

Data Sheet

a-s-e-n-t-i-c-s



# OCR Reader CR 700

ASE3-985G

Optical Recognition

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vision technology

# OCR Reader CR 700

The readers of the CR 700 series are ultra-compact, Ethernet-ready reading systems for fast and secure detection of optical characters (OCR), 2D codes and barcodes. Due to the high processing power, the partial scan feature and optimized decoding algorithms the CR 700 offers superior reading performance. For an optimal process integration several models are available:

- a) with normal or high-resolution image sensor
- b) with integrated optics and illumination or with C mount for interchangeable lenses
- c) in front or side looking design

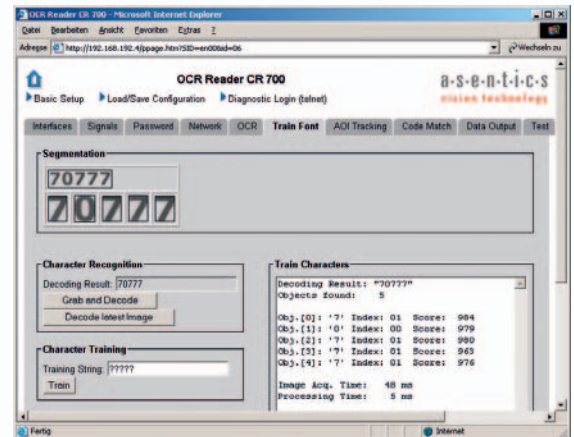
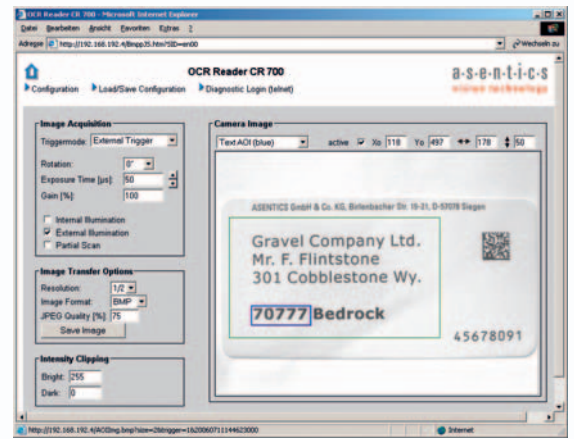
The configuration is made easily and comfortably via the Ethernet interface with help of a standard Web Browser. Beyond this the operator is supported by a multilingual user interface, an integrated diagnostic memory and a fast online video transmission.

## Field of application

- Document and mail processing
- Printing control in manufacturing processes (e.g. expiry dates)
- Identification in packaging and logistics
- Identification of important electronic components and printed circuit boards
- Part identification in assembly lines

## Features and benefits

- Very high reading speeds
  - Data Matrix: up to 60 codes/s
  - OCR: 2...5 ms per character
- Ease of use
- Diagnostic image memory included
- Simple extension of existing fonts by relearning of new characters (even of symbols and logos)
- Each character has only to be trained once
- Fonts are independent from size (automatic character scaling)



*The processing time for OCR is affected by various parameters. In addition to the number and size of the characters also size and amount of the characters trained are relevant.*

## Housing versions

C mount front looking version



C mount side looking version



Integrated optics front looking version

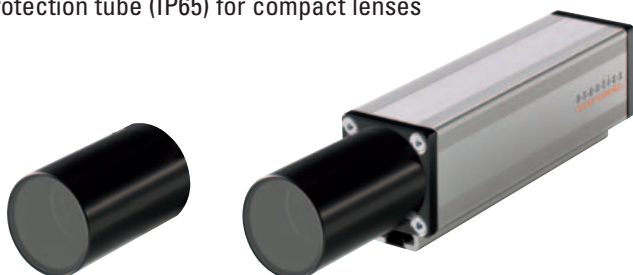


Integrated optics side looking version



## Accessoires

Protection tube (IP65) for compact lenses



3 LED spot lights = SL 30, AL 110, AL 55



# Technical Data



<b>model</b>	CR 711-F	CR 711-A	CR 713-F	CR 713-A
<b>sensor</b>	CCD matrix (659 x 494 pixel)		CCD matrix (1034 x 779 pixel)	
<b>image acquisition time</b>	3 ms (30 lines)...20 ms (full frame)		5 ms (40 lines)...48 ms (full frame)	
<b>lens mount</b>	C mount			
<b>reading distance</b>	selectable via C mount interchangeable lens			
<b>field of view (FOV)</b>	selectable via C mount interchangeable lens			
<b>depth of focus</b>	depends upon lens			

