

Series CCR-40K/CR-40K

Miniature DC-40 GHz Failsafe SPDT Coaxial Switch

PART NUMBER	DESCRIPTION
CCR-40K	Commercial Failsafe SPDT, DC-40GHz, 2.92mm.
CR-40K	Elite Failsafe SPDT, DC-40GHz, 2.92mm.

The CCR-40K/CR-40K is a broadband, SPDT, electromechanical, coaxial switch designed to switch a microwave signal from a common input to either of two outputs. The characteristic impedance is 50 Ohms. These switches incorporate 2.92mm high performance connectors.

The CCR-40K/CR-40K series switch is offered with a failsafe actuator. The CCR-40K/CR-40K series is compatible with the two most common mounting hole patterns making it interchangeable with a variety of switches.





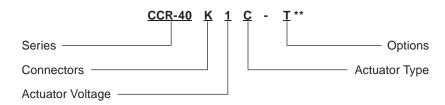
ENVIRONMENTAL AND PHYSICA	L CHARACTERISTICS
Operating Temperature Commercial Model, CCR-40K Elite Model, CR-40K	−40°C to 65°C −55°C to 85°C
Vibration (MIL-STD-202 Method 214, Condition D, non-operating)	10 g's RMS
Shock (MIL-STD-202 Method 213, Condition D, non-operating)	500 g's
Standard Actuator Life Actuator Life w/ Additional Features	5,000,000 cycles 1,000,000 cycles
Connector Type	2.92mm
Humidity (Moisture Seal)	Available
Weight	1.65 oz. (46.78g) (max.)

ELECTRICAL CHARACTERISTICS					
Form Factor	SPDT break	•	e make)	
Frequency Range	DC-4	0 GHz	<u>.</u>		
Characteristic Impedance	50 Oh	ıms			
Operate Time	10 ms	(max.)		
Release Time	10 ms	(max.)		
Actuation Voltage Available	12	15	24	28	V
Actuation Current, max. @ ambient temp.	200	250	120	90	mA

TYPICAL PERFORMANCE CHARACTERISTICS						
Frequency	DC-6 GHz	6-12 GHz	12–18 GHz	18-27 GHz	27-34 GHz	34-40 GHz
Insertion Loss, dB, typical.	0.2	0.4	0.5	0.6	0.7	0.8
Isolation, dB, typical.	70	60	60	50	50	50
VSWR , typical.	1.25:1	1.40:1	1.50:1	1.60:1	1.80:1	1.80:1

For maximum limits, please see charts on page 3

PART NUMBERING SYSTEM



Connector K: 2.92mm Female Actuator Voltage 1: 28 Vdc Failsafe 2: 15 Vdc Failsafe

3: 12 Vdc Failsafe 4: 24 Vdc Failsafe **Actuator Type**

0: Standard ContactsC: Indicator Contacts***

**SEE PARTS LIST ON PAGE 7

Options

T: TTL Drivers with Diodes D: Transient Suppression

Diodes

N: Narrow Body M: Moisture Seal

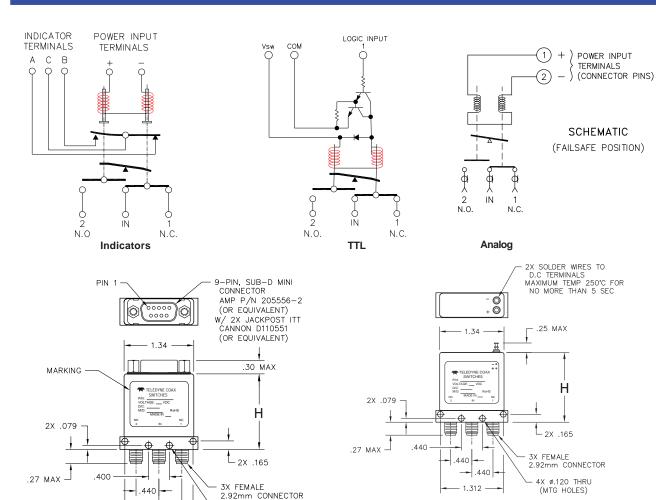
S: 9-Pin D-Sub Connector

For other options, contact factory.

