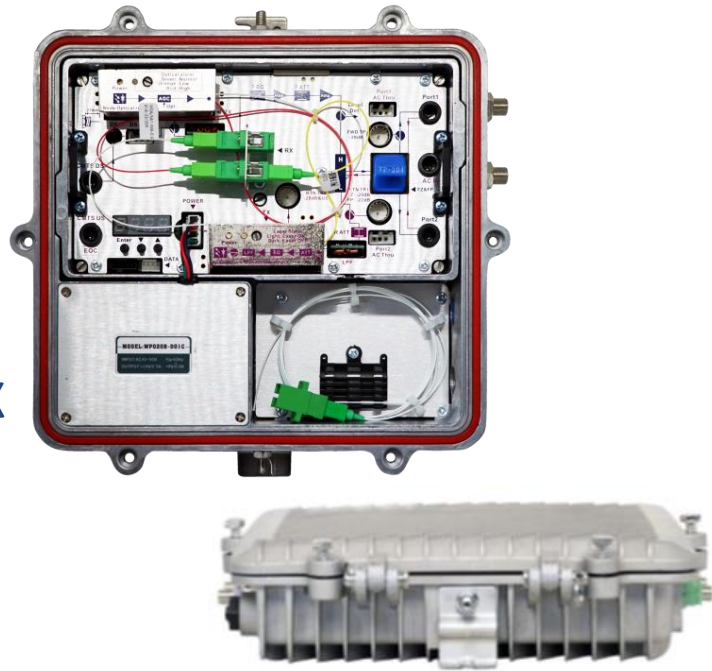


## Cabinet 1 or 2-port Optical Node FTTx Solution

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### AON121X Series



- Deep Fibre Node with 1 or 2 High Outputs
- Compact Housing
- Suitable for MDU Application
- Max Output Level 2x 108 dBμV
- GaAs amplifier device
- Excellent AGC performance
- Reserved data communication interface
- Burst mode for return transmissions optional

AON121X Series 1- or 2-port two-way Optical Node is part of ACT Deep Fiber solution, which has been designed to deliver interactive CATV, high capacity DOCSIS Data and other advanced services. The cost-effective node platform helps service providers expand bandwidth of their existing HFC network while minimizing capital investment.

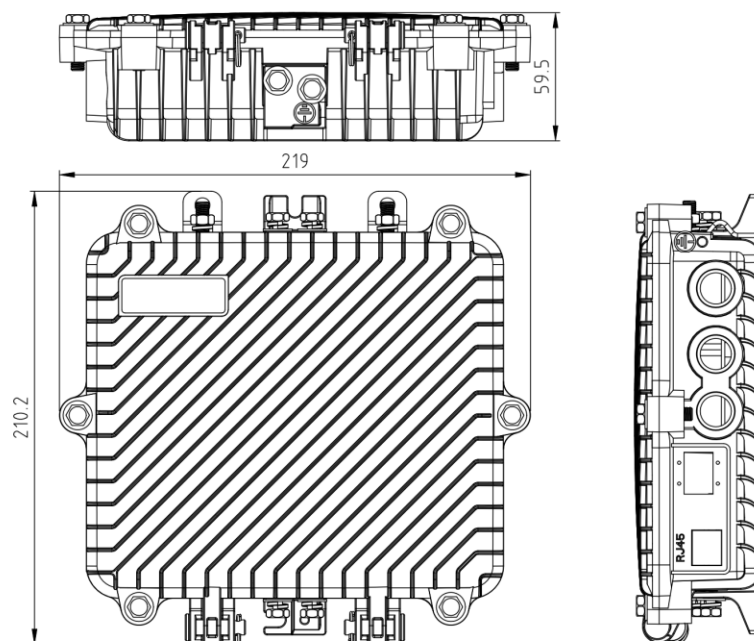
AON121X is a 1.2G Hz features a modular design for flexible applications. It has microprocessor control, a digital display, and an easy-to-use engineering debug interface. It has highly-optimized circuit design using SMT process production for smooth photoelectric signal transmissions. It has good RF attenuation with high accuracy with its use of a specialized RF attenuation chip. It uses GaAs technology to achieve high gains and low distortion, and has excellent AGC performance.

