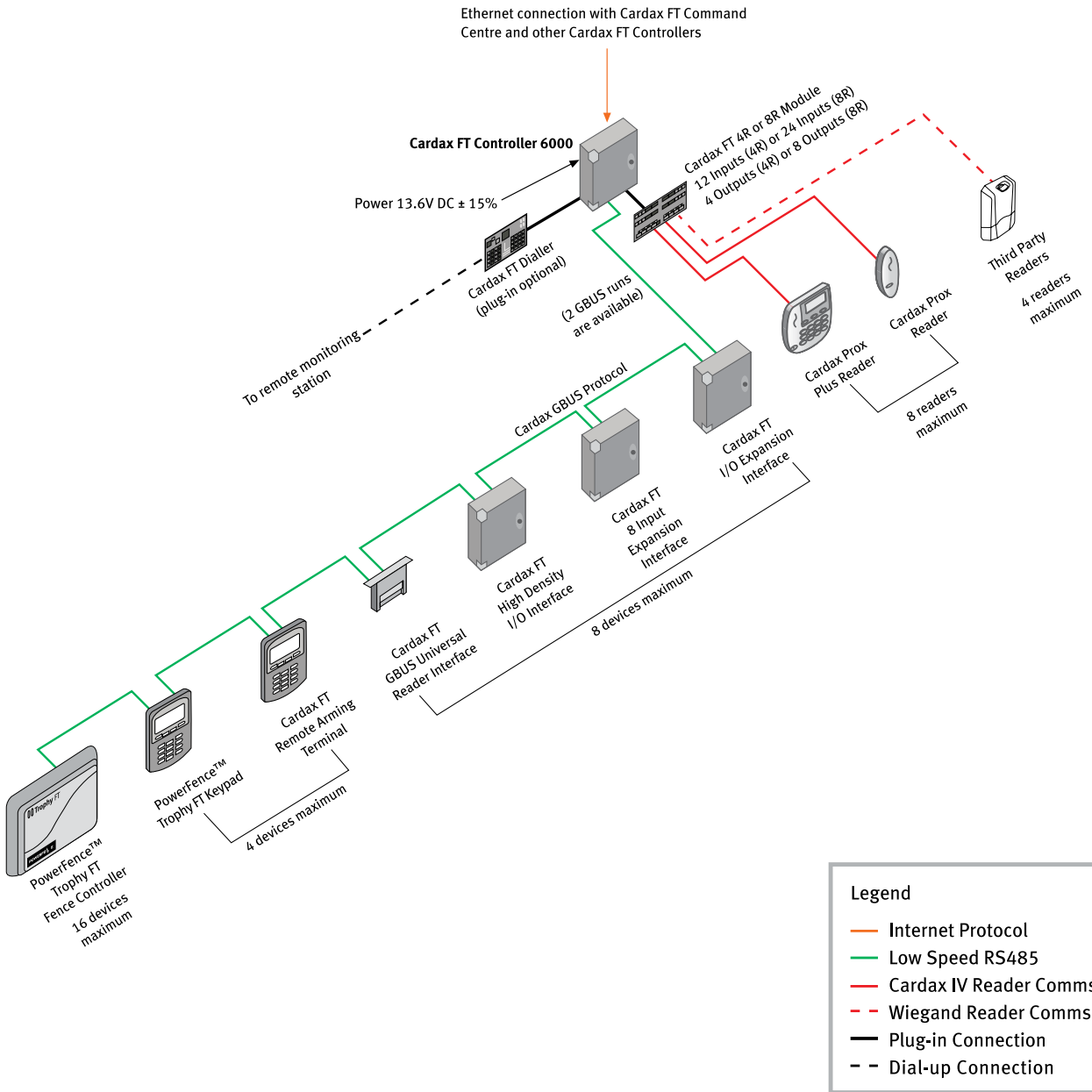
#### **Cardax FT Cabinets**

Two Cardax FT Cabinets are available to accommodate the Cardax FT Controller 6000 and I/O Devices:

- Cardax FT Cabinet
- Cardax FT Dual Cabinet

The Cardax FT Dual Cabinet is available with or without a power supply. Refer to the Cardax FT Cabinets datasheet for further information.

