OWNER'S MANUAL

* PLEASE READ CAREFULLY BEFORE USING AND KEEP WELL.

7" TFT LCD COLOR Rear Vision Monitor
(MULTIPLE DISPLAY MODE)

Model: ECL-70

* Design and Specifications are subject to change without notice.
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ECL-70M (7" TFT LCD monitor) is designed for the automotive rear vision system.

- High Resolution 7" TFT LCD panel
- Free Input Voltage (DC 10V ~ DC 32V)
- NTSC / PAL Compatibility
- 4 Camera Inputs / 1 AV Input / 1AV Out
- Multiple Display Mode (Single, Split, Triple, Quad)
- Automatic Picture Display (5 Triggering functions)
- Auto Scanning function
- Automatic Brightness Sensor (DAY/NIGHT)
- Built-in Speaker
- OSD with $\mu$-com
- Rain-Proof IP64 (ECL-70M monitor only)
SUGGESTIONS

TFT LCD Color Monitor

- **Safety**
  - Use only DC 10V to 32V.
  - In case that dust or liquid was soaked into the case, please turn off power and consult the experienced technician before using.
  - Do not cover air duct for preventing from considerable rise in temperature.

- **Installation**
  - Do not install the unit in an extremely hot or humid place (radiator, air duct, etc.) or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
  - The monitor is not designed for waterproof.

- **General cleaning information**
  - If your vehicle has been parked in direct sun light resulting in a considerable rise in temperature inside the vehicle, allow the unit to cool off before operating.
  - Clean the unit with a slightly damp soft cloth. Use a mild household detergent. Never use strong solvents such as thinner or benzine as they might damage the finish of the unit.
1. POWER

- **STAND-BY mode**
  - When Red LED is turned on, it indicates the power is applied and it is in stand-by mode.
  - The monitor is not turned off until the ignition key is at off position.

- **POWER-ON mode**
  - Press POWER button to turn the monitor on.
  - When the monitor is on, all buttons are backlit (Green LED).
  - Press POWER button to turn the monitor off.

* When the trigger signal is activated, the selected source’s image will be displayed on the monitor screen automatically. (Please refer to TRIGGER MODE in SETUP MENU for further information)

2. - / +

- **Use + / - button to adjust speaker volume.**
  - Press - to decrease speaker volume.
  - Press + to increase speaker volume.

- **Use + / - button to select the content in SETUP MENU mode.**
3. UP/DN
- Use UP/ DN button to adjust TILT (PAN) camera position.
  - Press UP button to adjust TILT (PAN) camera position upward.
  - Press DN button to adjust TILT (PAN) camera position downward.
*Available only TILT (PAN) camera is connected
- Use UP/ DN button to search the lists in SETUP MENU mode.

4. SOURCE
- Use SOURCE button to select the display image.
  (CAM1 → CAM2 → CAM3 → CAM4 → AUX → SPLIT2 → SPLIT3 → SPLIT4)
* OSD indicate which image is displayed on the screen.

5. MENU
- HOT KEY Function
  - Press MENU button to adjust Bright, Contrast, Color, Tint (Available at NTSC system only).

![Diagram of menu options]
- **SET UP MENU**
  - PRESS MENU BUTTON FOR A WHILE (OVER 1 SEC.) TO ENTER SETUP MENU.
  - SELECTABLE OSD MENU DISAPPEARS WITHIN 5 SECONDS IF THERE IS NO NEW INPUT SIGN

-SETUP MENU-
1. CAMERA SORT
2. NORMAL/MIRROR
3. TRIGGER MODE
4. SCREEN SPLIT
5. CAMERA NAME
6. SCALE MODE
7. AUTO SCAN
8. ADVANCED MENU

-SELECTABLE OSD MENU DISAPPEARS WITHIN 5 SECONDS IF THERE IS NO NEW INPUT SIGN

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3. TRIGGER MODE

TRIGGER SOURCE

TRIGGER DELAY

SELECT 'TRIGGER MODE'

