Fuji Duo Series SC-E Contactors

Features

- 5 to 100 hp at 480 VAC
- cULus and CSA approval, CE mark, meets JIS and IEC standards.
- Models SC-E02-xxx to SC-E4-xxx have 3-pole main circuits and come in three sizes with widths of 43 mm, 54 mm, and 67 mm.
- Models SC-E1-xxx to SC-E7-xxx employ a box terminal structure; allowing wires to be connected directly to the main circuit.
- Has a finger-protection terminal structure that prevents the exposure of live parts.
- Models SC-E5-xxx to SC-E7-xxx use a SUPERMAGNET™ (AC-input/DC-output operation) for high operating reliability and requires no surge suppressor.

Small Size

- SC-E02-xxx to E05-xxx: 43mm wide
- SC-E1-xxx to E2S-xxx: 54mm wide
- SC-E3-xxx, E4-xxx: 67mm wide
- SC-E5-xxx: 88mm wide

SC-E2S

SC-E7

Safety

- Terminals with finger-touch protection (DIN 57106/VDE 0106 Teil100)

Utility

- Box lug terminal construction
- Long electrical life
- Easy to wire

Environmental

- Low power consumption
- Recycled thermoplastic resin used for plastic parts.
- The names of materials are indicated on all major parts to facilitate recycling

Standards & Approvals

- UL listed , file E42419, Standard UL 508
- cUL listed, file E42419, Standard CSA C 22.2 No.14
- VDE 0660
- JIS C 8201-4-1
- IEC 60947-4-1 / EN 60947-4-1
- CE compliant

Optional accessories

- Auxiliary contact blocks
- Coil surge suppression units
- Replacement coils for contactor sizes SC-E5 and larger

SC-E Series Contactors Specifications - UL and CSA

Model	Price	Nominal Coil Voltage	Rated Capacity (HP) 3-Phase Motor 200V	3-Phase Motor 220–240V	3-Phase Motor 400–480V	3-Phase Motor 550–600V	1-Phase Motor 100–120V	1-Phase Motor 220–240V	Rated AC-3 Current (A) [note 1]	Rated AC-1 Thermal Current (A) [note 2]	SCCR Ratings (KA)	Rated Insulation Voltage (V)	Frame Width (mm)
SC-E02-24VAC	<--->	24VAC	2	2	5	5	1/3	1	9	20	5	690	43
SC-E02-110VAC	<--->	110VAC											
SC-E02-220VAC	<--->	220VAC											
SC-E02-440VAC	<--->	440-480VAC											
SC-E02-500VAC	<--->	500-550VAC											
SC-E02G-24VDC	<--->	24VDC											
SC-E03-24VAC	<--->	24VAC	3	3	7.5	7.5	1/2	2	12	20			
SC-E03-110VAC	<--->	110VAC											
SC-E03-220VAC	<--->	220VAC											
SC-E03-440VAC	<--->	440-480VAC											
SC-E03-500VAC	<--->	500-550VAC											
SC-E03G-24VDC	<--->	24VDC											
SC-E04-24VAC	<--->	24VAC	5	5	10	10	1	3	18	25			
SC-E04-110VAC	<--->	110VAC											
SC-E04-220VAC	<--->	220VAC											
SC-E04-440VAC	<--->	440-480VAC											
SC-E04-500VAC	<--->	500-550VAC											
SC-E04G-24VDC	<--->	24VDC											
SC-E05-24VAC	<--->	24VAC	5	7.5	15	15	2	3	25	32			
SC-E05-110VAC	<--->	110VAC											
SC-E05-220VAC	<--->	220VAC											
SC-E05-440VAC	<--->	440-480VAC											
SC-E05-500VAC	<--->	500-550VAC											
SC-E05G-24VDC	<--->	24VDC											

TABLE CONTINUED NEXT PAGE

Notes: 1. AC3 type loads consist of squirrel cage three-phase motors; occasional, limited jogging duty.
2. AC1 non-inductive or slightly inductive loads. Typically resistive loads (i.e. furnaces, ovens, etc.)

