IN2CONNECT
ELECTRONIC CONNECTORS

switches
shortform catalogue

Complete capability in switching solutions

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ITW Erg Components

ITW Switches
Sensors, Switches, Electronic Controls

ITW Switches
SENSORS, SWITCHES, ELECTRONIC CONTROLS

Founded in the 1950's, our business based in Portsmouth UK, designs and manufactures the world renowned product brands of ITW Switches, ITW McMurdo Connectors and ITW ERG Components.

From standard products to bespoke customer designs, and from electro-mechanical to full electronic software driven solutions, our business is here to develop your business.

We are a worldwide group, part of ITW Ltd, and are present across five continents through our select network of Distribution Partners. With production plants in Europe, North America and Asia, ITW Switches have the ability and logistics to fulfil your needs whenever and wherever you want them.

Within our wide portfolio we can ensure that if you want to switch it, control it, sense it, and/or interact with it, we can fulfil your requirements.

Our latest technologies ensure that we can take you beyond traditional, single input/single output switching, to state of the art, software driven, intelligent thinking touch sensors, linked to systems of your choice.

Our technical in house design capabilities harness both the appreciation and usage of acoustic, capacitive and inductive switching ensuring that we have the correct solution for your design wants and needs.

Closely linked with our own ITW Technology Centre in Chicago, USA, our Research and Development team are constantly innovating new and exciting ways of bringing reliable, functional and robust resolutions to traditional human interface design restrictions.

Our standard products and bespoke designs can be found in some of the most demanding applications from automotive through aerospace, material handling, industrial automation, mining, marine and security/access to name but a few.

Our professional design team benefit from in-house rapid prototyping equipment for the fast and accurate production of both mechanical and PCB components of our designs. Backed by full Solidworks design systems and a professional model shop we can produce working prototypes in reduced lead times quantified on full project timing plans as agreed with our customers.

Our Company evolves constantly within an environment of Continuous Improvement, with the majority of our production staff qualified to NVQ status.

This not only includes the obvious disciplines of Quality, Cost and Delivery, but also the equally important aspects of ownership, empowerment and recognition amongst our dedicated teams.

All ITW Switch, McMurdo and ERG products are RoHS compliant and manufactured under our ISO 9001 Quality Management accreditation, capable of being tested to all relevant major British and European specifications.

