ELECTRICAL DISTRIBUTION

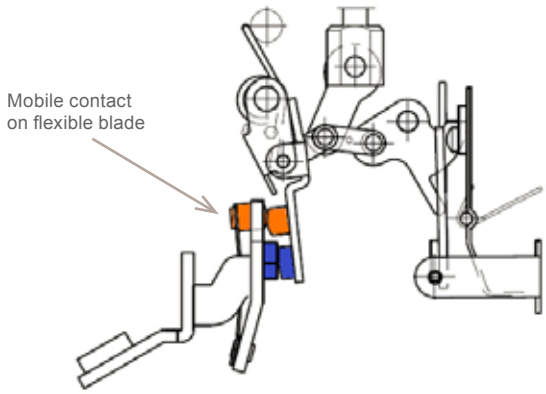
REMOTE CONTROL CONTACTOR & CIRCUIT BREAKER

The RCCB's primary use is to power loads that do not need to be permanently ON (to optimize energy).
This is why it is used:

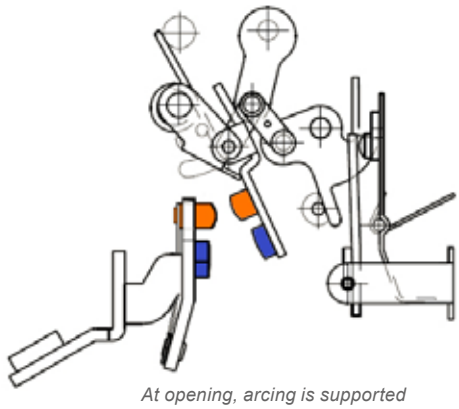
› For powering hydraulic actuators of cargo bay doors
› For powering Electro Hydraulic Actuators (EHA) and Electro Backup Hydraulic Actuators (EBHA)
› For powering ON and OFF the galleys or In Flight Entertainment (IFE)

The RCCB contacts are CLOSED and OPENED (load is set ON and OFF) only once or twice during the flight; it is designed to commute at least 100,000 times, giving the aircraft a minimum of 50,000 cycles (take off and landing).

› A unique feature: a mobile contact (in orange) that closes first and opens last ; this contact rich in tungsten endures rebound at closing time and arcing at opening time. The blue contact rich in silver ensures a low voltage drop during steady state operation ; this association guarantees 100 000 cycles under rated current with a power factor of 0.7.



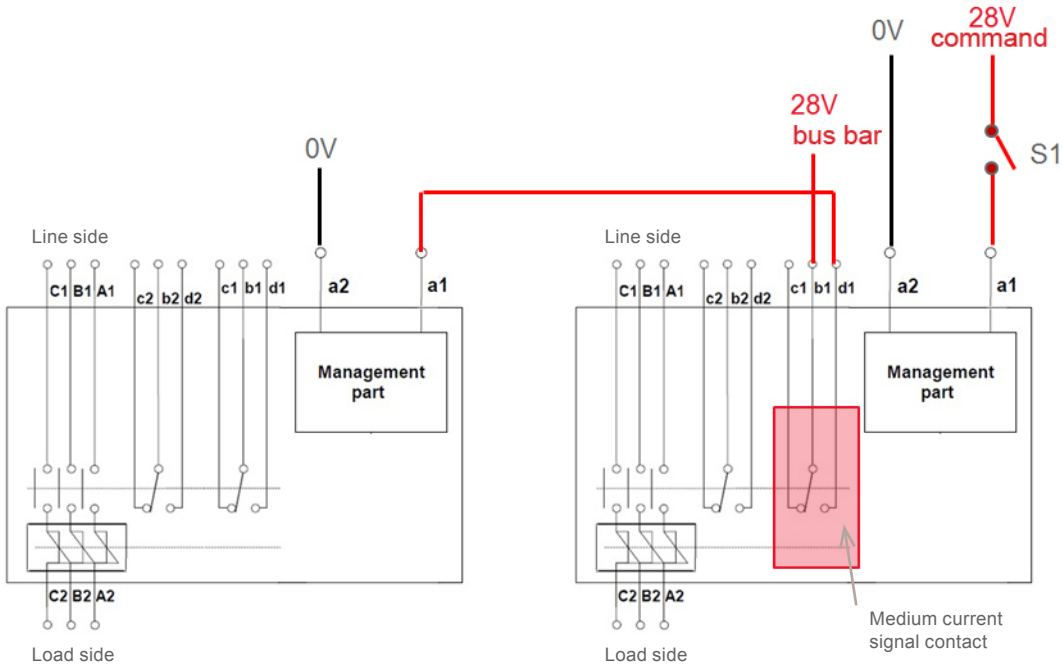
When closed low voltage drop is ensured by the blue contact



