Encore® System Controller Hardware Manual

Customer Product Manual
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– English –
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For parts and technical support, call the Industrial Coating Solutions Customer Support Center at (800) 433-9319 or contact your local Nordson representative.

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NORDSON CORPORATION • 100 NORDSON DRIVE, AMHERST, OHIO 44001• USA

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Contact Us
Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address:
http://www.nordson.com

http://www.nordson.com/en/global-directory

Change Record

Revision	Date	Change
01	01/25	Initial release.

Safety

Introduction

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to persons operating or servicing equipment.

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include:

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

All phases of equipment installation must comply with all federal, state, and local codes.

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing any moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- Obtain and read Material Safety Data Sheets (SDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment. Use only grounded air and fluid hoses. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored. Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material SDS for guidance.
- Do not disconnect live electrical circuits when working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Grounding

WARNING: Operating faulty electrostatic equipment is hazardous and can cause electrocution, fire, or explosion. Make resistance checks part of your periodic maintenance program. If you receive even a slight electrical shock or notice static sparking or arcing, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

Grounding inside and around the booth openings must comply with NFPA requirements for Class II, Division 1 or 2 Hazardous Locations. Refer to NFPA 33, NFPA 70 (NEC articles 500, 502, and 516), and NFPA 77, latest conditions.

- All electrically conductive objects in the spray areas shall be electrically connected to ground with a resistance of not more than 1 megohm as measured with an instrument that applies at least 500 volts to the circuit being evaluated.
- Equipment to be grounded includes, but is not limited to, the floor of the spray area, operator platforms, hoppers, photoeye supports, and blow-off nozzles. Personnel working in the spray area must be grounded.
- There is a possible ignition potential from the charged human body. Personnel standing on a painted surface, such as an operator platform, or wearing non-conductive shoes, are not grounded. Personnel must wear shoes with conductive soles or use a ground strap to maintain a connection to ground when working with or around electrostatic equipment.
- Operators must maintain skin-to-handle contact between their hand and the gun handle to prevent shocks while operating manual electrostatic spray guns. If gloves must be worn, cut away the palm or fingers, wear electrically conductive gloves, or wear a grounding strap connected to the gun handle or other true earth ground.
- Shut off electrostatic power supplies and ground gun electrodes before making adjustments or cleaning powder spray guns.
- Connect all disconnected equipment, ground cables, and wires after servicing equipment.

Action in the Event of a Malfunction

If a system or any equipment in a system malfunctions, shut off the system immediately and perform the following steps:

- Disconnect and lock out system electrical power. Close hydraulic and pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the system.

Disposal

Dispose of equipment and materials used in operation and servicing according to local codes.

Description

See Figure 1. The Encore® system controller uses a touchscreen interface for configuring and operating spray operations. The controller is configurable for both VT and HD spray systems.

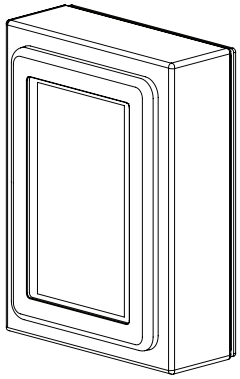


Figure 1 Encore System Controller

Specifications

Dimensions	See Figure 2.
Input Voltage:	24 Vdc (nominal)
Input Current:	0.33 A
Maximum Input Power:	8 W
Altitude:	≤ 2000 m (6562 ft)
Ambient Operating Temperature:	0-50 °C (32-122 °F)

