



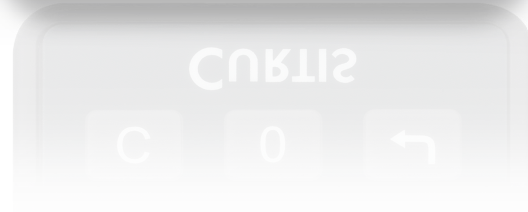
CURTIS

A KOHLER COMPANY



ECS Module

Electronic Code Switch



CE



Electronic Code Switch



The Curtis ECS module is a flexible, easy to implement, operator identification keypad. It ensures only authorized users have access to the machine, guaranteeing safe control and secure operation. Operators may identify themselves in multiple ways: through the use of a personal PIN code, through compatible RFID tags or a combination of the two. The ECS module can be easily integrated into machines with or without a CANbus. The ECS module incorporates a buzzer and two easy to read status LEDs, providing the operator audio and visual feedback regarding identification acceptance and diagnostics.

FEATURES

- ▶ Integrates easily into any system.
 - For CAN based systems: CANopen implementation with an optionally connected CAN termination resistor. Supports CAN baud rates from 100Kbps to 1 Mbps.
 - For non-CAN based systems: output relay will change state to indicate authorized access.
- ▶ Includes one standard RFID tag and two mini RFID tags. Supports ISO 14443A RFID tags.
- ▶ Supports up to 100 individual access PINs or RFID codes.
- ▶ Provides two pre-configured levels of access, supervisor and user, allowing additional configuration options to the supervisor access level.
- ▶ Two LEDs, one green and one red, to visualize identification acceptance and errors.
- ▶ An included buzzer provides audio feedback of errors or machine conditions to the operator.
- ▶ Machine power control through authorized RFID/ PIN access or via CAN.
- ▶ Auto machine shutdown based on interlock state and configurable timer.
- ▶ Pass Through Mode: allows the ECS to act as a pass through device, passing through push button inputs and RFID tag information over the CANbus.
- ▶ Diagnostic information accessible with the Curtis Integrated Toolkit.
- ▶ Updateable firmware over the CANbus.
- ▶ Easily operates in demanding conditions with an operational temperature range of -40° to $+70^{\circ}$ C, and electronics sealed to IP65.
- ▶ CE and FCC compliance, UL recognition and ROHS3 compliance ensure compatibility with global regulatory safety.



Electronic Code Switch



SPECIFICATIONS

Electrical

Voltage Ranges:

Nominal	Min	Max
12–96V	8.4V	120V

Operating Currents:

System Voltage	Typical (mA)	Max. (mA)
12–96V	25	302

Baud Rate:

100 Kbps to 1Mbps, 125 Kbps default

Environmental

Operating Temperature:

ECS: –40° to +70°C

RFID Tag: –20° to +50°C

Storage Temperature:

ECS: –40° to +85°C

RFID Tag: –40° to +70°C

Humidity:

Soak

Designed to meet EN 60068-2-78

Cyclic

Designed to meet EN 60068-2-30

Ingress Protection:

Designed to meet EN 60529

- ▶ IP65 for electronic components and IP54 for connector (mating with TYCO sealed connector).
- ▶ IP65 for electronic components and IP40 for connector (mating with TYCO unsealed connector).

Salt Spray (Fog):

Designed to meet ASTM B 117

Shock:

Designed to meet EN 60068-2-27

Vibration:

General: Designed to meet EN 60068-2-6

Random: Designed to meet EN 60068-2-64

Resonance: Designed to meet EN 60068-2-6

EMC

Emissions:

- ▶ **Radiated Emission:** EN 12895: 2015+A1: 2019
- ▶ **Conducted Emission:** EN 301 489-1 V2.2.1

Immunity:

Designed to meet:

- ▶ EN 12895: 2015+A1: 2019
- ▶ EN 301 489-1 V2.2.1

REGULATORY APPROVALS

FCC: This device complies with part 15C of the FCC Rules

- ▶ FCC ID: 2A4AV-ECS-XXXX

UL: UL recognition to UL 583

CE: The product complies with the requirements of:

- ▶ EMC: EN 12895: 2015+A1:2019, EN 301 489-1 V2.2.1, 2014/30/EU
- ▶ LVD: EN 60204-1:2018, 2014/35/EU
- ▶ RED: EN 300 330 V2.1.1, 2014/53/EU
- ▶ RoHS: 2015/863/EU (RoHS 3)

RFID

Frequency Bands:

Nominal	Min	Max
13.56MHz	13.553MHz	13.567MHz

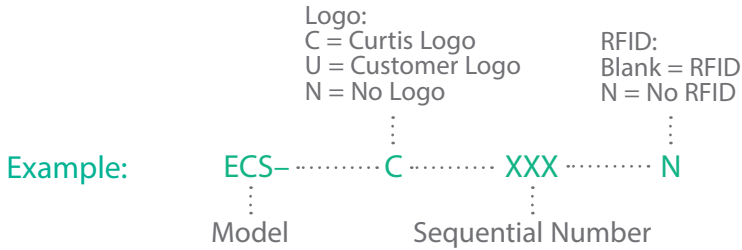
Maximum Transmission Power:

Frequency Band	Max. Power
13.56MHz	<42dBuA/m at 10m

Electronic Code Switch



MODEL ENCODEMENT



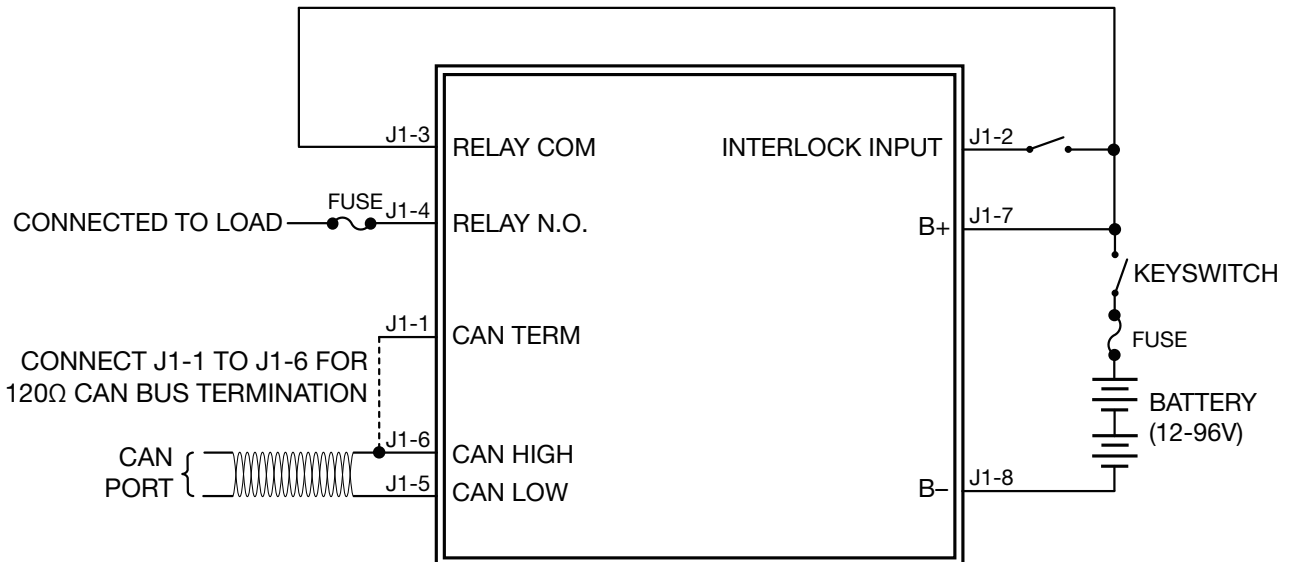
Without RFID



With RFID

NOTE: Units without RFID can be identified by both model number and overlay as shown on the right.

