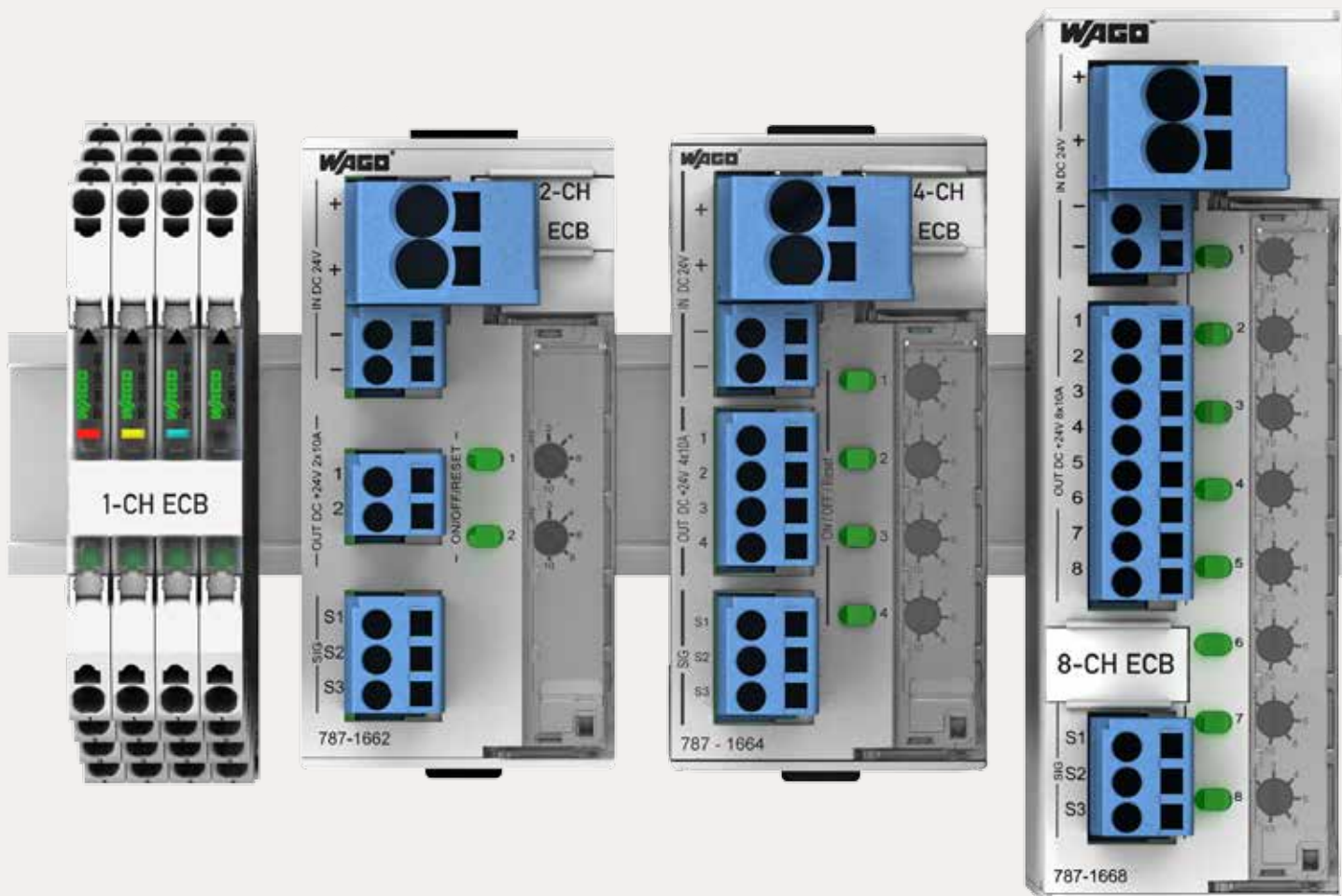


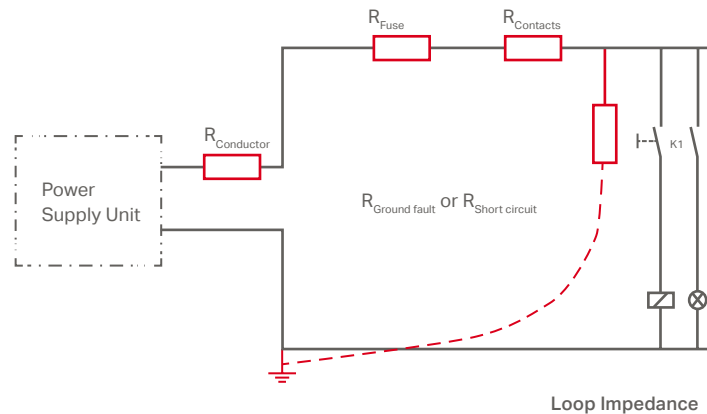
# EPSITRON® – Electronic Circuit Breakers

## Compact and Precise ECBs for DC Circuits



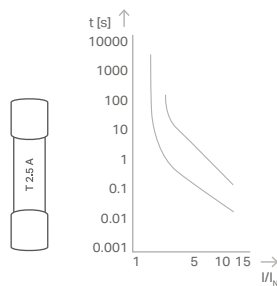
# WHY SECONDARY-SIDE FUSE PROTECTION?

On the secondary side, switched-mode power supplies provide DC voltage to control circuit loads (e.g., controllers, operating panels, displays and auxiliary relays). These control circuits also call for wiring protection and if the load has no protective unit of its own, device protection as well. Furthermore, Machinery Directive EN 60204 requires the detection of hazardous ground faults in control circuits and switching off within five seconds.



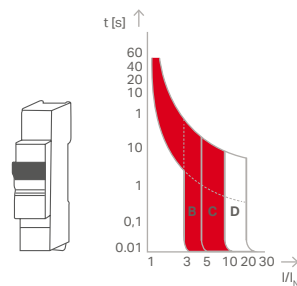
The overcurrent protection in primary switched-mode power supplies reacts very quickly to overcurrents on the output side. Selective protection of individual current paths in the secondary circuit via fuses or conventional circuit breakers is often ineffective, if the power supply cannot deliver a brief overcurrent.

# WHAT TYPES OF FUSE PROTECTION ARE THERE?



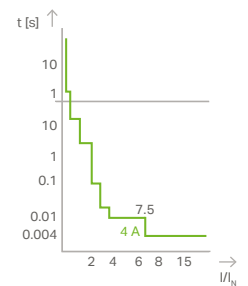
## Thermal

- Example: as found in NH and DP fuses
- High overcurrents required for fast tripping
- In the example:
  - 10-fold overcurrent (related to the fuse nominal current):
    - Tripping within range 30 ms (best case) or 200 ms (worst case)
  - Only 2-fold overcurrent:
    - Tripping within range 2 s (best case) or > 100 s (worst case)



## Thermal and Magnetic

- Found in circuit breakers or motor protection switches
- High overcurrents required for fast tripping
- In the example:
  - 3 ... 5-fold overcurrent for B-characteristic and AC operation, additional safety factor 1.2 or 1.5
  - Thus, in the worst case a tripping current of 7.5 times the nominal current is necessary.



