

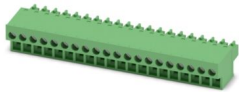
# FRONT-MC 1,5/20-ST-3,81 - Printed-circuit board connector



1850848

<https://www.phoenixcontact.com/us/products/1850848>

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



PCB connector, nominal cross section: 1.5 mm<sup>2</sup>, color: green, nominal current: 8 A, rated voltage (III/2): 160 V, contact surface: Tin, contact connection type: Socket, number of potentials: 20, number of rows: 1, number of positions: 20, number of connections: 20, product range: FRONT-MC 1,5/...-ST, pitch: 3.81 mm, connection method: Front screw connection, screw head form: L Slotted, conductor/PCB connection direction: 0 °, plug-in system: COMBICON MC 1,5, locking: without, mounting: without, type of packaging: packed in cardboard

## Your advantages

- Well-known connection principle allows worldwide use
- Low temperature rise, thanks to maximum contact force
- Optimized for tight installation situations: operation and conductor connection from one direction

## Commercial data

Item number	1850848
Packing unit	50 pc
Minimum order quantity	50 pc
Note	Made to order (non-returnable)
Sales key	AA02
Product key	AABALA
Catalog page	Page 83 (CC-2005)
GTIN	4017918109813
Weight per piece (including packing)	25.94 g
Weight per piece (excluding packing)	25.049 g
Customs tariff number	85366990
Country of origin	DE

# FRONT-MC 1,5/20-ST-3,81 - Printed-circuit board connector



1850848

<https://www.phoenixcontact.com/us/products/1850848>

## Technical data

### Product properties

Type	Standard
Product line	COMBICON Connectors S
Product type	PCB connector
Product family	FRONT-MC 1,5/...-ST
Number of positions	20
Pitch	3.81 mm
Number of connections	20
Number of rows	1
Mounting flange	without
Number of potentials	20

### Electrical properties

Nominal current $I_N$	8 A
Nominal voltage $U_N$	160 V
Degree of pollution	3
Contact resistance	1.6 m $\Omega$
Rated voltage (III/3)	160 V
Rated surge voltage (III/3)	2.5 kV
Rated voltage (III/2)	160 V
Rated surge voltage (III/2)	2.5 kV
Rated voltage (II/2)	320 V
Rated surge voltage (II/2)	2.5 kV

### Connection data

#### Connection technology

Type	Standard
Connector system	COMBICON MC 1,5
Nominal cross section	1.5 mm <sup>2</sup>
Contact connection type	Socket

#### Interlock

Locking type	without
Mounting flange	without

#### Conductor connection

Connection method	Front screw connection
Conductor/PCB connection direction	0 °
Conductor cross section rigid	0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section flexible	0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section AWG	28 ... 16
Conductor cross section flexible, with ferrule without plastic	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>

# FRONT-MC 1,5/20-ST-3,81 - Printed-circuit board connector



1850848

<https://www.phoenixcontact.com/us/products/1850848>

sleeve	
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.25 mm <sup>2</sup> ... 0.5 mm <sup>2</sup>
2 conductors with same cross section, solid	0.14 mm <sup>2</sup> ... 0.5 mm <sup>2</sup>
2 conductors with same cross section, flexible	0.14 mm <sup>2</sup> ... 0.75 mm <sup>2</sup>
2 conductors with same cross section, flexible, with ferrule without plastic sleeve	0.25 mm <sup>2</sup> ... 0.34 mm <sup>2</sup>
2 conductors with the same cross section, flexible, with TWIN ferrule with plastic sleeve	0.5 mm <sup>2</sup> ... 0.5 mm <sup>2</sup>
Cylindrical gauge a x b / diameter	2.4 mm x 1.5 mm / 1.6 mm
Stripping length	9 mm
Tightening torque	0.22 Nm ... 0.25 Nm

## Specifications for ferrules without insulating collar

ferrules without insulating collar, according to DIN 46228-1	Cross section: 0.25 mm <sup>2</sup> ; Length: 7 mm ... 9 mm
	Cross section: 0.34 mm <sup>2</sup> ; Length: 7 mm ... 9 mm
	Cross section: 0.5 mm <sup>2</sup> ; Length: 8 mm ... 9 mm
	Cross section: 0.75 mm <sup>2</sup> ; Length: 8 mm ... 9 mm
	Cross section: 1 mm <sup>2</sup> ; Length: 8 mm ... 9 mm
	Cross section: 1.5 mm <sup>2</sup> ; Length: 9 mm

## Specifications for ferrules with insulating collar

ferrules with insulating collar, according to DIN 46228-4	Cross section: 0.25 mm <sup>2</sup> ; Length: 8 mm ... 9 mm
	Cross section: 0.34 mm <sup>2</sup> ; Length: 8 mm ... 9 mm
	Cross section: 0.5 mm <sup>2</sup> ; Length: 8 mm ... 9 mm

## Material specifications

### Material data - contact

Note	WEEE/RoHS-compliant, free of whiskers according to IEC 60068-2-82/JEDEC JESD 201
Contact material	Cu alloy
Surface characteristics	hot-dip tin-plated
Metal surface terminal point (top layer)	Tin (4 - 8 μm Sn)
Metal surface contact area (top layer)	Tin (4 - 8 μm Sn)

