

# COMBICON control

## PCB terminal blocks for MCR technology

The diverse applications for PCB terminal blocks in the area of MCR technology have resulted in a continually growing product line over the past several years. This line meets the requirements of a large number of different devices and the related device specifications.

Regardless of whether modern process interfaces or automation components up to the PLC are used, you will always find the connection terminal block for your application in the range of PCB terminal blocks.

The PCB terminal blocks are available with three connection methods (screw, spring-cage and displacement connection). Single level as well as double, three and four-level terminal blocks are available to increase the contact density on the PCB. The screw and spring-cage versions are pin-compatible with each other. As a result, the user can choose between the two connection methods without changing the layout to achieve a high level of flexibility in PCB production and reduce costs.

The product line offers pitches from 2.5 to 7.62 mm. The terminal blocks have been designed for currents of up to 32 A and voltages of up to 400 V (surge voltage category III / contamination degree 3). Conductor cross sections ranging from 0.08 to 6 mm<sup>2</sup> can be connected.

When developing the PCB terminal blocks, requirements for state-of-the-art production methods for electronic modules, such as the through-hole reflow method or solderless assembly with press-in PCB terminal blocks are taken into account. The PCB terminal blocks suitable for the reflow process are equipped with high-temperature-resistant insulation housing. The various series are also available in tubular or tape magazines.

Customer-specific requirements can also be taken into account when producing the PCB terminal blocks. The terminal blocks are available with an enclosed clamping space, as partially assembled versions or in various colors. Please contact us.

### General

#### PCB terminal blocks with screw connection for the reflow process

Termination blocks with a conn. cross section of up to 1.5 mm<sup>2</sup>  
Termination blocks with a conn. cross section of up to 2.5 mm<sup>2</sup>  
SMD termination blocks with a 3.81 mm pitch

#### PCB terminal blocks with screw connection for wave soldering processes, currents up to 32 A, pitch 3.5/3.81/5.0/5.08 mm

Termination blocks with a conn. cross section of up to 0.5 mm<sup>2</sup>  
Termination blocks with a conn. cross section of up to 1.5 mm<sup>2</sup>  
Termination blocks with a conn. cross section of up to 2.5 mm<sup>2</sup>

#### PCB terminal blocks with screw connection for wave soldering processes, currents up to 32 A, pitch 7.5/7.62 mm

Termination blocks with a conn. cross section of up to 1.5 mm<sup>2</sup>  
Termination blocks with a conn. cross section of up to 2.5 mm<sup>2</sup>

#### PCB terminal blocks with spring-cage connection,

Termination blocks with a conn. cross section of up to 1.5 mm<sup>2</sup>  
Termination blocks with a conn. cross section of up to 2.5 mm<sup>2</sup>

#### Spring-cage PCB terminal blocks with a direct plug-in method for currents up to 24 A

SPT series with a connection cross section of up to 2.5 mm<sup>2</sup>  
FFKDS series with a connection cross section of up to 1.5 mm<sup>2</sup>

#### PCB terminal blocks with displacement connection

Termination blocks with a 3.81 mm pitch

#### Printed-circuit single terminal blocks with screw connection

KDS series with a connection cross section of up to 4 mm<sup>2</sup>

#### PCB terminal blocks with screw connection for the Ex area

GKDS series - single terminal blocks  
MKKDS/MK3DS double/three-level terminal block series  
FRONT termination block series with a front connection

