General Specifications

GS 85A7C01-16EN

FC33E (Explosion-proof),
FC33U (Outdoor)
Pan tilt zoom type CCD Color Camera

- GENERAL
The FC33 explosion-proof or outdoor pan tilt zoom type CCD Color Camera is compact and lightweight, making it suitable for installation with small spaces. The camera is an intelligent pan-tilt-zoom type, which has an embedded controller and can memorize preset point values. The camera, which has high durability, also can be used for a wide range of applications such as monitoring and diagnosis of facilities at each site. What's more, the camera has features being set forth below:

- High-sensitivity that permits whole day continuous monitoring without special lighting. (As a Day/Night camera function)
- Variable speed of the pan and tilt rotations.
- ARS-485 interface for control.

- STANDARD SPECIFICATIONS

- Camera
  - Camera type: Color
  - Image Sensor: 1/4" interline transfer CCD
  - Signal: NTSC, PAL
  - Effective Pixels: NTSC: 976 (H) x 494 (V)
    PAL: 976 (H) x 582 (V)
  - Horizontal resolution: 650TV line
  - Synchronous system: Internal synchronization
  - Video S/N: 50 dB
  - White Balance: ATW
  - Electronic shutter (Auto/Manual): /10,000 sec-1/60 sec

  Minimum illuminance of subject
  (Shutter speed NTSC: 1/60sec, PAL: 1/50sec):
  Normal sensitivity (Sense Up: OFF):
    - 0.5 lx Color typical
    - 0.04 lx Color typical
  High sensitivity (Sense Up: ON):
    - 0.03 lx Color typical
    - 0.0025 lx Color typical

  Zoom Magnification:
  (36x optical) x (20x digital)
  Lens:
  - 3.3 mm -119 mm / F1.4 - 4.2
  (With auto focus)
  Horizontal field of vision:
  Approx. 60.2° (wide-angle) -
  Approx. 1.7° (telephoto)
  Iris Control:
  Automatic Iris control with manual override

- Pan-tilt Specifications
  - Rotation angles (range)
    Pan: 360° endless
    Tilt: 180°/+90° to -90° from horizontal
  - Rotational speed: Pan-tilt 40°/second (maximum)
  - Rotational accuracy: ±0.5°

- Preset
  - Number of preset points: 128
  - Preset items: Pan-tilt, zoom and focus positions

- Input/output
  - Video signal output:
    VBS (video burst sync) 1.0 V p-p 75 q
    Video transmission distance:
    Up to 300 m (when 5C-2V cable is used, without a cable compensator)

  Control signal input/output: RS-485
  Asynchronous communication full duplex mode of 8-bit data 1-bit stop, at 9,600 bps
  Control signal transmission distance:
  Up to 1200 m

- Main Body
  - Explosion protection: Flame-proof construction
  - Explosion-proof class: Ex d IIC T5
    - Ex d IIC T5 Gb
    - Ta= -40°C to 60°C
    - ATEX Certificated: CML 14 ATEX 1097X issue 0
    - EN60079-0:2012, EN60079-1:2007

  Class of ship: DNV (Under examination)
  Ingress protection: IEC IP66 equivalent

  Compatible standards:
  - Housing material: Stainless steel SS316L
  - Finish: Electrolytic polishing
  - Weight: 19kg

YOKOGAWA
Security Business Center
Hadano Office
500 Soya, Hadano-shi, Kanagawa 257-8502, JAPAN
Contact us/Form:

GS 85A7C01-17EN
Copyright © Jun. 2013 (KP)
3rd Edition: May.10 2016 (YK)
**Power Supply**
- Allowable power supply: 100 to 240 V AC at 50/60 Hz
- Power consumption: 60 VA (with heater)

**Installation Environment**
- Operating temperature: -40°C to +60°C (-40°F to 140°F); FC33U / FC33E (ATEX)
- 20°C to +60°C ( -4°F to 140°F); FC33E (TIIS) in Japan only
- Installation: Upright /Inverted

*Note: Heater (for camera protection), defroster (anti-fog function), and simple surge arrester (AC power line) are being equipped internally.*

