

NCCG-xxx.I

Gigabit-Ethernet-Flächenkamera
NCCG-xxx.I-Serie Monochrom / Farbe, IP-Schutz

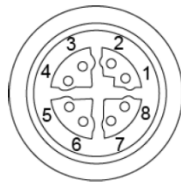
Gigabit Ethernet area scan camera
NCCG-xxx.I series monochrome / color, IP protection



Technische Beschreibung / *Specification*

Chip / <i>Sensor</i>	Unterschiedliche Sensorgrößen / <i>Different sensor sizes</i> CMOS Progressive Scan / <i>CMOS Progressive Scan</i>
Auflösung / <i>Resolution</i>	Unterschiedliche Auflösungen / <i>Different sensor resolutions</i> Siehe Übersichtstabelle / <i>see overview</i>
Pixelgröße / <i>Pixel size</i>	Unterschiedliche Pixelgrößen / <i>Different pixel sizes</i> Siehe Übersichtstabelle / <i>see overview</i>
Chipgröße / <i>Scan area</i>	Unterschiedliche Chipgrößen / <i>Different scan areas</i> Siehe Übersichtstabelle / <i>see overview</i>
Objektivanschluss / <i>Lens mount</i>	C-Mount
Optischer Filter / <i>Optical filter</i>	-
Bildwechselfrequenz / <i>Frame rate</i>	Unterschiedliche Bildwechselfrequenzen / <i>Different frame rates</i> Siehe Übersichtstabelle / <i>see overview</i>
Farbmodelle / <i>Color Models</i>	Farbe und monochrom / <i>Color and monochrome</i> Siehe Übersichtstabelle / <i>see overview</i>
Spannungsversorgung / <i>Voltage feed</i>	via Power and Process Interface (extern / <i>external</i>) via Data Interface (PoE)
Prozesssynchronisation / <i>Process synchronization</i>	
<i>Trigger Mode</i>	<i>Off (Free Running), On (Trigger)</i>
<i>Trigger Overlap Type</i>	<i>Readout</i>
<i>Trigger Sources</i>	<i>Hardware (Line 0, 1, 2, 3), Software, All ActionCMD (Action 1) or Off</i> <i>fixed Trigger Delay out of $t_{readout}$: 32 μsec @ 12 bit</i> <i>max. Trigger Delay during $t_{readout}$: 40.3 μsec @ 12 bit</i>
<i>Trigger Delay</i>	<i>0 ... 2 sec., Tracking and buffering of up to 256 triggers</i>
<i>External Flash Sync</i>	<i>via Exposure Active</i> <i>$t_{delay flash} \leq 1 \mu$sec, $t_{duration} = t_{exposure}$</i>