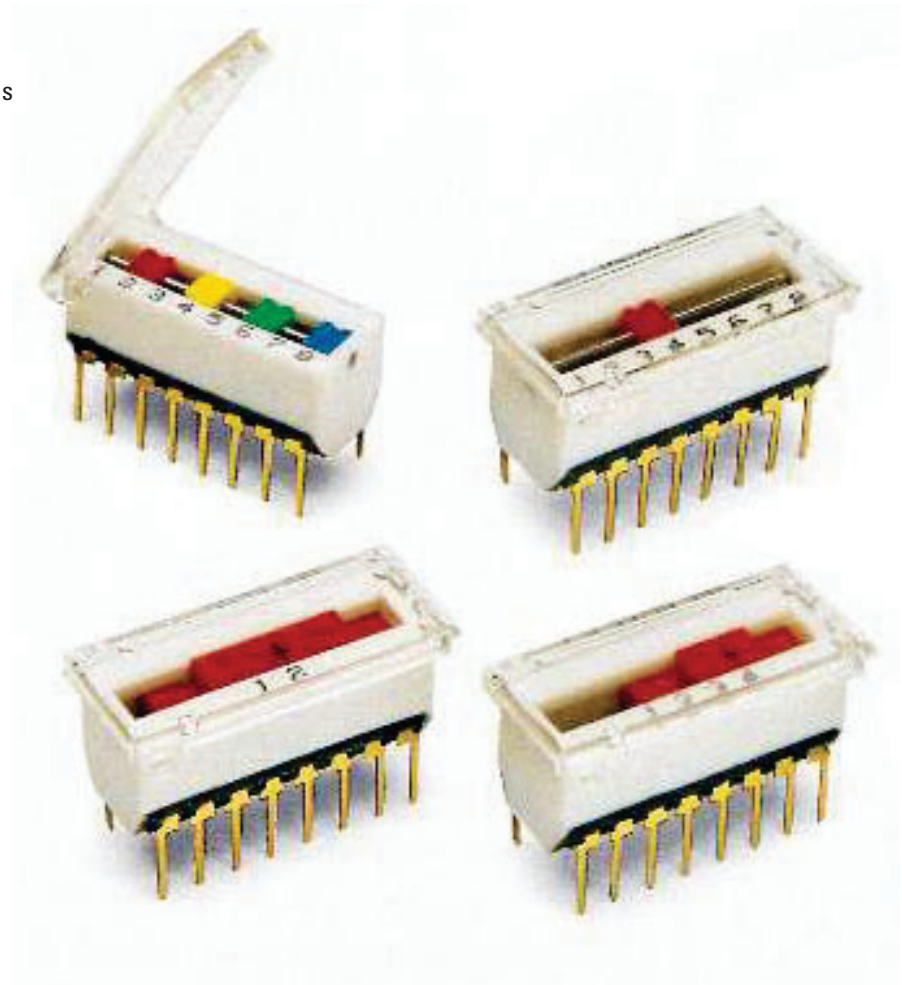
CONTENTS

DILSWITCH - 16

ITW Switches
SENSORS, SWITCHES, ELECTRONIC CONTROLS

DIL SWITCHES

This range of select on test/code and range setting switches overcome some of the problems of using standard dual in-line 8 way switches.



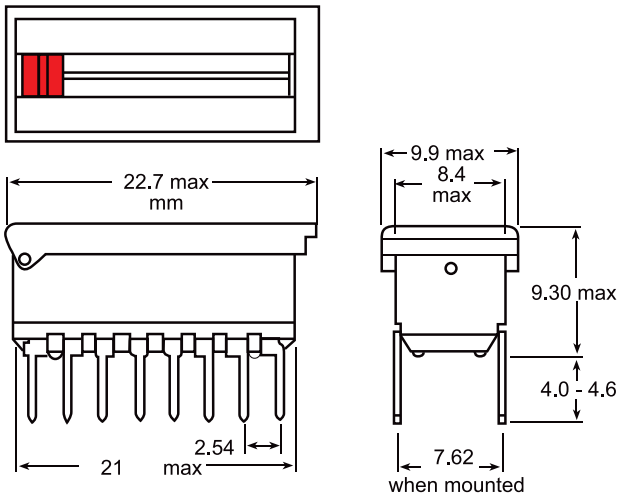
KEY FEATURES:

- An exclusive guaranteed one out of eight selection.
- Linked changeovers (up to 4) are operated by one actuator.
- Wide range of switching configurations including user PCB custom capability.
- Large numerals and coloured actuators.
- Base and tape sealed for flow soldering and solvent/aqueous washing (IP64)*
- Hinged transparent dust cover and recessed actuators prevent accidental setting changes.
- 1µm hard gold plated wiping contact for low level circuits.

* Once tape has been peeled back or disturbed IP rating is not valid.

PRINCIPAL ELECTRICAL AND PERFORMANCE DATA (AT 20°C 70% R.H.):

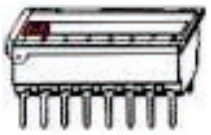
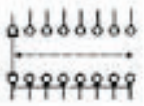
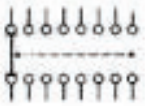
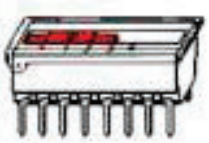
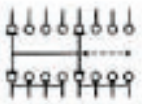
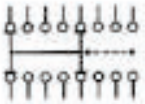
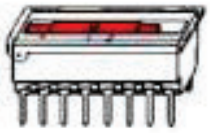
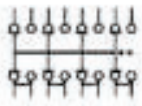
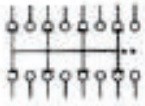
- Contact Ratings: Switching: 30V, 250mA 7.5VA max.
- Initial Contact Resistance: (at 10mV, 10mA max.) Typical: 18mΩ. Max. 30mΩ.
- Life: Typical (within rated load), 1000 cycles.
- Temperature Range: Storage, electrical use and manual operation -55°C to +85°C



Contact an Authorized Distributor or Factory for Pricing

DILSWITCH - 16

ELECTRICAL SCHEMATICS VIEWED FROM BELOW

	Linked Styles	Unlinked Styles
		
	DS16C 1-8 ED55140	DS16D 1-8 ED55148
		
	DS16C 2-4 ED55146	DS16D 2-4 ED55154
		
	DS16C 4-2 ED55147	DS16D 4-2 ED55155

ITW Switches
SENSORS, SWITCHES, ELECTRONIC CONTROLS

Designs and specifications are subject to change without notice due to product improvement.

