

**CX3 1.2 GHZ UNIVERSAL AMPLIFIER**

The CX3 is a compact dual output amplifier. It has two gain and slope modes that make this product universal. Output performance meets the requirements of forward and return path DOCSIS 3.1 signals.

Adjustments are using electrical circuits that are controlled with push buttons. A high gain return amplifier with pivot frequency variable slope control is fixed built on the mother board.

**Features**

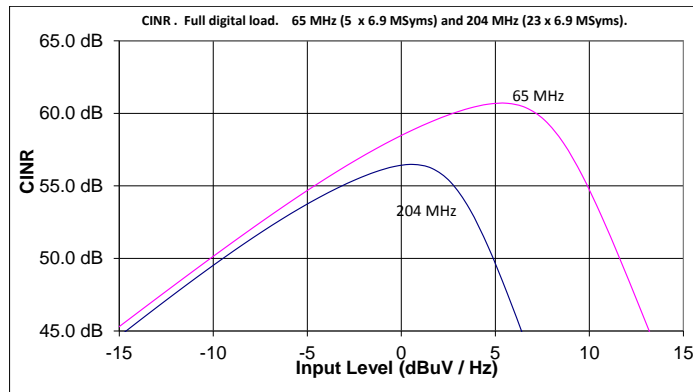
- Electrical adjustments
- 1.2 GHz forward path
- GaN technology
- 65/85/204 MHz return channel
- High gain / low gain selection
- Flat / sloped output selection
- Push buttons and LED indication for adjustments
- Cable simulator option at input
- 2 output ports

## Technical specifications

Parameter	Specification	Note
<b>Downstream signal path ( all values with the diplex filters, 0 dB output plug)</b>		
Frequency range	85...1218 MHz	
Return loss	18 dB	1)
Gain	43.0 dB	2)
Input attenuator control range	0... - 20 dB	3)
Input equaliser control range	0...20 dB	3)4)
Cable simulator	0 / -13 dB	4)
Mid-stage slope	13 / 0 dB	4)
Mid-stage gain selection	43.0 / 35.0 dB	
Flatness	± 0.5 dB	5)
Test point	20 dB	6)
Group delay	2 ns	7)
Noise figure @ 1218 MHz, flat, high gain	< 9.0 dB	
Noise figure @ 1218 MHz, flat, low gain	< 10.0 dB	
U <sub>max</sub> (138 QAM channels) @ 1.2 GHz	> 106.5 dBuV	8)
CTB 41 channels	> 116.0 dBμV	9)
CSO 41 channels	> 117.0 dBμV	9)
<b>Upstream signal path ( all values with the diplex filters)</b>		
Frequency range	5...204 MHz	
Return loss	18 dB	
Gain	28 dB (typical)	10)
Gain control range (output)	0...-20 dB	3)
Gain control range (input)	0 / -10 dB	
Slope control range	0...15 dB	3)11)
Flatness	± 0.5 dB	
Noise figure (@high gain)	< 6.5 dB	
CINR	see curves	12)
<b>General</b>		
Hum modulation	65 dB	13)
Maximum feed through current	7 A	14)
Supply voltage	180...255 VAC / 28...65 VAC	
Power consumption	< 19.0 W	
Input / Output connectors	F- female / 5/8"	
Test point connector	F- male	
Dimensions (appr.)	22 x 21 x 8 cm	
Weight	2.1 kg	
Operating temp	-40...+55 °C	
Class of enclosure	IP67	15)
EMC compatibility	EN 60728 -2	
Safety	EN 60728 -11	
ESD	2 kV	16)
Surge	6 kV (EN 60728-3)	

