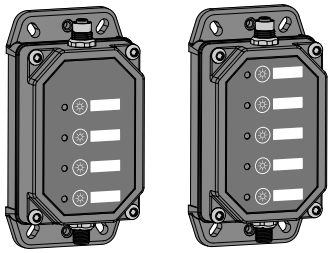
# LCA130T Wireless Andon Control Box Instruction Manual

## Features



- Rugged, cost-effective, and easy-to-install Andon Control Box
- Integral four or five capacitive touch button controller with programmable LEDs and discrete outputs
- Programmable using Banner's Pro Editor software and Pro Converter Cable
- Two M12 connectors for added Andon application flexibility and easy installation
- Up to five discrete outputs available to pass up to a total of 4 amps

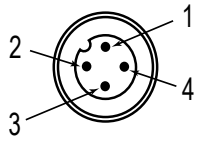
## LCA130T Models

| Model Name | Activation Method | Number of Touch Buttons | Frequency | Connector |
|---|---|---|---|---|
| LCA130T4DXN2Q | Touch | 4 Buttons | 2.4 GHz ISM Band | Integral 4-pin M12 male input quick-disconnect connector and 5-pin M12 female output quick-disconnect connector |
| LCA130T4DXN9Q | | | 900 MHz ISM Band | |
| LCA130T5DXN2Q | | 5 Buttons | 2.4 GHz ISM Band | Integral 4-pin M12 male input quick-disconnect connector and 8-pin M12 female output quick-disconnect connector |
| LCA130T5DXN9Q | | | 900 MHz ISM Band | |

## LCA130T Switch Diagram

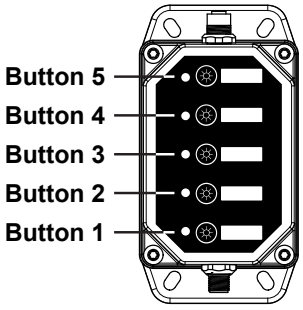
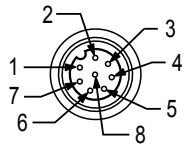
Touch, or touch and hold, one or more of the buttons to activate a programmed color and animation function.

*Input Pinout - All Models*

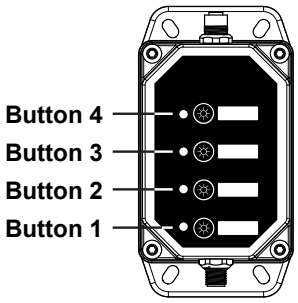
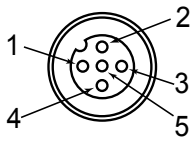
| 4-Pin M12 Male Connector | Pin | Wire Color | Wiring Description |
|---|---|---|---|
|  | 1 | Brown (bn) | 18 V DC to 30 V DC |
| | 2 | White (wh) | Use to configure with the Pro Editor Configuration software |
| | 3 | Blue (bu) | DC common (GND) |
| | 4 | Black (bk) | Not Used |



*Output Pinout - 5-Button Switch Control*

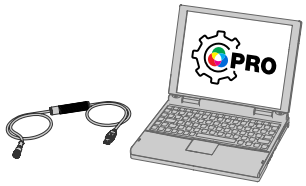
| 5-Button LCA130T | 8-pin M12 Female Connector | Pin | Description |
|---|---|---|---|
|  |  | 1 | Button 3 |
| | | 2 | Button 4 |
| | | 3 | Not used |
| | | 4 | Button 1 |
| | | 5 | Button 2 |
| | | 6 | Button 5 |
| | | 7 | DC common (GND) |
| | | 8 | Not used |

*Output Pinout - 4-Button Switch Control*

| 4-Button LCA130T | 5-pin M12 Female Connector | Pin | Description |
|---|---|---|---|
|  |  | 1 | Button 2 |
| | | 2 | Button 3 |
| | | 3 | DC common (GND) |
| | | 4 | Button 1 |
| | | 5 | Button 4 |

