DENSITÉ series

HDA-1861
Reclocked HD/SD/ASI DA with EQ
Guide to Installation and Operation

M950-9900-100
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Electromagnetic Compatibility

This equipment has been tested for verification of compliance with FCC Part 15, Subpart B requirements for Class A digital devices.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment has been tested and found to comply with the requirements of the EMC directive 2004/108/CE:

- EN 55022 Class A radiated and conducted emissions
- EN 50204 Radiated EMF immunity – 900 MHz pulsed
- EN 61000-3-3 Limitation of voltage changes, voltage fluctuations and flicker
- EN 61000-4-2 Electrostatic discharge immunity
- EN 61000-4-3 Radiated electromagnetic field immunity – radio frequencies
- EN 61000-4-8 Power frequency magnetic field immunity
- EN 61000-4-11 Voltage-dips, short-interruptions and voltage variations immunity

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1 HDA-1861 Reclocked HD/SD/ASI DA with EQ

1.1 Introduction

The HDA-1861 is a reclocked HD/SD distribution amplifier with up to 9 outputs and automatic equalization for up to 140 meters of cable (Belden 1694A). Reclocking of the video signals provides an additional level of signal integrity in long cable length applications. The HDA-1861 DA supports both HD-SDI (SMPTE 292M) and SD-SDI (SMPTE 259M-C) and also offers signal presence detection and remote reporting.

1.2 Features

- HD/SD-SDI input
- (9) reclocked HD/SD-SDI outputs
- HD SDI (1.485, 1.485/1.001 Gbps) is reclocked
- SD SDI (270 Mbps) is reclocked
- Other SD signals (143/177/360/540) are equalized but not reclocked
- 140 m automatic cable equalization in HD
- 300 m automatic cable equalization in SD
- Signal presence detection with remote reporting

1.3 Block Diagram

This block diagram shows the functionality of the HDA-1861.

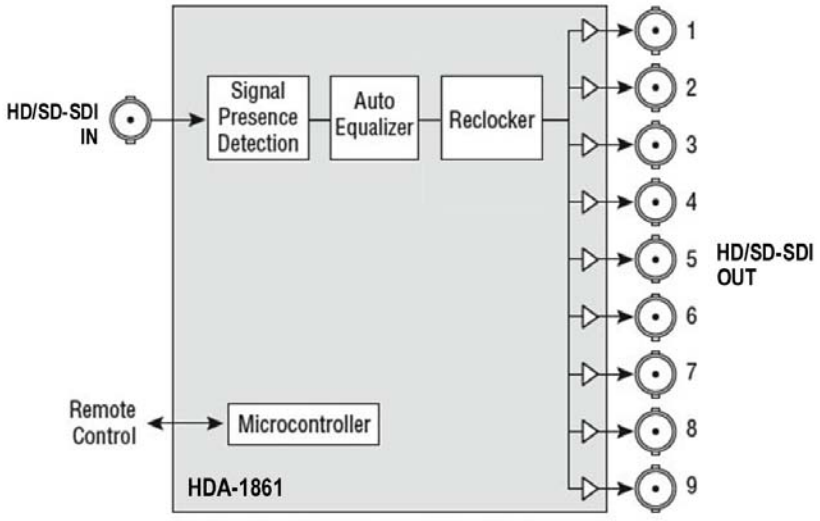


Figure 1.1 *Functional block diagram of the HDA-1861*

1.4 Front Card-edge Interface

The front card-edge of the HDA-1861 incorporates two elements:

- Status LED (see section 3.1)
- Select Button (see section 3.2)

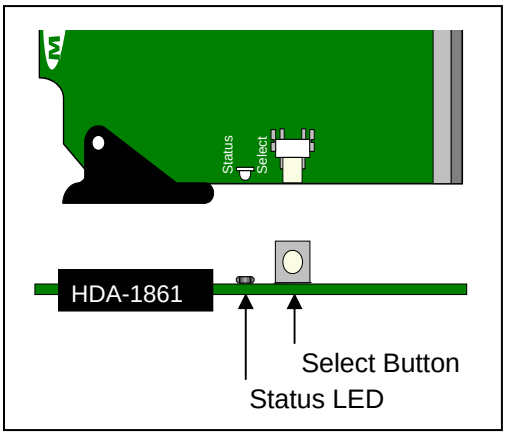


Figure 1.2 *Front card-edge layout*

2 Installation

2.1 Installation of Rear Connector Panels

Miranda Densité-series cards are each associated with a rear connector panel, which must be installed in the Densité frame before the card can be inserted.

