



T800-37 Paging Line Modem Modifications for Increased Delay

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General

The T800-37 Modem and Delay Board is used in POCSAG paging bases to set delays in simulcast applications. As standard the T800-37 can be set to a maximum nominal 5ms delay. Some customers require longer delays and this application note details a method to obtain additional delays.

Parts

Jumper wire only is required to carry out this modification

Description

IC12 of the circuit is used as a frequency divider to set the timing of the delay.

With link JP6 set to 2-3 IC12 input (P7 – P0) is set to 00001011 (decimal 11) which gives a divide by 12 on the reference frequency of 3.579545 MHz. Output frequency is therefore 298.295kHz (nominal 300kHz) with a cycle therefore being 3.35us.

With link JP6 set to 1-2 IC12 input (P7 – P0) is set to 00010111 (decimal 23) which gives a divide by 24 on the reference frequency of 3.579545 MHz. Output frequency is therefore 149.148kHz (nominal 150kHz) with a cycle therefore being 6.70us.

To increase the delay it is necessary to increase the divide ratio set by IC12. With IC12 input (P7 – P0) is set to 00111111 (decimal 63) which gives a divide by 64 on the reference frequency of 3.579545 MHz. Output frequency is therefore 55.930kHz (nominal 56kHz) with a cycle therefore being 17.88us.

With a cycle time of 17.88us total delay setable with the modem and delay board will be 17.88×767 (maximum setable delay in “bits”) = 13.714ms

Procedure

1. Lift the leg on IC12 pin 11 and add a jumper wire from IC12 pin 11 to IC12 pin 16. This pulls the P5 input to IC12 high.
2. Remove both links on JP6, this allows P4, P3 and P2 inputs to IC12 to pull high via the pullup resistors R16 and R17.
3. Set the required delay using the following table.

BULK DELAY Jumper	Function	Clock 56kHz
JP5A	no delay	nil
JP5B	256 bits delay	4577us 1373km
JP5C	512 bits delay	9155us 2746km

Note: The BULK DELAY jumpers are mutually exclusive. Only one of JP5A, B or C may be on at any one time. Failure to observe this may cause circuit malfunction

The VARIABLE DELAY jumpers (8 places) can be set to give fine control as follows:

VARIABLE DELAY Jumper	Function	Clock 56kHz
L1	Adds 1 bit to chain	17.88us 5.37km
L2	Adds 2 bits to chain	35.76us 10.73km
L4	Adds 4 bits to chain	71.52us 21.46km
L8	Adds 8 bits to chain	143.04us 42.91km
L16	Adds 16 bits to chain	286.08us 85.82km
L32	Adds 32 bits to chain	572.16us 171.65km
L64	Adds 64 bits to chain	1144.32us 343.30km
L128	Adds 128 bits to chain	2288.64us 686.59km

Complete fitting of the T800-37 as per the Fitting Instructions (IPN 402-00000-03)