

To The Next Generation

Product Guide

A **Nidec** Group Company
COPAL ELECTRONICS
All for dreams

Switches

S : SMD type available
F : FUJISOKU's brand items

Dip rotary coded switches

S



S-4000
 ●Code: BCD
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC2.4V 100mA
 ●Contact resistance: 100mΩmax.
 ●Open
 ●Dimensions: □4.8x2.6mm

S



SA-7000
 ●Code: BCD, BCH
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC5V 100mA
 ●Contact resistance: 100mΩmax.
 ●Open
 ●Dimensions: □7.2x3mm

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S-7000
 ●Code: BCD, BCH
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC5V 100mA
 ●Contact resistance: 100mΩmax.
 ●Sealed
 ●Dimensions: □7.2x2.9mm

S



SH-7000
 ●Code: BCD, BCH
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC5V 100mA,
 ●Contact resistance: 100mΩmax.
 ●Gray code output available
 ●Sealed
 ●Dimensions: 7.3x7.1x3.75mm



S-1000A/2000A
 ●Code: BCD, BCH
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC5V 100mA
 ●Sealed
 ●Terminal pin layout 4-1
 ●Dimensions: □10x7mm

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SC-1000/2000
 ●Code: BCD, BCH
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC5V 100mA
 ●Sealed
 ●Terminal pin layout 4-1
 ●Dimensions: □10x3.9mm

S



SD-1000/2000
 ●Code: BCD, BCH
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC5V 100mA
 ●OPEN
 ●Terminal pin layout 3-3
 ●Heat resist knob type available (MTO)
 ●Dimensions: □10x3.9mm

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SA-5000
 ●Code: BCD, BCH
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC5V 100mA
 ●Sealed
 ●Integrated circuit: Pull-up
 resistors, diodes
 ●Dimensions: □11x9.5mm

Dip slide switches

S



CVS (1mm pitch)
 ●No. of bits: 1, 2, 3, 4, 8 bits
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC6V 100mA, DC24V 25mA
 ●Contact resistance: 200mΩmax.
 ●Open
 ●Dimensions: 4.7x2~9x1.45mm

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CHS (Half pitch)
 ●No. of bits: 1, 2, 4, 6, 8, 10 bits
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC6V 100mA, DC24V 25mA
 ●Contact resistance: 50mΩmax.
 ●Open / Tape seal
 ●Dimensions: 5.4x2.5~14.3x2.5mm

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CHP (Half pitch)
 ●No. of bits: 2, 4, 8 bits
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC6V 100mA, DC24V 25mA
 ●Contact resistance: 50mΩmax.
 ●Open
 ●Dimensions: 5.9x4.6~12.2x4.6mm

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S-8000
 ●Code: BCO
 ●SCS compatible
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC5V 100mA
 ●Sealed
 ●Dimensions: □7.2x3.9mm



RD
 ●Code: Binary code
 ●Contact rating: Switching 1VA,
 Max. current 1A, Max. voltage 30V
 ●Sealed
 ●Dimensions: 17.8x12x17.8mm

Slide switches

S



CFS (Full pitch)
 ●No. of bits: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 bits
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC6V 100mA, DC24V 25mA
 ●Contact resistance: 50mΩmax.
 ●Open / Tape seal
 ●Dimensions: 6.4x3.95~26.9x4.5mm

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CFP (Full pitch)
 ●No. of bits: 2, 4, 6, 8 bits
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC8V 100mA, DC24V 25mA
 ●Contact resistance: 50mΩmax.
 ●Open
 ●Dimensions: 8.6x7.5~22.8x6.7mm

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CYP (Full pitch, Low profile)
 ●No. of bits: 2, 4, 6, 8, 10 bits
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC8V 100mA, DC24V 25mA
 ●Contact resistance: 100mΩmax.
 ●Open / Tape seal
 ●Dimensions: 6x6.48~26.8x5mm

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CES (Full pitch, Tall profile)
 ●No. of bits: 2, 4, 6, 8 bits
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC6V 100mA, DC24V 25mA
 ●Contact resistance: 50mΩmax.
 ●Open
 ●Dimensions: 10x7.66~22.9x10mm

Slide switches

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CJS
 ●Ideal for replacing jumper pins
 ●Structure of circuit: SPDT
 (with neutral detent type available)
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC8V 100mA, DC24V 25mA
 ●Contact resistance: 100mΩmax.
 ●Open / Tape seal
 ●Dimensions: 2.5x5.4~6x2.5mm

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CAS
 ●Ideal for replacing jumper pins
 ●Structure of circuit:
 SPDT/2PDT/Dual SPDT
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC6V 100mA, DC24V 25mA
 ●Contact resistance: 50mΩmax.
 ●Open / Tape seal
 ●Dimensions: 2.5~3.9x5.4x2.5mm



CL-SA
 ●Ideal for replacing jumper pins
 ●Continuous mountable with 2.54mm pitch
 ●Structure of circuit: SPDT
 ●Contact rating:
 Non-switching DC50V 500mA,
 Switching DC12V 500mA
 ●Contact resistance: 22mΩmax.
 ●Terminal style: PC, PC-R/A ●Open
 ●Dimensions: 2.54x10x4.5mm

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CL-SB
 ●Wide variety 48 types, silver/gold contact
 ●Structure of circuit:
 SPDT/SP3T/2PDT/2P3T
 ●Contact rating: Non-switching
 DC50V 200mA, Switching DC12V 200mA
 ●Contact resistance:
 Silver 50mΩmax./Gold 70mΩmax.
 ●High frequency available ●Open
 ●Dimensions: 3.5x8.5~12x3.5mm

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CRFS
 ●High frequency: DC ~1.0GHz
 ●Structure of circuit: 2PDT/2P3T
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC12V 100mA
 ●Contact resistance: 70mΩmax.
 ●Open
 ●Dimensions: 6~6.5x10~13.8x8.5mm

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CMS
 ●Structure of circuit:
 2PDT/2P3T/2P4T/4PDT
 ●Contact rating:
 Non-switching DC50V 100mA,
 Switching DC12V 100mA
 ●Contact resistance: 70mΩmax.
 ●Open
 ●Dimensions: 5x10.8~17.8x3.5mm

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CUS (1.4 mm low-profile slide SW)
CSS (2.0 mm low-profile slide SW)
 ●Structure of circuit: SPDT/SP3T/
 2P4T(CUS)/4PDT(CUS)
 ●Contact rating: Non-switching
 DC50V 100mA, Switching DC4V
 300mA(CUS), DC12V 100mA(CSS)
 ●Contact resistance: 70mΩ max.
 ●Open

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ASE/AS
 ●High reliability by twin-contact clip
 ●Structure of circuit: SPDT, 2PDT
 ●Contact rating:
 Switching AC/DC48V 50mA
 ●Contact material: gold
 ●Sealed(ASE)/Open(AS)
 ●UL approved
 ●Dimensions: 5x9.5x10.8mm

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BSS
 ●High reliable power supply switch
 ●Structure of circuit: SPDT, 2PDT
 ●Contacts material: silver/gold(MTO)
 ●Contact rating: Switching AC125V 6A,
 AC250V 3A, DC30V 4A / DC20V 25mA
 ●For panel mounting or PCB
 ●UL approved
 ●Dimensions: 7.9~12.1x13x8.5mm

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HSS
 ●Structure of circuit:
 SPST/SPDT/2PST/2PDT
 ●Contact rating: Switching
 AC125V 12A, AC250V 6A (1pole)
 AC125V 8A, AC 250V 5A (2poles)
 ●For panel mounting
 ●Dimensions: 15x21x16.8mm

