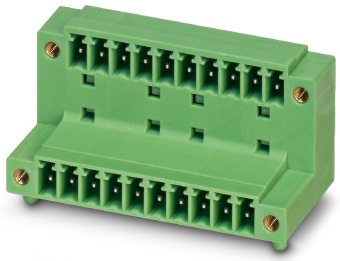
2020-08-28
Product version 03
Document revision 00

Data sheet

Item No.: 1830240

Type: MCD 1,5/16-GF-3,81

PCB headers



The figure shows a 10-pos. version with 20 contacts

1 Main features

- No. of pos. 16
- Nominal cross section 1.5 mm²
- Color green (6021)
- Pitch 3.81 mm
- Mounting type Wave soldering
- Nominal current 8 A
- Nominal voltage 160 V
- Connection direction 0 °
- Type of packaging packed in cardboard

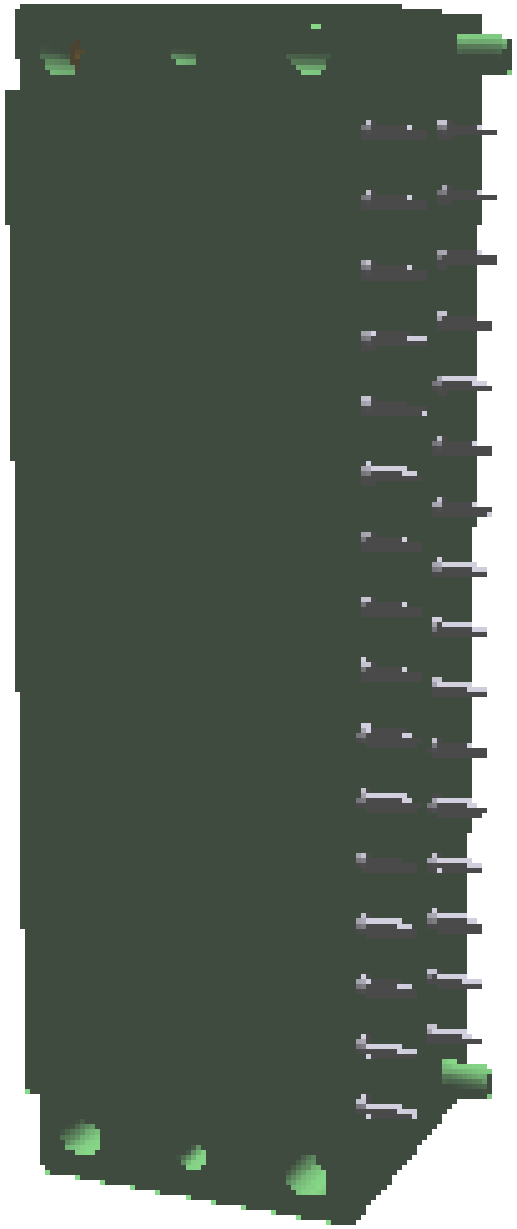
2 Your advantages

- Well-known mounting principle allows worldwide use
- Screwable flange for superior mechanical stability
- Conductor connection on several levels enables higher contact density

Make sure you always use the latest documentation.
It can be downloaded at: phoenixcontact.net/product/1830240

3 Table of contents

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



5 General Technical Data

5.1 item properties

Item no.	1830240
Type	MCD 1,5/16-GF-3,81
Product line	COMBICON Connectors S
Connector system	COMBICON MC 1,5
Product type	PCB headers
Type of contact	Male connector
Range of articles	MCD 1,5/..-GF
Pitch	3.81 mm
Number of positions	16
Number of rows	2
Number of connections	32
Number of potentials	32
Connection direction of the connector to the PCB	0 °
Pin layout	Linear pinning
Solder pins per potential	1
Product note	In combination with MCV plug components, both an MCVW and an MCVR plug must be used.
Type	Standard

6 Mounting

6.1 Flange mounting

Type of locking	Screw locking
Mounting flange	Threaded flange
Torque	0.3 Nm

7 Material properties

7.1 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	Nickel (1.3 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Soldering area surface	Nickel (1.3 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Surface characteristics	Tin-plated

