



FEATURES

- Digital Storage
- Flicker-Free Display
- Pulse Stretcher
- Multi-Band Display
- Operates with MSR-904A Receiver
- 160 MHz SDU

DESCRIPTION

The DC-904 Digitally Refreshed CRT is a dual function display unit specifically designed to operate with the MSR-904A Microwave Receiver. The DC-904 can display up to five sequential swept octave bands or can act as a 160 MHz SDU (Signal Display Unit) when the MSR-904A is operating in the CW mode. In addition to improving the MSR-904A performance, the digital CRT interfaces with the FCS-904 Frequency Counter/Synthesizer to form the basis of the ARS-2904 Automated Surveillance System. The high resolution, digital display is especially effective in locating and identifying signals often missed with analog displays, especially when using a slow scan rate.

The DC-904 connects directly to the MSR-904A Microwave Receiver and displays the receiver log IF output on the high resolution CRT. Even at the fastest scan rate, the DC-904 produces a real time vector

display of the received signal. In the crossband mode of operation, the DC-904 displays five sequentially swept frequency bands. (.03-2, 2-4, 4-8, 8-12 and 12-18 GHz) simultaneously. Each band has a horizontal resolution of 512 bits and a vertical resolution of 256 bits. The frequency limits of each band are displayed at the beginning and end of each trace. A single marker is displayed on the CRT, and the marker frequency is displayed at the top center of the CRT. The marker is tuned by the "FO/MKR" control on the MSR-904A Receiver or by the FCS-904 Frequency Counter/Synthesizer if employed in the system.

An optional addition to the DC-904 is a 160 MHz SDU which allows the user to tune the receiver to a signal, utilize the video and audio signals for analysis and simultaneously observe a panoramic signal display. This is

designated "Pan Mode" and a swept IF (up to 20 MHz) is displayed on the CRT.

In addition to interconnections for the MSR-904A, external inputs are present which allow the user to utilize the high resolution (1024 x 2048) characteristics of the CRT for other purposes.

Both the "AM Video" and the "160 MHz" inputs have buffered outputs to allow these signals to be used by other system instruments for analysis and recording.

The user can select between the multiband mode described earlier or a single F1-F2 trace. The single trace is front panel selectable and has the advantage of better resolution (1024 x 2048) which is particularly useful for small sweep segments.

There are a total of eleven front panel switches and controls which operate as follows:

"STORE" The Store button freezes the CRT display for further study. The marker frequency can be changed when in the "Store" mode.

"ERASE" Clears the CRT

"GRAT/CHAR" Activates and de-activates the CRT alphanumeric and graticule(s).

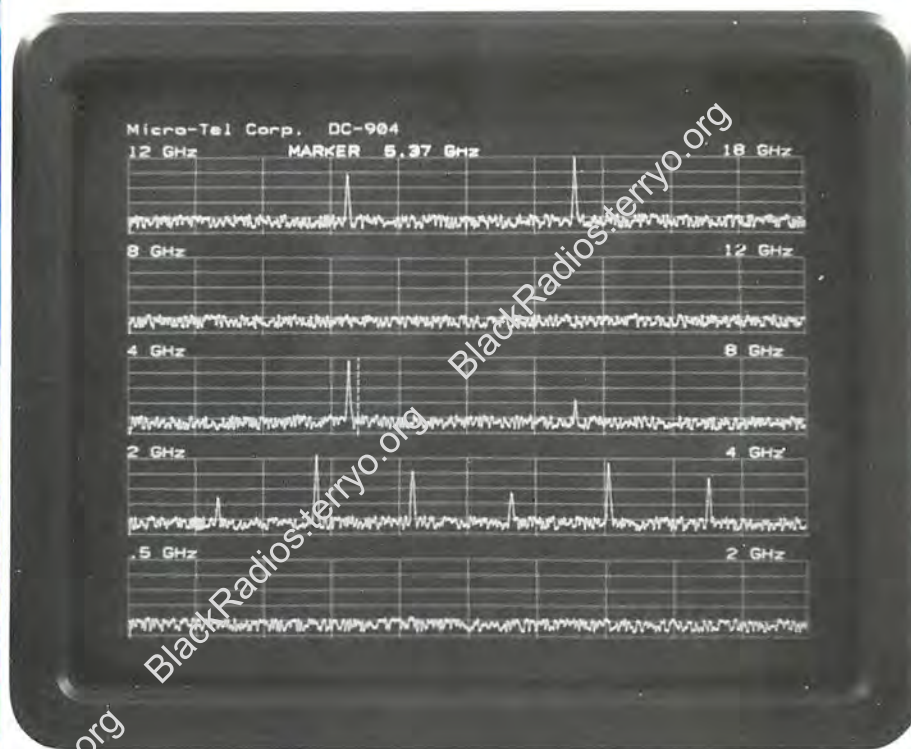
"FREQ/MARKER" When lighted, a marker is present on the CRT and the marker frequency is displayed in the top center of the CRT.

"MULTIBAND" This switch selects between a "multiband" swept display when lighted or a single trace swept display when extinguished. The light will be off when in the optional "Pan Display" mode.

"ANALOG PEAK" Activates an analog pulse stretcher used to assist in the detection of narrow pulses.

"MAX HOLD" Selects a digital detection mode which accumulates signals and displays the maximum level detected at each frequency point until reset via the "Erase" button or until a different detection mode is selected.