The HDA-1861 card is sized to fit into Miranda's Densité-2 frame. Two different rear connector panels are available to fit the Densité 2 frame:

- HDA-185N/186N-SRP – 1 input and 4 outputs
- HDA-185N/186N-DRP – 1 input and 9 outputs

With the use of an available adapter, the HDA-1861 can also be installed in a Densité-3 frame (see section 2.3 below). A rear connector panel for this frame is available for the HDA-1861:

- HDA-185N/186N-3SRP – 1 input and 7 outputs

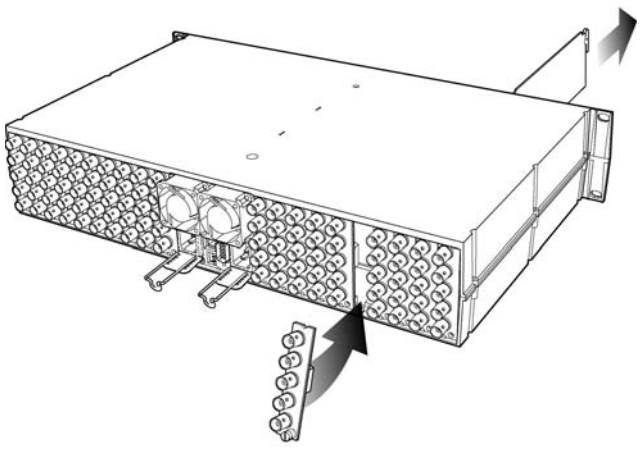
The two Densité-2 rear panels can also be used in a Densité-3 frame, with the addition of available adapters:

- HDA-185N/186N-SRP + DENSITE SRP-3RU – 1 input and 4 outputs
- HDA-185N/186N-DRP + DENSITE DRP-3RU – 1 input and 9 outputs

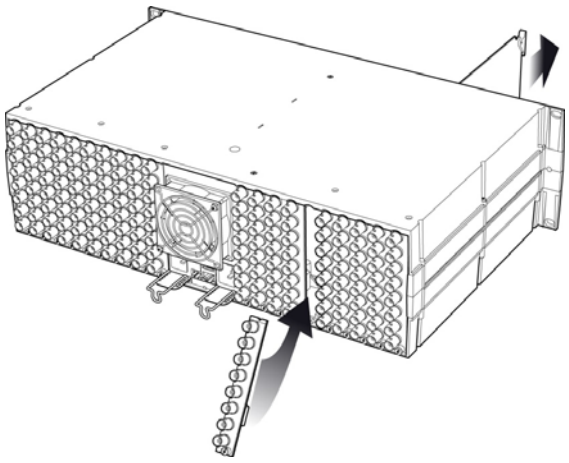
All cards and rear panels can be installed with the frame power on. The card has connectors which plug into a mid-frame mother board for distribution of power and for connection to the controller card, and a second connector which plugs directly into the rear connector panel for input and output.

The rear connector panel must be installed with the card out of the frame.

- To remove an existing card from the slot, tilt up the swivel handle on the front of the card to lever the connectors apart, then use the handle to pull the card straight out of the slot.



Densité-2 frame – rear panel installation



Densité-3 frame – rear panel installation

To install the connector panel:

(NOTE - if you are installing a Densité-2 rear panel plus adapter in a Densité-3 frame, please go to section 2.3)

1. If a card is installed in the slot whose rear panel is being changed, remove it as described above.

2. Remove the existing panel (either blank or belonging to an existing card that is being changed) by releasing the captive screw(s) at the bottom.

3. Position the new panel and secure it in place with the captive screw(s) at the bottom.

2.2 Card Installation

Once a matching rear connector panel has been installed, install the HDA-1861 card as follows:

1. Open the front panel of the frame.

2. Slide the HDA-1861 card into the slot and push gently on the handle to seat the connectors.

   If the card is used with the HDA-185N/186N-DRP double-width rear panel, it should be inserted into the right-hand slot. Inserting the card into the wrong slot will not damage the card, and will be flagged by the on-card status LED flashing red to indicate that there is no connection to the rear panel.

