Zone Paging via DK00

The application of Multi-Zone external paging can be controlled by the DK00 card if the external amplifier/device does not offer this function.

The application requires additional 24VDC double pole slave relays that are driven by the DK00 to switch the amplifier input and output. The PBX has full control of the external equipment while at the same time being isolated from it. This reduces the risk of damage from unpredictable sources such as lightning or power surges from the external devices/circuits. Also the DK circuit contact is limited to a maximum current capacity on 125mA while slave relay contacts, that it controls, can be almost unlimited.

These relays are very affordable and can be found with a simple search for "**24VDC relay**" on the internet from any search engine. The double pole (DP) relay is preferred as it has two separate contacts providing switching, on one relay, for both the input and output of each paging zone. 24Volt DC is also preferred allowing the PW122 to be utilized as the power supply for the relays thus avoiding the cost of additional equipment. For ease of installation and trouble shooting it is also recommended to order plug-in bases, with screw terminals, for the relays. For paging slave relay contacts need a minimum capacity of 1A. This rating can vary based on the number of speakers the contact is switching.

If you are using the optional "All Zone" setting, additional relays would be required to achieve this. The example below shows two relays enabled with the "All Zone" feature. The first relay to switch the amp input and the amp output to speakers in zone one. The additional relay adds in the speakers for zone two and three for the "All Zone" effect.

Programming

The programming example shows three external zones with All Zone and the DK00 in LT04 and 4COT in LT07 all in PIM 0. Trunk, route, LEN, and access numbers are for example only.

1. CM 10>032>E800 Assignment of 4 DK relays (0~3).
2. CM 10>056~059>D050~D053 Assignment of page trunks.
3. CM 3028>050>00 Trunk 50 for Zone 0 (All Zone).
4. CM 3028>051>10 Trunk 51 for Zone 1.
5. CM 3028>052>20 Trunk 52 for Zone 2.
6. CM 3028>053>30 Trunk 53 for Zone 3.
7. CM 3000>050>50 Trunk 50 to route 50. **Note 1.**
8. CM 3000>050>51 Trunk 51 to route 51. **Note 1.**
9. CM 3000>050>52 Trunk 52 to route 52. **Note 1.**
10. CM 3000>050>53 Trunk 53 to route 53. **Note 1.**
11. CM 3500>50~53>00
12. CM 3505>50~53>0
13. CM 44>000>0200 Relay 0 for paging zone 0 (Rt 50 All Zone).
14. CM 44>001>0201 Relay 1 for paging zone 1 (Rt 51 Zone 1).
15. CM 44>002>0202 Relay 2 for paging zone 2 (Rt 52 Zone 2).
16. CM 44>003>0203 Relay 3 for paging zone 3 (Rt 53 Zone 3).
17. CM 200>50>150 Access code 50 for "All Zone" page.
18. CM 200>51>151 Access code 51 for page zone 1.
19. CM 200>52>152 Access code 52 for page zone 2.
20. CM 200>53>153 Access code 53 for page zone 3.

Note 1: Trunk routes utilized for external paging should have all other 35 CM's (other than those indicated in the programming example) at the default setting.

Example for DK00 in LT 04, PIM 0
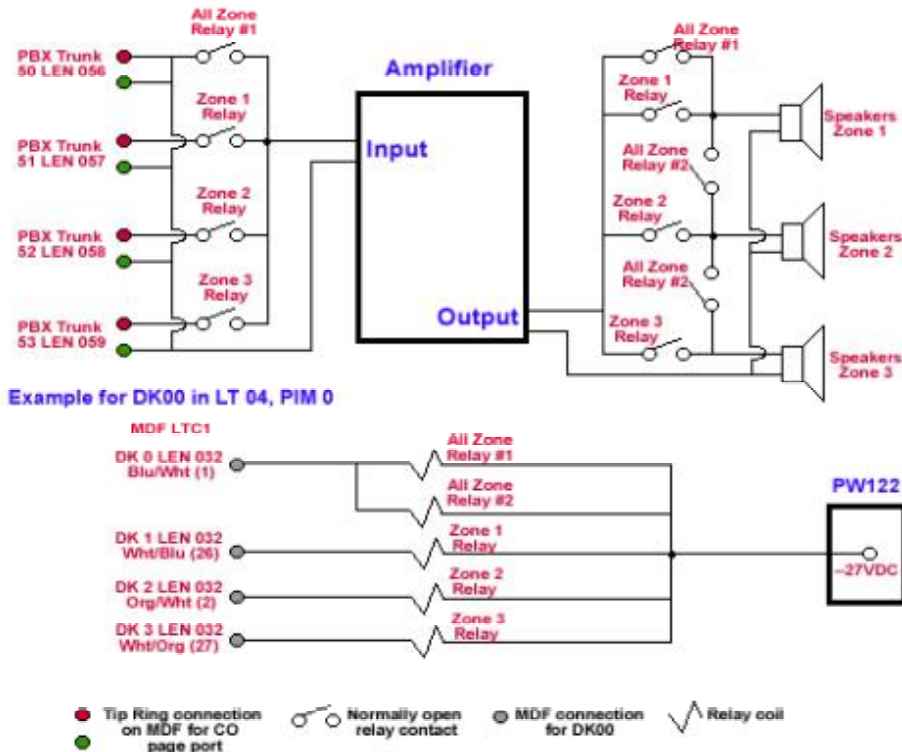
Additional Notes

MDF connections for the DK00.
The first relay (0) is actually connected to the 2nd conductor on the MDF while the 2nd relay (1) is connected to the 1st conductor on the MDF.
Looking down the LTC cable the relays wire in the order of DK 1, DK 0, DK 3, and DK 2.

The DK00 supports up to 8 relay ports.
The example above shows the assignment in CM 10 of E800 on LEN 032. The assignment of E801 could be added to LEN 034 to enable an addition 4 relays. Those relays would be addressed in CM 44 as 010, 011, 012, and 013. Their connection on the MDF for LT04 would be Relay 0 Grn/Wht (28), Relay 1 Wht/Grn (3), Relay 2 Brn/Wht (29), Relay 3 Wht/Brn (4).

The DK relay is a connection to PBX Ground.
It is a common misconception that the DK provides a normally open contact between 2 conductors on the MDF. The DK circuit is a normally open contact but it is between the conductor on the MDF and the PBX ground.

Testing the DK operation.
To test the operation of the circuit you must set a multi-meter to the ohms (Ω) setting. If you have an analog meter, or, must set a range for your digital meter, select a range that will easily show somewhere between 800K ohms and 1.5 Meg ohms. Connect one multi-meter lead to the conductor on the MDF for the DK circuit you are testing. Connect the other lead to the frame of the PBX. Initiate the DK circuit (access page trunk for example above) and you should identify the change from infinity (∞) to a reading of approximately 1 Meg ohm on the multi-meter. Release the circuit and the meter should then return to infinity/open circuit (∞ or if Fluke meter "OL")