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ES
 ●Structure of circuit:
 SPST/SPDT/2PDT
 ●Contact rating: Switching
 AC125V 25A, AC250V 25/12A
 AC125V 15A, AC250V 15/7A
 ●For panel mounting
 ●Dimensions: 16x28.8x15.8mm (1pole),
 19.3x33x19.9mm (2poles)

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SS220K-23

- High inrush: 70A
- Structure of circuit: 2PST
- Contact rating: Switching AC250V 20A
- For built-in use (ex. Electrical tools)
- Melting protection structure
- Dimensions: 14x27.5x19.8mm

Rotary selector switches

S

CS-32

- Structure of circuit: SP2T
- Contact rating: Switching 0.5VA, Max. current 100mA, Max. voltage 16V
- Contact resistance: 2Ωmax.
- Sealed
- Dimensions: 3.4x3.4x2mm

S

CS-4

- Structure of circuit: SPDT/SP3T/2PDT
- Contact rating: Switching 0.5VA, Max. current 100mA, Max. voltage 16V
- Contact resistance: 100mΩmax.
- Sealed
- Dimensions: 5x4.5x2.3mm

S

CS-7

- Structure of circuit: SP4T
- Contact rating: Non-switching DC50V 100mA, Switching DC5V 100mA
- Contact resistance: 100mΩmax.
- Sealed
- Dimensions: 7.3x7.1x3.75mm

SS-10

- Structure of circuit: SP4T/SP5T/SP6T/2P3T3
- Contact rating: Non-switching DC50V 100mA, Switching DC5V 100mA
- Contact resistance: 100mΩmax.
- Sealed
- Dimensions: 10x10x7mm



RS/RG

- Structure of circuit: 1~3 poles 2~12 contacts, 4~6 poles 2~6 contacts
- Contact rating: Switching 1VA, Max. current 1A, Max. voltage 30V
- Contact resistance: 100mΩmax.
- Sealed
- Dimensions: 17.8x12x17.8mm (1block)

F

MRE/MR

- Structure of circuit (poles-contacts): 1-10/2-5/3-3/4-2 [36deg. steps], 1-12/2-6/3-4/4-3 [30deg. steps]
- Contact Rating: Switching AC125V 500mA
- UL94V-0 housing
- Wiping contact mechanism
- Variable stopper(MR) Panel seal(MRE)
- Dimensions: φ16x14.5~15.3mm

F

MRB

- Structure of circuit: SP3T
- Step angle: 45 deg. steps
- Contact Rating: Switching 0.4VA, Max. voltage DC12V
- Twin contact type
- Gold contacts (for use in dry circuit)
- Completely sealed
- Dimensions: □15.8x11mm

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SRF

- Structure of circuit: SPDT [90deg. steps], SP3T/SP4T [45deg. steps]
- Contact Rating: Switching AC125V 6A, AC250V 3A(SPDT, SP3T) AC125V 3A, AC250V 1A(SP4T)
- Dimensions: φ28x18.5~20mm

F

MRP

- Pulse switches
- Structure of circuit: 1pole-20pulses
- Contact Rating: Switching DC5V 10mA
- Gold contacts
- R/A terminal type available
- Dimensions: □10.6x7.5mm

Push-button switches (Illuminated type)

F

CFPB

- Full surface illumination by LED
- Structure of circuit: SPST
- Contact rating: Switching DC5V 5mA, DC20V 1mA
- Soft operating feel
- Wide variety of key-top dimensions: □6mm □9mm □11mm □12mm
- Dimensions: □9.9~14.8x2~14mm

F

13AL/13BL

- Full surface illumination by LED
- Structure of circuit: SPST
- Contact rating: Switching DC5V 5mA, DC20V 1mA
- Wide variety of illumination color & key-top dimensions
- Dimensions: □12~15x20mm (13AL), □9.9~16.6x20mm (13BL)

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15EL/15GL

- Full surface illumination by LED
- Structure of circuit: SPST
- Contact rating: Switching DC5V 5mA, DC20V 1mA
- With concave face shape clear button-cover available (15GL)
- Dimensions: 15x14x20mm (15GL), 15x14x22.2mm (15EL)

F

TM/TR

- Structure of circuit: SPST
- Contact Rating: Switching DC12V 10mA(TR), 1VA(TM), Max. voltage DC48V, current 50mA(TM)
- Metal contact: silver/gold plated(TM) Rubber contact: gold plated(TR)
- Wide variety of button color
- Dimensions: 5.9~10.5x7~11.5x9mm

F

LTM/LTR

- Full surface illumination by LED
- Structure of circuit: SPST
- Contact Rating: Switching DC12V 10mA(LTR), 1VA(LTM), Max. voltage DC48V, current 50mA(LTM)
- Metal contact: silver/gold plated(LTM) Rubber contact: gold plated(LTR)
- Dimensions: □6x5.5mm *miniature-size

F

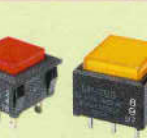
LTM3

- Structure of circuit: SPST
- Contact Rating: Switching 1VA, Max. voltage DC48V, current 50mA
- Contact material: silver/gold
- For panel Snap-in mounting
- Connector terminal
- Sharp operating feel
- Dimension: 12x11.5x13.5mm

F

TP/TPL

- Structure of circuit: 2PDT
- Contact Rating: Switching DC30V 0.1A
- Contact material: silver/gold
- Lock (stroke: 1mm) / Non-lock (stroke: 1.5mm)
- Wide variety of color buttons
- Dimensions: 8.5x7.5x6.5mm

F

LP1/LP2

- Structure of circuit: SPDT/2PDT
- Contact Rating: Switching AC125V 3A, AC250V 0.5A, DC30V 3A(silver contacts) AC/DC48V 50mA(gold contacts)
- Single LED/Dual color LED
- For panel Snap-in mounting or PCB
- UL, CSA approved (single LED)
- Dimensions: 15.2~19x15.2x12.5mm

F

DP

- Structure of circuit: SPST/4PST
- Contact Rating: Switching DC24V 50mA
- Self-cleaning contact mechanism
- Light operating feel
- Wide variety of size, button & LED color
- Dimensions: 12~17.4x12.4~17.4x8.3~10.2mm

F

CLP44

- No contact point and long-life 10 million times
- Super-high brightness monochromatic/bicolor single/dual LED illuminated
- Large button (φ28mm)
- Short structure, 29mm panel below
- Dimension: φ29.6x29mm

Push-button switches (Non-illuminated type)

F S

SMT1/TME1

- Structure of circuit: SPST
- Contact rating: Switching 1VA, Max. Voltage DC48V, current 50mA
- Contact material: silver/gold
- Immersion washable type
- Static electricity-proof (SMTE3)
- Dimensions: □7.5x3mm

F S

SMT3/SMTE3

- Structure of circuit: SPST
- Contact rating: Switching 0.6VA, Max. Voltage DC24V, current 30mA
- Contact material: silver/gold
- Immersion washable type (SMTE3)
- Static electricity-proof (SMTE3)
- Dimensions: □6.8x2.5mm

F S

CF-CA

- Right angle tactile switches
- Structure of circuit: SPST
- Contact rating: Switching 1VA, Max. Voltage DC32V, current 50mA
- Contact material: silver/gold
- Wide variety of button length
- Dimensions: 3.8x6.7x7mm

F S

CFPA

- Structure of circuit: SPDT
- Contact rating: Switching 1VA, Max. Voltage DC28V
- Contact material: gold
- Immersion washable type
- Highly reliable twin-contact clip
- Dimensions: 6.95x8.5x5.3mm

F S

SMAP

- Structure of circuit: SPDT/2PDT
- Contact rating: Switching 0.4VA, Max. Voltage DC28V
- Contact material: gold
- Immersion washable type
- Highly reliable twin-contact clip
- Dimensions: 8.35x11.75x5mm

