**PCSC**

Future Security

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Fault Tolerant

Fault tolerance is the ability of a system to maintain proper operation in the event of failures or faults in one or more of its components. If its operating quality decreases at all, the decrease is proportional to the severity of the failure, as compared to a naively designed system, in which even a small failure can lead to total breakdown. Fault tolerance is particularly sought after in high-availability, mission-critical, or even life-critical systems.

–Wikipedia
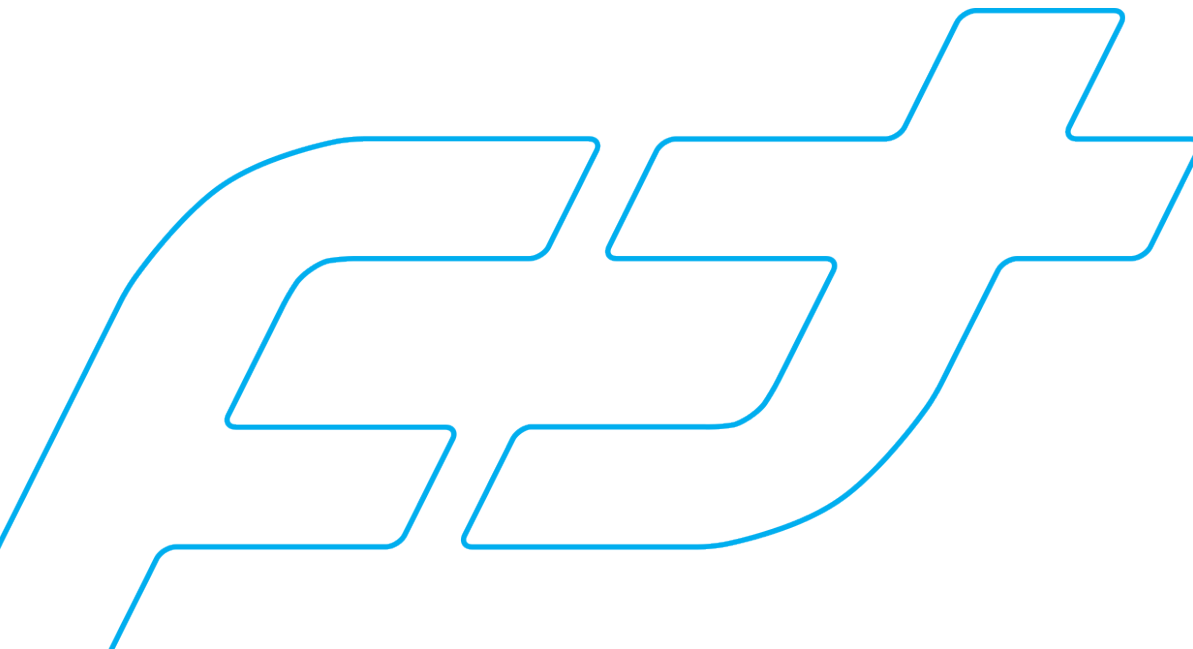
The **Fault Tolerant** Architecture

The reliability of your System, Controller, and Communicaitons are insured with the Fault Tolerant Architecture (FTA), providing controller redundancy with peer-to-peer administration and enhanced multiple communication paths. The proven Hydra management system with its inherent AI processes oversee an automated redundancy network for database, firmware levels and communication management for up to 8 controllers.
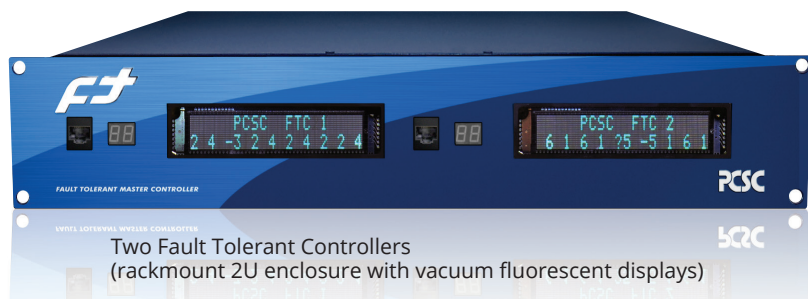
The FTA network provides the confidence of a 99.9% availability system, even during communication or controller failures or during a system maintenance. Communication is the "key" for a reliable system, without it, you will loose important alarm alerts and the ability to control your system.

