2018-03-23
Product version 02
Document revision 0

Data sheet

Order No.: 1803523

Type: MCV 1,5/12-G-3,81

Header

The figure shows a 10-position version of the product

1 Main features

- No. of pos. 12
- Nominal cross section 1.5 mm²
- Color green
- Pitch 3.81 mm
- Mounting type Wave soldering
- Nominal current 8 A
- Nominal voltage 160 V
- Connection direction 90 °
- Type of packaging packed in cardboard

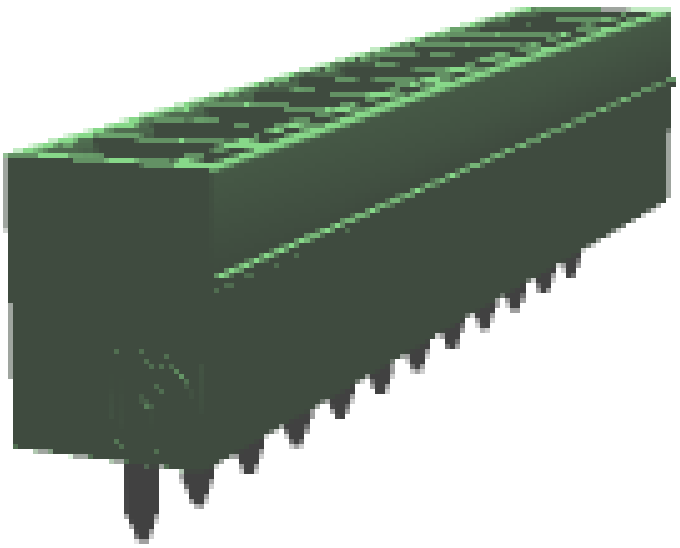
2 Your advantages

- Well-known mounting principle allows worldwide use
- Vertical connection enables multi-row arrangement on the PCB
- Maximum flexibility when it comes to device design – one header for connectors with different connection technologies

Make sure you always use the latest documentation.
It can be downloaded at: phoenixcontact.net/product/1803523

3 Table of contents

4 3D model in PDF can be activated (Acrobat Reader only)



5 item properties

Order No.	1803523
Type	MCV 1,5/12-G-3,81
Type of contact	Male connector
Range of articles	MCV 1,5/..-G
Pitch	3.81 mm
Number of positions	12
Locking	without
Mounting type	Wave soldering
Pin layout	Linear pinning

5.1 Material data

Material of metal parts		
Note	WEEE/RoHS-compliant, whisker-free acc. to IEC 60068-2-82/JEDEC JESD 201	
Contact material	Cu alloy	
Surface contact area	Ni 1 µm ... 3 µm , Sn 3 µm ... 5 µm	
Soldering area surface	Ni 1 µm ... 3 µm , Sn 3 µm ... 5 µm	
Surface characteristics	Tin-plated	

Insulating material data	Housing	Housing
Insulating material	PBT	
CTI according to IEC 60112	225	
Flammability rating according to UL 94	V0	
Color	green (6021)	