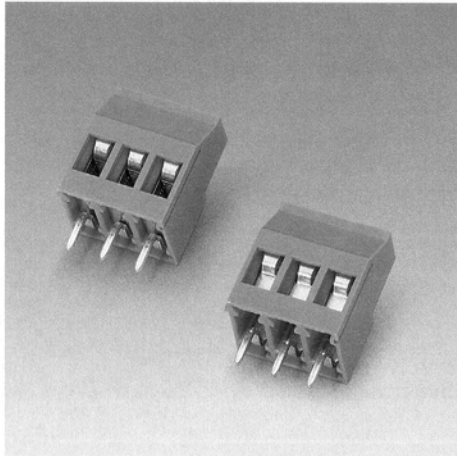
#### SI-FKS flat-type fuse holders

# COMBICON control

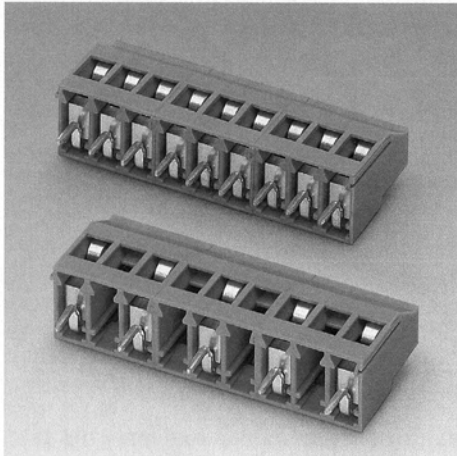
## PCB terminal blocks for MCR technology

### Customer-specific standard terminal blocks

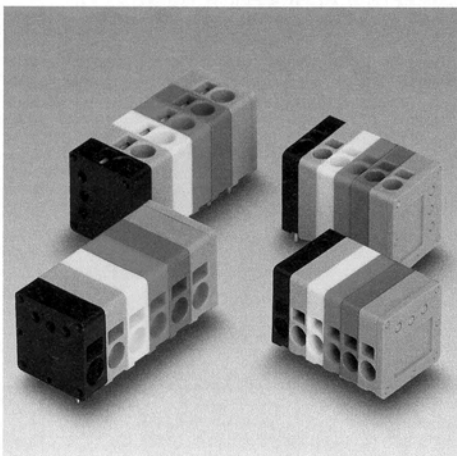
Customer-specific requirements and requests can also be taken into account when producing PCB terminal blocks. The terminal blocks are available with an enclosed clamping space, as partially assembled versions and in various colors.



PCB terminal blocks with open or enclosed clamping space



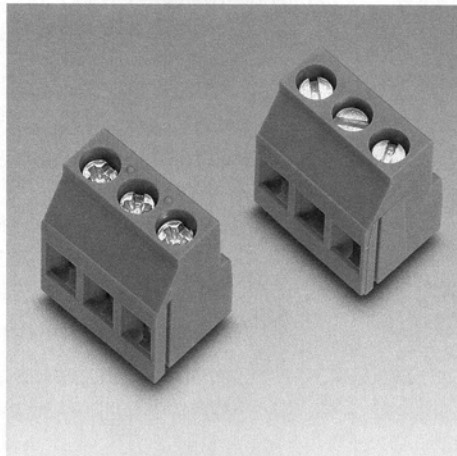
Fully and partially assembled versions



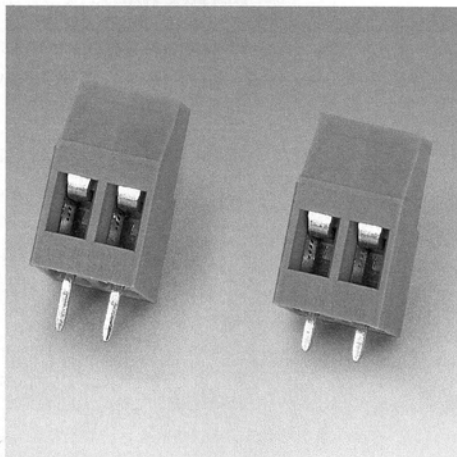
Color variants

### Standard terminal blocks with special functions

The individual processing of PCB terminal blocks in the soldering process, and even the special features for a conductor connection are taken into account in many series. Here, you can choose between slotted-head and Phillips screws, and also between solder pins of different lengths. Please contact us.



