

Auxiliary Range

CAR - Auxiliary Relay



1. Introduction & application

The CAR type auxiliary relay are voltage operated relays mainly used in control and alarm circuits.

CAR series of relay are available in two basic models CAR-H and CAR-S. Auxiliary relay CAR-H is provided with hand reset contacts. CAR-S is self reset type.

CAR series of relays are available in 2-elements & 3-elements model also. Each element can be energized separately also.

The CAR series of relays are used in various applications such as:

- Switching functions in protection and control circuits.
- Contact multiplication.
- Other auxiliary and alarm functions.

2. Features and characteristics

The CAR series of auxiliary relay are equipped with following features.

- Electro-mechanical design.
- Suitable for tripping, signaling in protection and control systems.
- Consistent and Repeat accuracy.
- High resistance to shock and vibration.
- Flexible user friendly standardized contacts arrangement.
- Hand reset or self reset contacts.
- Hand reset flag indication.
- Compact panel mounting case.

3. Design

The design of auxiliary relays electromechanical, 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 high thermal rating to withstand the problems of over heating due to continuous rating.

Similarly, the contacts have been designed with silver/cadmium oxide 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 superior phosphor-bronze spring quality material to have the positive flexible movements. Always each relay element is provided with 3 Make and 3 Break contacts.

In case of requirement, one Break contact can be connected in series with the relay element as a cut-off contact. This reduces the burden and saves the power from the battery. This facility is available with 1-element relay with Hand reset contacts only. The flag is always hand reset. The relay with self reset contacts may be provided without flag also.

3.1 Connections

The connection diagram of 1-element relay (self-reset & hand-reset) is given in fig 3.1 a & b respectively. The connection diagram of 2-element relay is given in Fig. 3.2 & 3-element relay is shown in Fig. 3.3.

3.2 Output relays

All relays are normally de-energized. The terminal arrangement of 1-element relay is given in the table 1.1. The terminal arrangement of CAR-2 & CAR-3 relay is given in table 1.2 & 1.3 respectively.

Table 1.1 : Out-put contact of CAR-1 series relays :

Contact	Terminal
Coil contacts	: 11, 12
Output contact Pair 1	: 1, 2
Output contact Pair 2	: 3, 4
Output contact Pair 3	: 5, 6
Output contact Pair 4	: 7, 8
Output contacts Pair 5	: 9, 10

Table 1.2 : Out-put contact of CAR-2 series relays :

Contact	Terminal
A-Coil contacts	: 9, 10
Output contact Pair 1	: 1, 2
Output contact Pair 2	: 3, 4

Output contact Pair 3	: 5, 6
Output contact Pair 4	: 7, 8
B-Coil contacts	: 19, 20
Output contact Pair 5	: 11, 12
Output contact Pair 6	: 13, 14
Output contact Pair 7	: 15, 16
Output contact Pair 8	: 17, 18

Table 1.3 : Out-put contact of CAR-3 series relays :

Contact	Terminal
A-coil contacts	: 7, 10
Output contact Pair 1	: 1, 2
Output contact Pair 2	: 11, 12
B-Coil contacts	: 8, 10
Output contact Pair 3	: 1, 3
Output contacts Pair 4	: 13, 14
C-Coil contacts	: 9, 10
Output contact Pair 5	: 1, 4
Output contacts Pair 6	: 15, 16