The Fault Tolerant Access Architecture increases security through system availability and ensuring system reliability, as without it, your security system is compromised.
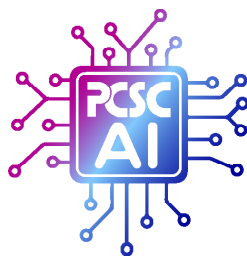
Fault Tolerant Controller Standard Enclosure

Multiple Form Factors

Fault Tolerant Controller

The original patented Fault Tolerant Access Controller (FT), available in a **standard enclosure** or **2U rackmount** configuration. Featuring the highest level of reliability with its automated process of system recovery for access control, alarm monitoring and output control systems. The FT Architecture (FTA) is the next evolution of building security management designed with a Virtual Point Definition network, integrated peer-to-peer and redundant communications. The FT system is designed to automatically recover regardless of communication or controller failure.
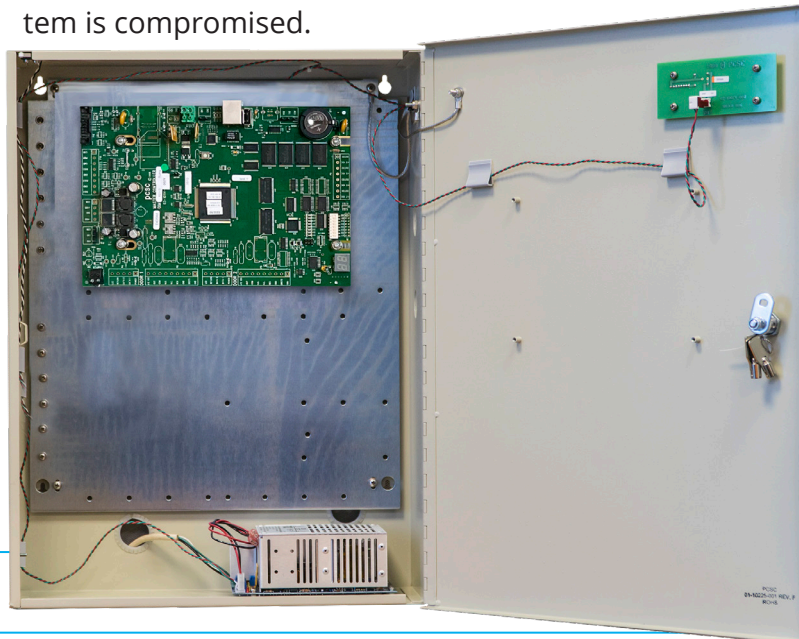
Fault Tolerant Pro Controller

A footprint that fits on the palm of your hand. PCSC has designed a hardware independent controller, the Fault Tolerant Pro (FT Pro) Access Controller defining "Open Architecture" products in the security industry. Building upon the patented Fault Tolerant Architecture, the FT Pro is the high security door access controller of choice for the latest in technical advancements. Designed for easy installation in today's complex world.

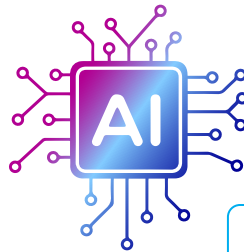Fault Tolerant Pro Controller (small footprint)

Two Fault Tolerant Controllers (rackmount 2U enclosure with vacuum fluorescent displays)

Fault Tolerant
Door Modules

The devices nearer to the edge of any physical security system are vital for secure ingress and egress. Often they are burden with high traffic card reader activity on a daily basis. Gauranteed high security, reliability and failure-free operation is at the heart of each SDM and DDM designed by PCSC.

Single Door Module (SDM)

The PCSC Single Door Module (SDM) controller has been re-engineered to support PCSC's patented Fault Tolerant Architecture. It utilizes host application systems, and provides unparalled features and capabilities with the highest system reliability. The SDM is ideal for all single door applications.

- Patented Fault Tolerant Architecture
- 32 Bit CPU architecture
- 1 Weigand Reader Port
- 1 Door Lock Form C Relay Output
- 1 REX Input
- 1 Door Position Input
- Powered Lock Output

Dual Door Module (DDM)

The DDM controllers are an integrated part of the Fault Tolerant Architecture, providing the highest system reliability in our industry. Each DDM has the ability to automatically route system request to another controller during controller failures or communication failures, ensuring the highest level of security with no degradation. DDMs provide door monitoring and control for up to 2 doors.