# Configuration Instructions

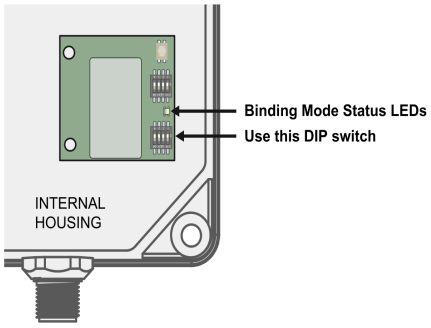
## Pro Editor




Use Banner's Pro Editor software and Pro Converter Cable to create custom configurations by selecting different colors, flash patterns, and animations.
For more information visit www.bannerengineering.com/proeditor.

## LCA130T DIP Switches

Before applying power to the device, set the radio's DIP switches.




| Device Settings[1] | DIP Switches | | | |
|---|---|---|---|---|
| | 1[2] | 2 | 3 | 4 |
| **Transmit Power Level:** 500 mW (default setting) | OFF | | | |
| **Transmit Power Level:** 250 mW | ON | | | |
| **Bit-Packed Button / LED and Output Status:**<br>Input 1: ENABLED<br>Output 1 Overwrite Input Status: ENABLED<br>(default setting) | | OFF | OFF | OFF |
| **Conventional Button / LED and Output Status:**<br>Inputs 2-6 (OFF = 0, Steady = 1, Flashing = 2): ENABLED<br>Outputs 2-6 (Overwrite Input Status): ENABLED | | ON | OFF | OFF |
| **Bit-Packed Button / LED and Output Status:**<br>Input 1: ENABLED<br>Output 1 Overwrite Input Status: DISABLED | | OFF | ON | OFF |

Continued on page 3

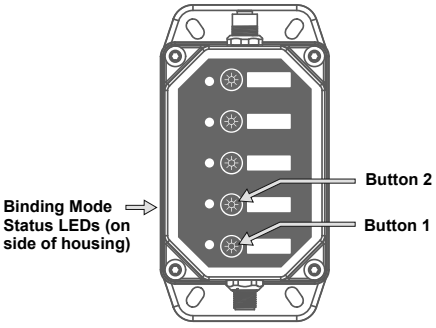
[1] Default device settings are shown. LED and output functionality can change depending on the configuration created with Pro Editor.
[2] DIP Switch 1 is only used on 900 MHz models.

Continued from page 2

| Device Settings | DIP Switches | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Conventional Button / LED and Output Status:**<br>Inputs 2-6 (OFF = 0, Steady = 1, Flashing = 2): ENABLED<br>Outputs 2-6 (Overwrite Input Status): DISABLED | | ON | ON | OFF |

# Bind the LCA130T to a DXM and Assign the Device Address

Before beginning the binding procedure, apply power to all the devices. Separate the radios by two meters when running the binding procedure. Put only one DXM into binding mode at a time to prevent the LCA130T from binding to the wrong DXM.




1. On the DXM: Use the arrow keys to select the **ISM Radio** menu on the LCD and click **ENTER**.
2. Highlight the **Binding** menu and click **ENTER**.
3. Use the arrow keys to select the Node address to bind the LCA130T to.
4. On the LCA130T, enter binding mode:
    a. Touch and hold button 1.
    b. Triple-touch button 2.
    c. Release button 1.

    The red and green Binding Mode Status LEDs flash alternately and the sensor searches for a DXM in binding mode. After the LCA130T binds, the LEDs stay solid momentarily, then they flash together four times. The LCA130T exits binding mode.
5. Label the LCA130T with the Node address number for future reference.
6. On the DXM: Click **BACK** to exit binding for that specific Node address.
7. Repeat steps 3 through 6 and change the Node address for as many LCA130Ts as are needed for your network.
8. On the DXM: After you have finished forming your network, click **BACK** until you reach the main menu.

