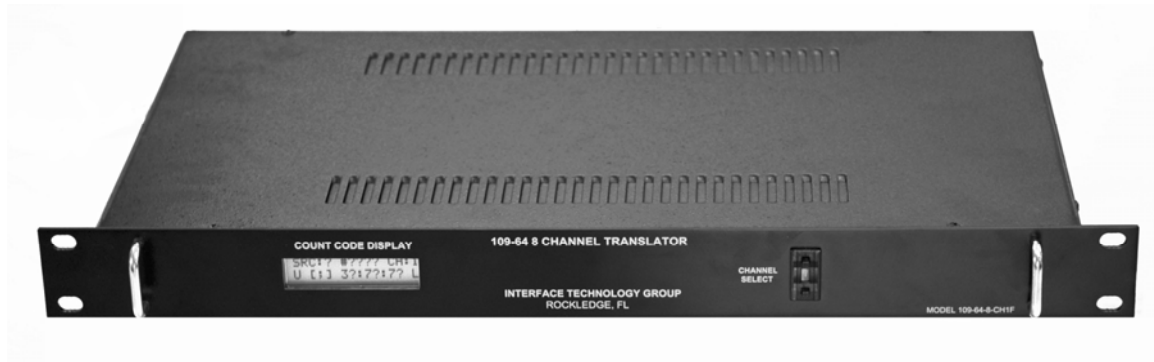


Interface Technology Group, Inc.



Model 109-64-8-CH1F

109-64 8 Channel Translator

Operation and Maintenance Manual

Interface Technology Group, Inc.
2107 South Hwy US-1
Rockledge, FL 32955
V 321-433-1165 F 321-433-0924

Specifications:

Power Input:..... 90 – 265 VAC 47-470 Hz.
.....IEC Input connector 10W Nominal

Fuse:.....1 Amp

Dimensions:..... 19” Wide X 1.75” High (1 RU) X 10.25 Deep

Weight:.....8 Pounds

Operating Environment:..... 32° F to 100° F, 0 – 95% RH Non condensing

Signal Inputs:

109-64 Multiplexed code 10 mV to 4 V P-P. 10K Input Impedance

Signal Outputs:

Sine wave FSK Output. Adjustable 0 to 5 V P-P. Factory set for 3.0 V P-P.

Square wave FSK Output. 4 V P-P TTL Level.

DC Code Output. Decoded selected channel data. TTL Level

Overview:

The model 109-64-8-CH1F Translator accepts up to 8 channels of 109-64 count code multiplexed as standard CCITT 110 Baud signals. The incoming signal goes through an automatic gain control (AGC) circuit to maintain a constant level to the filters. 8 separate 4 pole elliptical filters filter the input signal. A phase lock loop circuit then demodulates the output of each filter. A push button switch allows selection of any one of the 8 channels. The selected channel is then re-modulated as channel 1 (Center Frequency 1105 Hz) and sent out as a square wave 109-64 FSK signal. The square wave signal is also sent to an active low pass filter, through a potentiometer, to the rear panel as a sine wave FSK Output. Additionally, the selected channel is sent to a microprocessor to decode the count data and display the data on a 2-line 16-character LCD display.

The square wave 109-64 FSK output is designed to be compatible with the TRAK Systems Model 8460 Range Count Signal Generator when used in the 109-64 slave mode.

The sine wave output can be easily transported by analog methods if desired.

Operation:

On power up, the front panel LCD display will first identify the manufacturer, the software version number, and then the model number. The software is embedded code within the microprocessor itself and is used to decode and display the incoming 109-64 code. The software has no effect on the operation of the translator itself, just the operation of the front panel LCD display.

Connect a multiplexed input signal to the connector on the rear panel. Turn on the rear mounted power switch. Select the desired channel using the front panel pushbutton switch. Note that selecting channel 0 on the switch will result in selecting channel 1 and conversely, selecting channel 9 will result in the selection of channel 8. The front panel LCD display will always display the correct channel selected.

Whichever channel is selected will be decoded and displayed on the LCD screen. The selected channel will also be re-encoded and sent out the rear connectors as channel 1 FSK 109-64 code.

Note that the display function has no impact on the function of the translator itself. The display circuitry merely monitors the selected input and displays what it decodes. If the display were to fail, there would be no impact to the translator. Whichever channel is selected will continue to be re-encoded as channel one. The display is for operator convenience only.

Display Details:

When power is applied, the LCD Backlight illuminates, and the LCD screen begins to display text. The first static screen displayed is as follows:

I	T	G	-	R	O	C	K	L	E	D	G	E	,	F	L
S	o	f	t	w	a	r	e		V		1	.	0	0	

After a few seconds, the following static screen is displayed:

		M	O	D	E	L		N	U	M	B	E	R		
		1	0	9	-	6	4	-	8	-	C	H	1	F	

Note that the version of software refers to the software (firmware) that runs the display decoder only. The software has no affect on the translation function of the unit.

After a few more seconds, the following screen is displayed:

S	R	C	:	0	#	1	2	3	4	C	H	:	1
H	-	[1]	0	3	:	4	5	:	2	1	L

This is the main display screen. The decoded data from the 109-64 signal will displayed on this screen.

Description of the display elements:

Digit Number – Row 1:

- 1-4 Refers to the “Source” label as defined in document 109-64.
- 5 Source data. Can be 0-9.
- 7 Mission Number label.
- 8-11 Mission Number data.
- 13-15 Selected Channel Number label.
- 16 Channel number data. Can be 0-8.