AON121X node suits the last mile fiber deep access networks and also provides the optional HMS interface to support the remote monitoring capability in advanced network management system.

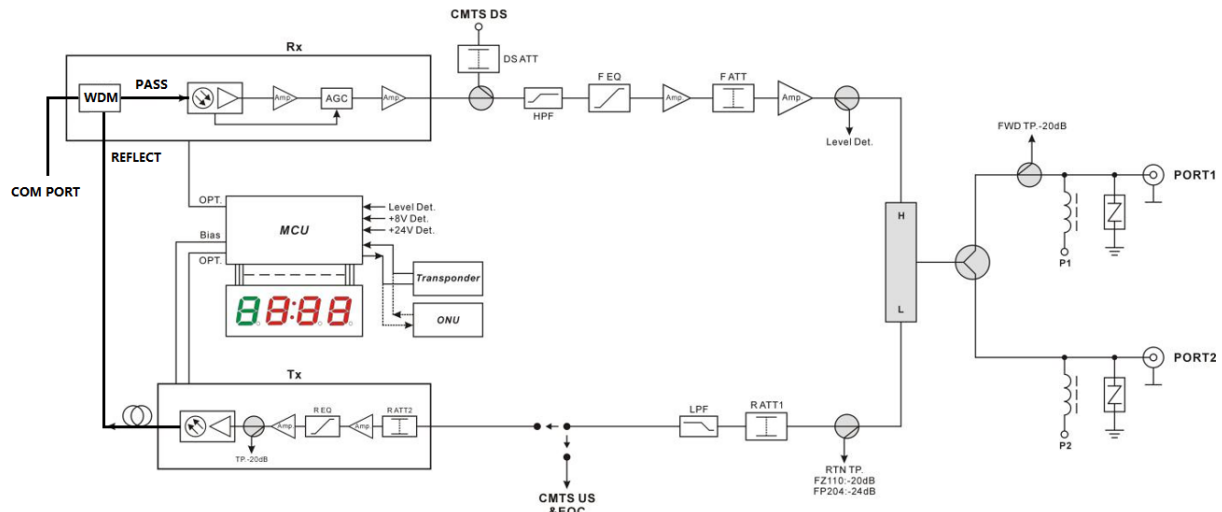
## Key Features

- High response PIN photoelectric conversion tube
- Optimized circuit design, SMT process production, optimized signal path, make the photoelectric signal transmission smoother
- Specialized RF attenuation chip, with good RF attenuation and equilibrium linear, high accuracy
- GaAs amplifier device, power doubler output, with high gain and low distortion
- Single Chip Microcomputer (SCM) control equipment working, LCD display the parameters, convenience and intuitive operation, and stable performance
- Excellent AGC performance, when the input optical power range is -9 dBm to +2 dBm, the output level remains unchanged, CTB and CSO basically unchanged
- Reserved data communication interface, can connect with the Ethernet transponder, access to network management system
- Return emission can select burst mode to sharply decrease the noise convergence and reduce the forepart receiver number