# LED Behavior for the Nodes

Nodes do not sample inputs until they are communicating with the Gateway. The radios and antennas must be a minimum distance apart to function properly. Recommended minimum distances are:

900 MHz (500 mW): 4.57 m (15 ft)
2.4 GHz (65 mW): 0.3 m (1 ft)

| Binding Mode Status LEDs | Node Status |
|---|---|
| Flashing green | Radio link okay |
| Green and red flashing alternately | In Binding mode |
| Both colors are solid for 4 seconds, then flash 4 times; looks amber | Binding mode is complete |
| Flashing red, once every 3 seconds | Radio link error |
| Flashing red, once every second | Device error |

# LCA130T Modbus Registers

*Holding registers*

| Modbus Registers | | EIP Registers | | I/O Type | I/O Range | | Holding Register Representation (DEC) | |
|---|---|---|---|---|---|---|---|---|
| Gateway | Node | Node | | | Min | Max | Min | Max |
| 1 | 1 + (Node# x 16) | 0 + (Node# x 8) | Instance 100 / N7 | Bit Packed Input | 0 | 682 | 0 | 682 |
| 2 | 2 + (Node# x 16) | 1 + (Node# x 8) | | Button 1 Input 1 | 0 | 2 | 0 | 2 |

Continued on page 4

Continued from page 3

| Modbus Registers | | EIP Registers | | I/O Type | I/O Range | | Holding Register Representation (DEC) | |
|---|---|---|---|---|---|---|---|---|
| Gateway | Node | Node | | | Min | Max | Min | Max |
| 3 | 3 + (Node# x 16) | 2 + (Node# x 8) | | Button 2 Input 2 | 0 | 2 | 0 | 2 |
| 4 | 4 + (Node# x 16) | 3 + (Node# x 8) | | Button 3 Input 3 | 0 | 2 | 0 | 2 |
| 5 | 5 + (Node# x 16) | 4 + (Node# x 8) | | Button 4 Input 4 | 0 | 2 | 0 | 2 |
| 6 | 6 + (Node# x 16) | 5 + (Node# x 8) | | Button 5 Input 5 | 0 | 2 | 0 | 2 |
| 7 | 7 + (Node# x 16) | 6 + (Node# x 8) | | Reserved | | | | |
| 8 | 8 + (Node# x 16) | 7 + (Node# x 8) | | Device Message | | | | |
| 9 | 9 + (Node# x 16) | 8 + (Node# x 8) | Instance 112 / N14 | Bit Packed Output | 0 | 682 | 0 | 682 |
| 10 | 10 + (Node# x 16) | 9 + (Node# x 8) | | Button 1 Output 1 | 0 | 2 | 0 | 2 |
| 11 | 11 + (Node# x 16) | 10 + (Node# x 8) | | Button 2 Output 2 | 0 | 2 | 0 | 2 |
| 12 | 12 + (Node# x 16) | 11 + (Node# x 8) | | Button 3 Output 3 | 0 | 2 | 0 | 2 |
| 13 | 13 + (Node# x 16) | 12 + (Node# x 8) | | Button 4 Output 4 | 0 | 2 | 0 | 2 |
| 14 | 14 + (Node# x 16) | 13 + (Node# x 8) | | Button 5 Output 5 | 0 | 2 | 0 | 2 |
| 15 | 15 + (Node# x 16) | 14 + (Node# x 8) | | Control Message | 0 | 2 | 0 | 2 |
| 16 | 16 + (Node# x 16) | 15 + (Node# x 8) | | Reserved | 0 | 2 | 0 | 2 |

To ensure that the LCA130T holds the correct state in case of signal interference, read the button input registers on the LCA130T, and then use the gateway to write the matching value to the button output registers on the LCA130T.

*Bit-Packed Holding Register Representation*

| | Summed Bit-Packed Register Contents of the LCA130T | |
|---|---|---|
| Buttons | Touch Value | Touch and Hold Value |
| Button 1 | 1 | 2 |
| Button 2 | 4 | 8 |
| Button 3 | 16 | 32 |
| Button 4 | 64 | 128 |
| Button 5 | 256 | 512 |

By default, an LED and an output are on steady when the corresponding button is touched and released immediately. An LED and an output continuously flash on and off when the button is touched and held for one second. Combinations of button touches and holds are summed.

