## SMART SENSOR BUSINESS

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Part no.: 50123639 CML720i-R20-1590.R/D3-M12 Light curtain receiver



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# Contents

- Technical data
- · Dimensioned drawings
- Electrical connection
- · Operation and display
- Suitable transmitters
- Part number code
- Notes
- Accessories

### Part no.: 50123639 – CML720i-R20-1590.R/D3-M12 – Light curtain receiver

#### **Technical data**

Basic data	
Series	720
Operating principle	Throughbeam principle
Device type	Receiver
Contains	Accessories for the use of the BT-2R1
Application	Object measurement
Special design	
Special design	Crossed-beam scanning
	Diagonal-beam scanning Parallel-beam scanning
Optical data	
Operating range	Guaranteed operating range
Operating range	0.3 7 m
Operating range limit	Typical operating range
Operating range limit	0.2 9 m
Measurement field length	1,590 mm
Number of beams	80 Piece(s)
Beam spacing	20 mm
	201111
Measurement data	
Minimum object diameter	30 mm
Electrical data	Delerity reversel protection
Protective circuit	Polarity reversal protection Short circuit protected Transient protection
Performance data	
Supply voltage UB	18 30 V , DC
Residual ripple	0 15 % , From U <sub>B</sub>
Open-circuit current	0 350 mA , The specified values refer to the entire package consisting of transmitter and receiver.
Inputs/outputs selectable	
Output current, max.	100 mA
Input resistance	6,000 Ω
Number of inputs/outputs selectable	2 Piece(s)
Туре	Inputs/outputs selectable
Voltage type, outputs DC	
Switching voltage, outputs	Тур. U <sub>B</sub> / 0 V
Switching voltage, inputs	high: ≥6V low: ≤4V
Input/output 1	
Activation/disable delay	1 ms
Timing	
Cycle time	2.8 ms
Response time per beam	30 µs

