

## TV MODULATOR

**CW-3150, -1, -2, -3, -4, -5, -6**  
with universal SAW filter

**CW-3160, -1, -2, -3, -4, -5, -6**  
with B/G standard SAW filter

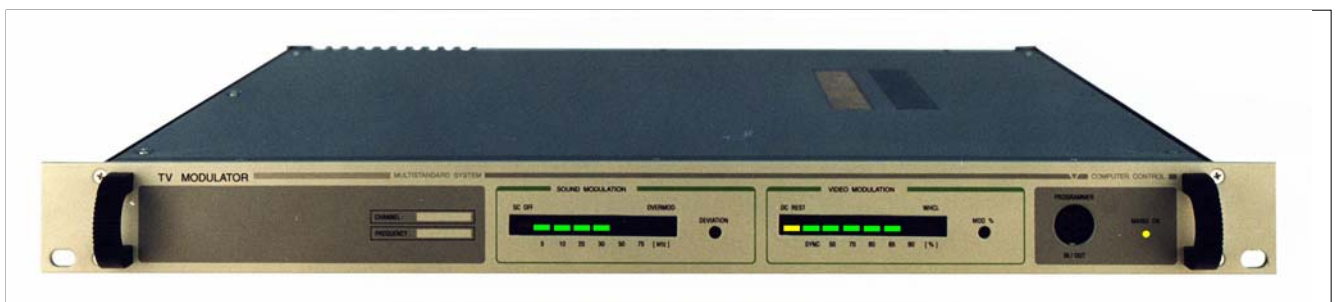
**CW-3170, -1, -2, -3, -4, -5, -6**  
with D/K standard SAW filter

*The CW-31xx series TV MODULATOR performs the supply of TV programs into professional cable TV systems. Using it, the base-band video and sound signals of satellite receivers, terrestrial TV receivers, local studios, video recorders can be transposed to any desired channel of the 48 to 860 MHz frequency band.*

*The unit combines the advantages of programmability with the high signal purity achieved through the unit's sophisticated circuitry. Thus the modulator meets the highest quality requirements.*

*For the different TV standards, particular optimized versions (CW-315x, CW-316x and CW-317x) are available.*

*Due to its outstanding parameters and very competitive pricing, this modulator is a basic component at building large multichannel professional CATV systems (for several ten thousands of subscribers and over 100 TV programs).*



### Main features:

- Base-band signal processing
- Vestigial side-band characteristics (AM-VSB) formed by SAW filter
- Six-degree group delay corrector
- Precision white clipper
- Parallel type synthesizer sound modulator
- Hybrid power end amplifier, high level output signal of 120 dB $\mu$ V
- Microprocessor control

## Technical data:

<b>TV SYSTEM</b>	B/G or D/K
Input signal	base-band video and audio signal
Output signal	high frequency vision and sound carriers modulated according to A5C and F3 respectively

### TRANSMISSION CHARACTERISTICS

Vision modulation	A5C, negative (vestigial side band)
- Modulation depth	87.5 % (adjustable)
- Amplitude response	
CW-315x	Epcos B585
CW-316x	Epcos B523
CW-317x	MFA HSW 21
- Group delay	90 ns pre-correction
- Differential amplitude	max. 2 % (at 4.43 MHz)
- Differential phase	max. 2° (at 4.43 MHz)
- Signal to noise ratio	
Unweighted	typ. 55 dB <sub>Rms</sub>
Weighted according to CCIR Rec. 567, referred to a B/W transition signal	typ. 62 dB <sub>Rms</sub>
Sound modulation	FM (F3)
- Sound carrier frequency	5.5 or 6.5 MHz (programmable 4.4 to 6.6 MHz)
- Amplitude response	max. ±1 dB (between 40 Hz and 15 kHz)
- Distortion	max. 0.5 %
- Preemphasis	50 μs
- Signal to noise ratio	min. 60 dB

### INPUT DATA

Video input	
- Nominal input voltage	1 V <sub>pp</sub> ± 3 dB
- Nominal input impedance	75 Ω (optionally loop-through)
- Return loss	min. 26 dB up to 5 MHz
Sound input	
- Nominal input voltage	0 dBm ± 6 dB
- Input impedance	10 kΩ unbalanced, or 600 Ω balanced

### OUTPUT DATA

- Output frequency bands	
CW 31x0	38.9 MHz IF (without RF converter)
CW 31x1	48 - 63 MHz
CW 31x2	76 - 94 MHz
CW 31x3	150 - 300 MHz
CW 31x4	300 - 450 MHz
CW 31x5	470 - 860 MHz
CW 31x6	110 - 150 MHz
- Nominal output voltage	120 dBμV ± 3 dB at the main output 98 dBμV at the test output
- Nominal sound carrier level	-13 dB related to the vision carrier
- Output impedance	75 Ω
- Output level stability	better than ± 0.5 dB
- Output frequency accuracy	better than 1 x 10 <sup>-4</sup> (synthesized)

- Signal purity	
Harmonic amplitude	max. -60 dB
Sound carrier in the adj. channel	max. -56 dB
Other mixed products	max. -60 dB

### PROGRAMMABLE PARAMETERS

1. Output frequency	50 kHz raster
2. Output level resolution	100 steps
3. Output signal on / off	
4. Output level control	gated / continuous
5. Clamper mode	gated / diode
6. Clamper time constant	fast / slow
7. White clipper mode	in / out
8. Sound carrier frequency	400 Hz raster
9. Sound carrier level	-10...-20 dB, in 100 steps
10. Sound carrier in / out	

### FRONT PANEL CONTROLS AND INDICATORS

1. Adjustable parameters (through front panel potentiometers)	
- Vision modulation depth	± 3 dB
- Sound carrier frequency deviation	± 6 dB
2. Front panel indicators	two 8-segment LED rows for displaying the operation modes and modulation factors

### SUPPLEMENTARY DATA

Optional versions:	
1. Loop-through video input	option CW-OP01
2. IF input / output	option CW-OP02 38.9 MHz/102 dBμV/75 Ω, F-type socket
3. For NICAM sound modulator	option CW-OP08
4. For A2 stereo IF sound signal	option CW-OP05
5. Group delay characteristics	adjusted according to the data supplied by the customer
6. For scrambled analogue video	for request

### GENERAL DATA

Service period	continuous
Mains voltage	230 V -10 ... +15 %, 50 / 60 Hz
Power consumption	max. 50 VA
Type of connectors	
Video input	BNC
Sound input	RCA
High frequency output	F-type socket
Physical dimensions	19" rack 1 height unit
Width	483 mm
Height	43.6 mm
Depth	473 mm
Mass	approx. 4 kg
Operational temperature range	
to fulfil the specs	+10 ... +35 °C
to maintain operation	0 ... +40 °C
Storage temperature range	-25 ... +45 °C

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