PRESS TO SEARCH MENU

PRESS TO SELECT THE MENU

PRESS TO EXIT THE MENU

SELECT 'TRIGGER SOURCE'

TRIGGER1: [CAM1, CAM2, CAM3, CAM4, AUX, SPLIT2, SPLIT3, SPLIT4]
TRIGGER2: [CAM1, CAM2, CAM3, CAM4, AUX, SPLIT2, SPLIT3, SPLIT4]
TRIGGER3: [CAM1, CAM2, CAM3, CAM4, AUX, SPLIT2, SPLIT3, SPLIT4]
TRIGGER4: [CAM1, CAM2, CAM3, CAM4, AUX, SPLIT2, SPLIT3, SPLIT4]
TRIGGER5: [CAM1, CAM2, CAM3, CAM4, AUX, SPLIT2, SPLIT3, SPLIT4]

PRESS TO SEARCH MENU

PRESS TO SELECT THE MENU

PRESS TO ADJUST "TRIGGER DELAY TIME"

PRESS TO EXIT THE MENU

SELECT 'TRIGGER DELAY'

TRIGGER1: [0 ~ 20 sec]
TRIGGER2: [0 ~ 20 sec]
TRIGGER3: [0 ~ 20 sec]
TRIGGER4: [0 ~ 20 sec]
TRIGGER5: [0 ~ 20 sec]
4. SCREEN SPLIT

SELECT 'SCREEN SPLIT'

- SPLIT 2
- SPLIT 3
- SPLIT 4

PRESS TO SEARCH MENU
PRESS TO SELECT THE MENU
PRESS TO EXIT THE MENU

SOURCE

SELECT 'SPLIT 2'

SOURCE1: [CAM1,CAM2,CAM3,CAM4]
SOURCE2: [CAM1,CAM2,CAM3,CAM4]
AUDIO: [CAM1,CAM2,CAM3,CAM4]

PRESS TO SEARCH MENU
PRESS TO SELECT THE MENU
PRESS TO SELECT THE "CAMERA"
SELECT TWO CAMERAS FOR DUAL IMAGE DISPLAY
SELECT ONE CAMERA FOR AUDIO FUNCTION.
PRESS TO EXIT THE MENU

SOURCE

SELECT 'SPLIT 3'

SOURCE1: [CAM1,CAM2,CAM3,CAM4]
SOURCE2: [CAM1,CAM2,CAM3,CAM4]
SOURCE3: [CAM1,CAM2,CAM3,CAM4]
AUDIO: [CAM1,CAM2,CAM3,CAM4]

PRESS TO SEARCH MENU
PRESS TO SELECT THE MENU
PRESS TO SELECT THE "CAMERA"
SELECT THREE CAMERAS FOR TRIPLE IMAGE DISPLAY
SELECT ONE CAMERA FOR AUDIO FUNCTION.
PRESS TO EXIT THE MENU

SOURCE
SELECT 'SPLIT 4'

SOURCE1: [CAM1,CAM2,CAM3,CAM4]
SOURCE2: [CAM1,CAM2,CAM3,CAM4]
SOURCE3: [CAM1,CAM2,CAM3,CAM4]
SOURCE4: [CAM1,CAM2,CAM3,CAM4]
AUDIO: [CAM1,CAM2,CAM3,CAM4]

PRESS TO SEARCH MENU
PRESS TO SELECT THE MENU
PRESS TO SELECT THE "CAMERA"
SELECT FOUR CAMERAS FOR QUAD IMAGE DISPLAY
SELECT ONE CAMERA FOR AUDIO FUNCTION.
PRESS TO EXIT THE MENU

5. CAMERA NAME
CAM1: [CAM1 ]
CAM2: [CAM2 ]
CAM3: [CAM3 ]
CAM4: [CAM4 ]

PRESS TO SEARCH MENU
PRESS TO SELECT THE MENU
PRESS TO MOVE NEXT LETTER
PRESS TO SELECT THE "CHARACTER"
PRESS TO EXIT THE MENU