ITW Switches
SENSORS, SWITCHES, ELECTRONIC CONTROLS

JUMPER SWITCH™

A switchable jumper on 0.1" pitch that securely switches PCB track signals with a positive contact action.

Supplied in units of 1 thru 16 poles they provide an alternative to jumpers without the need for 'parking pins' on the PCB or exposed bare pins and are available with ON/OFF (JSA4), CHANGEOVER (JSC4), and CENTRE-OFF (JSK9) switch actions. All contacts can be supplied in ganged pairs. (See ordering code).

Longer units (up to 16 poles) save loading time on production. On development they can be cut with a modelling knife to achieve any combination required to provide flexible switching with the least routing on a PCB.

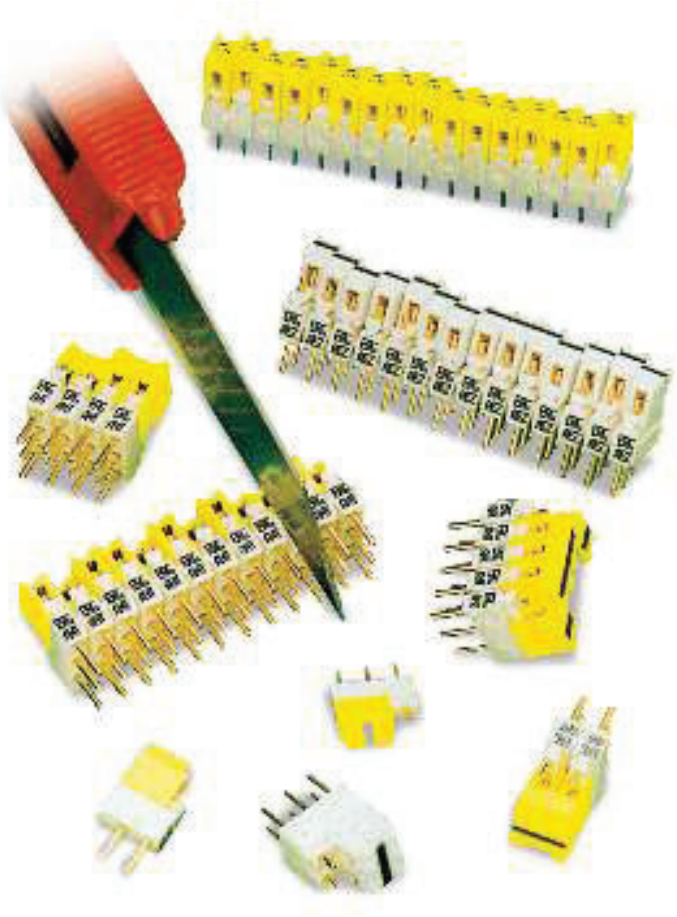
Options available include 2 pole ganged style, sliders of different colours in the EIA range and a mixture of colours for sliders in multiple way versions and slider numbering.

Reliable switching of the gold over nickel plated phosphor bronze contacts is assured with the 4 point wiping contact design. The contacts never rub over any plastic part and every one is tested before despatch. The positive detent action ensures good shock resistance and the deep 'V' slots securely locate any operating probe.

Jumper-Switch has been designed for use on hand or flow soldered and washed PCBs. The tight pin fit prevents any wicking. Users should evaluate that their particular processes are compatible with the unsealed contact design concept.

KEY FEATURES:

- Drop in replacement for jumpers.
- Secured in the ON or OFF setting.
- 0.1" mounting pitch.
- 1 thru 16 ON/OFF, CHANGEOVER and CENTRE-OFF contacts.
- Ganged pairs of contacts option.
- Hard gold plated wiping contacts.
- If you have a volume requirement for a product variant not shown on this sheet please contact us.