### Part no.: 50123639 – CML720i-R20-1590.R/D3-M12 – Light curtain receiver

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R8: 485     Function     Process     Service interface     Type   IO-Link     Conscion     Service     Pup of connections     Pup of connection     Type of connection     Trade size     Material     Material     No. of pins     Encoding     A-coded     Connector     Thread size     Material     No. of pins     B-pin     Encoding     A-coded     Connector     Type of connection     Thread size     Material     No. of pins     S-pin     Encoding     B-coded     Material     Metal     No. of pins     S-pin     Encoding     B-coded <	Interface	DS 495
Function       Process         Service interface       IO-Link         Type       IO-Link         Function       Configuration via software Service         Connection       2 Piece(s)         Purp cutut       Rear side         Connection 1       Configuration interface Connection to transmitter Signal OUT         Type of connection       Configuration interface Connection to transmitter Signal OUT         Type of connection       Connector         No. of pins       8-pin         Encoding       A-coded         Connector       Thread size         Function       BUS N         BUS OUT       Softer         Type       Ferrale         Material       Metal		NO 400
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Number of connections       2 Plece(s)         Plug outlet       Rear side         Connection 1       Configuration interface Connection to transmitter Signal IN Voltage supply         Type of connection       Connector         Thread size       M12         Type of connection       Connector         Material       Metal         No. of pins       8-pin         Encoding       A-coded         Connector       Thread size         Function       BUS IN BUS OUT         Type of connection       Connector         Tartad size       M12         Type of connection       Connector         Tartad size       M12         Type of connection       Connector         Thread size       M12         Type of connection       Connector         Thread size       M12         Type of connection       Could state         No. of pins       5-pin         Encoding       B-coded         Metal       Metal         No. of pins       5-pin         Encoding       Cubic         Dimension (W x H x L)       20 mm x 35.4 mm x 1.623 mm		
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Connection 1       Function     Configuration interface Connection to transmitter Signal IOUT Voltage supply       Type of connection     Connector       Thread size     M12       Type of connection     Male       Material     Metal       No. of pins     8 -pin       Encoding     A-coded       Connection 2     Function       Function     BUS IN BUS OUT       Type of connection     Connector       Thread size     M12       Type of connection     Connector       Type of connection     Connector       Type of connection     Connector       Type of connection     Connector       Thread size     M12       Type of connection     Connector       Thread size     M412       Type of connection     Connector       Thread size     M412       Topin     S -pin   <	Number of connections	2 Piece(s)
Function   Configuration interface Connection to transmitter Signal Nu Tr Violage supply     Type of connection   Connector     Thread size   M12     Type of connection   Bela     Material   Metal     No. of pins   8-pin     Encoding   A-coded     Connector   Encoding     Type of connection   BUS N     Function   BUS N     Punction   BUS N     Type of connector   Connector     Type of connection   Connector     Type of connection   Connector     Type of connection   Connector     Type of connection   Connector     Type of person   Female     Material   Metal     No. of pins   5-pin     Encoding   B-coded     Metanacial data     Design   Cublc     Dimension (W x H x L)   29 mm x 35 4 mm x 1,623 mm     Housing material   Metal, Aluminum     Lens cover material   Plastic     How weight   1.800 g     Housing color   Silver     Type of fastening   Groove mounting Via optional mounting device     Verter of tisplay     Number of LEDs   2 Plece(s)     Type of configurati	Plug outlet	Rear side
ConnectionConnectionType of connectionConnectorThread sizeM12TypeMaleMaterialMetalNo. of pins8 -pinEncodingA-codedConnection 2Function 2Function 1BUS NI BUS OUTType of connectionConnectorType of connectionS-pinToread sizeM12Type 1FemaleMaterialMetalNo. of pinsS -pinEncodingB-codedVertanical dataB-codedDesignCubicDimension (W x H x L)29 mm x 35.4 mm x 1,623 mmHousing materialMetalLens cover materialPlasticNet weight1.800 gHousing colorSilverType of fasteningGroove mounting Varional mounting deviceType of displayLED OLED displayNumber of LEDs2 Plece(s)Type of configurationSoftware Teach-in	Connection 1	
