

MODEL 923A OPERATION MANUAL ADDENDUM

Product improvements and changes have been incorporated into the Model 923, AM Modulation Monitor. The model number has also been changed to Model 923A to reflect the addition of a carrier level deviation meter to function as a carrier level shift indicator. This addendum describes the operation and calibration procedures of this newly added feature.

Instruction for using the addendum.

ITEM	DELETED FROM MANUAL	ADDED TO MANUAL
1	Section 3.3 Controls, Indicators and Connector, Page 3-1 to 3-3	New Section 3.3, page 4 and page 5 of the addendum
2	None	3.10 Carrier Level Deviation Meter, page 6 of the addendum
3	Section 5.4.2, Carrier Level Indicators, page 5-2	Section 5.4.2, Carrier Level Deviation Meter, page 6
4	Drawing No. 5102-3879 Rev. B, Fig. 6-1	Drawing No. 5102-3879 Rev. D, Fig. 6-1
5	Drawing No. 5102-3880 Rev. A, Fig. 6-2	Drawing No. 5102-3880 Rev. D, Fig. 6-2
6	Drawing No. 6600-2764 Rev. A, Fig. 6-4	Drawing No. 6600-2764 Rev. B, Fig. 6-4
7	Schematic No. 6601-3946 Rev. B, Sheet #1	Schematic No. 6601-3946 Rev. C, Sheet #1
8	Schematic No. 6601-3946 Rev. B, Sheet #2	Schematic No. 6601-3946 Rev. C, Sheet #2
9	Drawing No. 6608-3946 Rev. B, PCB Assembly	Drawing No. 6608-3946 Rev. B, PCB Assembly
10	Bill of materials, 6608-3946 Rev. B	Bill of materials, 6608-3946 Rev. C

OPERATION

3.1 GENERAL INFORMATION

The Model 923A AM Modulation Monitor displays the modulation percentage of the carrier being monitored. Both positive and negative modulations can be selected for monitoring. A front panel LED flashes when the modulation percentage exceeds 125 percent on positive peaks. A pair of front-panel LEDs flashes when the modulation percentage exceeds a present limit. Both positive and negative peaks can be monitored at the same time.

The Monitor can also be used to measure residual noise on the carrier and modulation percentage of low-level modulation.

3.2 TURN-ON AND WARM-UP

The monitor contains no on-off switch, and is on whenever it is plugged into an appropriate power source. Since the instrument is completely solid-state, a warm-up of no more than 5 minutes is sufficient for it to achieve its rated accuracy.

3.3 CONTROLS, INDICATORS AND CONNECTORS

Front and rear panel controls, indicators and connectors are shown in Figures 3.3-1 and 3.3-2. The function of these items are listed in Tables 3.3-1 and 3.3-2.

