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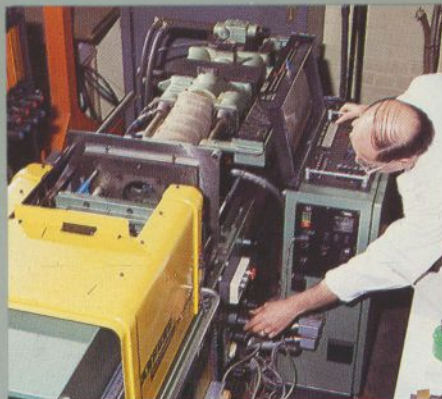
1. "MINIM" INTERNATIONAL S.I.L. REED RELAYS Series 300
2. "MINIM" HIGH PERFORMANCE S.I.L. REED RELAYS Series 310
3. SUB MINIATURE S.I.L. REED RELAYS Series 160
4. DUAL-IN-LINE REED RELAYS Series 120, 130, 150 & 500
6. SURFACE MOUNTED D.I.L. RELAYS Series 800
7. Telecom/Data Relays BS415 SURFACE MOUNTED D.I.L. Series 730
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20. TECHNICAL INFORMATION

Astralux Dynamics was founded in 1948 as a precision engineering company. The products at that time ranged from transformers to aircraft communication components for which the company gained wide recognition as a high quality producer.



1. Brightlingsea Manufacturing Facility

In 1970, the opening of a new purpose-built 20,000sq ft factory and administration complex at Brightlingsea provided a spacious and well equipped base in keeping with the company's growing prestige. Today the product range comprises telecommunication interconnection components and associated equipment, reed relays and solid state relays aimed at the telecommunication instrumentation, aerospace, automobile and data processing industries.



2. Automated Injection Moulding



3. Automated Assembly

Mechanical, chemical and electronic manufacturing enterprise, supported by a quality control that is the envy of competitors has enabled Astralux to secure approvals to BS9000, European CECC, Military Defence Standard A.Q.A.P.1, N.A.T.O. conditions and British Telecom delegated release.



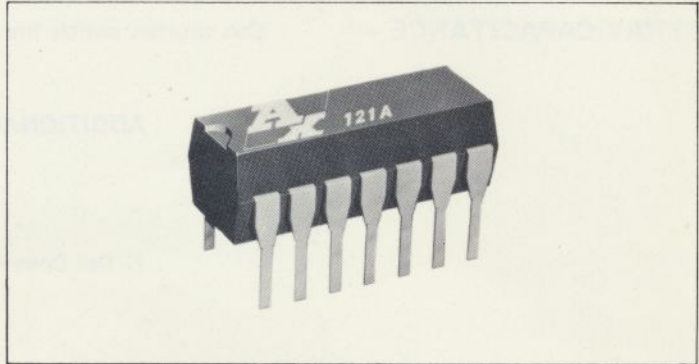
4. Computer Controlled Automatic Terminal Assembly

Astralux Dynamics was acquired early in 1986 as a prosperous and flourishing enterprise by Wolseley plc. Membership of this major group has made available investment capital for equipment and new product development and has extended the opportunities for further expansion into world markets. Research and development are high among Astralux' priorities in order to anticipate future trends to meet tomorrow's market needs today.

DUAL IN LINE

DESCRIPTION

The Astralux 120/130 series offers the most complete range of D.I.L. relays. Available in Form A, 2 Form A, Form B (magnetically biased) and Form C. The range offers contact ratings up to 10 watts in Form A and B and 4 watts in form C. Models are suitable for automatic insertion on standard 14 pin receptacles or for p.c.b. mounting. Automatic relay testing ensures complete reliability at low cost.



ALTERNATIVE D.I.L. RELAY PIN CONFIGURATIONS.

