XCU3 Series
Installation manual

Rugged and reliable IP cameras for challenging environments

SIQURA

Note: To ensure proper operation, please read this manual thoroughly before using the product and retain the information for future reference.

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Brand names

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Liability

TKH Security accepts no liability for claims from third parties arising from improper use other than that stated in this manual.

Although considerable care has been taken to ensure a correct and suitably comprehensive description of all relevant product components, this manual may nonetheless contain errors and inaccuracies. We invite you to offer your suggestions and comments by email via info@tkhsecurity.com Your feedback will help us to further improve our documentation.

How to contact us

If you have any comments or queries concerning any aspect related to the product, do not hesitate to contact:

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Document revisions

V1.0	2023-06-05	PdK: Initial version

Contents

About this manual

What's in this manual

This is the installation manual for the XCU3 Series. It describes installation instructions and warnings.

Where to find more information

Find product specific datasheets, manuals, EU Declarations of Conformity and firmware updates at http://tkhsecurity.com. Make sure that you have the latest version of this manual.

Who this manual is for

These instructions are for all professionals who will configure and operate this product.

What you need to know

You will have a better understanding of how this product works if you are familiar with:

> Camera technologies

> CCTV systems and components

> Ethernet network technologies and Internet Protocol (IP)

> Windows environments

> Video, audio, data, and contact closure transmissions

> Video compression methods

Why specifications may change

We are committed to delivering high-quality products and services. The information given in this manual was current when published. As we continuously seek to improve our products and user experience, all features and specifications are subject to change without notice.

We like to hear from you!

Customer satisfaction is our first priority. We welcome and value your opinion about our products and services. Should you detect errors or inaccuracies in this manual, we would be grateful if you would inform us. We invite you to offer your suggestions and comments,

Your feedback helps us to further improve our documentation.

Acknowledgement

This product uses the open-source Free Type font-rendering library. The Open Source Libraries and Licenses document, available at http://tkhsecurity.com, gives a complete overview of open source libraries used by our video encoders and IP cameras.

Typographical conventions

	INFO Read this information carefully to have a better understanding of the current or following instructions.
	CAUTION! Follow these precautions to prevent potential injury or material damage.
	DANGER! Follow these safeguards to prevent serious injury or death.

Compliance information

The XCU3 Compact and Fusion is in conformity with the certifications listed below.

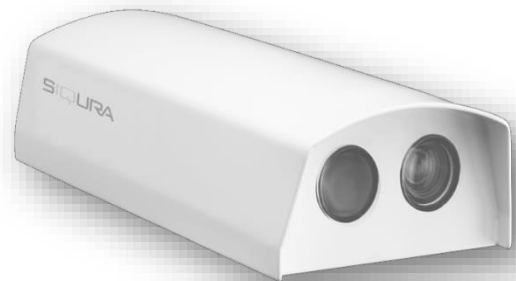Certifications:

> IP66, IP67

> CE

> FCC

Models

The XCU Series is designed to operate in harsh and aggressive environments. Typical applications are found in the heavy industry, in traffic, tunnels, waterways, waste treatment and even in corrosive environments like the marine. The XCU Fusion combines a full-HD ultra-low light imager with an uncooled thermal imager for both day and night vision, while the XCU Compact can be fitted with a low-light imager with 4x or 10x optical zoom lens, or a thermal imager.

XCU Compact series   *XCU Fusion series*

Preparations

Unpack

⚠	On delivery of the product, make sure that the packaging shows no signs of damage.
	If the packaging is visibly damaged, do not install or operate the unit. Report any damage to the supplier immediately.
	Unpack and handle the unit carefully so as not to damage the product.
	For better grip and protection, you are advised to wear slip-resistant safety gloves when handling the unit.

Check package contents

The package contents include the items below. Notify your supplier if any item is missing.

Camera

> XCU Compact camera unit (including sunshield) or
> XCU Fusion camera unit (without sunshield)

Documentation

> Quick Start Guide

Accessories

> Fall protection cable
> IP67 power connector (cable part)
> IP67 Ethernet connector (cable part)

Discard packaging materials

⚠	You are advised to retain the original product packaging. Shipping the product for repairs without the original packaging may cause product damage during transport.
	The packaging materials can be recycled. If you discard the packaging, properly separate the materials and dispose of them at your local waste collection or recycling center. Observe the local waste disposal regulations.