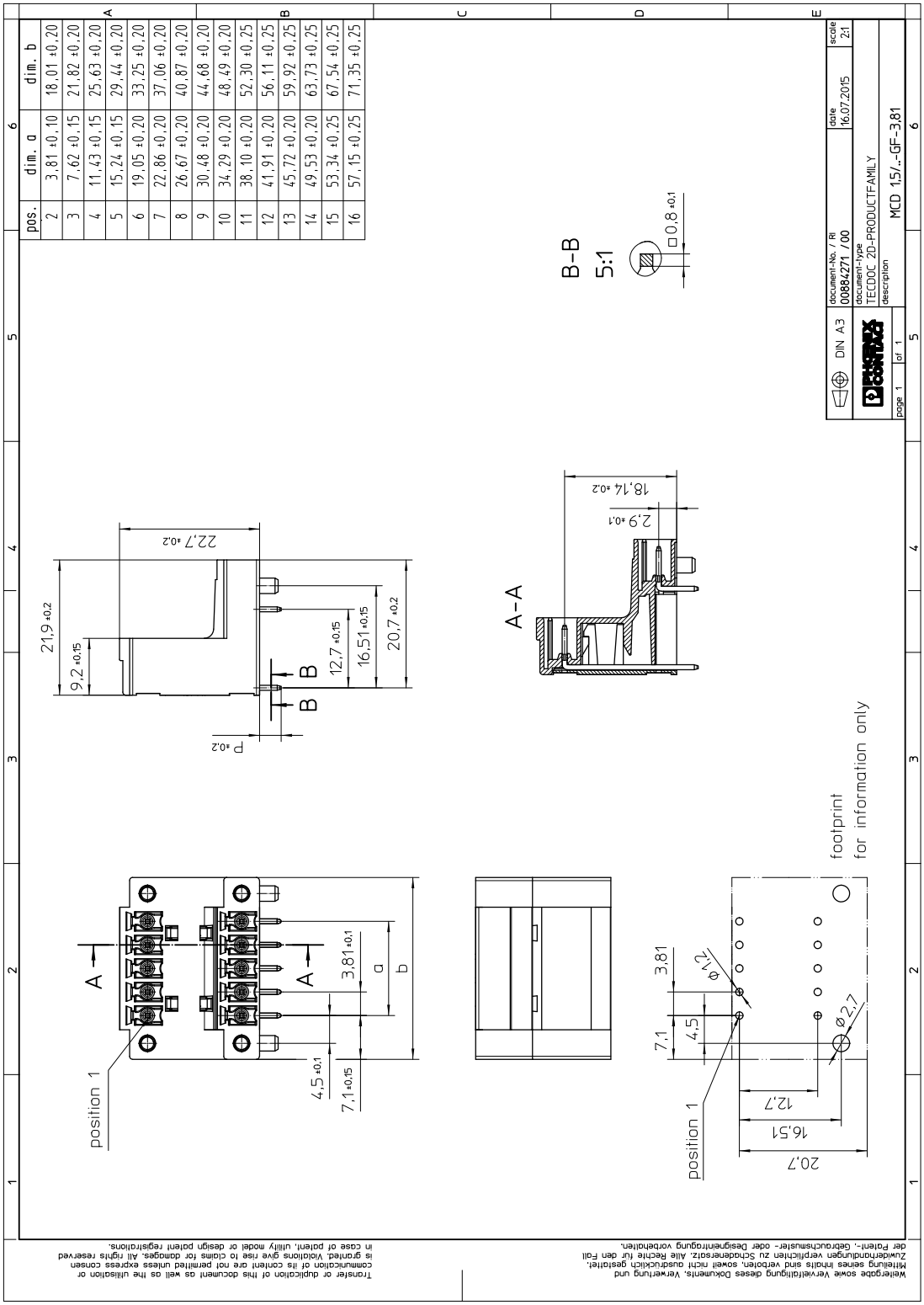
Insulating material data	Housing
Color	green (6021)
Insulating material	PA
Insulating material group	I
CTI according to IEC 60112	600
Flammability rating according to UL 94	V0
Glow wire flammability index GWFI according to EN 60695-2-12	850
Glow wire ignition temperature GWIT according to EN 60695-2-13	775
Temperature for the ball pressure test according to EN 60695-10-2	125 °C