Digit Number – Row 2:

- 1-2 “Status” data as defined by document 109-64. Displays 7 defined status conditions plus a “U” for an undefined condition. See text for further explanation.
- 3,5 Bracket labels.
- 4 Day data. Note 109-64 provides for only a single digit day.
- 9,12 Colon labels.
- 7-8 Hours data
- 10-11 Minutes data

13-14 Seconds data

16 Blank or "L". "L" Signifies that a launch has occurred (MLO). Position 10 of 109-64 code.

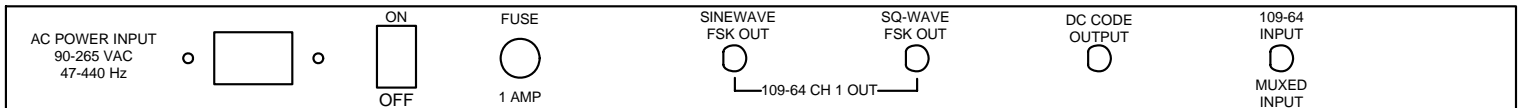
Status as defined by IRIG 109-64:

IRIG 109-64 defines 7 status conditions which are displayed on the translator when these codes are received. The status codes are as follows:

Code	Displayed on LCD
Start Operation	S-
Minus (-) Count	-
Hold	H-
Fire	F+
Plus (+) Count	+
End Operation	E+
Clear	(blank)
Preset Zulu	Z

Since there are 4 bits associated with the status word, there are 16 possible status conditions with 7 defined by 109-64. If the translator receives an undefined status word, a "U" will display on the LCD row 2, position 1.

Rear Panel Connections:



AC INPUT AC mains voltage is applied through the IEC connector.

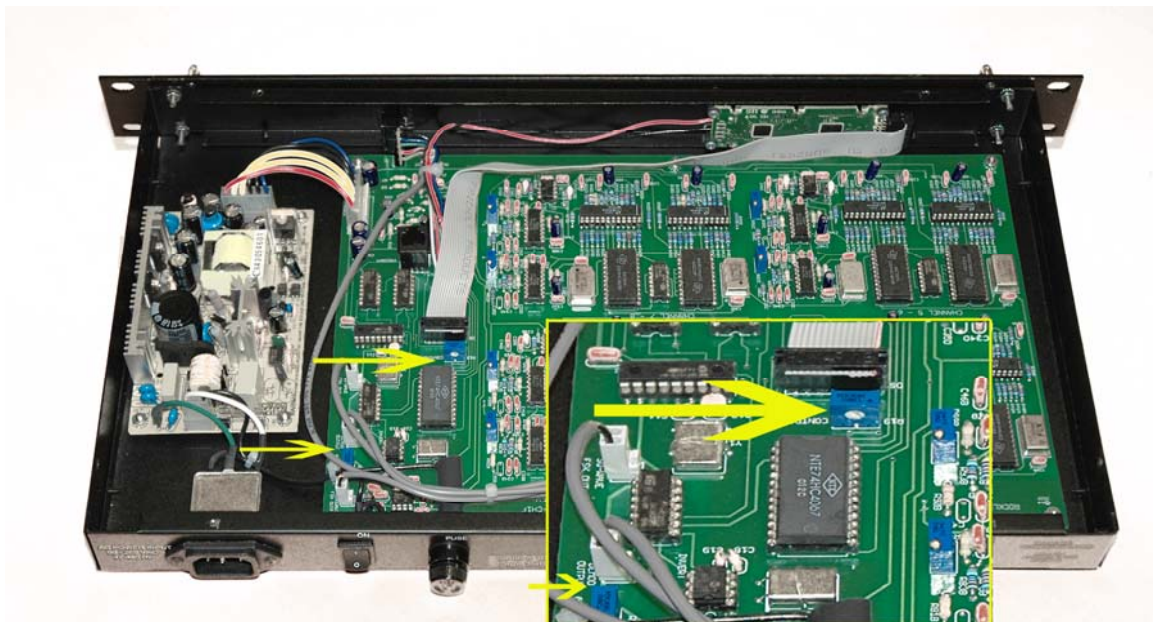
109-64 Input connected A frequency multiplexed 109-64 (up to) 8 channel signal is here.

- DC Code Output The selected channel is demodulated and sent out as a TTL level.
- SQ-WAVE FSK out The selected channel is re-modulated as an FSK channel 1 signal and sent to this connector as a TTL level output.
- SINEWAVE out The selected channel is re-modulated as an FSK channel 1 signal, low pass filtered and buffered, and sent to this connector. The level is adjustable 0-5 V P-P.

Adjustments:

There are two user adjustments inside the unit. One adjusts the contrast level of the LCD display. Normally, this is factory adjusted and should not need further adjustment. The location is clearly marked on the PCB and included here for reference.

The second user adjustment is for adjusting the sine wave output level. This is set at the factory for 3.0 V P-P nominal. If adjustment is desired, a small screwdriver may be used to adjust the potentiometer. The adjustment is clearly marked on the PCB and is illustrated below.



The arrow just under the ribbon connector shows the contrast adjustment location.

The sine wave level adjustment is shown by the arrow down and to the left.

NOTE: There are 8 additional potentiometers on the PCB. These are used to adjust the phase locked loops of each of the channel decoders and **should not** be adjusted in the field.

Power Supply:

The translator uses a “Universal Input” switching power supply for cool and reliable operation. The power supply accepts any common voltage between 90 and 265 VAC or 100 to 370 Volts DC without any adjustment. A separate line filter is built into the translator for an additional measure of EMI suppression. The Power supply used is UL listed and approved by several other agencies.

Routine Maintenance:

Remove dust from the cabinet when it accumulates. The front panel may be cleaned with a soft cotton cloth. Use only a small amount of mild soap and water solution to dampen the cloth if necessary.

No routine checks or adjustments are required.