

ELECTRO-MECHANICAL RELAYS

- LEIOS SERIES**
- LOCK OUT RELAY
 - CONTACT MULTIPLIER
 - DRAW-OUT / NON DRAW-OUT
 - ELECTRICAL / HAND / SELF RESET



LEIOS-22



LEIOS-10



LEIOS-6

PMD Division

We touch your **electricity** everyday!

Introduction :

The LEIOS series relays are voltage operated electro-mechanical, hinged armature type relays, mainly used in protection, control and alarm circuits. These relays are provided with option of hand reset and remote reset.

Design :

The design of LEIOS series relays is hinged armature type.

It has been ensured to have consistent electrical & magnetic qualities while designing the armature, yoke and the core materials.

The coil is wound with wires of high thermal rating to withstand the problems of over heating due to continuous operation. It is also ensured that the coil of high speed trip will tolerate the high burden to ensure the faster operation though rated for the very short time.

The contacts have been designed with silver alloy to have superior contact rating with minimum wear and tear. It is also ensured in the design and construction that the contact pressure is maximum to ensure superior contact rating. The contact spring is designed with phosphor-bronze spring quality material to have the flexible movements.

In case of high speed trip relays one break contact is connected in series with the relay elements as a cut-off contact. This disconnects the burden and saves the power from the battery.

Features & Characteristics :

- Electro-mechanical design in fully draw-out / non draw-out enclosure.
- Suitable for tripping, signaling in protection and control system.
- High resistance to shock and vibration.
- Flexible and user friendly contacts arrangement as per customer selection from ordering information.
- Remote as well as Hand reset flag indication.
- High Speed operation.
- Silver Alloy contacts.
- Durable & Reliable operations.
- Elegant & Ergonomics design.
- Minimum 4 to 22 pairs of contacts.
- DIN dimensions.
- High speed trip lock out relays.
- Electrically remote reset relays.
- Contact multiplier.

Technical Specifications :

Type : LEIOS Series Electro-Mechanical relays.
 Design : Flush mounting Poly carbonate plastic enclosure, Draw-out or Non Draw-out.
 Duty : Continuous operation.
 Rated Voltage (Un) : DC : 24V, 30V, 110V, 220V, 250V
 AC : 24V, 30V, 48V, 110V, 220V, 230V, 250V
 Operating Voltage Range : (1) Trip 40% to 120% Un Electrical Reset : 60% to 120% Un
 OR
 (2) Trip 80% to 120% Un Electrical Reset : 60% to 120% Un
 Pickup Voltage : (1) Trip = 40% to 60% Un Electrical Reset : 60% to 80% Un
 OR
 (2) Trip = 80% to 85% Un Electrical Reset : 60% to 80% Un

Trip Timings :	Relay Type	Pickup time	Drop-out time
	Aux Relay	<20 ms	4 to 12ms
	Latching Relay	<10ms	4 to 12ms
	Aux Relay Fast Trip	<4ms	4 to 12ms

Burden	For LEIOS-6 DC Changeover	<10W	
	For LEIOS-6 with Flag	<90W	
	For LEIOS-6 without Flag	<480W	
	For LEIOS-10 with Flag-Lockout Relay	<120W	Reset coil <190W (at 220V DC)
	For LEIOS-10 without Flag Selection/CT switching)	<120W	Reset coil <190W (at 220V DC)
	For LEIOS-22	<275W	Reset coil <575W (at 220V DC)

Contact Reset : Self Reset / Hand Reset / Electrical Remote Reset.
 Flag Reset : Hand Reset / Electrical Remote Reset.
 Insulation : 2 kV AC for 1 min between all terminals & earth.
 and 1 kV AC for 1 min across open contacts.
 Operating Temperature : -10 deg to +55 deg Celsius

Contact Rating :

Contact Rating is selectable by user. the available ratings are as under :-

Make & carry continuously : AC : 5 Amp, 10 Amp, 20 Amp
 : DC : 5 Amp, 10 Amp, 20 Amp

Weights :

General Tolerance : ± 10% of the weight

Description	LEIOS-6	LEIOS-10	LEIOS-22
Draw-out	475 gm	950 gm	1530 gm
Non Draw-out	525 gm	890 gm	1530 gm

