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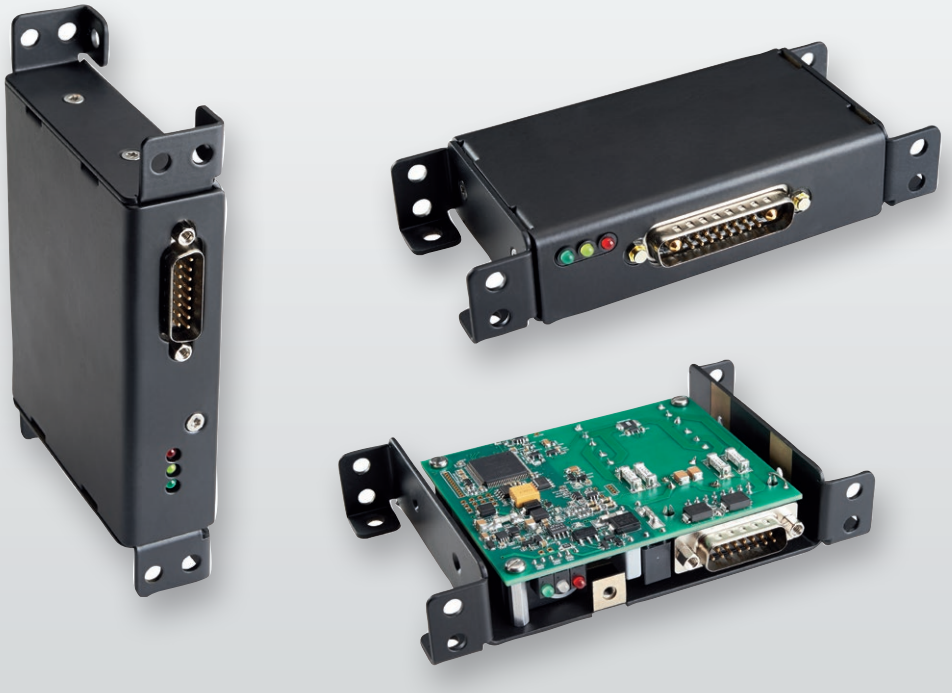
# ELECTRICAL DISTRIBUTION
# SELECTION GUIDE



CROUZET AEROSPACE

A BRAND OF INNOVISTA SENSORS

# Distribution selection guide

Crouzet delivers 2 standard distribution components:

- RCCB
- A Circuit Breaker panel Kit

Crouzet can also deliver customer specified distributions (with contactor, relays and CB) and adapt the above products to specific customer requests.

With smart management, loads can be powered off during some flight phases (in conjunction with RCCB use).This technique will reduce wire width and length and therefore will decrease the electrical network complexity and weight.

Crouzet is proud to contribute towards the “greener Aircraft” through its bus connected components and through its never ending quest for more compact and lighter solutions.

# PCB kit for Faston CB

*Read also page 15*

## REFERENCES

| | complete panel | PCB | rings and spacers | | | | |
|---|---|---|---|---|---|---|---|
| complete panel | 84341072 | | | | | | |
| bottom spacer | | | | 79219430 | | | |
| lateral spacer | | | | | 79219431 | | |
| central spacer | | | | | | 79219432 | |
| centring ring | | | | | | | 79219333 |
| EN 4165 connector support | | | 79219440 | | | | |
| PCB with 16 receptacles | | 79219439 | | | | | |
| Front plate | | | 79219441/42 | | | | |

| Spacer kit | |
|---|---|
| 5 short spacers<br>one central spacer<br>five short spacer (below) | 79219443 |

| Connection possibilities |
|---|
| EN4165 (2 modules of 8 size 16 pins) with pins soldered on the vertical PCB |
| EN4165 (2 modules of 8 size 16 pins) held by 79219440 with crimped contact pins |
| Flying leads soldered on the vertical PCB |

| Circuit Breaker type | |
|---|---|
| Faston without auxiliary contact (conical barrel) | 84406039..84406048 |
| Faston with auxiliary contact non polarised (conical barrel) | XB 406839..XB406848 |
| Faston without auxiliary contact polarised (conical barrel) | XB 406639..XB406648 |

| Weight (g) | |
|---|---|
| Without standard CB (only mechanichal panel) | < 351 |
| Panel with 16 Circuit Breakers | < 528 |
| MTBF FH (Typical) | > 60 000 |