8 Dimensions

8.1 Dimensions for the product

Length	21.9 mm
Width	71.35 mm
Height (without solder pin)	22.7 mm
Total height	26.2 mm
Solder pin [P]	3.5 mm

9 Series drawing



10 Application

11 Packaging information

Type of packaging	packed in cardboard
Pieces per package	50

11.1 Temperature limit values

Ambient temperature (storage/transport)	-40 °C ... 70 °C
Relative humidity (storage/transport)	30 % ... 70 %
Ambient temperature (assembly)	-5 °C ... 100 °C
Ambient temperature (operation)	-40 °C ... 100 °C (dependent on the derating curve)

12 Mechanical tests

12.1 Visual examination

Specification	IEC 61984:2008-10
Visual examination	Test passed
Specification	IEC 60512-1-1:2002-02

12.2 Dimensional test

Dimensional test	Test passed
Specification	IEC 60512-1-2:2002-02

12.3 Resistance of marking

Resistance of marking	Test passed
Specification	IEC 60068-2-70:1995-12

12.4 Polarization and coding

Polarization and coding	Test passed
Specification	IEC 60512-13-5:2006-02
Test force	20 N

12.5 Contact retention in insert

Contact holder in insert Requirements >20 N	Test passed
Specification	IEC 60512-15-1:2008-05

13 Insertion and withdrawal forces

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

14 Electrical tests

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	2 mΩ
Degree of pollution	2

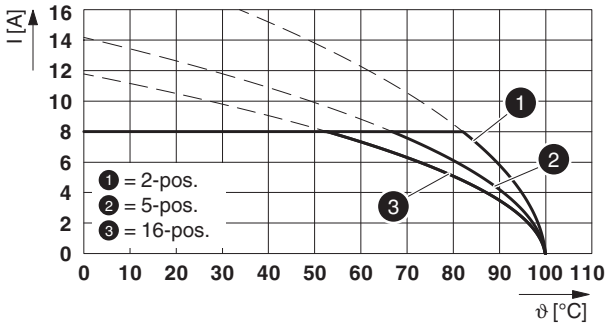
15 Air and creepage distances

Component	PCB headers		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	I		
Comparative tracking index (IEC 60112)	CTI 600		
Rated insulation voltage	160 V	160 V	320 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 mm	1.5 mm	1.6 mm

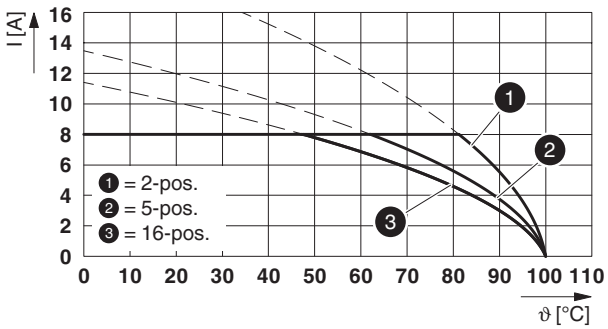
16 Current carrying capacity/derating curves

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

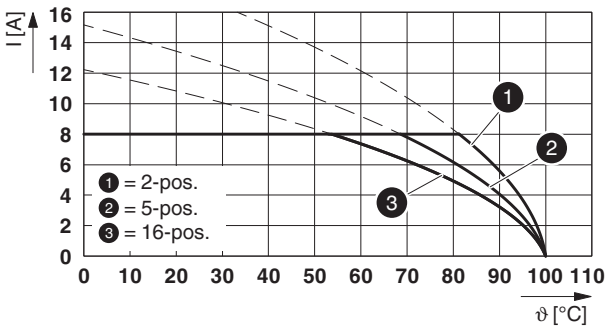
Type: FRONT-MC 1,5/...-ST-3,81 with MCD 1,5/...-GF-3,81