Contact Rating for 5 Amps	Rated at 250 Volts AC or DC						
	AC			DC			
	Current (Amp)	Voltage (Volts)	Power (VA)	Current (Amp)	Voltage (Volts)	Power (Watts)	L/R
Make & carry continuously	5	660	1250	5	660	1250	
Make & carry for 3 sec	30	660	7500	30	660	7500	
Breaking	5	250	1250	5	250	1250	0.04 for 100W resistive, 50W inductive

Cable Size & Lugs :

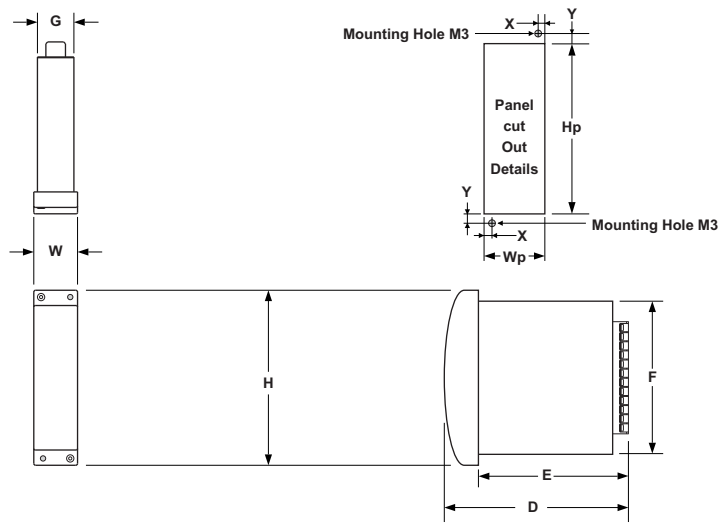
Cable Size		
1)	1 mm	Max. 2 cables per terminal
2)	1.5 mm	Max. 2 cables per terminal
3)	2.5 mm	Max. 2 cables per terminal
Lugs		
1)	U Type	Max. Tong width : 7 mm
2)	Circular Type	Max. O.D : 8 mm
3)	Straight or L Type	Max. width = 8 mm

Note : All the dim are in mm, Gen. Tol. : ± 1.0 mm

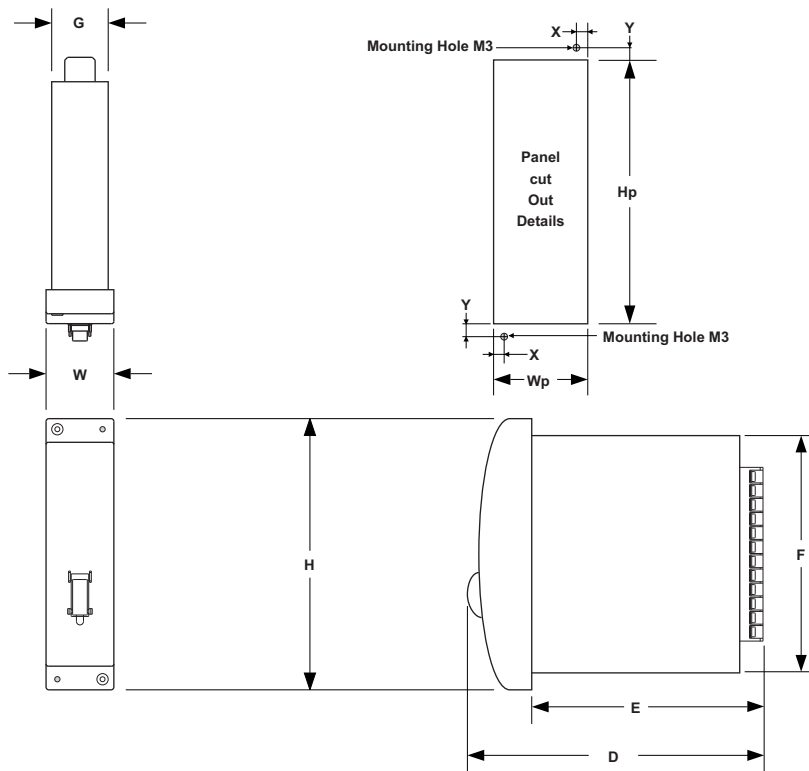
Outline Dimensional Details :

