The Maxcom MX700-3AC-MT OBI series ONU's are ideal for use in **MDU** or fiber to the business applications with a +36 dBmV output. A perfect platform for delivering upstream and downstream DOCSIS, voice, video, and high-speed data service over FTTX applications. They are designed compliant to industry standards to terminate an RF over Glass (RFoG) communications network. The standard model uses a single fiber and receives downstream signals at 1550nm and uses a 1610nm range Tunable DFB return transmitter. The Adjustable Laser allows up to 16 ONU's to share a single receiver while avoiding OBI. Operator uses a push button on the unit to select between 16 different wavelengths. Built with maximum toughness and reliability.

The MX700-3AC-MT series may be ordered with various features and options. Single and Dual fiber models are available, and PON pass through ports are optional. Contact Maxcom to learn about these and other options.

ONU Features

1. CATV Bi-directional single fiber port
2. Burst mode operation – Tunable DFB Lasers for improved stability to avoid OBI
3. Simple – Push button control and LED status indicators allow choice of 16 return frequencies
4. Superior proven technologies for both the RF amplification and optical components
5. AGC for consistent RF level output 36 dBmV standard
6. Automatic Optical Control is designed to reduce return noise effectively.
7. 1.2 GHz Downstream, Return Bandwidth options 5~42, 5~85 and higher
8. Follows SCTE 174 standards

Specifications

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Forward Receiver					
Optical Wavelength	*Extended/custom wavelength options avail. (Example 1525~1565nm)	1540	1550	1565	nm
Monitor Voltage	λ=1550		1		V/mW
Optical Input Power	Optical AGC / Continuous	-6	-1	+2	dBm
Bandwidth	Optional Return Diplex Avail	54		1218	MHz
Flatness of Frequency Response	f=54 to 1200 MHz		±0.75	±1	dB
Output Return Loss		14	16		dB
Standard Reference Output Level w/AGC when optical input is between -6 and +2 dBm	(Note 1) @ 3.5% OMI per Ch.		*36		dBmV
Standard Reference Output Level w/AGC when optical input is between -6 and +2 dBm	(Note 1) @ 2.7% OMI per Ch.		*35		dBmV
Slope	Typical		6		dB
Optical Input Return Losses		45			dB
C/N	(-1dBm optical input, 3.5% OMI/ch, 79ch NTSC, Digital ch above 550MHz at -6dB offset)	50			dB
CTB				-65	dB
CSO				-60	dB
Equivalent Noise Input	f=110MHz			7	pA/Hz
Return Transmitter					
Optical Wavelength	*Note 2	1600	1610	1620	nm
△λ Wavelength Shift	16 wavelength settings by 0.25nm steps	.25		.25	nm
Optical Output Power	w/ 2mW Isolated DFB laser	2	3	4	dBm
Dynamic Input Range	NPR ≥38		20		
RF Input Level	*Depending on output power ordered	10	20	30	dBmV
Bandwidth 5~42. *Avail 5~85 & Higher	Expanded options available	5		42	MHz
Flatness of Frequency Response	f=5 to 42MHz		±0.75	±1	dB
Input Return Loss	f=5 to 42MHz	14	16		dB
Optical Output Return Loss		45			dB
Optical Laser turn ON Level	Follows SCTE 174 (Note 3)	13	15		dBmV
Optical Laser turn OFF	Follows SCTE 174 (Note 3)		-5		dBmV
Laser Rise Time to 90% optical ON				1.3	μs
Laser Fall Time for optical to 10%				*1.6*	*μs*
General Parameters					
Total Current Consumption (DC)	*W/12VDC Power Adapter*			*10*	*W*
Temperature Range in Fahrenheit degrees		*-40*		*+131*	*°F*
Dimensions (includes connectors)	*Width x Height x Depth*	*7.45”*	*5.25”*	*1.65”*	*Inch*