Signal IN     Signal OUT       Type of connection     Connector       Thread size     M12       Type     Male       Material     Metal       No. of pins     8 -pin       Encoding     A-coded       Connection 2     Function       Function     BUS IN BUS OUT       Type of connection 7     Connector       Type of connection     Connector       Thread size     M12       Type of connection     Connector       Thread size     M12       Type     Female       Material     Metal       No. of pins     5 -pin       Encoding     B-coded       Material       No. of pins     5 -pin       Encoding     B-coded       Metanal (Metal, Aluminum       Posign     Cubic       Dimension (W x H x L)     29 mm x 35.4 mm x 1.623 mm       Housing material     Metal, Aluminum       Lens cover material     Plastic       Net weight     1,800 g       Housing color     Silver       Type of fastening     OLED omononting Via option	Function	Configuration interface
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Type of connection     Connector       Thread size     M12       Type     Male       Material     Metal       No. of pins     8 - pin       Encoding     A-coded       Connection 2     Function       Function     BUS IN BUS OUT       Type of connection     Connector       Thread size     M12       Type of connection     Connector       Material     Metal       No. of pins     5 - pin       Encoding     B-coded       Mechanical data     Design       Dimension (W x H x L)     29 mm x 35.4 mm x 1,623 mm       Housing material     Metal , Aluminum       Lens cover material     Plastic       Net w		Signal OUT Voltage supply
Thread size   M12     Type   Male     Material   Metal     Material   Metal     No. of pins   8 -pin     Encoding   A-coded     Connection 2   Function     Function   BUS NU     Type of connection   Connector     Thread size   M12     Type of connection   Connector     Thread size   M12     Type   Female     Material   Metal     No. of pins   5 - pin     Encoding   B-coded     Mechanical data     Design   Cubic     Dimension (W x H x L)   29 mm x 35.4 mm x 1,623 mm     Housing material   Metal , Aluminum     Lens cover material   Plastic     Net weight   1,800 g     Housing color   Silver     Type of fastening   Groove mounting via optional mounting device     Operation and display     Type of LEDs   2 Plece(§)     Type of configuration   Software Teach-in	Type of connection	
Material   Metal     No. of pins   8 -pin     Encoding   A-coded     Connection 2   Function     Function   BUS IN BUS OUT     Type of connection   Connector     Thread size   M12     Type   Female     Material   Metal     No. of pins   5 -pin     Encoding   B-coded     Methanical data   Metal     Design   Cubic     Dimension (W x H x L)   29 mm x 35.4 mm x 1,623 mm     Housing material   Metal, Aluminum     Lens cover material   Plastic     Net weight   1,800 g     Housing color   Silver     Type of fastening   Groove mounting device     Operation and display   LED OLED display     Number of LEDs   2 Pice(s)     Type of configuration   Software Trach-in		
Material   Metal     No. of pins   8 -pin     Encoding   A-coded     Connection 2   Function     Function   BUS IN BUS OUT     Type of connection   Connector     Thread size   M12     Type   Female     Material   Metal     No. of pins   5 -pin     Encoding   B-coded     Methanical data   Metal     Design   Cubic     Dimension (W x H x L)   29 mm x 35.4 mm x 1,623 mm     Housing material   Metal, Aluminum     Lens cover material   Plastic     Net weight   1,800 g     Housing color   Silver     Type of fastening   Groove mounting device     Operation and display   LED OLED display     Number of LEDs   2 Pice(s)     Type of configuration   Software Trach-in		
Encoding     A-coded       Connection 2       Function     BUS IN BUS OUT       Type of connection     Connector       Thread size     M12       Type     Female       Material     Metal       No. of pins     5 -pin       Encoding     B-coded       Mechanical data     Cubic       Dimension (W x H x L)     29 mm x 35.4 mm x 1,623 mm       Housing material     Metal , Aluminum       Lens cover material     Plastic       Net weight     1,800 g       Housing color     Silver       Type of fastening     Groove mounting Via optional mounting device       Operation and display     LED OLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in		
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Connection 2       Function     BUS IN BUS OUT       Type of connection     Connector       Thread size     M12       Type     Female       Material     Metal       No. of pins     5 -pin       Encoding     B-coded       Mechanical data       Design     Cubic       Dimension (W x H x L)     29 mm x 35.4 mm x 1,623 mm       Housing material     Metal , Aluminum       Lens cover material     Plastic       Net weight     1.800 g       Housing color     Silver       Type of fastening     Groove mounting via optional mounting device       Via optional mounting device       Via optional mounting device       Jence(s)       Type of configuration       Software Teach-in		
BUS OUT         Type of connection       Connector         Thread size       M12         Type       Female         Matrial       Metal         No. of pins       5 -pin         Encoding       B-coded         Mechanical data         Design       Cubic         Dimension (W x H x L)       29 mm x 35.4 mm x 1,623 mm         Housing material       Metal , Aluminum         Lens cover material       Plastic         Net weight       1,800 g         Housing color       Silver         Type of fastening       Groove mounting via optional mounting device         Operation and display         LeD OLED display       LED OLED display         Number of LEDs       2 Piece(s)         Type of configuration       Software Treach-in		
