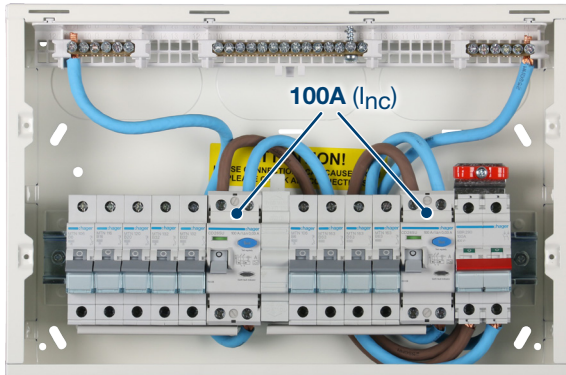


# Hager Solutions

We feel the easiest and most flexible solution for installers is to utilise a consumer unit which is 100A rated ( $I_{nA}$ ), with 100A ( $I_{nc}$ ) RCCBs fitted as standard, as shown below.



This enables the installer / designer to be confident that the consumer unit allows conformity to the overload protection requirement of RCCBs and switches regardless of the size of the upstream cut-out fuse fitted or the configuration of the downstream MCBs.

Solutions are available in single and dual row construction for;

- **Split Load**
- **Configurable**
- **High Integrity**
- **Time Delayed Type S**
- **RCCB Incomer**

$I_{nA}$  = Rated current of assembly (not necessarily the amps shown on the incoming device)

$I_{nc}$  = Rated current of a section within an assembly (not necessarily the amps shown on the specific device)

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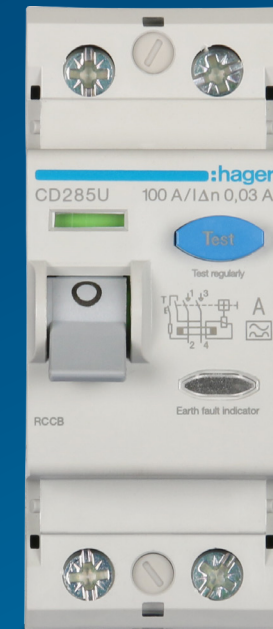
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536.4.3.2 / 536.4.202



# At a Glance

## Overload Protection of RCCBs & Switches

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# Overload Protection

## 536.4.3.2

"RCCBs & switches do not provide protection against overload, therefore they shall be protected by an overcurrent protective device."

## 536.4.202

"... overload protection shall not solely be based on the use of diversity factors of the downstream circuits. To achieve overload protection of RCCBs or switches, the rated current of the overcurrent protection device (OCPD) shall be selected according to the manufacturers instructions".

Devices such as switches, RCCBs etc. in distribution boards and consumer units may have historically had their rated current determined after having taken diversity into account but without having considered overload protection of the devices.

These devices do not provide protection against overload and the 18th Edition prescribes that overload protection of the switch or RCCB shall not solely be based on the use of diversity factors of the downstream circuits.

We state in our instructions that overload protection of switches and RCCBs can be achieved by:

### Method 1

Ensure the sum of the rated current of the downstream MCBs do not exceed the rated current of the switch or RCCB ( $I_{nc}$ ). This method would however need to consider the consequences of any spare ways and later additions.

### Method 2

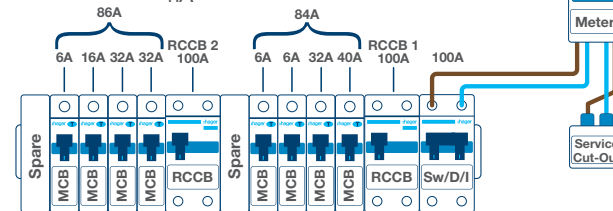
Ensure that the rated current of a switch disconnector or RCCB ( $I_{nc}$ ), stated by the assembly manufacturer, is not less than the rating of the upstream OCPD. For a domestic installation this could be a 100A cut-out fuse.

### Method 3

Select a consumer unit or distribution assembly that only utilises RCBOs on outgoing circuits. Consideration will still need to be given as to the rated current of the main switch.

### Example 1

Maximum demand based upon diversity = 92 A  
(100% Largest load + 40% all other loads)  
Consumer Unit  $I_{nA}$  = 100A



**Method 1. Overload protection provided by:**  
**Rated current of downstream devices**

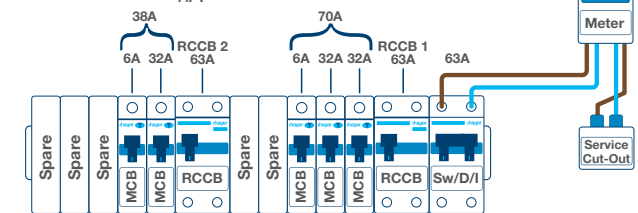
RCCB1  $\geq$  Sum of rated current of downstream MCBs: 84 A   
RCCB2  $\geq$  Sum of rated current of downstream MCBs: 86 A

**Method 2. Overload protection provided by:**  
**Cut-out fuse**

RCCBs  $\geq$  Rated current of upstream protection  
RCCBs (100 A) - Cut-out fuse 100 A   
Cut-out fuse 80 A   
Cut-out fuse 60 A

### Example 2

Maximum demand based upon diversity = 62.4 A  
(100% Largest load + 40% all other loads)  
Consumer Unit  $I_{nA}$  = 63A



**Method 1. Overload protection provided by:**  
**Rated current of downstream devices**

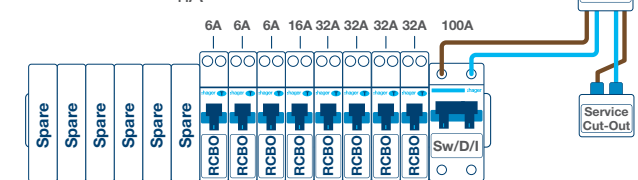
RCCB1  $\geq$  Sum of rated current of downstream MCBs: 70 A   
RCCB2  $\geq$  Sum of rated current of downstream MCBs: 38 A

**Method 2. Overload protection provided by:**  
**Cut-out fuse**

RCCBs  $\geq$  Rated current of upstream protection  
RCCBs (63 A) - Cut-out fuse 100 A   
Cut-out fuse 80 A   
Cut-out fuse 60 A

### Example 3

Maximum demand based upon diversity = 98.4 A  
(100% Largest load + 40% all other loads)  
Consumer Unit  $I_{nA}$  = 100A



**Method 3. Overload protection provided by:**  
**Each RCBO**

**Method 2. Overload protection provided by:**  
**Cut-out fuse**

Switch  $\geq$  Rated current of upstream protection  
RCCBs (100 A) - Cut-out fuse 100 A   
Cut-out fuse 80 A   
Cut-out fuse 60 A

**Note:** in all examples, potential future loads on spare ways should be considered.