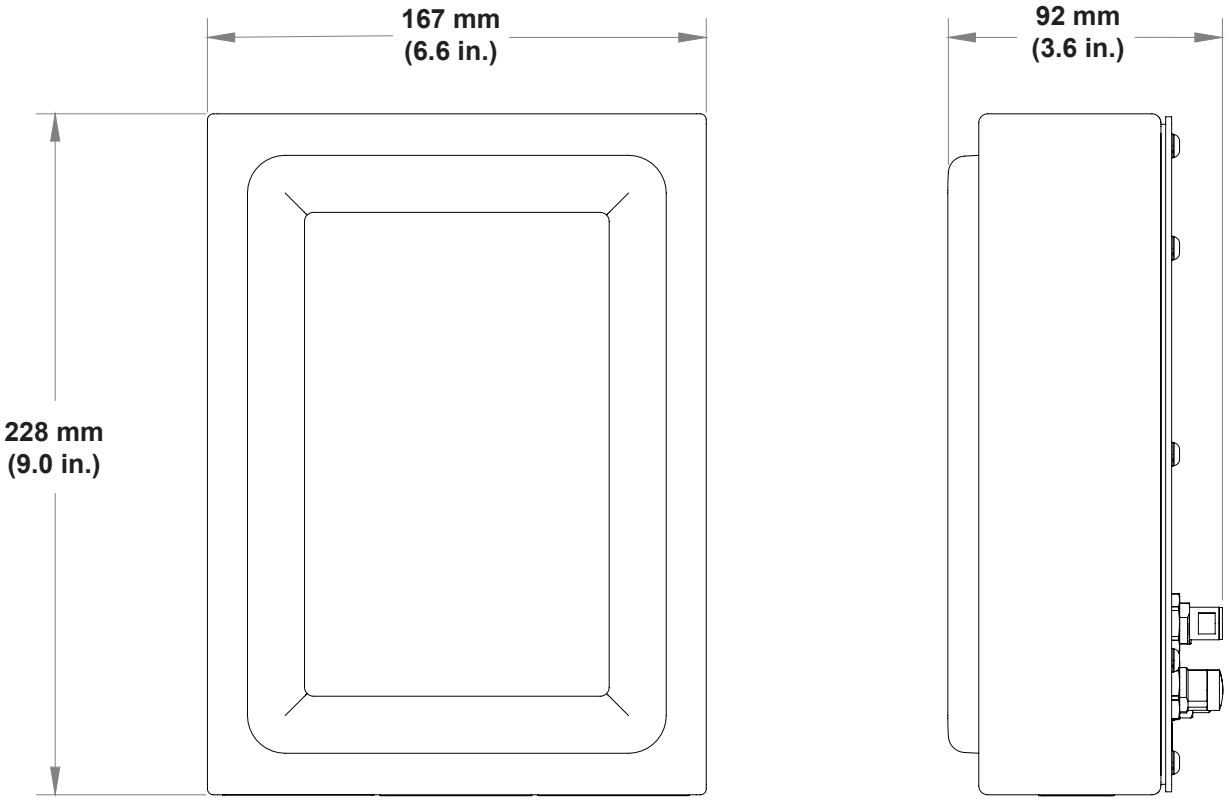


Figure 2 Controller Dimensions

Controller Certification Label

1626518

Installation

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

Refer to the system documentation provided with the system for integrating the controller into the system.

Configuration and setup of the system is completed through the touchscreen. Refer to the onscreen *Help* for setup instructions.

Connections

See Figure 3 and refer to Table 1 for connections on the system controller.

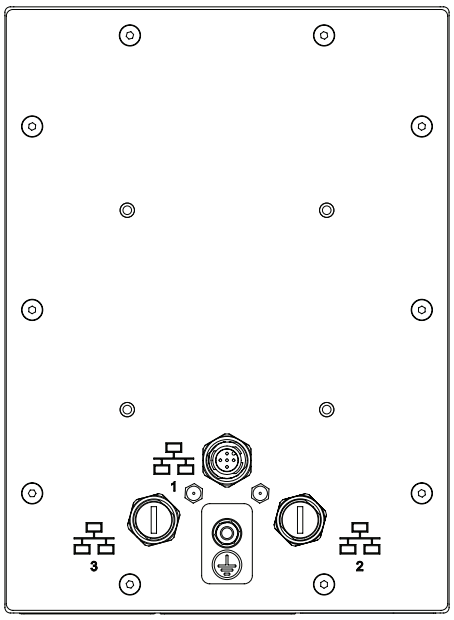
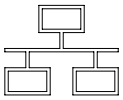


Figure 3 System Controller Connections

Table 1 System Controller Connections

Symbol	Description
	Interconnect Cable Receptacle or Network 1 - Power-CAN 2 - LAN 3 - WAN
	Ground Connection

Operation

Refer to the system controller touchscreen *Help* for additional operating procedures.

Specific Conditions of Use

1. The Encore VT and HD Manual and Mobile Powder Systems shall be used only with the separately and suitably certified Encore LT Powder Electrostatic Manual Applicators, and Encore HD Powder Electrostatic Manual Applicators in accordance with the manufacturer's instructions.
2. Follow the manufacturer's instructions to avoid possible electrostatic charging hazards.

Operator Controls

See Figure 4.

Touchscreen - The operator performs all configuration and operation tasks with the touchscreen interface. The touchscreen provides the operator a graphical user interface for system configuration, operation, troubleshooting, and onscreen help support.

System Controller Power - Power is controlled through the power interconnect cable receptacle. Power is turned ON and OFF to the system controller through the applicable controller connected by the power cable.