# Connectivity Diagram



The above diagram notes maximum connectivity. System configuration, network capacities, and the volume of system activity affect performance. Please contact Cardax Technical Support for advice.





# Cardax FT Dialler

## Cardax FT Dialler

The Cardax FT Dialler enables remote alarms management in conjunction with either the Cardax FT Command Centre – the head-end of the system, or with an alarm monitoring company.

The Cardax FT Dialler also enables on-demand connection between the Cardax FT Command Centre and remote Cardax FT Controller 6000, for configuration and security management.

The Cardax FT Dialler and Cardax FT Controller 6000 can be configured to dial via both of these methods on the occurrence of an alarm.

## Communications

The Cardax FT Dialler dials out to the Cardax FT Command Centre or the alarm monitoring station over telephone lines. Importantly, the Cardax FT Dialler is able to seize the phone line to transmit alarms, when the line is shared with a normal phone or other device.

The peer-to-peer communications between Cardax FT Controllers enables a Controller fitted with a Cardax FT

Dialler to support off-site alarm monitoring and operate as a back-up dialler for other Cardax FT Controllers on site.

Contact ID Protocol is supported for off-site alarms monitoring. The Cardax FT Dialler facilitates off-site monitoring by transmitting alarms to remote monitoring stations using industry-standard Contact ID format.

Using Contact ID, the Cardax FT Dialler can be configured to:

- Dial on the occurrence of specific alarms or events
- Provide periodic test transmissions (24 hour test and configurable line test)
- Dial on the arming (setting) / disarming (unsetting) of alarm zones.

## Dial-up Connection to Cardax FT Command Centre

The Cardax FT Dialler can be used to facilitate communications between the Cardax FT Command Centre server and Cardax FT Controllers located at remote sites. This dial-up connection can be used for remote site configuration including access control for cardholders and alarm configuration.

The Cardax FT Dialler will dial-up on demand, for example when an alarm occurs or when the event buffer of the Cardax FT Controller reaches a pre-defined threshold.

## Configuration

Remote alarms monitoring using the Contact ID protocol and the dial-up connection to the server are set up in the Cardax FT Command Centre.

They can both be configured to dial on the occurrence of an alarm. In this scenario, dial-up to a remote alarm monitoring station occurs first followed up with dial-up to the server.







## Housing and Power

Each Cardax FT Dialler is mounted on top of its respective Cardax FT Controller, which is housed in the Cardax FT Cabinet. The Cardax FT Dialler is 13.6V DC powered and can share the same power source as that provided for the Cardax FT Controller.