F

FP/CFP2

- Ultra-compact type
- Structure of circuit: SPDT/2PDT
- Contact rating: Switching 0.4VA AC/DC, Max. Voltage 28V
- Contact material: gold
- Washable
- PC, R.A. and V.M. terminals, Straight terminals type (CFP2)
- Dimensions: 4.5x7x5.4mm

F

APE/AP

- High reliability by twin-contact clip
- Structure of circuit: SPDT/2PDT
- Contact rating: Switching 0.4VA AC/DC, Max. voltage AC/DC48V, current 50mA
- Contact material: gold
- Washable
- PC and R.A. terminals
- UL approved (APE)
- Dimensions: 5x9.5x8mm

F

SP/SPP/SP2

- Structure of circuit: SPST/SPDT/2PST/2PDT
- Contact rating: Switching AC125V 3/10A, AC250 1/6A
- Wide variety of button styles
- UL, CSA approved models available
- Dimensions: 14.5x26x15.7mm

F

SP101

- Structure of circuit: SPST/SPDT
- Contact rating: Switching DC30V 60mA
- Sharp and light operating feel
- Contact material: gold
- For panel Snap-in mounting or PCB
- Dimensions: 10.5x20x11mm

F

SPC103

- Structure of circuit: SPDT
- Contact rating: Switching AC125V/AC250V/DC30V 3A
- Sharp and light operating feel
- Wide variety of button colors
- For panel Snap-in mounting or PCB
- Dimensions: □18x14.8mm

F**B series**

- High reliable power supply switch
- Structure of circuit: 1-4PDT
- Contact rating: Switching AC125V 6A, AC250V 3A, DC30V 4A / DC20V 25mA
- Contacts material: silver/gold(MTO)
- For panel mounting or PCB
- Dimensions: 13x8-22.6x11.7-19.8mm
- UL, CSA approved models available
- Self-extinguishing resin housing
- Wide variety of button styles
- Panel water proof type (8P) *class IP64
- Light and soft operating feel by snap action construction (8R-n/8W-n)
- Snap-in panel mounting type (8W-n)

Detect switches**S****CL-DA**

- Structure of circuit: SPST
- Contact rating: Switching DC12V 100mA
- Contacts material: gold
- Direction for operation: side
- Used in A-TCA standard package
- Dimensions: 4x5.7x2mm

S**CL-DB**

- Structure of circuit: SPST
- Contact rating: Switching DC5V 1mA
- Contacts material: gold
- Direction for operation: top or side
- Used in μ-TCA standard package
- Dimensions: 2.5x3.5x1.95mm

F**SPB101**

- Structure of circuit: SPST
- Contact rating: Switching DC48V, 50mA
- Contacts material: silver/gold
- Long stroke: 5mm
- Snap-in panel mounting
- Connector terminal
- Dimensions: 9x13.3x12.5mm

Toggle switches**F****FT/CFT2**

- Ultra-compact type
- Structure of circuit: SPDT/2PDT
- Contact rating: Switching 0.4VA, Max. Voltage 28V
- Contact material: gold ● Washable
- PC, R.A. and V.M. terminals, Straight terminals type (CFT2)
- Dimensions: 4.5x7x5.4mm

F**ATE/ATLE**

- High reliability by twin-contact clip
- Structure of circuit: SPDT/2PDT/4PDT
- Contact rating: Switching 0.4VA AC/DC, Max. voltage AC/DC48V, current 50mA
- Contact material: gold ● Washable
- Lever lock type: ATLE
- UL approved (except with cap type)
- Dimensions: 5x9.5x8mm (ATE)

F S**CF-TA**

- Through hall reflow toggle SW (R/A)
- Structure of circuit: SPDT
- Contact rating: Switching AC/DC 48V 50mA
- Contact material: gold
- Lever-lock type available
- Dimensions: 8x9.5x5mm

F**BT**

- Structure of circuit: SPDT/DPDT
- Contact rating: Switching AC/DC 20V 50mA
- Contact material: gold
- Insulation resistance: 10000MΩ min.
- Dimensions: 7.6-12.7x15.8x8.5mm

F**STE115**

- High inrush: 90A
- Structure of circuit: SPST/SPDT
- Contact rating: Switching AC125V 15A, AC250V 8A
- UL, CSA, TÜV approved
- Dimensions: 14x22.5x19.5mm

F**ET**

- Structure of circuit: 1-4FST/1-4PDT
- Contact Rating: Switching AC125V 30-3A, AC250V 25-2A
- UL, CSA approved models available
- Self-extinguishing resin housing
- For panel mounting
- Dimensions: 16-57x25.5-33.5x14.5-29.2mm

F**B series**

- High reliable power supply switch
- Structure of circuit: 1-4PDT
- Contact rating: Switching AC125V 6A, AC250V 3A, DC30V 4A / DC20V 25mA
- Contacts material: silver/gold(MTO)
- For panel mounting or PCB
- Dimensions: 13x7.9-22.6x9-11.3mm

- UL, CSA approved models available
- Self-extinguishing resin housing
- Wide variety of actuator styles
- Panel water proof type (8P) *class IP64
- Lever-lock type (8E)
- Washable type (8G)

Lever rocker switches**F****FL**

- Ultra-compact type
- Structure of circuit: SPDT/2PDT
- Contact rating: Switching 0.4VA, Max. Voltage 28V
- Contact material: gold ● Washable
- PC, R.A. terminals
- Dimensions: 4.5x7x5.4mm

F**ALE**

- High reliability by twin-contact clip
- Structure of circuit: SPDT/2PDT
- Contact rating: Switching 0.4VA AC/DC, Max. voltage AC/DC48V, current 50mA
- Contact material: gold ● Washable
- PC and R.A. terminals
- UL approved
- Dimensions: 5x9.5x8mm

F**CL-LA**

- High inrush: 160A
- Structure of circuit: SPST/2PST
- Contact rating: Switching AC125V 16A, AC250V 16A
- Wide variety of terminal styles (5 kinds)
- Snap-in panel mounting
- C-US UL, UL(TV-6), ENEC approved
- Dimensions: 12.5x27.8x17.8mm

F**SLE6/SLE10(Dust proof)**

- Structure of circuit: SPST/SPDT
- Contact Rating: Switching AC125V 6A, AC250V 4A (SLE6) AC125V 10A, AC250V 5A (SLE10)
- Snap-in panel mounting
- With rubber cover types available
- C-US UL, CSA, VDE, SEMKO approved
- Dimensions: 11.4x18.8x12.5mm

F**SL10K/SLE10K**

- High inrush: 100A (SL10K)
- Panel water proof (SLE10K) *class IP64
- Structure of circuit: 2PST
- Contact Rating: Switching AC125V 10A, AC250V 6A
- Snap-in panel mounting
- UL, CSA, VDE approved
- Dimensions: 12.4x18.8x13mm

F**SLE210K(Dust proof)**

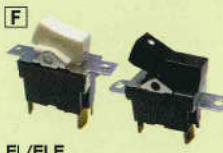
- High inrush: 100A
- Structure of circuit: 2PST
- Contact Rating: Switching AC125V 10A, AC250V 10A
- Snap-in panel mounting
- C-US UL, VDE, SEMKO approved
- Dimensions: 12.4x19x13mm

F**SLA215K**

- Structure of circuit: 2PST
- Contact Rating: Switching AC125V 15A, AC250V 15A
- Enhanced isolation structure
- Snap-in panel mounting
- UL, CSA, ENEC approved
- Dimensions: 15x21x19.3mm

F**ELE120(Dust proof)**

- High inrush: 120A
- Structure of circuit: SPST
- Contact rating: Switching AC125V 20A, AC250V 12A
- Self-extinguishing resin housing
- For panel snap-in mounting
- UL, CSA, VDE, SEMKO approved
- Dimensions: 14x22.5x19.5mm

