

# Data sheet

Order No.: 1110641

Type: LPC 2,5/13-STF-5,08

PCB connector, Lever Push-in connection



The figure shows an 10-position version

## 1 Main features



- |                           |                          |                        |                     |
|---------------------------|--------------------------|------------------------|---------------------|
| • No. of pos.             | 13                       | • Nominal current      | 16 A                |
| • Conductor cross section | 2.5 mm <sup>2</sup>      | • Nominal voltage      | 320 V               |
| • Color                   | green (6021)             | • Connection direction | 0 °                 |
| • Pitch                   | 5.08 mm                  | • Type of packaging    | packed in cardboard |
| • Connection method       | Lever Push-in connection |                        |                     |

## 2 Your advantages

- ✓ Tool-free lever principle enables time-saving connection and release of conductors with/without ferrules
- ✓ Clear lever positions provide reliable feedback on opened or closed clamping spaces
- ✓ Time-saving push-in connection when lever is closed
- ✓ Screwable flange for superior mechanical stability
- ✓ Quick and convenient testing using integrated test option



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



**1110641 LPC 2,5/13-STF-5,08****5 General Technical Data****5.1 item properties**

Order No.	1110641
Type	LPC 2,5/13-STF-5,08
Connector system	CLASSIC COMBICON
Product type	PCB connector
Type of contact	Female connector
Range of articles	LPC 2,5/...-ST-LR
Pitch	5.08 mm
Number of positions	13
Number of levels	1
Connection method	Lever Push-in connection
Connection direction of the conductor to plug-in direction	0 °

**1110641 LPC 2,5/13-STF-5,08****6 Mounting****6.1 Flange mounting**

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

**1110641 LPC 2,5/13-STF-5,08****7 Conductor connection****7.1 Connection capacity**

Nominal cross section	2.5 mm <sup>2</sup>
Conductor cross section, rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section, flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> (Stripping length: 7 mm ... 12 mm)
Conductor cross section flexible, with ferrule with plastic sleeve	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> (Stripping length: 7 mm ... 12 mm)
2 conductors with the same cross section flexible with TWIN ferrule and plastic sleeve	0.5 mm <sup>2</sup> ... 1 mm <sup>2</sup> (Stripping length: 7 mm ... 12 mm)
Cylindrical gauge a x b / diameter	2.8 mm x 2.0 mm / 2.4 mm
Stripping length	10 mm

**7.2 Connection capacity AWG**

Conductor cross section AWG	26 ... 12
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**1110641 LPC 2,5/13-STF-5,08****8 Material properties****8.1 Material of metal parts**

Note	WEEE/RoHS-compliant, whisker-free acc. to IEC 60068-2-82/JEDEC JESD 201
Contact material	Cu alloy
Terminal point surface	Tin (4 - 8 µm Sn)
Surface contact area	Tin (4 - 8 µm Sn)
Surface characteristics	hot-dip tin-plated

**8.2 Material of plastic parts**

	Housing	Actuation element
Color	green (6021)	orange (2003)
Insulating material	PA	PA GF
Insulating material group	I	I
CTI according to IEC 60112	600	600
Flammability rating according to UL 94	V0	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	