TYPICAL WIRING



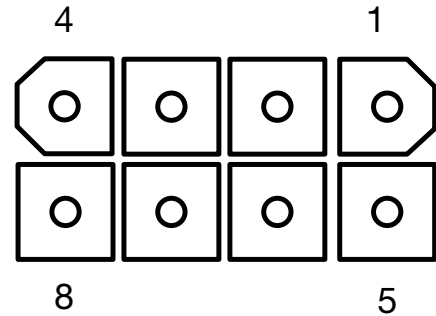
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CONNECTOR

The signals are assigned as shown in the table below.

Pin	Signal Name	Description
J1-1	CAN Term	CAN termination 120Ω; Short to pin 6 to enable
J1-2	Interlock Input	Interlock Input; 12V to 96V input; Active high
J1-3	Relay COM	Power to relay; 12V to 96V input
J1-4	Relay N.O.	Relay output
J1-5	CAN Low	CANbus low signal
J1-6	CAN HI	CANbus high signal
J1-7	B+	Battery Positive
J1-8	B-	Battery Common



MATING CONNECTOR

The mating connector for the ECS is an 8-pin Mini-Universal MATE-N-LOK housing. The part numbers to assemble a mating assembly are given in the table to the right.

Item	Part Description	Tyco P/N
1	Connector Housing	770579-1
2	Terminal (18 – 22 AWG)	770904-X

The ingress protection of the ECS connector may be improved to IP54 (from IP40) by replacing the mating connector part numbers in the table above with the following part numbers (shown at the right). The electronic components of the ECS are sealed to IP65.

Item	Part Description	Tyco P/N
1	Connector Housing	794821-1
2	Terminal (18 – 22 AWG)	770904-X
2	Interface Seal	794772-8
3	Single Wire Seal or Gang Seal	794758-1 or 1586359-8
4	Cavity Plug Seal (for unused terminal positions)	794995-1

COUNTRIES OF OPERATION

The ECS uses RFID in the 13.56 MHz high-frequency band. If RFID functionality is enabled, the ECS is permitted to operate in the following countries:

Albania	Cyprus	Iceland	Netherlands	Slovenia
Andorra	Czech Rep.	Ireland	North Macedonia	Spain
Austria	Denmark	Italy	Norway	Sweden
Belarus	Estonia	Kosovo	Poland	Switzerland
Belgium	Finland	Liechtenstein	Portugal	Turkey
Bosnia & Herzegovina	France	Malta	Romania	United Kingdom
Bulgaria	Germany	Moldova	San Marino	United States
China	Greece	Monaco	Serbia	Vatican City
Croatia	Hungary	Montenegro	Slovakia	

