TN110 Channel and Frequency Selection

MT-3 and MT-4 Channel (and Bank) Selection

The MT-3 series of Transmitters and Receivers can be programmed with up to 16 user selectable channels each. The MT-4 series of Transmitters and Receivers can be programmed with up to two banks (Bank A and Bank B) of 16 channels each. The 16 channels are controlled via 4 CSEL signal lines connected to each receiver and transmitter module. The CSEL signal lines are set as either a 0 (0 Vdc) or a 1 (+9.5 Vdc). The following chart shows the channel selected for the CSEL input settings:

Channel	Decimal	CSEL3	CSEL2	CSEL1	CSEL0
1	0	0	0	0	0
2	1	0	0	0	1
3	2	0	0	1	0
4	3	0	0	1	1
5	4	0	1	0	0
6	5	0	1	0	1
7	6	0	1	1	0
8	7	0	1	1	1
9	8	1	0	0	0
10	9	1	0	0	1
11	10	1	0	1	0
12	11	1	0	1	1
13	12	1	1	0	0
14	13	1	1	0	1
15	14	1	1	1	0
16	15	1	1	1	1

The MT-4 Receiver and MT-4 Transmitter Bank A/B select lines normally float high (+5V), selecting Bank A, but may be pulled low or high externally via the Bank A/B select line. The Receiver Bank A/B select line uses the same line as the MT-3 Receiver ISO COR K and the Transmitter Bank A/B select line uses the same line as the MT-3 Transmitter Standby.

There are 3 different ways to change the channel of a transmitter / receiver module:

1. The user can set jumpers mounted on the motherboard for each Channel Select signal line (Set of four for each Tx / Rx module). These jumpers can be used to permanently set a subrack slot at a specific channel. Jumpers can be set for 0 (0 Vdc) “down” or 1 (9.5 Vdc) “up”. Pull-up resistor jumpers to 9.5 Vdc must be installed. These jumpers are read right to left (MSD to LSD)
2. CSEL signal lines can be controlled externally by a tone remote adapter, a CI-RC-4M multiple link controller, or other third part devices.
3. 16 position rotary select switches mounted on the front of the base controller can control the CSEL lines, and optionally the CI-RC-4L repeater controller can have a rotary switch added.

The Pull-up resistor jumpers to 9.5 Vdc must be removed and all channel select jumpers must be installed in the 1 or “up” position for both external control and rotary switch control of channel selection.

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MT-3 Low Current / Enhanced Synthesizer Modules Frequency Selection

The MT-3 synthesizer modules operating frequency may be selected in standard channel increments through either four internal BCD rotary switches, or by the synthesizers internal memory that can be programmed for 15 preset frequencies.

In order to set the desired frequency for each channel, a four digit code is used to represent each available frequency. The four digit code is used internally in the synthesizer to generate the desired RF frequency. This four digit code is found in the Channel Designation Tables that accompany the receiver or transmitter Instruction Manual. The Channel Designation Tables cross reference each frequency with a code number.

(1) If Channel 1 is selected the synthesizer will scan four BCD switches mounted on the main circuitboard of the receiver or transmitter module for the code number.

(2) If Channel 2 through 16 is selected, then the frequency is established by the preprogrammed entry in the synthesizer's internal memory. The internal memory is normally programmed at the factory, but can be field programmed using the CP-SC-3 synthesizer channel programmer module.

MT-3 Crystal Control Modules Frequency Selection

The MT-3 crystal controlled modules operating frequency is selected by the control module's fundamental crystal frequency. The channel select lines and internal BCD rotary switches are not used by the crystal control module.

Crystal modules use a fundamental crystal in an oscillator circuit to determine the operating frequency of the oscillator. The output frequency of a VHF crystal module is three times the frequency of the fundamental crystal oscillator circuit. Output frequency of a UHF crystal module is nine times that of the fundamental crystal oscillator circuit.

To maintain ± 1 ppm frequency tolerance the crystal oscillator circuitboard has an on-board digital board which provides temperature compensation information for each individual crystal element. To change the transmitter or receiver operating frequency, a new crystal oscillator board must be purchased.

MT-4 Modules Frequency Selection

The MT-4 modules operating frequency is selected in standard channel increments through the Radio Service Software (RSS). Frequencies can be directly entered or selected through the use of a spin button that cycles through valid frequencies.

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