Type of connectionConnectorThread sizeM12TypeFemaleMaterialMetalNo. of pins5 -pinEncodingB-codedMechanical dataDesignDimension (W x H x L)29 mm x 35.4 mm x 1,623 mmHousing materialMetal , AluminumLens cover materialPlasticNet weight1,800 gHousing colorSilverType of fasteningGroove mounting via optional mounting deviceDeration and displayLED OLED displayLED OLED displayNumber of LEDs2 Piece(s)Type of configurationSoftware Teach-in	Function	
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Material     Metal       No. of pins     5 -pin       Encoding     B-coded       Mechanical data       Design     Cubic       Dimension (W x H x L)     29 mm x 35.4 mm x 1,623 mm       Housing material     Metal , Aluminum       Lens cover material     Plastic       Net weight     1,800 g       Housing color     Silver       Type of fastening     Groove mounting via optional mounting device       Operation and display       Type of display     LED OLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in		M12
Material     Metal       No. of pins     5 -pin       Encoding     B-coded       Mechanical data       Design     Cubic       Dimension (W x H x L)     29 mm x 35.4 mm x 1,623 mm       Housing material     Metal , Aluminum       Lens cover material     Plastic       Net weight     1,800 g       Housing color     Silver       Type of fastening     Groove mounting via optional mounting device       Deration and display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in	Туре	Female
Encoding     B-coded       Mechanical data     Cubic       Design     Cubic       Dimension (W x H x L)     29 mm x 35.4 mm x 1,623 mm       Housing material     Metal , Aluminum       Lens cover material     Plastic       Net weight     1,800 g       Housing color     Silver       Type of fastening     Groove mounting via optional mounting device       Operation and display       Type of display     LED OLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in		Metal
Mechanical data       Design     Cubic       Dimension (W x H x L)     29 mm x 35.4 mm x 1,623 mm       Housing material     Metal , Aluminum       Lens cover material     Plastic       Net weight     1,800 g       Housing color     Silver       Type of fastening     Groove mounting Via optional mounting device       Operation and display       Type of display     LED OLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in	No. of pins	5 -pin
DesignCubicDimension (W x H x L)29 mm x 35.4 mm x 1,623 mmHousing materialMetal , AluminumLens cover materialPlasticNet weight1,800 gHousing colorSilverType of fasteningGroove mounting deviceOperation and displayType of displayLED olsplayNumber of LEDs2 Piece(s)Type of configurationSoftware reach-in	Encoding	B-coded
DesignCubicDimension (W x H x L)29 mm x 35.4 mm x 1,623 mmHousing materialMetal , AluminumLens cover materialPlasticNet weight1,800 gHousing colorSilverType of fasteningGroove mounting deviceOperation and displayType of displayLED olsplayNumber of LEDs2 Piece(s)Type of configurationSoftware reach-in		
Dimension (W x H x L)29 mm x 35.4 mm x 1,623 mmHousing materialMetal , AluminumLens cover materialPlasticNet weight1,800 gHousing colorSilverType of fasteningGroove mounting via optional mounting device <b>Operation and display</b> Type of displayLED OLED displayNumber of LEDs2 Piece(s)Type of configurationSoftware Teach-in		
Housing materialMetal , AluminumLens cover materialPlasticNet weight1,800 gHousing colorSilverType of fasteningGroove mounting via optional mounting deviceDeretion and displayType of displayLED OLED displayNumber of LEDs2 Piece(s)Type of configurationSoftware Teach-in		
Lens cover materialPlasticNet weight1,800 gHousing colorSilverType of fasteningGroove mounting Via optional mounting device <b>Operation and display</b> Type of displayLED OLED displayNumber of LEDs2 Piece(s)Type of configurationSoftware Teach-in		
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Housing colorSilverType of fasteningGroove mounting Via optional mounting deviceOperation and displayType of displayLED OLED displayNumber of LEDs2 Piece(s)Type of configurationSoftware Teach-in		
Type of fastening     Groove mounting Via optional mounting device       Operation and display     LED OLED display       Type of display     LED OLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in		
Via optional mounting device       Operation and display       Type of display       LED OLED display       Number of LEDs     2 Piece(s)       Type of configuration     Software Teach-in		
Operation and display     Type of display   LED OLED display     Number of LEDs   2 Piece(s)     Type of configuration   Software Teach-in	Type of fastening	Groove mounting Via optional mounting device
Type of displayLED OLED displayNumber of LEDs2 Piece(s)Type of configurationSoftware Teach-in		
Type of displayLED OLED displayNumber of LEDs2 Piece(s)Type of configurationSoftware Teach-in	Operation and display	
OLED display         Number of LEDs       2 Piece(s)         Type of configuration       Software Teach-in		
Type of configuration Software Teach-in		
Teach-in		
Operational controls Membrane keyboard	Type of configuration	
	Operational controls	Membrane keyboard