*** Indicator Contacts Operating Temperature -50°C to 85°C (Elite Model Only)



SCHEMATICS AND MECHANICAL OUTLINE



Standard Width Body

4X ø.120 THRU

(MTG HOLES)

.52

.440 .440

0 0 0

1.312

1.50 -

H = 2.20 MAX. TTL + SUB-D **Optional Narrow Width Body**

1.34

0 0

H = 1.45 MAX. STD MODEL

H = 1.80 MAX. TTL MODEL OR SUB-D

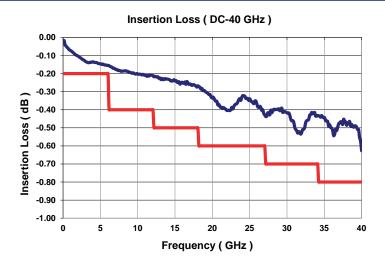
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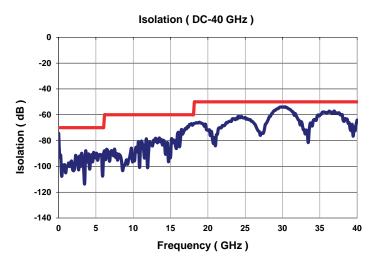
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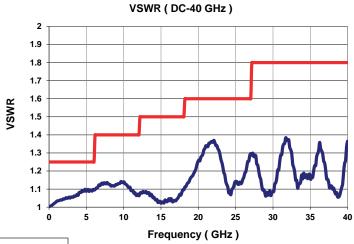
9 PIN D	9 PIN D-SUB PINOUT FOR FAILSAFE SPDT								
	OPTIONS								
Pin No.	Basic	Indicators	TTL	Indicators & TTL					
1	+	+							
2	-	-							
3			Common	Common					
4			1	1					
5									
6			Vsw	Vsw					
7		А		А					
8		В		В					
9		С		С					

TRUTH TABLE (with TTL option)							
Logic Input	RF	Path			cator		
1	IN to 1	IN to 2		Α	В		
0	On	Off		С	0		
1	Off	On		0	С		

TYPICAL NARROWBAND RF INSERTION LOSS PERFORMANCE CURVES









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Failsafe SPDT Coaxial Switch



GLOSSARY

Actuator

An actuator is the electromechanical mechanism that transfers the RF contacts from one position to another upon DC command.

Arc Suppression Diode

A diode is connected in parallel with the coil. This diode limits the "reverse EMF spike" generated when the coil denergizes to 0.7 volts. The diode cathode is connected to the positive side of the coil and the anode is connected to the negative side.

Date Code

All switches are marked with either a unique serial number or a date code. Date codes are in accordance with MIL-STD-1285 Paragraph 5.2.5 and consist of four digits. The first two digits define the year and the last two digits define the week of the year (YYWW). Thus, 1032 identifies switches that passed through final inspection during the 32nd week of 2010.

Failsafe

A failsafe switch reverts to the default or failsafe position when actuating voltage is removed. This is realized by a return spring within the drive mechanism. This type of switch requires the continuous application of operating voltage to select and hold any position. (Multi-position switches are normally open with no voltage applied).

Indicator

Indicators tell the system which position the switch is in. Other names for indicators are telemetry contacts or tellback circuit. Indicators are usually a set of internally mounted DC contacts linked to the actuator. They can be wired to digital input lines, status lights, or interlocks. Unless otherwise specified, the maximum indicator contact rating is 30 Vdc, 50 mA, or 1.5 Watts into a resistive load.

Isolation

Isolation is the measure of the power level at the output connector of an unconnected RF channel as referenced to the power at the input connector. It is specified in dB below the input power level.

SPDT Switch

A single-pole double-throw, bi-directional switch that can be used as having one input and two outputs or two inputs and one output.

Switching Time

Switching time is the total interval beginning with the arrival of the leading edge of the command pulse at the switch DC input and ending with the completion of the switch transfer, including contact bounce. It consists of three parts: (1) inductive delay in the coil, (2) transfer time of the physical movement of the contacts, and (3) the bounce time of the RF contacts.

TTL Switch Driver Option

As a special option, switch drivers can be provided for both failsafe and latching switches, which are compatible with industry-standard low-power Schottky TTL circuits.