F**EL/ELE**

- Structure of circuit: 1-2P1-2T
- Contact Rating: Switching AC125V 25/20/15/10A, AC250V 25/15/12/7A
- Self-extinguishing resin housing
- For panel snap-in mounting
- UL, CSA, VDE, SEMKO approved
- Dimensions: 16-19.3x29-33x22-23.6mm

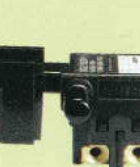
F**HLS**

- Structure of circuit: SPST/2PST/3PST
- Contact Rating: Switching AC125V 8A, AC250V 5A, AC125V 12A, AC250V 6A
- Self-extinguishing resin housing
- For panel snap-in mounting
- UL, CSA approved
- Dimensions: 15-25x21-28x9-21.5mm

F**B series**

- High reliable power supply switch
- Structure of circuit: 1-4PDT
- Contact rating: Switching AC125V 8A, AC250V 3A, DC30V 4A / DC20V 25mA
- Contacts material: silver/gold(MTO)
- Dimensions: 13x8-22.6x9-17.5mm

- UL, CSA approved models available
- Self-extinguishing resin housing
- Wide variety of actuator styles
- For panel mounting or PCB
- Dust proof type (8P)
- Snap-in panel mounting type (8H/8HD)

Trigger switches (Custom products)**F****SGEL115CDY-1-Z(Dust proof)**

- Structure of circuit: SPST
- Contact Rating: Switching AC125V 15A, AC250V 7.5A
- Lock-pin mechanism

F**SGE110F(Dust proof)**

- Structure of circuit: 2PDT
- Contact Rating: Switching DC12V 20A
- Built-in brake circuit terminals
- Rotational direction changeover lever

F**SGEL115F-A-Z(Dust proof)**

- Structure of circuit: SPDT
- Contact Rating: Switching AC125V 15A, AC250V 10A
- Lock-pin mechanism

F**SGEL108/106CV-A-Z(Dust proof)**

- Structure of circuit: SPDT
- Contact Rating: Switching AC125V 8A (SGEL108), AC250V 6A (SGEL106)
- Variable speed control (Trigger stroke adjustable)

F**SGEL106CVR-A-Z(Dust proof)**

- Structure of circuit: 3PDT
- Contact Rating: Switching AC250V 6A
- Rotational direction changeover lever
- Variable speed control

Trimmer potentiometers

S : SMD type
T : Through hole pin type



ST-2
● Adjustment turns: 1 turn
● Sealed
● Resistance range: 100~1MΩ
● Resistance tolerance: ±20%
● Power rating: 0.1W(70°C), 0W(125°C)
● Dimensions: 2.4x1.7x2.8mm



ST-32
● Adjustment turns: 1 turn
● Sealed
● Resistance range: 10~2MΩ
● Resistance tolerance: ±20%
● Power rating: 0.125W(70°C), 0W(125°C)
● Dimensions: 3.4x2.0x3.4mm



ST-4/ST-42
● Adjustment turns: 1 turn
● Sealed
● Resistance range: 10~2MΩ
● Resistance tolerance: ±20%
● Power rating: 0.25W(70°C), 0W(125°C)
● Dimensions: 5.0x2.3x4.5mm



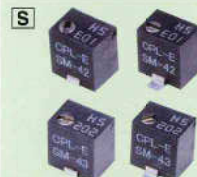
ST-5
● Adjustment turns: 14 turns
● Sealed
● Resistance range: 10~2MΩ
● Resistance tolerance: ±10%
● Power rating: 0.25W(85°C), 0W(125°C)
● Dimensions: 6.75x4.3x6.0mm



ST-7
● Adjustment turns: 3 turns
● Sealed
● Resistance range: 50~1MΩ
● Resistance tolerance: ±20%
● Power rating: 0.25W(70°C), 0W(125°C)
● Dimensions: 6.4x3.4x6.1mm



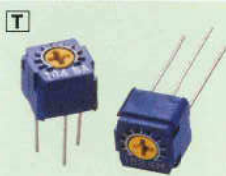
SM-3/SM-31
● Adjustment turns: 11 turns (SM-3) / 5 turns (SM-31)
● Sealed
● Resistance range: 50~2MΩ
● Resistance tolerance: ±20%
● Power rating: 0.125W(70°C), 0W(150°C)
● Dimensions: 3.2x3.9x3.9mm



SM-42/SM-43
● Adjustment turns: 11 turns (SM-42) / 5 turns (SM-43)
● Sealed
● Resistance range: 10~2MΩ
● Resistance tolerance: ±10%
● Power rating: 0.25W(85°C), 0W(150°C)
● Dimensions: 3.9x5.3x4.8mm



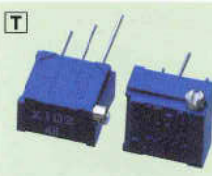
FT-63
● Adjustment turns: 1 turn
● Sealed
● Resistance range: 10~2MΩ
● Resistance tolerance: ±10%
● Power rating: 0.5W(70°C), 0W(125°C)
● Dimensions: 7.0x5.8x7.0mm



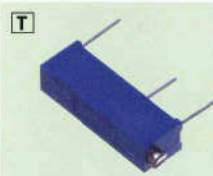
CT-6
● Adjustment turns: 1 turn
● Sealed
● Resistance range: 10~2MΩ
● Resistance tolerance: ±10%
● Power rating: 0.5W(70°C), 0W(125°C)
● Dimensions: 7.0x5.8x7.0mm



CT-94
● Adjustment turns: 18 turns
● Sealed
● Resistance range: 10~2MΩ
● Resistance tolerance: ±10%
● Power rating: 0.5W(70°C), 0W(125°C)
● Dimensions: 4.8x9.6x9.6mm



CT-9
● Adjustment turns: 18 turns
● Sealed
● Resistance range: 10~2MΩ
● Resistance tolerance: ±10%
● Power rating: 0.5W(70°C), 0W(125°C)
● Dimensions: 5.5x9.6x9.6mm



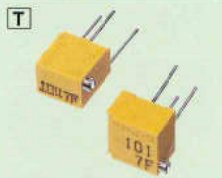
CT-20
● Adjustment turns: 15 turns
● Sealed
● Resistance range: 10~5MΩ
● Resistance tolerance: ±10%
● Power rating: 0.5W(70°C), 0W(125°C)
● Dimensions: 5.0x6.4x19mm



TM-7
● Adjustment turns: 3 turns
● Sealed
● Resistance range: 50~2MΩ
● Resistance tolerance: ±10%
● Power rating: 0.5W(70°C), 0W(125°C)
● Dimensions: φ7.2x6.9mm



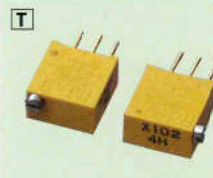
RJ-4
● Adjustment turns: 1 turn
● Sealed
● Resistance range: 10~2MΩ
● Resistance tolerance: ±10%
● Power rating: 0.5W(70°C), 0W(120°C)
● Dimensions: φ4.9x4.5mm



RJ-5
● Adjustment turns: 14 turns
● Sealed
● Resistance range: 10~2MΩ
● Resistance tolerance: ±10%
● Power rating: 0.25W(85°C), 0W(125°C)
● Dimensions: 4.3x6.75x6.0mm



RJ-6
● Adjustment turns: 1 turn
● Sealed
● Resistance range: 10~5MΩ
● Resistance tolerance: ±10%
● Power rating: 0.5W(70°C), 0W(125°C)
● Dimensions: φ7.0x5.8mm



RJ-9
● Adjustment turns: 18 turns
● Sealed
● Resistance range: 10~5MΩ
● Resistance tolerance: ±10%
● Power rating: 0.5W(70°C), 0W(125°C)
● Dimensions: 4.7x9.7x9.0mm



