
1 Introduction

The *Squadron® Access Control Installation Guide* provides information about Squadron controllers. Information regarding Squadron readers is available in the following reader installation guides:

- *A2005 Reader Installation Guide for Squadron® Access Control* (TP-830221-001)
- *CBORD® A1005 Magstripe Reader Installation Guide for Squadron® Access Control* (TP-830214-001)
- *HID® bioCLASS Reader Installation Guide for Squadron® Access Control* (TP-830293-001)
- *HID® CEPAS-Compliant iCLASS® Reader Installation Guide for Squadron® Access Control* (TP-830298-001)
- *HID® Dorado Magstripe Reader Installation Guide for Squadron® Access Control* (TP-830213-001)
- *HID® iCLASS® and multiCLASS® Readers Installation Guide for Squadron® Access Control* (TP-830210-001)
- *HID® Proximity Readers Installation Guide for Squadron® Access Control* (TP-830211-001)
- *HID® SmartID Reader Installation Guide for Squadron® Access Control* (TP-830282-001)
- *HPS Combination Card Readers Installation Guide for Squadron® Access Control* (TP-830212-001)
- *IR® Biometric HandKey® II Reader Installation Guide for Squadron® Access Control* (TP-830215-001)
- *MR-5, MR-20, BR-20 Readers Installation Guide for Squadron® Access Control* (TP-830208-001)
- *RS485 VIP Reader Installation Guide for Squadron® Access Control* (TP-830233-001)
- *SARGENT® iCLASS® Harmony Locks Installation Guide for Squadron® Access Control* (TP-830342-001)
- *Schlage® AD-300 Locks Installation Guide for Squadron® Access Control* (TP-830295-001)
- *Schlage® AD-400 Locks Installation Guide for Squadron® Access Control* (TP-830301-001)
- *Schlage® Multi-Technology Reader Installation Guide for Squadron® Access Control* (TP-830427-001)
- *VIP Locks Installation Guide for Squadron® Access Control* (TP-830291-001)

- In addition, you should have the following tools and materials:
 - Wire ties
 - 3/32" tubing (used with alarm supervision resistors, if needed)
 - Conduit fittings and supplies
 - Wire nuts or crimp splice terminals
 - Appropriate fasteners to mount enclosures
 - Volt-Ohm Meter
 - Hand tools, including a 3/32 blade screwdriver

1.7 Squadron Components

Squadron kits are not available due to the many configuration options that are supported. You must order the individual Squadron components, power supplies and cables for your specific configuration. Work with your CBORD Sales Representative to ensure that the correct components are ordered for your institution. CS Gold uses the components listed in Table 1-2.

Table 1-2: Squadron Components

Part Number	Component	Description
ACS6730155	2-Door Controller V2000 EVO	The V2000 EVO supports the additional features of the V1000 EVO—improved dynamic DHCP that can be used with hosted access.
3ACSGR6730042000	Master Network Controller (V1000R Series)	The Master Network Controller (V1000R Series) has support for one of the following: <ul style="list-style-type: none"> • Wireless RS485 Panel Interface Module (PIM) • IR Biometric HandKey II Reader • A2005 Reader • Squadron 1-Door Connector (C50) The C50 communicates to the V1000R and V1000RX controllers through a RS485 Hub. The Wireless RS485 PIM, the HandKey II reader, and the A2005 reader attach to the V1000R Series and V1000 EVO controllers using two RS485 daisy chain busses.
ACS6730156	V1000 EVO	The V1000 EVO controller supports improved dynamic DHCP that can be used with hosted access. It also supports the following: <ul style="list-style-type: none"> • AD-300 (Wired): The AD-300 attaches to the V1000 EVO via a Hub using two RS485 chain busses. • AD-400 (Wireless): The AD-PIM400 attaches to the V1000 EVO using two RS485 daisy chain busses.

