



नाम

Name : _____

अनुक्रमांक

Roll No : _____

पाठ्यक्रम

Course : _____

दिनांक

Date : _____

प्राप्तांक

Marks Awarded : _____

अनुदेशक के आदयक्षर

Instructor Initial : _____

MULTI LAMP ROUTE INDICATORS

THEORY: A route indicator is a device for indicating in conjunction with a stop signal, the route to be travelled by a train where two or more routes exist. Introduction of route indicators eliminates the necessity of having separate splitting signal for each route and brings about great reduction in number of signals in large terminals and yards. The driver is also not required to pass a red light in the normal course of running. There are several types of route indicators in use the operation of multi-lamp route indicator is described below:

These indicators are sometimes known as “Theatre” or “Music Hall” type. They are usually fitted with 35 or 49 lamps in 7 horizontal and 5 or 7 vertical rows, behind a glass screen or cover glass. The indication is given by illuminating the appropriate lamps to form the required number or letter. The lamps are numbered according to their position in Horizontal and vertical rows. For example, that burn for the normal 2 will be numbered 21 the second 12 third 13 i.e., (21 – in 2nd horizontal row and in 1st vertical row again No.13 No. bulb. 1st horizontal row and in 3rd vertical row, etc.).

	1	2	3	4	5
1	11	12	13	14	15
2	21	22	23	24	25
3	31	32	33	34	35
4	41	42	43	44	45
5	51	52	53	54	55
6	61	62	63	64	65
7	71	72	73	74	75

With some type of lamps for each indication are wired in series in which case failure of one lamp will extinguish the whole indication. With others, the lamps are wired in parallel so failure of one lamp will not extinguish the whole indication and the incomplete indication may still be readily distinguished. In some indicators that the lamp are controlled through relays as the case of S&H models.

Depending upon whether the route indicators to be wired series or parallel, the type of transformer and the type of the bulb are to be selected.

Series wiring: $T_R = 110V/54V, 84V, 102V$ with suitable tapings

(i.e., Route require bulbs x 6) for each route voltage tapings.

Parallel wiring : $T_R = 110V/12V$ Bulb = 12V 6W (Recent indicators use). 12V 4W (SL5 bulb).

The minimum load to be specified and kept to avoid high voltage developing on secondary with less load and fusing the bulbs avoided by adding some extra load along with that minimum route bulbs.

For routes 1 to 9 = bulbs $7 \times 5 = 35$ route indicator is used.

For routes 1 to 19 = bulbs $7 \times 7 = 49$ route indicator is used.

For routes 1 to 99 = One 35 lamp & 49 lamp route indicators out, side by side to be used (a rate requirement).

The 5&7 35 lamp multi-lamp route indicator is described below:

There are 35 Nos. of 12V – 6W indicator lamps arranged in 5-vertical and 7 horizontal rows. The indicator has been wired upto display 7 numbers namely, 1,2,3,4,5,6&7 for such different routes. There are also 7 relays – One for each route.

If a particular route is set that corresponding route relay picks up through the control circuit. Over the contacts of these route relays the required lamps are lighted to give the indication.

It may be observed from the table given below that a particular lamp may be common to two or more routes indicatins. So, lamps are taken in some common circuits and the rest of the lamps in separate circuits.

From the table attached it will be seen that lamp 11 as common to routes 3,4,5 and 7 and this lamp will not light up if route 1 or 2 or 6 is set, so the lamp circuit is proved indirectly over back contacts of 1UR, 2UR and 6UR.

Similarly, all the other lamps are wired to confirm to the table.

Procedure:

1. Study the circuit arrangement of the route indicator for numerals - 1,2,3,4,5,6,7.
2. Prepare circuit for numerals 9 and letters T&L.
3. Wire up the indicator for 9, T&L.
- 4.

Bulb	Routes											Bulb	Routes										
	1	2	3	4	5	6	7	9	T	L	1		2	3	4	5	6	7	9	T	L		
11	-	-	3	4	5	-	7				44	1	2	3	4	5	6	7					
12	-	2	3	-	5	6	7				45	-	-	-	4	-	-	-					
13	-	2	3	-	5	6	7				51	-	-	-	-	-	6	-					
14	1	2	3	-	5	6	7				52	-	-	-	-	-	-	7					
15	-	-	-	-	-	-	7				53	-	2	-	-	-	-	7					
21	-	-	-	4	5	6	-				54	1	-	-	4	-	-	-					
22	-	-	-	-	-	-	-				55	-	-	3	-	5	6	-					
23	1	-	-	-	-	-	-				61	-	-	-	-	-	6	-					
24	1	-	-	-	-	-	-				62	-	2	-	-	-	-	7					
25	1	-	-	4	-	-	-				63	-	-	-	-	-	-	-					
31	-	-	-	4	5	6	-				64	1	-	-	4	-	-	-					
32	1	-	-	-	-	-	-				65	-	-	3	-	5	6	-					
33	-	-	-	-	-	-	-				71	-	2	3	-	5	-	7					
34	1	-	-	4	-	-	-				72	-	2	3	-	5	6	-					
35	-	2	3	-	-	-	7				73	-	2	3	-	5	6	-					
	-	-	-	4	5	6	-				74	1	2	3	4	5	6	-					
42	-	-	-	4	5	6	-				75	-	2	-	-	-	-	-					
43	-	-	3	4	5	6	-																

1. Locate the lamps on route indicator for Routes – 9, T&L distinctive for each route.
2. Prepare wiring diagram for series wiring for Routes – 9, T&L.
3. Prepare wiring diagram for parallel wiring for routes 9, T&L.
4. Compare the multilamp route indicator with junction type route indicator.
5. What are the advantages and disadvantages in connecting the lamps in series and in parallel in multilamp route indicator?
6. To prove the route indication before the signal aspect is displayed with a multi-lamp type route indicator. What are the additional requirements? Is it necessary.
7. Prepare circuit for the UR rs for the following layout.

Date

Signature of the Trainee