At opening, arcing is supported by the orange contact

› A unique feature: a signal contact withstanding «medium» current:

Using c1 b1 d1 «medium current signal contacts» it is possible to command 2 RCCBs with only one switch (here switch S1) :



The RCCB merges a contactor function and a circuit breaker function in a single unit. The contactor is closed when 28 V 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.

Our real MTBF figure of 300,000 Flight Hours (field value) during 20 years of service have convinced our customers to mount the RCCB successively on:

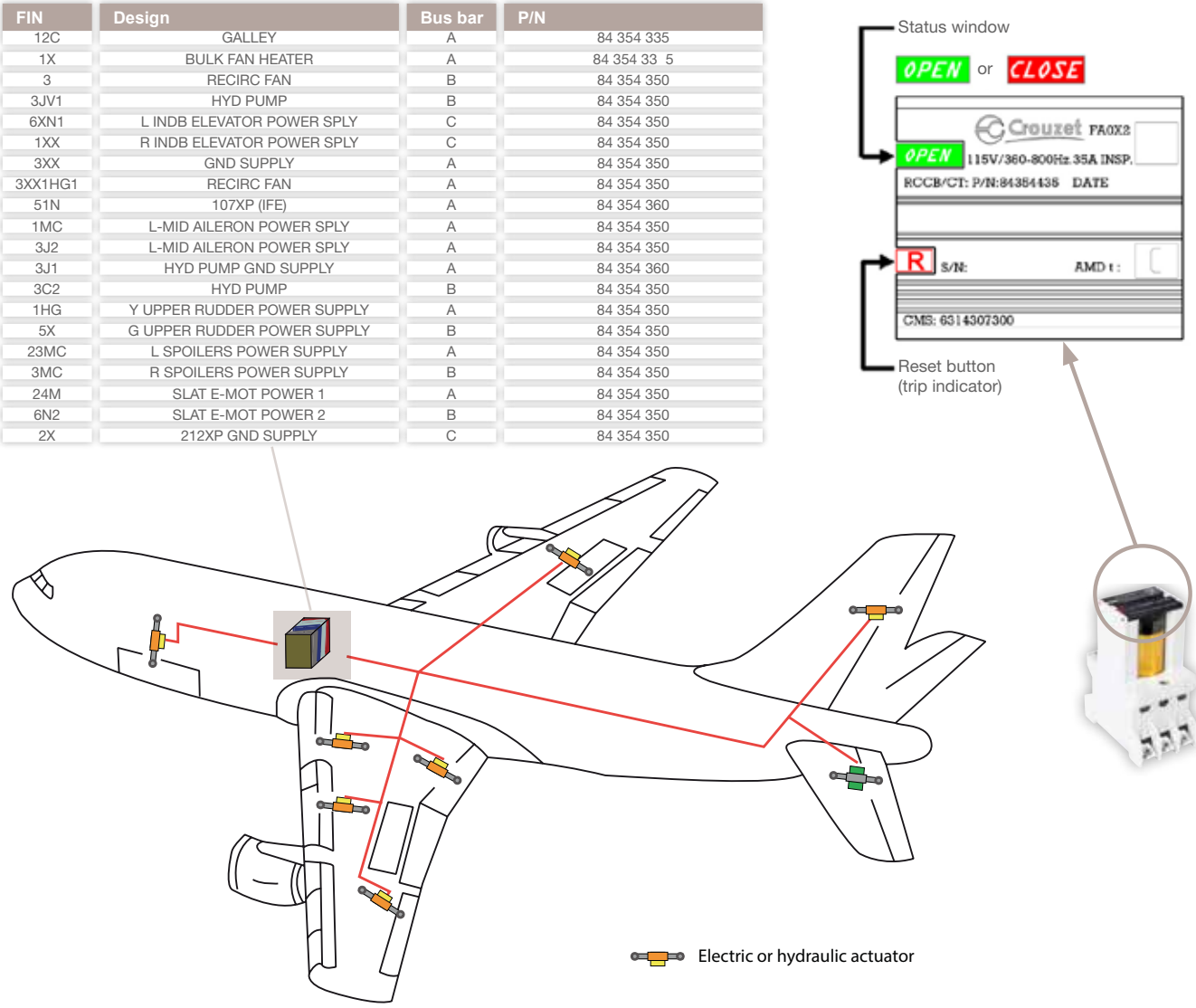
› Galleys feeders

› Cargo doors actuation motors

› Flight control power packs (EHA and EBHA) of primary flight control actuators(spoilers; ailerons; rudder)