For example, the value held in register 1 is 6 (2 + 4) when button 1 is flashing (2) and button 2 (4) is steady.

*Conventional Button holding Register Representation*

| Value | Description |
|---|---|
| 0 | LED and output off |
| 1 | Touch: LED and output are on steady |
| 2 | Touch and Hold: LED and output are flashing on and off |

# LCA130T Specifications

**Supply Voltage and Current**

18 V DC to 30 V DC

50 mA maximum current at 18 V DC (exclusive of load)

**Supply Protection Circuitry**

Protected against transient voltages

**Response Time**

Power-Up Delay: 500 milliseconds maximum

Input Response: 40 milliseconds maximum

Output Response: 300 milliseconds maximum

**Output Rating**

4A maximum load (combined or on a single output)

**Connections**

Integral 5-pin and 8-pin M12 male quick-disconnect connectors

Models with a quick disconnect require a mating cordset

**Construction**

Polycarbonate

**Vibration and Mechanical Shock**

Meets IEC 60068-2-6 requirements (Vibration: 10 Hz to 55 Hz, 0.5 mm amplitude, 5 minutes sweep, 30 minutes dwell)

Meets IEC 60068-2-27 requirements (Shock: 15G 11 ms duration, half sine wave)

### Pro Editor Configuration

Connection to Pro Editor software enables control of:

- **Animation:** Off, Steady, Flash, Two Color Flash
- **Color:** Green, Red, Yellow, Blue, Cyan, Magenta, Amber, Rose, Lime Green, Orange, Sky Blue, Violet, Spring Green
- **Intensity:** Off, Low, Medium, High
- **Speed:** Slow, Standard, Fast
- **Pattern:** Normal, Strobe, 3-Pulse, SOS, Random

Pro Converter Cable required to interface between PC and indicator, see Accessories

### Operating Conditions

–40 °C to +50 °C (–40 °F to +122 °F)

95% at +50 °C maximum relative humidity (non-condensing)

### Environmental Rating

IP65

### Radio Range

900 MHz (500 mW): Up to 1.6 km (1 mile) (internal antenna)

2.4 GHz (65 mw): Up to 1000 m (3280 ft) with line of sight (internal antenna)

### Antenna Minimum Separation Distance

900 MHz (500 mW): 4.57 m (15 ft)

2.4 GHz (65 mW): 0.3 m (1 ft)

### Radio Transmit Power

900 MHz Conducted: 27 dBm (500 mW); EIRP with the supplied 4 dB antenna: 31 dBm (1260 mW)

2.4 GHz Conducted: < 18 dBm (65 mW); EIRP with the supplied 2 dB antenna: < 20 dBm (100 mW)

### Spread Spectrum Technology

FHSS (Frequency Hopping Spread Spectrum)

### Required Overcurrent Protection

**WARNING:** Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to www.bannerengineering.com.

| Supply Wiring (AWG) | Required Overcurrent Protection (A) | Supply Wiring (AWG) | Required Overcurrent Protection (A) |
|---|---|---|---|
| 20 | 5.0 | 26 | 1.0 |
| 22 | 3.0 | 28 | 0.8 |
| 24 | 1.0 | 30 | 0.5 |

### Certifications

Banner Engineering BV
Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM

Turck Banner LTD Blenheim House
Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN

(CE/UKCA approval only applies to 2.4 GHz models)

### 900 MHz Compliance (RM7023 Radio Module)

Radio module is indicated by the product label marking

Contains FCC ID: UE3RM7023: FCC Part 15, Subpart C, 15.247

Contains IC: 7044A-RM7023

### 2.4 GHz Compliance (SX243 Radio Module)

Radio module is indicated by the product label marking

Contains FCC ID: UE3SX243: FCC Part 15, Subpart C, 15.247

Radio Equipment Directive (RED) 2014/53/EU

ETSI/EN: EN 300 328 V2.2.2 (2019-07) [RED HarmStds]

Contains IC: 7044A-SX243

## FCC Part 15 Class A for Intentional Radiators

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.