Form	Circuit Schematics	Type 120	Type 130	Nom Coil V d.c. @ 20°C	Nom Coil Ω ± 10%	Diode	Maximum Switch Ratings		
		14 pin	8 pin				Volts d.c.	Amps d.c.	Watts d.c.
1 FORM A		121A-14 121A-16 121A-18 121A-20	131A-14 131A-16 131A-18 131A-20	5 5 12 24	500 360 530 2000	Yes	100	0.50	10
1 FORM A		121A-13 121A-15 121A-17 121A-19	131A-13 131A-15 131A-17 131A-19	5 5 12 24	500 360 530 2000	No	100	0.50	10
1 FORM B			131B-14	5	500	Yes	100	0.50	10
1 FORM B			131B-13	5	500	No	100	0.50	10
1 FORM C		121C-13		5	150	Yes	28	0.25	3
1 FORM C		125C-11		5	150	Yes	100	0.20	4

8 Pin Variants may also be supplied as 14 pin relays
Check with factory for new code number.

Astralux are continuously updating the D.I.L. relay range –
consult Astralux for your relay requirements.

DUAL IN LINE REED RELAYS (TECHNICAL DATA)

INRUSH CURRENT —

Exceeding the contact rating due to inrush currents will shorten the life of the switch. Circuit precautions should be observed when switching inductive or capacitive loads.

STRAY CAPACITANCE —

Can shorten switch life. A series resistor connected at switch end will extend the life.

ADDITIONAL DATA

Nominal V d.c.	Must Operate V d.c.	Must Release V d.c.	Max Continuous V d.c.
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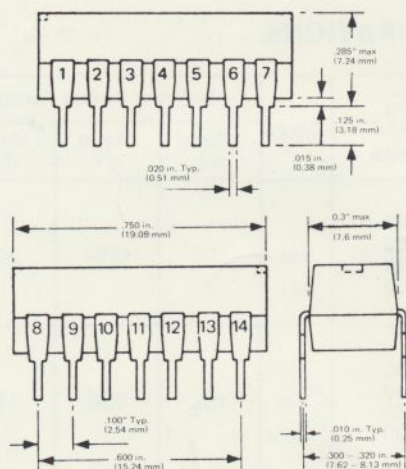
1. Coil Operating Voltages at 20°C

Form	Nominal V d.c.	Must Operate V d.c.	Must Release V d.c.	Max Continuous V d.c.
Form A	5	3.5	0.5	15.0
	12	8.0	2.0	18.0
	24	16.0	4.0	36.0
Form (B) & C	5	3.7	0.5	7.5 (5.0)

(The Following are typical Values)

	FORM A	FORM B	FORM C
2. Operate Time (mS) at nominal voltage: (Inc. bounce)	0.250	0.10	0.500
3. Release Time (mS) (Inc. bounce)	0.15	0.60	1.3
4. Insulation Resistance (Ω)			
coil-contact @ 500 V d.c.	10^9	10^9	10^9
contact-contact @ 85 V d.c.	10^9	10^9	10^9
5. Breakdown Voltage (V d.c.) coil-contact Tested 500V d.c.	2000	2000	2000
contact-contact (2 Form A)	250 (200)	250	250
6. Initial Contact Resistance (m Ω) (2 Form A)	100 (200)	150	150
7. Capacitance Coil — Contact (pF)			
1 Form	3.0	5.0	5.0
2 Form	3.0		
Contact-Contact (pF)	2.0	3.0	2.5
8. Contact Operating Frequency (Hz)	500	500	500
9. Operational Temperature Range (°C)	-40/+105	-40/+105	-40/+105

DIMENSIONS 120/130 DIL.



120 Series has all pins as shown.
130 Series has pins 1,2,6,7,8,9,13,14 only

OTHER ASTRALUX PRODUCTS

Other quality products from Astralux include a very comprehensive range of reed relays and solid state switching devices, also a full range of Post Office and Ministry approved Plugs, Sockets and Emergency Light units. Full details available on request.

We reserve the right to change, without prior notice, information contained in this leaflet.

