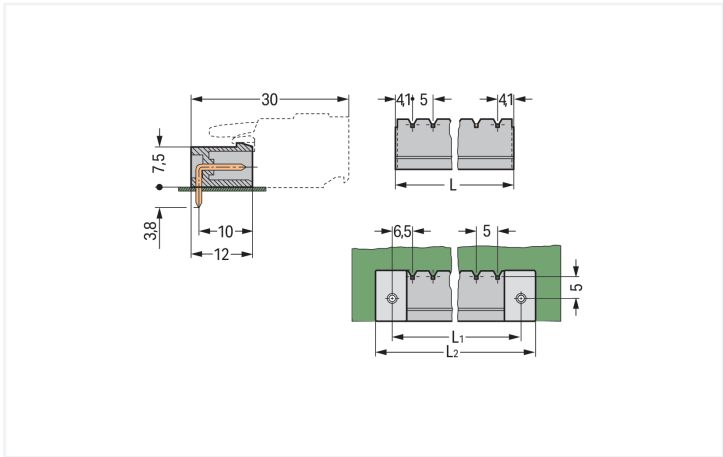
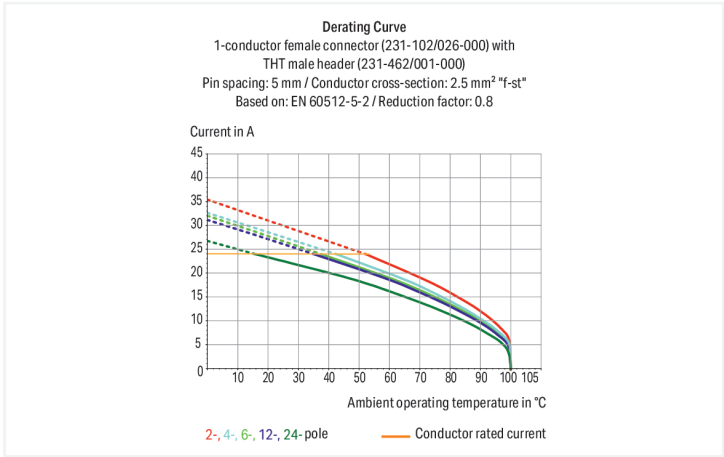




Color: ■ gray



Dimensions in mm
 $L = (\text{pole no.} - 1) \times \text{pin spacing} + 8.2 \text{ mm}$
 $L_1 = L + 5 \text{ mm}$
 $L_2 = L_1 + 7.4 \text{ mm}$

Male connector, 231 Series, solder pin dimensions 1 x 1 mm

Our male connector (item number 231-446/001-000) is designed for seamless electrical installations. The item's dimensions are (83.2 x 12.2 x 12) mm (width x height x depth).

Tin is used for coating the contact surfaces. THT is used to assemble the pcb connector.

Notes	
Safety Information	The MCS – MULTI CONNECTION SYSTEM includes connectors without breaking capacity in accordance with DIN EN 61984. When used as intended, these connectors must not be connected/disconnected when live or under load. When used as intended, these connectors must not be connected/disconnected when live or under load. The circuit design should ensure header pins, which can be touched, are not live when unmated.
Variants:	Other pole numbers 3.8 mm pin projection for male headers with straight solder pins Gold-plated or partially gold-plated contact surfaces Other versions (or variants) can be requested from WAGO Sales or configured at https://configurator.wago.com/ .



Electrical data				
Ratings per		IEC/EN 60664-1		
Overvoltage category	III	III	II	
Pollution degree	3	2	2	
Nominal voltage	320 V	320 V	630 V	
Rated impulse withstand voltage	4 kV	4 kV	4 kV	
Rated current	12 A	12 A	12 A	
Approvals per		UL 1059		
Use group		B	C	D
Rated voltage		300 V	-	300 V
Rated current		10 A	-	10 A
Approvals per		UL 1977		
Rated voltage		600 V		
Rated current		10 A		
Approvals per		CSA		
Use group		B	C	D
Rated voltage		300 V	-	300 V
Rated current		10 A	-	10 A
Connection Data				
Total number of potentials	16	Connection 1		
Number of connection types	1	Pole number	16	
Number of levels	1			
Physical data				
Pin spacing	5 mm / 0.197 inches			
Width	83.2 mm / 3.276 inches			
Height	12.2 mm / 0.48 inches			
Height from the surface	8.4 mm / 0.331 inches			
Depth	12 mm / 0.472 inches			
Solder pin length	3.8 mm			
Solder pin dimensions	1 x 1 mm			
!	1.4 ^(+0.1) mm			
Mechanical data				
Variable coding	Yes			
Anti-rotation protection	Yes			
Plug-in connection				
Contact type (pluggable connector)	Male connector/plug			
Connector (connection type)	for PCB			
Mismating protection	No			
Mating direction to the PCB	0°			
PCB contact				
PCB contact	THT			
Solder pin arrangement	over the entire male connector (in-line)			
Number of solder pins per potential	1			