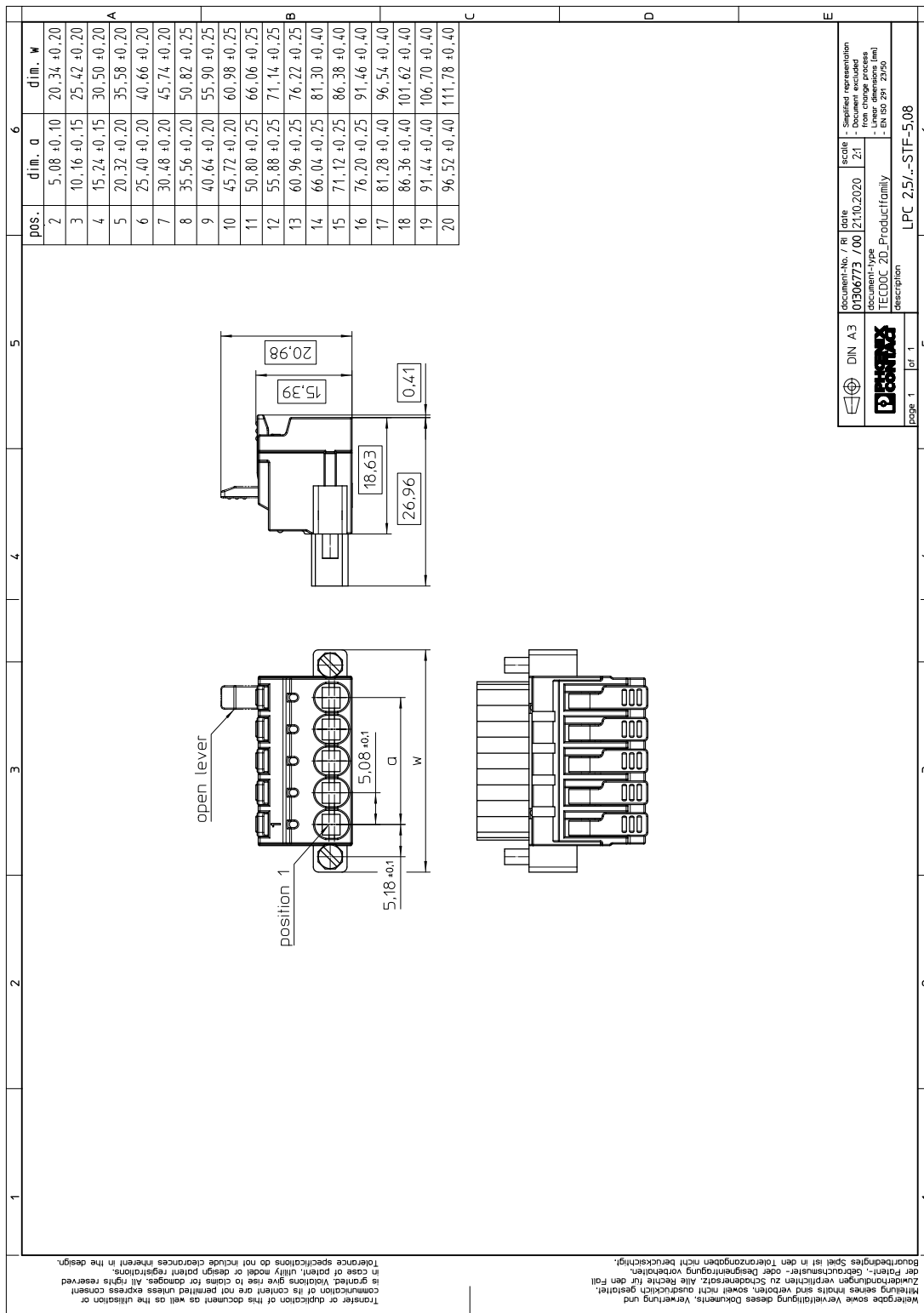
**1110641 LPC 2,5/13-STF-5,08****9 Dimensions****9.1 Dimensions for the product**

Length	27.37 mm
Width	76.22 mm
Total height	15.39 mm



1110641 LPC 2,5/13-STF-5,08

10 Series drawing



**1110641 LPC 2,5/13-STF-5,08****11 Product notes****11.1 General information**

Notes on operation	In accordance with IEC 61984, COMBICON connectors have no switching power (COC). During designated use, they must not be plugged in or disconnected when carrying voltage or under load.
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**12 Packaging information**

Type of packaging	packed in cardboard
Pieces per package	50

**13 Application****Ferrules without insulating collar, according to DIN 46228-1**

Recommended crimping pliers	1212034 CRIMPFOX 6
Ferrules without insulating collar, according to DIN 46228-1	Cross section: 0.25 mm <sup>2</sup> ; Length: 7 mm Cross section: 0.34 mm <sup>2</sup> ; Length: 7 mm Cross section: 0.5 mm <sup>2</sup> ; Length: 8 mm ... 10 mm Cross section: 0.75 mm <sup>2</sup> ; Length: 8 mm ... 10 mm Cross section: 1 mm <sup>2</sup> ; Length: 8 mm ... 12 mm Cross section: 1.5 mm <sup>2</sup> ; Length: 10 mm ... 12 mm Cross section: 2.5 mm <sup>2</sup> ; Length: 10 mm ... 12 mm