Digital-Ein-Ausgänge / Digital I/Os	
Lines	<i>Input: Line 0...3, Output: Line 4...7, GPIO: No</i>
Output Sources	<i>Off, ExposureActive, Timer1, ReadoutActive</i>
Output Line Mode	<i>Yes, Tri-State, PushPull, OpenDrain, OpenSource</i>
Output PWM function	<i>Yes, Line 4...7 PWM Mode: Off, One Pulse, FixedFrequency PWM Feature: PWMDuration, PWMDutyCycle Configuration Mode for lightning protection: MaxPWMDuration, MaxPWMDutyCycle</i>
Line Debouncer	<i>Low and high signal separately selectable Debouncing time 0...5 msec, Step size: 1 µsec</i>
Speicher / Memory	
Image Buffer	<i>115 MB 8 Images (Trigger Mode) / 1 Image (Free Running Mode)</i>
Non-volatile Memory	<i>128 kB</i>
Netzwerkeinstellungen / Network Interface Data	
Interface	<i>Gigabit Ethernet 1000BASE-T 1000 Mbit/sec Fast Ethernet 100BASE-T 100 Mbit/sec</i>
Ethernet IP Configuration	<i>Persistent IP, DHCP, LLA</i>
Package Size	<i>576...9000 Byte, Jumbo Frames supported</i>
GigE Vision® Eigenschaften / Features	
Events <i>(Transmission via Asynchronous Message Channel)</i>	<i>ExposureEnd, ExposureStart, FrameEnd, FrameStart, FrameTransferSkipped, Error, GigEVisionHeartbeatTimeOut, Line 0...3 FallingEdge, Line 0...3 RisingEdge, PrimaryApplicationSwitch, TransferBufferFull, TransferBufferReady, TriggerOverlapped, TriggerReady, TriggerSkipped</i>
Action CMD	<i>Yes, Action 1 for Trigger</i>
Frame Counter	<i>Up to 2³²</i>
Payload Size	<i>0...10027208 Byte</i>
Timestamp	<i>64 Bit, resolution in nsec, increment = 8</i>
Packet Delay	<i>0...2³² - 1 nsec</i>
Packer Resend	<i>Resend Buffer: 77 MB (8 images)</i>
GigE Vision	<i>V2.0 (v1.2 backward compatible)</i>
LED Signalisierung / LED signalling	<i>Grün blinkend / Green flash Grün / Green Gelb / Yellow Gelb blinkend / Yellow flash</i>
Daten- und Versorgungs-Schnittstelle / Data and Power Interface	<i>M12 / 8 pol X-codiert, verschraubbar / (SACC-CI-M12MS-12CON-L180) M12 / 8 pol X-coded, screwable Gigabit-Ethernet-Anschluss mit PoE: Daten und Steuerung / Gigabit Ethernet connection: data and control interface Gigabit Ethernet Transfer Rate / transfer rate: 1000 Mbits/sec Fast Ethernet Transfer Rate / transfer rate: 100 Mbit/sec</i>



Pin Belegung / *Pin assignment*

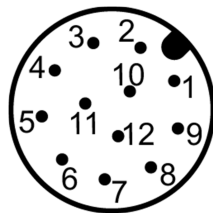
1 – MX1+	2 – MX1-
3 – MX2+	4 – MX2-
5 – MX4+	6 – MX4-
7 – MX3-	8 – MX3+

**Prozessschnittstelle /
Process Interface**

M12-Stecker, A-codiert,
12-polig / *M12 male con-
nector, A-coded, 12 pole*
Spannungsversorgung,
Trigger, Blitz / *voltage
feed, trigger, flash*

Pin Belegung / *Pin assignment*

1 - Power Vcc	2 - GND (Power)
3 - IN1 (Line0)	4 - OUT1 (Line4)
5 - IN2 (Line1)	6 - OUT2 (Line5)
7 - OUT3 (Line6)	8 - IN3 (Line2)
9 - OUT4 (Line7)	10 - IN4 (Line3)
11 - GND (IO)	12 - Power (IO)



wire colors on connecting cables (ordered separately)			
1	brown	2	blue
3	white	4	green
5	pink	6	yellow
7	black	8	grey
9	red	10	violet
11	grey-pink	12	red-blue

**Spannungsversorgung /
Voltage feed**

Power over Ethernet

Über / *via* Data Interface (Power over Ethernet IEEE 802.3af, PoE)
Class 1 Gerät / *device*
Spannung / *voltage* VCC: 36...57 VDC
Strom / *current* I: Unterschiedliche Ströme /
different current values

Externe Spannungsversorgung / *Power Supply (ext.)*

Über / *via* Process Interface (extern / *external*)
Spannung / *voltage* VCC: 12...24 VDC ± 20%
Strom / *current* I: Unterschiedliche Ströme /
different current values