Part Number	Component	Description
3ACSGR6730029000	2-Door Connector (V100)	<p>The V100 communicates with the V1000R Series or V1000 EVO controller using RS485. The 2-Door Connector (V100) controls and accepts messages from two door locations using Clock and Data or Wiegand. Includes the cover and base. The V100 supports addresses 0–15.</p> <p>The V100 can also connect to a CBORD 8 Port RS485 Hub, which then connects back to the V1000R Series or V1000 EVO controller.</p>
3ACSGR6730064000	Squadron 1-Door Connector (C50)	<p>Communicates with the V1000R Series or V1000 EVO controller through an RS485 Hub. Each RS485 Hub supports a maximum of 8 C50s, and up to 4 RS485 Hubs can be attached to a V1000R Series or V1000 EVO controller. Supports one Squadron card reader. Supports REX and Door Monitor inputs plus one additional input and dual relay outputs. Supports 32 addresses (96-127).</p>
3ACSGR6730030000	Input Monitor Interface (V200)	<p>Communicates with the V1000R Series or V1000 EVO controller using RS485. Supports additional input monitors. Doors can be monitored and controlled without using a card reader through the use of virtual doors. You can have a maximum of 8 or 12 virtual doors depending on how the V200 and V300 are paired. The V200 has 16 main inputs which can be configured for supervised or unsupervised operation. Includes the cover and base. Supports addresses 0-15 only.</p>
3ACSGR6730031000	Output Control Interface (V300)	<p>The V300 communicates with the V1000R Series or V1000 EVO controller using RS485. Additional hardware or external devices can be controlled using a relay contact. Doors can be monitored without using a card reader through the use of virtual doors. You can have a maximum of 8 or 12 virtual doors, depending on how the V200 and V300 are paired. The V300 has 12 main SPDT relay outputs. Includes the cover and base. The V300 supports addresses 0–15.</p>
3ACSGR6726030000	Squadron E400 1-Door Controller	<p>Uses TCP/IP communications to CS Gold using an integrated 10/100 BaseT Ethernet interface. Power is optionally provided by Power over Ethernet (PoE). Internal 8 MB flash memory. Supports one external Wiegand or Clock and Data card reader. REX and Door Monitor inputs plus three additional inputs (Tamper, AC Fail, and Battery Fail). Dual relay outputs.</p>

Part Number	Component	Description
ACS6730169	Squadron E400 EVO 1-Door Controller	Connects to a remote server through an Ethernet connection and manages door peripherals over an Hi-O bus. Controlling downstream door peripherals, the E400 EVO is a fully integrated single-door controller that offers discrete I/O and Wiegand/Clock-and-Data interfaces to external readers. The E400 EVO receives inputs from the Door Position Switch and REX Switch to drive the Magnetic Lock output.
3ACSGR6726029000	Squadron ER40 Integrated 1-Door Controller	Uses TCP/IP communications to CS Gold using an integrated 10/100 BaseT Ethernet interface. Power is optionally provided by PoE. Internal 8 MB flash memory. The iCLASS R40 reader is built into the controller. REX and Door Monitor inputs plus three additional inputs (Tamper, AC Fail, and Battery Fail). Dual relay outputs.
3ACSGR6726031000	Squadron ERP40 Integrated 1-Door Controller	Uses TCP/IP communications to CS Gold using an integrated 10/100 BaseT Ethernet interface. Power is optionally provided by PoE. Internal 8 MB flash memory. The RP40 multiCLASS reader is built into the controller. REX and Door Monitor inputs plus three additional inputs (Tamper, AC Fail, and Battery Fail). Dual relay outputs.
3ACSGR6730043000	Squadron Single Board Enclosure (NEMA standard)	Squadron board must be mounted in a location that is secure from unauthorized access (refer to section 6.1).
3ACSGR6730025001	Squadron 6 Board Enclosure (NEMA standard)	Squadron boards reside in the appropriate enclosure. Refer to the <i>Squadron® 6 Board Enclosure Installation Instructions</i> (TP-830250-001) for information on installing the Squadron 6 Board Enclosure.
3ACSGR6730066001	Squadron 8 Board Enclosure (NEMA standard)	Squadron boards reside in the appropriate enclosure. Refer to the <i>Squadron® 8 Board Enclosure Installation Instructions</i> (TP-830171-001) for information on installing the Squadron 8 Board Enclosure.
3ACSGR6730046000	Squadron 12 Board Enclosure (NEMA standard)	Squadron boards reside in the appropriate enclosure. Refer to the <i>Squadron® 12 Board Enclosure Installation Instructions</i> (TP-830041-001) for information on installing the Squadron 12 Board Enclosure.

