

## AE20LRCAA 10.3 Gbits/s 1310 nm XAUI Transceiver

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### Features

- 10.3 Gbits/s optical transmitter and receiver with four-channel XAUI 3.125 Gbits/s I/O electrical interface
- Compliant with *IEEE*® 802.3ae D3.0
- Compliant with XENPAK MSA Issue 1.0 Release
- Uncooled, directly modulated 1.3  $\mu$ m DFB laser, and PIN receiver
- Hot pluggable in the Z-direction
- SC duplex fiber-optic connector
- Seventy-pin electrical connector
- Differential LVDS data interface
- Operating case temperature range: 0 °C to 70 °C
- Global interrupt pin for failure mode analysis
- Compact size:
  - 4.76 in. (L) x 1.4 in. (W) x 0.46 in. (H)
- Supports 10 km on single-mode fiber and 85 m on FDDI-grade multimode fiber

### Description

The newest transceiver from Agere Systems Inc. is the AE20LRCAA, a bidirectional module designed to provide a 10.3 Gbits/s compliant electro-optical interface, compliant with *IEEE* 802.3ae D 3.0 specifications. The module contains a 10.3 Gbits/s optical transmitter and receiver in the same physical package along with the electronics necessary to interface with the four-channel 3.125 Gbits/s XAUI interface. Local VXCO and clock recovery circuits are also included within the module.

The optical transmitter is an uncooled, field-proven InGaAsP MQW, 1.3 mm DFB laser for up to 10 km on SMF and 85 m on FDDI-grade MMF.

The optical receiver uses an InGaAs PIN photodetector and includes clock and data recovery circuits.

The electrical interface uses a low-voltage swing, ac-coupled differential interface.

## Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operations sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

| Parameter                   | Symbol           | Min | Max | Unit |
|-----------------------------|------------------|-----|-----|------|
| Supply Voltage              | V <sub>CC1</sub> | 0   | 5.5 | V    |
|                             | V <sub>CC2</sub> | 0   | 3.6 | V    |
|                             | V <sub>CC3</sub> | 0   | 2.0 | V    |
| Operating Temperature Range | T <sub>C</sub>   | 0   | 70  | °C   |
| Storage Temperature Range   | T <sub>stg</sub> | -40 | 85  | °C   |
| Operating Wavelength Range  | λ                | 1.1 | 1.6 | μm   |