Fuji Duo Series SC-E Contactors

SC-E Series Contactors Specifications - UL and CSA

Model	Price	Nominal Coil Voltage	Rated Capacity (HP)						Rated AC-3 Current (A) [note 1]	Rated AC-1 Thermal Current (A) [note 2]	SCCR Ratings (KA)	Rated Insulation Voltage (V)	Frame Width (mm)
			3-Phase Motor				1-Phase Motor						
			200V	220–240V	400–480V	550–600V	100–120V	220–240V					
SC-E1-24VAC	<--->	24VAC	7.5	10	25	25	2	3	32	50	5	690	54
SC-E1-110VAC	<--->	110VAC											
SC-E1-220VAC	<--->	220VAC											
SC-E1-440VAC	<--->	440-480VAC											
SC-E1-500VAC	<--->	500-550VAC											
SC-E1G-24VDC	<--->	24VDC											
SC-E2-24VAC	<--->	24VAC	10	15	30	30	3	5	40	60			
SC-E2-110VAC	<--->	110VAC											
SC-E2-220VAC	<--->	220VAC											
SC-E2-440VAC	<--->	440-480VAC											
SC-E2-500VAC	<--->	500-550VAC											
SC-E2G-24VDC	<--->	24VDC											
SC-E2S-24VAC	<--->	24VAC	15	20	30	30	3	10	50	65			
SC-E2S-110VAC	<--->	110VAC											
SC-E2S-220VAC	<--->	220VAC											
SC-E2S-440VAC	<--->	440-480VAC											
SC-E2S-500VAC	<--->	500-550VAC											
SC-E2SG-24VDC	<--->	24VDC											
SC-E3-24VAC	<--->	24VAC	20	25	50	50	5	15	65	100			67
SC-E3-110VAC	<--->	110VAC											
SC-E3-220VAC	<--->	220VAC											
SC-E3-440VAC	<--->	440-480VAC											
SC-E3-500VAC	<--->	500-550VAC											
SC-E3G-24VDC	<--->	24VDC											
SC-E4-24VAC	<--->	24VAC	25	30	50	50	5	15	80	105			
SC-E4-110VAC	<--->	110VAC											
SC-E4-220VAC	<--->	220VAC											
SC-E4-440VAC	<--->	440-480VAC											
SC-E4-500VAC	<--->	500-550VAC											
SC-E4G-24VDC	<--->	24VDC											
SC-E5-24V	<--->	24VAC/VDC	30	30	60	75	7.5	15	105	150	10		88
SC-E5-100V	<--->	110VAC/VDC											
SC-E5-200V	<--->	220VAC/VDC											
SC-E5-400V	<--->	380-450VAC											
SC-E5-500V	<--->	460-575VAC											
SC-E6-24V	<--->	24VAC/VDC	40	40	75	100	10	20	125	150			100
SC-E6-100V	<--->	110VAC/VDC											
SC-E6-200V	<--->	220VAC/VDC											
SC-E6-400V	<--->	380-450VAC											
SC-E6-500V	<--->	460-575VAC											
SC-E7-24V	<--->	24VAC/VDC	50	50	100	125	15	25	150	200			115
SC-E7-100V	<--->	110VAC/VDC											
SC-E7-200V	<--->	220VAC/VDC											
SC-E7-400V	<--->	380-450VAC											
SC-E7-500V	<--->	460-575VAC											

Notes: 1. AC3 type loads consist of squirrel cage three-phase motors; occasional, limited jogging duty.
2. AC1 non-inductive or slightly inductive loads. Typically resistive loads (i.e. furnaces, ovens, etc.)