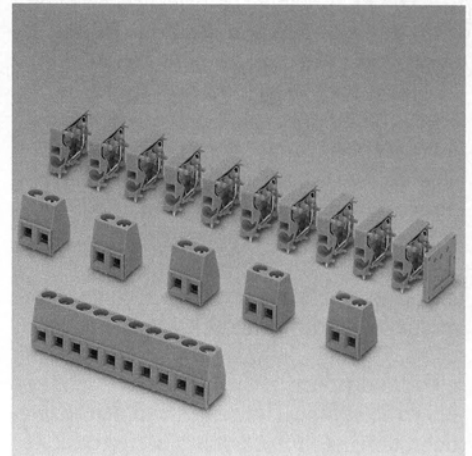
Versions with slotted-head and Phillips screws



PCB terminal blocks with short or long solder pin

### PCB terminal blocks with a variable number of positions

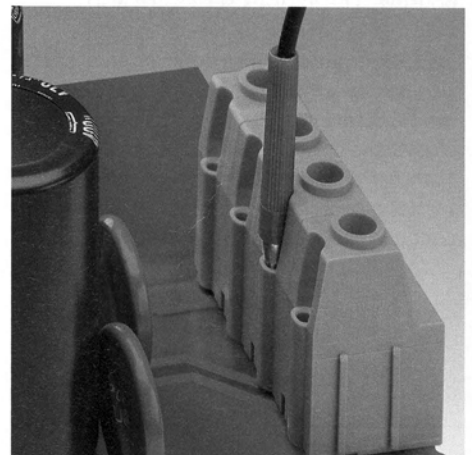
PCB terminal blocks are available in three versions – as a one-piece block, as part blocks or as single terminal blocks. Part blocks can be assembled with multi-position blocks using a tongue and groove fitting. In case of single terminal blocks, you can freely determine the number of positions for individual assembly. Only in cases of more than 30 positions, should the row be broken to equalize possible tolerances between the terminal block and the PCB.



One-piece blocks and PCB single terminal blocks

### Test connections

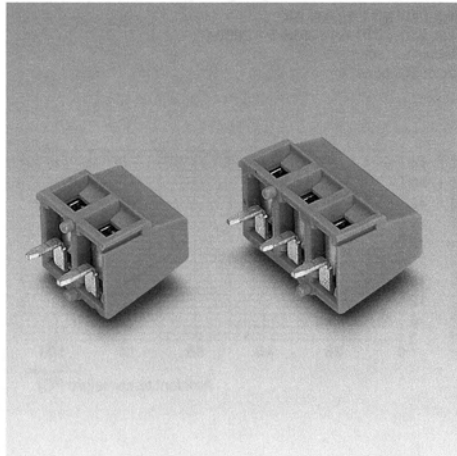
In addition to the basic type, many PCB terminal block series also offer pin-compatible versions with test connections.



PCB terminal blocks with integrated test connection

### Polarization

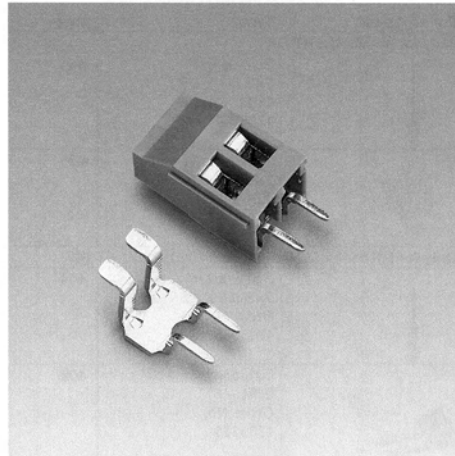
Especially, 2 and 3 pos. terminal blocks are often exposed to high tightening torques, which cannot be absorbed by a few solder pins. Normally, these terminal blocks must be supported for conductor connection. If this is not possible, terminal blocks with additional anti-rotation pins are available for different versions.