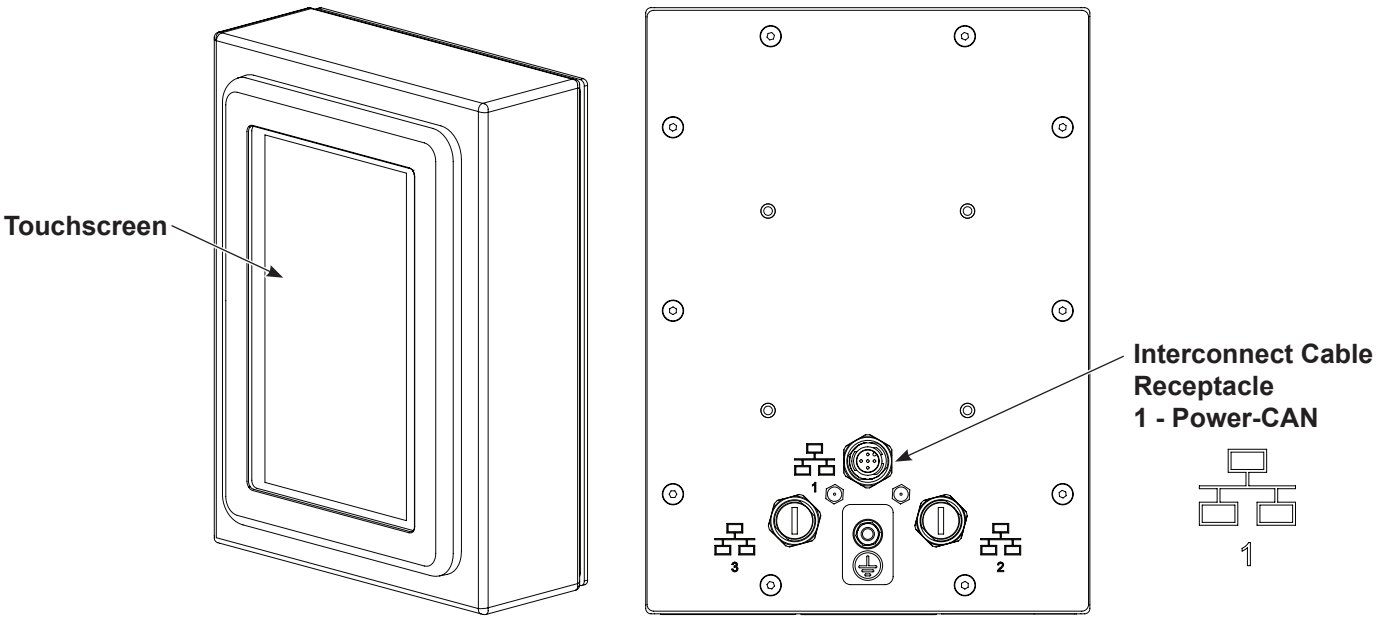


Figure 4 Operator Controls

Touchscreen Interface

See Figure 5 and refer to Table 2 for navigating the touchscreen interface.

NOTE: Orientation of screen may be portrait or landscape depending on system.

