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Quickstart Guide
EnVision™ Elite Touch Controller

Part Number: 0180100-QS

Read this document carefully

This document contains important safety instructions that must be followed during the installation, servicing, and maintenance of this product. Keep it in a safe place. If there are any questions regarding the safe installation or operation of this product contact Alpha Technologies Ltd. or your nearest Alpha® power system representative.

Save this document for future reference.

Introduction

The EnVision™ Elite series controller is a next generation controller for smart networks. It is the cornerstone of the EnVision™ ecosystem which is built on the four pillars; control, sense, react, and explore; empowering your business to predict and prevent issues before they happen.

The EnVision™ Elite series controller offers cutting-edge performance, control, and monitoring while ensuring seamless integration with your current systems. Its backward compatibility with Alpha® power systems and the Cordex® HP controller form factor allows for easy upgrades with minimal disruption.

EnVision™ Elite series controllers are a direct replacement of the current Cordex® HP series controllers. It has enhanced security features, wireless connectivity, increased storage, and expanded capabilities to support a wider range of power equipment and peripherals.

Figure 1: EnVision™ Elite Touch controller

Specifications

Electrical	
Input voltage	12 to 60 VDC maximum
Input power	10W
Relay switching	60 V maximum; 1 A maximum
Features	
LCD panel	High resolution capacitive touchscreen liquid crystal display (LCD) panel, 720 × 1280 pixels, with backlight and contrast control
Web interface	Embedded web-based user interface accessed via Ethernet or Wi-Fi using a web browser (Microsoft® Edge, Google® Chrome, Mozilla® Firefox, Apple® Safari)
Audio	Two multitone audio signaling devices
LEDs	Three front panel status LEDs for alarm, progress, and status indication. See the Troubleshooting section for information on states and meanings.
Wireless accessibility and Bluetooth® Low Energy support	Wirelessly connect to a mobile computing device (tablet, smartphone, or laptop) as long as the device is within 100 feet (30 m) line-of-sight proximity.
Redundant power input	Auxiliary power input connector
Mechanical	
Dimensions H × W × D	3.33 × 6.36 × 1.85 in. (84.6 × 161.5 × 46.9 mm)
Net weight	1 lb (0.5 kg)
Mounting	19-/23-inch rack mount
	DIN rail mount
	Panel mount
Communication ports	**CAN:** Two RJ12 offset ports (right side) for communication to Alpha®, DPX, and Cordex® power electronics and peripherals
	Ethernet: Two RJ45 ports (front and left side); 10/100/1000 BASE-T with full/half duplex; Auto MDI/MDI-X
	USB: Two USB 2.0 ports (front and left side)
	Wireless antenna: 2.4 GHz Wi-Fi (802.11a/b/g/n) and Bluetooth® Low Energy 5.0
Hardware	
Processor	NXP® i.MX 8 series system on module, Arm® Cortex® A53, 1.2 GHz, 8 GB Flash, 1 GB RAM
Super capacitor	Backup the real-time clock temporarily in the event of a transient event or power loss
Cooling	Fanless design with integrated heat sink for passive cooling and lower maintenance
Operating system	Linux® OS
Security	
Trusted platform module	NXP® EdgeLock® secure element with Common Criteria Evaluation Assurance Level (EAL) 6+ and FIPS 140-2 certified security for Zero Trust Networks.
Automation and control systems cybersecurity standard	Designed to meet the ISA/IEC 62443-4-2 standard. For more information, see the International Society of Automation website.
Remote authentication	Secure remote authentication with RADIUS and TACACS+ security protocols.
User management	Manage up to seven user accounts, featuring five customizable privilege levels to improve security and streamline management, minimizing the risk of data breaches and security incidents.

Environmental	
Operating temperature	–40 to 149°F (–40 to 65°C)
Storage temperature	–40 to 185°F (–40 to 85°C)
Relative humidity	5 to 95% non-condensing
Elevation	Up to 13,124 ft (4,000 m)
Peripheral and module support	
The EnVision™ Elite controller supports all peripherals and modules supported by the Cordex® HP controller. See the **Controller module reference guide** chapter of the EnVision™ Elite Software Manual (0350189-J0) for a full list of supported modules and peripherals.	