6 Dimensions

6.1 Dimensions for the product

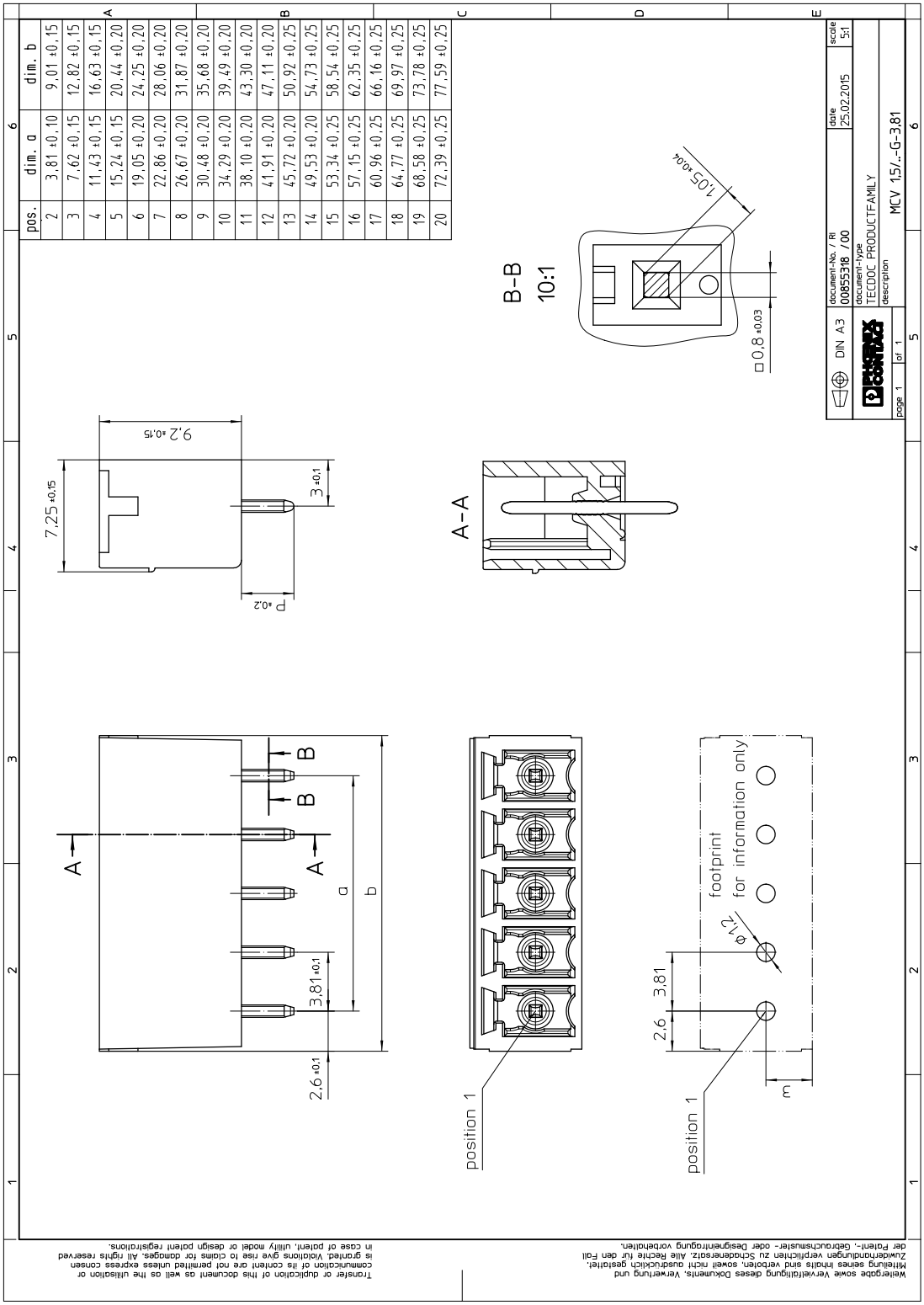
Length	7.25 mm
Width	47.11 mm
Height (without solder pin)	9.2 mm
Total height	12.6 mm
Solder pin [P]	3.4 mm
Dimension a	41.91 mm

6.2 Dimensions for PCB design

Hole diameter	1.2 mm
Pin dimensions	0,8 x 0,8 mm

1803523 MCV 1,5/12-G-3,81

7 Series drawing



8 Packaging information

Type of packaging	packed in cardboard
Pieces per package	50

9 Application

9.1 Temperature limit values

Ambient temperature (storage/transport)	-40 °C ... 70 °C
Ambient temperature (assembly)	-5 °C ... 100 °C
Ambient temperature (operation)	-40 °C (dependent on the derating curve)

10 Mechanical tests

Mechanical test group A	
Specification	IEC 61984:2008-10
Visual examination	Test passed
Specification	IEC 60512-1-1:2002-02
Dimensional test	Test passed
Specification	IEC 60512-1-2:2002-02
Resistance of marking	Test passed
Specification	IEC 60068-2-70:1995-12
Insertion and withdrawal force	Test passed
Specification	IEC 60512-13-2:2006-02
No. of cycles	25
Insertion strength per pos. approx.	8 N
Withdraw strength per pos. approx.	6 N
Polarization and coding	Test passed
Specification	IEC 60512-13-5:2006-02
Test force	20 N
Contact retention in insert	Test passed
Specification	IEC 60512-15-1:2008-05
Test force per pos.	29.5 N

11 Electrical tests

11.1 Electrical data

Rated current / conductor cross section	8 A / 1.5 mm²
Rated insulation voltage (III/2)	160 V
Rated surge voltage (III/2)	2.5 kV
Contact resistance	1.2 mΩ
Degree of pollution	2