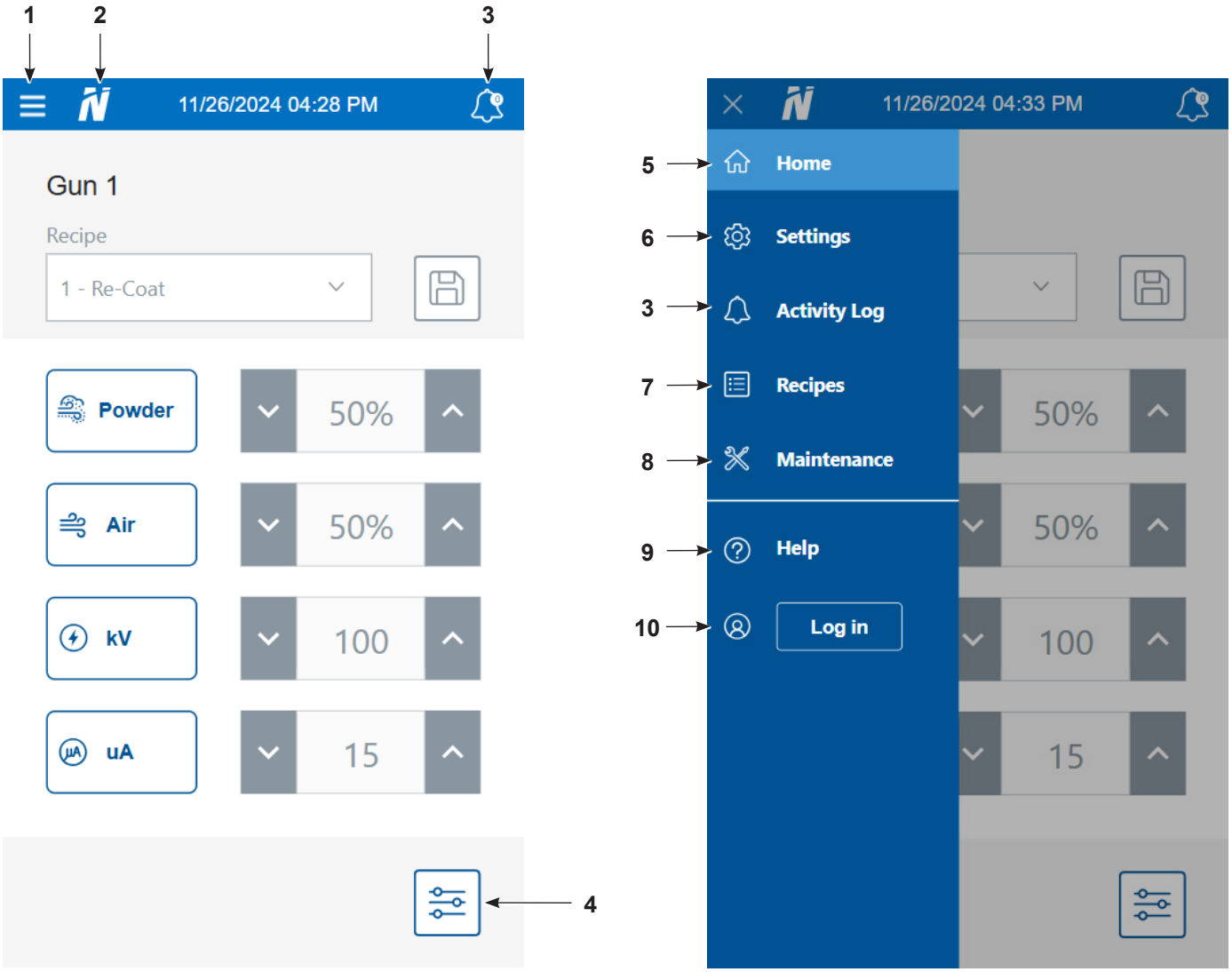


Figure 5 Touchscreen Interface

Table 2 Navigation Icons

Item	Icon	Description
1	Menu	Opens the *Menu* panel
2	Logo	Navigates back to *Home* screen
3	Alarms	Navigates to the *Activity and Alarm* log
4	Gun Settings	Navigates to *Gun Settings*
5	Home	Navigates back to *Home* screen
6	Settings	Opens *Settings* menu
7	Recipes	Opens *Recipes* screen
8	Maintenance	Opens *Maintenance* screen
9	Help	Opens *Help*
10	Log In/Out	Allows user to log in and out of interface with profile

Troubleshooting

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

WARNING: This controller produces a high-voltage signal that could cause fatal injury to personnel. Be alert when performing electrical checks.

For additional system troubleshooting, refer to the system manual *Troubleshooting* section.

Problem	Possible Cause	Corrective Action
1. Operator Interface: No Power	System power button OFF	On the pump controller, turn the power button ON.
	No AC power	See Figure 6. Check for +24 Vdc at power interconnect cable and see the following: a. If no power, check that the power on pump controller is turned ON. b. If there is power at the power interconnect cable, refer to the system manual for additional troubleshooting.
	Loose cable	Check power interconnect cable connection from system controller to pump controller.
	Bad cable	See Figure 6. Check for +24 Vdc at power interconnect cable. If needed, replace cable.
	Bad receptacle PCA board	See Figure 7. Check for power on the receptacle PCA board (23.75-24.25 Vdc). Replace if needed.
	Bad system controller	See Figure 8. Check for red LED on system controller next to P1.
2. No CAN Network Traffic	Intermittent cable	Check interconnect cable for loose connection, opens, or shorts.
	Poor connection	Check receptacle PCA board. Replace if needed.
	Poor connection CAN HAT	Check CAN HAT blue and white wire for loose connections.
	Bad CAN HAT	Replace CAN HAT module.