Performance Parameters vs Frequency

Generally speaking, the RF performance of coaxial switches is frequency dependent. With increasing frequency, VSWR and insertion loss increase while isolation decreases. All data sheets specify these three parameters as "worst case" at the highest operating frequency. If the switch is to be used over a narrow frequency band, better performance can be achieved.

Actuator Current vs Temperature

The resistance of the actuator coil varies as a function of temperature. There is an inverse relationship between the operating temperature of the switch and the actuator drive current. For switches operating at 28 VDC, the approximate actuator drive current at temperature, T, can be calculated using the equation:

$$I_{T} = \frac{I_{A}}{[1 + .00385 (T-20)]}$$

Where:

 I_{T} = Actuator current at temperature, T

I_A = Room temperature actuator current – see data sheet

T = Temperature of interest in °C

Magnetic Sensitivity

An electro-mechanical switch can be sensitive to ferrous materials and external magnetic fields. Neighboring ferrous materials should be permitted no closer than 0.5 inches and adjacent external magnetic fields should be limited to a flux density of less than 5 Gauss.

SPECIAL FEATURE

Switching High-Power or Highly Sensitive Signals

Ensure the most linear response with the best galvanically matched contact system in the industry. Extremely low passive intermodulation is standard on all of our switches.

Carrier Frequency 1	Carrier Frequency 2	PIM 3rd Order Frequency	PIM 5th Order Fre- quency
870 MHz	893 MHz	847 MHz	824 MHz

	3rd Order Intermodulation	5th Order Intermodulation	
SPDT	−91 dBm	–110 dBm	
	–134 dBc	–153 dBc	

Series CCR-40K/CR-40K

PART No.