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### Part no.: 50123639 – CML720i-R20-1590.R/D3-M12 – Light curtain receiver

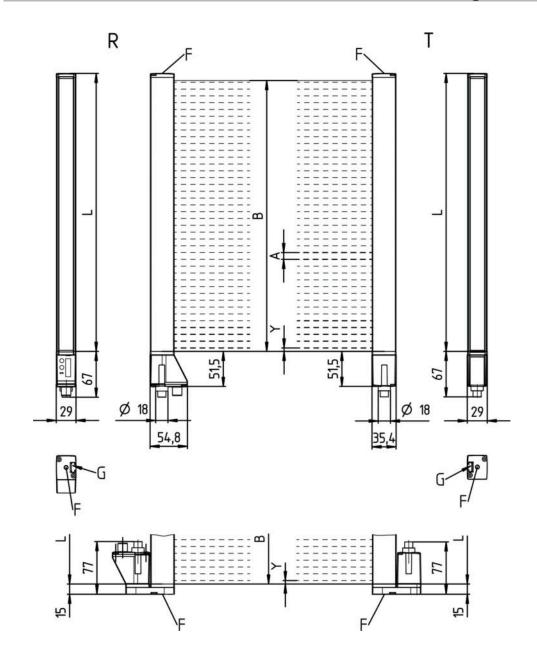
Environmental data			
Ambient temperature, operation	-30 60 °C		
Ambient temperature, storage	-40 70 °C	-40 70 °C	
Certifications			
Degree of protection	IP 65		
Protection class	111		
Certifications	c CSA US		
Standards applied	IEC 60947-5-2		

Classification	
Customs tariff number	90314990
eCl@ss 8.0	27270910
eCl@ss 9.0	27270910
ETIM 5.0	EC002549
ETIM 6.0	EC002549

#### **Dimensioned drawings**

All dimensions in millimeters

Part no.: 50123639 – CML720i-R20-1590.R/D3-M12 – Light curtain receiver



A Beam spacing 20 mm B Measurement field length 1590 mm

F M6 thread

- G Fastening groove
- L Profile length 1608 mm
- T Transmitter
- R Receiver
- Y 5 mm

Part no.: 50123639 – CML720i-R20-1590.R/D3-M12 – Light curtain receiver



A PWR / SW IN/OUT B BUS IN / OUT

#### **Electrical connection**

Connection 1	
Function	Configuration interface Connection to transmitter Signal IN Signal OUT Voltage supply
Type of connection	Connector
Thread size	M12
Туре	Male
Material	Metal
No. of pins	8 -pin
Encoding	A-coded

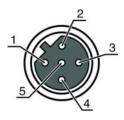
Pin	Pin assignment
1	V+
2	I/O 1
3	GND
4	IO-Link
5	I/O 2
6	RS 485 Tx+
7	RS 485 Tx+
8	FE/SHIELD



Connection 2		
Function	BUS IN BUS OUT	
Type of connection	Connector	
Thread size	M12	
Туре	Female	
Material	Metal	
No. of pins	5 -pin	
Encoding	B-coded	

### Part no.: 50123639 - CML720i-R20-1590.R/D3-M12 - Light curtain receiver

Pin	Pin assignment
1	V+
2	Tx-
3	PB GND
4	Tx+
5	FE/SHIELD



#### **Operation and display**

#### LEDs

LED	Display	Meaning
1	Green, continuous light	Operational readiness
	Green, flashing	Teach / error
		Measurement frequency display
2	Yellow, continuous light	Light path free, with function reserve
	Yellow, flashing	No function reserve
	Off	Object detected