Material data	
Note (material data)	Information on material specifications can be found here
Color	gray
Material group	I
Insulation material (main housing)	Polyamide (PA66)
Flammability class per UL94	V0
Contact material	Electrolytic copper (E _{Cu})
Contact Plating	Tin
Fire load	0.092 MJ
Weight	5.1 g

Environmental requirements																																																								
Limit temperature range	-60 ... +100 °C	<table><tr><th colspan="2">Environmental Testing</th></tr><tr><td>Test specification: Railway applications – Rolling stock – Electronic equipment</td><td>DIN EN 50155 (VDE 0115-200):2022-06</td></tr><tr><td>Test procedure: Railway applications – Rolling stock equipment – Vibration and shock tests</td><td>DIN EN 61373 (VDE 0115-0106):2011-04</td></tr><tr><td>Spectrum/Mounting location</td><td>Service life test, Category 1, Class A/B</td></tr><tr><td>Functional test with noise-like oscillations</td><td>Test passed according to Section 8 of the standard</td></tr><tr><td>Frequency</td><td>f₁ = 5 Hz to f₂ = 150 Hz</td></tr><tr><td>Acceleration</td><td>0.101g (highest test level used for all axes)</td></tr><tr><td>Test duration per axis</td><td>10 min.</td></tr><tr><td>Test directions</td><td>X, Y and Z axes</td></tr><tr><td>Monitoring of contact faults and interruptions</td><td>Passed</td></tr><tr><td>Voltage drop measurement before and after each axis</td><td>Passed</td></tr><tr><td>Simulated service life test through increased levels of noise-like oscillations</td><td>Test passed according to Section 9 of the standard</td></tr><tr><td>Frequency</td><td>f₁ = 5 Hz to f₂ = 150 Hz</td></tr><tr><td>Acceleration</td><td>0.572g (highest test level used for all axes)</td></tr><tr><td>Test duration per axis</td><td>5 h</td></tr><tr><td>Test directions</td><td>X, Y and Z axes</td></tr><tr><td>Extended testing: Monitoring of contact faults and interruptions</td><td>Passed</td></tr><tr><td>Extended testing: Voltage drop measurement before and after each axis</td><td>Passed</td></tr><tr><td>Shock test</td><td>Test passed according to Section 10 of the standard</td></tr><tr><td>Shock pulse form</td><td>Half sine</td></tr><tr><td>Acceleration</td><td>5g (highest test level used for all axes)</td></tr><tr><td>Shock duration</td><td>30 ms</td></tr><tr><td>Number of shocks (per axis)</td><td>3 pos. und 3 neg.</td></tr><tr><td>Test directions</td><td>X, Y and Z axes</td></tr><tr><td>Extended testing: Monitoring of contact faults and interruptions</td><td>Passed</td></tr><tr><td>Extended testing: Voltage drop measurement before and after each axis</td><td>Passed</td></tr><tr><td>Vibration and shock stress for rolling stock equipment</td><td>Passed</td></tr></table>	Environmental Testing		Test specification: Railway applications – Rolling stock – Electronic equipment	DIN EN 50155 (VDE 0115-200):2022-06	Test procedure: Railway applications – Rolling stock equipment – Vibration and shock tests	DIN EN 61373 (VDE 0115-0106):2011-04	Spectrum/Mounting location	Service life test, Category 1, Class A/B	Functional test with noise-like oscillations	Test passed according to Section 8 of the standard	Frequency	f ₁ = 5 Hz to f ₂ = 150 Hz	Acceleration	0.101g (highest test level used for all axes)	Test duration per axis	10 min.	Test directions	X, Y and Z axes	Monitoring of contact faults and interruptions	Passed	Voltage drop measurement before and after each axis	Passed	Simulated service life test through increased levels of noise-like oscillations	Test passed according to Section 9 of the standard	Frequency	f ₁ = 5 Hz to f ₂ = 150 Hz	Acceleration	0.572g (highest test level used for all axes)	Test duration per axis	5 h	Test directions	X, Y and Z axes	Extended testing: Monitoring of contact faults and interruptions	Passed	Extended testing: Voltage drop measurement before and after each axis	Passed	Shock test	Test passed according to Section 10 of the standard	Shock pulse form	Half sine	Acceleration	5g (highest test level used for all axes)	Shock duration	30 ms	Number of shocks (per axis)	3 pos. und 3 neg.	Test directions	X, Y and Z axes	Extended testing: Monitoring of contact faults and interruptions	Passed	Extended testing: Voltage drop measurement before and after each axis	Passed	Vibration and shock stress for rolling stock equipment	Passed
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Processing temperature	-35 ... +60 °C																																																							