CR-40KX0-NMS

CR-40KX0-NS

CR-40KX0-T

CR-40KX0-TMS

CR-40KX0-TN

CR-40KX0-TNM

CR-40KX0-TNMS

CR-40KX0-TNS

CR-40KX0-TS

Miniature DC-40 GHz Failsafe SPDT Coaxial Switch

FAILSAFE CCR-40K/CR-40K PART NUMBER LIST

3 CCR-40KXC-DM 45 CCR-40KX0-TNM 87 4 CCR-40KXC-DMS 46 CCR-40KX0-TNMS 88 5 CCR-40KXC-DN 47 CCR-40KX0-TNS 89 6 CCR-40KXC-DNM 48 CCR-40KX0-TS 90 7 CCR-40KXC-DNMS 49 CR-40KXC 91 8 CCR-40KXC-DNS 50 CR-40KXC-D 92 9 CCR-40KXC-DS 51 CR-40KXC-DM 93 10 CCR-40KXC-M 52 CR-40KXC-DMS 94 11 CCR-40KXC-MS 53 CR-40KXC-DN 95		Part No.		Part No.	
3 CCR-40KXC-DM 45 CCR-40KXO-TNM 87 4 CCR-40KXC-DMS 46 CCR-40KXO-TNMS 88 5 CCR-40KXC-DNM 47 CCR-40KXO-TNS 89 6 CCR-40KXC-DNMS 49 CR-40KXC-D 91 7 CCR-40KXC-DNS 50 CR-40KXC-D 92 8 CCR-40KXC-DNS 50 CR-40KXC-DM 93 10 CCR-40KXC-MS 51 CR-40KXC-DMS 94 11 CCR-40KXC-MS 53 CR-40KXC-DMS 95 12 CCR-40KXC-MS 53 CR-40KXC-DNM 96 13 CCR-40KXC-NM 55 CR-40KXC-DNM 96 14 CCR-40KXC-NMS 56 CR-40KXC-DNM 96 15 CCR-40KXC-NMS 57 CR-40KXC-DN 96 16 CCR-40KXC-T 59 CR-40KXC-MS 96 17 CCR-40KXC-TM 60 CR-40KXC-NM 96 18 CCR-40KXC-TMS 61 CR-40KXC-	1	CCR-40KXC	43	CCR-40KX0-TMS	85
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14 CCR-40KXC-NMS 56 CR-40KXC-DNS 15 CCR-40KXC-NS 57 CR-40KXC-DS 16 CCR-40KXC-S 58 CR-40KXC-M 17 CCR-40KXC-T 59 CR-40KXC-MS 18 CCR-40KXC-TM 60 CR-40KXC-N 19 CCR-40KXC-TMS 61 CR-40KXC-NM 20 CCR-40KXC-TMM 63 CR-40KXC-NS 21 CCR-40KXC-TNM 63 CR-40KXC-NS 22 CCR-40KXC-TNMS 64 CR-40KXC-TS 23 CCR-40KXC-TNS 65 CR-40KXC-TM 24 CCR-40KXC-TS 66 CR-40KXC-TM 25 CCR-40KXO-D 68 CR-40KXC-TNS 26 CCR-40KXO-DM 69 CR-40KXC-TNMS 27 CCR-40KXO-DMS 70 CR-40KXC-TNS 29 CCR-40KXO-DMS 71 CR-40KXC-TNS 30 CCR-40KXO-DNM 72 CR-40KXO-TS 31 CCR-40KXO-DNMS 73 CR-40KXO 32	12	CCR-40KXC-N	54	CR-40KXC-DNM	96
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16 CCR-40KXC-S 58 CR-40KXC-M 17 CCR-40KXC-T 59 CR-40KXC-MS 18 CCR-40KXC-TM 60 CR-40KXC-N 19 CCR-40KXC-TMS 61 CR-40KXC-NM 20 CCR-40KXC-TN 62 CR-40KXC-NS 21 CCR-40KXC-TNM 63 CR-40KXC-NS 22 CCR-40KXC-TNMS 64 CR-40KXC-S 23 CCR-40KXC-TNS 65 CR-40KXC-T 24 CCR-40KXC-TS 66 CR-40KXC-TM 25 CCR-40KX0-D 68 CR-40KXC-TN 26 CCR-40KX0-DM 69 CR-40KXC-TNM 27 CCR-40KX0-DMS 70 CR-40KXC-TNMS 29 CCR-40KX0-DMS 70 CR-40KXC-TNS 30 CCR-40KX0-DNM 72 CR-40KXC-TNS 31 CCR-40KX0-DNMS 73 CR-40KX0-TS 31 CCR-40KX0-DNS 74 CR-40KX0-DM 33 CCR-40KX0-MS 75 CR-40KX0-DM 36	14	CCR-40KXC-NMS	56	CR-40KXC-DNS	