6. SCALE MODE
CAM1: [OFF, SCALE1, SCALE2, SCALE3, SCALE4]
CAM2: [OFF, SCALE1, SCALE2, SCALE3, SCALE4]
CAM3: [OFF, SCALE1, SCALE2, SCALE3, SCALE4]
CAM4: [OFF, SCALE1, SCALE2, SCALE3, SCALE4]
SCALE 1
SCALE 2

PRESS TO SEARCH MENU
PRESS TO SELECT THE MENU
PRESS TO SELECT THE "SCALE MODE"
PRESS TO EXIT THE MENU
7. AUTO SCAN
AUTO SCAN: [ON, OFF]
SCAN CAM1: [0 ~ 20 sec]
SCAN CAM2: [0 ~ 20 sec]
SCAN CAM3: [0 ~ 20 sec]
SCAN CAM4: [0 ~ 20 sec]
SCAN SPLIT2: [0 ~ 20 sec]
SCAN SPLIT3: [0 ~ 20 sec]
SCAN SPLIT4: [0 ~ 20 sec]
8. ADVANCED MENU
1. DISPLAY: [FULL, NORMAL]
2. UP/DOWN: [UP, DOWN]
3. LEFT/RIGHT: [LEFT, RIGHT]
4. VIDEO FORMAT: [NTSC, PAL]
5. DAY/NIGHT CONTROL

- SOURCE
- PRESS TO SEARCH MENU
- PRESS TO SELECT THE MENU
- PRESS TO MAKE OPTION SETTING
- PRESS TO EXIT THE MENU

SELECT 'ADVANCED MENU'
PRESS TO SEARCH MENU
PRESS TO SELECT THE MENU
PRESS TO MAKE OPTION SETTING
PRESS TO EXIT THE MENU

SELECT 'DAY/NIGHT CONTROL'

- DAY/NIGHT: [ON, OFF]
- DAY/NIGHT LEVEL: [0~60]
- DAY/NIGHT BRIGHT: [0~48]

- SOURCE
- PRESS TO SEARCH MENU
- PRESS TO SELECT THE MENU
- PRESS TO MAKE OPTION SETTING
- PRESS TO EXIT THE MENU

SUBMENU EXPLANATIONS

1. CAMERA SORT
   - Different types of camera (NORMAL, SHUTTER, TILT / PAN) can be connected to CA1~CA3.
   - CA 4 is only available with NORMAL CAMERA.*

   **CAUTION!**
   - Wrong camera connections may cause the defect of unit.

2. NORMAL/MIRROR
   - Camera’s Normal / Mirror image can be switched (CAM1 ~ CAM4).
3. TRIGGER MODE

3.1 TRIGGER SOURCE
- 5 Trigger signals can be connected and each trigger source (CAM1, CAM2, CAM3, CAM4, AUX, SPLIT2, SPLIT3, SPLIT4) can be selected.
- When the trigger signal is activated, the selected source’s image will be displayed on the monitor screen.

3.2 TRIGGER DELAY
- Each trigger’s delay time can be adjusted from 0 sec to 20 sec.
* TRIGGER PRIORITY: TRIGGER1 > TRIGGER 2 > TRIGGER 3 > TRIGGER 4 >TRIGGER 5

4. SCREEN SPLIT
- Multiple Images can be displayed.
- SPLIT 2 (DUAL SCREEN DISPLAY)
- SPLIT 3 (TRIPLE SCREEN DISPLAY)
- SPLIT 4 (QUAD SCREEN DISPLAY)
* Only one audio function can be used.

5. CAMERA NAME
- Each camera can be named and selected camera name is displayed via OSD.

6. SCALE MODE
- Different scale modes (SCALE1, SCALE2, SCALE3, SCALE 4, OFF) can be selected at CA1 ~ CA4.
- SCALE 1, SCALE 2 can be adjusted.
- When the trigger signal is activated, the selected scale is displayed on the monitor screen.
* This is the just electrical scale that is measuring distance from the vehicles.