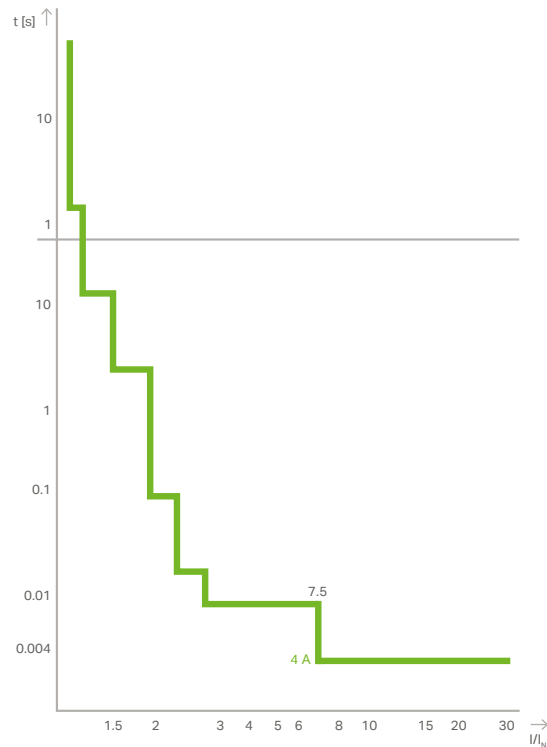
## Electronic

- Ensure precision settings
- Reaction within a short time – even at low overcurrents
- Protection of long cable runs and small cross sections possible

NH fuse = Low-voltage, high-power fuse  
 DP fuse = Device protection fuse

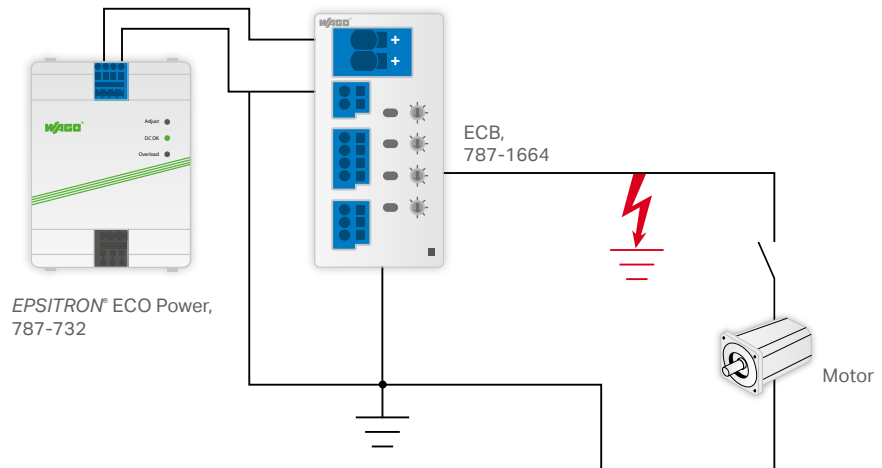
# HOW DOES AN ECB FUNCTION?

The ECB verifies that the output current is greater than the nominal current. As soon as the output current exceeds the nominal current, the output is electronically switched off by a semiconductor switch. The trip time depends on the magnitude of the overcurrent. The measurement of the output current, processing and calculation of the tripping time, as well as actuation of the semiconductor switch are performed by a microprocessor that monitors one or more output channels. The corresponding tripping times can be taken from the graph on the right.



## ECB ADVANTAGES

- Switch off secondary-side overcurrents and short circuits – even with long cable runs and small conductor cross-sections – precisely, fast and repeatedly
- Selectivity, especially with ECBs having active current limitation
- Remote operation via digital input and output
- Readout functions (communication) through serial data transfer via digital input and output
- Beneficial installation size and width, for example, 8 output channels in just 42 mm (save more than 70% of installation space compared to miniature circuit breakers)
- Nominal current assignable for each channel
- Satisfy EN 60204-1 requirements for dependably switching off ground faults after five seconds (see right)



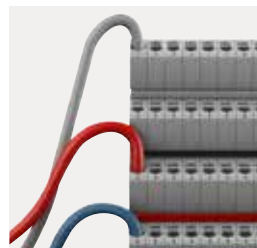
# EPSITRON® – ELECTRONIC CIRCUIT BREAKERS

## Single-Channel ECBs



### Push-In CAGE CLAMP® Connection

- Terminate solid and ferruled conductors via Push-In CAGE CLAMP® Connections – no operating tool needed