Model	Type	Front Cover		Total Length	Enclosure body inside the panel			Panel Cut out (Hp x Wp)	Mounting Hole	
		Width	Height		Depth	Height	Width		X	Y
		(W)	(H)	(E)	(F)	(G)				
LEIOS-6	Draw-out	48	95	201.6	170.2	78.7	40.0	81.5x43	4	3.0
LEIOS-10	Draw-out	48	192	213.7	171.7	168.0	40.0	169.5x43	4	4.5
LEIOS-22	Draw-out	72	192	238.0	196.0	168.0	64.0	169.5x67	8	4.5
LEIOS-6	Non Draw-out	48	95	201.6	170.2	78.7	40.0	81.5x43	4	3.0
LEIOS-10	Non draw-out	48	192	209.0	167.0	168.0	40.0	169.5x43	4	4.5
LEIOS-22	Non draw-out	72	192	231.6	189.6	168.0	64.0	169.5x67	8	4.5

LEIOS-6



LEIOS-10 & LEIOS-22



Type Tests :

Conforming to the Standards IEC 60255, IEC 60068, IEC 60259, IEC 60297, IEC 61000, IS:9844, IS:9839

Sr. No.	Description of Test
1	Dimensions of structure and visual inspection
2	Cold Temperature Test (Operating)
3	Cold Temperature Test (Storage)
4	Dry Temperature Heat (Operating)
5	Dry Temperature Test (Storage)
6	Change of temperature Test
7	Static Damp Heat Test (Steady State)
8	Cyclic Temperature Test Humidity
9	Vibration Response Test & Vibration Endurance Test
10	Shock Response Test & Shock Endurance Test
11	Bump Test
12	Seismic test
13	Salt spray test
14	High frequency disturbance test
15	Electrical Fast Transient Disturbance Test
16	Electro-static Discharge Immunity Test
17	Surge Immunity Test
18	Impulse voltage withstand test
19	AC ripple on DC supply
20	Power frequency magnetic field
21	Damped oscillatory magnetic field value
22	Impulse magnetic field immunity test
23	Thermal withstand continuous
24	Maximum allowable temperature
25	Degree of Protection Test (IP-54) on Relay Front
26	Maximum altitude of operation
27	Installation category (overvoltage category)
28	Pollution degree
29	Safety Test as per IEC 60255-27
30	Safety Test as per IEC 61010-1
31	Pick-up Value Test
32	Drop-out Value Test
33	Temperature Rise Test
34	Mechanical Durability Test
35	Contact Performance Test
36	Rated Burden Test
37	Dielectric Test

Applicable Contact Configurations : User selectable from following combination : -

LEIOS-6

(Aux Relay with Flag)

<u>NO</u>	+	<u>NC</u>
3	+	1
2	+	2
1	+	3

Table-1a

(Aux Relay without Flag)

<u>NO</u>	+	<u>NC</u>
6	+	0
4	+	2
3	+	3
2	+	4

Table-1b

(DC Change over)

4 CO

Table-1c

LEIOS-10

<u>NO</u>	+	<u>NC</u>
9	+	1
8	+	2
7	+	3
6	+	4
5	+	5
4	+	6
3	+	7
2	+	8
1	+	9

Table-2

LEIOS-22

<u>NO</u>	+	<u>NC</u>
3	+	19
7	+	15
11	+	11
15	+	7
19	+	3

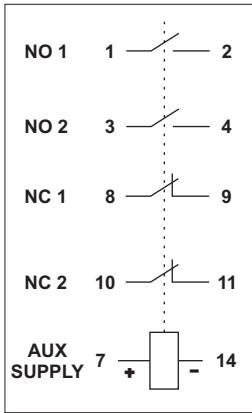
Table-3

Note : For supervision terminal, one NC contact pair will reduce in every type of relay. e.g. 7NO/3NC will become 7NO/2NC, if supervision terminal is required. however if same no. of contacts are desired then one common terminal can be provided for 2 no. contacts.