PRINCIPAL ELECTRICAL AND PERFORMANCE DATA (AT 20°C 70% R.H.):

- Contact Ratings: Non Switching: 100Vac, 5A
- Switching: 1µV to 100V, 1µA to 1A 10VA.
- Initial Contact Resistance: (at 10mV, 10mA max.) Typical: 10mΩ. Max. 15mΩ.
- Insulation Resistance: (at 500Vdc min.) 10,000MΩ.
- Life: Minimum 1,000 operations.
- Dielectric Strength: 1 minute: 500Vrms 50Hz.
- Capacitance Between Open Contacts: < 5pf at 1KHz.
- Temperature: Operating range for continuous electrical use and manual operation is restricted to -55°C to +85°C for standard products.
- Operating Force per pole: Max. 5N.
- Humidity: BS 2011 Test Ca: 56 days
- Solderability: < 2 seconds to wet at 235°C as per IEC 68 and BS 2011 Test T, solder bath method.

  Resistance to soldering heat as per IEC 68 and BS 2011 10 seconds satisfactory at 260°C when mounted on 1.5mrn PCB.
- Materials:
  Slider - GF PBT UL94-VO

  Switch Body - PA/PTFE lubricated - UL94-VO

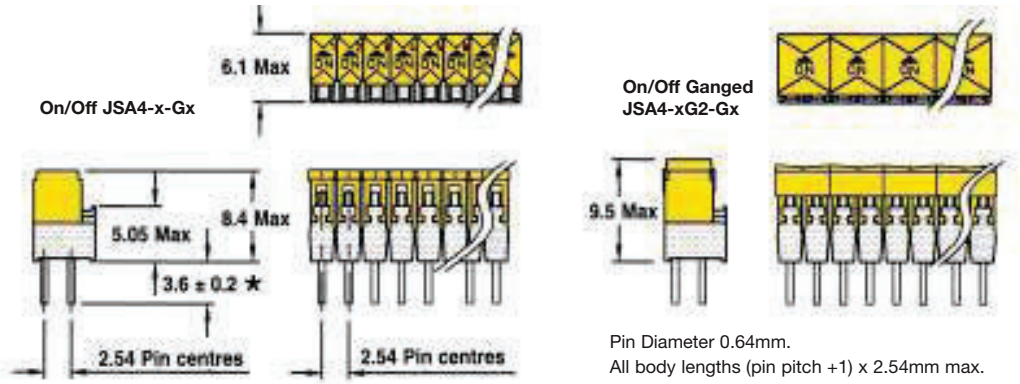
  Contact (moving) - CuSnP plated AuCo over 2.5µNi

  Contact (fixed) - CuZn plated AuCo over 2.5µNi

  Please note: BS 2011 is now superseded by BS EN 60068.

JUMPER-SWITCH™

MECHANICAL DETAILS



Pin Diameter 0.64mm.
All body lengths (pin pitch +1) x 2.54mm max.

For alternatives - Please contact Sales Office

HOW TO ORDER

JS	A	4	8	N	G0
Jumper-Switch™	A - 2 rows of pins - ON/OFF C - 3 rows of pins - CHANGEOVER K - 3 rows of pins - CENTRE-OFF	4 - Slider colour Yellow (standard slider) 9 - Slider colour White (centre - off)	Number(s) of sliders from 1 to 16 OR Number of pairs from 1G2 to 8G2	N - Optional - numbered sliders	G0 - Gold thickness - (Standard 0.1µm) G1 - (Special 1.0µm)

ITW Switches
SENSORS, SWITCHES, ELECTRONIC CONTROLS

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ITW Switches
SENSORS, SWITCHES, ELECTRONIC CONTROLS

ROTARY CODED SWITCHES

BCD (10 position) and Hexadecimal (16 position), real and complementary codes.

KEY FEATURES:

- Fully sealed and suitable for flow soldering and solvent cleaning, these switches have a black polyamide casing (UL94 rated) and bold white characters.
- Choice of low profile screwdriver-operated, knurled knob or large easy-to-operate colour coded knobs.
- Gold plated wiping contacts for reliable low level switching.
- If you have a volume requirement for a product variant not shown on this sheet please contact us.