- Patented Fault Tolerant Architecture
- 32 Bit CPU architecture
- Open Systems Operating System
- Global Entry / Exit and Input / Output
- User Programmable Control Logic
- Peer to Peer Hydra Protocol
- Automated Firmware Updates
- Onboard Ethernet Communication
- Backup Communication Ports
- Wireless MESH Communications option
- Optional PoE
- Virtual Point Architecture
- Supports all card technologies
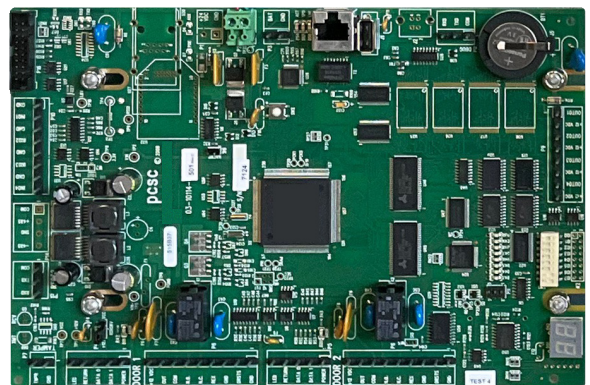
Single Door Module (SDM)

As part of Fault Tolerant Controller system, The newley re-engineered Single Door Module (SDM) has a small form factor, and is the ideal solution for all single door point applications. Bring Fault Tolerant capabilities to nearly any door, quickly and efficiently.

Dual Door Module (DDM)

Support for up to 2 doors, the Dual Door Module (DDM) is a robust Fault Tolerant solution for any set of doors, providing the highest level of security. The DDM is usually housed within a standard cabinet type enclosure, or within a sliding rack mount drawer. The DDM requires a Fault Tolerant Controller as part of a complete system.

Details

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System Standard Features

- Fault Tolerant Process
- Automatic Hot Cutover
- Fail Safe Operations
- Open Systems Platform
- Open Architecture Protocol
- Ethernet / PoE Communication
- Peer to Peer Communications
- Homeland Security Threat Level Control
- AutoAlternateCommunicationRouting-3Types
- Access Action for Disabled Persons
- Supervisory Controlled Entry Authorization
- Onboard Rechargeable Battery Circuit
- Cardholder or Card Group Action
- User Programmable Input Action
- Dynamic Input to Output or Group Output Linking
- Global Anti-Passback
- 3 Levels of Anti-Passback Control
- Automatic Card Activation and Deactivation by Date and Time
- User Configurable Cardholder and History Capacity
- User Selectable Input Monitoring Modes

High Security Features

- "Threat Level" Card Authorization Logic
  Each Cardholder Supports:
  - Two Person Minimum Occupancy Rule
  - Escort Capable and/or Required
- 5 State Alarm Monitoring
- 2 Stage Alarm Control
- Alarm Latching
- AC Power Fail Notification
- DC Low Power Notification
- Supervised Readers
- Supervised Tamper
- Supervised REX
- FIPS 201 and TWIC Compliant

System Hardware Features

- 32-bit or Quad Core 64-bit ARM Processor (FT Pro) and Architecture
- Processor is based on an ARM processor
- Solid State Memory
- Onboard Ethernet Communication
- Optional PoE
- Alternate Communication
- Optional Clique Network Status Display Panel
- FLASH Memory
- 5 State Alarm Monitoring
- Supervised Tamper
- Electronically Protected Power Input

FT Controller Capacities

- FTA "Clique" Capacity: Maximum 8 FTC
  - Maximum 112 DIM
  - Unlimited "Cliques"
  - Maximum 224 Reader/Clique
- Cardholders:
  - 20,000 (standard) – 250,000+
- History Transactions:
  - 20,000 (standard) – 250,000+
- Each Cardholder Supports 16 Access Groups
- Simultaneous Multi Card Format Recognition
- Multiple Site Codes (16)
- Up to 672 Supervised Inputs

Door Interface Module Features

DDM – Dual Door Module

- 32-bit ARM Processor and Architecture
- Onboard Ethernet Communication
- PoE (optional)
- WirelessMeshCommunications (Optional)
- DualEthernetCommunications (Optional)
- FLASH Memory
- 3 Communication Ports
- Seven Segment Status Display
- Host Online Notification
- Tamper
- Separate Tamper Input
- Battery Charger Output
- 5 State Alarm Monitoring
- 2 Weigand Reader Ports
- 2 Door Lock Form C Relay Outputs
- 2 REX Inputs
- 2 Door Position Inputs
- 2 Alarm Shunt Outputs
- 4 Voltage Outputs

SDM – Single Door Module

- 32-bit CPU
- Onboard PoE Communication
- 1 Weigand Reader Port
- 1 Door Lock Form C Relay Output
- 1 REX Input
- 1 Door Position Input
- Powered Lock Output

* Please consult your PCSC representative for configuration availability.