siehe Übersicht / *see overview*

**Digital Input
(Trigger)**

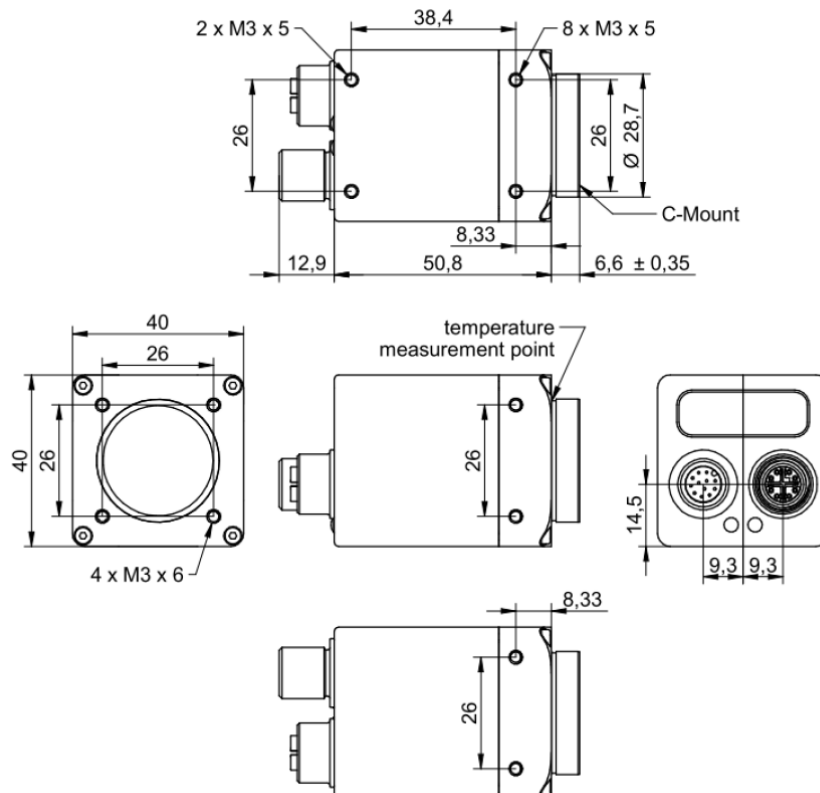
Isoliert, kurzschlussgesichert / *Isolated, short circuit protection*
 $U_{IN(low)} = 0.0 \dots 4.5 \text{ VDC}$
 $U_{IN(high)} = 11.0 \dots 30.0 \text{ VDC}$
 $I_{IN} = 3.0 \dots 10.0 \text{ mA}$
min. impulse length (t_{min}): 2 μs