Hereafter is an illustration of the main aircraft locations of the RCCB:

FIN	Design	Bus bar	P/N
12C	GALLEY	A	84 354 335
1X	BULK FAN HEATER	A	84 354 33 5
3	RECIRC FAN	B	84 354 350
3JV1	HYD PUMP	B	84 354 350
6XN1	L INDB ELEVATOR POWER SPLY	C	84 354 350
1XX	R INDB ELEVATOR POWER SPLY	C	84 354 350
3XX	GND SUPPLY	A	84 354 350
3XX1HG1	RECIRC FAN	A	84 354 350
51N	107XP (IFE)	A	84 354 360
1MC	L-MID AILERON POWER SPLY	A	84 354 350
3J2	L-MID AILERON POWER SPLY	A	84 354 350
3J1	HYD PUMP GND SUPPLY	A	84 354 360
3C2	HYD PUMP	B	84 354 350
1HG	Y UPPER RUDDER POWER SUPPLY	A	84 354 350
5X	G UPPER RUDDER POWER SUPPLY	B	84 354 350
23MC	L SPOILERS POWER SUPPLY	A	84 354 350
3MC	R SPOILERS POWER SUPPLY	B	84 354 350
24M	SLAT E-MOT POWER 1	A	84 354 350
6N2	SLAT E-MOT POWER 2	B	84 354 350
2X	212XP GND SUPPLY	C	84 354 350



REMOTE CONTROL CONTACTOR & CIRCUIT BREAKER

RCCB 115/200 VAC 360-800 HZ

Read also page 16

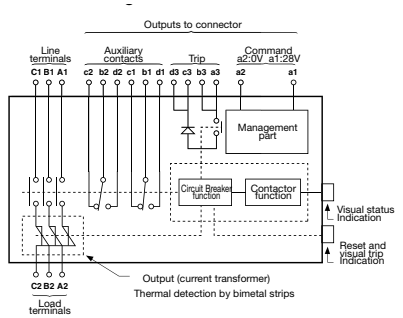
REFERENCES

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**

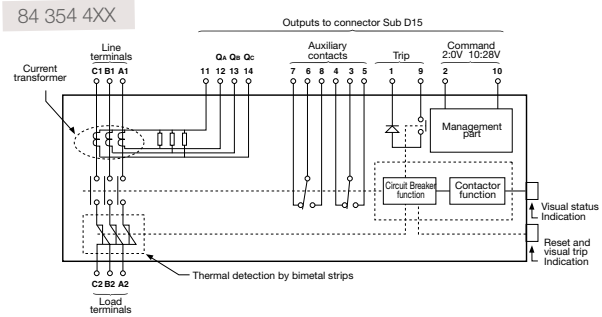
GENERAL CHARACTERISTICS

Mounting hardware		
Fixing screws (to panel or closet wall)	3 screws 10-32 UNF-3B	3 screws 10-32 UNF-3B
Connexion screws (to power feeders lugs)	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≤32 V (a2 - a1 pins)	17 V= ≤U≤32 V (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 Intermediate current level	Common/NC/NO: b1/c1/d1 28 VDC 3A (L/R 5 ms) - 5 VAC 250 mA	Common/NC/NO: 3/4/5 28 VDC 3A (L/R 5 ms) - 5 VAC 250 mA
Auxiliary contact n°2 SPDT type Low level current	Common/NC/NO: b2/c2/d2 3 VDC 0 to 20 mA resistive 28 VDC 200 mA (L/R 5 ms)	Common/NC/NO: 6/7/8 3 VDC 0 to 20 mA resistive 28 VDC 200 mA (L/R 5 ms)
Dielectric stength	I leakage < 1 mA @ 1500 V~	I leakage < 1 mA @ 1500 V~
Insulation resistance	≥ 100 MΩ	≥ 100 MΩ
Contactor Endurance cycles with RC at 40°C cos Fi=0.7	100 000 cycles	100 000 cycles
Current measurement & Breaker function		
Current transformer ratio	-	0.5 Volt rms for 10 A rms
Integrated load resistance (on current trasformer output)	-	50 Ω
Breaking at 115 VAC 360-800 Hz	2000 A	2000 A
Trip status auxiliary contact (incorporated diode)	28 VDC 10 to 200 mA	28 VDC 10 to 200 mA
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 10 g	up to 10 g
Shock	25 g - 11 ms	25 g - 11 ms
Vibration (sinusoïdal)	10 g from 5 to 2000 Hz	10 g from 5 to 2000 Hz
Vibration (random)	5.8 g from 10 to 2000 Hz	5.8 g from 10 to 2000 Hz

