# HDO206 CATV FIBRE RECEIVER

HDO206 is a dual receiver module for fibre optic return path links in CATV and FTTLA networks. The receiver has an extended frequency range to fulfil DOCSIS 3.1 requirements. HDO206 is installed into HDX installation frame. HDO206 has an integrated alarm receiver to enable reception of monitoring data from AC800 FTTLA node, AC810 node, CXE880 node or E62 transponder installed into E8 node or E3 amplifier.


## Features

- DOCSIS 3.1 compatible
- Low noise current density
- Two independent return path receivers
- Also high input power model available
- Integrated node alarm receiver (AC800 FTTLA, AC810, CXE880 or E62 counterpart)
- Monitoring of 32 nodes
- Wide input power / output level range
- Three output level control modes:
  - Automatic based on OMI, target output level and optical input power
  - Automatic based on optical input power
  - Manual
- Small form factor family, 2 RU height
- Fibre connectors can be located at the rear or at the front panel

## Management features

- Optical input power measurement and monitoring
- Automatic RF output level control with monitoring
- AC800 FTTLA, AC810, CXE880 and E62 monitoring: presence, identification data, measurements, statistics (see also node specification)
- Signal LEDs for both receiver statuses, module LED for internal status
- Internal temperature measurement and monitoring
- Non-volatile logging of 32 latest events, including alarms, alarming values, settings changes and application starts
- Uptime and total uptime counters
- All adjustments and alarm limits fully user configurable
- Local PC connection through backplane HDO bus with HDX021 cable
- Remote IP connection through HDC100 controller module
- SNMP monitoring and configuration through HDC100 controller module

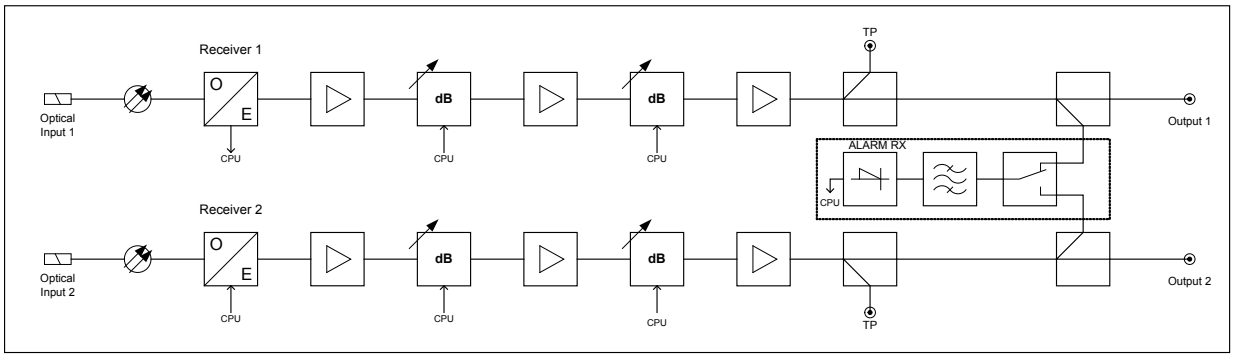
## Technical specifications

| Parameter | Specification | Note |
|---|---|---|
| **Optical parameters** | | |
| Light wavelength | 1260...1620 nm | |
| Input power range | | 1) |
| Standard model | -25...-5 dBm | |
| High input power model | -20…+3 dBm | |
| **RF parameters** | | |
| Frequency range | 5…204 MHz | |
| Output level | | 2) |
| Standard model | $2 * P_{opt}$ + 134 dBµV | |
| High input power model | $2 * P_{opt}$ + 130 dBµV | |
| Flatness | ±0.75 dB | 3) |
| Slope variation | ±0.75 dB | |
| RF impedance | 75 Ω | |
| Output return loss | 18 dB | |
| Level control range | 60 dB | |
| RF test points | 20 dB | 4) |
| Isolation | 50 dB | 5) |
| **Linearity and noise parameters** | | |
| Noise current density | 3.8 pA/√Hz | 6) |
| CINR (full load 5-204 MHz) | | 7) |
| Standard model | 49 dB @ -5 dBm, 29 dB @ -20 dB | |
| High input power model | 51 dB @ 0 dBm, 25 dB @ -20 dB | |
| **Alarm receiver** | | |
| Maximum number of monitored nodes | 2 x 16 | 8) |
| Data carrier frequency | 10.7 MHz | |
| Modulation method | ASK 9600 bps or FSK 38400 bps | 9) |
| Channel bandwidth | 0.4 MHz | 10) |
| ASK decision making threshold | 75 dBµV | 11) |
| **General** | | |
| Power consumption | 5 W ( 2.6 W if only 1 RX) | |
| Supply voltages | 25 V / 145 mA (70 mA if only 1 RX) | |
| | 6.3 V / 230 mA (145 mA if only 1 RX) | 12) |
| Optical connectors | SC/APC | 13) |
| RF Connectors | F female | 14) |
| Cooling | Free air flow | 15) |
| Dimensions | 2U x 7HP x 380 mm | h x w x d |
| | Occupies 1/12 of HDX002 | |
| Weight | 1.5 kg | |
| EMC compliance | EN 50083-2 | |
| Enclosure classification | IP20 | |
| Operating temperature range | 0...+45 °C | |
| Storage temperature range | -20…+60 °C | |
| Operating relative humidity | 0…85 % | |

## Notes

1) Standard and high input power models are available, see ordering information.
   High input power model contains internal 2 dB optical attenuator in the front of photodiode.
2) Gain limited maximum output level when OMI is 10%. $P_{opt}$ is the optical input power.
3) Typical value. Maximum value is ±1.0 dB.
4) Compared to output. Typical accuracy is ±0.5 dB. Maximum value is ±0.75 dB.
5) This is a crosstalk attenuation between signal paths 1 and 2.
6) Typical value that can be used in C/N calculation.
   In C/N calculation must be taken into account that the high input power model contains an internal 2 dB optical attenuator in the front of photodiode.
7) Typical value with a low noise transmitter. The total OMI is 25 % and the output level is 90 dBµV if not gain limited.
8) In multi node mode each receiver can monitor up to 16 CXE880 nodes and/or E62 transponders in E3 amplifier or E8 node. In single node mode one AC800 FTTLA or AC810 node per one receiver.
9) HDO206 detects and adjusts automatically to ASK or FSK modulation.
10) In ASK mode typical selectivity >45 dB outside channel between 5…85 MHz.
11) Equivalent level at RF output. Accuracy ±3 dB.
12) Optional fan increases the total power consumption by 1.3 W (200 mA / 6.3 V).
13) Fibre connectors can be located at the rear or at the front panel.
14) Fixed connections are located at the rear panel. Test points are located at the front panel.
15) Optional cooling fan can be installed or replaced by the user without signal interruption.

## Block diagram




## Ordering information

HDO206 1-1 - 2-1 2-2

| | |
|---|---|
| **1-1 Receiver type** | |
| **A** | Standard receiver |
| **H** | High input power receiver |

| | |
|---|---|
| **2-1 Fibre location** | |
| **F** | Front panel |
| **R** | Rear panel |
| **2-2 Fibre connector type** | |
| **A** | SC/APC, 9 deg. |
| **C** | E-2000 |
| **D** | SC/APC, 8 deg. |
| **H** | SC/APC with shutter, 8 deg. |

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