### BODY CONNECTION CABLES

<table>
<thead>
<tr>
<th>Cable type</th>
<th>Device to be Connected</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power cable</strong>&lt;br&gt;(Default length 5m, non-removable from the body)</td>
<td><strong>Symbol / Type</strong>&lt;br&gt;(Connected to:)</td>
</tr>
<tr>
<td>Brown</td>
<td>L</td>
</tr>
<tr>
<td>Pale blue</td>
<td>N</td>
</tr>
<tr>
<td>Green yellow</td>
<td>GND</td>
</tr>
<tr>
<td><strong>Video signal cable</strong>&lt;br&gt;Composite cable&lt;br&gt;(Default length 5m, non-removable from the body)</td>
<td><strong>Internal conductor</strong>&lt;br&gt;Video signal</td>
</tr>
<tr>
<td><strong>External inductor</strong>&lt;br&gt;Signal/GND</td>
<td></td>
</tr>
<tr>
<td><strong>RS-485 cable</strong>&lt;br&gt;Twisted pair cable&lt;br&gt;(As needed)</td>
<td><strong>Yellow</strong>&lt;br&gt;TXD+&lt;br&gt;Web camera server&lt;br&gt;(VEDEO IN)</td>
</tr>
<tr>
<td><strong>White</strong>&lt;br&gt;TXD−&lt;br&gt;Protocol (RS-485 &lt;= USB, RS-232, etc.) Full duplex converter&lt;br&gt;(RS-485 terminals)</td>
<td></td>
</tr>
<tr>
<td><strong>Orange</strong>&lt;br&gt;RXD+&lt;br&gt;Or the like&lt;br&gt;(RS-485 terminals)</td>
<td></td>
</tr>
<tr>
<td><strong>White</strong>&lt;br&gt;RXD−</td>
<td></td>
</tr>
<tr>
<td><strong>Shield</strong>&lt;br&gt;FG</td>
<td></td>
</tr>
</tbody>
</table>

**Note: Specific controllers (for NTSC only) are required.**
**EXTERNAL DIMENSIONS**

Main body of model FC33

**Upright Type:**

FC33□-□□□□□

![Diagram of external dimensions for FC33 model](image)

- **Unit:** mm
- **Φ 11 (mounting hole):** Make sure there is enough space for turning and installation.
- **Wiper:** Attached if specified at time of order
- **Shade:** Attached if specified at time of order
- **Hood:** Attached if specified at time of order
- **Power cable 5 m:** AWG16 (UL) / 3-wire cable, outer diameter 10
- **Composite cable 5 m:** 1 coaxial cable, 4 pairs of twisted-pair cable, outer diameter 11.6
- **Name tag plate:** Attached if specified at time of order
- **Flexible fitting female screw:** M-screw is usable for FC33E.
Inverted type

**FC33□-□□□□U**

Unit: mm

Flexible fitting female screw
M-screw is usable for FC33E.

Make sure that there is enough space for turning and installation.

Composite cable 5m
1 coaxial cable, 4 pairs of twisted-pair cable, outer diameter 11.6

Power cable 5m
AWG16 (UL) / 3-wire cable, outer diameter 10

Name tag plate
Attached if specified at time of order

Wiper
Attached if specified at time of order

Hood
Attached if specified at time of order
**TERMINAL BOX (TB) AND METAL FLAME-PROOF PACKING FITTINGS (/G54)**

- Terminal box (TB), pressure-resistant and explosion-proof cable gland (/G54 to be specified)

![Diagram of Terminal Box and Cable Gland](image)

- Mass
  - Explosion-proof terminal box: Approx. 5 kg
  - Cable gland: Approx. 0.33 kg/each

- Matching cable outer dimension: Ø 7.4 to 12 mm
- Matching crimped terminal: Ø 3.5 mm

**TERMINAL BOX (TB) AND METAL FLAME-PROOF PACKING FITTINGS (/G56)**

- Terminal box (TB) and pressure-resistant and explosion-proof cable gland (/G56 to be specified)

![Diagram of Terminal Box and Cable Gland](image)

- Mass
  - Explosion-proof terminal box: Approx. 5 kg
  - Cable gland: Approx. 0.33 kg/each

- Matching cable outer dimension: Ø 7.4 to 12 mm
- Matching crimped terminal: Ø 3.5 mm