## Cardax FT Dialler



April 2010		
<b>TECHNICAL SPECIFICATIONS</b>	<b>Cardax FT Controller 6000</b>	
<b>Operating System</b>		Windows CE 6
<b>Power Supply</b>	Voltage	13.6 v DC±15%
<b>Current</b>	Controller 6000	220mA
	Controller 6000 with 4R Module (all relays operated)	390mA
	Controller 6000 with 4R Module (without relays operated)	240mA
	Controller 6000 with 8R Module (all relays operated)	530mA
	Controller 6000 with 8R Module (without relays operated)	240mA
Note: the above currents exclude external devices such as readers, alarm sounders or GBUS I/O devices.		
<b>Temperature Range</b>	Cardax FT Controller 6000	-10° to +70° C
	Cardax FT Controller 6000 High Spec (HS)	-10° to +55° C
<b>Humidity</b>		95% Noncondensing
<b>Onboard Inputs / Outputs</b>	4-State balanced inputs	Default using 4k7 ohm termination resistors, configurable
	Relay Outputs	Dry contact relays (c/o contacts)
	Inputs - Cardax FT 4R Module	12
	- Cardax FT 8R Module	24
	Outputs - Cardax FT 4R Module	4
	- Cardax FT 8R Module	8
<b>Relay Specifications</b>	Resistive load	3 A at 24V DC/AC
	Inductive load	1 A at 24V DC/AC
<b>Data Storage per Cardax FT Controller 6000</b>	Max. number of Access Zones	Unlimited
	Max. number of Alarms Zones	256
	Max. number of Access Groups	2,000
	Max. number of Time Schedules	400
	Max. number of cardholders	500,000
	Max. number of events	80,000
	Max. inter-Controller peer to peer connections	60
<b>Device Communications</b>	Between Cardax FT Controller 6000 and GBUS Devices	RS485 at 38.4 Kbits per second
	Cardax GBUS	1200m max
	GBUS Wiring format – data	2 wire (using Cat 5)
	GBUS Wiring format – power	2 gauge selected to suit cable length)
	Cardax readers	4 wire, 200m max
	Wiegand readers	6 wire (See reader manufacturer's specifications for max. cable length)
<b>Network Communications</b>	Network connection - Controller 6000	10/100 BaseT Ethernet Port
	Network connection - Controller 6000 High Spec	10/100/1000 BaseT Ethernet Port
	Network protocol	TCP/IP
		128 bit AES symmetric encryption for Controller to Server and Inter-Controller communications
<b>Dial-Up Communications</b>	Dial up modem	Cardax FT Dialler operating PPP protocol
	Network service	PPP protocol using PSTN (telephone line) connection
	Alarm Monitoring Service	Contact ID protocol using PSTN (telephone line) connection

April 2010		
<b>TECHNICAL SPECIFICATIONS</b>	<b>Cardax FT Controller 6000 Continued</b>	
<b>Number of Reader Ports</b>	Cardax FT 4R Module	
	Cardax reader connections	4
	OR Wiegand reader connections	2
	Cardax FT 8R Module	
	Cardax reader connections	8
	OR Wiegand reader connections	4
<b>Reader Data Format</b>	Cardax readers	Cardax IV format
	Wiegand readers	Wiegand format
<b>Elevator Control</b>	Max. number of shafts per Controller 6000	2
	Max. number of floors per shaft	75
<b>Compliance Standards</b> <b>Cardax FT Controller 6000*</b>	The Cardax FT Controller 6000 complies with C-Tick, CE and FCC approvals.	
		 ACN 002132943
* Compliance with other international standards will be proven as required. Please contact Cardax for the latest list of approvals. All Cardax FT products must be installed in accordance with the Installation Notes to comply with international standards.		
<b>Cardax FT Cabinets</b>	refer to the Cardax FT Cabinet datasheet	
<hr/>		
<b>TECHNICAL SPECIFICATIONS</b>	<b>Cardax FT Dialler</b>	
<b>Dimensions</b>	Cardax FT Dialler	113 x 54mm
<b>Power Supply</b>		13.6V ± 15%, 300mA
<b>Temperature Range (ambient)</b>		-10 to +55°C
<b>EMC Standards</b>		EN 50130-4 EN 55022
<b>Mounting</b>	Cardax FT Dialler plugs vertically into the serial port on the Cardax FT Controller	
<b>Communication</b>		RS232
<b>Compliance Standards</b>	NZ Telepermit, A-Tick C-Tick, CE	
		  ACN 002132943 
System configuration, network capacities, and the volume of system activity affect performance. Please contact Gallagher Security Management Systems for advice.		
<b>Part numbers</b>	Cardax FT Controller 6000	C300100
	Cardax FT Controller 6000 High Spec	C300101
	Cardax FT 4R Module	C300141
	Cardax FT 8R Module	C300181
	Cardax FT Cabinet	C200100
	Cardax FT Dual Cabinet	C200104
	Cardax FT Dual Cabinet (with Power Supply)	C200105
	Cardax FT Dialler	C200620
<hr/>		
System configuration, network capacities, and the volume of system activity affect performance. Please contact Cardax Technical Support for advice.		



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