3. Close the front panel of the frame.

2.3 Installing Densité-2 Cards and Rear Modules in a Densité-3 Frame

The Densité-3 frame supports many Miranda Densité-2 series cards, including the HDA-1861. Should you wish to install the HDA-1861 card in your Densité-3 frame, you will need an adapter for the card. You may use the 3 RU rear panel that is available for the HDA-1861 (HDA-185N/186N-3SRP), or you may use one of the two 2 RU rear panels. In the latter case, an adapter will also be required for the rear panel, as described above. These adapters extend the height of the Densité-2 devices so that they will fit into the slots of the 3 RU Densité-3 frame.

Card adapters:

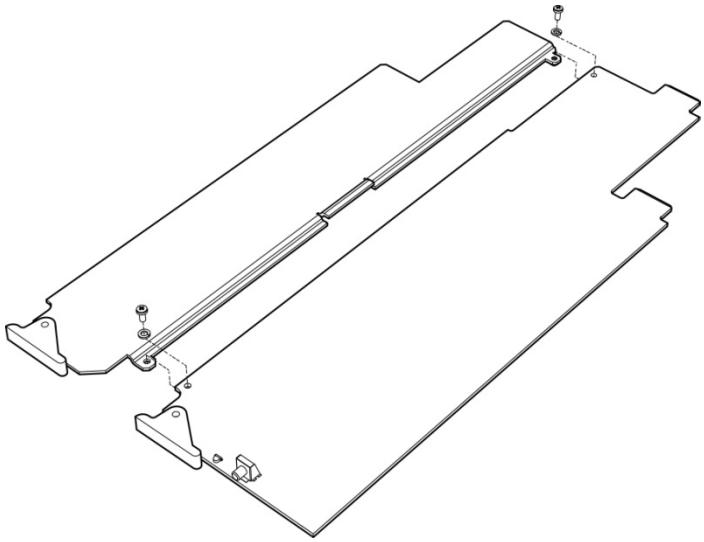
There are 3 different types of adapters available, depending on the Densité 2 card geometry, so be sure to order the adapter designed to fit the HDA-1861 card.

Densité 3 – EXT A

Install the adapter on the HDA-1861 as follows:

1. Fit the top edge of the card into the holding slot along the bottom edge of the adapter.

2. Align the holes in the top of the card with the holes on the adapter, and secure them together with the two provided screws and lock washers, as shown in the figure.



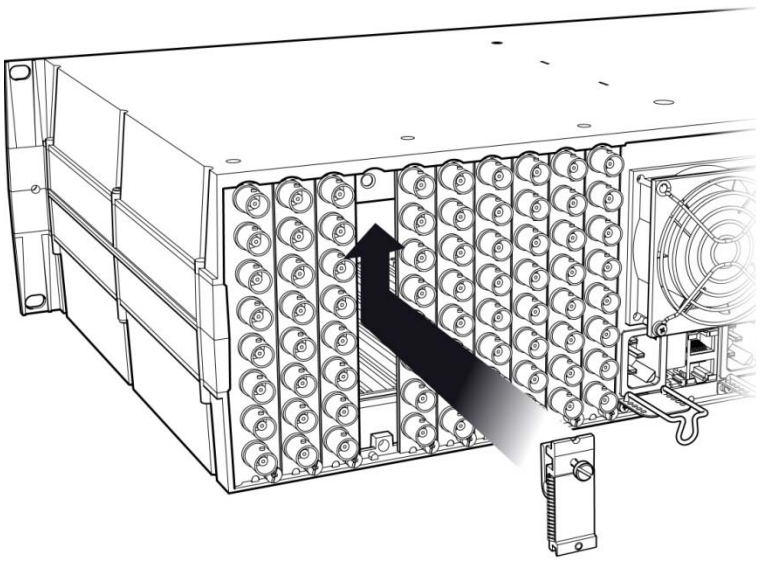
Rear adapters:

3-RU rear module adapters are available for Single and Double Densité-2 rear panels:

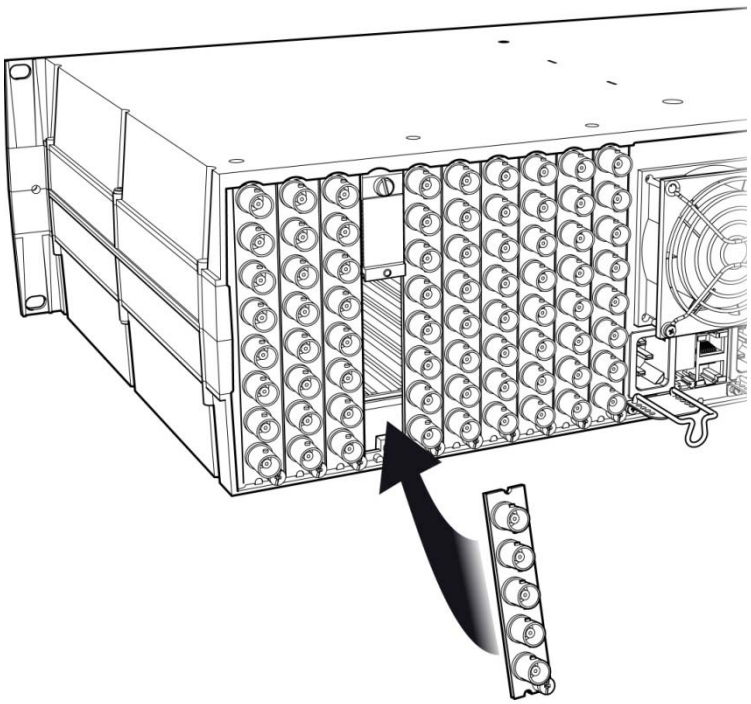
- DENSITE DRP-3RU
- DENSITE SRP-3RU

Install these as follows:

1. Position the adapter at the top of the empty slot(s) on the rear of the frame.
2. Use the captive screw in the adapter to fasten it securely in position.



3. Slip the top of the 2RU rear panel into the slot at the bottom of the adapter, and secure it to the frame using the captive screw at the bottom of the panel.

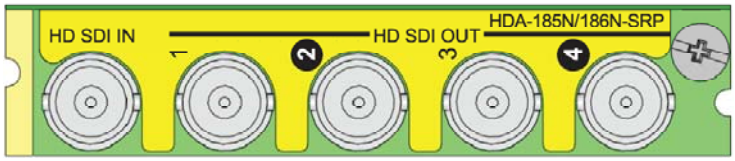


2.4 Signal Connections on Rear Connector Panels

Three rear panels are available for the HDA-1861.

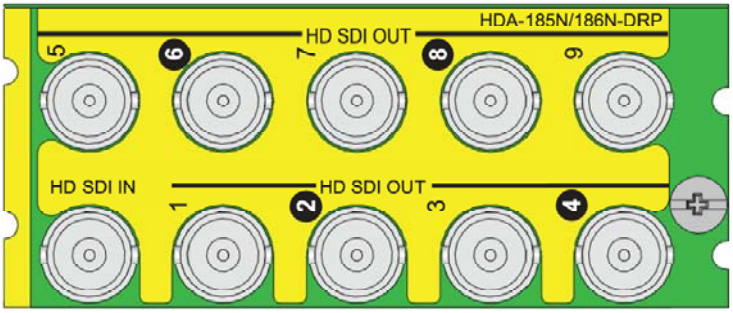
HDA-185N/186N-SRP – single-slot-width Densité-2 panel

Connections: 1 x HD SDI IN
4 x HD SDI OUT *****



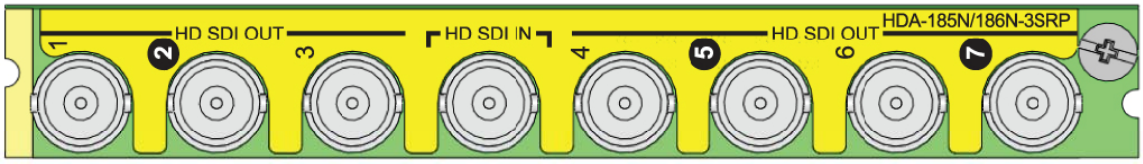
HDA-185N/186N-SRP – double-slot-width Densité-2 panel