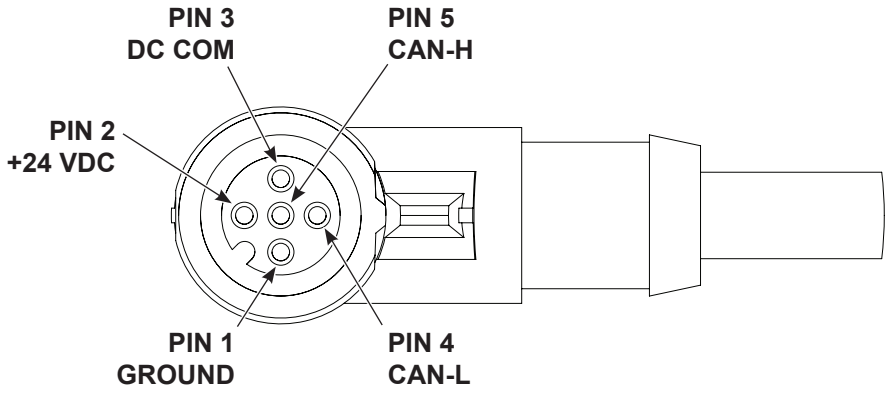


Figure 6 Face View of Interconnect Cable

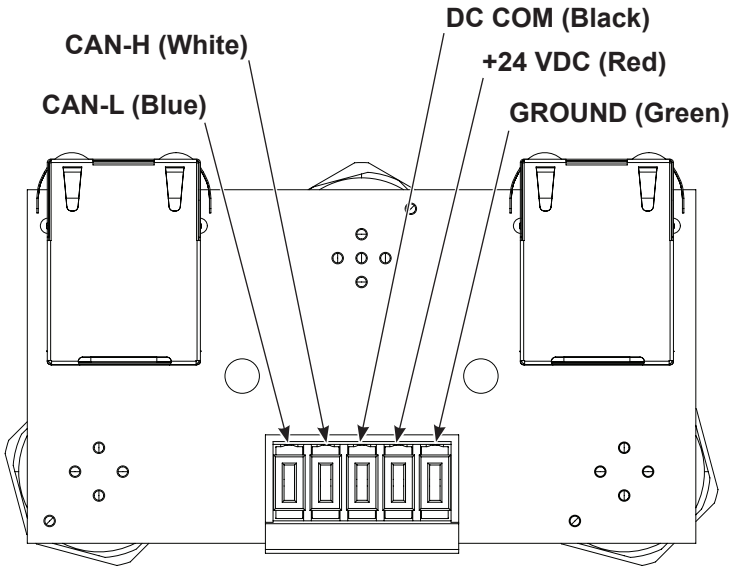


Figure 7 Receptacle PCA Board Power-CAN Harness Terminations

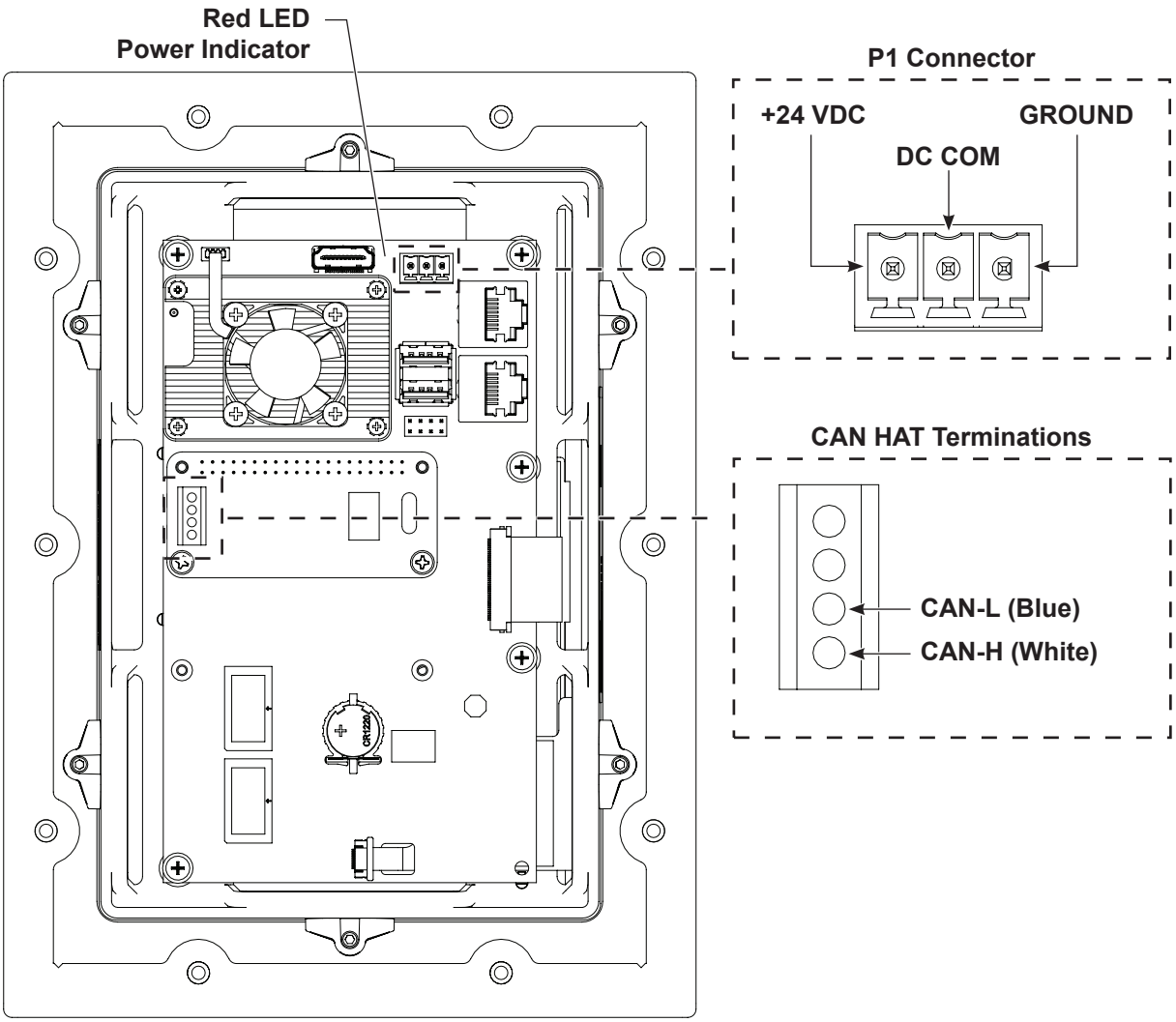


Figure 8 Back of HMI Touchscreen

Repair

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

The following sections describe how to replace the following:

- HMI touchscreen
- Receptacle PCA board
- CAN HAT module
- Refer to the *Parts* section for kit part numbers.

Disassembly

WARNING: Risk of electrical shock. Turn power OFF before servicing.

See Figure 9.