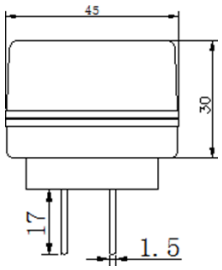
Note 1: Power output is measured at 1200MHz.
Note 2: 1610nm DWDM，0.25nm Step.. 16 wavelength/frequencies available
Note 3: Burst mode parameter may be adjustable according to model ordered

Avoiding OBI

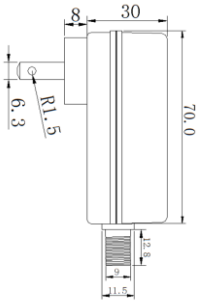
RFoG deployments are a highly popular and efficient solution in offering increased capacities and network performance. A challenge that is commonly found in RFoG systems is OBI, or Optical Beat Interference. OBI can degrade the signal quality (SNR) when two or more optical transmitters (RFoG ONU, or Mini Nodes) with the same optical wavelengths transmit simultaneously. Temporary packet loss errors can impact the customer when OBI occurs.

The likelihood of OBI occurring in an RFoG network can increase in situations where there is higher network traffic. **MDU**'s in particular are more likely to experience OBI because there are often multiple cable modems connected to each ONU or Mini Node, unlike standard residential applications where only a single cable modem is connected to each ONU or Mini Node.

An Excellent solution is to use Maxcom's OBI Free ONU's or Mini Nodes with **Tunable Return Path Lasers.** The Maxcom MX700 series (OBI Free) ONU Mini Nodes provide a way for the operator to combat OBI by offering a simple tunable laser option. The operator can easily select 1 of 16 available wavelengths. So, in an RFoG deployment where an operator might have 16 ONU Mini Nodes sharing a common return path receiver, each ONU Mini Node can simply be assigned to a different return path wavelength, thus avoiding the potential of OBI occurring.