## GENERAL CHARACTERISTICS

| Electrical | | |
|---|---|---|
| Vehiculated current | 15*4+6*10+6*5=150 Amp | from -60°C to 71°C |
| Vehiculated power | 150*28=4200 W | |
| Prospective current (blocked mechanism) | 1800 Amp | 28VDC (no copper tracks destruction) |
| Dielectric | 700VDC between 2 copper tracs and between each track and power feeder | |

| Mechanical | |
|---|---|
| | torque (max) N.m |
| Power stud (M6) | 3,9 |
| Every screw/spacer (M3) | 2 |
| Locktite | on every screw/spacer (not on power stud nut) |

| Environmental | | | |
|---|---|---|---|
| DO160 section | Test | category | method |
| 4 | Altitude | | similarity |
| 5 | Temperature | from -60°C..71°C (with power) | test |
| 6 | Humidity | | test |
| 7 | Crash | MIL STD 810E | test |
| | | 80 ms 1/2 sine (20g on all axes) | |
| 8 | Vibration | MIL STD 810E helicopter | test |
| | | random wide band+ sine strips | |
| 9 | Explosion proofness | | demonstration |
| 10 | Waterproof | | N/A |
| 11 | Fluids | | N/A |
| 12 | Sand and dust | | similarity |
| 13 | Fungus resistance | | no tested |
| 14 | Salt spray | 48h no power + 48h dry | test |
| 15 | Magnetic effect | | demonstration |
| 16 ➔ 23 | EMI | | N/A |
| 25 | Inflammability | FAR 25853 | demonstration |

# PCB kit for Faston CB

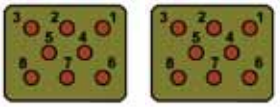
## HOW DOES IT WORK?

The assembly is qualified and distributes securely up to 150 Amps under 71°C with a configuration carrying four 15 Amps, six 10 Amps and six 5 Amps Circuit Breakers (thus a total of 16 CBs).
The distribution connector can be mounted on the vertical PCB or distribution leads can be soldered on the vertical PCB.

- If leads are soldered directly on the vertical PCB, the maximum currents are:
  Red zone: 15 Amp max
  Yellow zone: 10 Amp max
  Green zone: 5 Amp max

  **Max output:**
  4*15+6*10+6*5=150 Amp

- If EN 4165 is soldered and used with leads the size 16 pins limit the current to 13 Amps:

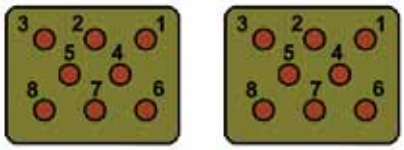


  **Max output:**
  4*13+6*10+6*5=142 Amp

### PIN TO CB AFFECTATIONS

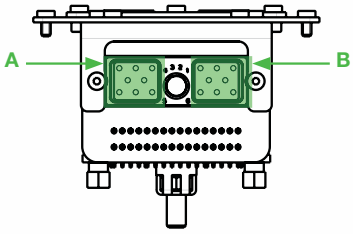
EN4165

Layout 0816 : 8 contacts size 16 **x 2**



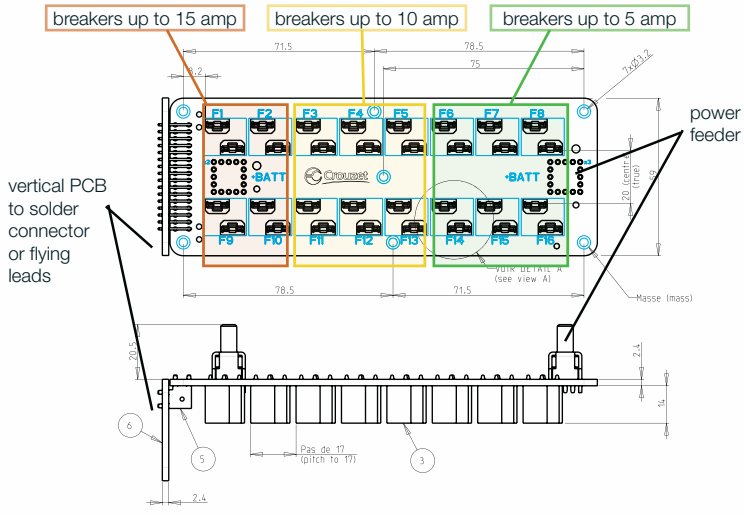
| Module A | CB# |
|---|---|
| 1 | F6 |
| 2 | F2 |
| 3 | F1 |
| 4 | F7 |
| 5 | F3 |
| 6 | F8 |
| 7 | F5 |
| 8 | F4 |

connector EN 4165 8T16

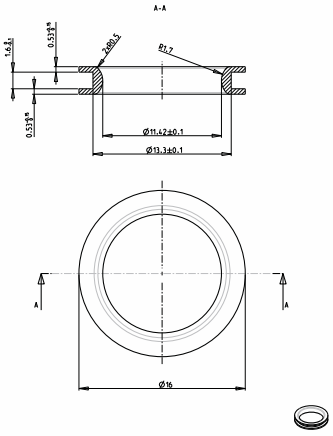



| Module B | CB# |
|---|---|
| 1 | F9 |
| 2 | F10 |
| 3 | F14 |
| 4 | F11 |
| 5 | F15 |
| 6 | F12 |
| 7 | F13 |
| 8 | F16 |

### DIMENSIONS AND SPECIFIC ZONES FOR CB RATINGS

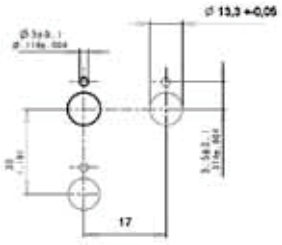



### CENTRING RING

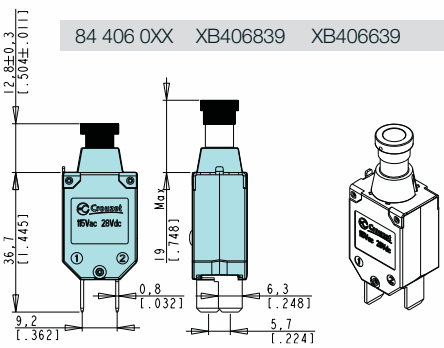


### PANEL CUTOUT RECOMMENDATION AND CIRCUIT BREAKER TYPE

- Thickness: 1.6 mm




84 406 0XX XB406839 XB406639



# RCCB 115/200 VAC 360-800 Hz

*Read also page 16*

## REFERENCES

| Rating | Without current transformer | With current transformer |
|---|---|---|
| **35 A** | 84 354 335 | 84 354 435 |
| **50 A** | 84 354 350 | 84 354 450 |
| **60 A** | 84 354 360 | 84 354 460 |