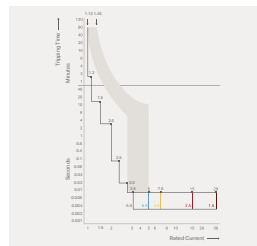
### Easy Wiring

- Input potential up to 40 A via double connection
- Signal output can be commoned for up to 30 devices
- Total reset by commoning the signal inputs



### Intuitive Status Indication

- Integrated, multi-color LEDs indicate the operating status of each channel
- Push/slide switch for switching on/off, as well as acknowledgement



### Trip Characteristics

- Reliable, rapid and precise disconnection in case of overcurrent or short circuit
- High switch-on capacities > 50,000  $\mu\text{F}$



### Industry's Most Compact

- "True" 6.0 mm width maximizes panel space



### Marking

- Device identification via WMB Markers or TOPJOB® S Marking Strips
- With devices color coded according to nominal current



### Versatile Configuration Options

- Optional nominal current setting 1 ... 8 A, in 1 A increments
- 7 different configuration options for the digital measurement output

## 2-, 4- and 8-Channel ECBs



### Pluggable CAGE CLAMP® Connection Technology

- Fast, vibration-proof, maintenance-free
- For solid, fine-stranded and ferruled conductors
- 100% protected against mismatching
- With marking



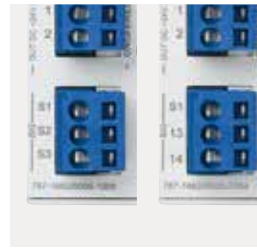
### Rotary Switch

- Nominal current can be individually adjusted for each channel
- The setting is visible, even when no voltage is applied
- Transparent cover can be sealed and marked with TOPJOB® S Marking Strips



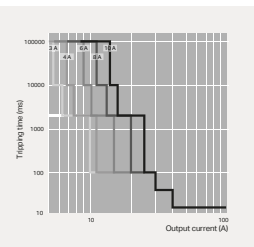
### Intuitive Status Indication

- Each output channel has backlit buttons for switching on/off, as well as acknowledgement
- Integrated, multi-color LEDs indicate the operating status of each channel



### Communication 1.0

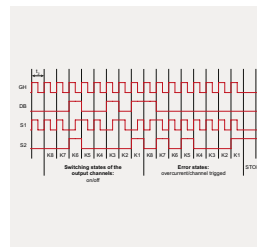
- Remote digital input S1 resets all tripped channels.
- Digital output S3 transmits a simple group message indicating whether one of the channels was triggered by an overcurrent.
- Optional isolated signal contact 13/14 as group signal



### Trip Characteristics

- Reliable and precise disconnection in case of overcurrent or short circuit
- Optional, active short circuit current limitation\* to 1.7 times the nominal current prevents a voltage drop in other current paths

\*Only for 787-166x/xxxx-1xxx



### Communication 2.0

- Remote digital input (S1) switches certain channels on and off via pulse sequence.
- Digital output S2 transmits the current status (on/off/tripped/over-current) of each individual channel
- Optional transmission of input voltage and output/nominal current value for each channel