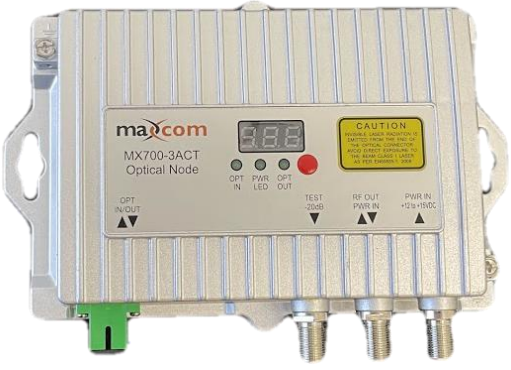


Power supply included

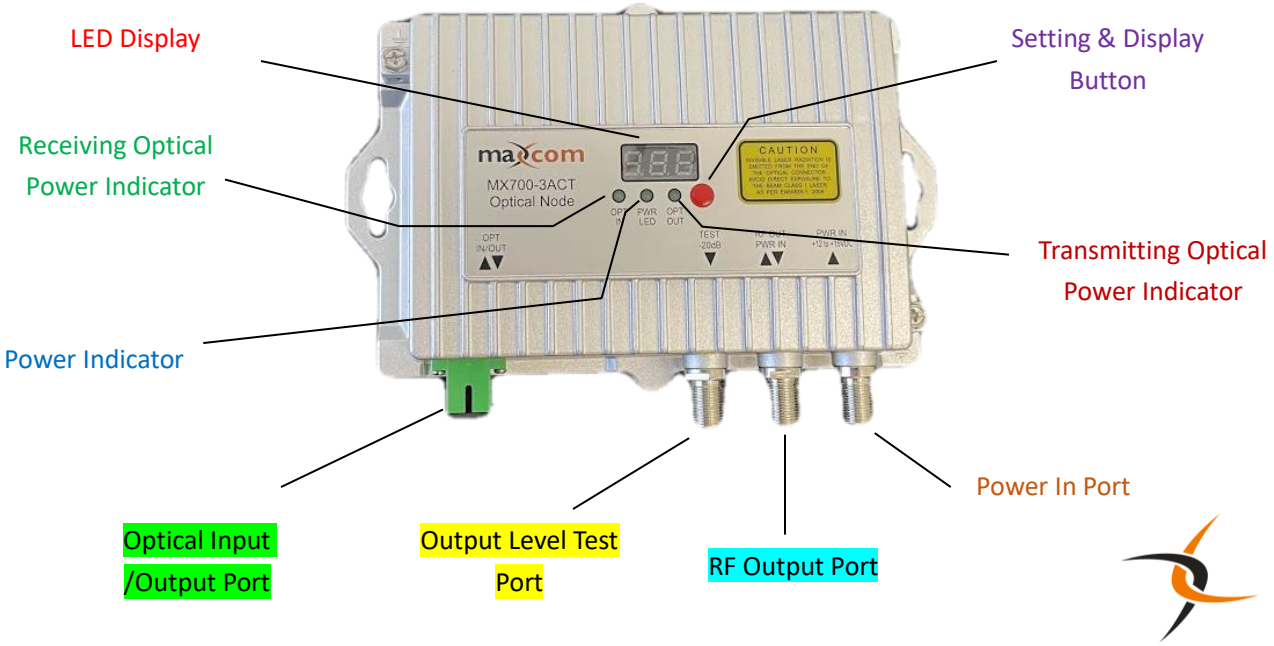


*Final design of units shipped may vary slightly

WARNING NOTICE
DANGER!
The Optical Port on the Maxcom Node Emits Invisible which may cause Permanent Damage to the Eye or Vision. Never Look Directly the Fiber Port or a Fiber Cable or Connector



- LED Display: Indicates the Node's Channel/Wavelength and Optical Power Input status and setting.
- Receiving Optical Power Indicator: If Optical Input power is within normal range, indicator is Green.
- Power Indicator：If power supply input voltage is +12 ~ 15 DCV is normal, indicator is Green.
- Setting and Display Button: Use the Button to set and display Node's status.
- Transmitting Optical Power Indicator: If an active Return RF signal is present, indicator light is on (or flickering related to burst mode.
- Optical Input/output Port: Connect a fiber with SC/APC connector
- Output Level Test Port: Forward output level monitoring, -20dB monitoring test point
- RF Output Port: Forward signal output port, return signal input port *this port will also accept +12~15V DC if used with power inserter.
- Power In Port: Direct +12~15V DC input



The MX700-3ACT series is equipped with status lights below the LED screen

OPT IN	ON	Optical Input Power is Higher than -10dBm
	OFF	Optical Input Power is Lower than -10dBm
OPT OUT	ON	Return RF Signal is present and Higher than +5 dBmV
	OFF	No Return RF Signal, or Signal is Lower than -4 dBmV
PWR LED	ON	Device is Powered ON
	OFF	NO DC Input - Device is OFF

1		λ57 (nm)	**Displays Current Channel Selected (Wavelength Channel Assignment) λ57 (1613.5nm) in this example**
2		- 1.2 (dBm	**Displays the Current Optical Power in dBm (-1.2 dBm in this example)** *Note, optimal input power suggested is -6 ~ +1 dBm. If optical power falls below -15 dBm "---" will display. If optical input power exceeds +2 dBm, Display will Flash 3 times every minute, indicating high input alarm
3		λ55 (nm)	**Displays the Lowest Channel (Wavelength) available (Selectable) on this Particular Node * λ55 shown as L55 (1612.5nm) in this example**
4		λ62 (nm)	**Displays the Highest Channel (Wavelength) available (Selectable) on this Particular Node * λ62 shown as F62 (1616.25nm) in this example**

Display and Channel/Wavelength Setting

*Note: After 1 minute, the LED Display Screen goes into sleep mode (No Display)

1. Pushing the button once will display the current channel (wavelength setting)
2. Press the button again to display the Optical Input Power in dBm
3. Press the button again to display the Lowest Channel (Wavelength) available on this particular node *The value may differ from Node to Node
4. Press the button again to display the Highest Channel (Wavelength) available on this particular node *This value may differ from Node to Node