**All details and specifications are subject to verification and may change.

Fault Tolerant Security System
U.S. Patent No. 7,644,299

At a Glance:

- Fault Tolerant Architecture
- OEM Integration Capable with SDK
- Multiple Form Factors
- Intuitive Installation
- Lower Costs

Made in the U.S.A.

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Fault Tolerant Architecture - PoE

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The Fault Tolerant architecture supports a global peer to peer network within each "Clique". "One" Clique is limited to 8 Fault Tolerant Controllers supporting up to 112 door modules or a maximum of 224 readers. The Host System can administer an unlimited amount of FT Cliques.

"Clique" Definition:
Clique is a "sub system" within the "System" that supports up to 8 redundant FT controllers, meaning, automatic failover and 100% security during failure of 7 FT controllers. Within the Clique up to 112 door modules can be supported and depending on the door modules, support up to 224 readers. The Clique supports "global" inputs and outputs as well as cardholder anti-pass-back without Host intervention.

Server Room

Access Control Software Server

Note: FT and DDM must be ordered with the optional PoE option.

Cables from Server to Switch - Ethernet
Cable from Switch to Work Station - Ethernet

Ethernet Switch

Vigitron PoE Switch

Ethernet

2 U Rack mount

Vigitron PoE Switch

Work Station

Dual Redundant FT's/Racks

DDM 3   DDM 1   DDM 2   SDM

Door 7

Door 5   Door 6   Door 3   Door 4

Door 1   Door 2

Reader

Door Lock

REX

Door Status

Cable Distances:
• Switch" to "PoE Switch" maximum of 300 feet
• (PoE) Switch to FT maximum 300 feet
• (PoE) Switch to SDM / DDM maximum 300 feet
• SDM / DDM to Door 500 feet
    -Reader
    -Door Lock
    -Door Status
    -Request to Exit (REX)

Cables:

Server to Switch	CAT5/6
Switch to PoE Switch	CAT5/6
(PoE) Switch to FT	CAT5/6
(PoE) Switch to SDM / DDM	CAT5/6

SDM / DDM to Door
    -Reader: 6 conductor, 22 AWG, twisted shielded
    -Door Lock: 2 conductor, 18 AWG
    -Door Status: 2 conductor, 22 AWG, twisted shielded
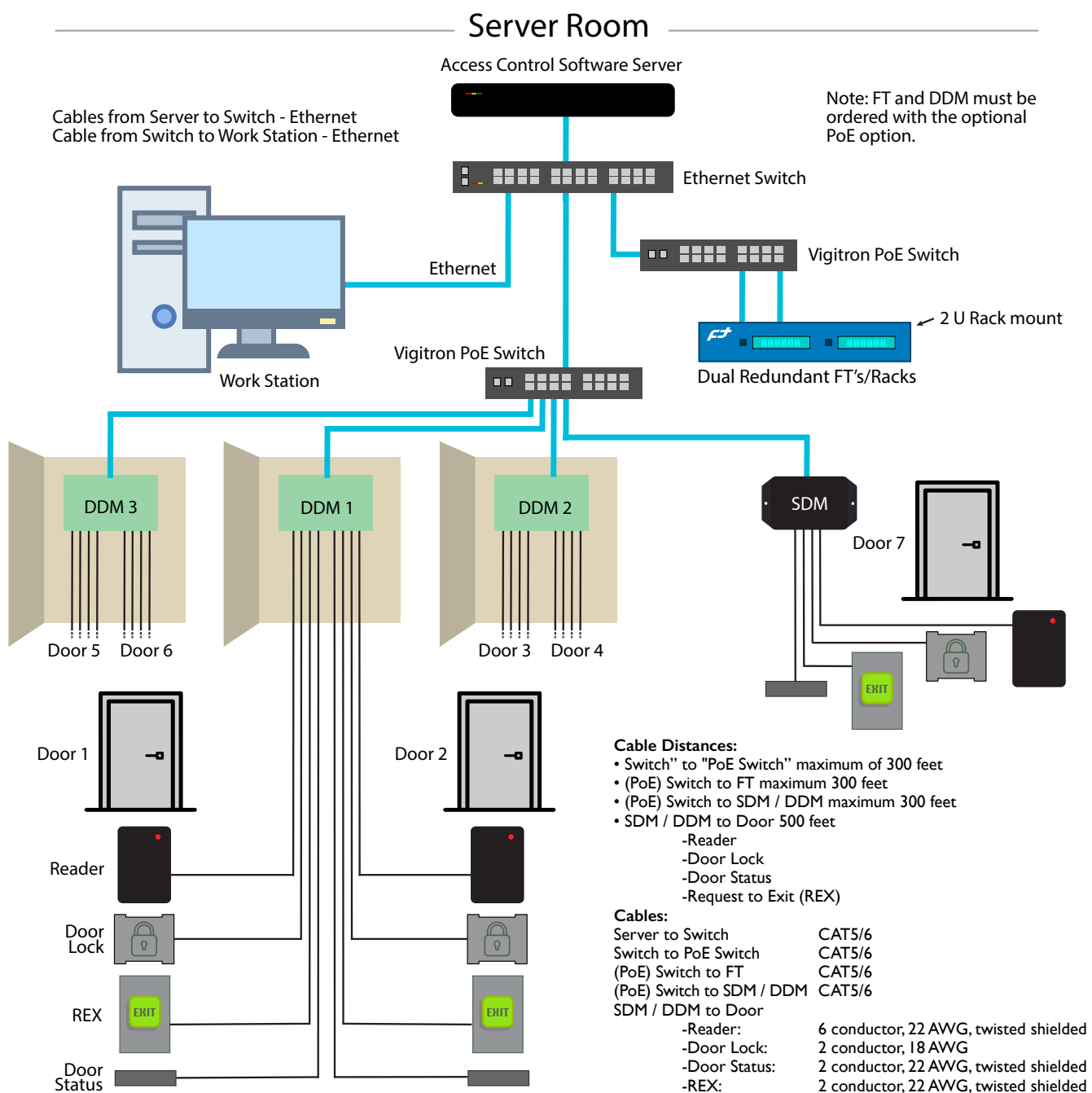   -REX: 2 conductor, 22 AWG, twisted shielded