# EPSITRON® – ELECTRONIC CIRCUIT BREAKERS

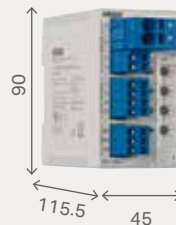
## Product Overview – ECBs



1 Channel



2 Channels



4 Channels



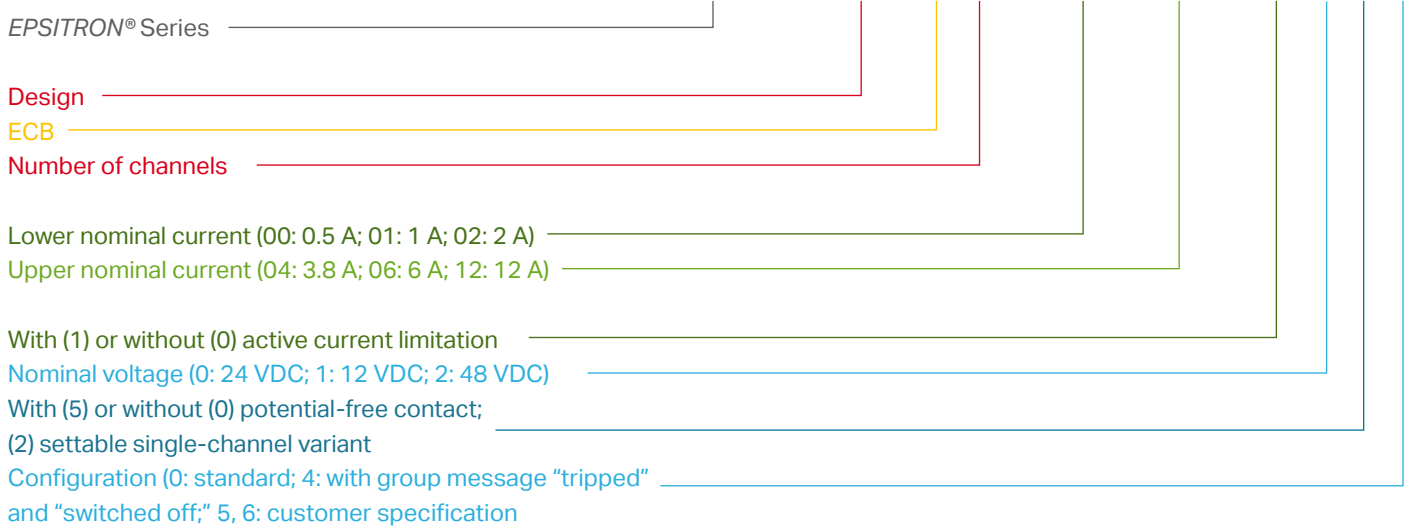
8 Channels

Nominal Voltage [V] DC	Number of Channels	Adjustable Nominal Current [A]	Active Current Limitation	Isolated Signal Contact	Specialty Configuration	Item Number
24	1	1				787-2861/0100-0000
		2				787-2861/0200-0000
		4				787-2861/0400-0000
		6				787-2861/0600-0000
		8				787-2861/0800-0000
		1 ... 8				787-2861/0108-0020
		24	2	2 ... 10		
2 ... 10					■	787-1662/0000-0004
2 ... 10				■	■	787-1662/0000-0054
3.8 LPS	■					787-1662/0004-1000
0.5 ... 6	■					787-1662/0006-1000
1 ... 6						787-1662/0106-0000
2 ... 12	■					787-1662/0212-1000
24	4	2 ... 10				787-1664
		2 ... 10			■	787-1664/0000-0004
		2 ... 10		■	■	787-1664/0000-0054
		3.8 LPS	■			787-1664/0004-1000
		0.5 ... 6	■			787-1664/0006-1000
		1 ... 6				787-1664/0106-0000
		2 ... 12	■			787-1664/0212-1000
		0.5 ... 6	■		■	787-1664/0006-1054
24	8	2 ... 10				787-1668
		2 ... 10			■	787-1668/0000-0004
		2 ... 10		■	■	787-1668/0000-0054
		0.5 ... 6	■			787-1668/0006-1000
		1 ... 6				787-1668/0106-0000
		0.5 ... 6	■		■	787-1668/0006-1054
12	2	2 ... 10				787-1662/0000-0100
	4	2 ... 10				787-1664/0000-0100
48	2	2 ... 10				787-1662/0000-0200
		2 ... 10		■		787-1662/0000-0250
	4	2 ... 10				787-1664/0000-0200
		2 ... 10		■		787-1664/0000-0250
	8	2 ... 10				787-1668/0000-0200
		2 ... 10			■	787-1668/0000-0250



Model Code Key:

# 787-xx6a/bbcc-defg



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