## GENERAL CHARACTERISTICS

| | | |
|---|---|---|
| **Mounting hardware** | | |
| Fixing screws | 3 screws 10-32 UNF-3B | 3 screws 10-32 UNF-3B |
| Connexion screws | 6 screws 8-32 UNC-3A | 6 screws 8-32 UNC-3A |
| Matched connector for control signals | Air LB00 1748-120.00 | Sub D 15 Female |
| Connector retaining screw | M3x0.5 | - |
| **Contactor Function** | | |
| Actuating voltage | 17 V= ≤U≤32V (a2 - a1 pins) | 17 V= ≤U≤32V (10 - 2 pins) |
| Max Pull-in current | 3A during max 50 ms | 3A during max 50 ms |
| Max. continuous hold-in current | 300 mA | 300 mA |
| Min. Hold-in voltage | 10 V= | 10 V= |
| Response time (off to on) | < 60 ms | < 60 ms |
| Release time ( on to off) | < 60 ms | < 50 ms |
| Direct visual indication of contacts position on front plate | OPEN / CLOSE | OPEN / CLOSE |
| Auxiliary contact n°1 SPDT type<br>Intermediate current level | Common/NC/NO: b1/c1/d1<br>28Vdc 3A (L/R 5ms) - 5Vac 250mA | Common/NC/NO: 3/4/5<br>28Vdc 3A (L/R 5ms) - 5Vac 250mA |
| Auxiliary contact n°2 SPDT type<br>Low level current | Common/NC/NO: b2/c2/d2<br>3 Vdc 0 to 20mA resistive<br>28 Vdc 200mA(L/R 5ms) | Common/NC/NO: 6/7/8<br>3 Vdc 0 to 20mA resistive<br>28 Vdc 200mA(L/R 5ms) |
| Dielectric stength | I leakage < 1mA @ 1500 V~ | I leakage < 1mA @ 1500 V~ |
| Insulation resistance | ≥ 100 MΩ | ≥ 100 MΩ |
| Contactor Endurance cycles with RC at 40°C | 100 000 cycles | 100 000 cycles |
| **Current measurement & Breaker function** | | |
| Current transformer ratio | - | 0,5 Volt rms for 10 Amp rms |
| Integrated load resistance (on current trasformer output) | - | 50 Ω |
| Breaking at 115 Vac 360-800Hz | 2000 A | 2000 A |
| Trip status auxiliary contact (incorporated diode) | 28Vdc 10 to 200mA | 28Vdc 10 to 200mA |
| Visual indication of trip status by R button on front plate | Yes | Yes |
| Operating circuit disable after break | Yes | Yes |
| Resetting after trip | By push on front R button | By push on front R button |
| Endurance at 2*RC | 1 000 cycles | 1 000 cycles |
| **Mechanical** | | |
| Operating force (R push button) | < 10 N | < 10 N |
| Max. admissible force (R push button) | 50 N | 50 N |
| Tightening torque (barrel nut) | 3 +/- 0.2 Nm | 3 +/- 0.2 Nm |
| Tightening torque (terminal screw) | 2.3 +/-0.1 Nm | 2.3 +/-0.1 Nm |
| Weight | < 550 g | < 700 g |
| MTBF FH (Typical) | > 300 000 | > 300 000 |
| **Environmental** | | |
| Salt spray | 48h at 5% NaCl | 48h at 5% NaCl |
| Operating temperature | -40°C to +85°C | -40°C to +85°C |
| Acceleration (centrifugal) | up to 10g | up to 10g |
| Shock | 25 g - 11 ms | 25 g - 11 ms |
| Vibration (sinusoïdal) | 10g from 5 to 2000 Hz | 10g from 5 to 2000 Hz |
| Vibration (random) | 5.8g from 10 to 2000Hz | 5.8g from 10 to 2000Hz |

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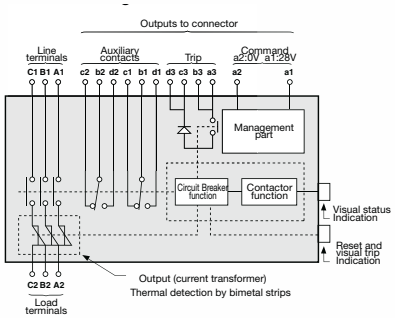


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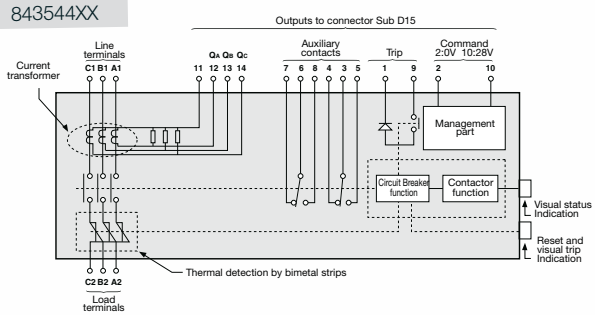