17 CCR-40KXC-T 59 CR-40KXC-MS 18 CCR-40KXC-TM 60 CR-40KXC-N 19 CCR-40KXC-TMS 61 CR-40KXC-NM 20 CCR-40KXC-TN 62 CR-40KXC-NS 21 CCR-40KXC-TNM 63 CR-40KXC-NS 22 CCR-40KXC-TNMS 64 CR-40KXC-S 23 CCR-40KXC-TNS 65 CR-40KXC-T 24 CCR-40KXC-TS 66 CR-40KXC-TM 25 CCR-40KX0 67 CR-40KXC-TMS 26 CCR-40KX0-DM 69 CR-40KXC-TNM 27 CCR-40KX0-DMS 70 CR-40KXC-TNMS 29 CCR-40KX0-DMS 70 CR-40KXC-TNS 30 CCR-40KX0-DNM 72 CR-40KXC-TNS 31 CCR-40KX0-DNMM 72 CR-40KX0-TS 31 CCR-40KX0-DNMS 73 CR-40KX0-D 33 CCR-40KX0-DNS 74 CR-40KX0-DM 34 CCR-40KX0-MS 77 CR-40KX0-DNM 36 <td>15</td> <td>CCR-40KXC-NS</td> <td>57</td> <td>CR-40KXC-DS</td> <td></td>	15	CCR-40KXC-NS	57	CR-40KXC-DS	
18 CCR-40KXC-TM 60 CR-40KXC-N 19 CCR-40KXC-TMS 61 CR-40KXC-NM 20 CCR-40KXC-TN 62 CR-40KXC-NMS 21 CCR-40KXC-TNM 63 CR-40KXC-NS 22 CCR-40KXC-TNMS 64 CR-40KXC-S 23 CCR-40KXC-TNS 65 CR-40KXC-T 24 CCR-40KXC-TS 66 CR-40KXC-TM 25 CCR-40KXO-D 68 CR-40KXC-TMS 26 CCR-40KX0-DM 69 CR-40KXC-TNM 27 CCR-40KX0-DMS 70 CR-40KXC-TNMS 29 CCR-40KX0-DMS 70 CR-40KXC-TNS 30 CCR-40KX0-DNM 72 CR-40KXC-TNS 31 CCR-40KX0-DNM 72 CR-40KXC-TS 31 CCR-40KX0-DNMS 73 CR-40KX0-D 32 CCR-40KX0-DNS 74 CR-40KX0-DM 34 CCR-40KX0-MS 77 CR-40KX0-DN 35 CCR-40KX0-MS 77 CR-40KX0-DNMS 3	16	CCR-40KXC-S	58	CR-40KXC-M	
19 CCR-40KXC-TMS 61 CR-40KXC-NM 20 CCR-40KXC-TN 62 CR-40KXC-NMS 21 CCR-40KXC-TNM 63 CR-40KXC-NS 22 CCR-40KXC-TNMS 64 CR-40KXC-S 23 CCR-40KXC-TNS 65 CR-40KXC-TM 24 CCR-40KXC-TS 66 CR-40KXC-TM 25 CCR-40KXO 67 CR-40KXC-TMS 26 CCR-40KXO-D 68 CR-40KXC-TNM 27 CCR-40KXO-DM 69 CR-40KXC-TNM 28 CCR-40KXO-DMS 70 CR-40KXC-TNMS 29 CCR-40KXO-DMS 71 CR-40KXC-TNS 30 CCR-40KXO-DNM 72 CR-40KXC-TNS 31 CCR-40KXO-DNMS 73 CR-40KXO-D 32 CCR-40KXO-DNS 74 CR-40KXO-D 33 CCR-40KXO-DNS 75 CR-40KXO-DMS 34 CCR-40KXO-MS 77 CR-40KXO-DNM 35 CCR-40KXO-NM 79 CR-40KXO-DNMS	17	CCR-40KXC-T	59	CR-40KXC-MS	
20 CCR-40KXC-TN 62 CR-40KXC-NMS 21 CCR-40KXC-TNM 63 CR-40KXC-NS 22 CCR-40KXC-TNMS 64 CR-40KXC-S 23 CCR-40KXC-TNS 65 CR-40KXC-T 24 CCR-40KXC-TS 66 CR-40KXC-TM 25 CCR-40KX0 67 CR-40KXC-TMS 26 CCR-40KX0-D 68 CR-40KXC-TNS 27 CCR-40KX0-DM 69 CR-40KXC-TNM 28 CCR-40KX0-DMS 70 CR-40KXC-TNMS 29 CCR-40KX0-DN 71 CR-40KXC-TNS 30 CCR-40KX0-DNM 72 CR-40KXC-TNS 31 CCR-40KX0-DNMS 73 CR-40KX0 32 CCR-40KX0-DNS 74 CR-40KX0-DM 34 CCR-40KX0-DN 76 CR-40KX0-DNS 35 CCR-40KX0-MS 77 CR-40KX0-DNM 36 CCR-40KX0-NM 79 CR-40KX0-DNMS 37 CCR-40KX0-NMS 80 CR-40KX0-DNS 39<	18	CCR-40KXC-TM	60	CR-40KXC-N	