Changing the Channel (Wavelength) Setting：

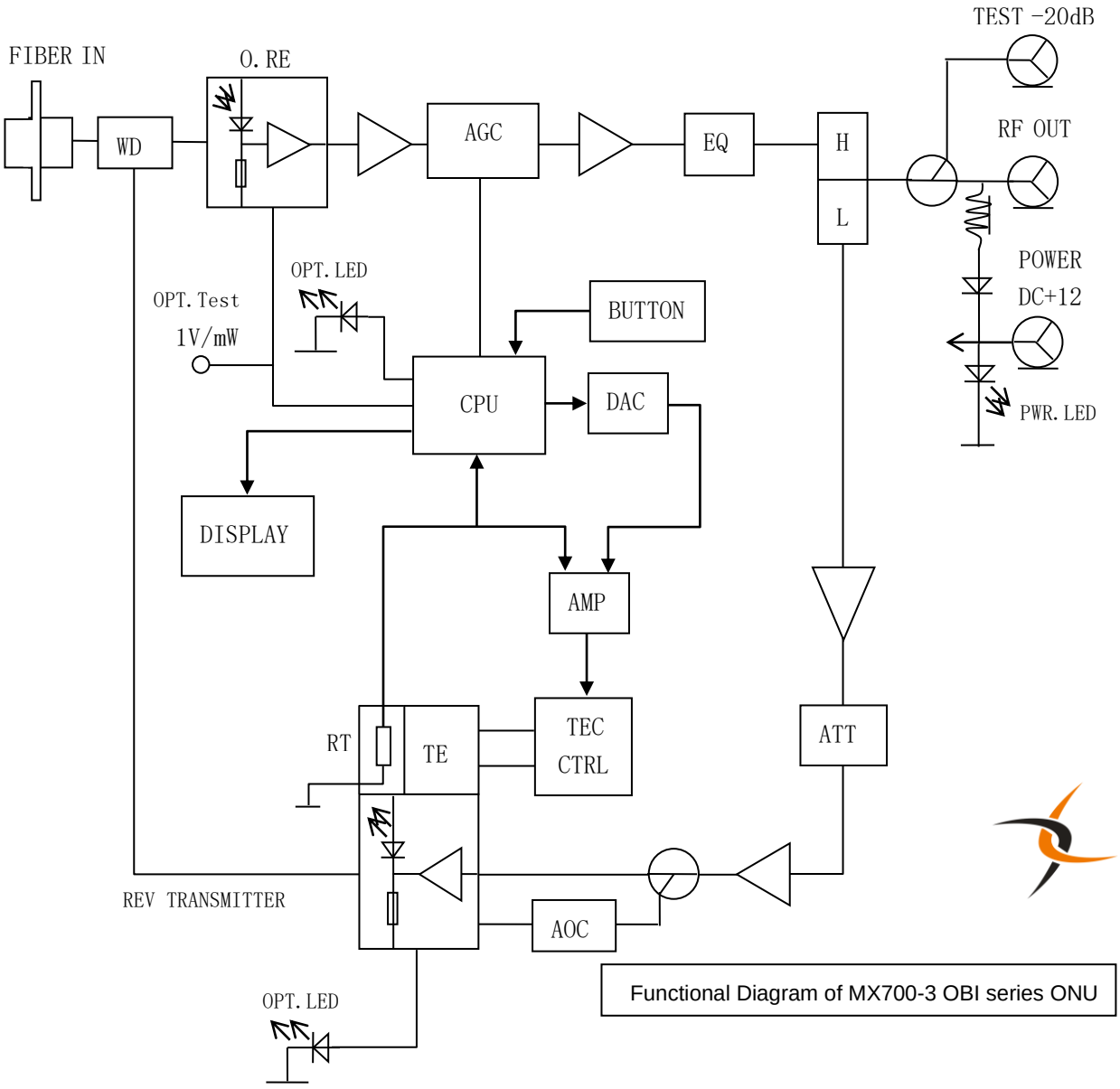
1. Press the button once to display the current channel (wavelength setting), for example “λ57”.
2. Press and hold the button for about 3 seconds, until the Display begins to Flash.
3. While the Display is Flashing, Press the button once to advance to the next channel, for example the display will change from “λ57”, to “57F”. Click the button again to advance to the next channel. You may continue to click the button to tune to the next available channel, you may continue this cycle until you reach the desired Channel.
4. To Save the Desired Channel, Press and Hold the button again for about 3 seconds, until the Display stops Flashing. The Node will retain this setting even when power is lost.)