RJ-13
● Adjustment turns: 1 turn
● Sealed
● Resistance range: 10~5MΩ
● Resistance tolerance: ±10%
● Power rating: 0.75W(70°C), 0W(125°C)
● Dimensions: φ12.4x6.3mm

Attenuators, Mixed signal devices, Circuit protectors

High frequency attenuators



E-TA3216/E-TA2012
● Thermal variable attenuators
● Attenuation: 1~5dB (E-TA3216), 1~10dB (E-TA2012)
● Impedance: 50Ω
● VSWR: Less than 1.7 (E-TA3216 DC~2GHz), Less than 1.3 (except as stated above)
● Frequency: DC~3GHz
● Rated power: 100mW (E-TA3216), 63mW (E-TA2012)



T2114
● Step type variable attenuators
● For speech equipments of 600Ω
● Corresponds to the unbalanced circuit/balanced circuit
● Attenuation: 0.5~8dB (15.5dB total), 1~16dB (31dB total)
● Impedance: 600Ω
● Frequency: DC~150kHz
● Rated power: 50mW

Digital potentiometers



DP series
● Digital controllable potentiometers
● Automatic adjustment possible by automatic adjustment
● Non-volatile wiper storage
● Low power CMOS technology
● Number of taps: 16/32/64/100/128/256
● Package: SC70/SOT-23/MSOP/SOIC/TSSOP/TDFN

White LED drivers



W series
● Driver ICs for activating white LEDs
● Small size and low-profile package
● Available types: 1. Simple LED activation
2. Individual activation of 4 separate LEDs,
3. Activation of grouped 6 LEDs
● Applications: Lighting for automotive instrument panel, Camera flash, LCD/Keypad backlighting for hand-held electronics devices
● Package: SOIC/SOT-23/MSOP/TDFN/DFN

Resettable circuit protectors



C-FAP series
● Fast response (less than 1μsec)
● Wide bandwidth (fc=3GHz)
● Small SMD package (DFN)
● Small energy consumption (100nJ)
● UL approved
● Max. trigger current(I trigger max.): 50/100/200/300/500mA
● Max. impulse voltage(V imp): 250/400/500/650/850V



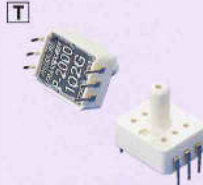
PRCP series
● Polymer PTC Thermistors
● Quick rising edge at trip point
● UL, CSA, TUV approved
● Max. rated voltage(V max.): 6.0~72 V
● Hold current: 0.05~13A, Trip current: 0.1~24A
● Max. rated current(I max.): 10~100A
● Min. resistance value(R min.): 0.003~7.3 Ω



CR-CP series
● Ceramic PTC Thermistors
● Quick rising edge at trip point
● Operated more than 100,000 times repeatedly
● Max. rated voltage(V max.): 16 V *low operating voltage
● Hold current: 470~1550mA, Trip current: 880~2860mA
● Max. rated current(I max.): 2~10A
● Resistance: 0.15~1.0Ω *low resistance

Pressure sensors

Pressure transducers (without Amp.)



P-2000
 ● 0~9.81, ~981kPa, Gauge
 ● Media: non-corrosive gases
 ● Output: 90±40mV
 ● Power: 1.5mADC
 ● Dimensions: 12x11x12.5mm



P-3000S
 ● 0~4.9, ~9.81, ~49, ~98.1, ~490, ~885kPa, Gauge, ±49, ±98.1kPa, Differential, 0~34.3, ~98.1kPa, Absolute
 ● Media: non-corrosive gases
 ● Output: 100±30mV
 ● Power: 1.5mADC
 ● Dimensions: □15x21.5mm □17x30.5mm



P-8300
 ● 0~49, ~98.1, ~343, ~981kPa, Gauge, 0~34.3, ~98.1kPa, Absolute
 ● Media: gases and liquids
 ● Output: 100±50mV
 ● Power: 1.5mADC
 ● Dimensions: φ23.5x23.2/10.8mm



P-8505
 ● 0~49, ~100, ~350, 1000kPa, Gauge
 ● Media: gases and liquids
 ● Output: 90±10mV
 ● Power: 1.5mADC
 ● Dimensions: φ20×15.3mm



P-8600
 ● 0~5, ~10, ~20, ~30MPa, Gauge
 ● Media: gases and liquids
 ● Output: 40±5mV
 ● Power: 5VDC
 ● Dimensions: φ12.7x25.5mm

Pressure transducers (with Amp.)



PA-20
 ● 0~100kPa, Gauge, -100~300kPa, Compound
 ● Media: non-corrosive gases
 ● Output: 1~5VDC
 ● Power: 12~24VDC
 ● Dimensions: 10x25.5x20.5mm



PA-100
 ● 0~1, ~2~5kPa, Gauge, ±1, ±2, ±5kPa, Differential
 ● Media: non-corrosive gases (*for low differential pressure)
 ● Output: 0.5~4.5V
 ● Power: 5VDC
 ● Dimensions: 22.5x25x18.1mm



PA-110
 ● 0~100kPa, Differential
 ● Media: non-corrosive gases
 ● Output: 0.5~4.5V
 ● Power: 5VDC
 ● Dimensions: 33x64x55mm



PA-500
 ● 0~49, ~98.1, ~343, ~490, ~981kPa, ~9.81kPa, Gauge
 ● Media: gases and liquids
 ● Output: 1~5V
 ● Power: 12~24VDC
 ● Dimensions: φ28x49.7mm



PA-708
 ● 0~100, ~300, ~600kPa, Compound
 ● Media: gases and liquids
 ● For ultra high purity aggressive fluids (*PFA pressure port)
 ● Output: 1~5V ● Power: 12~24VDC
 ● Dimensions: φ45x98mm



PA-750/758
 ● 0~100, ~350kPa, ~1, ~3.5MPa, ~100kPa, Gauge, ~100, ~300kPa, Compound, 0~100kPa, Absolute
 ● Media: Gases and liquids
 ● Output: 1~5V/4~20mA
 ● Power: 10.8~30VDC, 24VDC
 ● Dimensions: φ23.5x61.6/63.5mm



PA-800
 ● 0~98.1, ~343, ~981, ~98.1kPa, Gauge
 ● Media: gases and liquids
 ● Output: 1~5V
 ● Power: 12~24VDC
 ● Dimensions: φ28x50.2mm



PA-838-D
 ● 0~10, ~50, ~100kPa, Differential
 ● Media: gases and liquids
 ● Output: 4~20mA
 ● Power: 24VDC
 ● Dimensions: 40x70x79.5mm



PA-853
 ● 0~100, ~350, ~1000, ~100kPa, Gauge
 ● Media: gases and liquids
 ● Output: 1~5V
 ● Power: 12~24VDC
 ● Dimensions: φ23x60mm



PA-830/838
 ● 0~49, ~98.1, ~981kPa, Gauge (PA-838), 0~9.81, ~49, ~98.1, ~343, ~98.1kPa, ~98.1, Gauge, 0~34.3, ~98.1, absolute (PA-830)
 ● Media: gases and liquids
 ● Output: 1~5V/4~20mA
 ● Power: 12~24VDC/24VDC
 ● Dimensions: φ30x55~59mm



PA-850/858
 ● 0~100, ~350, ~1000, ~100kPa, Gauge, ~100~300kPa, Compound, 0~100kPa, absolute
 ● Media: gases and liquids
 ● Output: 1~5V with 1 switch/4~20mA
 ● Power: 12~24VDC/24VDC
 ● Dimensions: φ35.2x48~49mm



PA-860/868
 ● 0~5, ~10, ~20, ~35MPa, Gauge
 ● Media: hydraulic oil
 ● Output: 1~5V/4~20mA
 ● Power: 12~24VDC
 ● Dimensions: φ30x41mm