Fault Tolerant Architecture - Non PoE

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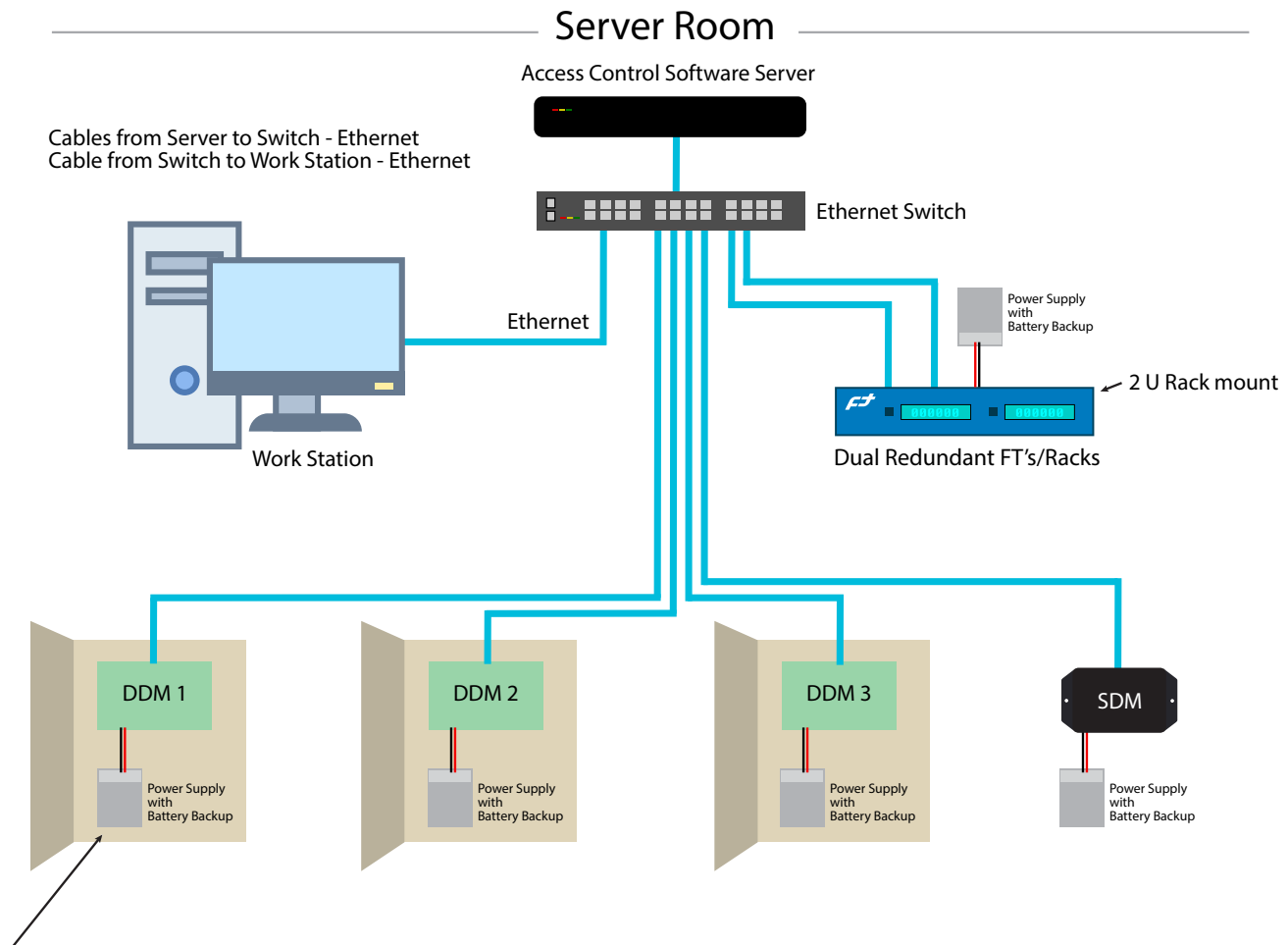
Server Room