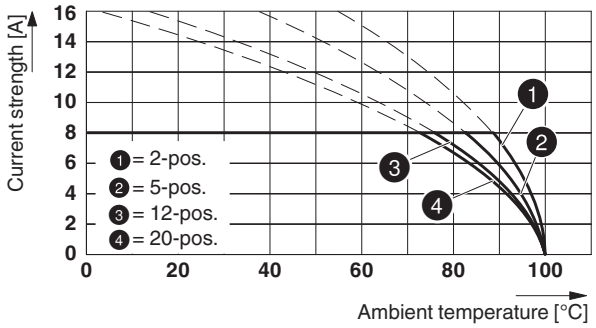
11.2 Air and creepage distances

Component	Header		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	IIIa		
Comparative tracking index (IEC 60112:2003-01)	CTI 225		
Rated insulation voltage	160 V	160 V	250 V
Rated surge voltage	2.5 kV	2.5 kV	2.5 kV
Degree of pollution	3	2	2
Overvoltage category	III	III	II
Minimum clearance case A (inhomogeneous field)	1.5 mm	1.5 mm	1.5 mm
Minimum value of the creepage path requirement in acc. with table	2.5 mm	1.6 mm	2.5 mm

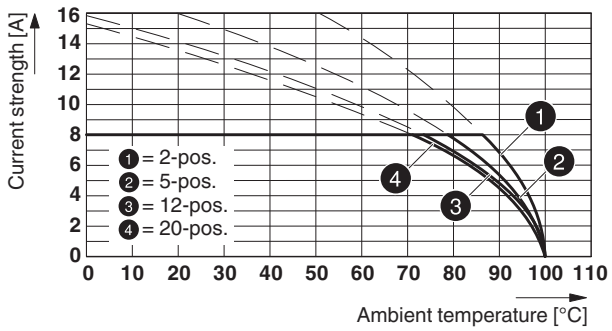
12 Current carrying capacity/derating curves

Specification	IEC 61984:2008-10
Note	Representation based on IEC 60512-5-2:2002-02
Reduction factor	0.8
Number of positions	See diagram
Conductor cross section	1.5 mm²
Note	

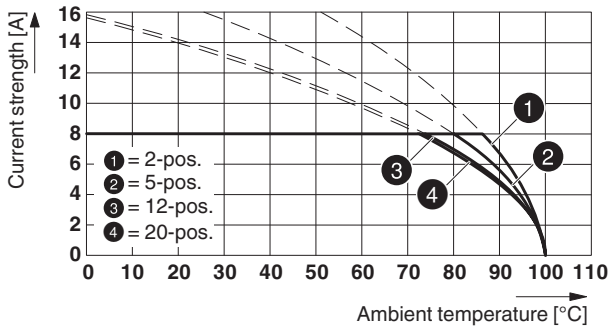
Type: MC 1,5/...-ST-3,81 with MCV 1,5/...-G-3,81



Type: FRONT-MC 1,5/...-ST-3,81 with MCV 1,5/...-G-3,81



Type: FK-MCP 1,5/...-ST-3,81 with MCV 1,5/...-G-3,81



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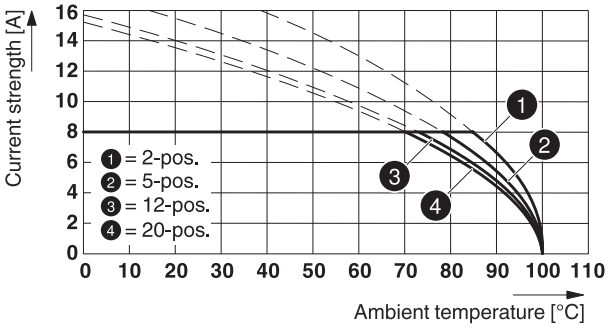
Type: FMC 1,5/...-ST-3,81 with MCV 1,5/...-G-3,81



13 Environmental and durability tests

13.1 Vibration test

Specification	IEC 60068-2-6:2007-12
Result	Test passed
Frequency	10 - 150 - 10 Hz
Sweep speed	1 octave/min
Amplitude	0.35 mm (10 - 60.1 Hz)
Acceleration	5 g (60.1 - 150 Hz)
Test duration per axis	2.5 h
Test directions	X-, Y- and Z-axis

14 Classification for connectors

Specification	IEC 61984:2008-10
Main features	Connectors without switching capacity (COC)
Construction form	Fixed connectors
Strain relief elements	without strain relief
Protection against electric shock	Not encapsulated - touch-proof when inserted
Protection class	
Protective conductor	without PE
Lock	no

15 Approvals

CSA				
Use group	B	D		
mm²/AWG/kcmil				
Voltage	300 V	300 V		
Current	8 A	8 A		

VDE Gutachten mit Fertigungsüberwachung				
mm²/AWG/kcmil				
Voltage	160 V			
Current	8 A			

IECEE CB Scheme				
mm²/AWG/kcmil				
Voltage	160 V			
Current	8 A			

CCA				
mm²/AWG/kcmil				
Voltage	160 V			
Current	8 A			

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cULus Recognized				
Use group	B	D		
mm²/AWG/kcmil				
Voltage	300 V	300 V		
Current	8 A	8 A		