PA-870/878
 ● 0~2, ~3.5, ~5MPa, Gauge
 ● Media: gases and liquids
 ● Output: 1~5V/4~20mA
 ● Power: 12~24VDC
 ● Dimensions: φ30x47.5mm

Pressure switches



PA-930/930-A
 ● 0~100, ~1000, ~100kPa, Gauge, ~100~100kPa, Compound (PA-930), 0~100, ~200kPa, absolute (PA-930-A)
 ● Media: gases and liquids
 ● Output: 1~5V
 ● Power: 12~24VDC
 ● Dimensions: φ30x91.5/101.5mm



PS20
 ● 0~100kPa, Gauge, ~100~300kPa, Compound
 ● Media: non-corrosive gases
 ● 1 switch output
 ● Power: 12~24VDC
 ● Dimensions: 10x25.5x20.5mm



PS6
 ● 0~100, ~1000, ~100kPa, Gauge
 ● Media: non-corrosive gases
 ● 2 digits LED
 ● Output: 1~5V with 1 switch, or 2 switch outputs
 ● Power: 12~24VDC
 ● Dimensions: 10x52.5x25mm



PS30
 ● 0~100, ~1000kPa, Compound
 ● Media: non-corrosive gases
 ● 2.5 digits LED
 ● Output: 2 switch outputs
 ● Power: 12~24VDC
 ● Dimensions: □30x29mm



PS40
 ● 0~100, ~1000kPa, Gauge
 ● Media: non-corrosive gases
 ● Output: 1~5V with 1 or 2 switch outputs
 ● Power: 12~30VDC
 ● Dimensions: 24.8x45x15mm



PS60
 ● 0~100, ~1000, ~3000, ~1000kPa, Compound
 ● Media: non-corrosive gases
 ● 3 digits LED
 ● Output: 2 switch outputs
 ● Power: 12~24VDC
 ● Dimensions: 10x52.5x25mm



PS8
 ● 0~98.1, ~343, ~981, ~98.1kPa, Gauge
 ● Media: gases and liquids
 ● Output: 2 switch outputs
 ● Power: 12~24VDC
 ● Dimensions: φ28x50.2mm



PS83
 ● 0~9.81, ~49, ~98.1, ~343, ~98.1kPa, ~98.1, Gauge, 0~34.3, ~98.1, absolute
 ● Media: gases and liquids
 ● Output: 2 switch outputs
 ● Power: 12~24VDC
 ● Dimensions: φ30x55~59mm



PS85
 ● 0~100, ~100, ~300, ~1000kPa, Compound
 ● Media: gases and liquids
 ● Output: 2 switch outputs
 ● Power: 12~24VDC
 ● Dimensions: φ35.2x48~49mm



PS86
 ● 0~5, ~10, ~20, ~35MPa, Gauge
 ● Media: hydraulic oil
 ● Output: 2 switch outputs
 ● Power: 12~24VDC
 ● Dimensions: φ30x41mm

Pressure switches



- PS87**
- 0~3.5, ~5MPa, Gauge
 - Media: gases and liquids
 - 1 switch output
 - Power: 12~24VDC
 - Dimensions: ϕ 30x26mm



- PS91**
- -100~10kPa, Compound
 - Media: gases and liquids
 - 2 switch outputs
 - Power: 12~24VDC
 - Dimensions: ϕ 40x57.5mm

Handy manometers



- PG-100**
- 0~10, ~100, ~1000kPa, ~-100, Gauge
 - -10~10, ~100, ~1000kPa, Compound
 - 0~100kPa, Absolute
 - Media: non-corrosive gases
 - 3.5 digits LCD
 - Power: 3.6VDC (Lithium battery)
 - Dimensions: 60 x 90 x 20mm



- PG-100N**
- -10~10, ~100~100, ~1000kPa, Compound
 - Media: non-corrosive gases
 - 3.5 digits LCD
 - Power: 2 AAA dry batteries
 - Dimensions: 55 x 110 x 16.9mm



- PG-100B**
- -100~100, ~1000kPa, Compound
 - 0~100kPa, Absolute
 - Media: Gases and liquids
 - 3.5 digits LCD
 - Power: 2 AAA dry batteries
 - Dimensions: 55 x 110 x 16.9mm

Pressure gauges



- PG-20**
- 0~0.5, ~1MPa, Gauge, -0.1~0.5MPa, ~1MPa, Compound
 - Media: gases and liquids
 - 3.5 digits LED
 - Output: 1~5V/4~20mA with 1 switch output, or 2 switch outputs
 - Power: 24VDC/12~24VDC
 - Dimensions: \square 38x135mm/ \square 28x127mm



- PG-30**
- -10~10, ~100~100, ~1000kPa, Compound
 - Media: non-corrosive gases
 - 3 digits LED
 - Output: 1~5V with 2 switch outputs
 - Power: 10.8~30VDC
 - Dimensions: \square 30x35.5mm



- PG-35**
- -100~100, ~1000kPa, Compound, 0~100kPa, Absolute
 - Media: gases and liquids
 - 3 digits LED
 - Output: 1~5V with 2 switch outputs
 - Power: 10.8~30VDC
 - Dimensions: \square 30x37mm



- PG-35H**
- -0.1~10, ~35MPa, Compound
 - Media: gases and liquids
 - 3 digits LED
 - Output: 1~5V with 2 switch outputs
 - Power: 10.8~30VDC
 - Dimensions: \square 30x37mm



- PG-35L**
- -100~100, ~1000kPa, Compound
 - Media: gases and liquids
 - 3 digits LED
 - Output: 1~5V with 2 switch outputs
 - Power: 10.8~30VDC
 - Dimensions: \square 30x37mm



- PG-75**
- 0~0.1, ~1, ~3.5MPa, Gauge, -0.1~0.1, ~1, ~3.5MPa, Compound
 - Media: gases and liquids
 - 3.5 digits LED
 - Output: 1~5V/4~20mA with 2 switch outputs
 - Power: 10.8~30VDC
 - Dimensions: 30x37x72mm



- PG-200**
- 0~100, ~1000kPa, Gauge 0~100kPa, Absolute
 - Media: non-corrosive gases
 - 3.5 digits LCD
 - Output: 0~1V with 1 or 2 switch outputs
 - Power: 3.6VDC (Lithium battery) / 5~24VDC (External power)
 - Dimensions: \square 72x40mm



- PG-20B**
- 0~100, ~1000kPa, Gauge
 - Media: gases and liquids
 - 3.5 digits LCD
 - Output: 0~1V with 1 or 2 switch outputs
 - Power: 3.6VDC (Lithium battery) / 3~24VDC (External power)
 - Dimensions: \square 72x40mm

Pressure indicators



- PZ-200**
- Input signal: 1~5V/4~20mA
 - 3.5 digits LCD
 - Output: 4~20mA with 4 switch outputs
 - Power: 12~24VDC
 - Dimensions: \square 72x40mm



- PZ-30**
- Input signal: 1~5V/4~20mA
 - 3 digits LED
 - Output: 1~5V/4~20mA with 2 switch outputs
 - Power: 10.8~30VDC
 - Dimensions: \square 31x35mm

Liquid leak sensors



- WL10**
- Infrared reflectance method
 - Media: Water
 - Power: 12~24VDC
 - Dimensions: ϕ 25x10.6mm

Potentiometers

M : for manual setting
S : for sensors

M



- M-1303/1305 (Wirewound)**
- Adjustment turns: 3 turns/5 turns
 - Effective electrical angle: 1080°/1800°
 - Linearity: \pm 0.5%
 - Resistance range: 100~20k Ω
 - Rotational life: 15000 cycles
 - Dimensions: ϕ 13x16.1mm