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# RCCB 115/200 VAC 360-800 Hz

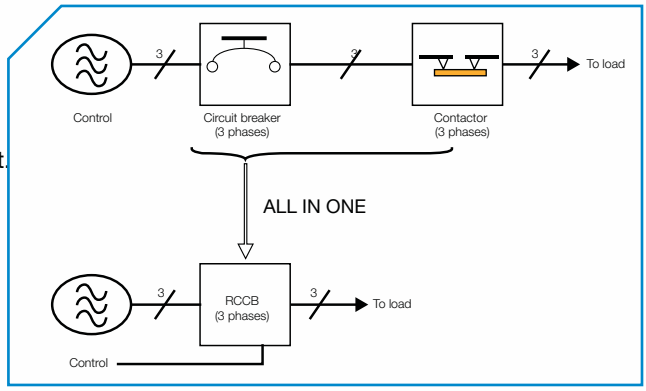
## HOW DOES IT WORK?

The RCCB merges a contactor function and a circuit breaker function in a single unit. This association gives the following unique advantages:

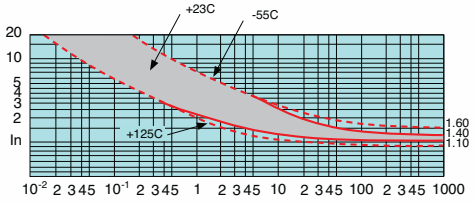
- Reduction of the length of wires with large cross-sections (mass reduction and harness simplification)
- Reduction of voltage drop (reduced number of contacts)
- Reduction of volume
- Improved reliability (less components)

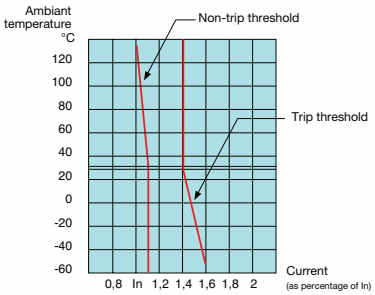
The contactor is closed when 28V is applied on the command input. The RCCB has a status display window and a mechanical "TRIP indicator". When the CB has tripped, the mechanical "TRIP indicator" is "popped out" and must be pushed back in manually to RESET the circuit breaker (see page 16).

The “protection function" overrides the "contactor function". After tripping, the RCCB must therefore be reset manually, this avoids any risk of spurious restarting.



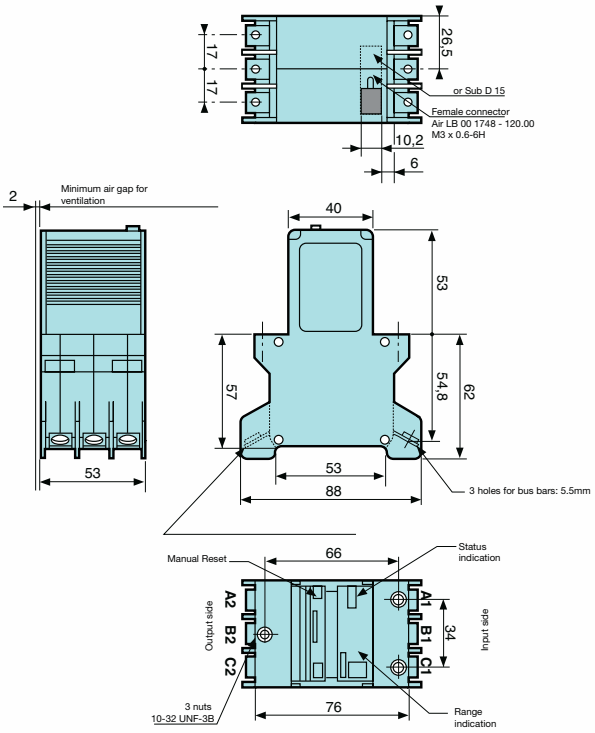

### TRIPPING CHARACTERISTICS




### DIMENSIONS

Without current transformer




With current transformer