**Notes**

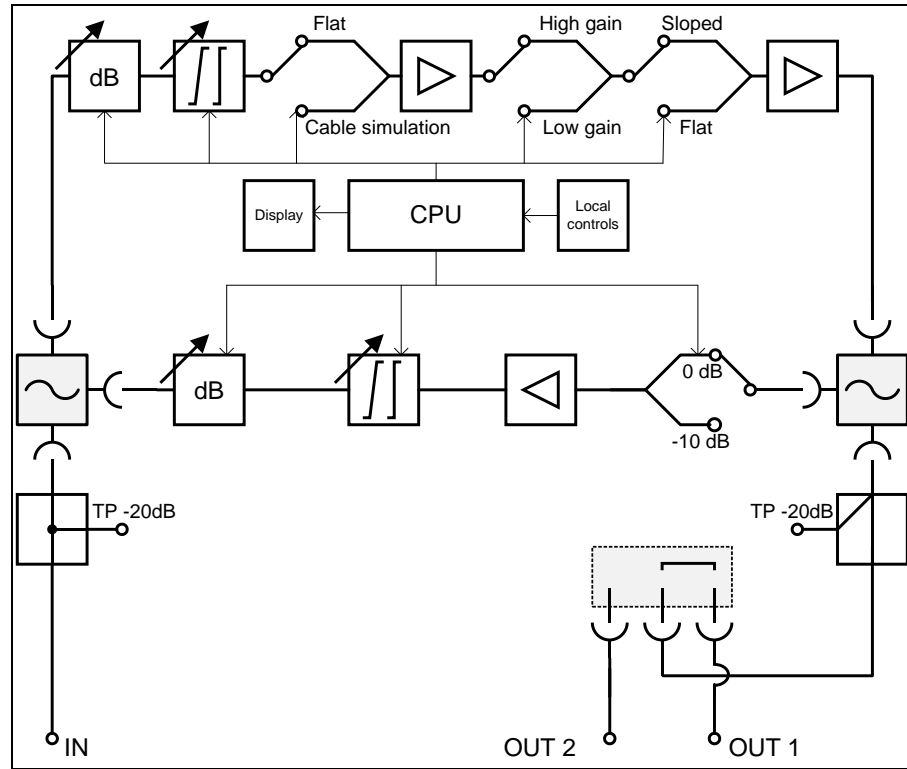
- 1) The limiting curve is defined at 80 MHz -2.0 dB / octave, at least 12 dB.
- 2) This is the nominal gain at 1218 MHz. Guaranteed minimum gain is 42.0 dB.
- 3) Step size is 0.5 dB.
- 4) Defined between 85...1218 MHz.
- 5) Typical value. The guaranteed value is  $\pm 0.9$  dB.
- 6) Output TP is from a directional coupler and has a  $\pm 1.0$  dB tolerance. Input TP is a transformer type and it is having an accuracy of  $\pm 2.0$ .
- 7) Typical value for 4.43 MHz band , when  $f > 130$  MHz.
- 8) Tested according to IEC60728-3-1, but full digital loading up to 1218 MHz was used. Channels have 13 dB cable equivalent slope between 85...1218 MHz and signal level has been defined at 1210 MHz. BER measurement has been done on the worst channel between 110...1218 MHz.
- 9) According to EN50083-3. Amplifier output was 13 dB cable equivalent sloped between 85...1218 MHz and high gain mode was used. Output level is defined highest channel 862 MHz.
- 10) Guaranteed minimum gain is 27.0 dB, maximum gain is 29.0 dB. Defined with 0 dB slope in 65 and 204 MHz configuration.
- 11) Pivot frequency can be selected between 204 MHz and 85 MHz.
- 12)



Measurement is done at 49 MHz in 65 MHz case and at 113 MHz in 204 MHz case.

- 13) With 5 A current between 10...1218 MHz.
- 14) Valid only in 65 VAC powered version.
- 15) Housing itself is IP67, but when 230 VAC product is in question, classification is IP54.
- 16) EN61000-4-2, contact discharge to enclosure and RF-ports.

**Block diagram**



**Ordering**

Availability of each item and delivery time must be checked before ordering.

Ordering code	Product	Configuration (installed)	Package contents
CX3L065	1,2 GHz Amplifier 230 VAC	2 x CXD065, 2 x F female adapter, 1 x 5/8 sealing adapter	1 x F female adapter, 1 x CXM4 output splitter
CX3R065	1,2 GHz Amplifier 65 VAC	2 x CXD065, 2 x 5/8 sealing adapter	1 x CXM4 output splitter module
CX3L085	1,2 GHz Amplifier 230 VAC	2 x CXD085, 2 x F female adapter, 1 x 5/8 sealing adapter	1 x F female adapter, 1 x CXM4 output splitter
CX3R085	1,2 GHz Amplifier 65 VAC	2 x CXD085, 2 x 5/8 sealing adapter	1 x CXM4 output splitter module
CX3L204	1,2 GHz Amplifier 230 VAC	2 x CXD204, 2 x F female adapter, 1 x 5/8 sealing adapter	1 x F female adapter, 1 x CXM4 output splitter
CX3R204	1,2 GHz Amplifier 65 VAC	2 x CXD204, 2 x 5/8 sealing adapter	1 x CXM4 output splitter module
CXD065	Diplex filter 65/85 MHz		
CXD085	Diplex filter 85/105 MHz		
CXD204	Diplex filter 204/258 MHz		
CXM4	Output splitter module		