PRINCIPAL ELECTRICAL AND PERFORMANCE DATA (AT 20°C ± 5°C, 75% RH AND INITIAL VALUES UNLESS OTHERWISE STATED):

- Contact Ratings (Max): (a) 30V switched, 100Vrms non switching. (b) 125mA switched or carried at 85°C max.
- Contact Resistance: (100% checked): 100mΩ max. measured at 10mVdc/10mA max., initial value and after:- (a) 20,000 detent steps at rated current. (b) Storage for 240 hours at 85°C carrying rated current.
- Contact Life: Reliability (16 position switches): An analysis of nearly 4,000,000 dry circuit contact closures monitored (after closure) at 10mVdc/10mA max. disclosed: (a) > 99.998% of results < 100mΩ. (b) No contact resistance > 20Ω.
- Insulation Resistance: (100% checked): 1,000 MΩ min. at 240Vdc (1 minute) initial and after:- (a) 10 days exposure to 90-95% RH at 40°C. (b) 1,000 complete rotations of 16 detents.
- Dielectric Strength: 1 minute: 250Vrms
- Inter Contact Capacitance: 5pf max. at 1MHz.
- Environmental Temperature Category: -55°C to +85°C.
- Climate Category: 55/85/10 storage and use.
- Vibration: Shock 10-200Hz 1.52mm or 15g, 50g, 11ms. Please note: BS 2011 is now superseded by BS EN 60068.

ROTARY CODED SWITCHES

FLAT TYPE (SCREWDRIVER OPERATION)

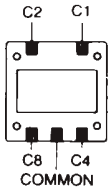
10 position BCD

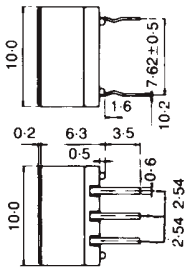
ERG 10-112	Real Code
ERG 10-122	Complement code

16 position HEX

ERG 16-112	Real Code
ERG 16-122	Complement code

Mass 0.8g max.
Operating force at rotor centre 300g cm max.





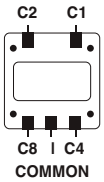
LARGE KNOB STYLE

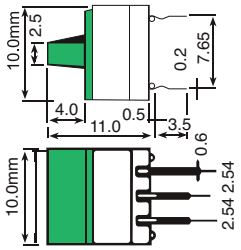
10 position BCD

ERG 10-412/2 (red knob)	Real code
ERG 10-412/5 (green knob)	Real code
ERG 10-412/6 (blue knob)	Real code
ERG 10-422/2 (red knob)	Complement code
ERG 10-422/5 (green knob)	Complement code
ERG 10-422/6 (blue knob)	Complement code

16 position HEX

ERG 16-412/2 (red knob)	Real code
ERG 16-412/5 (green knob)	Real code
ERG 16-412/6 (blue knob)	Real code
ERG 16-422/2 (red knob)	Complement code
ERG 16-422/5 (green knob)	Complement code
ERG 16-422/6 (blue knob)	Complement code





INDICATOR TYPE

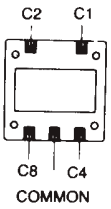
10 position BCD

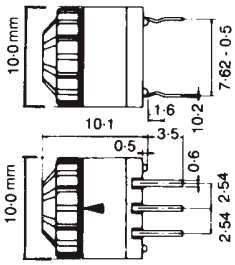
ERG 10-312	Real code
ERG 10-322	Complement code

16 position HEX

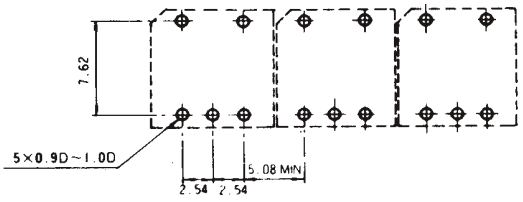
ERG 16-312	Real code
ERG 16-322	Complement code

Suitable for vertical and horizontal (edge of PCB operation).
Mass 1g max. Operating force of rotor centre 300g cm max.





DRILLING MATRIX (ALL TYPES)



This range is manufactured to our specification in Japan.