Connections: 1 x HD SDI IN
9 x HD SDI OUT *****



HDA-185N/186N-3SRP – single-slot-width Densité-3 panel

Connections: 1 x HD SDI IN
7 x HD SDI OUT *****



**** Note:** On all of these panels, the outputs identified with a black label are **not** suitable for ASI distribution.*

3 Operation

3.1 Card-Edge Status LED

The status monitor LED is located on the front card-edge of the HDA-1861, and is visible through the front access door of the DENSITÉ frame. This multi-color LED indicates the status of the HDA-1861 by color, and by flashing/steady illumination.

The chart shows how the various error conditions that can be flagged on the HDA-1861 affect the LED status.

- If a cell is gray, the error condition cannot cause the LED to assume that status
- If more than one LED status is possible for a particular error condition, the status is configurable. See Section 3.2.2 on page 12 for details.
- The factory default status is shown by a ✪

The LED will always show the most severe detected error status that it is configured to display, and in the chart error severity increases from left to right, with green representing no error/disabled, and flashing red the most severe error.

	Card-edge LED Status				
Error Condition	Green	Yellow	Red	Flashing Yellow	Flashing Red
Signal present	✪				
No input signal			✪		
No lock on input			✪		
No Rear panel					✪
Card is selected for local control				✪	

If the LED is Flashing Yellow, it means that the card is selected for local control using the Densité frame's control panel, or that the card is booting up. See Section 3.2 for details.

3.2 Local control using the Densité frame control panel

3.2.1 Overview

Push the SELECT button on the HDA-1861 card edge (see Section 1.4) to assign the local control panel to operate the HDA-1861. Use the control panel buttons to navigate through the menu, as described below.

All of the cards installed in a Densité frame are connected to the frame's controller card, which handles all interaction between the cards and the outside world. There are no operating controls located on the cards themselves. The controller supports remote operation via its Ethernet ports, and local operation using its integrated control panel.

The local control panel is fastened to the controller card by a hinged connector, and when installed is located in the front center of the frame, positioned in front of the power supplies. The panel consists of a display unit capable of displaying two lines of text, each 16 characters in length, and five pushbuttons.

The panel is assigned to operate any card in the frame by pushing the SELECT button on the front edge of that card.

- Pushing the CONTROLLER button on the control panel selects the Controller card itself.
- The STATUS LED on the selected card flashes yellow.

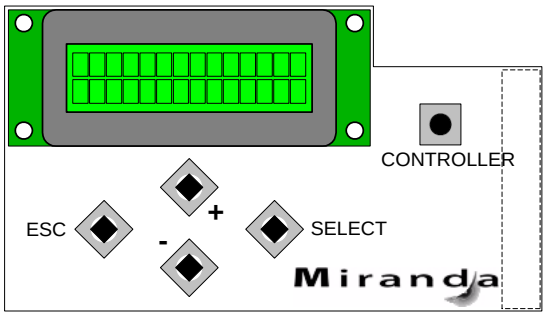


***Figure 3.1** Densité Frame local control panel*

The local control panel displays a menu that can be navigated using the four pushbuttons located beneath the display. The functionality of the pushbuttons is as follows:

[+] [–] Used for menu navigation and value modification

[SELECT] Gives access to the next menu level. When a parameter value is shown, pushing this button once enables modification of the value using the [+] and [–] buttons; a second push confirms the new value

[ESC] Cancels the effect of parameter value changes that have not been confirmed; pushing [ESC] causes the parameter to revert to its former value.

Pushing [ESC] moves the user back up to the previous menu level. At the main menu, [ESC] does *not* exit the menu system. To exit, re-push the [SELECT] button for the card being controlled.