**Ferrules with insulating collar, according to DIN 46228-4**

Recommended crimping pliers	1212034 CRIMPFOX 6
Ferrules with insulating collar, according to DIN 46228-4	Cross section: 0.25 mm <sup>2</sup> ; Length: 8 mm ... 10 mm Cross section: 0.34 mm <sup>2</sup> ; Length: 8 mm ... 10 mm Cross section: 0.5 mm <sup>2</sup> ; Length: 8 mm ... 10 mm Cross section: 0.75 mm <sup>2</sup> ; Length: 10 mm ... 12 mm Cross section: 1 mm <sup>2</sup> ; Length: 10 mm ... 12 mm Cross section: 1.5 mm <sup>2</sup> ; Length: 10 mm ... 12 mm Cross section: 2.5 mm <sup>2</sup> ; Length: 12 mm

**13.1 Temperature limit values**

Ambient temperature (storage/transport)	-40 °C ... 70 °C
Ambient temperature (assembly)	-5 °C ... 100 °C
Ambient temperature (operation)	-40 °C ... 105 °C (dependent on the derating curve)

**1110641 LPC 2,5/13-STF-5,08****14 General tests****14.1 Specification**

Specification	IEC 61984
Specification	IEC 60999-1
Brief description	Printed-circuit board connector

**15 Mechanical tests****15.1 Check for damage to conductor or loosening**

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

**15.2 Pull-out test**

Specification	IEC 60999-1:1999-11
Result	Test passed
Conductor cross section/conductor type/tractive force actual value	0.2 mm <sup>2</sup> / solid / > 10 N
Conductor cross section/conductor type/tractive force actual value	0.2 mm <sup>2</sup> / flexible / > 10 N
Conductor cross section/conductor type/tractive force actual value	2.5 mm <sup>2</sup> / solid / > 50 N
Conductor cross section/conductor type/tractive force actual value	2.5 mm <sup>2</sup> / flexible / > 50 N

**15.3 Repeated connection and disconnection**

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

**15.4 Conductor connection**

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

**15.5 Visual examination**

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

**15.6 Dimensional test**

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

**15.7 Resistance of marking**

## 1110641 LPC 2,5/13-STF-5,08

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Resistance of marking

Test passed

Specification

IEC 60068-2-70:1995-12

### 15.8 Polarization and coding

Polarization when inserted  
Requirement >20 N

Test passed

Specification

IEC 60512-13-5:2006-02

**1110641 LPC 2,5/13-STF-5,08****16 Insertion and withdrawal forces**

Insertion and withdrawal force	
Specification	Test passed
No. of cycles	25
Insertion strength per pos. approx.	8 N
Withdraw strength per pos. approx.	6 N

**1110641 LPC 2,5/13-STF-5,08****17 Electrical tests**

Rated current / conductor cross section	16 A / 2.5 mm <sup>2</sup>
Rated insulation voltage (III/2)	320 V
Rated surge voltage (III/2)	4 kV
Contact resistance	2 mΩ
Degree of pollution	2

**17.1 Air and creepage distances**

Component	PCB connector		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	I		
Comparative tracking index (IEC 60112:2003-01)	CTI 600		
Rated insulation voltage	250 V	320 V	630 V
Rated surge voltage	4 kV	4 kV	4 kV
Degree of pollution	3	2	2
Overvoltage category	III	III	II
Minimum clearance case A (inhomogeneous field)	3 mm	3 mm	3 mm
Minimum value of the creepage path requirement in acc. with table	3.2 mm	3 mm	3.2 mm

**17.2 Electrical function**

Specification	IEC 60999-1:1999-11
Result	Test passed
Voltage drop	Voltage drop (U) after the load ≤ 15 mV
Test current (minimum cross section)	3 A AC
Test current (maximum cross section)	16 A AC
Conductor cross section, flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section, rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>