Type: FMC 1,5/...-STF-3,81 with MCD 1,5/...-GF-3,81

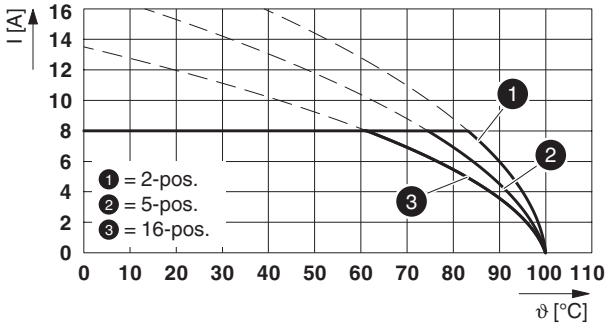


Type: FK-MCP 1,5/...-STF-3,81 with MCD 1,5/...-GF-3,81



1830240 MCD 1,5/16-GF-3,81

Type: MC 1,5/...-STF-3,81 with MCD 1,5/...-GF-3,81



17 Environmental and durability tests

17.1 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	5g (60.1 - 150 Hz)
Test duration per axis	2.5 h
Test directions	X-, Y- and Z-axis
Note	

17.2 Insulation resistance

Specification	IEC 60512-3-1:2002-02
Result	Test passed
Insulation resistance, neighboring positions	> 5 MΩ

18 Data transmission

19 Approvals / Certificates

CSA	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
Usegroup B				
	300 V	8 A	-	-
Usegroup D				
	300 V	8 A	-	-

IECEE CB Scheme	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
	160 V	8 A	-	-

EAC				

cULus Recognized	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
Usegroup B				
	300 V	8 A	-	-
Usegroup D				
	300 V	8 A	-	-

VDE report with production monitoring	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
	160 V	8 A	-	-

20 Commercial Data

Item no.	1830240
Type	MCD 1,5/16-GF-3,81
Pieces per package	50
Net weight	14.818 g
GTIN	4017918112776
	Information that applies locally, see link on page 1

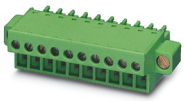
21 corresponding plugs

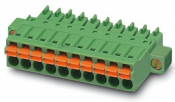
Item no.	Type
1748493	FMC 1,5/16-STF-3,81
1827842	MC 1,5/16-STF-3,81
1828485	MCVR 1,5/16-STF-3,81
1828634	MCVW 1,5/16-STF-3,81
1850990	FRONT-MC 1,5/16-STF-3,81
1851371	FK-MCP 1,5/16-STF-3,81
1852503	MCC 1/16-STZF-3,81
1897681	QC 0,5/16-STF-3,81

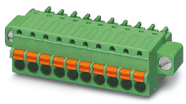
22 Accessories

Description	Item No.	Type
Coding profile, is inserted into the slot on the plug or inverted header, red insulating material	1734634	CP-MSTB
	0804109	SK 3,81/2,8:FORTL.ZAHLEN

23 Combination tests







MCD 1,5/..-GF	FRONT-MC 1,5/..-STF	FMC 1,5/..-STF	FK-MCP 1,5/..-STF	MC 1,5/..-STF
IEC 61984	IEC 61984	IEC 61984	IEC 61984	IEC 61984
Mechanical tests (A)				
Insertion/withdrawal force per position	approx. 8 N / 6 N	approx. 8 N / 6 N	approx. 8 N / 6 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 1st level	2 mΩ	1.6 mΩ	1.3 mΩ	1.3 mΩ
Contact resistance R_1 2nd level	2.4 mΩ	2.3 mΩ	1.8 mΩ	1.8 mΩ
Insertion/withdrawal cycles	25	25	25	25
Contact resistance R_2	2.1 mΩ	2 mΩ	1.4 mΩ	1.4 mΩ
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 µs)	2.95 kV	4.8 kV	2.95 kV	2.95 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	1.39 kV	2.21 kV	1.39 kV	1.39 kV
Insulation resistance Requirements > 5 MΩ	> 5 MΩ	> 5 MΩ	> 5 MΩ	> 5 MΩ
Thermal tests (C)				
Tested number of positions	16	16	16	16
Tested conductor cross section	1.5 mm²	1.5 mm²	1.5 mm²	1.5 mm²
Test current	8 A	8 A	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	4.8 kV	2.95 kV	2.95 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	1.39 kV	2.21 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