PCB terminal blocks with polarization pins

### Bridges

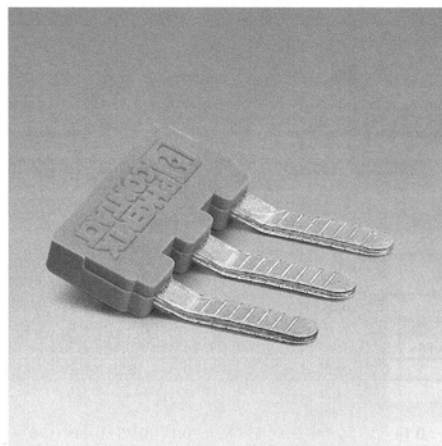
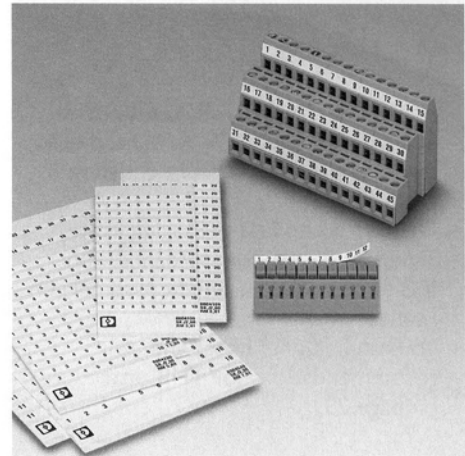
Two methods are available to distribute potential or loop through a ground conductor in PCB terminal blocks. The easiest solution is a separate bridge fixed directly in the connection area, if necessary, with a feeding conductor. You can find internally bridged versions in the standard MKDS product range. The complete clamping space is also available in this case.



Internal bridges

### Identification

For identification of individual terminal points in single terminal blocks and in multi-position PCB terminal blocks, marker cards (SK strips with consecutive numbers 1-10, 11-20) are available in all pitches from 2.5 to 7.62 mm. Alternatively, the terminal blocks can also be supplied with individual labeling.



Separate fixed bridge

### Note:

Since the installation environment of the entire printed circuit board cannot be influenced, the specified nominal voltage of all COMBICON PCB terminal blocks refers to the "as-delivered" condition. For more details as regards dimensioning of clearance and creepage distances of printed circuit boards, see page 578.

# COMBICON control

## Connectors for MCR technology

COMBICON connectors have established themselves as the worldwide standard in industrial electronics. Depending on the type of application, completely different demands are made on the connector. For the one, a space-saving design is important, and for the other quick connection by means of a spring-cage connection. Some cannot imagine not locking the connector and header. For MCR applications, increasing miniaturization of the modules necessitates a high packing density of individual connection points. Within the control connector range, the product series MICRO, MINI and CLASSIC COMBICON are available with their different features in pitches of 2.5 – 7.62 mm. These combinations are supplemented with different headers with single and double-level versions as well as horizontal and vertical plug-in directions.

To round off the services, customer-specific changes can be made to the connectors. In addition to the green housing standard, another 20 colors are available on request. The headers and connectors can be printed individually for clear identification of each terminal point. In case of external equipment connections or harsh operating conditions such as vibrations, it is advisable to lock the plugs and headers additionally. This can be done either with the particularly easy-to-use Click and Lock quick locking or with the proven screw flanges.

When using several plug connections in one application, clear assignment of the connectors and headers is possible with individual coding.

### General

#### MICRO COMBICON connectors 2.5 mm pitch

Connectors with a spring-cage connection  
Headers for reflow processes  
Headers for wave soldering processes

#### MINI COMBICON connectors 3.5 / 3.81 / 5.08 mm pitch

Connectors with a screw connection  
Inverted connectors with a screw connection  
Connectors with a spring-cage connection  
Connectors with an IDC terminal block connection  
Headers for reflow processes  
Headers for press-in technology  
Headers for wave soldering processes  
Inverted headers for wave soldering processes  
Panel feed-throughs and direct mounting  
Headers with fiber optics FO  
Connectors and headers with a 5.08 pitch

#### CLASSIC COMBICON connectors 5.0 / 5.08 mm pitch

Connectors with a screw connection  
Inverted connectors with a screw connection  
Connectors with a spring-cage connection  
Inverted connectors with a spring-cage connection  
Connectors with an IDC terminal block connection  
Headers for reflow processes  
Headers for press-in technology  
Headers for wave soldering processes  
Inverted headers for wave soldering processes

#### CLASSIC COMBICON connectors 7.5 / 7.62 mm pitch

Connectors with a screw connection  
Inverted connectors with a screw connection  
Connectors with a spring-cage connection  
Headers for wave soldering processes  
Inverted headers for wave soldering processes