Regulatory compliance

Regulatory compliance	
Safety	IEC 62368-1 (CE Mark)
	CSA/UL 62368-1
EMC	FCC CFR47 Part 15/B- Class A
	CAN ICES-003(A)/NMB-003(A)
	ETSI 300 386 V2.1.1
	IEC/EN 61000-4-2
	IEC/EN 61000-4-3
	IEC/EN 61000-4-4
	IEC/EN 61000-4-5
	IEC/EN 61000-4-6
Network Equipment-Building Systems	Designed to meet NEBS Level 3
Sustainability	RoHS 3 2011/65/EU and 2015/863/EU
	WEEE 2012/19/EU and 2018/849/EU
Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.	
FCC radio frequency radiation exposure statement This equipment complies with FCC radio frequency radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter. The device complies with radio frequency specifications when the device used at >7.9 inches (20 cm) from your body.	

CE statement

This is a class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

This device meets the EU requirements (Radio Equipment Directive 2014/53/EU, Article 3.1a) on the limitation of exposure of the general public to electromagnetic fields by way of health protection.

Protection of health and safety of humans, domestic animals, and livestock (compliance with safety standards according to Article 3.1a).

Appropriate level of electromagnetic compatibility (EMC Directive 2014/30/EU, Article 3.1b).

Effective and efficient use of radio frequencies (EMC Directive 2014/30/EU, Article 3.2).

The device complies with radio frequency specifications when the device is used at >7.9 inches (20 cm) from your body.

Industry Canada statement

This device complies with Industry Canada (IC) license-exempt Radio Standards Specification. Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil nedoit pas produire de brouillage, et
2. L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Radiation exposure statement

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance >7.9 inches (20 cm) between the radiator and your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de >7.9 pouces (20 cm) de distance entre la source de rayonnement et votre corps.

Safety

Save these instructions

This document contains important safety instructions that must be followed during the installation, servicing, and maintenance of the product. Keep it in a safe place. Review the drawings and illustrations contained in this document before proceeding. If there are any questions regarding the safe installation or operation of this product, contact Alpha Technologies Ltd. or the nearest Alpha® power system representative.

Safety symbols

To reduce the risk of injury or death, and to ensure the continued safe operation of this product, the following symbols have been placed throughout this document. Where these symbols appear, use extra care and attention.

Symbol	Type	Description
	**WARNING**	Risk of serious injury or death Equipment in operation poses a potential electrical hazard which could result in serious injury or death to personnel. This hazard may continue even when power is disconnected.
	**CAUTION**	Cautions indicate the potential for injury to personnel.
	**CAUTION**	Risk of burns A device in operation can reach temperature levels which could cause burns.
	**ATTENTION**	The use of attention indicates specific regulatory or code requirements that may affect the placement of equipment or installation procedures. Follow the prescribed procedures to avoid equipment damage or service interruption.
	**GROUNDING**	This symbol indicates the location or terminal intended for the connection to protective earth. An device that is not properly connected to protective earth presents an electrical hazard. Only a licensed electrician can connect AC power and protective earth to the enclosure.
	**NOTICE**	A notice provides additional information to help complete a specific task or procedure or general information about the product.

General safety

You must read and understand the following warnings before installing the device and its component. Failure to do so could result in personal injury or death.

- Read and follow all instructions included in this document.
- Only trained personnel are qualified to install or replace this equipment and its components.
- Use proper lifting techniques whenever handling equipment, parts, or batteries.

WARNING

This system is designed to be installed in a restricted access location that is inaccessible to the general public.

AVERTISSEMENT

Ce système est conçu pour être installé dans un endroit à accès restreint inaccessible au grand public.

WARNING

This equipment is not suitable for use in locations where children are likely to be present.

AVERTISSEMENT

Cet équipement ne convient pas pour une utilisation dans des lieux ou des enfants sont susceptibles d'être présents.

Electrical safety

WARNING

The EnVision™ Elite Touch controller is Safety Extra Low Voltage (SELV) so no shock hazard exists. However, high currents are possible if I/O lines are not correctly fused. The DC output from the rectifier modules and the battery system has a high short circuit current capacity that may cause severe burns and electrical arcing. Use extreme care when working inside the shelf while the system is energized. Do not make contact with live components or parts.

Before working with any live battery or power system, follow these precautions:

- Remove all metallic jewelry, such as watches, rings, metal rimmed glasses, or necklaces.
- Wear safety glasses with side shields at all times during the installation.
- Use Occupational Safety and Health Administration (OSHA®) approved insulated hand tools. Do not rest tools on top of batteries.

