


# Product Details and Certifications

## Cross Reference RA Part Number: 700-CF310D A

 **Product: 700-CF310D**

Description: MCS-CF Control Relay, 3 N.O. / 1 N.C. , 110V 50Hz / 120V 60Hz



Representative Photo Only (actual product may vary based on configuration selections)

### ***CONTROL RELAY DATA***

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Relay Coil Voltage	4-Pole AC Coil Voltage
Terminal Type	Screw Terminals
Contact Type	Standard Contacts
Contact Configuration	3 N.O. / 1 N.C.
Control Voltage	110V 50Hz / 120V 60Hz

### ***CERTIFICATIONS AND APPROVALS***

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cULus  
CE  
CSA

### ***RECOMMENDED SPARE PARTS***

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TA473	110V 50Hz/120V 60Hz Coil
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**Bulletin 700-CF — Control Relay**

- IEC industrial relays
- Mechanically linked contact performance per IEC 60947-5-1
- Gold plated, bifurcated version for low level switching applications
- Master control relay version rated 15 A (AC-15)
- Solid-state and pneumatic timing modules
- 4-...10 Poles

**Certifications**

cULus Listed (File No. E14840, Guide NKCR/NKCR7)  
CE Marked  
CCC Certified

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**Standards Compliance**  
UL 508  
CSA C22.2 No. 14  
EN/IEC 60947-1, -5-1  
Meets the material restrictions for European Directive 2002/95/EC - EU-RoHS

**4-Pole AC Coil Voltage (Ratings for 700-CF Only)**

AC-12		AC-15							Connection Diagrams	Contacts		Standard Contacts Cat. No.*	Gold Plated Bifurcated Contacts Cat. No.*	Master Contacts Cat. No.*
$I_{th}$ [A]		$I_e$ [A]								N.O.	N.C.			
40 °C	60 °C	24/48V	120V	240V	400V	500V	600V	690V						
20	20	10	10	10	6	2.5	1	1		2	2	700-CF220®	700-CFB220®	700-CFM220®
										3	1	700-CF310®	700-CFB310®	700-CFM310®
										4	0	700-CF400®	700-CFB400®	700-CFM400®
										0	4	700-CF040®	700-CFB040®	—

\* For spring clamp terminals, insert **R** after 700-C. Example: **Cat. No. 700-CRF220D**.

**⊗ AC Coil Voltage Code**

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. Example: **Cat. No. 700-CF220®** becomes **Cat. No. 700-CF220D** for 120V, 60 Hz

[V]	12	24	32	36	42	48	100	100...110	110	120	127	200	200...220	208	240	220...230	230	230...240	240	277	347	380	380...400	400	400...415	440	480	500	550	600
50 Hz	R	K	V	W	X	Y	KP	—	<b>D</b>	S	KG	L	—	—	F	—	VA	T	—	—	—	—	N	—	G	B	—	M	C	—
60 Hz	Q	J	—	V	—	X	—	KP	—	<b>D</b>	—	—	KG	H	L	—	—	A	T	I	E	—	—	—	—	N	B	—	—	C
50/60 Hz	—	KJ	—	—	—	KY	KP	—	KD	—	—	KG	KL	—	—	KL	KF	—	KA	—	—	—	—	KN	—	KB	—	—	—	—

**4-Pole DC Coil Voltage (Ratings for 700-CF Only)**

AC-12		AC-15							Connection Diagrams	Contacts		Standard Contacts Cat. No.‡	Gold Plated Bifurcated Contacts Cat. No.*	Master Contacts Cat. No.*
$I_{th}$ [A]		$I_e$ [A]								N.O.	N.C.			
40 °C	60 °C	24/48V	120V	240V	400V	500V	600V	690V						
										2	2	700-CF220®	700-CFB220®	700-CFM220®
20	20	10	10	10	6	2.5	1	1		3	1	700-CF310®	700-CFB310®	700-CFM310®
										4	0	700-CF400®	700-CFB400®	700-CFM400®

‡ For spring clamp terminals, insert **R** after 700-C. Example: **Cat. No. 700-CRF220ZJ**.

\* Ratings for Bulletin 700-CFB and 700-CFM are on page 9-159

**⊗ DC Coil Voltage Code§**

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no. example: **Cat. No. 700-CF220®** becomes **Cat. No. 700-CF220ZJ** for 24V DC

[V]	9	12	24	36	48	48...72	60	64	72	80	110	110...125	115	125	220	220...250	230	250
Standard	ZR	ZQ	ZJ	ZW	ZY	—	ZZ	ZB	ZG	ZE	ZD	—	ZP	ZS	ZA	—	ZF	ZT
Standard diode	—	—	DJ	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Electronic with diode	—	EQ	EJ	—	—	EY	—	—	—	—	—	ED	—	—	—	EA	—	—

§ When ordering DJ coil with built-in surge suppression, the DJ is not polarity sensitive. Drop out time: 14...20 ms.