M



- M-22S10/M-22E10 (Wirewound)**
- Adjustment turns: 10 turns
 - Effective electrical angle: 3600°
 - Linearity: \pm 0.2%
 - Resistance range: 100~100k Ω / 1~20 k Ω
 - Rotational life: 25000 cycles
 - Dimensions: ϕ 22x18.5mm/ ϕ 22x19mm

M/S



- JP-30B/JP-30 (Cermet)**
- Adjustment turns: 1 turn
 - Effective electrical angle: 300°
 - Linearity: \pm 0.5%
 - Resistance range: 500~100k Ω
 - Rotational life: 0.1 million cycles / 3 million cycles
 - Dimensions: ϕ 30x14.5mm

S



- JT22 (Optical contactless)**
- Effective electrical angle: 120°, 360°
 - Linearity: \pm 3.0%
 - Output voltage: 0.5~+4.5V
 - Rotational life: 100 million cycles
 - Dimensions: ϕ 22x15mm

S



- JT30 (Optical contactless)**
- Effective electrical angle: 120°, 360°
 - Linearity: \pm 3.0%
 - Output voltage: 0.5~+4.5V
 - Rotational life: 100 million cycles
 - Dimensions: ϕ 22x15mm

S



- J40S/J45S/J50S (Wirewound)**
- Adjustment turns: 1 turn
 - Effective electrical angle: 353°
 - Linearity: \pm 0.1~0.15%
 - Resistance range: 500~50k Ω
 - Rotational life: 1~10 million cycles
 - Dimensions: ϕ 44.5x16.6mm

S



- M22L10 (Wirewound)**
- Adjustment turns: 10 turns
 - Effective electrical angle: 3600°
 - Linearity: \pm 0.2%
 - Resistance range: 1k~20k Ω
 - Rotational life: 30 million cycles
 - Dimensions: ϕ 22x18.5mm

S



- MC1003 (Conductive plastic)**
- Adjustment turns: 3 turns
 - Effective electrical angle: 1080°
 - Linearity: \pm 1%
 - Resistance range: 5k~20k Ω
 - Rotational life: 1 million cycles
 - Dimensions: ϕ 10x12.6mm

S



- JC10 (Conductive plastic)**
- Adjustment turns: 1 turn
 - Effective electrical angle: 324°
 - Linearity: \pm 2%
 - Resistance range: 2k, 5k, 10k Ω
 - Rotational life: 5 million cycles
 - Dimensions: ϕ 10x7.6mm

S



- JC22E (Conductive plastic)**
- Adjustment turns: 1 turn
 - Effective electrical angle: 320°
 - Linearity: \pm 1%
 - Resistance range: 1k~10k Ω
 - Rotational life: 10 million cycles
 - Dimensions: ϕ 22x12mm

S



- JC22S (Conductive plastic)**
- Adjustment turns: 1 turn
 - Effective electrical angle: 340°
 - Linearity: \pm 0.5%
 - Resistance range: 200~10k Ω
 - Rotational life: 20 million cycles
 - Dimensions: ϕ 22.5x23.8mm

S



- JC30S/JC40S (Conductive plastic)**
- Adjustment turns: 1 turns
 - Effective electrical angle: 343°/345°
 - Linearity: \pm 0.5% \pm 0.3%
 - Resistance range: 500~20k Ω
 - Rotational life: 30 million cycles
 - Dimensions: ϕ 30x17mm/ ϕ 40x20mm

S



CRV16(Conductive plastic)

- Adjustment turns: 1 turn
- Effective electrical angle: $220^\circ \pm 5^\circ$
- Linearity: $\pm 1\%$
- Resistance range: 1k, 2k, 5k, 10k Ω
- Rotational life: 0.5 million cycles
- Dimensions: $\phi 16.2 \times 6.7 \text{mm}$

S



JCL(Conductive plastic)

- Effective electrical travel: 10~50mm
- Linearity: $\pm 0.5\%$
- Resistance range: 1k~10k Ω
- Mechanical life: 20 million cycles
- Dimensions: 45~85x18x14mm

S



JCL B(Conductive plastic)

- Effective electrical travel: 100~500mm
- Linearity: $\pm 0.5\%$
- Resistance range: 1k~10k Ω
- Mechanical life: 4~20 million cycles
- Dimensions: 159~569x22x24mm

Rotary encoders

M : for manual setting
S : for sensors


M



REC16K/L(Open collector type)

- Excellent click & switch feeling
- Input voltage: DC5V
- Square wave, A and B phases
- Single shaft/Double shafts
- With push switch
- With click
- Resolution: 25 P/R
- Dimensions: $\square 16 \times 10.5 \text{mm}$


M



REC16K/M(Output voltage type)

- Excellent click & switch feeling
- Input voltage: DC5V
- Square wave, A and B phases
- Single shaft
- With push switch/Without push switch
- With click
- Resolution: 25 P/R
- Dimensions: $\square 16 \times 10.5 \text{mm}$


M



REC16D/16F

- Input voltage: DC5V
- Square wave, A and B phases
- Single shaft/Double shafts
- With push switch
- With click
- Resolutions: 25 P/R
- Dimensions: $\square 16 \times 10 \text{mm}$

M



REC16/RES16

- Input voltage: DC5V
- Square wave, A and B phases
- With push switch(except RES16) /Without push switch
- With click/Without click
- Resolutions: 20, 50 P/R
- Dimensions: $\square 16 \times 10 \text{mm}$

M



REC20

- Input voltage: DC5V
- Square wave, A and B phases
- With click
- Resolutions: 25 P/R
- Dimensions: $\phi 20 \times 18 \text{mm}$

M



RES20B

- Input voltage: DC5V
- Square wave, A and B phases
- Without click
- Resolution: 25 P/R
- Dimensions: $\phi 20 \times 18 \text{mm}$

M



REC20D/RES20D

- Input voltage: DC5V
- Square wave, A and B phases
- With click/Without click
- Resolution: 25, 50 P/R
- Dimensions: $\phi 20 \times 11 \text{mm}$

M



REC20D/RES20D

- Input voltage: DC5V
- Square wave, A and B phases
- With click/Without click
- Resolution: 25, 50 P/R
- Dimensions: $\phi 20 \times 11 \text{mm}$
- Panel seal type

M



RMS20(Magnetic)

- Magnetic encoders
- Input voltage: DC5V
- Square wave, A and B phases
- Without click
- Resolution: 100, 250, 256 P/R
- Dimensions: $\phi 20 \times 13.5 \text{mm}$

S



RE12

- Ultra-small size
- Input voltage: DC5V
- Quasi-sinusoidal wave, A phase
- Resolution: 100~300 P/R
- Dimensions: $\phi 12 \times 12 \text{mm}$

S



RE12D

- Ultra-small size
- Input voltage: DC5V
- Square wave, A and B phases
- Resolution: 100~300 P/R
- Dimensions: $\phi 12 \times 15.5 \text{mm}$

S



RE20F

- Input voltage: DC5V
- Quasi-sinusoidal wave, A phase or A and B phases
- Resolution: 100, 300 P/R
- Dimensions: $\phi 20 \times 13.4 \text{mm}$

S



RE30E

- Input voltage: DC5~12, 24V
- Square wave, A, B and Z phases
- Resolution: 100~1024 P/R
- Dimensions: $\phi 30 \times 30 \text{mm}$

Motors

DC geared motors

MG16B



- Metal injection molding adopt
- Rated torque: 20~160mN·m
- Rated speed: 477~45min⁻¹
- Rated current: DC6V 400, DC12V 250mA
- No load speed: 477~45min⁻¹
- Gear ratio: 1/30~1/300