21 CCR-40KXC-TNM 63 CR-40KXC-NS 22 CCR-40KXC-TNMS 64 CR-40KXC-S 23 CCR-40KXC-TNS 65 CR-40KXC-TM 24 CCR-40KXC-TS 66 CR-40KXC-TM 25 CCR-40KX0 67 CR-40KXC-TMS 26 CCR-40KX0-DM 69 CR-40KXC-TNM 27 CCR-40KX0-DMS 70 CR-40KXC-TNMS 29 CCR-40KX0-DMS 70 CR-40KXC-TNS 30 CCR-40KX0-DNM 72 CR-40KXC-TNS 31 CCR-40KX0-DNM 72 CR-40KX0 32 CCR-40KX0-DNMS 73 CR-40KX0 33 CCR-40KX0-DNS 75 CR-40KX0-DM 34 CCR-40KX0-M 76 CR-40KX0-DNM 35 CCR-40KX0-MS 77 CR-40KX0-DNM 36 CCR-40KX0-NM 79 CR-40KX0-DNMS 37 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NMS 81 CR-40KX0-MS 40 </td <td>19</td> <td>CCR-40KXC-TMS</td> <td>61</td> <td>CR-40KXC-NM</td> <td></td>	19	CCR-40KXC-TMS	61	CR-40KXC-NM	
22 CCR-40KXC-TNMS 64 CR-40KXC-S 23 CCR-40KXC-TNS 65 CR-40KXC-T 24 CCR-40KXC-TS 66 CR-40KXC-TM 25 CCR-40KX0 67 CR-40KXC-TMS 26 CCR-40KX0-D 68 CR-40KXC-TN 27 CCR-40KX0-DM 69 CR-40KXC-TNM 28 CCR-40KX0-DMS 70 CR-40KXC-TNMS 29 CCR-40KX0-DN 71 CR-40KXC-TNS 30 CCR-40KX0-DNM 72 CR-40KXC-TS 31 CCR-40KX0-DNMS 73 CR-40KX0 32 CCR-40KX0-DNS 74 CR-40KX0-D 33 CCR-40KX0-DS 75 CR-40KX0-DM 34 CCR-40KX0-MS 77 CR-40KX0-DN 35 CCR-40KX0-MS 77 CR-40KX0-DNM 36 CCR-40KX0-NM 79 CR-40KX0-DNS 37 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-MS 40	20	CCR-40KXC-TN	62	CR-40KXC-NMS	
23	21	CCR-40KXC-TNM	63	CR-40KXC-NS	
24 CCR-40KXC-TS 66 CR-40KXC-TM 25 CCR-40KX0 67 CR-40KXC-TMS 26 CCR-40KX0-D 68 CR-40KXC-TN 27 CCR-40KX0-DM 69 CR-40KXC-TNM 28 CCR-40KX0-DMS 70 CR-40KXC-TNMS 29 CCR-40KX0-DN 71 CR-40KXC-TNS 30 CCR-40KX0-DNM 72 CR-40KXC-TS 31 CCR-40KX0-DNMS 73 CR-40KX0 32 CCR-40KX0-DNS 74 CR-40KX0-D 33 CCR-40KX0-DS 75 CR-40KX0-DM 34 CCR-40KX0-M 76 CR-40KX0-DNS 35 CCR-40KX0-MS 77 CR-40KX0-DNM 36 CCR-40KX0-N 78 CR-40KX0-DNM 37 CCR-40KX0-NM 79 CR-40KX0-DNS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-MS 40 CCR-40KX0-T 83 CR-40KX0-MS	22	CCR-40KXC-TNMS	64	CR-40KXC-S	
25 CCR-40KX0 67 CR-40KXC-TMS 26 CCR-40KX0-D 68 CR-40KXC-TN 27 CCR-40KX0-DM 69 CR-40KXC-TNM 28 CCR-40KX0-DMS 70 CR-40KXC-TNMS 29 CCR-40KX0-DN 71 CR-40KXC-TNS 30 CCR-40KX0-DNM 72 CR-40KXC-TS 31 CCR-40KX0-DNMS 73 CR-40KX0 32 CCR-40KX0-DNS 74 CR-40KX0-D 33 CCR-40KX0-DS 75 CR-40KX0-DM 34 CCR-40KX0-M 76 CR-40KX0-DMS 35 CCR-40KX0-MS 77 CR-40KX0-DN 36 CCR-40KX0-N 78 CR-40KX0-DNM 37 CCR-40KX0-NM 79 CR-40KX0-DNS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-MS 40 CCR-40KX0-T 82 CR-40KX0-MS 41 CCR-40KX0-T 83 CR-40KX0-MS	23	CCR-40KXC-TNS	65	CR-40KXC-T	