(Part 15.21) Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

## Industry Canada Statement for Intentional Radiators

This device contains licence-exempt transmitters(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

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

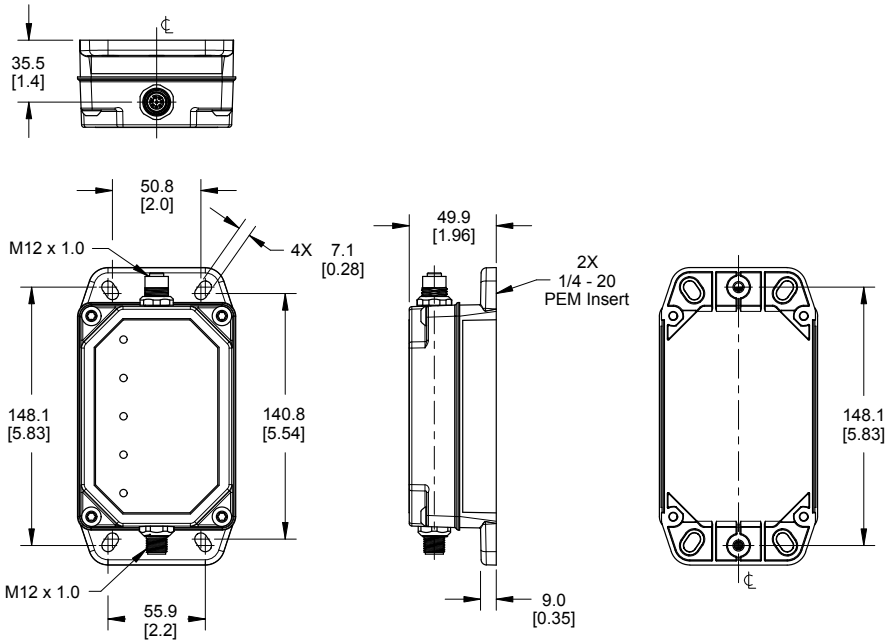
Cet appareil contient des émetteurs/récepteurs exemptés de licence conformes à la norme Innovation, Sciences, et Développement économique Canada. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage.

2. L’utilisateur de l’appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement.

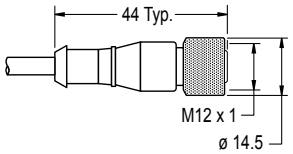
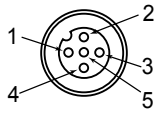
# Dimensions

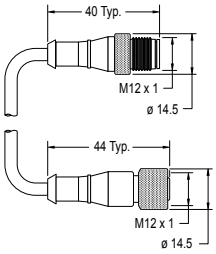
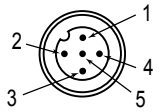
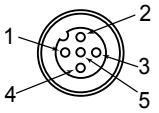
All measurements are listed in millimeters [inches], unless noted otherwise.

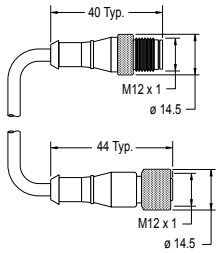
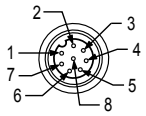
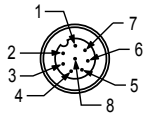



# Accessories

# Cordsets

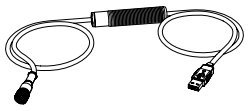
| 5-Pin Threaded M12 Cordsets—Single Ended | | | | |
|---|---|---|---|---|
| **Model** | **Length** | **Style** | **Dimensions** | **Pinout (Female)** |
| **MQDC1-501.5** | 0.5 m (1.5 ft) | Straight |  |  <br>1 = Brown<br>2 = White<br>3 = Blue<br>4 = Black<br>5 = Gray |
| **MQDC1-503** | 0.9 m (2.9 ft) | | | |
| **MQDC1-506** | 2 m (6.5 ft) | | | |
| **MQDC1-515** | 5 m (16.4 ft) | | | |
| **MQDC1-530** | 9 m (29.5 ft) | | | |
| **MQDC1-560** | 18 m (59 ft) | | | |
| **MQDC1-5100** | 31 m (101.7 ft) | | | |