Access Control Software Server

Cables from Server to Switch - Ethernet
Cable from Switch to Work Station - Ethernet

Ethernet Switch

Power Supply with Battery Backup

Ethernet

2 U Rack mount

Work Station

Dual Redundant FT's/Racks

DDM 1
Power Supply with Battery Backup

DDM 2
Power Supply with Battery Backup

DDM 3
Power Supply with Battery Backup

SDM
Power Supply with Battery Backup

Note: PCSC Power Supply ("P6") - 6 amp, with battery charger.

Cable Distances:
• SDM / DDM to Door 500 feet
 -Reader
 -Door Lock
 -Door Status
 -Request to Exit (REX)

Cables:
Server to Switch   CAT5/6

SDM / DDM to Door
 -Reader: 6 conductor, 22 AWG, twisted shielded
 -Door Lock: 2 conductor, 18 AWG
 -Door Status: 2 conductor, 22 AWG, twisted shielded
 -REX: 2 conductor, 22 AWG, twisted shielded
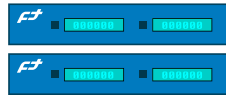
Fault Tolerant Architecture - Multi Campus

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Dual FT Controllers / Rack

Level "5" Redundancy - Headquarters. Bldg A, B, C, D
Level "6" Redundancy - Headquarters. Bldg A, B, C, D
Level "7" Redundancy - Headquarters. Bldg A, B, C, D
Level "8" Redundancy - Headquarters. Bldg A, B, C, D