HG16



- Rated torque: 24.5~49mN·m
- Rated speed: 310~55min⁻¹
- Rated current: DC6V 350~170mA, DC12V 180~90mA
- No load speed: 390~60min⁻¹
- Gear ratio: 1/30~1/240

HG37



- Rated torque: 29~588mN·m
- Rated speed: 460~14.5min⁻¹
- Rated current: DC12V 280~180mA, DC24V 140~90mA
- No load speed: 570~16.3min⁻¹
- Gear ratio: 1/10~1/300

LA16G324B



- Rated torque: 14.7~24.5mN·m
- Rated speed: 150~65min⁻¹
- Rated current: DC12V 65~52mA
- No load speed: 190~78min⁻¹
- Gear ratio: 1/50~1/120

LC20G-101



- Rated torque: 4.9~24.5mN·m
- Rated speed: 657~4.5min⁻¹
- Rated current: DC12V 80~50mA
- No load speed: 680~4.5min⁻¹
- Gear ratio: 1/10~1/1500

LC22G-103/105



- Rated torque: 4.9~24.5mN·m
- Rated speed: 578~4.1min⁻¹/600~4.1min⁻¹
- Rated current: DC24V 40~30mA /DC12V 60mA
- No load speed: 610~4.1min⁻¹ /620~4.1min⁻¹
- Gear ratio: 1/10~1/1500

LC22G-107/108



- Rated torque: 14.7~294.2mN·m
- Rated speed: 718~5.2min⁻¹/670~4.7min⁻¹
- Rated current: DC24V 100~70mA /DC12V 200~80mA
- No load speed: 800~5.3min⁻¹ /720~4.8min⁻¹
- Gear ratio: 1/10~1/1500

LC30G191C



- Rated torque: 98.1~588.4mN·m
- Rated speed: 540~4.4min⁻¹
- Rated current: DC24V 0.65~0.15A
- No load speed: 720~4.5min⁻¹
- Gear ratio: 1/10~1/1500

LC37G-183C



- Rated torque: 29.4~588.4mN·m
- Rated speed: 530~4.3min⁻¹
- Rated current: DC24V 0.35~0.13A
- No load speed: 700~4.6min⁻¹
- Gear ratio: 1/10~1/1500

Stepping motors

SPG20/SPG20-SK



- Rotational motion
- 4 phases unipolar
- 10 poles
- Step angle: 18°
- Dimensions: $\phi 25 \times 37.3 \text{mm}$
- Gear ratio: 1/6~1/72
- Built-in sensor(SPG20-SK)

Stepping motors



SP27/SPG27

- Rotational motion
- 4 phases unipolar
- 12 poles
- Step angle: 15°
- Dimensions: $\phi 27 \times 30\text{mm}$, $\phi 30 \times 40.2\text{mm}$
- Gear ratio: 1/2.5~1/12, 1/5~1/12



SPS20/SPS10

- Linear motion
- 4 phases unipolar (SPS20)
- /2 phases bipolar (SPS10)
- 10 poles
- Step size: 25 μm /20 μm
- Dimensions: $\phi 20 \times 42.5\text{mm}$ / $\phi 10 \times 27\text{mm}$

Brushless DC fans



F16EA

- Air flow: 0.012m³/min
- Static pressure: 4.7Pa
- Noise: 3dB(A)
- Rated voltage: DC3.3V
- Dimensions: $\square 16 \times 4\text{mm}$



F17FA

- Air flow: 0.01m³/min
- Static pressure: 6Pa
- Low noise: 5dB(A) at 1m
- Rated voltage: DC3.3V
- Dimensions: $\square 17 \times 5\text{mm}$



F17HA

- Air flow: 0.015m³/min
- Static pressure: 10Pa
- Noise: 7dB(A)
- Rated voltage: DC5V
- Dimensions: $\square 17 \times 8\text{mm}$



F251R

- Air flow: 0.04, 0.05, 0.06m³/min
- Static pressure: 20, 30, 47Pa
- Noise: 11, 15, 20dB(A)
- Rated voltage: DC5, 12V
- Dimensions: $\square 25 \times 10\text{mm}$



F310R

- Air flow: 0.06, 0.09m³/min
- Static pressure: 14, 23Pa
- Noise: 13, 17dB(A)
- Rated voltage: DC5, 12V
- Dimensions: $\square 30 \times 10\text{mm}$



F412R

- Air flow: 0.11, 0.15m³/min
- Static pressure: 15, 26Pa
- Noise: 16, 23dB(A)
- Rated voltage: DC5, 12, 24V
- Dimensions: $\square 41 \times 12.2\text{mm}$



F410T

- Air flow: 0.11, 0.15m³/min
- Static pressure: 10, 23Pa
- Noise: 12, 18dB(A)
- Rated voltage: DC5, 12V
- Dimensions: $\square 40 \times 10\text{mm}$



F614T

- Air flow: 0.36, 0.43m³/min
- Static pressure: 20, 29Pa
- Noise: 23, 29dB(A)
- Rated voltage: DC5, 12, 24V
- Dimensions: $\square 62 \times 14.5\text{mm}$



F455B (Side flow fans)

- Air flow: 0.28m³/min
- Static pressure: 44Pa
- Noise: 20dB(A)
- Rated voltage: DC5
- Dimensions: $\square 45 \times 5\text{mm}$

Polygon laser scanners (Custom products)

S : Polygon laser scanners

M : Polygon mirrors

High accuracy type (Ball-bearing)

S



PD30LA/PD40LA

- Mirror size: $\phi 40\text{mm}$
- Dynamic pyramidal angle error accuracy: 120/80sec (PD30LA), 60/30sec (PD40LA)
- Speed range: 1500~2000r/min (PD30LA), 1500~2000r/min (PD40LA)
- For digital PPCs, digital photo labs

S



PD40ERB

- Mirror size: $\phi 40\text{mm}$
- Dynamic pyramidal angle error accuracy 60/90sec.
- Speed range 3000~8000r/min.
- For barcode readers

S



PD60EA

- Mirror size: $\phi 55\text{mm}$
- Dynamic pyramidal angle error accuracy 30/60sec.
- Speed range 1500~5000r/min.
- For digital PPCs, digital photo labs

S



PD60ER

- Mirror size: $\phi 65\text{mm}$
- Dynamic pyramidal angle error accuracy 40/80sec.
- Speed range 5000~12000r/min.
- For digital PPCs, digital photo labs

S



PD60LA

- Mirror size: $\phi 65\text{mm}$
- Dynamic pyramidal angle error accuracy 10/20sec.
- Speed range 2500~5000r/min.
- For medical equipment

High speed & long life type (Aero-dynamic bearing)

S



PT22ERG

- Mirror size: $\phi 26\text{mm}$
- Dynamic pyramidal angle error accuracy 60/90 sec.
- Speed range 20000~50000r/min.
- For laser printer

S



PTC30ERG

- Mirror size: $\phi 34\text{mm}$
- Dynamic pyramidal angle error accuracy 60/90sec.
- Speed range 20000~50000r/min.
- For laser printers, medical equipment

S



PT60SARG

- Mirror size: $\phi 55\text{mm}$
- Dynamic pyramidal angle error accuracy 40/80sec.
- Speed range 20000~40000r/min.
- For digital PPCs, digital photo labs

S



PV60

- Mirror size: $\phi 76\text{mm}$
- Dynamic pyramidal angle error accuracy 60/90sec.
- Speed range 40000~55000r/min.
- For medical testing equipment

Polygon mirrors

M



Various polygon mirrors

Turbo fans

TF series

- State of the art coreless Aero-dynamic-bearing
- Long life and high static air pressure
- Low power consumption
- Battery operation possible
- Low vibration



Current sensors

C-CT series

- AC 0.1~200A, 4 types lineup
- Output linearity outstanding
- Compact, so easy installation in distributing box
- Clamp-on type, so also supports the existing box.



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