WARNING

Lethal voltages are present within the power system. Always assume that an electrical connection or conductor is energized. Check the circuit with a voltmeter with respect to the grounded portion of the enclosure (both AC and DC) before performing any installation or removal procedure.

Installation and safety precautions

Only qualified personnel should install and connect the power components within the power system.

The installer should follow all applicable local rules and regulations for electrical and battery installations; for example, Canadian Standards Association (CSA®), Underwriters Laboratories Inc. (UL), Canadian Electrical Code (CEC®), National Electrical Code (NEC®), Occupational Safety and Health Administration (OSHA®), and local fire codes. It is suitable for installation as part of the Common Bonding Network in one or more of the following locations:

- Network telecommunication facilities
- Locations where the NEC® applies
- Outside plant

Battery safety

ATTENTION

Battery safety data sheets

Read the battery safety data sheet (SDS) before installing batteries in the power system. The SDS provides important information including hazard identification, first aid measures, handling and storage, and personal protective equipment (PPE).

WARNING

Follow battery module manufacturer's safety recommendations when working around battery systems. Do not smoke or introduce an open flame when battery modules (especially vented battery modules) are charging. When charging, battery module vent hydrogen gas, which can explode.

Controller features

The EnVision™ Elite Touch controller has the following features:

Figure 2: EnVision™ Elite Touch controller features

1. **USB 2.0 ports**
   Dual USB 2.0 ports on both the front and side of the controller for upgrades or file management via a standard USB drive.

2. **Ethernet ports**
   Dual 10/100/1000 BASE-T Ethernet ports for connection on both the front and side of the controller for remote or local communication.

3. **Status LEDs**
   Three front panel LEDs for alarm, progress, and status indication.

4. **2.4 GHz wireless antenna**
   Configure a Wi-Fi access point on the controller and communicate with supported Bluetooth® devices.

5. **Touchscreen LCD panel**
   Full color touchscreen LCD panel to access controls and menu items by using fingertip touch or a capacitive touch stylus.

6. **CAN ports**
   CAN is used by the controller to discover, collect data from, control, and configure the power and I/O (ADIO) modules in the power system. The controller has two CAN buses, each of which can control up to 127 power and ADIO modules.

7. **Alarm connection**
   Controller fail alarm relay contacts for extending various alarm and control signals. Each relay output can be wired for: normally open (NO), common (COM), and normally closed (NC) during an alarm or control condition.

8. **Main and redundant power connections**
   Two 12 to 60V DC input power connections. The EnVision™ Elite controller will operate when either power input is energized.

Mounting options

The EnVision™ Elite Touch controller has been designed as a compact modular controller offering maximum flexibility for various mounting options. Modular, external I/O peripherals allow for additional flexibility with mounting provisions for the entire control system.

Panel mount

A 3RU panel is available for 19-/23-inch rack mount applications. The rack mount panel provides flush mounting for the controller and rear mounting for one or two ADIO peripherals. Standard mounting positions are provided for future ADIO peripheral mounting options. The rack mount panel may also be configured with a redundant input power module for utilizing redundant input feeds to power the controller and up to two ADIO peripherals.

The rack mount panel provides front accessibility to all controller and I/O connection points.

DIN rail mount

The controller can be mounted onto DIN rails using the DIN rain mounting kit. This option permits wall mounting and allows for other unique mounting applications.

Initial configuration

NOTICE

See the EnVision™ Elite Software Manual (0350189-J0), SNMP Integrator Guide (0350190-J0), and Modbus Integrator Guide (0350191-J0) for information on configuring your controller.

The Getting started chapter of the EnVision™ Elite Software Manual will guide you through initial setup and configuration of your new EnVision™ Elite controller.

Knowledge and permissions

We assume you have a good working knowledge of, and access to, the following:

- Ethernet cables and TCP/IP settings needed to connect your computer to the controller
- Current version of Microsoft® Edge, Google® Chrome, Mozilla® Firefox, or Apple® Safari
- Power system or 3GPP interface that the controller is controlling
- Controller module sign in credentials and the appropriate level of permissions.

Typical system configuration

The controller is a scalable software platform that allows multiple systems to be created and managed by one controller. The user interface is organized around system inventory so you only see the systems that you have created and you can manage them independently. Both the web interface and the LCD panel provide a summary of all systems monitored by the controller as well as controller and alarm information.