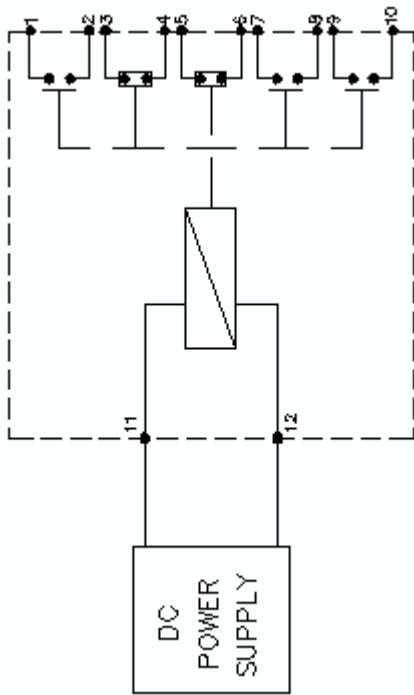


Fig. 3.1a : Connection diagram CAR - 1- S

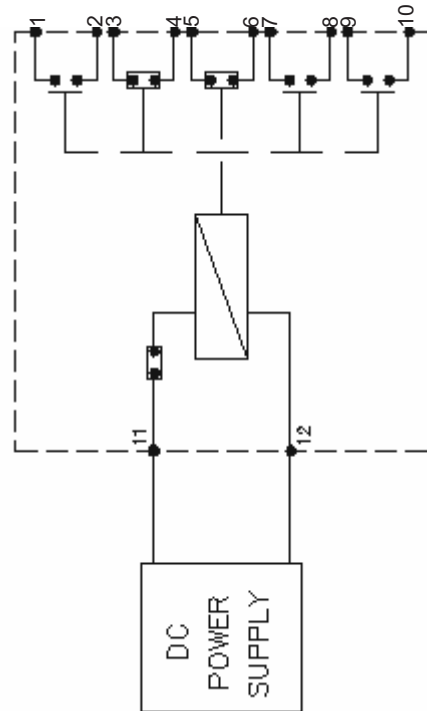


Fig. 3.1b : Connection diagram CAR - 1- H

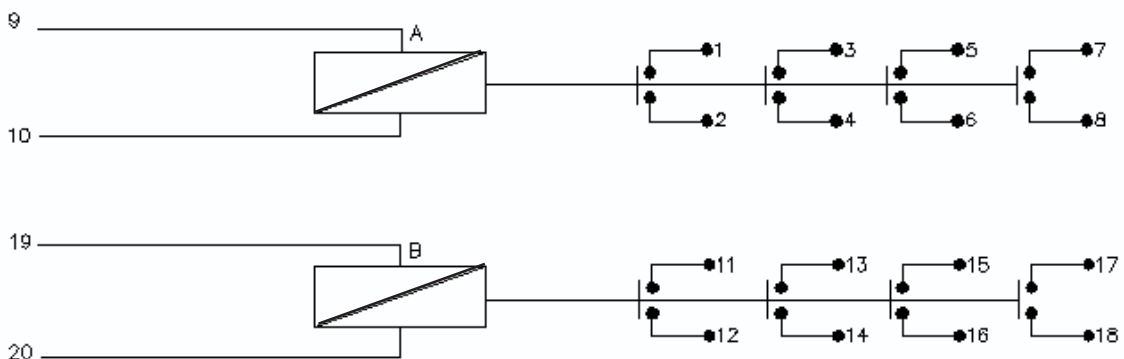


Fig. 3.2 : Connection diagram CAR - 2

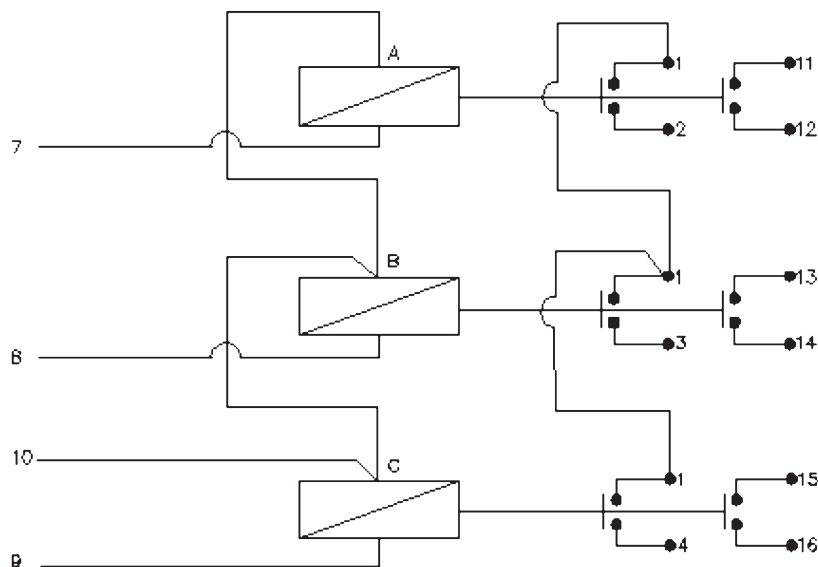


Fig. 3.2 : Connection diagram CAR - 3

4. Technical data

4.1 General data

- Type : CAR-1(CAR-H /CAR-S) , CAR-2 & CAR-3
- Design : Flush mounting metal case
- Duty : Continuous operation
- Maintenance : None

4.2 Measuring input circuits

- Rated voltage : 24V, 48V, 110V, 220V DC
And 63.5V, 110V, 230V AC
- Operating range : DC – 70% to 120% of rated voltage.
AC – 80% to 110% of rated voltage.
- Burden : 3 to 6 watts depending upon the rating.