## OCR

<b>minimum height of character</b>	1/20th of height of FOV	1/30th of height of FOV
<b>minimum distance of character</b>	20% of character height (expansion space)	
<b>processing time</b>	30 ms (10 signs, single line, character height of 30 pixel)	
<b>OCR performance</b>	single line reading, position tracking, diagnostic image memory	
<b>fonts</b>	pre-installed: Arial, Courier, OCR-A, OCR-B, Tahoma, Univers, Verdana, further fonts are trainable	
<b>reading angle</b>	maximum torsional angle $\pm 10^\circ$	

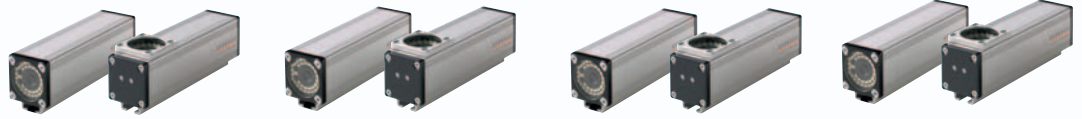
## 2D codes

<b>symbologies</b>	Data Matrix 10x10 to 144x144 and rectangular codes, 2D Pharmacode™, QR code, PDF417, Databar	
<b>print quality test</b>	Data Matrix: decode, symbol contrast, print growth, axial and grid nonuniformity, unused EC, angle of distortion, scan grade	
<b>reading speed 2D codes</b>	up to 60 codes/s	up to 50 codes/s
<b>resolution 2D codes</b>	1/100th of height of FOV	1/150th of height of FOV
<b>reading angle</b>	torsional angle $360^\circ$ (omnidirectional); tilting and inclination angle up to $30^\circ$	

## 1D codes

<b>symbologies</b>	EAN 8/13, UPC-A, UPC-E, Code 128, Code 39, Code 93, Industrial 2/5, Interleaved 2/5, Codabar, Pharmacode, OMR, Postnet, Planet, 4-State-Codes (Australian, Dutch KIX, Royal Mail, Singapore, USPS OneCode)	
<b>reading speed 1D codes</b>	up to 100 codes/s	
<b>resolution 1D codes</b>	1/125th of height of FOV	1/200th of height of FOV
<b>resolution postal codes</b>	1/100th of height of FOV	1/150 th of height of FOV

<b>reading modes</b>	continuous or triggered via digital input
<b>digital inputs</b>	2 switching inputs (24 V $\pm$ 30%)
<b>digital outputs</b>	3 switching outputs (24 V / 1.5 W); 1 high speed trigger output for external illumination
<b>configuration interfaces</b>	RS 232, Ethernet 100Base-T with TCP/IP
<b>data interfaces</b>	RS 232 / RS 485 switchable, Ethernet 100Base-T with TCP/IP
<b>indicators</b>	1 LED "operation", 1 LED "trigger", 2 status LEDs
<b>illumination</b>	external illumination (accessory)
<b>power supply</b>	24 V DC $\pm$ 20%
<b>power consumption</b>	6.0 W
<b>protection class</b>	type F: IP 65 / type A: IP 54 (with lens protection tube)
<b>operating temperature</b>	0° ... + 45° C
<b>storage temperature</b>	-20° ... + 70° C
<b>humidity</b>	5 ... 95 %, non-condensing
<b>dimensions (L x W x H)</b>	type F: 184 mm x 38.5 mm x 47.5 mm / type A: 147 mm x 38.5 mm x 114.5 mm (incl. lens protection tube)
<b>weight</b>	290 g (without lens and tube)
<b>connection</b>	1 male plug + 2 female plugs 8-pin, M12x1
<b>housing material</b>	aluminum, anodized
<b>attachment</b>	2 sliding blocks with female thread M5 (distance adjustable)
<b>configuration software</b>	configuration via TCP / IP and standard web browser



<b>model</b>	CR 721 -x046	CR 721 -x070	CR 723 -x073	CR 723 -x105
reading distance	46 mm	70 mm	73 mm	105 mm
field of view (FOV)	24 mm x 32 mm	35 mm x 46 mm	54 mm x 72 mm	75 mm x 100 mm
depth of focus	± 5 mm	± 7 mm	± 5 mm	± 7 mm
max. transportation speed	8 m/s	3 m/s	3 m/s	1.8 m/s
sensor	CCD matrix (659 x 494 pixel)		CCD matrix (1034x 779 pixel)	
image acquisition time	3 ms (30 lines) ... 20 ms (full frame)		5 ms (40 lines) ... 48 ms (full frame)	

### OCR

minimum height of character	1.3 mm	1.8 mm	1.8 mm	2.5 mm
minimum distance of character	20% of character height (expansion space)			
processing time	30 ms (10 signs, single line, character height of 30 pixel)			
OCR performance	single line reading, position tracking, diagnostic image memory			
fonts	pre-installed: Arial, Courier, OCR-A, OCR-B, Tahoma, Univers, Verdana, further fonts are trainable			
reading angle	maximum torsional angle ± 10°			