Below is a reference list of wavelengths between the 1600nm and 1620nm range. Each wavelength is separated by .25nm. Each Maxcom Node will only use a range of 16 consecutive wavelengths from the chart below. Note that the wavelength ranges vary from node to node. This is because the IC performance of each laser is slightly different and therefore each node may have a slightly different range of wavelengths to select from. In other words, each node will have 16 available wavelengths to choose from, but you may notice that each node may offer a different range of consecutive wavelengths. This allows for more diversity with wavelength selection within the range of 1610+/-10nm while ensuring all nodes remain compliant to specifications.

Wavelength(nm)		Wavelength(nm)	
Setting	Standard	Setting	Standard
λ34	1602	**λ50**	**1610**
λ34F	1602.25	λ50F	1610.25
λ35	1602.5	λ51	1610.5
λ35F	1602.75	λ51F	1610.75
λ36	1603	λ52	1611
λ36F	1603.25	λ52F	1611.25
λ37	1603.5	λ53	1611.5
λ37F	1603.75	λ53F	1611.75
λ38	1604	λ54	1612
λ38F	1604.25	λ54F	1612.25
λ39	1604.5	λ55	1612.5
λ39F	1604.75	λ55F	1612.75
λ40	1605	λ56	1613
λ40F	1605.25	λ56F	1613.25
λ41	1605.5	λ57	1613.5
λ41F	1605.75	λ57F	1613.75
λ42	1606	λ58	1614
λ42F	1606.25	λ58F	1614.25
λ43	1606.5	λ59	1614.5
λ43F	1606.75	λ59F	1614.75
λ44	1607	λ60	1615
λ44F	1607.25	λ60F	1615.25
λ45	1607.5	λ61	1615.5
λ45F	1607.75	λ61F	1615.75
λ46	1608	λ62	1616
λ46F	1608.25	λ62F	1616.25
λ47	1608.5	λ63	1616.5
λ47F	1608.75	λ63F	1616.75
λ48	1609	λ64	1617
λ48F	1609.25	λ64F	1617.25
λ49	1609.5	λ65	1617.5
λ49F	1609.75	λ65F	1617.75

Sample of 16 wavelengths that you might find available to choose from on a particular node

*Note that you may find a different range of wavelengths available on a different node.



Functional Diagram of MX700-3 OBI series ONU

Maxcom Obi Mitigated Mini Optical Node - R ONU Modeling Matrix

Single Fiber with Burst-Mode Laser	OBI Mitigation Control Type		Forward Output Level		Return Input Level		Laser Type		Tx. Optical Power		Optical Connector		Transmitter wavelength		Sub Split		Power Adaptor		Forward Frequency		Options	
MX700-3AC	-	XX	-	XX		XX	-	X	-	X	-	XX	-	XXXX	-	XX	-	XX	-	XX	-	XXX
MDU Version	MT	Tunable Laser (Manual Tuning for 16 wavelengths)	36	36dBmV	20	20dBmV	D	DFB	2	2mW (3dBm)	SA	SC/APC	1610	Tunable 1600~1620 nm range	45	42/54	01	North America	1.2G	1220MHz	00	None
Residential Version	AT	Auto Tune (Automatic Time/Frequency shifting of Laser)	20	20dBmV	30	30dBmV									81	85/102	*Included				E53	Extended input RX wavelength 1525~1565nm
															22	204/258						

*MX700-3AC-**AT** series ONU's provide excellent automated OBI mitigation incorporating **Continuum Wave Shifting Technology**

Contact a Maxcom Sales Representative for customer requested custom orders 209-339-2333

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Maxcom carries a full line of Optical Products and CATV Products supporting RFoG.