Fuji Duo Series SC-E Contactors

SC-E Series Contactors Specifications - IEC												
Contactor Type	Rated Capacity (kW)				Rated Operating Current (A)						Rated Thermal Current (A)	Internal Auxilliary Contact Arrange-ment
	3-Phase Motor AC-3 / AC-4				3-Phase Motor AC-3 / AC-4				Resistive Load AC-1			
	200-240V	380-440V	500-550V	600-690V	200-240V	380-440V	500-550V	600-690V	200-240V	380-440V		
SC-E02(G)-xxx	2.2 / 2.2	4 / 4	4 / NA	4 / NA	9 / 9	9 / 9	7 / NA	5 / NA	20	20	20	-
SC-E03(G)-xxx	3 / 3	5.5 / 5.5	5.5 / NA	5.5 / NA	12 / 12	12 / 12	9 / NA	7 / NA	20	20	20	-
SC-E04(G)-xxx	4 / 4	7.5 / 7.5	7.5 / NA	7.5 / NA	18 / 18	18 / 18	13 / NA	9 / NA	25	25	25	-
SC-E05(G)-xxx	5.5 / 4	11 / 7.5	11 / NA	7.5 / NA	25 / 18	25 / 18	17 / NA	9 / NA	32	32	32	-
SC-E1(G)-xxx	7.5 / 7.5	15 / 15	15 / NA	11 / NA	32 / 32	32 / 32	24 / NA	15 / NA	50	50	50	-
SC-E2(G)-xxx	11 / 11	18.5 / 18.5	18.5 / NA	15 / NA	40 / 40	40 / 40	29 / NA	19 / NA	60	60	60	-
SC-E2S(G)-xxx	15 / 11	22 / 18.5	25 / NA	22 / NA	50 / 40	50 / 40	38 / NA	26 / NA	65	65	65	-
SC-E3(G)-xxx	18.5 / 18.5	30 / 30	37 / NA	30 / NA	68 / 68	65 / 65	60 / NA	38 / NA	100	100	100	-
SC-E4(G)-xxx	22 / 18.5	40 / 30	37 / NA	37 / NA	80 / 68	80 / 65	60 / NA	44 / NA	105	105	105	-
SC-E5-xxx	30 / 30	55 / 55	5 5/ NA	55 / NA	105 / 105	105 / 105	85 / NA	64 / NA	150	150	150	2NO+2NC
SC-E6-xxx	37 / 37	60 / 60	6 0 / NA	60 / NA	125 / 125	125 / 125	90 / NA	72 / NA	150	150	150	2NO+2NC
SC-E7-xxx	45 / 45	75 / 75	75 / NA	90 / NA	150 / 150	150 / 150	120 / NA	103 / NA	200	200	200	2NO+2NC

Internal Auxiliary Contact Ratings

Internal Auxiliary Contact Ratings - UL and CSA						
Frame Size (note 1)	Rated Insulation Voltage (V)	NEMA ICS 5-2000 Ratings (note 2)				
		AC Ratings			DC Ratings	
		Designation	Making VA	Breaking VA	Designation	Making/Breaking VA
E5 to E7-xxx	690	A600	7200	720	Q300	69

Notes:
1. E02(G) to E4(G) do not have internal auxiliary contact.
2. NEMA ICS 5-2000. For more information, refer to Control Circuit Contact Electrical Ratings, see page 17-77.

Internal Auxiliary Contact Ratings - IEC, JIS									
Based on IEC 60974-4-1, EN 60947-4-1, JIS C 8201-4-1									
Frame Size (note 1)	Rated Insulation Voltage (V)	Rated Thermal Current (A)	Making and Breaking Capacity (A)		Rated Operational Current (A)				Minimum Operating Voltage and Current
			AC Voltage	Amps	AC Voltage	AC-15 (Ind. load)	DC Voltage	DC-13 (Ind. load)	
E5 to E7-xxx	690	10	120V	60	120V	6	24V	3	5VDC, 3mA
			220V	30	220V	3	48V	1.5	
			440V	15	440V	1.5	110V	0.55	
			600V	12	600V	1.2	220V	0.27	

Note 1: E02(G) to E4(G) do not have internal auxiliary contact.

Fuji Duo Series SC-E Contactors

Coil Characteristics

AC Coil Characteristics

Frame Size	Power Consumption (VA)		Power Loss (W)		Pick-Up Voltage (V)	Drop-Out Voltage (V)	Operating Time (ms)	
	Inrush	Sealed	50Hz	60Hz			Coil ON to Contact ON	Coil OFF to Contact OFF
	50/60Hz	50/60Hz						
E02 to E05-xxx	90/95	9/9	2.7	2.8	0.85 - 1.1 x U.S. rated coil voltage	0.2 - 0.75 x U.S. rated coil voltage	9-20	5-16
E1 to E2S-xxx	120/135	12.7/12.4	3.6	3.8	0.85 - 1.1 x U.S. rated coil voltage	0.2 - 0.75 x U.S. rated coil voltage	10-17	6-13
E3, E4-xxx	180/190	13.3/13.4	4.5	5	0.85 - 1.1 x U.S. rated coil voltage	0.2 - 0.75 x U.S. rated coil voltage	10-18	8-18
E5-xxx	80/95	4/4.6	3.2	3.6	0.85 - 1.1 x U.S. rated coil voltage	0.2 - 0.75 x U.S. rated coil voltage	39-45	27-33
E6, E7-xxx	190/230	4.9/5.8	3.4	3.7	0.8 - 1.1 x U.S. rated coil voltage	0.1 - 0.65 x U.S. rated coil voltage	31-37	30-36