26 CCR-40KX0-D 68 CR-40KXC-TN 27 CCR-40KX0-DM 69 CR-40KXC-TNM 28 CCR-40KX0-DMS 70 CR-40KXC-TNMS 29 CCR-40KX0-DN 71 CR-40KXC-TNS 30 CCR-40KX0-DNM 72 CR-40KXC-TS 31 CCR-40KX0-DNMS 73 CR-40KX0 32 CCR-40KX0-DNS 74 CR-40KX0-D 33 CCR-40KX0-DS 75 CR-40KX0-DM 34 CCR-40KX0-M 76 CR-40KX0-DMS 35 CCR-40KX0-MS 77 CR-40KX0-DN 36 CCR-40KX0-N 78 CR-40KX0-DNM 37 CCR-40KX0-NM 79 CR-40KX0-DNS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-MS 40 CCR-40KX0-S 82 CR-40KX0-MS 41 CCR-40KX0-T 83 CR-40KX0-MS	24	CCR-40KXC-TS	66	CR-40KXC-TM	
27 CCR-40KX0-DM 69 CR-40KXC-TNM 28 CCR-40KX0-DMS 70 CR-40KXC-TNMS 29 CCR-40KX0-DN 71 CR-40KXC-TNS 30 CCR-40KX0-DNM 72 CR-40KXC-TS 31 CCR-40KX0-DNMS 73 CR-40KX0 32 CCR-40KX0-DNS 74 CR-40KX0-D 33 CCR-40KX0-DS 75 CR-40KX0-DM 34 CCR-40KX0-M 76 CR-40KX0-DMS 35 CCR-40KX0-MS 77 CR-40KX0-DN 36 CCR-40KX0-N 78 CR-40KX0-DNM 37 CCR-40KX0-NM 79 CR-40KX0-DNMS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-DS 40 CCR-40KX0-S 82 CR-40KX0-MS 41 CCR-40KX0-T 83 CR-40KX0-MS	25	CCR-40KX0	67	CR-40KXC-TMS	
28 CCR-40KX0-DMS 70 CR-40KXC-TNMS 29 CCR-40KX0-DN 71 CR-40KXC-TNS 30 CCR-40KX0-DNM 72 CR-40KXC-TS 31 CCR-40KX0-DNMS 73 CR-40KX0 32 CCR-40KX0-DNS 74 CR-40KX0-D 33 CCR-40KX0-DS 75 CR-40KX0-DM 34 CCR-40KX0-M 76 CR-40KX0-DMS 35 CCR-40KX0-MS 77 CR-40KX0-DN 36 CCR-40KX0-N 78 CR-40KX0-DNM 37 CCR-40KX0-NM 79 CR-40KX0-DNMS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-DS 40 CCR-40KX0-S 82 CR-40KX0-MS 41 CCR-40KX0-T 83 CR-40KX0-MS	26	CCR-40KX0-D	68	CR-40KXC-TN	
29 CCR-40KX0-DN 71 CR-40KXC-TNS 30 CCR-40KX0-DNM 72 CR-40KXC-TS 31 CCR-40KX0-DNMS 73 CR-40KX0 32 CCR-40KX0-DNS 74 CR-40KX0-D 33 CCR-40KX0-DS 75 CR-40KX0-DM 34 CCR-40KX0-M 76 CR-40KX0-DMS 35 CCR-40KX0-MS 77 CR-40KX0-DN 36 CCR-40KX0-N 78 CR-40KX0-DNM 37 CCR-40KX0-NM 79 CR-40KX0-DNMS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-DS 40 CCR-40KX0-S 82 CR-40KX0-MS 41 CCR-40KX0-T 83 CR-40KX0-MS	27	CCR-40KX0-DM	69	CR-40KXC-TNM	
30 CCR-40KX0-DNM 72 CR-40KXC-TS 31 CCR-40KX0-DNMS 73 CR-40KX0 32 CCR-40KX0-DNS 74 CR-40KX0-D 33 CCR-40KX0-DS 75 CR-40KX0-DM 34 CCR-40KX0-M 76 CR-40KX0-DMS 35 CCR-40KX0-MS 77 CR-40KX0-DN 36 CCR-40KX0-N 78 CR-40KX0-DNM 37 CCR-40KX0-NM 79 CR-40KX0-DNMS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-DS 40 CCR-40KX0-S 82 CR-40KX0-MS 41 CCR-40KX0-T 83 CR-40KX0-MS	28	CCR-40KX0-DMS	70	CR-40KXC-TNMS	