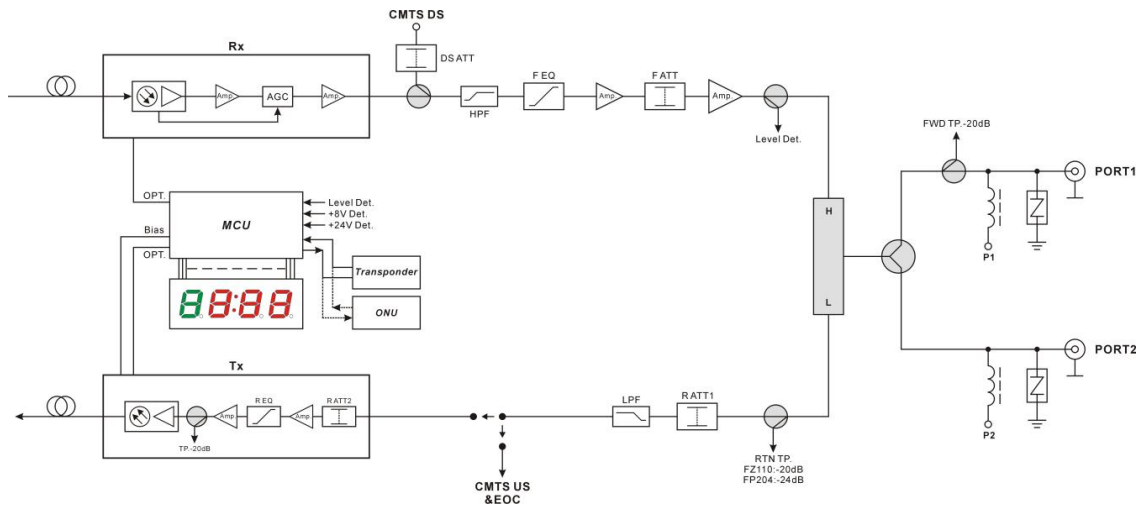
## Outline Dimensions



## Block Diagram



### Single Fiber Option



## Dual Fiber Option

## Specifications

| Item                         | Unit | Technical Parameters                             |                      |
|------------------------------|------|--------------------------------------------------|----------------------|
| Forward Optical Parameters   |      |                                                  |                      |
| Receiving Optical Power      | dBm  | -8 to +2                                         |                      |
| Optical Return Loss          | dB   | >45                                              |                      |
| Optical Receiving Wavelength | nm   | 1100 to 1600                                     |                      |
| Optical Connector Type       |      | FC/APC, SC/APC or specified by the user          |                      |
| Fiber Type                   |      | Single Mode                                      |                      |
| Link Performance             |      |                                                  |                      |
| C/N                          | dB   | ≥ 51 (-1dBm input)                               |                      |
| C/CTB                        | dB   | ≥ 65                                             | Output Level 106dBμV |
| C/CSO                        | dB   | ≥ 60                                             | EQ 8dB 79ch PAL-D    |
| Forward RF Parameters        |      |                                                  |                      |
| Frequency Range              | MHz  | 54/85/105/258 -1003/ 1218                        |                      |
| Flatness in Band             | dB   | ±0.75                                            |                      |
| Rated Output Level           | dBμV | ≥ 106                                            |                      |
| Max Output Level             | dBμV | ≥ 108                                            |                      |
| Output Return Loss           | dB   | (54/85/105/258 to 550MHz)≥16/(550 to 1218MHz)≥14 |                      |
| Output Impedance             | Ω    | 75                                               |                      |
| Electronic Control EQ Range  | dB   | 0 to 15                                          |                      |
| Electronic Control ATT Range | dBμV | 0 to 20                                          |                      |
| Return Optical Parameters    |      |                                                  |                      |
| Optical Transmit Wavelength  | nm   | 1310±10, 1550±10 or specified by the user        |                      |
| Output Optical Power         | mW   | 0.5, 1, 2                                        |                      |
| Optical Connector Type       |      | FC/APC, SC/APC or specified by the user          |                      |
| Return RF Parameters         |      |                                                  |                      |
| Frequency Range              | MHz  | 5 to 42/65/85/204                                |                      |
| Flatness in Band             | dB   | ±0.75                                            |                      |
| Input Level                  | dBμV | 72 to 85                                         |                      |
| Output Impedance             | Ω    | 75                                               |                      |
| NPR Dynamic Range            | dB   | ≥15 (NPR≥30 dB)                                  | ≥10(NPR≥30 dB)       |
|                              |      | Use DFB laser                                    | Use FP laser         |
| General Performance          |      |                                                  |                      |
| Supply Voltage               | V    | A: AC (150 to 265)V; B: AC (35 to 90)V           |                      |
| Operating Temperature        | °C   | -40 to 60                                        |                      |
| Storage Temperature          | °C   | -40 to 65                                        |                      |
| Relative Humidity            | %    | Max 95% no condensation                          |                      |
| Consumption                  | VA   | ≤ 20                                             |                      |
| Dimension (L×W×H)            | mm   | 280 x 260 x 70                                   |                      |
| Net Weight                   | kg   | 2.8                                              |                      |