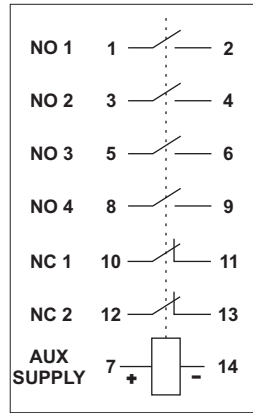
Terminal Arrangement viewed from Rear

e.g. LEIOS-6

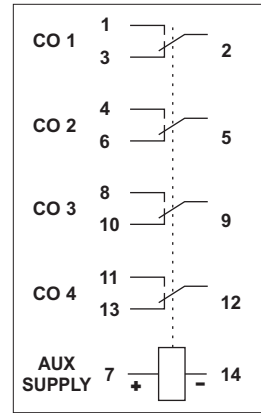
(Aux Relay with Flag)
(2NO / 2NC)



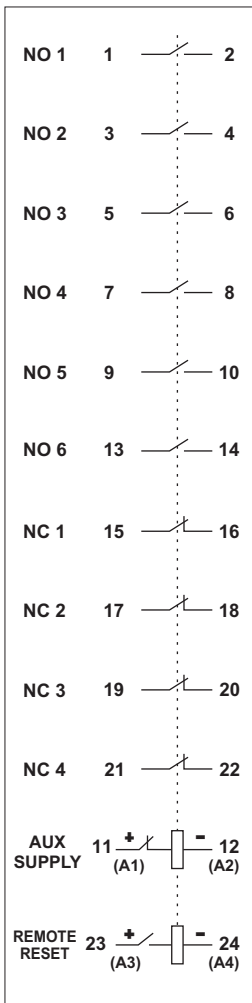
(Aux Relay without Flag)
(4NO / 2NC)



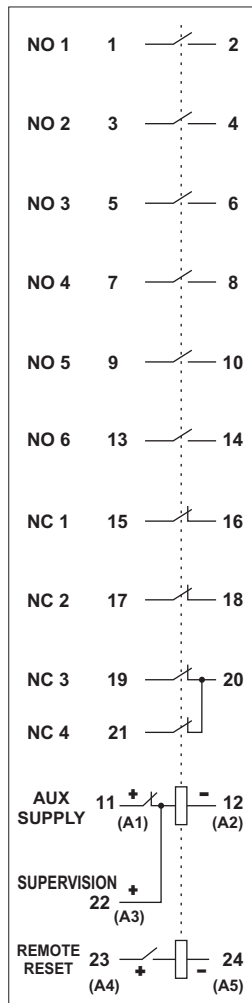
DC Changeover
(4CO)



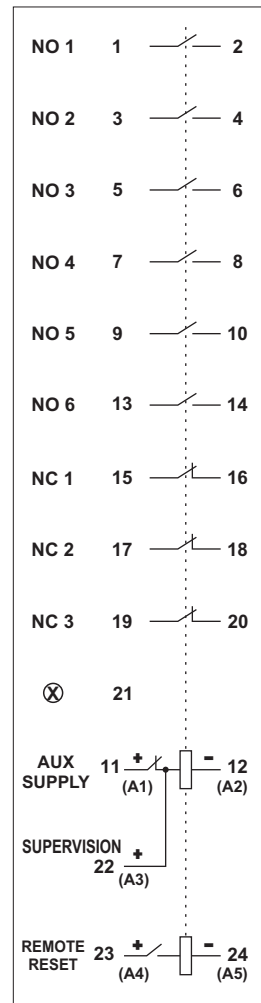
e.g. for LEIOS-10, 6NO / 4NC
without Supervision Terminal