Appendix E Products and Accessories

Squadron products and accessories available through CBORD are listed in the following tables:

Table E-1: Squadron Boards

Part Number	Component	Description
3ACSGR6730033000	2-Door Controller (V2000 EVO)	Includes the cover and base with 32 MB added memory.
3ACSGR6726030000	Squadron E400 1-Door Controller	Includes the cover and base.
ACS6730169	Squadron E400 EVO 1-Door Controller	Includes the cover and base.
3ACSGR6726029000	Squadron ER40 Integrated 1-Door Controller	Includes the cover, base, and an integrated iCLASS R40 reader.
3ACSGR6726031000	Squadron ERP40 Integrated 1-Door Controller	Includes the cover, base, and an integrated RP40 multiCLASS reader.
3ACSGR6761442000	Replacement Pluggable Terminal Strip Kit for Squadron 1-Door Controllers	Includes one each of the 2-, 6-, 9-, 10-, and 12-pin pluggable terminal strips, which are used with the following boards: <ul style="list-style-type: none"> • Squadron E400 1-Door Controller • Squadron ER40 Integrated 1-Door Controller • Squadron ERP40 Integrated 1-Door Controller
3ACSGR6730064000	Squadron 1-Door Connector (C50)	Includes the cover and base.
3ACSGR6730029000	2-Door Connector (V100)	Includes the cover and base.
3ACSGR6730030000	Input Monitor Interface (V200)	Includes the cover and base.
3ACSGR6730031000	Output Control Interface (V300)	Includes the cover and base.
3WYRGR6735000000	Wireless 2-Door PIM	Supported on the V1000R Series and V1000 EVO controller.
3WYRGR6735003000	Wireless RS485 PIM	Supported on the V1000R Series and V1000 EVO controllers.

Table E-2: Squadron Enclosures

Part Number	Component	Description
3ACSGR6730013000	V2000 EVO in Single-position NEMA-1 Enclosure	2-door board
3ACSGR6730043000	Squadron Single Board Enclosure (NEMA standard)	1-board enclosure

Part Number	Component	Description
3ACSGR6730025001	Squadron 6 Board Enclosure (NEMA standard), 12.9" W x 16.5" H x 7.6" D	6-board tilt-out enclosure
3ACSGR6730066001	Squadron 8 Board Enclosure (NEMA standard), 25.3" W x 21.2" H x 7.6" D	8-board flat enclosure with one 4-board mounting panel
3ACSGR6760026000	Additional 4 Board Mounting Panel for 3ACSGR6730066001	Increases capacity to 8 boards
3ACSGR6730046000	Squadron 12 Board Enclosure (NEMA standard), 27.2" W x 29.2" H x 8.6" D	12-board flat enclosure with one 6-board mounting panel
3ACSGR6760019000	Additional 6 Board Mounting Panel for 3ACSGR6730046000	Increases capacity to 12 boards
3ACSGR6760025000	Wiring Duct Wire Management Kit for one 4-board panel	Parts for the 8-board enclosure (3ACSGR6730066001)
3ACSGR6760024000	Wiring Tie Wire Management Kit for one 4-board panel	Parts for the 8-board enclosure (3ACSGR6730066001)
3ACSGR6760018000	Wiring Duct Wire Management Kit for one 6-board panel	Parts for the 12-board enclosure (3ACSGR6730046000)
3ACSGR6760017000	Wire Tie Wire Management Kit for one 6-board panel	Parts for the 12-board enclosure (3ACSGR6730046000)
ACS6730151	Squadron 4-Board Enclosure (NEMA standard), 15.3" W x 18.8" H x 7.6" D	4-board flat enclosure with one 2-board mounting panel
ACS6760064	Additional 2-Board Mounting Panel for ACS6730151	Additional 2-board mounting panel for ACS6730151
ACS6760065	Wiring Duct Wire Management Kit for one 2-Board Panel	Parts for the 4-board enclosure (ACS6730151)

Table E-3: Power Supplies for Squadron Application

Part Number	Description	Notes	AC Power Requirements
3ACSGR6731440000	Power Supply, 12VDC@2.5A or 24VDC@2.5A, 1 class 2 output, Altronix	Holds 1 or 2 batteries: 7AH	120 VAC, 1A Max
3ACSGR6731441000	Power Supply, 12VDC@4.0A or 24VDC@3.0A, 1 class 2 output, Altronix	Holds 1 or 2 batteries: 7AH	120 VAC, 1.5 A Max
3ACSGR6731442000	Power Supply, 12VDC@6.0A or 24VDC@6.0A, 1-protected output, Altronix	Holds 1 or 2 batteries: 7AH	120 VAC, 2 A Max