7. AUTO SCAN
- The auto scanning time of each camera can be adjusted (0 ~ 20 sec).
8. ADVANCED MENU

8.1 DISPLAY
- 5 Trigger signals can be connected and each trigger source (CAM1, CAM2, CAM3, CAM4, AUX, SPLIT2, SPLIT3, SPLIT4) can be selected.
- When the trigger signal is activated, the selected source's image will be displayed on the monitor screen.

- FULL
  - Display the image in the ratio of 16:9.

- NORMAL
  - Display the image on the screen in the ratio of 4:3.

8.2 UP/DOWN
- Converted image display (top and bottom)
8.3 LEFT/RIGHT
- Converted image display (right and left)

8.4 VIDEO FORMAT
- NTSC or PAL system can be selectable.

8.5 DAY/NIGHT CONTROL
- DAY/NIGHT : Select DAY/NIGHT ON/OFF
- DAY/NIGHT LEVEL: Adjust the sensitive of DAY/NIGHT LEVEL.
- DAY/NIGHT BRIGHT: Adjust the BRIGHTNESS level.

9. DAY/NIGHT SENSOR
- **Automatic Brightness Control**
- The brightness of the monitor is adjusted automatically with the CDS accordingly to the circumstance.
Install the monitor on a place which can stand more weight than 5Kg (10.1b).

- Clean the place before installation.
- Remove the protective paper covering the bottom of the bracket.
- Stick the provided bracket on the surface and fix it firmly with the screws.

- Adjust the angle of the monitor and fasten the handle screws strongly.
- Install the Control Box on the place which can stand more weight than 5Kgs (10.1b).
- Fix the control box with the provided screws as the drawings below.

![Diagram of Control Box](image)

**Mounting on the floor, console, etc.**

- Bracket Jack
- Fix the bracket jack with provided screws after connecting the cameras.

**Connections:**
- **Camera Input:** CA1, CA2, CA3, CA4
- **Power / Trigger Input**
- **Audio Output**
- **Video Output**
- **Monitor Connector Cable**
- **Audio Input**
- **Video Input**
**SYSTEM CONNECTIONS**

- ECL-70M MONITOR
- ECL-70CQ CONTROL BOX
- CAMERA (Not supplied)

* Shutter / Tilt / Normal camera

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**POWER/TRIGGER WIRE FUNCTIONS**

<table>
<thead>
<tr>
<th>REF #</th>
<th>WIRE COLOR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RED</td>
<td>POWER IN DC (10 TO 32V)</td>
</tr>
<tr>
<td>2</td>
<td>GREEN</td>
<td>TRIGGER 1</td>
</tr>
<tr>
<td>3</td>
<td>YELLOW</td>
<td>TRIGGER 4</td>
</tr>
<tr>
<td>4</td>
<td>BLUE</td>
<td>TRIGGER 3</td>
</tr>
<tr>
<td>5</td>
<td>BLACK</td>
<td>GROUND</td>
</tr>
<tr>
<td>6</td>
<td>BROWN</td>
<td>TRIGGER 5</td>
</tr>
<tr>
<td>7</td>
<td>WHITE</td>
<td>TRIGGER 2</td>
</tr>
</tbody>
</table>
## SPECIFICATIONS