### Special types

Cable housings  
Feed-through housings and assembly frames  
Plug-in blocks for direct mounting  
Plug-in blocks for rail mounting  
ZEC series - direct connectors  
SUBCON headers with a MINI-COMBICON connection

#### COMBICON I/O connectors CIOC

Connectors with an IDC terminal block connection  
Headers with 1 and 4 rows for wave soldering processes  
Bus connectors

# COMBICON control

## Connectors for MCR technology

### Customer-specific standard connectors

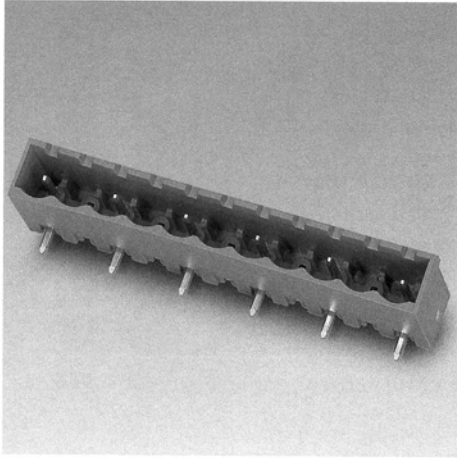
Customer-specific requirements and requests can also be taken into account when producing connectors. Normally, connectors are available as partially assembled versions and in various colors.

### Standard connectors with special pins

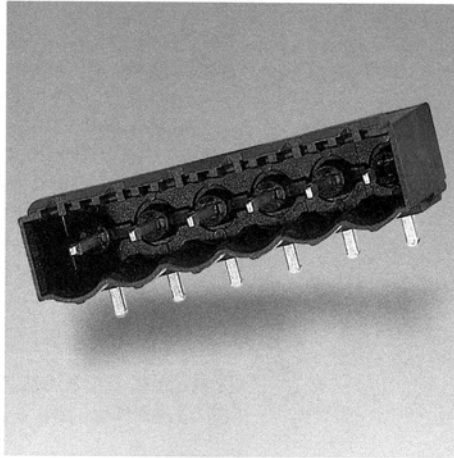
Individual processing of pin strips in the soldering process and also the special environmental requirements are taken into account in many product ranges. Solder pins of different lengths and different surfaces (e.g. tin or gold) are available for these pins.

### Test connections

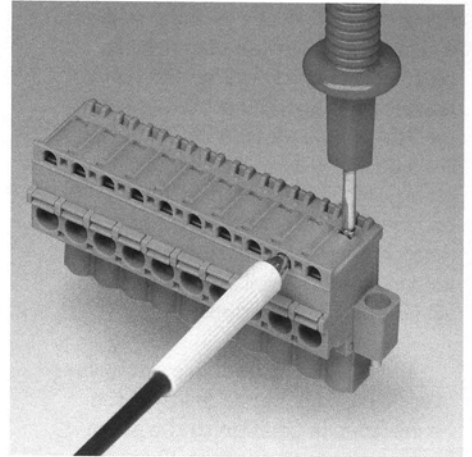
Test connections or touch connections have been integrated in many plugs for the purpose of measurement and testing.