| 5-Pin Threaded M12 Cordsets—Double Ended | | | | | |
|---|---|---|---|---|---|
| **Model** | **Length** | **Style** | **Dimensions** | **Pinout (Male)** | **Pinout (Female)** |
| **MQDEC-501SS** | 0.31 m (1.02 ft) | Male Straight/ Female Straight |  |  |  |
| **MQDEC-503SS** | 0.91 m (2.99 ft) | | | 1 = Brown<br>2 = White<br>3 = Blue | 4 = Black<br>5 = Gray |
| **MQDEC-506SS** | 1.83 m (6 ft) | | | | |
| **MQDEC-512SS** | 3.66 m (12 ft) | | | | |
| **MQDEC-515SS** | 5 m (16.4 ft) | | | | |
| **MQDEC-530SS** | 9 m (29.5 ft) | | | | |
| **MQDEC-550SS** | 15 m (49.2 ft) | | | | |

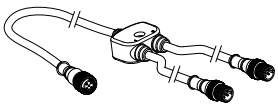
| 8-Pin Threaded M12 Cordsets—Double Ended | | | | |
|---|---|---|---|---|
| **Model** | **Length** | **Style** | **Dimensions** | **Pinout** |
| **MQDEC1-803SS** | 1 m (3.28 ft) | Male Straight / Female Straight |  | 1 = White<br>2 = Brown<br>3 = Green<br>4 = Yellow<br>5 = Gray<br>6 = Pink<br>7 = Blue<br>8 = Red |
| **MQDEC1-806SS** | 2 m (6.56 ft) | | | |
| **MQDEC1-810SS** | 3 m (9.84 ft) | | | |
| **MQDEC1-815SS** | 5 m (16.4 ft) | | | |
| **MQDEC1-830SS** | 9 m (29.5 ft) | | Female  Male  | |
| **MQDEC1-850SS** | 15 m (49.2 ft) | | | |
| **MQDEC1-8100SS** | 30.5 m (100 ft) | | | |
| **MQDEC1-8200SS** | 61 m (200 ft) | | | |

# Pro Editor Hardware

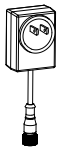
**MQDC-506-USB**
- Pro Converter Cable
- 1.83 m (6 ft) length 5-pin M12 quick disconnect to Device and USB to PC
- Required for connection to Pro Editor



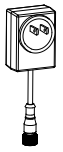
**CSB-M1251FM1251M**
- 5-pin parallel Y splitter (Male-Male-Female)
- For full Pro Editor preview capability
- Requires external power supply, sold separately



**PSW-24-1**
- 24 V DC, 1 A power supply
- 2 m (6.5 ft) PVC cable with M12 quick disconnect
- Provides external power with splitter cable, sold separately

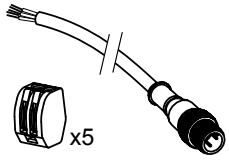


**PSW-24-2**
- 24 V DC, 2 A power supply
- 3.5 m (11.5 ft) PVC cable with M12 quick disconnect
- Provides external power with splitter cable, sold separately



**PSD-24-4**
- 90 to 264 V AC 50/60 Hz input
- Includes a 1.8 m (6 ft) US style 5-15P input plug
- 24 V DC UL Listed Class 2 M12 connector output
- 4 A total current

**ACC-PRO-CABLE5**
- Mating accessory for cabled and terminal models
- 150 mm (6 inch) PVC cable with M12 quick disconnect
- Lever wire nuts included (qty 5)
- Required to connect cabled models and screw terminal models to Pro Converter Cable, sold separately



| | |
|---|---|
| **MQDC-801-5M-PRO**<br>• 8-pin to 5-pin double-ended cordset<br>• 0.31 m (1 ft) PVC cable with M12 quick disconnects<br>• Required to connect 8-pin Pro Series-enabled devices to Pro Converter Cable (MQDC-506-USB), sold separately |  |

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