Control Circuit

Cat. No. 700-CF			
<b>Operating Voltage</b>			
AC 50/60 Hz	Pickup	[x U <sub>s</sub> ]	0.85...1.1
	Dropout	[x U <sub>s</sub> ]	0.3...0.6
DC*	Pickup	[x U <sub>s</sub> ]	0.8...1.1
	Dropout	[x U <sub>s</sub> ]	0.1...0.6
<b>Coil Consumption</b>			
AC 50/60 Hz	Inrush	[VA/W]	70/50
	Seal	[VA/W]	8/2.6
DC (conventional)	Inrush/Seal	[W]	6.5
DC (electronic)	Inrush (avg./peak)	[W]	10/17
	Seal	[W]	1.7
<b>Operating Times</b>			
AC 50/60 Hz	Pickup Time	[ms]	15...30
	Dropout Time	[ms]	10...60
DC (conventional)	Pickup Time	[ms]	40...70
	Dropout Time	[ms]	7...15
DC (electronic)	Pickup Time	[ms]	25...50
	Dropout Time	[ms]	25...50
Min OFF time		[ms]	200
Max. ripple			± 15%
<b>Latch Attachment Release, 100-FL</b>			
Coil Consumption	AC	[VA/W]	45/40
	DC	[W]	25
<b>Contact Signal Duration</b>		[min./max]	0.03...15 s
<b>Timing Attachment</b>			
Reset Time, 100-ETA, 100-ETB	at min. time setting	[ms]	10
	at max. time setting	[ms]	70
Repeat Accuracy			± 10%

\* For 9V DC, code ZR, use operating voltage 0.65...1.3 x U<sub>s</sub>.  
For 24V DC, code ZJ, DJ, or EJ use operating voltage 0.7...1.25 x U<sub>s</sub>.  
For 110V DC, code ED use operating voltage 0.7...1.25 x U<sub>s</sub>.

General

Cat. No. 700-CF	
<b>Rated Insulation Voltage U<sub>i</sub></b>	
IEC	690V
UL; CSA	600V
<b>Rated Impulse Strength U<sub>imp</sub></b>	
	6 kV
High Test Voltage 1 minute (per IEC 60947-4)	
	2500V
<b>Rated Voltage U<sub>e</sub></b>	
AC	115, 230, 400, 500, 690V
DC	24, 48, 110, 220, 440V
Short-Circuit Protection gG Fuse 10 A	
<b>Rated Frequency</b>	
	50/60 Hz, DC
<b>Ambient Temperature</b>	
Storage	-55...+80 °C (-67...176 °F)
Operation at nominal current	-25...+60 °C (-13...140 °F)
15% current reduction for AC-12 at > 60 °C	-25...+70 °C (-13...158 °F)
<b>Corrosion Resistance</b>	
	humid-alternating climate, cyclic, per IEC 60068-2-30 and DIN 50 016, 56 cycles
<b>Altitude</b>	
	2000 m above mean sea level, per IEC60 947-4
<b>Type of Protection</b>	
IP2X (IEC 60529 and DIN 40050)	in connected state
Shock Resistance	IEC 60068-2: Half sinusoidal shock 11 ms, 30 G (in 3 directions)
Vibration Resistance	IEC 60068-2: Static >2 G, in normal position no malfunction <5 G

Utilization Category Table from EN 60947-5-1

Verification of Making and Breaking Capacities of Switching Elements Under Normal Conditions  
Corresponding to the Utilization Categories\*

Utilization Category	Normal Condition of Use								
	Make‡			Break‡			Number and Rate of Making and Breaking operations		
	I/I <sub>e</sub>	U/U <sub>e</sub>	cos ψ	I/I <sub>e</sub>	U/U <sub>e</sub>	cos ψ	No. operating cycles§	Operating cycles per minute	ON time [s]➤
AC-12⌘	1	1	0.9	1	1	0.9	6050	6	0.05
AC-13⌘	2	1	0.65	1	1	0.65	6050	6	0.05
AC-14⌘	6	1	0.3	1	1	0.3	6050	6	0.05
AC-15⌘	10	1	0.3	1	1	0.3	6050	6	0.05
DC	—	—	T <sub>0.95</sub>	—	—	T <sub>0.95</sub>	—	—	—
DC-12	1	1	1 ms	1	1	1 ms	6050	6	0.05➤
DC-13	1	1	6 x P*	1	1	6 x P*	6050	6	0.05➤
DC-14⌘	10	1	15 ms	1	1	15 ms	6050	—	0.05➤

I<sub>e</sub> Rated operational current, I Current to be made or broken

U<sub>e</sub> Rated operational voltage, U Voltage before make

PU<sub>e</sub>I<sub>e</sub> Steady-state power consumption (W)

T<sub>0.95</sub> Time to reach 95% of the steady-state current (ms)

\* See sub-clause 8.3.3.5.2.

‡ For tolerances on test quantities, see sub-clause 8.3.2.2.

§ The first 50 operating cycles shall be run at U/U<sub>e</sub>=1.1 with the loads set at U<sub>e</sub>.

♣ The value "6 x P" results from an empirical relationship which is found to represent most DC magnetic loads to an upper limit of P = 50 W, e.g., 6 x P= 300 W.

➤ The ON time shall be at least equal to T<sub>0.95</sub>.

⌘ Where the break current differs from the make current value, the ON time refers to the make current value after which the current is reduced to the break current value for a suitable period e.g., 0.05 s.