DC Coil Characteristics

Frame Size	Power Consumption (W)		Pick-Up Voltage (V)	Drop-Out Voltage (V)	Operating Time (ms)	
	Inrush	Sealed			Coil ON to Contact ON	Coil OFF to Contact OFF
E02G to E05G-xxx	7	7	0.85 - 1.1 x U.S. rated coil voltage	0.1 - 0.75 x U.S. rated coil voltage	45-49	10-26
E1G to E2SG-xxx	9	9	0.85 - 1.1 x U.S. rated coil voltage	0.1 - 0.75 x U.S. rated coil voltage	40-50	8-17
E3G, E4G-xxx	12	12	0.85 - 1.1 x U.S. rated coil voltage	0.1 - 0.75 x U.S. rated coil voltage	60-70	14-21
E5-xxx	20	2.8	0.85 - 1.1 x U.S. rated coil voltage	0.1 - 0.75 x U.S. rated coil voltage	35-41	26-32
E6, E7-xxx	225	3.2	0.8 - 1.1 x U.S. rated coil voltage	0.1 - 0.65 x U.S. rated coil voltage	28-34	27-33

Operating Coil

AC Coil, SC-E02-xxx to SC-E4-xxx

Voltage Code	Coil Operating Voltage / Frequency
24VAC	24VAC 50Hz / 24-26VAC 60Hz
110VAC	100-110VAC 50Hz / 110-120VAC 60Hz
220VAC	200-220VAC 50Hz / 220-240VAC 60Hz
440VAC	415-440VAC 50Hz / 440-480VAC 60Hz
500VAC	480-500VAC 50Hz / 500-550VAC 60Hz

Operating Coil

AC/DC Coil (SUPERMAGNET), SC-E5-xxx to SC-E7-xxx

Voltage Code	Coil Operating Voltage / Frequency
24V	24-25VAC 50/60Hz; 24VDC
100V	100-127VAC 50/60Hz; 100-120VDC
200V	200-250VAC 50/60Hz; 200-240VDC
400V	380-450VAC 50/60Hz
500V	460-575VAC 50/60Hz

Operating Coil

DC Coil, SC-E02G-xxx to SC-E4G-xxx

Voltage Code	Coil Operating Voltage
24VDC	24VDC

Performance Data

Frame size	Making current (A)		Breaking current (A)		Operating cycles per hour	Durability (operations)	
	220V	440V	220V	440V		Electrical	Mechanical
SC-E02	108	108	90	90	1800	2 million	10 million
SC-E03	144	144	120	120	1800	1.5 million	10 million
SC-E04	216	216	180	180	1800	1.5 million	10 million
SC-E05	250	250	200	200	1200	1.5 million	10 million
SC-E1	384	384	320	320	1200	1.5 million	10 million
SC-E2	480	480	400	400	1200	1.5 million	10 million
SC-E2S	500	500	400	400	1200	1.5 million	10 million
SC-E3	816	780	680	650	1200	1.5 million	5 million
SC-E4	816	800	680	650	1200	1 million	5 million
SC-E5	1260	1260	1050	1050	1200	1 million	5 million
SC-E6	1500	1500	1250	1250	1200	1 million	5 million
SC-E7	1800	1800	1500	1500	1200	1 million	5 million

Fuji Duo Series SC-E Contactors

Standard operating conditions

The magnetic contactors are manufactured for use in the standard operating conditions given in the table.

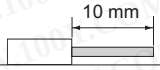
Standard Operating Conditions	
Ambient Temperature	Operating: -5 to 55°C No sudden temperature changes resulting in condensation or icing (The average temperature over a 24-hour period must not exceed 35°C) Storage: -40 to 65°C
Humidity	45 to 85%RH
Altitude	2000m or lower
Atmosphere	No excessive dust, smoke, corrosive gases, flammable gases, steam, or salt
Vibration	10 to 55Hz 15m/s^2
Shock	50m/s^2
Mounting	35mm IEC DIN rail mounting (SC-E02 to SC-E4), screw mounting
Mounting Angle	
Standard	IEC 947-4-1, EN 60947-4-1, VDE 0660 JIS C 8201-4-1, JEM 1038 UL 508, file E42419; CSA C22.2, file 20479

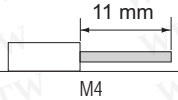
Wiring

Be sure to perform wiring correctly with reference to the wiring diagrams. Main terminals for models SC-E02 to SC-E7 are wired using solid wires or stranded wires. Stranded wires or flexible stranded wires can be connected by twisting them together and crimping a sleeve (ferrule) onto them before connecting.