EAC

16 Commercial Data

Order No.	1803523
Type	MCV 1,5/12-G-3,81
Pieces per package	50
Net weight	3.3 g
GTIN	4017918045838
	Information that applies locally, see link on page 1
Country of origin	Information that applies locally, see link on page 1

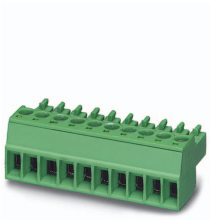
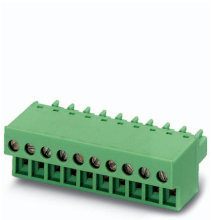
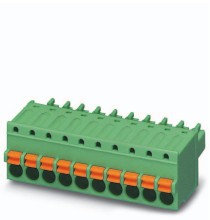
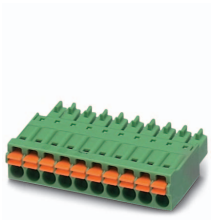
17 corresponding plugs

Order No.	Type
1748079	FMC 1,5/12-ST-3,81
1803675	MC 1,5/12-ST-3,81
1827075	MCVW 1,5/12-ST-3,81
1827224	MCVR 1,5/12-ST-3,81
1850767	FRONT-MC 1,5/12-ST-3,81
1851148	FK-MCP 1,5/12-ST-3,81
1852273	MCC 1/12-STZ-3,81
1897490	QC 0,5/12-ST-3,81

18 Accessories

Description	Order No.	Type
	0804109	SK 3,81/2,8:FORTL.ZAHLEN
Coding profile, is inserted into the slot on the plug or inverted header, red insulating material	1734634	CP-MSTB
	0805399	SK 3,81/2,8:UNBEDRUCKT
	0805056	SK 3,81/2,8:SO
	0804141	SK 3,81/2,8: 1-250
Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm	1051993	B-STIFT

19 Combination tests

					
	MCV 1,5/..-G	**MC 1,5/..-ST**	**FRONT-MC 1,5/..-ST**	**FK-MCP 1,5/..-ST**	**FMC 1,5/..-ST**
Specification	IEC 61984	IEC 61984	IEC 61984	IEC 61984	IEC 61984
Mechanical tests (A)					
Insertion/withdrawal force per position	approx. 8 N / 6 N	approx. 7 N / 5 N	approx. 9 N / 7 N	approx. 8 N / 5 N
Polarization when inserted Requirement >20 N	Test passed	Test passed	Test passed	Test passed
Contact holder in insert Requirements >20 N	Test passed	Test passed	Test passed	Test passed
Durability tests (B)					
Contact resistance R_1	1.2 mΩ	1.6 mΩ	1.6 mΩ	1.5 mΩ
Insertion/withdrawal cycles	25	25	25	25
Contact resistance R_2	1.2 mΩ	1.7 mΩ	1.6 mΩ	1.7 mΩ
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 µs)	2.95 kV	2.95 kV	2.95 kV	2.95 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	1.39 kV	1.39 kV	1.39 kV	1.39 kV
Insulation resistance Requirements > 5 MΩ	> 11 TΩ	> 5 TΩ	> 50 GΩ	> 50 GΩ
Thermal tests (C)					
Tested number of positions	20	20	20	20
Tested conductor cross section	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2
Test current	8 A DC	8 A DC	8 A	8 A
Upper limiting temperature Requirements < 100°C	Test passed	Test passed	Test passed	Test passed
Climatic tests (D)					
Test sequence 1: low temperature storage	-40 °C/2 h	-40 °C/2 h	-40 °C/2 h	-40 °C/2 h
Test sequence 2: heat storage	100 °C/168 h	100 °C/168 h	100 °C/168 h	100 °C/168 h
Test sequence 3: noxious gas storage (ISO 6988)	0.2 dm^3 SO_2 on 300 dm^3/ 40 °C/1 cycle	0.2 dm^3 SO_2 on 300 dm^3/ 40 °C/1 cycle	0.2 dm^3 SO_2 on 300 dm^3/ 40 °C/1 cycle	0.2 dm^3 SO_2 on 300 dm^3/ 40 °C/1 cycle
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 µs)	2.95 kV	2.95 kV	2.95 kV	2.95 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	1.39 kV	1.39 kV	1.39 kV	1.39 kV
Environmental and endurance tests (E)					
Specification	IEC 61984:2008-10	IEC 61984:2008-10	IEC 61984:2008-10	IEC 61984:2008-10
Degree of protection	Finger safety with IP20 test finger	Finger safety with IP20 test finger	Finger safety with IP20 test finger	Finger safety with IP20 test finger