### 2D codes

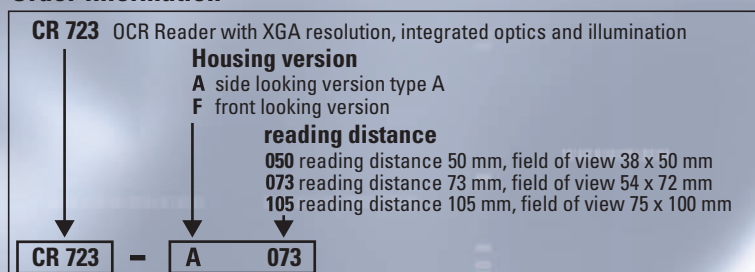
symbolologies	Data Matrix 10x10 to 144x144 and rectangular codes, 2D PharmacoCode™, QR code, PDF417, Databar			
print quality test	Data Matrix: decode, symbol contrast, print growth, axial and grid nonuniformity, unused EC, angle of distortion, scan grade			
reading speed 2D codes	up to 60 codes/s		up to 50 codes/s	
resolution 2D codes	≥ 0.25 mm (10 mil)	≥ 0.35 mm (14 mil)	≥ 0.35 mm (14 mil)	≥ 0.50 mm (20 mil)
reading angle	torsional angle 360° (omnidirectional); tilting and inclination angle up to 30°			

### 1D codes

symbolologies	EAN 8/13, UPC-A, UPC-E, Code 128, Code 39, Code 93, Industrial 2/5, Interleaved 2/5, Codabar, PharmacoCode, OMR, Postnet, Planet, 4-State-Codes (Australian, Dutch KIX, Royal Mail, Singapore, USPS OneCode)			
reading speed 1D codes	up to 100 codes/s			
resolution 1D codes	≥ 0.20 mm (8 mil)	≥ 0.28 mm (11 mil)	≥ 0.25 mm (10 mil)	≥ 0.40 mm (16 mil)
resolution postal codes	≥ 0.25 mm (10 mil)	≥ 0.35 mm (14 mil)	≥ 0.35 mm (14 mil)	≥ 0.50 mm (20 mil)

reading modes	continuous or triggered via digital input
digital inputs	2 switching inputs (24 V ± 30%)
digital outputs	3 switching outputs (24 V / 1,5 W); 1 high-speed trigger output for external illumination
configuration interfaces	RS 232, Ethernet 100Base-T with TCP/IP
data interfaces	RS 232 / RS 485 switchable, Ethernet 100Base-T with TCP/IP
indicators	1 LED "operation", 1 LED "trigger", 2 status LEDs
illumination	integrated LED strobe (white) or external illumination
power supply	24 V DC ± 20%
power consumption	7.0 W
protection class	type F: IP 65 / type A: IP 54
operating temperature	0° ... + 45° C
storage temperature	-20° ... + 70° C
humidity	5 ... 95 %, non-condensing
dimensions (L x W x H)	type F: 142 mm x 38.5 mm x 47.5 mm / type A: 147 mm x 38.5 mm x 52.5 mm
weight	380 g
connection	1 male plug + 2 female plugs 8-pin, M12x1
housing material	aluminum, anodized
attachment	2 sliding blocks with female thread M5 (distance adjustable)
configuration software	configuration via TCP / IP and standard web browser