Tightening torque

If wires are not tightened sufficiently, they may become hot or loosen, resulting in a fire, short-circuit, electric shock, or other potentially dangerous situation. Tighten wires to the torques specified in these tables.

Wire Sizes, Tightening Torques - Control Circuit		
Solid or Stranded Wire (mm^2)	***One***	0.75 to 2.5 (1 to 1.6 mm diameter)
	Two	0.75 to 2.5 (1 to 1.6 mm diameter)
AWG	***One***	18 to 14
	Two	18 to 14
Insulation Stripping Length		
Fork Terminal		Max. 7.7mm wide
Terminal Screw Size		M3.5
Tool		Phillips screwdriver, H-type, No. 2 (ISO 8764); ADC part number DN-SP1 or DN-SP2
		Flat-blade screwdriver, 1 x 5.5 x L-type, B (ISO 2830); ADC part number DN-SS5
Tightening Torque (N·m)		0.8 to 1

Wire Sizes, Tightening Torques - Main Circuit					
Contactor Type		***SC-E02-xxx***	***SC-E03-xxx***	***SC-E04-xxx***	***SC-E05-xxx***
Solid Wire (mm^2)	***One***	0.75 to 4		0.75 to 6	
	Two	1 to 4		1.5 to 6	
Stranded Wire (mm^2)	***One***	0.75 to 4		0.75 to 6	
	Two	1 to 4		1.5 to 6	
AWG	***One***	12 max.		10 max.	
	Two	12 max.		10 max.	
Insulation Stripping Length					
Terminal Screw Size		M4			
Tool		Phillips screwdriver, H-type, No. 2 (ISO 8764); ADC part number DN-SP1 or DN-SP2			
		Flat-blade screwdriver, 1 x 5.5 x L-type, B (ISO 2830); ADC part number DN-SS5			
Tightening Torque (N·m)		1.2 to 1.5			

Fuji Duo Series SC-E Contactors

Tightening torque (continued)

Wire Sizes, Tightening Torques - Main Circuit						
Contactor Type			***SC-E1, E2, E2S-xxx***	***SC-E3, E4-xxx***	***SC-E5, E6-xxx***	***SC-E7-xxx***
Top-Only Connection	***Solid or stranded wire (mm 2) 1***		0.75 to 35	1.5 to 70	4 to 70	4 to 120
	Flexible stranded wire with sleeve (mm 2) 1		0.75 to 25	1.5 to 50	2.5 to 50	2.5 to 95
	Flexible stranded wire without sleeve (mm 2)		0.75 to 25	1.5 to 50	4 to 50	4 to 95
	AWG		18 to 2	16 to 2/0	12 to 2/0	12 to 250MCM
	Solid or stripping length (mm)		15	19.5	26.5	28.5
Bottom-Only Connection	***Single stranded wire (mm 2) 1***		0.75 to 25	1.5 to 50	4 to 70	4 to 120
	Flexible stranded wire with sleeve (mm 2) 1		0.75 to 16	1.5 to 35	2.5 to 50	2.5 to 95
	Flexible stranded wire without sleeve (mm 2)		0.75 to 16	1.5 to 35	4 to 50	4 to 95
	AWG		18 to 3	16 to 1/0	12 to 2/0	12 to 250MCM
	Sheath stripping length (mm)		12.5	16	26.5	28.5
Top/Bottom Connection	***Solid or stranded wire (mm 2) 1***	***Top/ bottom***	0.75 to 25	1.5 to 50	4 to 70	4 to 120
	Flexible stranded wire with sleeve (mm 2) 1	***Top/ bottom***	0.75 to 16	1.5 to 35	2.5 to 50	2.5 to 95
	Flexible stranded wire without sleeve (mm 2)	***Top/ bottom***	0.75 to 16	1.5 to 35	4 to 50	4 to 95
	AWG	***Top/ bottom***	18 to 3	16 to 1/0	12 to 2/0	12 to 250MCM
Tool			Phillips screwdriver, H-type, No.2 (ISO 8764); ADC part number DN-SP1 or DN-SP2	Hex. wrench 4 (ISO 2936)		
			Flat-blade screwdriver, 1 x 5, 5xL-type, B (ISO 2830); ADC part number DN-SS5			
Tightening Torque (Nm)			2.5	8		10
Self-locking Torque (Nm) 2			1	2		