Before you continue

⚠	Prior to installation and operation, carefully read all instructions in this manual and heed all warnings.
	Unpack this equipment and handle it carefully. If the package appears to be damaged, notify the shipper immediately.
	Use the original packaging to transport the unit. Disconnect power supply before moving it. In case of returning the equipment, the original packaging must be used.
	Any change performed on the unit that is not previously approved by the manufacturer will void both the certification and the warranty.
⚡	Before performing any operation, turn off the power. The installation of the unit can be performed only by qualified personnel in accordance with the relevant code of practice and with all the relevant local and national standards including but not limited to the use of special pipes, tapes, sealants, cables and glands.
	For security reasons, install the unit out of the reach of children.
	For security reasons, do not install the unit in the proximity of water containers and never push objects or pour liquids into the unit. The unit can be safely used in damp environments or outdoors, as long as the glands or connectors are properly sealed.
	When leaving the unit unused for long periods, disconnect supply cables.
	Connecting GND/Earth/PE to line or neutral may result in damaging the device and will void the warranty.
	When a fibre optical cable is used on the equipment it shall be suitably protected against mechanical damage.

Install the unit

⚠	Make sure that the installation surface can support at least four times the weight of the unit in normal operating conditions. In case of excessive external stress (vibration, strong winds or impact, for example), the equipment may need additional means of protection.
	Proper stainless-steel hardware (grade A4 or 316) should be carefully chosen to fasten the unit's brackets to the surfaces. Use a suitable lubricant with (for example Molykote P-40) between threaded connections to avoid fretting corrosion. Proper tools should be used during the installation, in accordance to environmental requirements.
	Each anchor to fasten the bracket should be able to carry a load of at least 100
	Covers should be opened only by the manufacturer.
	Electrical connections (such as plugs and cords) must be protected from potential hazardous environmental factors (e.g. foot traffic, hitting objects).
	Pointing the camera at the sun may damage it.
	In case the camera is mounted outdoors, exposed to the heating effects of the sun, the XCU camera sunshield must be used.
	Complete the installation performing the camera connection referring to the manual of the camera.
	Carefully check the supply voltage marked on the label. An incorrect power supply voltage may damage the unit. Do not overload the terminal connection, as it may cause a fire or electrical shock hazard.
⚡	For 120 Vac / 230 Vac models: An all-pole mains switch with an opening distance between the contacts at least 3 mm in each pole must be incorporated in the electrical installation. The switch must be equipped with protection against the fault current towards the ground (differential) and the overcurrent (magnetothermal, maximum 10 A). **Recommended for 120 Vac / 230 Vac**: 2 A Delayed Fuse T (Time delay) or equivalent resettable devices such as magnetothermal. **Recommended for 24 Vac:** 4 A Delayed Fuse T (Time delay) or equivalent resettable devices such as magnetothermal. These ratings include inrush current for startup or temporary overload. It must be very quickly recognizable and readily accessible. Install a suitable overcurrent protection, maximum 10 A. (UL approval valid up to 20A current rating of protective device)
	Make sure that the unit case is properly earthed. The Protective Earth (PE) connection is included in the 3p or 5p power connector. The minimum wire size is 0.75 mm2 copper stranded wire.

Cables and installation

Flexible cables are recommended to connect the camera.

For larger distances, or in case of an already installed rigid (tunnel) cable, the use of a junction box is recommended as interface to the camera. In this case a prefabricated patch-cable with molded connectors can be used. (MOQ applies)

For tunnel applications a shielded CPR B2ca rated cable is recommended:

For example: Jobarco Ecoflex CPR HCH-JZ B2ca (suitable for patch-cable use)

Power cable: maximum length table

Power supply	Total cable resistance	Cable length for copper wire size		
		1.5mm²	0.75mm²	0.5mm²
24VAC 50/60Hz	< 1.2 Ohm	< 50m	< 25m	< 17m
24VDC	< 2.3 Ohm	< 100m	< 50m	< 33m
100 - 240VAC 50/60Hz		< 300m	< 150m	0.75mm² minimum

Power cable: length and overvoltage protection

> The camera 24V power input is compliant with EMC standard EN 50130-4. This standard sets requirements for surge voltage immunity in clause 13. The 24V power supply lines and signal lines are tested for line-to-ground surge voltage levels up to 1kV (1.2/50 µs). There is no requirement for line-to-line surge voltage testing on 24V inputs.

> The 24V power supply inputs may not be grounded.

> For cable lengths up to 10m no additional surge protection is recommended. For longer cables, additional surge protection (SPD type T3 according IEC 61643, or equivalent) is recommended to ensure that the camera overvoltage category (IEC 60664-1) is reduced to class II.

> The installer is required to provide additional protection to reduce the overvoltage if the equipment is subject to transient overvoltages exceeding those for overvoltage category II.