Part Number	Description	Notes	AC Power Requirements
3ACSGR6731443000	Power Supply, 12VDC@10A only, 1-protected output, Altronix	Holds 1 or 2 batteries: 12AH	120 VAC, 3 A Max
3ACSGR6731451000	Power Supply, 12VDC@2.5A or 24VDC@2.5A, 8-fused outputs, Altronix	Holds 1 or 2 batteries: 7AH	120 VAC, 1A Max
3ACSGR6731452000	Power Supply, 12VDC@4.0A or 24VDC@3.0A, 8-fused outputs, Altronix	Holds 1 or 2 batteries: 7AH	120 VAC, 1.5 A Max
3ACSGR6731453000	Power Supply, 12VDC@6.0A or 24VDC@6.0A, 16-fused outputs, Altronix	Holds 1 or 2 batteries: 7AH	120 VAC, 2 A Max
3ACSGR6731454000	Power Supply, 12VDC@10A only, 16-fused outputs, Altronix	Holds 1 or 2 batteries: 7AH	120 VAC, 3 A Max
3ACSGR6722170000	Fused Power Distribution Module, 4-outputs, Altronix	As needed for above supplies	Not applicable
3ACSGR6722171000	Fused Power Distribution Module, 8-outputs, Altronix	As needed for above supplies	Not applicable
3ACSGR1061038000	Battery, Sealed Lead-Acid, 12V, 7AH	20-Hour Rate	Not applicable
3ACSGR1061039000	Battery, Sealed Lead-Acid, 12V, 12AH	20-Hour Rate	Not applicable
3ACSGR6741772000	Power Supply, 18VDC, 0.5A	Optional for HID ProxPro Reader	120 VAC, 0.2 A max

Table E-4: Miscellaneous Parts for Squadron Boards

Part Number	Description	Notes
CMN1311076	Plug in Terminal Block, 2-pin	Spare for Vertex boards
CMN1311021	Plug in Terminal Block, 4-pin	Spare for Vertex boards
CMN1311085	Plug in Terminal Block, 5-pin	Spare for Vertex boards
CMN1311077	Plug in Terminal Block, 6-pin	Spare for Vertex boards
CMN1311078	Plug in Terminal Block, 8-pin	Spare for Vertex boards
CMN1311086	Plug in Terminal Block, 9-pin	Spare for Vertex boards
3COMGR1311079000	Plug in Terminal Block, 10-pin	Spare for Vertex boards
CMN1311407	2-Pin Shunt	Spare for Vertex boards

Part Number	Description	Notes
CMN4341018	Lithium Battery, CR2032	Spare for V1000R Series, V2000 EVO
3ACSGR6716001000	VertX Gateway FLASH Memory module, 32 MB	Spare for V1000R Series, V2000 EVO
3ACSGR6751968000	Pigtail Kit for A1005	--
3ACSGR6741579000	Pair of battery leads with battery terminals, red and black, 8"	Spare for Altronix Power Supplies
3ACSGR6741580000	Pair of battery leads with battery terminals, red and black, 18"	Spare for Altronix Power Supplies

Table E-5: Typical 7 A-H Battery Run Times

Discharge Rate	One 7 A-H Battery	Terminal Voltage	Effective Capacity	Two 7 A-H Batteries	Terminal Voltage	Effective Capacity
0.35 Ampere	20 hours	10.6 V	7.0 A-H	40 hours	10.6 V	14.0 A-H
0.7 Ampere	8.8 hours	10.5 V	6.2 A-H	20 hours	10.6 V	14.0 A-H
1.4 Amperes	3.9 hours	10.3 V	5.5 A-H	8.8 hours	10.5 V	12.3 A-H
3.5 Amperes	1.3 hours	9.7 V	4.6 A-H	3.2 hours	10.2 V	11.2 A-H
7 Amperes	30 minutes	9.0 V	3.5 A-H	1.3 hours	9.7 V	9.1 A-H
14 Amperes	13 minutes	8.2 V	3.0 A-H	30 minutes	9.0 V	7.0 A-H

Table E-6: Typical 12 A-H Battery Run Times

Discharge Rate	One 7 A-H Battery	Terminal Voltage	Effective Capacity	Two 7 A-H Batteries	Terminal Voltage	Effective Capacity
0.6 Ampere	20 hours	10.6 V	12.0 A-H	40 hours	10.6 V	24.0 A-H
1.2 Ampere	8.6 hours	10.5 V	10.3 A-H	20 hours	10.6 V	24.0 A-H
2.4 Amperes	3.9 hours	10.3 V	9.4 A-H	8.6 hours	10.5 V	20.6 A-H
6.0 Amperes	1.4 hours	9.6 V	8.4 A-H	3.2 hours	10.2 V	19.2 A-H
12 Amperes	30 minutes	9.0 V	6.0 A-H	1.4 hours	9.6 V	16.8 A-H
24 Amperes	14 minutes	8.2 V	5.6 A-H	30 minutes	9.0 V	12.0 A-H