"NORMAL" This removes the DC-904 from either the "Analog Peak" or "Max Hold" mode.



MULTI-BAND DISPLAY

"PAN DISPLAY ON" Activates the optional Pan Display mode.

"SCAN RATE" This control varies the sweep rate, in the Pan Display mode, from 10 to 30 sweeps per second.

"SCAN WIDTH" The Pan Display Scan Width varies the sweep width from 1 to 20 MHz.

DC-904/ARS-2904 SYSTEM OPERATION

The DC-904 can be used as an element of a larger system, the ARS-2904 Automatic Receiving System, which consists of various combinations of several instruments including the MSR-904A Receiver, the FCS-904 Frequency Counter/Synthesizer and the PA-904 Pulse Analyzer. The DC-904 has added versatility when used in the ARS-2904 System due to the interface between the DC-904 and the FCS-904 Frequency Counter/Synthesizer. The FCS-904 controls the frequency of operation in the system configuration and transfers data to the DC-904 including F1-F2 limits, marker frequency and CW frequency.

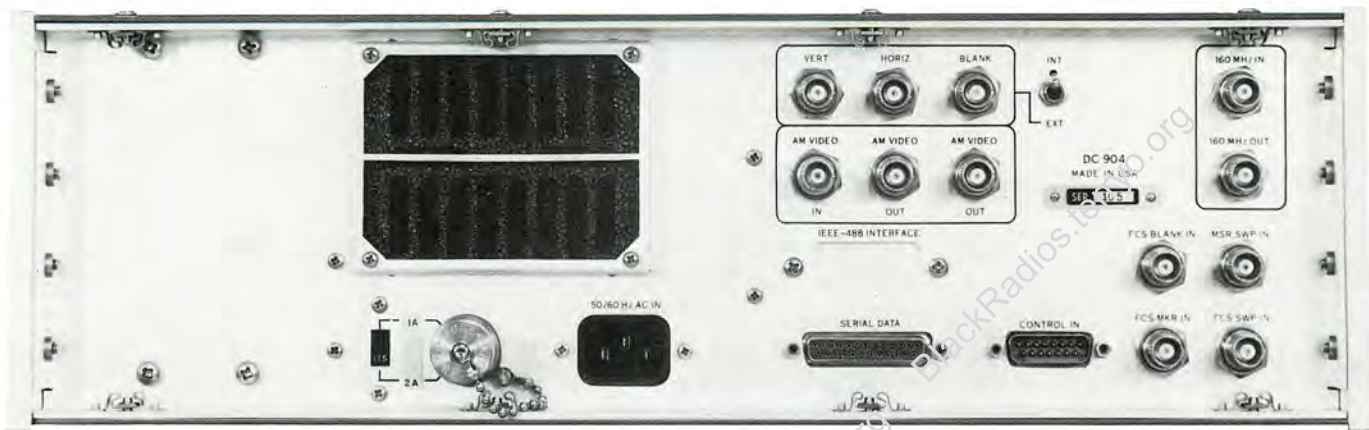


ARS-2904
AUTOMATIC RECEIVING SYSTEM

NOTES

SPECIFICATIONS

Number of Traces	1 to 5
Horizontal Resolution	512 Bits minimum - 1024 Bits maximum
Vertical Resolution	256 Bits minimum (5 band mode); 2048 Bits in single trace mode
MSR Interface:	
X and Y Inputs	0-10V
Blanking Input	TTL Levels, Low Blanked
External Interface:	
X and Y Inputs	Variable Gain .1V/Div to 1V/Div
Blanking Input	TTL Levels, Low Blanked
FCS-904 Interface	RS-232 Serial Interface
160 MHz In	-70 to 0 dBm (Option 1)
160 MHz Out	0 dB \pm 3 dB Referenced to the 160 MHz Input Level (Option 1)
SDU Swept Width	1 to 20 MHz (Option 1)
SDU Bandwidth5 MHz (Option 1)
AM Video In	2V Peak into 50 ohms
AM Video Out	0 dB \pm 3 dB Referenced to the AM Video Input
Temperature ($^{\circ}$ C)	0 to 50
Cooling	Forced Air
AC Line Input	115/230 VAC, \pm 10% - 50/60 Hz
Size (Inches)	5 $\frac{1}{4}$ x 17 x 19
Weight (Pounds)	38



ORDERING INFORMATION (Please see latest price list.)

DC-904 Digitally Refreshed CRT

- Option 1 160 MHz SDU Display
(Requires MSR-904A
Option 4B - 160 MHz IF)

MSR-904A Microwave Surveillance Receiver 5-18 GHz

- Option 2 LO sample for Synthesizers
or Counters
- Option 3 Low Frequency Coverage—
.03 to 500 MHz
- Option 4B 160 MHz IF Output
phase lockable with
synthesizer
- Option 4C 70 MHz IF Output—
phase lockable with
synthesizer
- Option 5 Special IF Bandwidths—
Contact Factory
- Option 6 IF Reference—
Measure RF Amplitude to
1 dB with calibration
chart
- Option 8 Provision for 18-40 GHz

FCS-904 Frequency/Counter Synthesizer .03-40 GHz (MSR-904A must have Option 2-LO Sample)

- Option 4 Remote Tuner Operation

WARRANTY

All Micro-Tel products are unconditionally warranted for a period of one year except for physical damage, provided the equipment is returned to the plant in Hunt Valley.