- **ECL-70M (MONITOR)**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power input</td>
<td>DC 12V (from control box)</td>
</tr>
<tr>
<td>Power cons.</td>
<td>Max 10 Watt.</td>
</tr>
<tr>
<td>Video system</td>
<td>NTSC, PAL standard signal</td>
</tr>
<tr>
<td>Sync. System</td>
<td>Internal</td>
</tr>
<tr>
<td>LCD panel size</td>
<td>7 inch diagonal color</td>
</tr>
<tr>
<td>Field of view</td>
<td>Top: 50°, Bottom: 70°, Left: 70°, Right 70°</td>
</tr>
<tr>
<td>Screen size</td>
<td>7.0 inch (Digonal)</td>
</tr>
<tr>
<td>Resolution</td>
<td>1440(W) X 234(H)</td>
</tr>
<tr>
<td>Auto dimmer</td>
<td>Auto selectable</td>
</tr>
<tr>
<td>Color configuration</td>
<td>R.G.B. Stripe</td>
</tr>
<tr>
<td>Auto con./bright.</td>
<td>Day &amp; Night sensor</td>
</tr>
<tr>
<td>O.S.D control</td>
<td>Bright, Contrast, Color, Tint (NTSC System Only), Image Select, auto scan time, scale on/off</td>
</tr>
<tr>
<td>Power connector</td>
<td>13p Large Din connector</td>
</tr>
<tr>
<td>Speaker</td>
<td>Approx. 40 x 20mm, impedance: 8Ω, 0.2 watt max.</td>
</tr>
<tr>
<td>Finish</td>
<td>Dark Gray (Heat resistant-ABS)</td>
</tr>
<tr>
<td>Operating temp.</td>
<td>−10°C ~ +50°C (14°F ~ 122°F)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>−25°C ~ +80°C (−13°F ~ 176°F)</td>
</tr>
<tr>
<td>Ambient condition</td>
<td>Indoor use only</td>
</tr>
<tr>
<td>Vibration</td>
<td>4G</td>
</tr>
<tr>
<td>Dimensions</td>
<td>197(W) X 138(H) X 32.2(D) mm</td>
</tr>
<tr>
<td></td>
<td>7.75(W) X 5.43(H) X 1.3(D) inch</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 1.0kg</td>
</tr>
<tr>
<td>Supplied acc’y</td>
<td>Mounting bracket (1)</td>
</tr>
<tr>
<td></td>
<td>Screw kits (1)</td>
</tr>
<tr>
<td></td>
<td>Instruction manual (1)</td>
</tr>
<tr>
<td></td>
<td>Sun Visor (1)</td>
</tr>
</tbody>
</table>
### SPECIFICATIONS

**ECL-70CQ (CONTROL BOX)**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power input</td>
<td>DC 10V~32V (Car battery)</td>
</tr>
<tr>
<td>Power cons.</td>
<td>Max. 24 Watt.</td>
</tr>
<tr>
<td>Video system</td>
<td>NTSC, PAL standard signal</td>
</tr>
<tr>
<td>Sync. System</td>
<td>Internal</td>
</tr>
<tr>
<td>Video input</td>
<td>5 CH (4 mini DIN, 1 RCA), Composite, 1Vp-p 75 Ω</td>
</tr>
<tr>
<td>Audio input</td>
<td>5 CH (4 mini DIN, 1 RCA)</td>
</tr>
<tr>
<td>Video output</td>
<td>1 RCA, Composite video signal, 1Vp-p 75 Ω</td>
</tr>
<tr>
<td>Audio output</td>
<td>1 RCA, 150mV RMS, 47K</td>
</tr>
<tr>
<td>Case material</td>
<td>Steel</td>
</tr>
<tr>
<td>Operating temp.</td>
<td>-10°C ~ +50°C (14°F ~ 122°F)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-25°C ~ +80°C (-13°F ~ 176°F)</td>
</tr>
<tr>
<td>Ambient condition</td>
<td>Indoor use only</td>
</tr>
<tr>
<td>Vibration</td>
<td>4G</td>
</tr>
<tr>
<td>Dimensions</td>
<td>154(W) X 105(D) X 28(H) mm</td>
</tr>
<tr>
<td></td>
<td>6.06(W) X 4.13(D) X 1.1(H) inch</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 1.0kg</td>
</tr>
<tr>
<td>Supplied acc’y</td>
<td>Power cord 2m (1)</td>
</tr>
<tr>
<td></td>
<td>Screw kits (1)</td>
</tr>
<tr>
<td></td>
<td>Bracket jack (2)</td>
</tr>
</tbody>
</table>

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