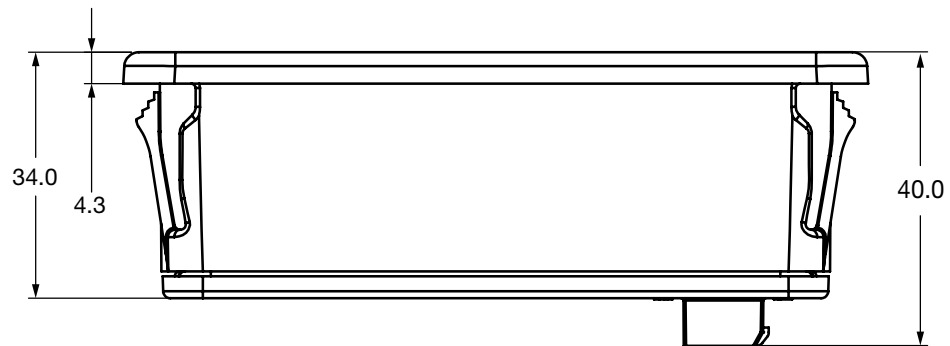
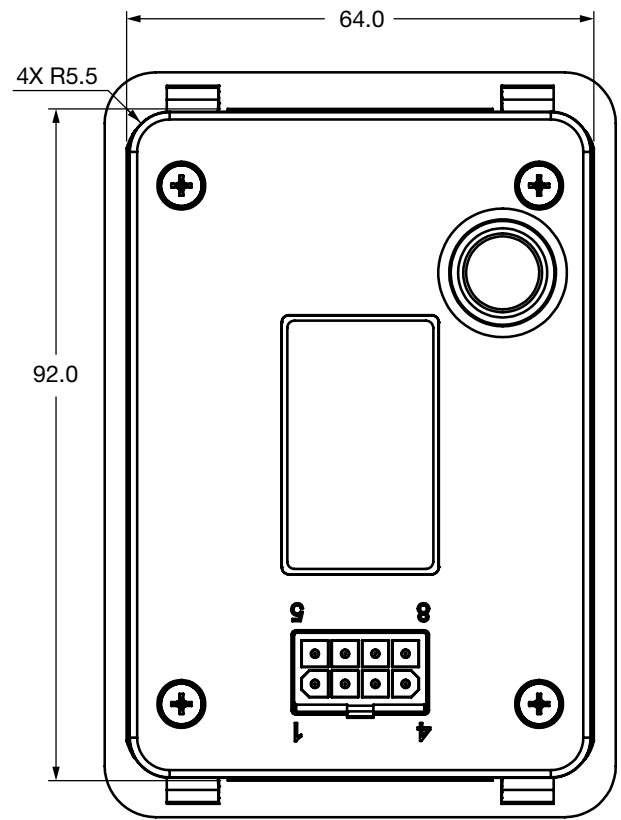
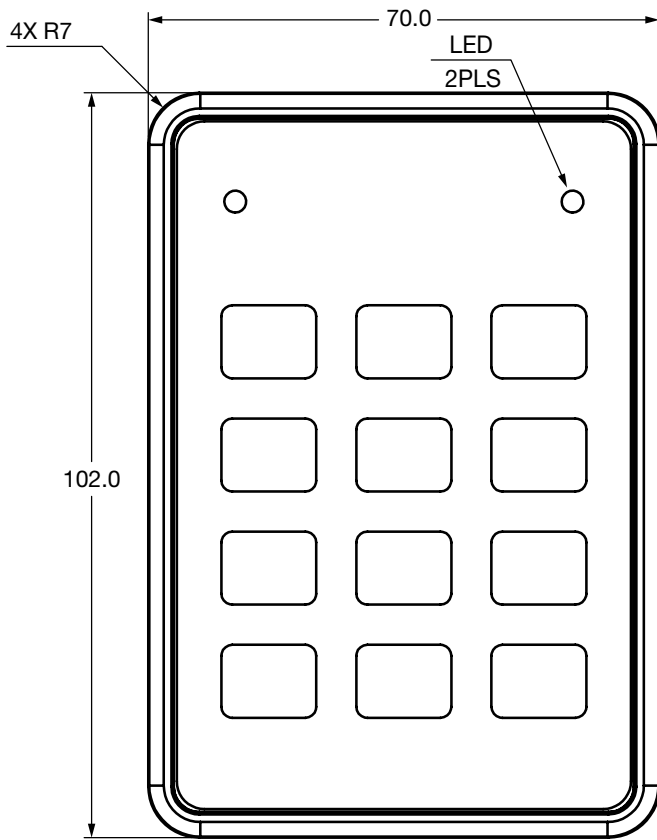
For questions regarding counties not listed above, please speak to a Curtis sales representative.

For countries where the RFID of this product is not authorized, a unit without RFID is available and is identifiable by an 'N' as the last character of the model number and PN as well as a unique overlay. Please see the Model Encodement section for more information.

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DIMENSIONS mm (typical)



WARRANTY Two year limited warranty from time of delivery.