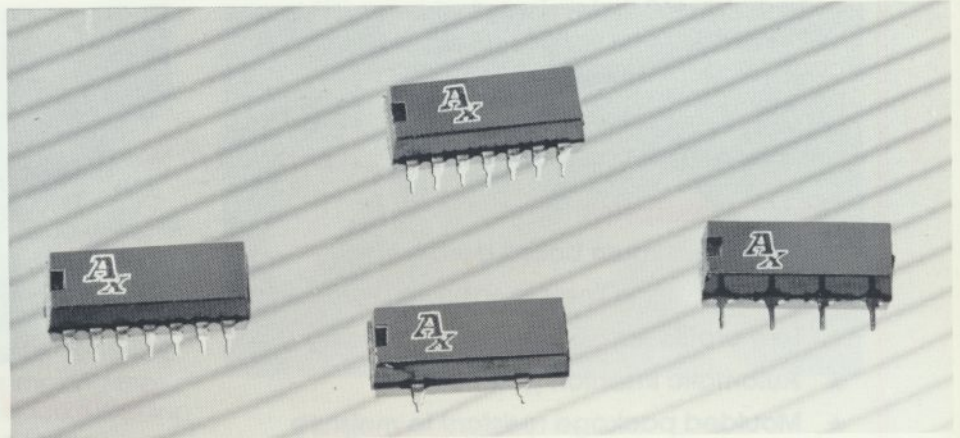


ASTRALUX *dynamics limited* AN ANTIFERRENCE GROUP COMPANY

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Astralux DUAL-IN-LINE REED RELAYS Series 120, 130, 150 & 500

The Astralux 120/130 series offers the widest possible choice of Dual In Line Reed Relays. Manufactured in the U.K. to Astralux stringent quality standards all relays are 100% tested on purpose designed automatic test equipment throughout manufacture. Astralux quality is confirmed by being Post Office approved and having approval to Defence Standard A.Q.A.P. 1. and BS9000/CECC.



Design features

- ★ The Dual in line range includes low profile packages and offers alternative coil connections in line with other European standards.
- ★ Standard DIL packages are available with 4, 8 or 14 pins.

Technical data

Coil Operating voltage at 25°C

	Nominal	Must Operate	Must Release	Max. Continuous
Form A and C	5	3.7	0.5	7.5(5.5)
Form (B) ¹	12	9.0	1.0	18.0(13.5)
	24	18.0	2.0	36 (26.5)

Contact Characteristics (Min) Blocking Voltage

121A/131A, 121B/131B, 501	250 volts d.c.
122A/132A, 121C/131C, 125/135C, 502	200 volts d.c.
151A	200 volts d.c.

Isolation Voltage (Typical)

Coil to Contact	500 volts d.c.
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Initial Contact Resistance (Max)

All types (except 125C/135C)	150 m.ohms
125C/135C	200 m.ohms

Notes

1. Excessive voltage will cause contact reclosure.
2. Measured with diode clamp.
3. Measured with coil leads shorted, and contact leads shorted.

*Items marked * are
Approved to BS9000
(BS9152 F0018)*

- ★ Contact range offered is Form A, 2 Form A, magnetically biased Form B, and Form C. Contact ratings are up to 10 watts on Form A or B models and up to 4 watts on Form C.
- ★ Standard coil voltages are 5, 12 or 24 volts and optional diode protection is available on most models.

Operate time² at nominal coil drive, including bounce time (typical).

Form A	0.5 m.seconds
Form B	0.35 m.seconds
Form C	1.0 m.seconds N.O./1.5 m.seconds N.C.

Insulation resistance (Typical)

Coil to Contact	10 ⁹ ohms at 25°C and 40% RH measured at 85v d.c.
Contact to Contact	10 ⁹ ohms at 25°C and 40% RH measured at 85v d.c.

Capacitance (Typical)

	Form A	Form B	Form C
Coil to Contact ³	3.0 pF	4.5 pF	5.0 pF
Contact to Contact	2.0 pF	3.0 pF	2.5 pF

Temperature Range	Operate -40°C to +85°C Storage -40°C to +125°C
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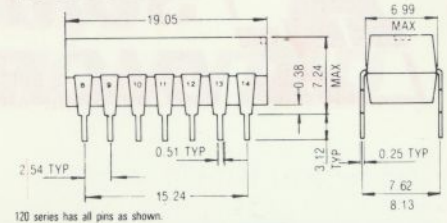
SERIES TYPE	CONTACT RATINGS (Max)		
	Volts dc	Current dc	Watts dc
121A/131A	100	0.5	10
151A	100	0.5	10
122A/132A	100	0.25	10
501A	100	0.5	10
502A	100	0.25	10
121B/131B	100	0.5	10
121C/131C	100	0.3	3
125C/135C	100	0.3	4

CAUTION: This product contains a glass capsule and should not be opened or dismantled.