e.g. for LEIOS-10, 6NO / 4NC
with Supervision Terminal

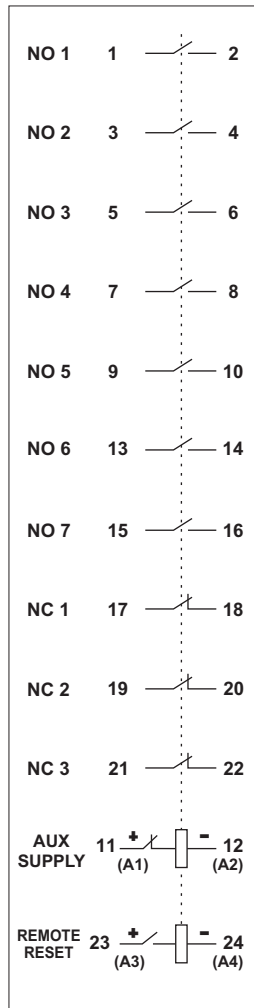


e.g. for LEIOS-10, 6NO / 3NC
with Supervision Terminal

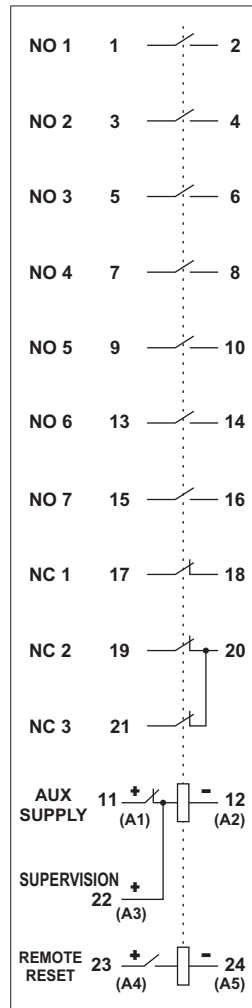


Terminal Arrangement viewed from Rear

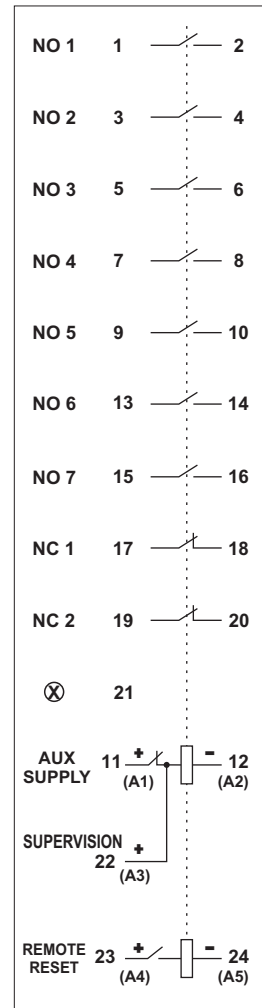
e.g. for LEIOS-10, 7NO / 3NC
without Supervision Terminal



e.g. for LEIOS-10, 7NO / 3NC
with Supervision Terminal



e.g. for LEIOS-10, 7NO / 2NC
with Supervision Terminal



Draw-out Relays :
Internal Assembly View

LEIOS-10 :