CODE TABLE

● = real code ○ = compliment code

Pin No.	Position (BCD & HEX)															
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C 1	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●
C 2	○	○	●	●	○	○	●	●	○	○	●	●	○	○	●	●
C 4	○	○	○	○	●	●	●	●	○	○	○	○	●	●	●	●
C 8	○	○	○	○	○	○	○	○	●	●	●	●	●	●	●	●

ITW Switches
SENSORS, SWITCHES, ELECTRONIC CONTROLS

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SPECTRA C - 023 STYLE

Using a third common contact pin halves the PCB area to maximise code setting on crowded PCB's. They are also used widely for two state, pull up / pull down resistor setting.

KEY FEATURES:

- Large numerals and colour coded sliders.
- Base and tape seal for flow soldering and solvent / aqueous washing (IP64)*
- 1µm hard gold plated wiping contact gives high reliability.

* Once tape has been peeled back or disturbed IP rating is not valid.

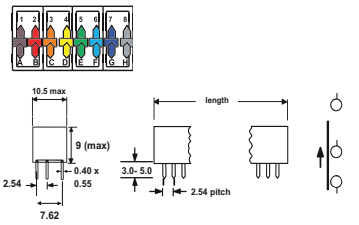
PRINCIPAL ELECTRICAL AND PERFORMANCE DATA (AT 20°C 70% R.H.):

- Contact Ratings: 1µV to 100V, 1µA to 1A up to 10VA.
- Initial Contact Resistance: (at 10mV, 10mA max.) Typical: 10mΩ. Max. 20mΩ.
- Insulation Resistance: (at 500Vdc min.) 10MΩ.
- Life: 1000 closures
- Dielectric Strength: 1 minute: 500Vrms 50Hz.
- Capacitance Between Open Contacts: < 1pf at 1KHz.
- Temperature: Operating range for continuous electrical use and manual operation is restricted to -55°C to +100°C for standard products.
- Solderability: Parts are suitable for wave soldering. Typical processing parameters can be supplied on request.
- Resistance to soldering heat: 5 seconds maximum at 395°C when mounted on 1.5mm PCB.

SPECTRA C - 023 STYLE

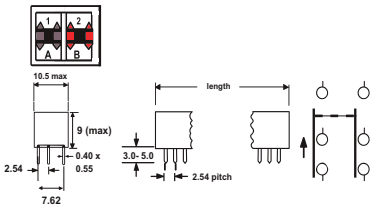
SPECTRA C CHANGEOVER TRIPLE IN LINE S.P.D.T - SCS 023 SERIES

ERG Part Number	Number of s.p.d.t suffix	Part Nos SCS-plus max	Length mm
ED57384	2	2-023	6.7
ED57385	4	4-023	11.8
ED57387	8	8-023	21.9



SPECTRA C GANGED CHANGEOVER TRIPLE IN LINE D.P.D.T - SCS-G-023 SERIES

ERG Part Number	Number of d.p.d.t suffix	Part Nos SCS-plus max	Length mm
ED57389	1	1G2-023	6.7
ED57390	2	2G2-023	11.8



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SPECTRADIL - 014 STYLE
SDS, SDC, SDD RANGES

This series offers standard programme setting switches to suit applications where 'end stacking' up to any number of switches without missing a pitch is required.

KEY FEATURES:

- Large numerals and actuators plus colour coded sliders with open access to them.
- Base sealed for flow soldering. If immersion washing, use 023 series.
- 1µm hard gold plated wiping contact gives high reliability in low level circuits.
- If you have a volume requirement for a product variant not shown on this sheet please contact us.

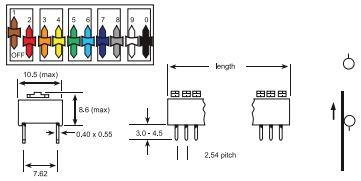
PRINCIPAL ELECTRICAL AND PERFORMANCE DATA (AT 20°C 70% R.H.):

- Contact Ratings: 1µV to 100V, 1µA to 1A up to 10VA.
- Initial Contact Resistance: (at 10mV, 10mA max.) Typical: 10mΩ. Max. 20mΩ.
- Insulation Resistance: (at 500Vdc min.) 10MΩ.
- Life: 1000 closures
- Dielectric Strength: 1 minute: 500Vrms 50Hz.
- Capacitance Between Open Contacts: < 1pf at 1KHz.
- Temperature: Operating range for continuous electrical use and manual operation is restricted to -55°C to +100°C for standard products.
- Solderability: Parts are suitable for wave soldering. Typical processing parameters can be supplied on request.
- Resistance to soldering heat: 5 seconds maximum at 395°C when mounted on 1.5mm PCB.