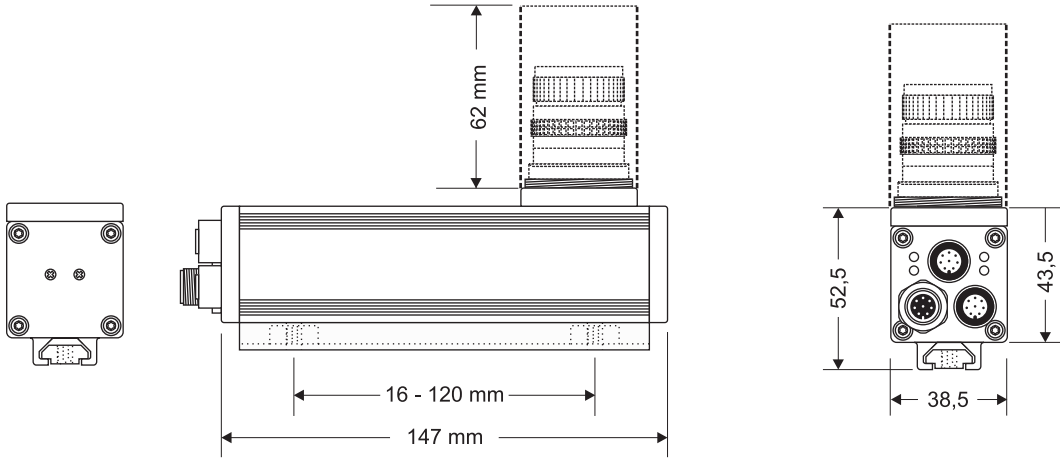
### Order information



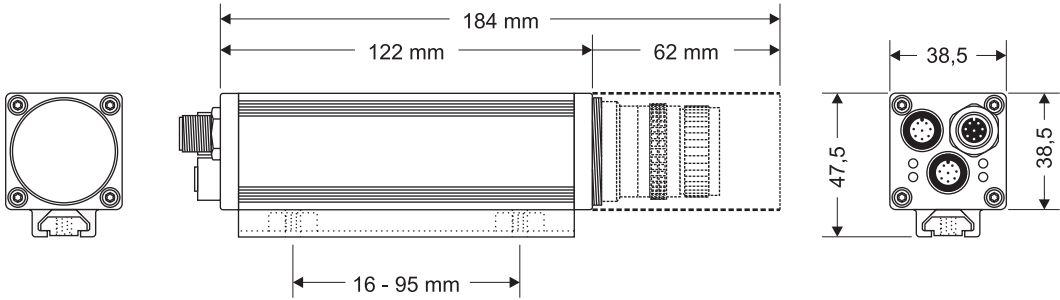
# Dimensions

## CR 71x

### Type A

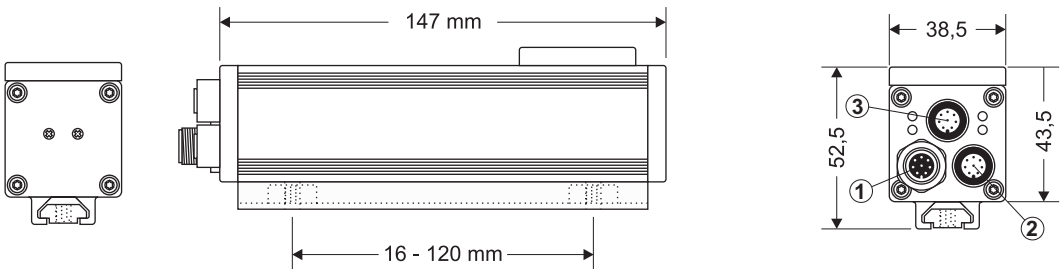


### Type F

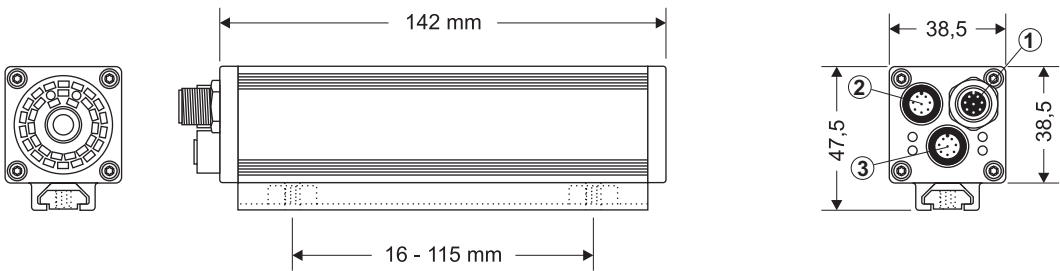


## CR 72x

### Type A



### Type F



# Contact Assignment

### Connection ①

M12 x 1 male plug, 8-pole

- 
- 1 RxD of RS232 / (+) for RS485 interface (data)
  - 2 (+) 24 V DC output supply voltage
  - 3 TxD of RS232 / (-) for RS485 interface (data)
  - 4 input contact 1 (external trigger)
  - 5 output contact 1
  - 6 output contact 2
  - 7 GND
  - 8 input / output contact 3

### Connection ②

M12 x 1 female plug, 8-pole

- 
- 1 TxD of the RS232 interface (configuration)
  - 2 (+) 24 V DC output supply voltage
  - 3 RxD of the RS232 interface (configuration)
  - 4 output contact 4 (trigger for external lighting)
  - 5 reserved
  - 6 input contact 2
  - 7 GND
  - 8 reserved

### Connection ③

M12 x 1 female plug, 8-pole

- 
- 1 not assigned
  - 2 not assigned
  - 3 not assigned
  - 4 Tx- of Ethernet interface
  - 5 Rx+ of Ethernet interface
  - 6 Tx+ of Ethernet interface
  - 7 not assigned
  - 8 Rx- of Ethernet interface

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