31 CCR-40KX0-DNMS 73 CR-40KX0 32 CCR-40KX0-DNS 74 CR-40KX0-D 33 CCR-40KX0-DS 75 CR-40KX0-DM 34 CCR-40KX0-M 76 CR-40KX0-DMS 35 CCR-40KX0-MS 77 CR-40KX0-DN 36 CCR-40KX0-N 78 CR-40KX0-DNM 37 CCR-40KX0-NM 79 CR-40KX0-DNMS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-DS 40 CCR-40KX0-S 82 CR-40KX0-MS 41 CCR-40KX0-T 83 CR-40KX0-MS	29	CCR-40KX0-DN	71	CR-40KXC-TNS	
32 CCR-40KX0-DNS 74 CR-40KX0-D 33 CCR-40KX0-DS 75 CR-40KX0-DM 34 CCR-40KX0-M 76 CR-40KX0-DMS 35 CCR-40KX0-MS 77 CR-40KX0-DN 36 CCR-40KX0-N 78 CR-40KX0-DNM 37 CCR-40KX0-NM 79 CR-40KX0-DNMS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-DS 40 CCR-40KX0-S 82 CR-40KX0-MS 41 CCR-40KX0-T 83 CR-40KX0-MS	30	CCR-40KX0-DNM	72	CR-40KXC-TS	
33 CCR-40KX0-DS 75 CR-40KX0-DM 34 CCR-40KX0-M 76 CR-40KX0-DMS 35 CCR-40KX0-MS 77 CR-40KX0-DN 36 CCR-40KX0-N 78 CR-40KX0-DNM 37 CCR-40KX0-NM 79 CR-40KX0-DNMS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-DS 40 CCR-40KX0-S 82 CR-40KX0-M 41 CCR-40KX0-T 83 CR-40KX0-MS	31	CCR-40KX0-DNMS	73	CR-40KX0	
34 CCR-40KX0-M 76 CR-40KX0-DMS 35 CCR-40KX0-MS 77 CR-40KX0-DN 36 CCR-40KX0-N 78 CR-40KX0-DNM 37 CCR-40KX0-NM 79 CR-40KX0-DNMS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-DS 40 CCR-40KX0-S 82 CR-40KX0-M 41 CCR-40KX0-T 83 CR-40KX0-MS	32	CCR-40KX0-DNS	74	CR-40KX0-D	
35 CCR-40KX0-MS 77 CR-40KX0-DN 36 CCR-40KX0-N 78 CR-40KX0-DNM 37 CCR-40KX0-NM 79 CR-40KX0-DNMS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-DS 40 CCR-40KX0-S 82 CR-40KX0-M 41 CCR-40KX0-T 83 CR-40KX0-MS	33	CCR-40KX0-DS	75	CR-40KX0-DM	
36 CCR-40KX0-N 78 CR-40KX0-DNM 37 CCR-40KX0-NM 79 CR-40KX0-DNMS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-DS 40 CCR-40KX0-S 82 CR-40KX0-M 41 CCR-40KX0-T 83 CR-40KX0-MS	34	CCR-40KX0-M	76	CR-40KX0-DMS	
37 CCR-40KX0-NM 79 CR-40KX0-DNMS 38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-DS 40 CCR-40KX0-S 82 CR-40KX0-M 41 CCR-40KX0-T 83 CR-40KX0-MS	35	CCR-40KX0-MS	77	CR-40KX0-DN	
38 CCR-40KX0-NMS 80 CR-40KX0-DNS 39 CCR-40KX0-NS 81 CR-40KX0-DS 40 CCR-40KX0-S 82 CR-40KX0-M 41 CCR-40KX0-T 83 CR-40KX0-MS	36	CCR-40KX0-N	78	CR-40KX0-DNM	
39 CCR-40KX0-NS 81 CR-40KX0-DS 40 CCR-40KX0-S 82 CR-40KX0-M 41 CCR-40KX0-T 83 CR-40KX0-MS	37	CCR-40KX0-NM	79	CR-40KX0-DNMS	
40 CCR-40KX0-S 82 CR-40KX0-M 41 CCR-40KX0-T 83 CR-40KX0-MS	38	CCR-40KX0-NMS	80	CR-40KX0-DNS	
41 CCR-40KX0-T 83 CR-40KX0-MS	39	CCR-40KX0-NS	81	CR-40KX0-DS	
	40	CCR-40KX0-S	82	CR-40KX0-M	
42 CCR-40KX0-TM 84 CR-40KX0-N	41	CCR-40KX0-T	83	CR-40KX0-MS	
	42	CCR-40KX0-TM	84	CR-40KX0-N	

^{*} X = 1 (28Vdc), 2 (15Vdc), 3 (12Vdc) and 4 (24Vdc)