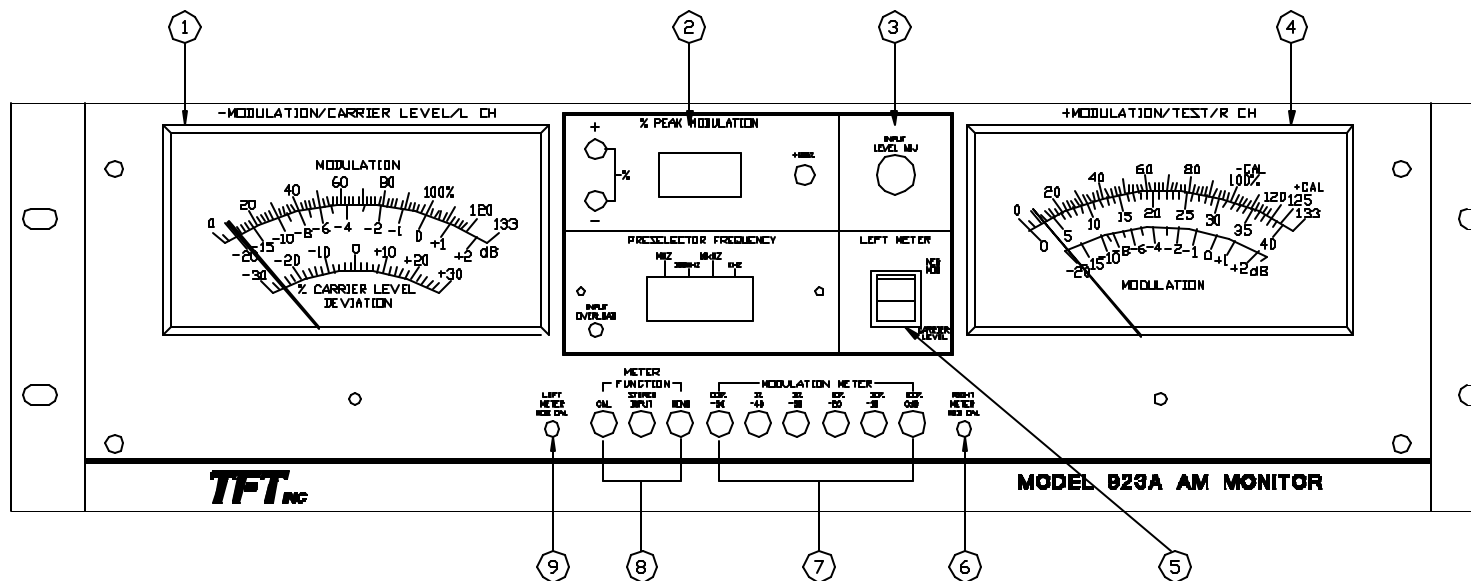


Figure 3.3-1. Front Panel Controls and Indicators

Table 3.3-1. Front Panel Controls and Indicators

ITEM	TITLE	FUNCTION														
1	MODULATION / CARRIER LEVEL / LEFT	Indicates \pm carrier level deviation from its 100% reference as described in Section 3.10 when the LEFT METER selection switch is at the CARRIER LEVEL position. It indicates negative modulation percentage of the RF carrier.														
2	% PEAK MODULATION	<p>When the selection switch is at NEG MOD position. 3-digit pushwheel switch and 3 LEDs. Used to indicate that a modulation peak has exceeded a reference level selected via the MODULATION Meter switches (Item 6).</p> <p>The LEDs can respond to fast transients and peaks that the MODULATION meters cannot.</p> <p>The pushwheel switches should be set to the desired modulation reference modulation percentage. The \pm % LED pair will then flash when modulation peaks exceed the selected reference.</p> <p>The + 125% regardless of the setting of the pushwheel switches.</p>														
3	INPUT LEVEL ADJ.	Used to adjust the carrier input level from the transmitter as described in section 2.3. The carrier level is set to rear zero on the carrier level meter so that the modulation meters and the carrier level meter are in calibration.														
4	+ MODULATION/TEST/RIGHT	<p>Analog meter. Indicates positive modulation percentage of carrier being monitored as described in Section 3.4.</p> <p>The scale to be read depends on which MODULATION METER attenuation switch (item 6) is depressed, as follows:</p> <table border="1" data-bbox="755 1081 1226 1354"> <thead> <tr> <th data-bbox="755 1081 917 1144">Modulation Meter Switch</th> <th data-bbox="1031 1081 1177 1144">Applicable Meter Scale</th> </tr> </thead> <tbody> <tr> <td data-bbox="755 1176 901 1207">100% (0 dB)</td> <td data-bbox="1031 1176 1144 1207">Top scale</td> </tr> <tr> <td data-bbox="755 1207 868 1239">30% (-10)</td> <td data-bbox="1031 1207 1177 1239">Middle scale</td> </tr> <tr> <td data-bbox="755 1239 868 1270">10% (-20)</td> <td data-bbox="1031 1239 1193 1270">Top scale $\div 10$</td> </tr> <tr> <td data-bbox="755 1270 868 1302">3% (-30)</td> <td data-bbox="1031 1270 1226 1302">Middle scale $\div 10$</td> </tr> <tr> <td data-bbox="755 1302 868 1333">1% (-40)</td> <td data-bbox="1031 1302 1209 1333">Top scale $\div 100$</td> </tr> <tr> <td data-bbox="755 1333 885 1365">0.3% (-50)</td> <td data-bbox="1031 1333 1226 1365">Middle scale $\div 10$</td> </tr> </tbody> </table>	Modulation Meter Switch	Applicable Meter Scale	100% (0 dB)	Top scale	30% (-10)	Middle scale	10% (-20)	Top scale $\div 10$	3% (-30)	Middle scale $\div 10$	1% (-40)	Top scale $\div 100$	0.3% (-50)	Middle scale $\div 10$
Modulation Meter Switch	Applicable Meter Scale															
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0.3% (-50)	Middle scale $\div 10$															
5	LEFT METER / CARRIER LEVEL / MODULATION SWITCH	The + MODULATION meter is also used to indicate residual noise, as described in Sec. 3.6. Residual noise in dB referenced to 100% modulation is the sum of the reading on the lower meter scale and the dB label on the on the depressed MODULATION METER switch.														

Table 3.3-1. Front Panel Controls and Indicators (Continues)

ITEM	TITLE	FUNCTION
6	RIGHT METER MOD. CAL.	Screwdriver-adjust potentiometer. Used for calibrating + MODULATION meter as described in section 3.4.
7	MODULATION METER ATTENUATORS	Set of six interlocked push buttons switches. Each switch selects an attenuator to set the scale of the + MODULATION/TEST/RIGHT meter (Item 4)
8	METER FUNCTION	Two interlocked pushbutton switches (MONO and STEREO INPUT) and one alternate-action pushbutton switch (CAL) used as follows: MONO Used for monitoring AM Monaural broadcast programs only. STEREO INPUT Reserved for future use. CAL On-off control of modulation calibrator. Use of the calibrator is explained in Section 3.5.
9	LEFT METER MOD. CAL.	Screwdriver-adjust potentiometer. Used for calibrating MODULATION meter as described in section 3.4

3.10 CARRIER LEVEL DEVIATION METER (Operation)

This new feature allows measurement of the carrier power level changes in percentage. The LEFT meter is a dual purpose meter with a $\pm 30\%$ carrier deviation scale and a percent modulation scale. To use the carrier level deviation meter, it is necessary to place the LEFT METER function select switch to CARRIER LEVEL switch position, adjust the INPUT LEVEL ADJ. pot to center the meter for 100% desired transmitter power output level. The left meter will indicate any transmitter power output level changes in percent.

The negative % PEAK MODULATION switch and LEDs (Item 2, Fig. 3.3-1) may be used to monitor negative modulation simultaneously while observing the carrier level deviation.

The left meter indication negative % of modulation while the meter selection switch is placed at the NEG. MOD. position.

5.4.2 CARRIER LEVEL DEVIATION METER (Calibration)

The carrier level deviation meter is driven by OP AMP, U25, and its associated components. The input to the OP AMP is a DC voltage which is proportional to the RF carrier level normally at 2 Vdc at 100% carrier level. R129 provides an offset voltage such that the meter is at its center zero calibration point. The value of R133 determines the gain of the OP AMP. It should be adjusted to full scale deflection of + 30% or -30% when the RF carrier deviates the same percentage.