1. Turn OFF power to the system controller. After power is turned OFF, any cables connected to the outside of the controller can be removed.
2. Remove the M4 button head screws (1) to remove the cover (2).
3. Disconnect the Ethernet cables from the receptacle PCA board (14) to the HMI touchscreen (9).
4. Remove the nuts (15) from the receptacles.
5. Remove the M3 pan head screws (13) to remove the receptacle PCA board (14).
6. Remove the M2 pan head screws (3) to remove the CAN HAT module (4).
7. Remove the header (5) from the board.
8. Loosen the set screws (11) to unhook the clips (12) from the HMI touchscreen (9) bezel.
9. Remove the HMI touchscreen (9) along with its guard (10) and gasket (8) from the controller enclosure (7).

Reassembly

See Figure 9.

1. Place the gasket (8) and guard (10) onto the HMI touchscreen (9).
2. Install the HMI touchscreen into the controller enclosure (7).
3. Secure the HMI touchscreen by hooking the clips (12) into the HMI touchscreen (9) bezel and tighten set screws (11) to keep HMI in place.
4. Install the stand-offs (6) (if removed) and the header (5) by aligning the short pin side of the header to the PCA board on the back of the HMI touchscreen.

5. Align the connectors and install the new CAN HAT module (4) and M2 pan head screws (3) onto the back of the HMI touchscreen.
6. Install the receptacle PCA board (14) onto the cover (2) with M3 pan head screws (13).
7. Connect the Ethernet cable from the receptacle PCA board (14) to the HMI touchscreen (9). Tighten the nuts (15) onto the receptacles with the teeth making contact with the cover (2) for grounding.
8. Remove any applicable plugs (16) before connecting cables to receptacles.
9. Install the cover (2) onto the enclosure (7) with the M4 button screws (1) and turn the power to the system controller ON to put the controller back in operation.
10. Refer to the onscreen *Help* to enter system settings and gun configurations.