**Digital Output
(Flash)**

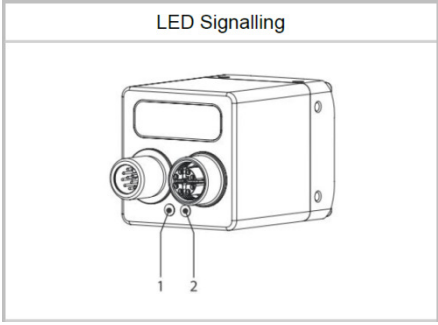
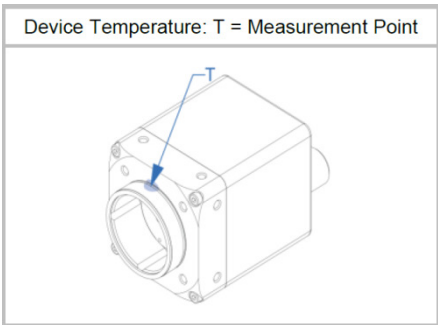
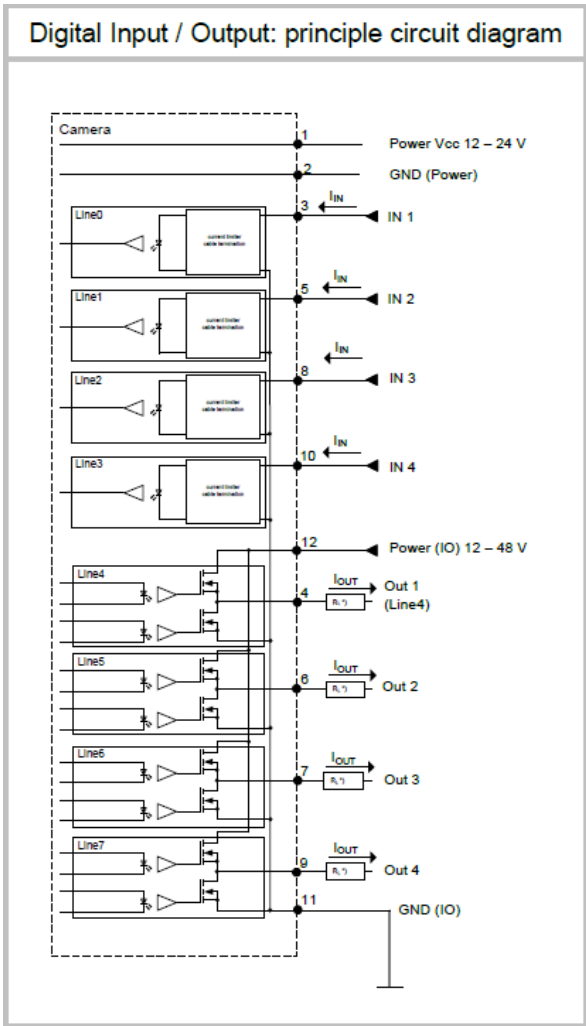
Isoliert, kurzschlussgesichert / *Isolated, short circuit protection*
 $U_{EXT} = 12 \dots 48 \text{ VDC}, 24 \text{ VDC [Power (IO)]}$
 $I_{OUT} =$ Continuously: max. 1.5 A
PWM t_{ON} max 1s /
Duration max 40%: max. 2.5 A
 $t_{ON} < 0.2 \mu\text{s}$ $t_{OFF} < 0.2 \mu\text{s}$
max. Frequency: 500 kHz

Gehäuse / Housing	Aluminium, hart eloxiert, IP40 (mit montiertem Objektiv und GigE-Kabel) IP65/67 (mit montiertem Tubus und Kabel) / <i>Aluminum, hard anodized, IP40 (with mounted lens and GigE cable) IP65/67 (with mounted tube and cable)</i>
Abmessungen / Dimensions	Gehäuse ohne Stecker / <i>Housing without connector:</i> 40 mm x 40 mm x 57.4 mm (±0.35mm) Gehäuse einschließlich Stecker / <i>Housing including connector:</i> 40 mm x 40 mm x 70.3 mm (±0.35mm)
Gewicht / Weight	137 g
Lagerungstemperatur / Storage Temperature	-10°C...+70°C
Betriebstemperatur / Operating temperature	+0°C...+65°C @ T = Messpunkt / <i>measurement point</i> +0°C...+70°C @ internem Temperatursensor / <i>internal temperature sensor</i> Bei einer Umgebungstemperatur oberhalb 45°C sind Kühlungsmaßnahmen erforderlich / <i>Ambient temperature above 45°C requires cooling measures</i>
Feuchtigkeit / Humidity	10%...90% nicht kondensierend / <i>non-condensing</i>

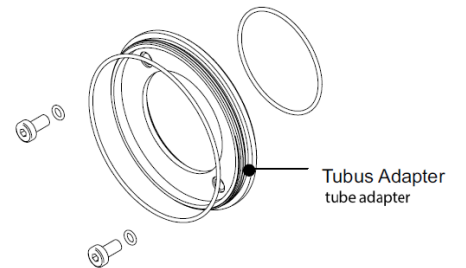
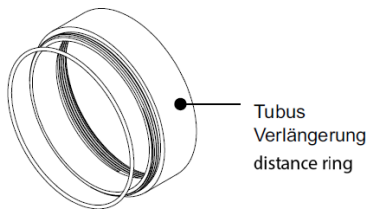
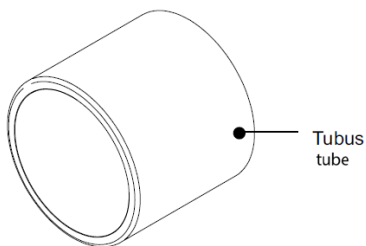
Technische Zeichnung / Technical drawing