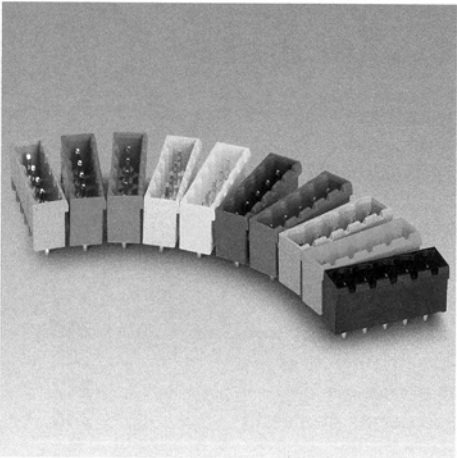
Partially assembled pin strip



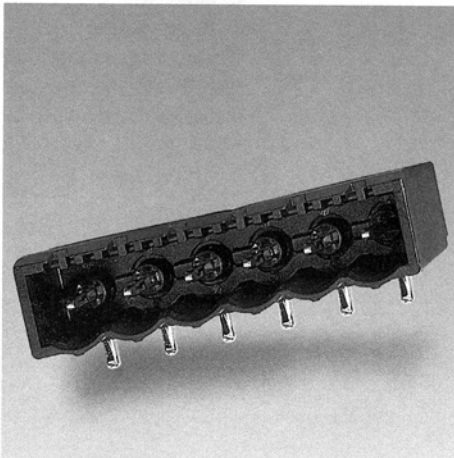
Version with tin-plated pins



Integrated test connections



Color variance



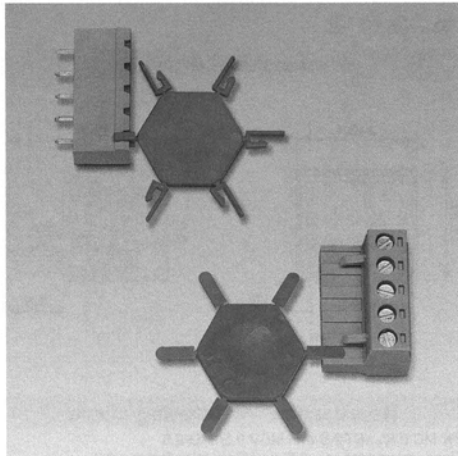
Version with partially gold-plated pins

### Note:

Actuate COMBICON connectors only when they are not under any load. If for operating reasons small loads must be switched, empirical values are available upon request.

### Coding

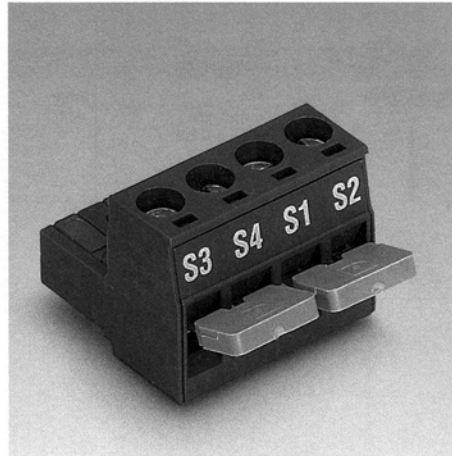
If connectors from a series with the same number of positions are used in one application, clear assignment of the connectors and headers is possible through individual coding. The coding can be carried out later on site or is provided in pre-assembled versions.



Coding with coding section and coding profile

### Bridges

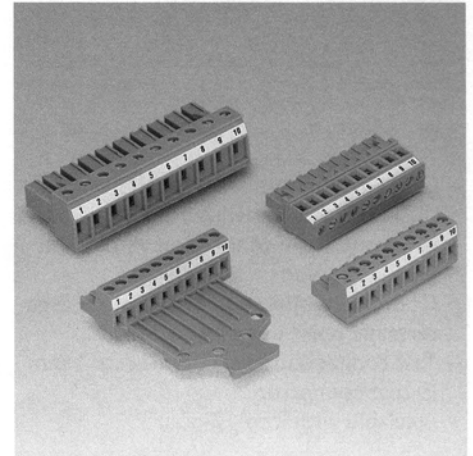
Apart from the classic TWIN connectors, power can be distributed through separate bridges even in case of standard connectors. The fixed bridge is connected directly in the connection area, if necessary with a feeding conductor.



Separate fixed bridges

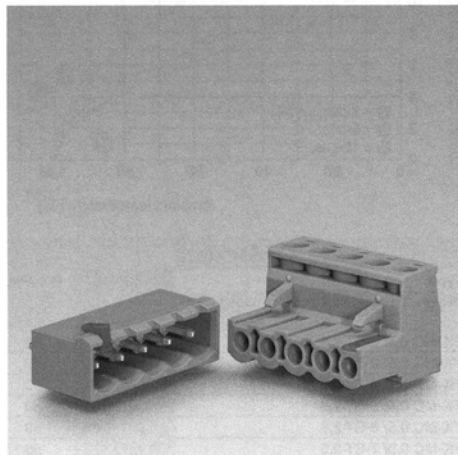
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Example for non-pluggable combination