Commercial data	
Product Group	3 (Multi Conn. System)
PU (SPU)	50 pcs
Packaging type	Box
Country of origin	PL
GTIN	4044918866514
Customs tariff number	85366930000

Product Classification	
UNSPSC	39121409
eCl@ss 10.0	27-44-04-02
eCl@ss 9.0	27-44-04-02
ETIM 9.0	EC002637
ETIM 10.0	EC002637
ECCN	NO US CLASSIFICATION

Environmental Product Compliance	
RoHS Compliance Status	Compliant, No Exemption

Approvals / Certificates

General approvals			Declarations of conformity and manufacturer's declarations		
   					
Approval	Standard	Certificate Name	Approval	Standard	Certificate Name
CB DEKRA Certification B.V.	IEC 61984	NL-113351	Railway WAGO GmbH & Co. KG	-	Railway Ready
CSA DEKRA Certification B.V.	C22.2	1466354			
KEMA/KEUR DEKRA Certification B.V.	EN 61984	71-130478 REV.1			
UL Underwriters Laboratories Inc.	UL 1059	E45172			
UR Underwriters Laboratories Inc.	UL 1977	E45171			

Approvals for marine applications

   		
Approval	Standard	Certificate Name
ABS American Bureau of Ship- ping	-	24-0095975-PDA
BV Bureau Veritas S.A.	IEC 60998	11915/E0 BV
DNV DNV GL SE	-	TAE000016Z
PRS Polski Rejestr Statków	-	TE/1095/880590/23



Downloads			
Environmental Product Compliance			
Compliance Search			
Environmental Product Compliance	231-446/001-000		
Documentation			
Additional Information			
Technical Section	03.04.2019	pdf 2027.26 KB	
CAD/CAE-Data			
CAD data		CAE data	
2D/3D Models	231-446/001-000	EPLAN Data Portal	231-446/001-000
		ZUKEN Portal	231-446/001-000
PCB Design			
Symbol and Footprint via SamacSys			
	231-446/001-000		
Symbol and Footprint via Ultra Librarian			
	231-446/001-000		
1 Compatible Products			
1.1 System counterpart			
1.1.1 Female connector/socket			
Item No.: 232-116/026-000 1-conductor female connector, angled; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; 2,50 mm²; gray	Item No.: 232-216/026-000 1-conductor female connector, angled; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; 2,50 mm²; gray	Item No.: 231-116/027-000 1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; clamping collar; gray	Item No.: 231-116/031-000 1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; clamping collar; gray
Item No.: 231-116/026-000 1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; gray	Item No.: 231-116/037-000 1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; Lateral locking levers; gray	Item No.: 231-116/125-000 1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; Snap-in flange; gray	Item No.: 231-116/102-000 1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; with integrated end plate; gray
Item No.: 231-120/125-000 1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 20-pole; Snap-in flange; 2,50 mm²; gray	Item No.: 2231-1116/327-000 1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; 2,50 mm²; gray	Item No.: 2231-1116/329-000 1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; Centered locking levers; gray	Item No.: 2231-1116/329-000/336-000 1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; Centered locking levers; Strain relief plate; gray



1.1.1 Female connector/socket



Item No.: 2231-1116/327-047
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; direct marking; 2,50 mm²; gray



Item No.: 2231-1116/038-000
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; Lateral locking levers; 2,50 mm²; gray



Item No.: 2231-1116/038-000/336-000
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; Lateral locking levers; Strain relief plate; gray



Item No.: 2231-1116/327-000/336-000
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; Strain relief plate; gray



Item No.: 2231-1116/026-000
1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; 2,50 mm²; gray



Item No.: 2231-1116/031-000
1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; clamping collar; 2,50 mm²; gray



Item No.: 2231-1116/037-000
1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; Lateral locking levers; 2,50 mm²; gray



Item No.: 2231-1116/102-000
1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; with integrated end plate; 2,50 mm²; gray



Item No.: 231-2116/037-000
2-conductor female connector; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; Lateral locking levers; gray



Item No.: 231-2116/026-000
2-conductor female connector; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 16-pole; with integrated end plate; gray

1.2 Optional Accessories

1.2.1 Coding

1.2.1.1 Coding



Item No.: 231-129
Coding key; snap-on type; light gray

1.2.1.2 Intermediate plate



Item No.: 231-500
Spacer; for formation of groups; light gray

1.2.2 Installation

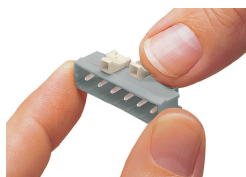
1.2.2.1 Mounting accessories



Item No.: 231-193
Locking device; for male connectors; 1 part; gray

Installation Notes

Coding



Coding a male header – fitting coding key (s).