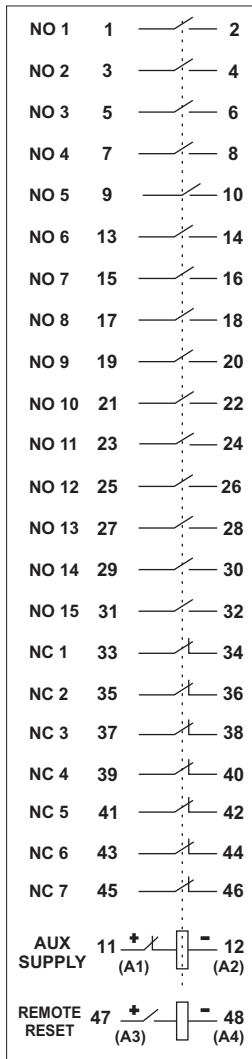


Front Cover with Internal Assembly

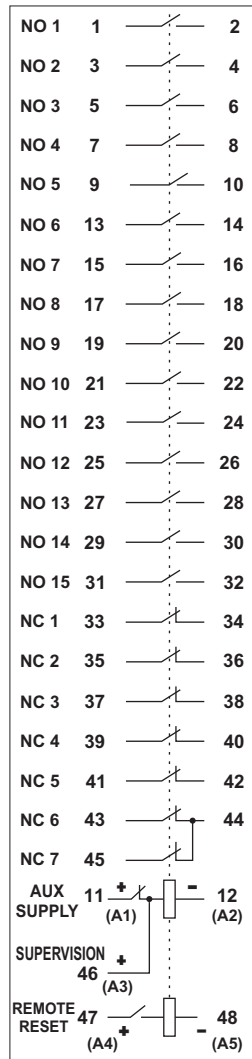
Relay Enclosure

Terminal Arrangement viewed from Rear

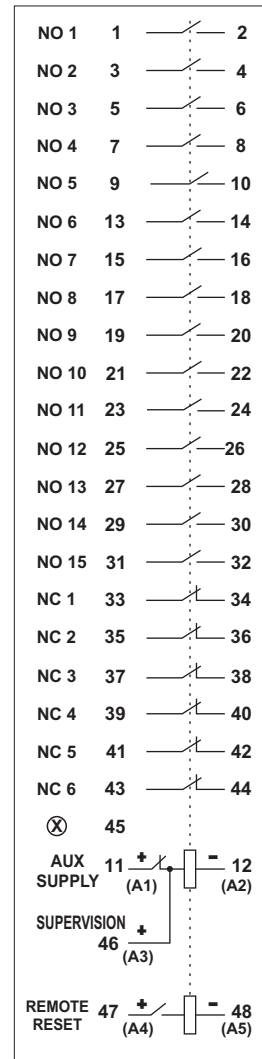
e.g. for LEIOS-22, 15NO / 7NC without Supervision Terminal



e.g. for LEIOS-22, 15NO / 7NC with Supervision Terminal

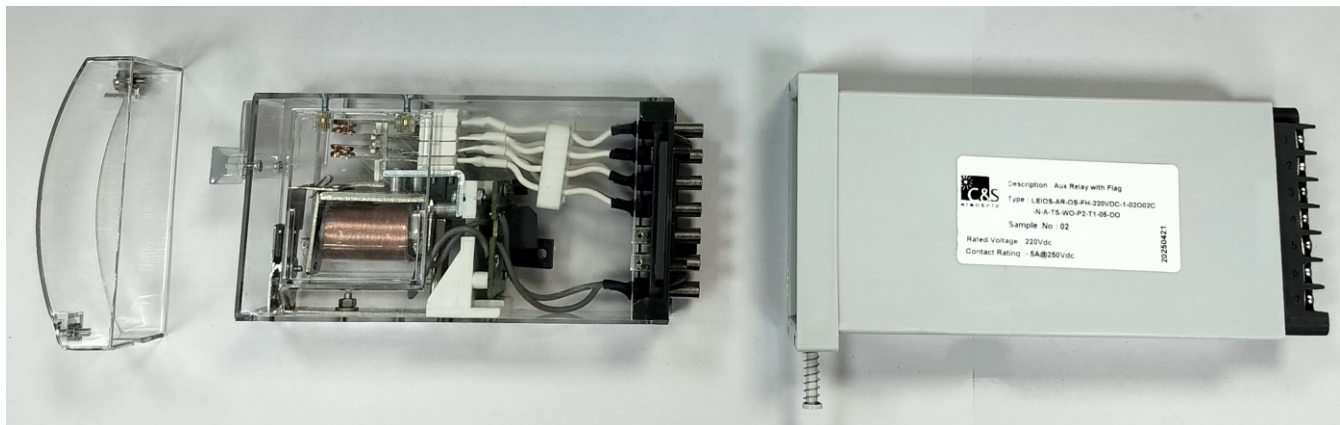


e.g. for LEIOS-22, 15NO / 6NC with Supervision Terminal



Draw-out Relays :
 Internal Assembly View

LEIOS-6 :



Front Cover

Internal Assembly

Relay Enclosure

Ordering Information : NOTE : Refer 1a, 1b, 1c, Table 2 and Table 3 on Page 6 for possible arrangement of contacts.

Model No. :

LEIOS - XX - X - X - XXXXX - X - XXOYYC - X - X - X - X - XX - X

SERIES
LEIOS

NUMBER OF CONTACTS
06 : Maximum 06 contacts
10 : Maximum 10 contacts
22 : Maximum 22 contacts

CONTACTS RESET
E : Only Electrical Reset
H : Only Hand Reset
S : Only Self Reset
C : Combined Hand & Electrical Reset

FLAG RESET
E : Only Electrical Reset
H : Only Hand Reset
C : Combined Hand & Electrical Reset
N : No Flag

Aux Power Supply DC Rating (Rated voltage)
024DC : 24Volts DC
030DC : 30Volts DC
048DC : 48Volts DC
110DC : 110Volts DC
220DC : 220Volts DC
250DC : 250Volts DC