Ethernet cable:

> Shielded CAT5E S/FTP, wire size AWG24, solid or stranded, cable length up to 100m.

> For PoE powering of the XCU cameras the Ethernet cable must comply with the IEEE 802.3at requirements for PoE+ (up to 25,5W power at the camera). This means the maximum cable resistance per pair set is limited to 12.5 Ohm. The recommended size AWG24 typically meets this requirement for cable lengths up to 100m.

> For larger wire diameters the use of a junction box is recommended.
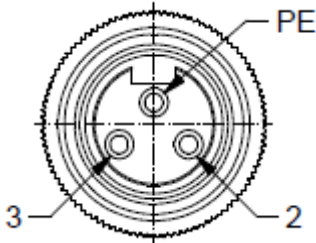
Connectors (Power and I/O)

For rapid installation and maintenance, the XCU3 models are equipped with weatherproof connectors for both power and Ethernet.
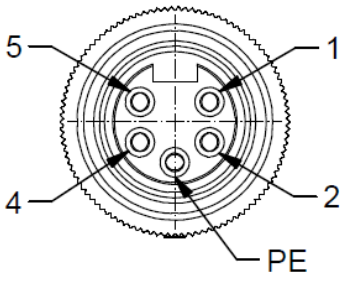
3p-Cable plug for power IP67 connector, size 7/8"

Models with 24 Vac/PoE and models with115/230 Vac are equipped with a 3p power connector. In the table below you will find the cable plug details and the wiring diagram.

Standard Power Connector (3p)	Part ID
XCUCNC-PWR01	599405969650 (Conec 41-00001)
Specifications	**Pin assignment**
IP67 rated only when covered with cap or mated	PE is connected to the metal camera housing
Cable range 6-12 mm (unshielded cable)	2 = (L) 230VAC or (+) 24VDC/24VAC
Screw termination, Wire range 0.5 – 1.5 mm2	3 = (N) 230VAC or (-) 24VDC/24VAC
Temperature range -40°C to +85°C	
UL approved E331608	
Front view	

5p-Cable plug for power IP67 connector, size 7/8"

Some special 24 Vac/PoE models are fitted with 2 relay outputs. These are equipped with a 5p power and I/O connector. In the table below you will find the cable plug details and the wiring diagram.
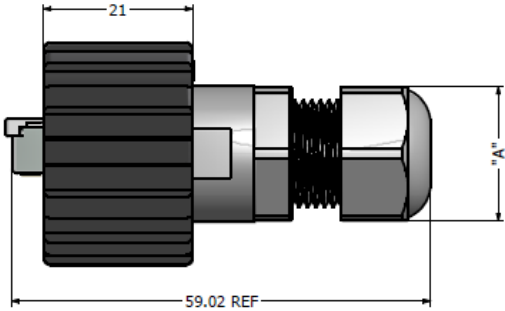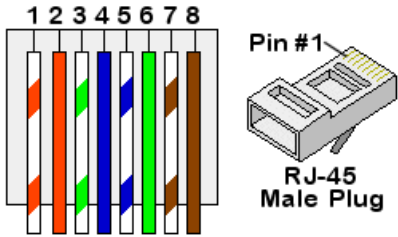
Special Power/IO connector (5p)	Part ID
CON CONEC PLUG POWER 5P IP67	599712000622 (Conec 41-00003)
Specifications	**Pin assignment**
IP67 rated only when covered with cap or mated	1 = (+) 24VDC/24VAC
Cable range 6-12 mm (unshielded cable)	2 = (-) 24VDC/24VAC
Screw termination, Wire range 0.5 – 1.5 mm2	PE = Relay common for both relays. PE is connected to the metal camera housing
Temperature range -40°C to +85°C	4 = Relay* ''I/O output 5'' (normally open)
UL approved E331608	5 = Relay* ''I/O output 6'' (normally open)
Front view	

*Relay contact rating: 30V / 1A (AC or DC, resistive load)