### Material data - housing

Color (Housing)	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

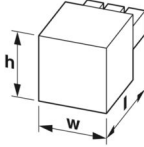
# FRONT-MC 1,5/20-ST-3,81 - Printed-circuit board connector



1850848

<https://www.phoenixcontact.com/us/products/1850848>

## Dimensions

Dimensional drawing	
Pitch	3.81 mm
Width [w]	76.99 mm
Height [h]	12.3 mm
Length [l]	21.7 mm

## Mounting

Drive form screw head	Slotted (L)
Drive form screw head	Slotted (L)

## Mechanical tests

### Test for conductor damage and slackening

Specification	IEC 60999-1:1999-11
Result	Test passed

### Pull-out test

Specification	IEC 60999-1:1999-11
Conductor cross section/conductor type/tractive force setpoint/actual value	0.14 mm <sup>2</sup> / solid / > 10 N
	0.14 mm <sup>2</sup> / flexible / > 10 N
	1.5 mm <sup>2</sup> / solid / > 40 N
	1.5 mm <sup>2</sup> / flexible / > 40 N

### Insertion and withdrawal forces

Result	Test passed
No. of cycles	25
Insertion strength per pos. approx.	7 N
Withdraw strength per pos. approx.	5 N

### Torque test

Specification	IEC 60999-1:1999-11
---------------	---------------------

### Resistance of inscriptions

Specification	IEC 60068-2-70:1995-12
Result	Test passed

### Polarization and coding

Specification	IEC 60512-13-5:2006-02
Result	Test passed

### Visual inspection

# FRONT-MC 1,5/20-ST-3,81 - Printed-circuit board connector



1850848

<https://www.phoenixcontact.com/us/products/1850848>

Specification	IEC 60512-1-1:2002-02
Result	Test passed

## Dimension check

Specification	IEC 60512-1-2:2002-02
Result	Test passed

## Environmental and real-life conditions

### Vibration test

Specification	IEC 60068-2-6:2007-12
Frequency	10 - 150 - 10 Hz
Sweep speed	1 octave/min
Amplitude	0.35 mm (10 Hz ... 60.1 Hz)
Sweep speed	5g (60.1 Hz ... 150 Hz)
Test duration per axis	2.5 h

### Durability test

Specification	IEC 60512-9-1:2010-03
Impulse withstand voltage at sea level	2.95 kV
Contact resistance $R_1$	1.6 m $\Omega$
Contact resistance $R_2$	1.7 m $\Omega$
Insertion/withdrawal cycles	25
Insulation resistance, neighboring positions	> 5 M $\Omega$

### Climatic test

Specification	ISO 6988:1985-02
Corrosive stress	0.2 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> /40 °C/1 cycle
Thermal stress	100 °C/168 h
Power-frequency withstand voltage	1.39 kV

### Ambient conditions

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

## Electrical tests

### Thermal test | Test group C

Specification	IEC 60512-5-1:2002-02
Tested number of positions	20

### Insulation resistance

Specification	IEC 60512-3-1:2002-02
Insulation resistance, neighboring positions	> 5 M $\Omega$

### Air clearances and creepage distances |

# FRONT-MC 1,5/20-ST-3,81 - Printed-circuit board connector



1850848

<https://www.phoenixcontact.com/us/products/1850848>

Specification	IEC 60664-1:2007-04
Insulating material group	I
Comparative tracking index (IEC 60112)	CTI 600
Rated insulation voltage (III/3)	160 V
Rated surge voltage (III/3)	2.5 kV
minimum clearance value - non-homogenous field (III/3)	1.5 mm
minimum creepage distance (III/3)	2 mm
Rated insulation voltage (III/2)	160 V
Rated surge voltage (III/2)	2.5 kV
minimum clearance value - non-homogenous field (III/2)	1.5 mm
minimum creepage distance (III/2)	1.5 mm
Rated insulation voltage (II/2)	320 V
Rated surge voltage (II/2)	2.5 kV
minimum clearance value - non-homogenous field (II/2)	1.5 mm
minimum creepage distance (II/2)	1.6 mm

## Packaging specifications

Type of packaging	packed in cardboard
-------------------	---------------------

# FRONT-MC 1,5/20-ST-3,81 - Printed-circuit board connector



1850848

<https://www.phoenixcontact.com/us/products/1850848>

## Classifications

### ECLASS

ECLASS-11.0	27460202
ECLASS-12.0	27460202
ECLASS-13.0	27460202

### ETIM

ETIM 9.0	EC002638
----------	----------

### UNSPSC

UNSPSC 21.0	39121400
-------------	----------

# FRONT-MC 1,5/20-ST-3,81 - Printed-circuit board connector



1850848

<https://www.phoenixcontact.com/us/products/1850848>

## Environmental product compliance

China RoHS	Environmentally friendly use period: unlimited = EFUP-e No hazardous substances above threshold values
------------	---

Phoenix Contact 2024 © - all rights reserved  
<https://www.phoenixcontact.com>

Phoenix Contact USA  
586 Fulling Mill Road  
Middletown, PA 17057, United States  
(+717) 944-1300  
[info@phoenixcon.com](mailto:info@phoenixcon.com)