Aux Power Supply AC Rating (Rated voltage)
024AC : 24Volts AC
030AC : 30Volts AC
048AC : 48Volts AC
110AC : 110Volts AC
230AC : 230Volts AC

ELEMENTS
1 : Single Element
2 : Two Elements (available in LEIOS-6 only)

CONTACTS
XXOYYC : NO/NC
OOXCO : CO

FLAG OPERATION
N : Normal operation
R : Reverse operation **
O : Without any Flag

TRIP COIL SUPERVISION
S : Relay with supervision terminal (Relay will have one less pair of NC contacts from Standard configuration)
T : Relay without supervision terminal

PICKUP VOLTAGE
4 : 40 to 60% of rated voltage
8 : 80 to 85% of rated voltage

PICKUP TIME
A : <20 ms (for Auxiliary Relay)
L : <10 ms (for Latching Relay)
U : <4 ms (only for LEIOS-6, Auxiliary Relay)

CONTACT RATING
05 : 05 Amps
10 : 10 Amps
20 : 20 Amps # #

TERMINALS
D : Draw-out
N : Non Draw-out

** : Available only in Auxiliary Relays (A).

: Available only in change over(C) relays.

Ordering Code Examples:

XXXXX - XX - X - X - XXXXX - X - XXOYYC - X - X - X - XX - XX - X

EXAMPLE 1 : LEIOS-10 contacts :

LEIOS - 10 - C - C - 220DC - 1 - 06O04C - N - S - 8 - L - 10 - D

LEIOS-10, Contacts are Hand & Electrical Reset, Flag is Hand & Electrical Reset, Aux supply 220VDC, Single element,

Contacts configuration 6NO+4NC, Normal flag operation, with supervision terminal, Pickup voltage of 80 to 85% of rated voltage,

less than 10ms of pickup time, Contact rating of 10 Amps & Draw-out type terminals.

EXAMPLE 2 : LEIOS-6 Aux Relay with Flag

LEIOS - 06 - S - H - 220DC - 1 - 02O02C - N - T - 8 - A - 05 - D

LEIOS-06 series, Contacts are only Self Reset, Flag is Hand Reset, Aux supply 220VDC, Single element, Contacts configuration 2NO+2NC,

Normal flag operation, without supervision terminal, Pickup voltage of 80 to 85% of rated voltage, less than 20ms of pickup time, Contact rating of 05 Amps and Draw-out type terminals.

EXAMPLE 3 : LEIOS-6 Aux Relay without Flag

LEIOS - 06 - S - N - 220DC - 1 - 04O02C - O - T - 8 - U - 05 - D

LEIOS-06 series, Contacts are only Self Reset, No Flag, Aux supply 220VDC, Single element, Contacts configuration 4NO+2NC, Without any flag

without supervision terminal, Pickup voltage of 80 to 85% of rated voltage, less than 4ms of pickup time, Contact rating of 05 Amps & Draw-out type terminals.

EXAMPLE 4 : LEIOS-6 DC Change over Relay

LEIOS - 06 - S - N - 220DC - 1 - 0004CO - O - T - 8 - A - 20 - D

LEIOS-06 series, Contacts are only Self Reset, No Flag, Aux supply 220VDC, Single element, Contacts 4 change over, without any flag

without supervision terminal, Pickup voltage of 80 to 85% of rated voltage, less than 20ms of pickup time, Contact rating of 20 Amps & Draw-out type terminals.

EXAMPLE 5 : LEIOS-10 Contacts :

LEIOS - 10 - E - N - 220DC - 1 - 06O04C - O - T - 8 - L - 10 - D

LEIOS-10 series, Contacts are only Electrical Reset, No Flag, Aux supply 220VDC, Single element, Contacts configuration 6NO+4NC, without any flag,

without supervision terminal, Pickup voltage of 80 to 85% of rated voltage, less than 10ms of pickup time, Contact rating of 10 Amps & Draw-out type terminals.

NOTE:

- 1) In Hand reset relay, the contacts are hand reset and the flag is also hand reset mechanically.
- 2) In Self reset relay, the contacts are self reset but the flag is mechanically hand reset.
- 3) In Electrical reset relay, the contacts are electrically reset and the flag is also electrically reset from a remote location.