84 354 3XX



84 354 4XX



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 generally large cross-sections wires (mass reduction and harness simplification)

› Reduction of voltage drop (reduced number of contacts)

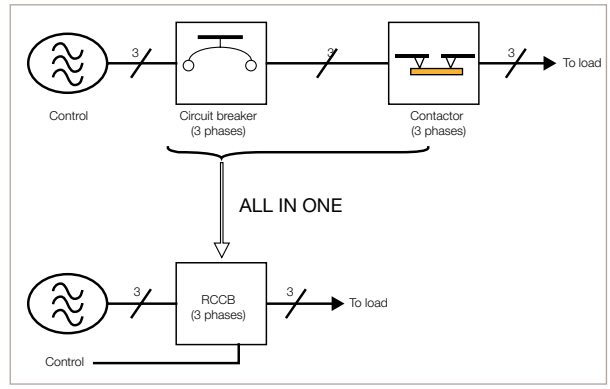
› Reduction of envelope

› Improved reliability (less components)

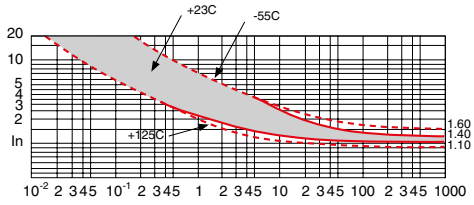
The contactor is closed when 28 V is applied on the command input.

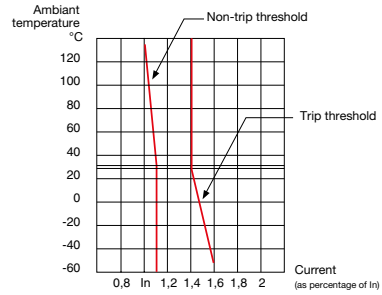
The RCCB has a status display window and a mechanical «TRIP indicator». When the CB has tripped, the mechanical «TRIP indicator» is «popped out» and must be pushed back in manually to RESET the circuit breaker (see page 16).

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



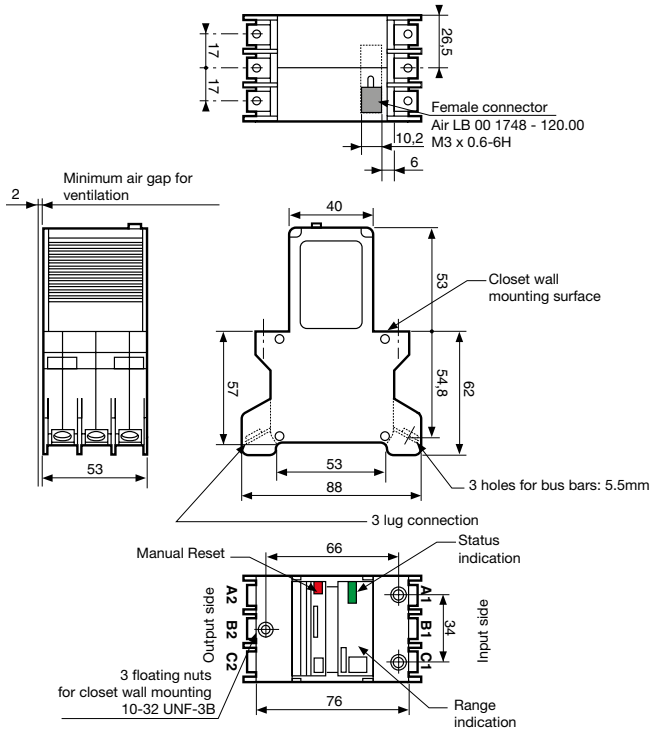
TRIPPING CHARACTERISTICS





DIMENSIONS

Without current transformer



With current transformer