## Burst Mode (Optional)

|                                       |      |                |
|---------------------------------------|------|----------------|
| Optical Output Power                  | dBm  | -30            |
| (When there is no burst signal input) |      |                |
| Laser Turn On Threshold               | dBμV | ≥70            |
| Laser Turn Off Threshold              | dBμV | ≤62            |
| Laser Turn On Time (t1)               | us   | 0.5 ≤ t1 ≤ 1   |
| Laser Turn Off Time (t2)              | us   | 0.5 ≤ t2 ≤ 1.5 |

**Note:** The forward RF parameters are tested under the condition of using GaAs 25dB power doubler module in the last stage. Use other module, the parameters will be slightly different.

## Ordering Information

| AON121X Series 1 or 2 Output, Fiber Deep Node Ordering Information |                                                                                                                                                                                                                                                                                                                 |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------|----|-------|----|----------------|---|----------------------------------------------------------------------------------------------------------------------------------|---|----------------|----|-----------------|----|-----------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------|----|--------------------------------------------|----|------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----|---|----------------------------------------|---|-------------------------------------|--|--|
| AON121                                                             | X-                                                                                                                                                                                                                                                                                                              | X- | XX-                | X- | X-    | X- | X              |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
|                                                                    | ↓                                                                                                                                                                                                                                                                                                               | ↓  | ↓                  | ↓  | ↓     | ↓  | ↓              |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
|                                                                    | <table><tr><th></th><th>Bandwidth</th></tr><tr><td>0</td><td>1 GHz</td></tr><tr><td>2</td><td>1.2 GHz</td></tr></table>                                                                                                                                                                                         |    | Bandwidth          | 0  | 1 GHz | 2  | 1.2 GHz        |   | <table><tr><th></th><th>Band Split</th></tr><tr><td>42</td><td>42/54 MHz</td></tr><tr><td>65</td><td>65/85 MHz</td></tr></table> |   | Band Split     | 42 | 42/54 MHz       | 65 | 65/85 MHz       |  | <table><tr><th></th><th>Power Supply</th></tr><tr><td>1</td><td>150 V<sub>AC</sub> to 365 V<sub>AC</sub></td></tr><tr><td>2</td><td>35 V<sub>AC</sub> to 90 V<sub>AC</sub></td></tr></table> |  | Power Supply      | 1  | 150 V <sub>AC</sub> to 365 V <sub>AC</sub> | 2  | 35 V <sub>AC</sub> to 90 V <sub>AC</sub> |  | <table><tr><th></th><th>WDM</th></tr><tr><td>-</td><td>No WDM</td></tr><tr><td>W</td><td>With WDM</td></tr></table>                                                            |  | WDM | - | No WDM                                 | W | With WDM                            |  |  |
|                                                                    | Bandwidth                                                                                                                                                                                                                                                                                                       |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| 0                                                                  | 1 GHz                                                                                                                                                                                                                                                                                                           |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| 2                                                                  | 1.2 GHz                                                                                                                                                                                                                                                                                                         |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
|                                                                    | Band Split                                                                                                                                                                                                                                                                                                      |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| 42                                                                 | 42/54 MHz                                                                                                                                                                                                                                                                                                       |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| 65                                                                 | 65/85 MHz                                                                                                                                                                                                                                                                                                       |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
|                                                                    | Power Supply                                                                                                                                                                                                                                                                                                    |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| 1                                                                  | 150 V <sub>AC</sub> to 365 V <sub>AC</sub>                                                                                                                                                                                                                                                                      |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| 2                                                                  | 35 V <sub>AC</sub> to 90 V <sub>AC</sub>                                                                                                                                                                                                                                                                        |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
|                                                                    | WDM                                                                                                                                                                                                                                                                                                             |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| -                                                                  | No WDM                                                                                                                                                                                                                                                                                                          |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| W                                                                  | With WDM                                                                                                                                                                                                                                                                                                        |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