SPECTRADIL - 014 STYLE

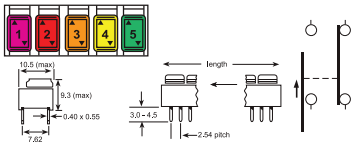
ON/OFF S.P.S.T SDS 014 SERIES

ERG Part Number	Number of s.p.s.t	Part Nos SDS-plus suffix	Length mm max
ED58131	1	1-014	3.1
ED57654	2	2-014	5.0
ED57655	4	4-014	10.1
ED57556	6	6-014	15.0
ED57657	8	8-014	20.1
ED57658	10	10-014	25.2



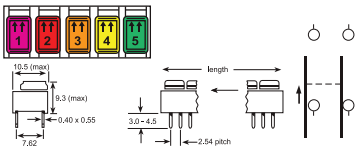
CHANGEOVER S.P.D.T SDC 014 SERIES

ERG Part Number	Number of s.p.d.t	Part Nos SDC-plus suffix	Length mm max
ED57672	1	1-014	5.0
ED57673	2	2-014	10.1
ED57674	3	3-014	15.0
ED57675	4	4-014	20.1
ED57676	5	5-014	25.2



GANGED ON/OFF D.P.S.T SDD 014 SERIES

ERG Part Number	Number of d.p.s.t	Part Nos SDD-plus suffix	Length mm max
ED57663	1	1-014	5.0
ED57664	2	2-014	10.1
ED57665	3	3-014	15.0
ED57666	4	4-014	20.1
ED57667	5	5-014	25.2



ITW Switches
SENSORS, SWITCHES, ELECTRONIC CONTROLS

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DILSWITCH - 16

ITW Switches
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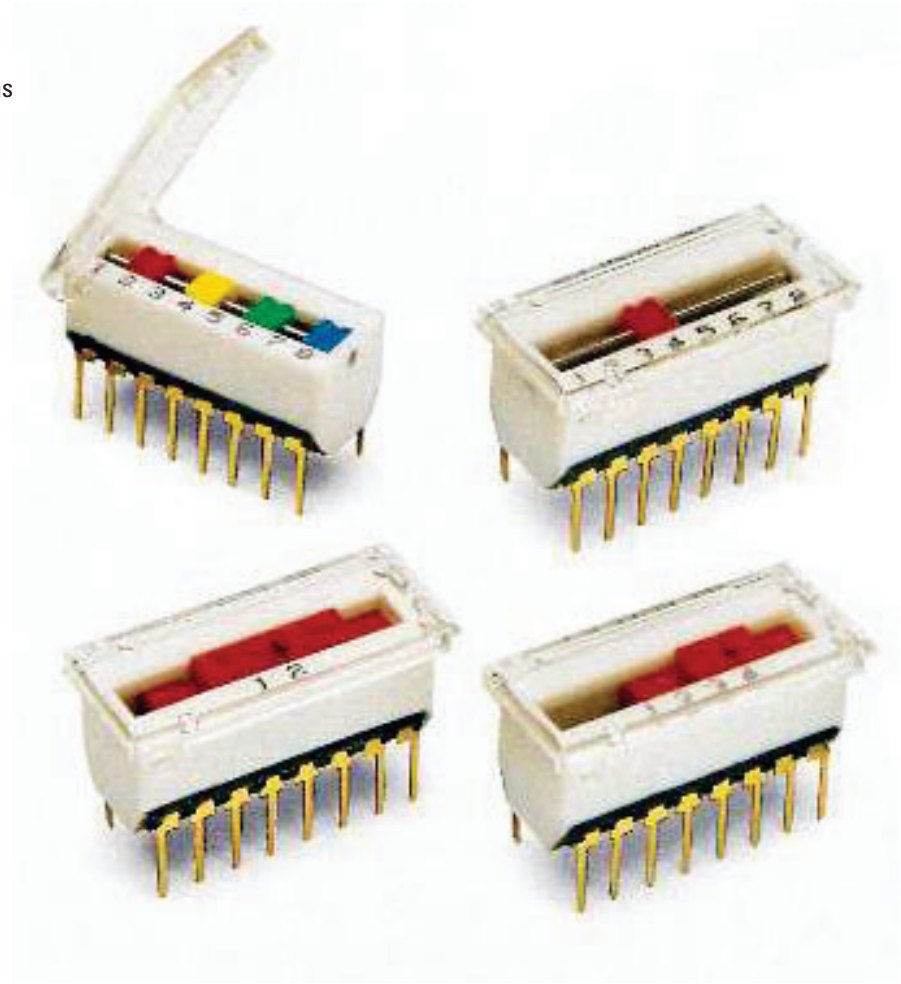
DIL SWITCHES