A DC power system may have the following elements:

- EnVision™ Elite Touch controller and ADIO modules with CAN bus connections
- One or more rectifier modules
- A battery string
- A shunt to measure battery current
- A battery low voltage disconnect (LVD) in series with the battery string

Connect to the controller

There are three options for connecting to the controller web server from a web browser running on your computer:

- Through a local area network (LAN)
- Direct connection with IP auto-configuration
- Direct connection with static IP address.

Factory default credentials

Obtain the user account information and passwords from the system administrator. The default values are:

- Default user name: admin
- Default password: admin

Connect through a LAN

Use the LCD panel to verify that the Ethernet port is configured to acquire an IP address automatically. **IP Address Mode** can be found in the **Configuration** table at **Shortcuts > Ethernet > Ethernet/Rear**.

Enable DHCP at **Controller > Communication > Ethernet**. Go to the desired Ethernet port and select the **Change Network Configuration Wizard** button in the **Configuration** table.

1. Plug an Ethernet cable in to the left side Ethernet port and to your LAN. The computer that you want to connect the controller to must also be on this same LAN.
2. Use the LCD panel to determine the IP address automatically assigned to the controller. You can use either the IPv4 or IPv6 addresses. IP address information can be found at **Shortcuts > Ethernet > Ethernet/Rear**.
3. Enter this IP address into the address bar of your web browser and select enter. The web interface sign in screen displays.

NOTICE

The default IP address of the front Ethernet port is 10.10.10.201, subnet 255.255.255.0. The left side Ethernet port is set up to use Dynamic Host Configuration Protocol (DHCP).

Troubleshooting

Figure 3: EnVision™ Elite Touch controller LEDs

Table A: EnVision™ Elite Touch controller LED states

LED name	Color	State	Meaning
Major or critical alarm (bell icon)	**Red**	**Off**	Indicates no active alarms.
		Solid	Indicates one or more major or critical alarms. There can be minor alarms as well.
		Flashing	N/A
Minor alarm (caution icon)	**Yellow**	**Off**	Indicates no active alarms
		Solid	Indicates one or more minor alarms.
		Flashing	N/A
OK (OK icon)	**Green**	**Off**	N/A
		Solid	Indicates that there are no alarms.
		Flashing	Flashes during initial startup.

Troubleshoot the controller

This section covers possible issues and fixes for your controller. Additionally, see the README notes that are released with the controller software.

Unable to communicate via Ethernet

Confirm that all cables are firmly connected.

1. Go to **Controller > Communication > Ethernet**.
2. Ensure that the IP address settings are correct. Note that having two Ethernet ports connected on the same subnetwork is unsupported configuration. Therefore, if Ethernet cables are connected to the side and front ports, either ensure these are separate networks or unplug one cable.
3. Edit the settings if required.
4. Select **Save**.
   If that does not work, then restart the controller.

It is always recommend to use the controller **Restart Controller** button from the menu system to ensure any outstanding configuration changes or log data is saved to disk.

If the issue is not resolved, contact your IT department to confirm that both the controller and the computer can communicate across the network.

LCD panel not responding

If the controller is not responding to touch, you can perform a controller restart. To restart the controller, unplug the power connect for 10 seconds, then reinsert power.

Controller fail relay

The controller has a relay that can be used to indicate the controller power has failed. This relay is labeled **Alarm** and is located beside the power connector.

The relay is normally energized, and becomes de-energized in the event of a failure. This means that during normal use, the normally open (NO) contacts are closed, and the normally closed (NC) contacts are open.

The controller fail relay is not programmable in any way.

Upgrade a Cordex® CXC HP controller to an EnVision™ Elite Touch controller

NOTICE

Backup the Cordex® CXC HP controller configuration file and save it to a USB drive. You can restore this backup to the new EnVision™ Elite Touch controller after installation. See the EnVision™ Elite Software Manual (0350189-J0) for information on restoring a configuration file.

1. Review the system schematic of the power system. Identify additional signal I/O wiring to the existing controller. Note the wire tag numbers and terminal block position numbers on the controller PCB. Sign in to the controller and note the following settings and any other customer settings:
   - Voltage settings
   - Battery settings
   - Current settings
   - Custom settings
2. Locate the Cordex® CXC HP 2RU touchscreen system controller. If installed in a 3RU panel mount, unlock and flip down the front panel.
3. Remove the back cover.
4. Cut all tie wraps securing the controller wiring.
5. Pull the terminal blocks with wires, then disconnect the CAN cable, ground wire, and Ethernet cable (if applicable).
6. Remove the Cordex® CXC HP 2RU touchscreen controller from the panel mount and save the mounting hardware for reuse.
7. Mount the EnVision™ Elite Touch controller using the existing hardware.
8. Reinstall terminal blocks, CAN cable, ground wire, and Ethernet cable (if applicable).