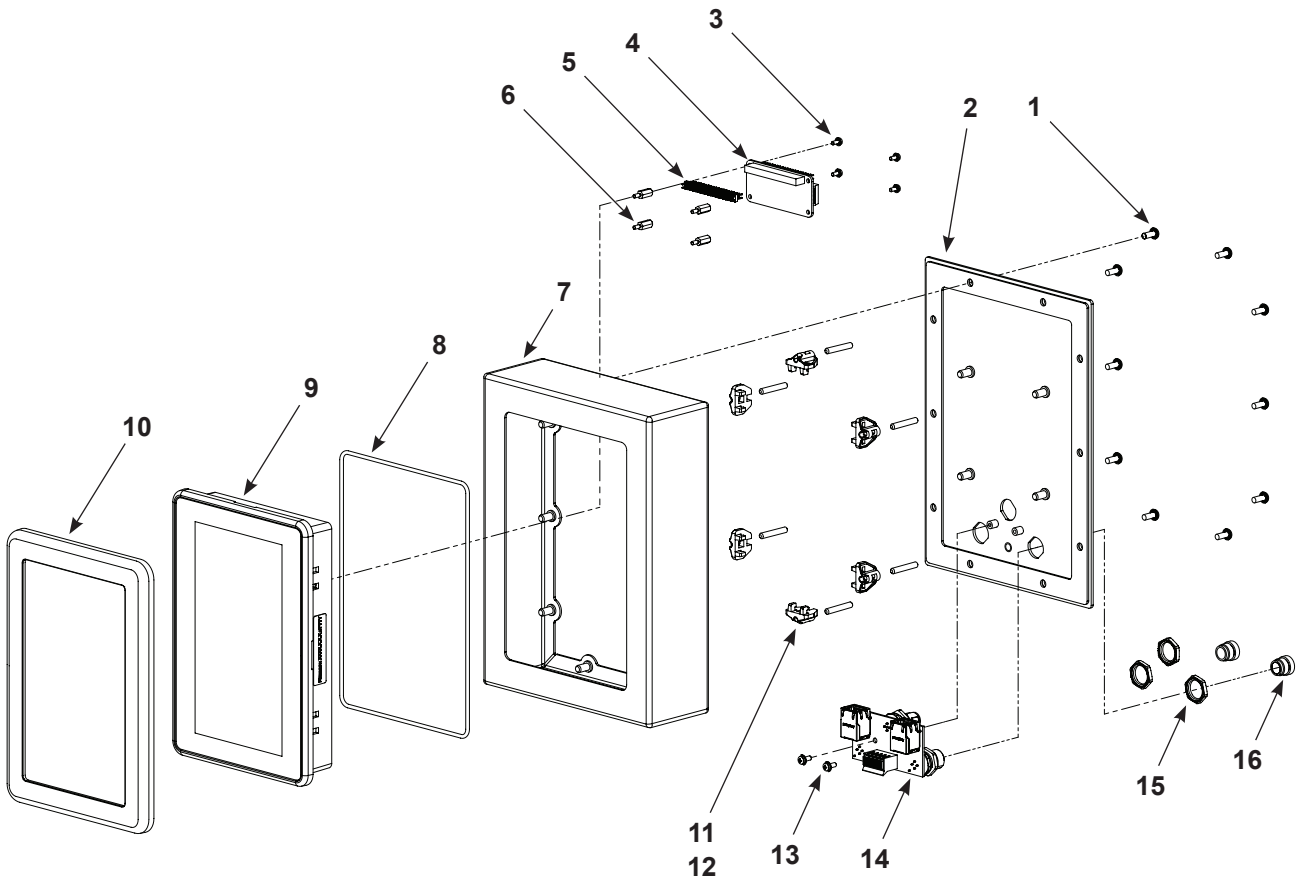


Figure 9 Disassembly/Reassembly

1. M4 button head screw
2. Cover
3. M2 pan head screw
4. CAN HAT module
5. Header
6. Stand-off
7. Enclosure
8. Gasket
9. HMI touchscreen
10. Guard
11. Set screw
12. Clip
13. M3 pan screw
14. Receptacle PCA board
15. Nut
16. Plug

Parts

To order parts, call the Industrial Coatings Customer Service Center at (800) 433-9319 or contact your local Nordson representative.

Service Kits

See Figure 10 and the following parts list.

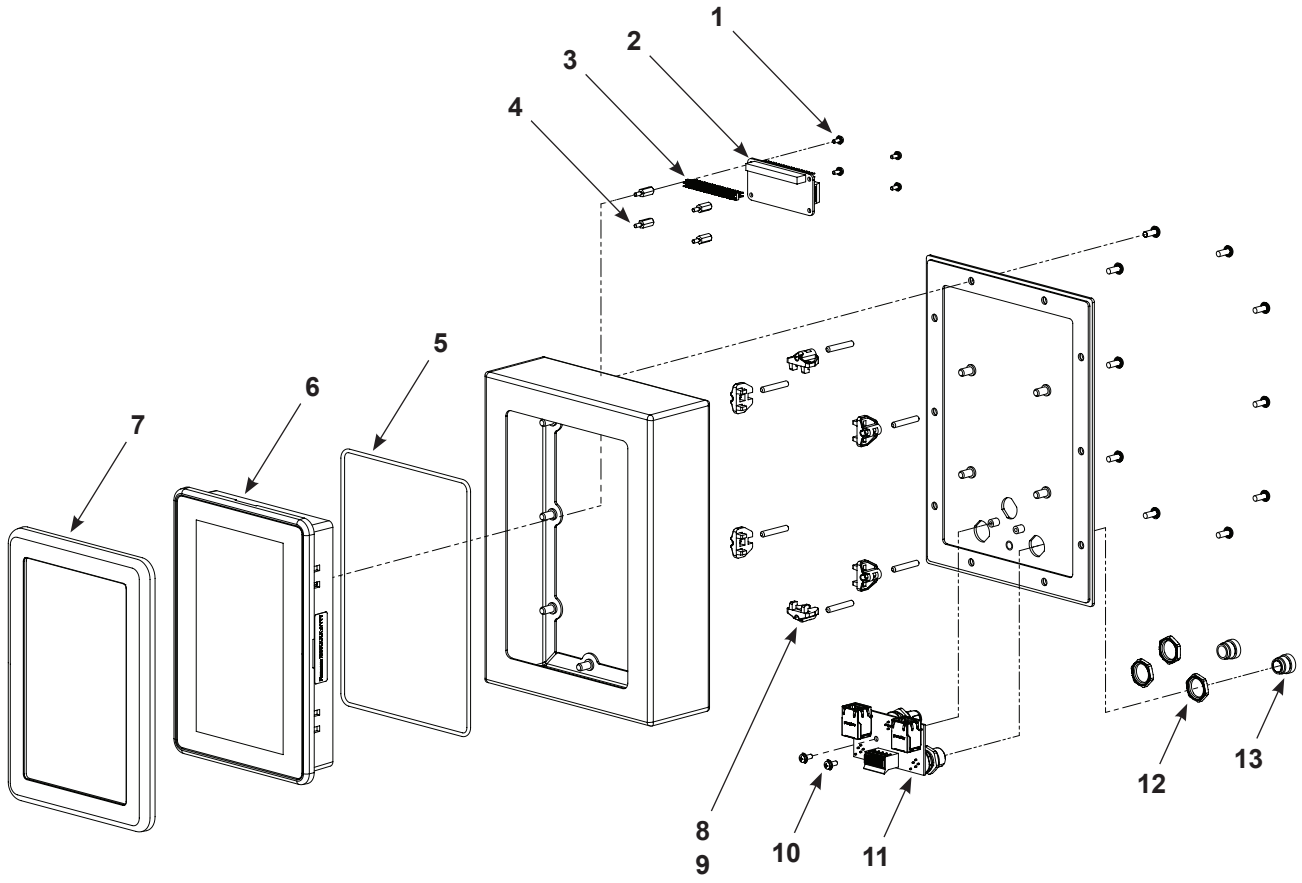


Figure 10 Controller Parts

CAN HAT Module Kit

Item	Description	Quantity	Note
1626870 - KIT, service, CAN HAT		—	
1	• MACHINE SCREW, pan, recess, M2.5 x 6, steel, zinc plating, with internal tooth lockwasher	4	
2	• MODULE, CAN-HAT, RS485, 40-pin	1	
3	• HEADER, post, tinned, double-row, thru-hole	1	
4	• STAND-OFF, hex, M2.5 x 6 length male/female, steel, zinc	4	