Remote Secured
Data Site for
additional Redundancy
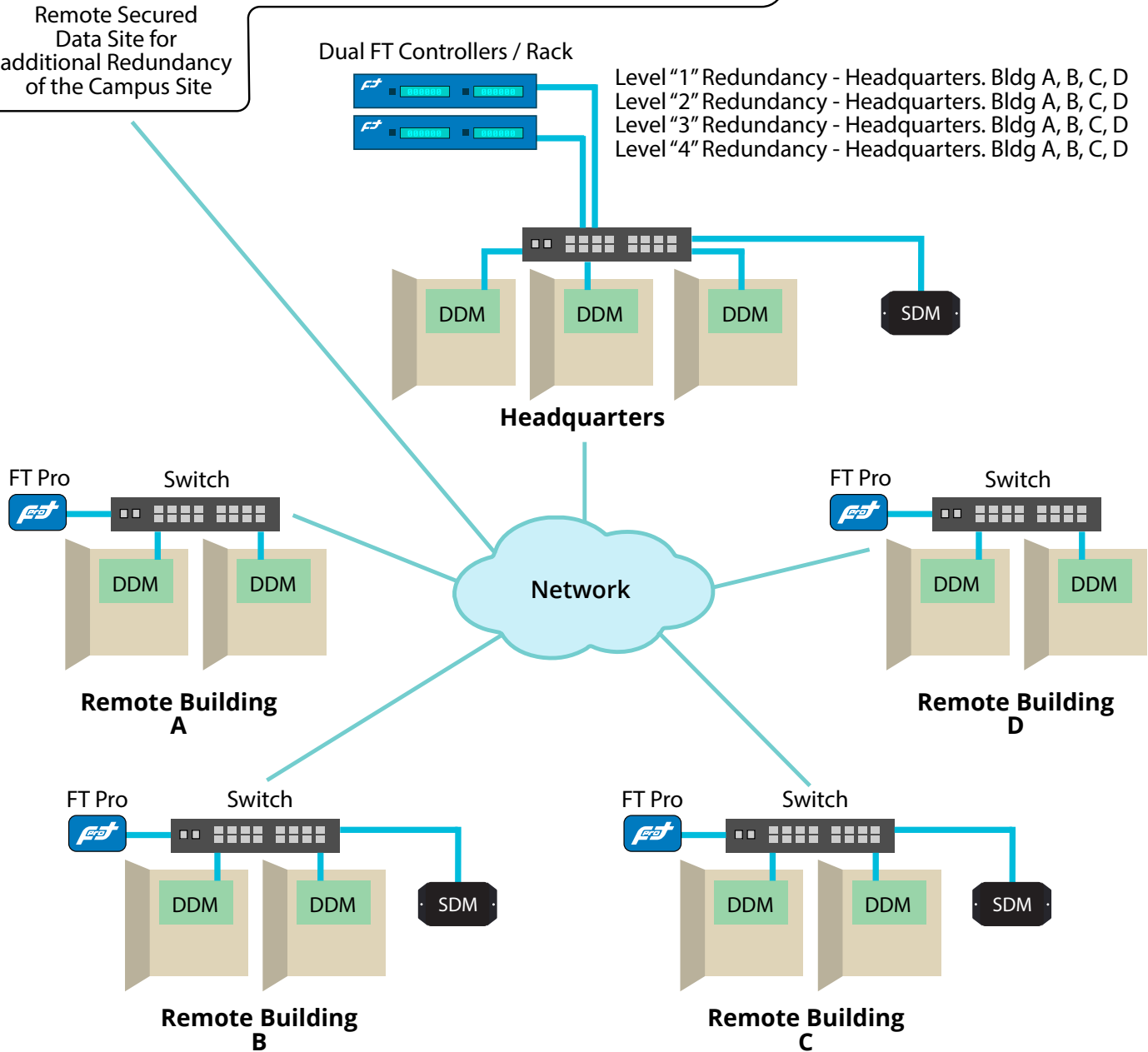of the Campus Site

Dual FT Controllers / Rack

Level "1" Redundancy - Headquarters. Bldg A, B, C, D
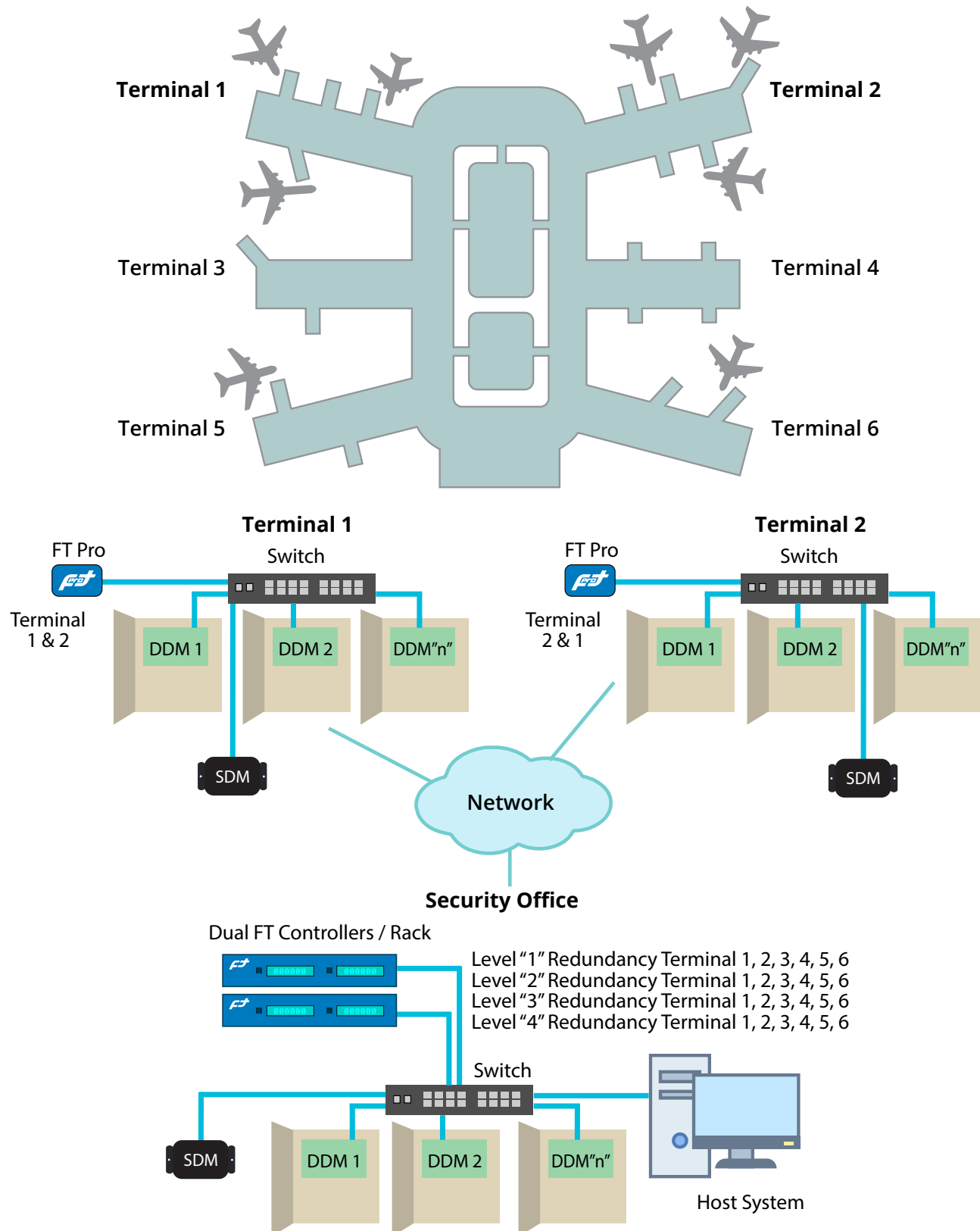Level "2" Redundancy - Headquarters. Bldg A, B, C, D
Level "3" Redundancy - Headquarters. Bldg A, B, C, D
Level "4" Redundancy - Headquarters. Bldg A, B, C, D