ATTENTION

Redundant power input

Connections to the Cordex® CXC HP 2RU touchscreen system controller and the EnVision™ Elite Touch controller are identical, although the EnVision™ Elite Touch controller has a redundant power input connection.

Technical drawing

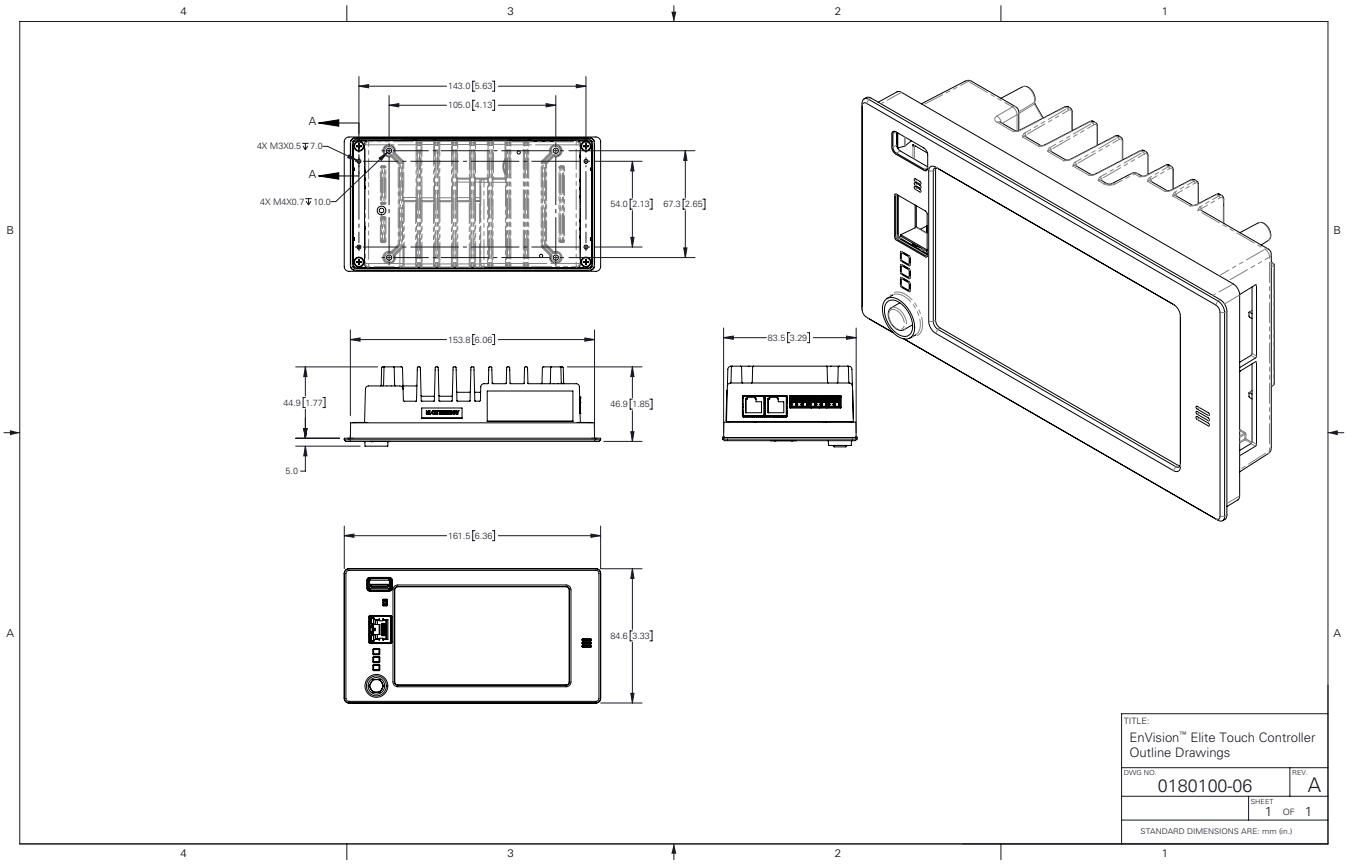

Figure 5: EnVision™ Elite Touch controller outline drawing

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