#### Suitable transmitters

Part no.	Designation	Article	Description
50119514	CML720i- T20-1590.R-M12	Light curtain transmitter	Operating range: 0.3 6 m Connection: Connector, M12, Rear side, 5 -pin

#### Part number code

Part designation: CML7XXi-YZZ-AAAA.BCCCDDD-EEEFFF

CML	Operating principle: Measuring light curtain
7XXi	Series: 720i: 720i series 730i: 730i series
Y	Device type: T: transmitter R: receiver
ZZ	Beam spacing: 05: 5 mm 10: 10 mm 20: 20 mm 40: 40 mm
AAAA	Measurement field length [mm], dependent on beam spacing
В	Equipment: A: connector outlet, axial R: rear connector outlet

### Part no.: 50123639 – CML720i-R20-1590.R/D3-M12 – Light curtain receiver

CCC	Interface: L: IO-Link /CN: CANopen /PB: PROFIBUS /PN: PROFINET /CV: Analog current and voltage output /D3: RS 485 Modbus
DDD	Special equipment: -PS: Power Setting
EEE	Electrical connection: M12: M12 connector
FFF	-EX: Explosion protection:

#### Note

A list with all available device types can be found on the Leuze electronic website at www.leuze.com.

#### Notes

#### Observe intended use!

- This product is not a safety sensor and is not intended as personnel protection.
- The product may only be put into operation by competent persons.
- Only use the product in accordance with its intended use.

#### For UL applications:

- For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).
- These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7)

#### Accessories

### Connection technology - Connection cables

Part no.	Designation	Article	Description
50132079	KD U-M12-5A- V1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC

#### Part no.: 50123639 – CML720i-R20-1590.R/D3-M12 – Light curtain receiver

#### Connection technology - Y distribution cables

	Part no.	Designation	Article	Description
		K-Y1 M12A-5m- M12A-S-PUR	Interconnection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 5 -pin Connection 3: Connector, M12, Axial, Female, A-coded, 8 -pin Shielded: Yes Cable length fork 1: 5,000 mm Cable length fork 2: 150 mm Sheathing material: PUR
	50123265	K-YPB M12A-5m- M12A-S-PUR	Interconnection cable	Suitable for interface: PROFIBUS DP Connection 1: Connector, M12, Axial, Male, B-coded, 5 -pin Connection 2: Connector, M12, Axial, Female, B-coded, 5 -pin Connection 3: Connector, M12, Axial, Male, B-coded, 5 -pin Shielded: Yes Cable length fork 1: 5,000 mm Cable length fork 2: 250 mm Sheathing material: PUR

### Mounting technology - Mounting brackets

Part no.	Designation	Article	Description
50142900	BT 700M.5-2SET	Mounting device set	Contains: 2x mounting brackets, 1 teach template, 4 M6 x 10 screws Design of mounting device: Bracket mounting Fastening, at system: Through-hole mounting, T slotted hole Mounting bracket, at device: Screw type, Sliding block Type of mounting device: Rigid Material: Steel

### Mounting technology - Swivel mounts

	Part no.	Designation	Article	Description
RR.	429046	BT-2R1	set	Contains: 2x BT-R swivel mount, 1 cylinder for mounting on the light curtain Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 360° Material: Metal, Plastic

### Services

Part no.	Designation	Article	Description
S981001	CS10-S-110	Start-up support	Details: Performed at location of customer's choosing, duration: max. 10 hours. Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses. Restrictions: No mechanical (mounting) and electrical (wiring) work performed, no changes (attachments, wiring, programming) to third-party components in the nearby environment.
S981005	CS10-T-110	Product training	Details: Location and content to be agreed upon, duration: max. 10 hours. Conditions: Price not including travel costs and, if applicable, accommodation expenses. Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure.

Note	
A list with all available accessories can be found on the Leuze electronic website in the Download tab of the article detailed name	l