## Functional Block Diagram

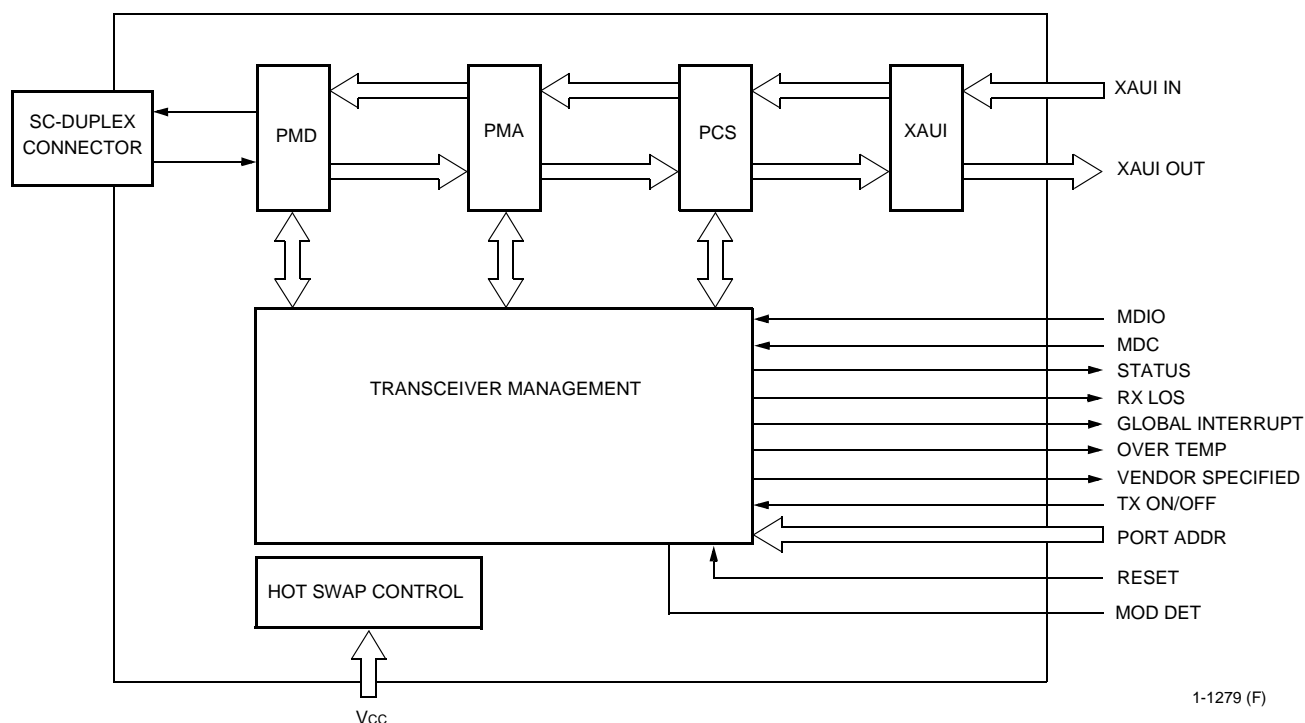


Figure 1. AE20LRCAA Transceiver Functional Block Diagram

## Transceiver Optical and Electrical Characteristics

Table 1. Transmitter Optical and Electrical Characteristics (Tc = 0 °C to 70 °C)

| Parameter                | Symbol          | Min  | Max  | Unit |
|--------------------------|-----------------|------|------|------|
| Supply Voltage           | VCC1            | 5.23 | 5.78 | V    |
|                          | VCC2            | 3.14 | 3.47 | V    |
|                          | VCC3            | 1.71 | 1.89 | V    |
| Average Launch Power     | PO              | OMA  | 1    | dBm  |
| Optical Wavelength       | $\lambda$       | 1265 | 1355 | nm   |
| Spectral Width           | $\lambda_{RMS}$ | OMA  | OMA  | nm   |
| Extinction Ratio         | ER              | 4    | —    | dB   |
| Rise/Fall Time (20%/80%) | tr/TF           | —    | 40   | ps   |
| Power Supply Current     | ICCT1           | TBD  | TBD  | mA   |
|                          | ICCT2           | TBD  | TBD  | mA   |
|                          | ICCT3           | TBD  | TBD  | mA   |
| Input Data Voltage       | —               | ±400 | ±800 | mV   |

Table 2. Receiver Optical and Electrical Characteristics (Tc = 0 °C to 70 °C)

| Parameter            | Symbol           | Min             | Max  | Unit     |
|----------------------|------------------|-----------------|------|----------|
| Supply Voltage       | VCC1             | 5.23            | 5.78 | V        |
|                      | VCC2             | 3.14            | 3.47 | V        |
|                      | VCC3             | 1.71            | 1.89 | V        |
| Sensitivity in OMA   | PI               | 0.0477 (–13.23) | —    | mW (dBm) |
| Stressed Sensitivity | PSS              | 0.0857 (–11.68) | —    | mW (dBm) |
| Wavelength Range     | $\lambda$        | 1265            | 1355 | nm       |
| Max Input Power      | P <sub>MAX</sub> | —               | 1*   | dBm      |
| Return Loss          | —                | 12              | —    | dB       |
| Output Data Voltage  | —                | TBD             | —    | —        |
| Power Supply Current | ICCR1            | TBD             | TBD  | mA       |
|                      | ICCR2            | TBD             | TBD  | mA       |
|                      | ICCR3            | TBD             | TBD  | mA       |

\* Current PIN and TIA do not meet the 1 dBm overload specification. Agere Systems recommends 2 dB attenuation be included in the case of an optical loopback diagnostic test.

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