**CABLE GLANDS**

- Water-proof gland with union
  - UG2 (cabling port G1/2 cable gland 2)
  - UG3 (cabling port G1/2 cable gland 3)
  - UM2 (cabling port M20x1.5 cable gland 2)
  - UM3 (cabling port M20x1.5 cable gland 3)

  Weight: approx. 230 g

- Pressure-resistant packing metal rig
  - EG2 (cabling port G1/2 cable gland 2)
  - EG3 (cabling port G1/2 cable gland 3)
  - EM2 (connection home M20x1.5 cable gland 2)
  - EM3 (connection home M20x1.5 cable gland 3)

  (Note 1) This CABLE GLAND is Japanese standard

  Weight: approx. 250 g

- Pressure-resistant packing metal rig

  Weight: approx. 350 g

Note: Each shape of the packing metal rig may be changed a little.
## MODEL AND SUFFIX CODES

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix Code</th>
<th>Option Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FC33E</td>
<td></td>
<td></td>
<td>Explosion-proof pan-tilt zoom CCD color camera</td>
</tr>
<tr>
<td>FC33U</td>
<td></td>
<td></td>
<td>Outdoor pan-tilt zoom CCD color camera</td>
</tr>
<tr>
<td>Camera type</td>
<td>-N</td>
<td></td>
<td>High-sensitivity, 1/4 inch, 976(H) x 494(V) pixels, 36 times optical zoom. NTSC</td>
</tr>
<tr>
<td></td>
<td>-P</td>
<td></td>
<td>High sensitivity, 1/4 inch, 976(H) x 582(V) pixels, 36 times optical zoom. PAL  (Note1)</td>
</tr>
<tr>
<td>Wiper</td>
<td>W</td>
<td></td>
<td>With wiper</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td></td>
<td>Without wiper</td>
</tr>
<tr>
<td>Control</td>
<td>S</td>
<td></td>
<td>RS-485</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td></td>
<td>Multiplexed signal</td>
</tr>
<tr>
<td>Cable connection</td>
<td>0</td>
<td>G (PF) female thread (for TIIS explosion protection in Japan)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>M female thread (for ATEX explosion protection )</td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>S</td>
<td></td>
<td>Upright</td>
</tr>
<tr>
<td></td>
<td>U</td>
<td></td>
<td>Inverted</td>
</tr>
<tr>
<td>Additional specification code</td>
<td>/L10</td>
<td></td>
<td>Cable length 10 m (Both cable lengths are extended *2)</td>
</tr>
<tr>
<td></td>
<td>/T</td>
<td></td>
<td>Name tag plate: Up to 15 letters (alpha-numeral combination code, *2and *2 can be specified</td>
</tr>
<tr>
<td></td>
<td>/SH</td>
<td></td>
<td>Hood (Upright)</td>
</tr>
<tr>
<td></td>
<td>/SU</td>
<td></td>
<td>Hood (Inverted)</td>
</tr>
<tr>
<td></td>
<td>/SD</td>
<td></td>
<td>Shade</td>
</tr>
<tr>
<td></td>
<td>/TB</td>
<td></td>
<td>Terminal box (for both /G54 and /G56)</td>
</tr>
<tr>
<td></td>
<td>/G54</td>
<td></td>
<td>Cable ground (x4) for Terminal box</td>
</tr>
<tr>
<td></td>
<td>/G56</td>
<td></td>
<td>Cable ground (x6) for Terminal box</td>
</tr>
<tr>
<td></td>
<td>/ADP</td>
<td></td>
<td>Mount for replacement</td>
</tr>
</tbody>
</table>

(Note1) In case of PAL camera, please choose only \*2(0S(485)) as \*2Control\*2suffix code.

---

### NOTE

Terminal box (\*2TB\*2above) does not have an explosion-proof structure and symbol as \*2ATEX\*2. Because it is only providing a cable joint function without power, an explosion resistance test is not supported by Japanese law as electromechanical components.
COMPONENT NAMES AND FUNCTIONS

Item specified at the time of the order

1. Model and Suffix code
2. Tag name (Up to 15 letters), If Name tag plate(T) option is specified.

Note: Every trade or company name used in this document is a trademark or registered trademark of the company.