This range of select on test/code and range setting switches overcome some of the problems of using standard dual in-line 8 way switches.



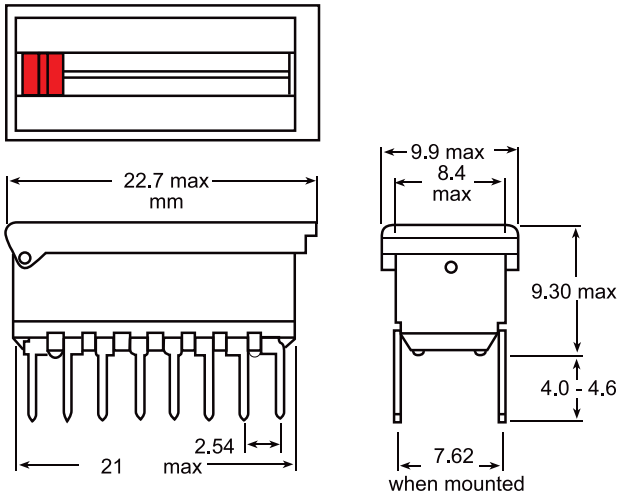
KEY FEATURES:

- An exclusive guaranteed one out of eight selection.
- Linked changeovers (up to 4) are operated by one actuator.
- Wide range of switching configurations including user PCB custom capability.
- Large numerals and coloured actuators.
- Base and tape sealed for flow soldering and solvent/aqueous washing (IP64)*
- Hinged transparent dust cover and recessed actuators prevent accidental setting changes.
- 1µm hard gold plated wiping contact for low level circuits.

* Once tape has been peeled back or disturbed IP rating is not valid.

PRINCIPAL ELECTRICAL AND PERFORMANCE DATA (AT 20°C 70% R.H.):

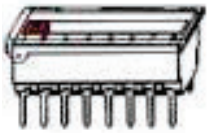
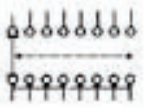
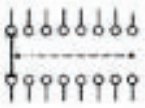
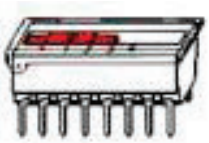
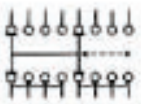
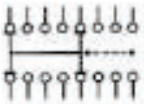
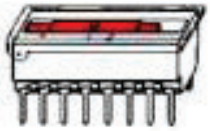
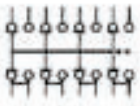
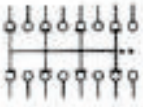
- Contact Ratings: Switching: 30V, 250mA 7.5VA max.
- Initial Contact Resistance: (at 10mV, 10mA max.) Typical: 18mΩ. Max. 30mΩ.
- Life: Typical (within rated load), 1000 cycles.
- Temperature Range: Storage, electrical use and manual operation -55°C to +85°C



Contact an Authorized Distributor or Factory for Pricing

DILSWITCH - 16

ELECTRICAL SCHEMATICS VIEWED FROM BELOW

	Linked Styles	Unlinked Styles
	 DS16C 1-8 ED55140	 DS16D 1-8 ED55148
	 DS16C 2-4 ED55146	 DS16D 2-4 ED55154
	 DS16C 4-2 ED55147	 DS16D 4-2 ED55155

ITW Switches
SENSORS, SWITCHES, ELECTRONIC CONTROLS

Designs and specifications are subject to change without notice due to product improvement.