Zusätzliche Abbildungen / *Additional images*



Zubehör / *Optional Accessories*



Variantenübersicht / <i>Variants overview</i>								
	NCCG-13M.I	NCCG-13C.I	NCCG-32M.I	NCCG-32C.I	NCCG-51M.I	NCCG-51C.I	NCCG-124M.I	NCCG-124C.I
Chip / Sensor Shutter / <i>Shutter</i> Größe / <i>Scan area</i> Pixelgröße / <i>Pixel size</i>	1/2" progressive scan CMOS global 6.14 mm x 4.92 mm 4.8 µm x 4.8 µm		1/1.8" progressive scan CMOS global 7.06 mm x 5.30 mm 3.45 µm x 3.45 µm		2/3" progressive scan CMOS global 8.45 mm x 7.06 mm 3.45 µm x 3.45 µm		1.1" progressive scan CMOS global 14.13 mm x 10.35 mm 3.45 µm x 3.45 µm	
								
Auflösung / Resolution	1280 x 1024 pixels		2048 x 1536 pixels		2448 x 2048 pixels		4096 x 3000 pixels	
Bildwechselfrequenz / Frame rate	94 fps (Full Frame) 148 fps (Binning)		39 fps (Full Frame) 55 fps (Binning)		23 fps (Full Frame) 35 fps (Binning)		10 fps (Full Frame) 15 fps (Binning)	
Belichtungszeit / Exposure time	20 µs ... 1 s		1 µs ... 60 s		1 µs ... 60 s		1 µs ... 60 s	
Verstärkungsfaktor / Gain	0...18 dB	0...12 dB	0...48 dB		0...48 dB		0...48 dB	
Pixelformat / Pixel formats	Mono 8 / 10	Bayer RG 8 / 10 / 12 / 12 packed, Mono 8 / 10 / 12 / 12 packed, RGB8, BGR8	Mono 8 / 10 / 12 / 12 Packed	Bayer RG 8 / 10 / 12 / 12 Packed, Mono 8 / 10 / 12 / 12 Packed, RGB8, BGR8	Mono 8 / 10 / 12 / 12 Packed	Bayer RG 8 / 10 / 12 / 12 Packed, Mono 8 / 10 / 12 / 12 Packed, RGB8, BGR8	Mono 8 / 10	Bayer RG 8 / 10 / 12 / 12 Packed, Mono 8 / 10 / 12 / 12 Packed, RGB8, BGR8
Partial Scan	✓		✓		✓		✓	
Binning 2x2, 2x1, 1x2	✓		✓		✓		✓	
Farbmodelle / Color models	Mono	RGB, Mono	Mono	RGB, Mono	Mono	RGB, Mono	Mono	RGB, Mono
Farbanpassungen / Color processing and adjustment	-	✓	-	✓	-	✓	-	✓
Elektrische Daten / Electrical data Extern / <i>external</i> PoE	U: 12...24 VDC U: 36...57 VDC		U: 12...24 VDC U: 36...57 VDC		U: 12...24 VDC U: 36...57 VDC		U: 12...24 VDC U: 36...57 VDC	
Leistungsaufnahme / Power consumption	approx. 2.5 W @12 VDC and 94 fps 3.0 W @ 48VDC (PoE) and 94 fps		approx. 2.4 W @12 VDC and 39 fps 3.1 W @ 48VDC (PoE) and 39 fps		approx. 2,5 W @12 VDC and 24 fps 3,1 W @ 48VDC (PoE) and 24 fps		approx. 2,6 W @12 VDC and 9 fps 3,2 W @ 48VDC (PoE) and 9 fps	
External Trigger	U _{IN(low)} : 0.0...4.5 VDC, U _{IN(high)} : 11...30 VDC, min. impulse length: 2.0 µs							
Flash-Output	U _{EXT} : 5...30 V DC, I _{OUT} : max. 50 mA							