RJ45 IP67 plug kit, for CAT6A, AWG24

By default the cameras are fitted with a IP67 Ethernet connector. The table below gives the cable plug details and wiring diagram.
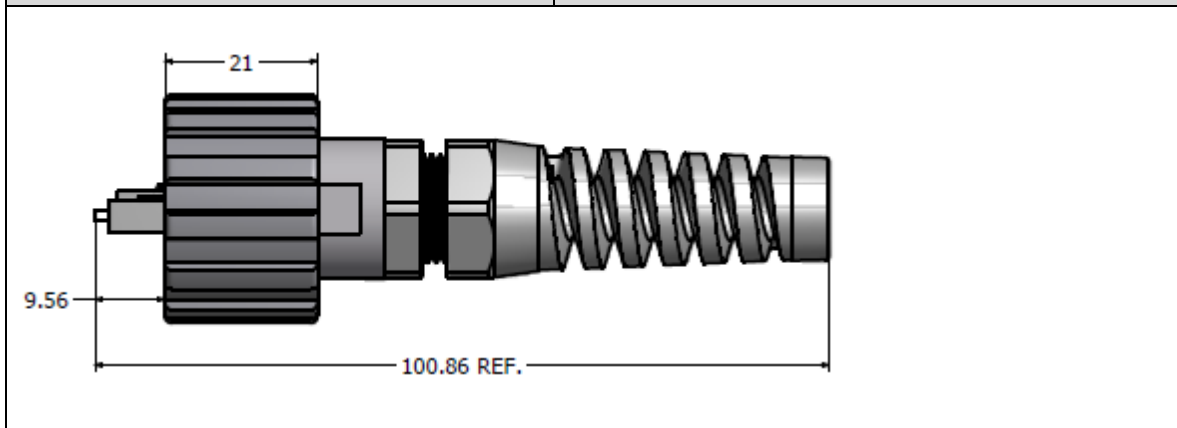
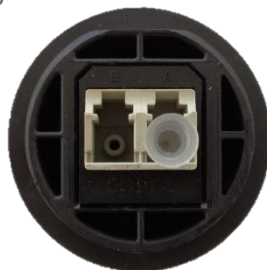| Standard RJ45 connector (8p)	Part ID
XCUCNC-RJ45	599712000558 (Conec 17-150234)
Specifications	
IP67 rated only when covered with cap or mated	
Temperature range -40°C to +85°C	
UL approved E202784	
Cable range 4-8 mm (shielded cable)	Shielded CAT6A RJ45 plug (inside IP67 housing)
Wire size: solid or stranded AWG24	The RJ45 plug does not accept larger wire size.
Note: for wire size AWG27 up to AWG22 consider Conec 17-170004 (not tested)	
Side view	***Plug shown is only used to indicate pin #1***

Dual LC Plug for Fiber IP67 connector

The XCU3 models are also available with direct to fiber connection (1SM, 2SM, 1MM, and 2MM models). These models are fitted with a IP67 Dual LC connector. The table below gives the cable plug details and wiring diagram.

Standard Dual LC Fiber connector	Part ID
XCUCNC-2SM	599712000556 (Conec 17-300200)
XCUCNC-2MM	599712000574 (Conec 17-300210)
Specifications	Color
IP67 rated only when covered with cap or mated	SM adapter = blue
Temperature range -40°C to +85°C	MM adapter = beige
UL approved E350510	
Accept 4.5mm to 8.0mm outside diameter fiber optic cable	
Side view	

When the camera is fitted with a WDM SFP (1MM or 1SM model) the transmitter is transmitting on 1310 nm and the receiver at 1550 nm. The single fiber is connected to the left side of the connector. See figure below.

"Wiring" of the 1MM or 1SM models
The right hand LC connector is not connected.

Maintenance

> Read and understand the following instructions before you clean or service the unit.

> Use only original TKH Security replacement parts.

> Observe the applicable standards and safety instructions when you inspect, maintain or repair the equipment.

> Disconnect the power to the unit and contact TKH security support or the nearest service center whenever you detect damage or deformation to the equipment.

> If the product does not work properly, contact TKH Security support or the nearest service center. Never attempt to disassemble the camera yourself. TKH Security does not assume any responsibility for problems caused by unauthorized repair or maintenance.

Maintenance and inspection intervals

The XCU3 Compact and XCU3 Fusion has been designed especially for the harsh environment of traffic tunnel applications and requires little or no maintenance. The camera is fanless and does not include any parts which are prone to wear and tear. Therefore, do not open the camera housing for any maintenance activities. It is advised to inspect the glass window at a regular basis for environmental pollutants such as dirt, grime or dust.

Routine activities

Regularly perform the following routine activities:

> **Inspect the level of pollution on the glass or germanium window**
Inspection frequency depends on the ambient pollution levels. Extremely polluted environments may require more frequent inspections.

> **HInstruction to clean the unit, the glass window, and the germanium window**
Any pollution on the unit or the window can be rinsed off with clean, lukewarm water. Pressurized water jets may be used, but care shall be taken not to damage the optical or germanium window. (Their impact protection is rated IK8). Do not use caustic or abrasive cleaning products.

> **Inspect the mounting of the unit**
Check if the mounting bolts and screws are still properly secured and not damaged by corrosion.

Extraordinary maintenance

The XCU Compact does not require extraordinary maintenance.

Our Brands