|                                                                    | ↓                                                                                                                                                                                                                                                                                                               | ↓  | ↓                  | ↓  | ↓     | ↓  | ↓              |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
|                                                                    | <table><tr><th></th><th>Return Transmitter</th></tr><tr><td>0</td><td>None</td></tr><tr><td>A</td><td>1550 DFB 3 dBm</td></tr><tr><td>B</td><td>1310 FP 0 dBm</td></tr><tr><td>C</td><td>1310 DFB 3 dBm</td></tr><tr><td>D</td><td>1611 CWDM 3 dBm</td></tr><tr><td>E</td><td>1591 CWDM 3 dBm</td></tr></table> |    | Return Transmitter | 0  | None  | A  | 1550 DFB 3 dBm | B | 1310 FP 0 dBm                                                                                                                    | C | 1310 DFB 3 dBm | D  | 1611 CWDM 3 dBm | E  | 1591 CWDM 3 dBm |  | <table><tr><th></th><th>Optical Connector</th></tr><tr><td>AS</td><td>SC/APC</td></tr><tr><td>AF</td><td>FC/APC</td></tr></table>                                                            |  | Optical Connector | AS | SC/APC                                     | AF | FC/APC                                   |  | <table><tr><th></th><th>EMS</th></tr><tr><td>0</td><td>No EMS with Internal Optical Connector</td></tr><tr><td>1</td><td>EMS with External Optical Connector</td></tr></table> |  | EMS | 0 | No EMS with Internal Optical Connector | 1 | EMS with External Optical Connector |  |  |
|                                                                    | Return Transmitter                                                                                                                                                                                                                                                                                              |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| 0                                                                  | None                                                                                                                                                                                                                                                                                                            |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| A                                                                  | 1550 DFB 3 dBm                                                                                                                                                                                                                                                                                                  |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| B                                                                  | 1310 FP 0 dBm                                                                                                                                                                                                                                                                                                   |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| C                                                                  | 1310 DFB 3 dBm                                                                                                                                                                                                                                                                                                  |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| D                                                                  | 1611 CWDM 3 dBm                                                                                                                                                                                                                                                                                                 |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| E                                                                  | 1591 CWDM 3 dBm                                                                                                                                                                                                                                                                                                 |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
|                                                                    | Optical Connector                                                                                                                                                                                                                                                                                               |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| AS                                                                 | SC/APC                                                                                                                                                                                                                                                                                                          |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| AF                                                                 | FC/APC                                                                                                                                                                                                                                                                                                          |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
|                                                                    | EMS                                                                                                                                                                                                                                                                                                             |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| 0                                                                  | No EMS with Internal Optical Connector                                                                                                                                                                                                                                                                          |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |
| 1                                                                  | EMS with External Optical Connector                                                                                                                                                                                                                                                                             |    |                    |    |       |    |                |   |                                                                                                                                  |   |                |    |                 |    |                 |  |                                                                                                                                                                                              |  |                   |    |                                            |    |                                          |  |                                                                                                                                                                                |  |     |   |                                        |   |                                     |  |  |

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Ver. ACT\_AON121X\_Series\_Optical\_Node\_Datasheet\_V1I\_Mar\_2024