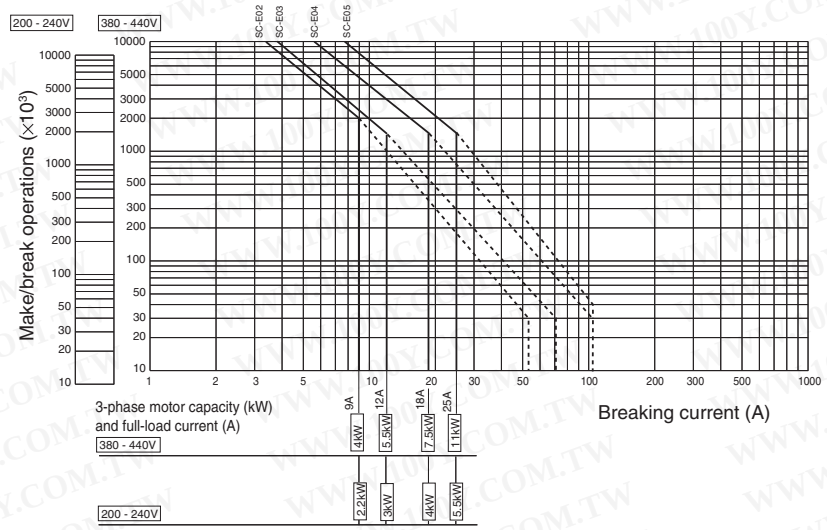
Note 1: Stranded wire (0 to 25mm^2) consists of 7 wires or less. Stranded wire (35 to 120mm^2) consists of 19 wires or less. Flexible stranded wire consists of more number wires than the above.

Note 2: The tightening bolt must be loosened in order to insert the wire. However, stop loosening the bolt when the anti-drop attachment on the bottom of the bolt reaches the top edge of the terminal. If a torque exceeding that given in the table is applied in this state, the retaining bracket may loosen.

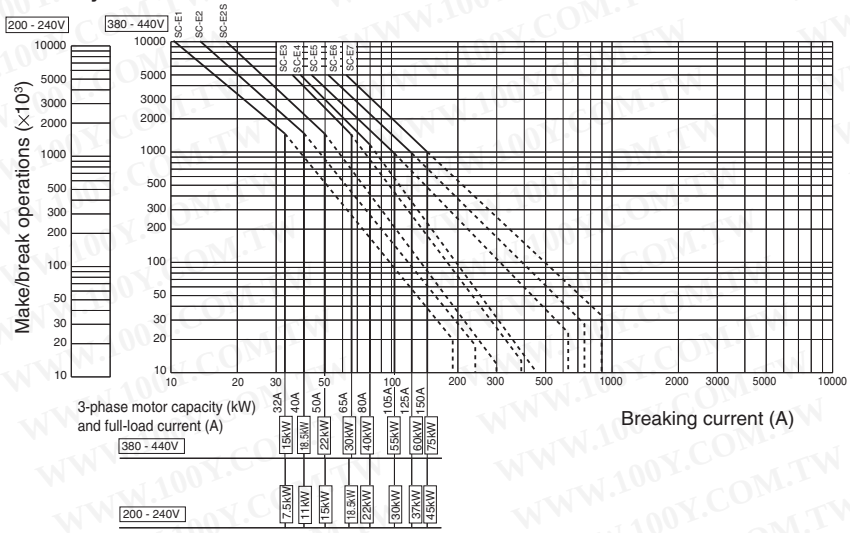
Fuji Duo Series SC-E Contactors

Electrical durability

AC-3 duty / SC-E02 to SC-E05-xxx



AC-3 duty / SC-E1 to SC-E7-xxx



AC-1 duty / SC-E02 to SC-E7-xxx