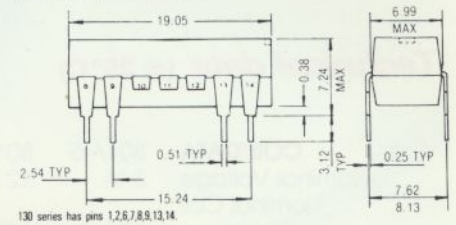
FORM

CIRCUIT SCHEMATIC (viewed from top)	14 PIN	8 PIN	NOMINAL COIL VOLTAGE	NOMINAL COIL RESIST. (ohms) ± 10% at 25°C	DIODE		
	1	*121A-3	*131A-3	5	500	NO	
	+2	*121A-4	*131A-4	5	500	YES	
	3	*121A-5	*131A-5	12-24	2900	NO	
	4	*121A-6	*131A-6	12-24	2900	YES	
	5	121A-5-1	131A-5-1	12	1100	NO	
	6	121A-6-1	131A-6-1	12	1100	YES	
	7	121A-5-2	131A-5-2	24	2150	NO	
		121A-6-2	131A-6-2	24	2150	YES	
		1	*121A-13	*131A-13	5	500	NO
		2	*121A-14	*131A-14	5	500	YES
3		*121A-15	*131A-15	6	360	NO	
4		*121A-16	*131A-16	6	360	YES	
5		*121A-17	*131A-17	12	530	NO	
+6		*121A-18	*131A-18	12	530	YES	
7		*121A-19	*131A-19	24	2000	NO	
		*121A-20	*131A-20	24	2000	YES	
		1	122A-1	132A-1	5	200	NO
		+2	122A-2	132A-2	5	200	YES
	3	122A-3	132A-3	12	500	NO	
	4	122A-4	132A-4	12	500	YES	
	5	122A-5	132A-5	24	2150	NO	
	6	122A-6	132A-6	24	2150	YES	
	1	121B-3	131B-3	5	500	NO	
	+2	121B-4	131B-4	5	500	YES	
	3	121B-5	131B-5	12	2900	NO	
	4	121B-6	131B-6	12	2900	YES	
	5						
	6						
	1	121B-13	131B-13	5	500	NO	
	+2	121B-14	131B-14	5	500	YES	
	1	121C-1	131C-1	5	80	NO	
	+2	121C-2	131C-2	5	80	YES	
	3	121C-3	131C-3	12	450	NO	
	4	121C-4	131C-4	12	450	YES	
	5	121C-5	131C-5	24	1750	NO	
	6	121C-6	131C-6	24	1750	YES	
	7	121C-11	131C-11	5	200	NO	
		121C-12	131C-12	5	200	YES	
		121C-13		5	150	NO	
		121C-14		5	150	YES	
	1	125C-1	135C-1	5	150	NO	
	+2	125C-2	135C-2	5	150	YES	
	3	125C-3	135C-3	12	500	NO	
	4	125C-4	135C-4	12	500	YES	
	5	125C-5	135C-5	24	2150	NO	
	6	125C-6	135C-6	24	2150	YES	
	1		501A-3	5	500	NO	
	2		501A-5	12	500	NO	
	3		501A-7	24	1400	NO	
	1		502A-1	5	200	NO	
	2		502A-3	12	385	NO	
	3		502A-5	24	1200	NO	
	4						
		4 PIN					
	+2	151A-1		5	200	NO	
		151A-2		5	200	YES	
		151A-3		5	500	NO	
		151A-4		5	500	YES	
		151A-7		24	2150	NO	
		151A-8		24	2150	YES	
		151A-9		12-24	2900	NO	
		151A-10		12-24	2900	YES	