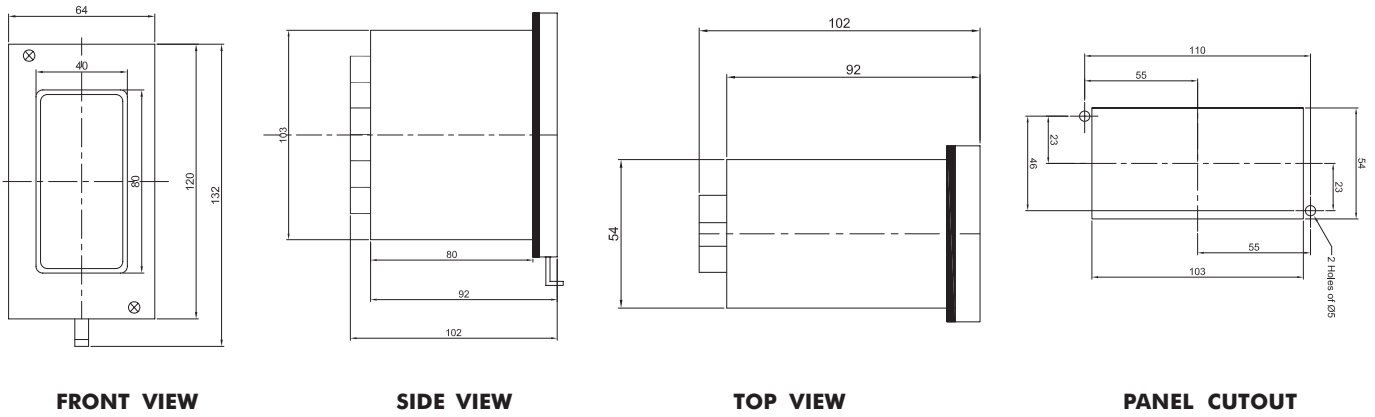
4.3 Common data

- Operating time : 25 ms at rated voltage.
- Reset value : Around 10 milliseconds.
- Insulation : 2KV RMS, 50 Hz for 1 minute/2.5 KV for 1 second between all terminal and case as per I.S. 3231 and 1 KV RMS, 50 Hz for 1 min. across open contacts.
- Operation Indicator : Hand Reset mechanical flag.
- Contact configuration : 3 NO + 2 NC potential free contacts self reset or hand reset in single element relay, 4 NO potential free contacts (for each element) in two elements relay & 2 NO potential free contacts(for each element) in three element relay.
- Operating Temperature : -10 deg to +55 deg Celsius

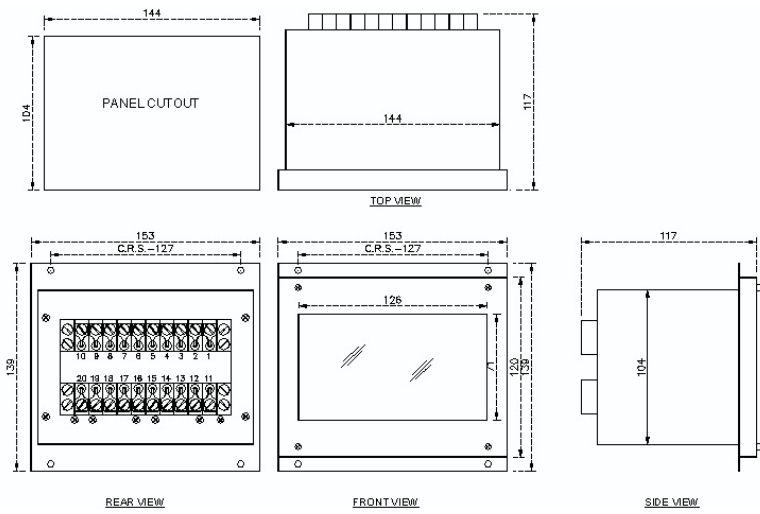
Contact Rating

	A.C.	D.C.
Make and Carry continuously	1250 VA a.c. within limits of 660V & 5 amps.	1250 W d.c. within limits of 660V & 5 amps.
Make and Carry for 3 sec.	7500 VA a.c. within limits of 660V & 30 amps.	7500 W d.c. within limits of 660V & 30 amps.
Break	1250 VA a.c. within limits of 250V & 5 amps.	100 W (resistive) or 50W inductive (L/R ratio =0.04)within limits of 250V & 5 amps.

5.0 Dimensional diagram of CAR - 1



5.0 Dimensional diagram of CAR - 2 & CAR - 3



6.0 Order Form

CAR -				
Self Reset		S		
Hand Reset		H		
Voltage	AC		1	
Voltage	DC		2	
Rating	DC	AC		
	24V	63.5V		1
	48V	110V		2
	110V	230V		3
	220V			4
Single element				1
Two element				2
Three element				3

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