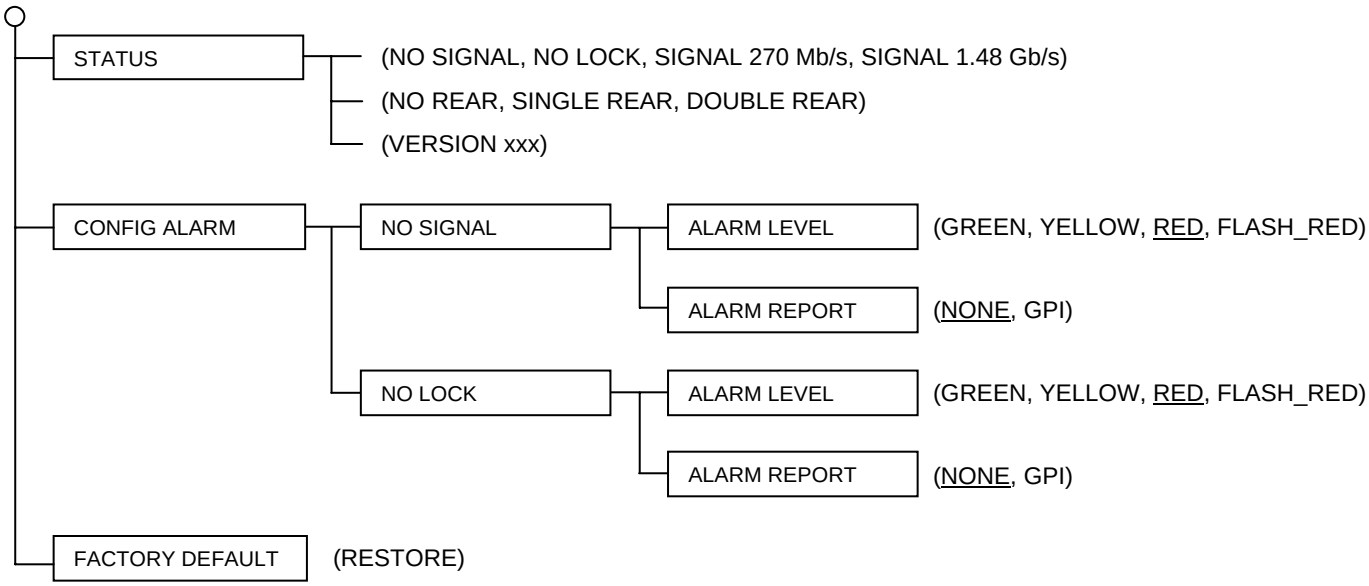
If no controls are operated for 30 seconds, the controller reverts to its normal standby status, and the selected card's STATUS LED reverts to its normal operating mode. If a parameter was changed on the card but not submitted (SELECT was not pressed) and the 30 second timeout occurs, the parameters will be confirmed as if the SELECT key had been pressed.

3.2.2 Menu for local control

The HDA-1861 has operating parameters which may be adjusted locally at the controller card interface.

- Press the SELECT button on the HDA-1861 front card edge to assign the Densité frame's local control panel to the HDA-1861
- Use the keys on the local control panel to step through the displayed menu to configure and adjust the HDA-1861
- Note that card status messages and error reports are the first items that appear when the select button is pushed.

HDA-1861 Menus



CONFIG ALARM menu:

For each alarm, select the way in which it will be displayed on the card-edge Status LED.

Alarm level: [GREEN, YELLOW, RED, FLASH RED]

For each alarm, select whether it will be reported on the GPI output of the frame controller.

Alarm report: [NONE, GPI]

FACTORY DEFAULT restores the HDA-1861 to the factory set-up conditions, shown underlined in the menu.

4 Specifications

INPUT

Signal:	HD-SDI SMPTE-292M (1.485, 1.485/1.001 Gbps) SD-SDI SMPTE-259M-C (270 Mbps) EN50 83-9 DVI-ASI (270 Mbps) SMPTE 310M/DVB-SSI
Cable length:	HD: 140 m Belden 1694A SD: 300 m Belden 1694A
Return loss:	> 15 dB up to 1.5 GHz

OUTPUTS (9)

Signal:	HD-SDI SMPTE-292M (1.485, 1.485/1.001 Gbps) SD-SDI SMPTE-259M-C (270 Mbps) EN50 83-9 DVI-ASI (270 Mbps) *5 outputs only* Other SD signals (143/177/360/540) are equalized but not reclocked
Return loss:	> 15 dB up to 1.5 GHz
Jitter (wideband):	< 0.2 UI p-p (wideband)

PROCESSING PERFORMANCE

Signal path:	10 bits
Latency:	6 ns

POWER <3 W