HMI Touchscreen Kit

Item	Description	Quantity	Note
1626868 - KIT, service, HMI, Encore manual systems		—	
5	• GASKET, system controller, 7-in. HMI	1	
6	• HMI, system controller, with image, powder, manual	1	
7	• GUARD, HMI bezel	1	
8	• SET SCREW, cup, M4 x 25 stainless steel	6	
9	• CLIP, mount, system controller	6	

Receptacle PCA Board Kit

Item	Description	Quantity	Note
1626871 - KIT, service, receptacle PCA, system controller		—	
10	• SCREW, pan, recess, M3 x 8, with internal lockwasher, steel, black zinc	2	
11	• PCA, receptacle board, system controller	1	
12	• NUT, panel, brass, nickel plating, PG9 thread, EMC	3	
13	• PLUG, M12, male thread, 5P, IP67, plastic	2	

Cables

Item	Part	Description	Quantity	Note
NS	1625517	CABLE, Ethernet, CAT6, RJ45 x RJ45 DN-90, 1 ft	1	A
NS	1625549	CABLE, CAN-power, M12 F90 x M12 F-90, 0.5 m	1	B
NS	1625900	CABLE, CAN-power, M12 F-90 x M12 F-90, 3 m	1	B

NOTE: A. Used for connection between HMI and PCA inside the system controller enclosure.

B. Used for connection the between the system controller and the pump controller.

NS: Not Shown

EU DECLARATION of Conformity

This Declaration is issued under the sole responsibility of the manufacture.

Product: Encore VT and HD Manual and Mobile Powder Systems

Models: Encore VT and HD Manual and Mobile Powder Systems with “NEW CONTROLS TECHNOLOGY”.

Description: The manual powder electrostatic powder spray system includes applicator, control cable and associate controls. This is available in a stationery system, or in a mobile system.

Applicable Directives:
2006/42/EC – Machinery Directive
2014/30/EU – EMC Directive
2014/53/EU – Radio Equipment Directive
2014/34/EU – ATEX Directive

Standards Used for Compliance:

EN/ISO12100 (2010)	EN60204-1 (2018)	EN301 489-17 (2020)
EN60079-0 (2018)	EN50050-2 (2013)	EN61000-6-2 (2019)
EN60079-31 (2014)	EN50177 (2009 +A1:2012)	

Principles:
This product has been designed & manuf. according to the Directives & standards / norms described above.

Type of Protection:
- Ambient Temperature: +15ºC to +40ºC
- Ex II 2 D / 2mJ = (Manual and Auto Applicators)
- EX II (2) 3 D = (Manual & Automatic Controllers)

Certificates:
- FM14ATEX0051X = Encore XT/HD Manual Appl. And Encore Select HD Robot Appl. (Dublin, Ireland)
- FM11ATEX0056X = (Applicators) (Dublin, Ireland)
- **FM24ATEX0029X** = (Controller) (Dublin, Ireland)

ATEX Surveillance
- 0598 SGS Fimko Oy (Helsinki, Finland)

Date: 29Oct2024

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UK DECLARATION of Conformity

This Declaration is issued under the sole responsibility of the manufacture.

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Models: Encore VT and HD Manual and Mobile Powder Systems with “NEW CONTROLS TECHNOLOGY”.

Description: The manual powder electrostatic powder spray system includes applicator, control cable and associate controls. This is available in a stationery system, or in a mobile system.

Applicable UK Regulations:
Supply Machinery Safety 2008
Electromagnetic Compatibility Regulation 2016
Equipment & Protective Systems Intended for use in Potentially Explosive Atmosphere Reg 2016
Radio Equipment Regulations 2017

Standards Used for Compliance:

EN/ISO12100 (2010)	EN60204-1 (2018)	EN301 489-17 (2020)
EN60079-0 (2018)	EN50050-2 (2013)	EN61000-6-2 (2019)
EN60079-31 (2014)	EN50177 (2009 +A1:2012)	

Principles:
This product has been designed & manuf. according to the Directives & standards / norms described above.

Type of Protection:
- Ambient Temperature: +15ºC to +40ºC
- Ex II 2 D / 2mJ = (Manual and Auto Applicators)
- EX II (2) 3 D = (Manual & Automatic Controllers)

Certificates:
- FM21UKEX0129X = Encore XT/HD Manual App & Select HD Robot Appl. (Maidenhead, Berkshire, UK)
- FM22UKEX0006X = (Applicators) (Maidenhead, Berkshire, UK)
- FM24UKEX00011X = (Controllers) (Maidenhead, Berkshire, UK)

EX Quality System Certificate
- SGS Baseefa NB 1180 (Buxton, Derbyshire, UK)

Date: 29Oct2024

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