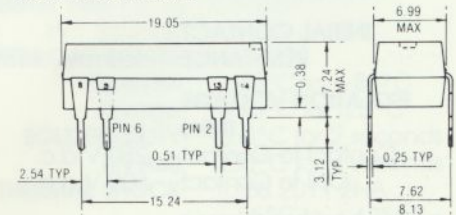
120 SERIES RELAYS



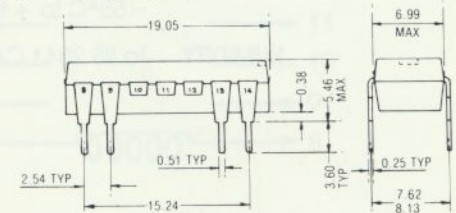
130 SERIES RELAYS



150 SERIES RELAYS



500 SERIES RELAYS



Dimensions are in millimetres (inches)
DO NOT SCALE DRAWINGS

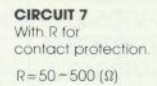
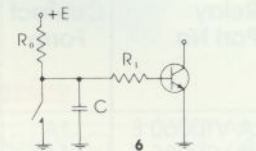
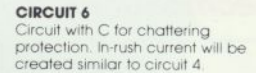
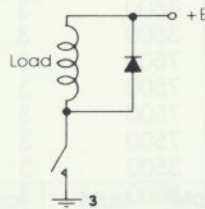
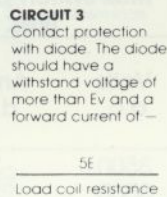
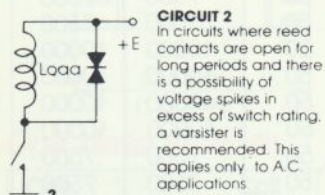
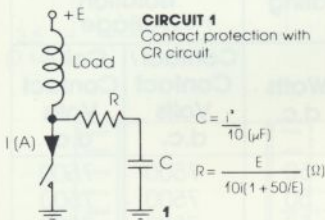
N.B. Diode option on versions where shown.

Contact Protection Circuits

When a reed switch is connected to an inductive load or a load where surge current or in-rush current flows (such as capacitive lamp, long cable, etc) the following contact protection circuits are recommended.

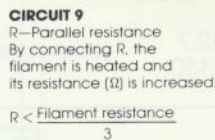
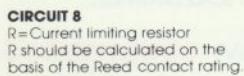
Inductive Load

When an electromagnetic relay, electromagnetic solenoid, or electromagnetic counter has an inductive component as the circuit load; the energy stored in the inductance will cause an inverse voltage when the reed contacts break. The voltage, although dependent on the inductance value, sometimes reaches several hundred volts and becomes a major factor in contact deterioration. To prevent this, many protection circuits are available, typical examples of which are shown.



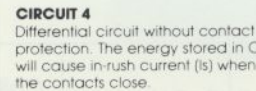
Lamp Load

If the reed switch is used for switching tungsten filament lamps, the in-rush current (5 to 10 times the steady-state current) at the contacts immediately the lamp is turned on, often causes excessive heating or sticking of the reed contacts. The lamp load is, therefore, considered similar to a capacitive load, thus requiring a contact protection circuit. Examples of protection circuits recommended are as shown.



Capacitive Load

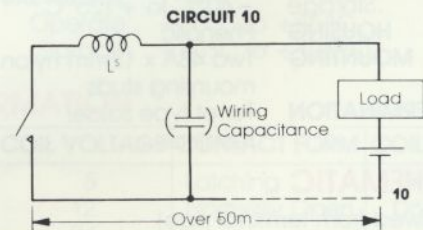
When a capacitor is connected in series or in parallel with reed switch contacts in a closed circuit, the in-rush current which flows at the time of capacitor charge and discharge will cause deterioration of the reed contacts. Typical examples of the protection circuits to prevent high in-rush current are shown.



Cable Capacitance

When the reed switch is connected to the load by cable over a long distance, static capacitance induced by the cable will affect the contact performance of the reed switch. Although dependant on the type of cable, it is recommended, if the cable length exceeds 50 metres, that the user provides a protection circuit as shown to extend operating life of the reed switch.

A surge suppressor (L_s) inserted close to the reed switch contacts causes the in-rush current flowing to the contacts to be delayed. The value of L_s is 0.5 to 5mH depending on the load current. The L_s can be replaced by a very small resistance (current-limiting) of 10 to 500 ohms.



IMPORTANT NOTE:

All information (including without limitation figures) given by the Company relating to the performance of the goods is based upon the Company's experience but the Company shall accept no liability should it prove to be in any way inaccurate and it shall be the responsibility of the Buyer to ensure that the capacity and the performance of the Goods are sufficient and suitable for the purpose or purposes intended (whether by the Buyer

or by any third party) and that their capacity and performance is not adversely affected by any items used in their installation (where relevant) and/or otherwise in connection with them. The Company reserves the right without notification to the Buyer to alter any such matters and to supply the Goods so altered, in performance of the Contract provided that such alteration shall not materially affect the characteristics of the Goods.