**17.3 Temperature cycles**

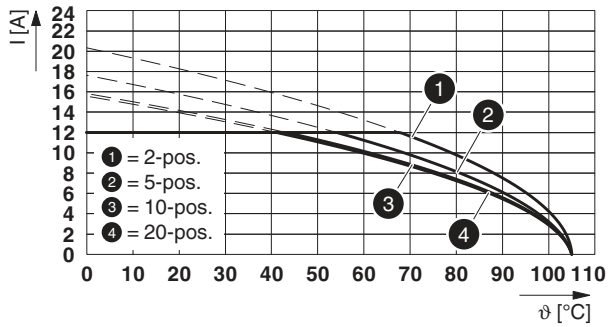
Specification	IEC 60999-1:1999-11
Result	Test passed
Voltage drop	Voltage drop (U) after the load ≤ 22.5 mV or 1.5 x U <sub>after 24 h</sub> The small value is to be used.
Test current (minimum cross section)	3 A AC
Test current (maximum cross section)	16 A AC
Temperature cycles	192
Conductor cross section, flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section, rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>

## 1110641 LPC 2,5/13-STF-5,08

## 18 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	2.5 mm <sup>2</sup>

Type: LPC 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08



**1110641 LPC 2,5/13-STF-5,08****19 Environmental and durability tests****19.1 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	50 m/s <sup>2</sup> (60.1 - 150 Hz)
Test duration per axis	2.5 h
Test directions	X-, Y- and Z-axis
Note	

**19.2 Railway application, vibration test**

Specification	IEC 61373:2010-05
Result	Test passed
Testing	Vibration, broadband noise
Frequency	5 - 150 Hz
Test directions	X-, Y- and Z-axis (pos. and neg.)
Spectrum	Service life test category 1, class B, body mounted

**19.3 Shock test**

Specification	IEC 60068-2-27:2008-02
Result	Test passed
Pulse shape	Semi-sinusoidal
Peak acceleration	200 m/s <sup>2</sup>
Shock duration	11 ms
Number of shocks per direction	3
Test directions	X-, Y- and Z-axis (pos. and neg.)

**20 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
Connection method	Can be reconnected
Protection against electric shock	Not encapsulated - touch-proof when inserted
Protective conductor	without PE
Lock	no
Connection method	Screwless terminal points



**1110641 LPC 2,5/13-STF-5,08****21 Commercial Data**

Order No.	1110641
Type	LPC 2,5/13-STF-5,08
Pieces per package	50
Net weight	2.22 g
GTIN	4063151027773
	Information that applies locally, see link on page 1
	Information that applies locally, see link on page 1

**22 Accessories**

Description	Order No.	Type
Coding profile, is inserted into the slot on the plug or inverted header, red insulating material	1734634	CP-MSTB
Actuation tool, for ST terminal blocks, insulated, also suitable for use as a bladed screwdriver, size: 0.6 x 3.5 x 100 mm, 2-component grip, with non-slip grip	1205053	SZS 0,6X3,5

## 1110641 LPC 2,5/13-STF-5,08

## 23 Combination tests

**LPC 2,5/13-STF-LR**

IEC 61984

**Mechanical tests (A)**

Insertion/withdrawal force per position

Polarization when inserted  
Requirement >20 NContact holder in insert  
Requirements >20 N**Durability tests (B)**Contact resistance R<sub>1</sub> 1st levelContact resistance R<sub>1</sub> 2nd level

Insertion/withdrawal cycles

Contact resistance R<sub>2</sub>Rated impulse voltage at sea level  
Voltage waveform ≥ (1.2/50 μs)Power-frequency withstand voltage  
Voltage waveform ≥ (50/60 Hz)**Thermal tests (C)**

Tested number of positions

Tested conductor cross section

Test current

Upper limiting temperature  
Requirements < 100°C**Climatic tests (D)**

Test sequence 1: low temperature storage

Test sequence 2: heat storage

Test sequence 3: noxious gas storage  
(ISO 6988)Rated impulse voltage at sea level  
Voltage waveform ≥ (1.2/50 μs)Power-frequency withstand voltage  
Voltage waveform ≥ (50/60 Hz)**Environmental and endurance tests (E)**

Specification

Degree of protection

**MSTBV 2,5/13-GF**

IEC 61984

approx. 8 N / 6 N

Test passed

Test passed

2 mΩ

25

2.2 mΩ

4.8 kV

2.21 kV

20

2.5 mm<sup>2</sup>

12 A

Test passed

-40 °C/2 h

105 °C/168 h

0.2 dm<sup>3</sup> SO<sub>2</sub> on 300 dm<sup>3</sup>/  
40 °C/1 cycle

4.8 kV

2.21 kV

IEC 61984:2008-10

Finger safety with IP20  
test finger