DDM DDM DDM SDM

Headquarters

FT Pro Switch

DDM DDM

**Remote Building
A**

FT Pro Switch

DDM DDM

**Remote Building
D**

Network

FT Pro Switch

DDM DDM SDM

**Remote Building
B**

FT Pro Switch

DDM DDM SDM

**Remote Building
C**

Fault Tolerant Architecture - Airports

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Terminal 1
Terminal 2
Terminal 3
Terminal 4
Terminal 5
Terminal 6

Terminal 1

FT Pro

Switch

Terminal 1 & 2

DDM 1
DDM 2
DDM"n"

SDM

Terminal 2

FT Pro

Switch

Terminal 2 & 1

DDM 1
DDM 2
DDM"n"

SDM

Network

Security Office

Dual FT Controllers / Rack

Level "1" Redundancy Terminal 1, 2, 3, 4, 5, 6
Level "2" Redundancy Terminal 1, 2, 3, 4, 5, 6
Level "3" Redundancy Terminal 1, 2, 3, 4, 5, 6
Level "4" Redundancy Terminal 1, 2, 3, 4, 5, 6

Switch

SDM

DDM 1
DDM 2
DDM"n"

Host System

Specifications

Description	Details
Power:	Maximum 1.0 Amps @ 12 VDC
Recommended Power Supply:	P6 Universal Supply
Communications:	Ethernet, PoE
Relay Rating:	Form C 2.0 Amps @24 VDC
Environmental:	32°-115° F (0°- 46° C)
Humidity:	0 - 90% Non-Condensing
Enclosure / Dimensions:	16 AWG CRS enclosure with Tamper, Lock, and Key
Medium:	18"h x 11.5"w x 6"d (45.7 cm x 29.2 cm x 15.2cm)
Large:	21.6"h x 16.1"w x 5.7"d (55.4 cm x 40.9 cm x 14.5 cm)
Rackmount:	2U - 19" Rack Mount Housing with Vacuum Fluorescent Display
Weight:	(Medium) 25 lbs. (17.2 Kg), (Large) 35 lbs. (24.2 Kg), (Rackmount 2U) 15 lbs. (6.8 Kg)

Cabling Requirements

Controller-to-Door:	Reader: 6 Conductors, Maximum 500 ft. (152 m) or 2,000 ft. (609 m), 22 AWG, stranded, twisted
Door Strike:	2 Conductors Maximum 2,000 ft. (609 m), 18 AWG, stranded, twisted
Door Status:	2 Conductors Maximum 2,000 ft. (609 m), twisted shielded
REX:	2 Conductors Maximum 2,000 ft. (609 m), 22 AWG, stranded, twisted
Controller-to-Input-Point:	2 Conductors Maximum 2,000 ft. (609 m), twisted shielded