

## hiX56xx Rel. 2.6 Interface Description

### ADSL Linecards

Interface according:

S50010-M1499-B101	72-ADSL2+/ADSL2/ADSL ports over ISDN (Annex B) Lantiq Geminax-D Max (V1.2)
S50010-M1499-C1	72-ADSL2+/ADSL2/ADSL ports over ISDN (Annex B) Lantiq Geminax-D Max (V1.3)
S50010-M1499-D1	72-ADSL2+/ADSL2/ADSL ports over POTS (Annex B) Lantiq Geminax-D Max (V1.3)

ITU-T G.992.1 Annex B non overlap (ADSL full rate over ISDN)

ITU-T G.992.3 Annex B non overlap (ADSL2 full rate over ISDN)

ITU-T G.992.5 Annex B non overlap (ADSL2+ full rate over ISDN)

- ADSL ports enable
  - Downstream: 32 kbit/s to 8160 kbit/s
  - Upstream: 32 kbit/s to 896 kbit/s
  - The line rates are set with a 32 kbit/s granularity.
- ADSL2 ports enable
  - Downstream: 32 kbit/s to 11,000 kbit/s
  - Upstream: 32 kbit/s to 1500 kbit/s
  - The line rates are set with a 4 kbit/s granularity.
- ADSL2+ ports enable
  - Downstream: 32 kbit/s up to a maximum of 25,000 kbit/s
  - Upstream: 32 kbit/s to 1024 kbit/s
- Latency: fixed or interleaved mode can be configured for each ADSL port

### VDSL

IU\_VDSL24 S50028-Q2028-A3

- VDSL2 in accordance with ITU-T G.993.2, bandplan 998 Annex B profile 8b and profile 17a
    - Bandplan Annex B 998 (B8-6), profile 8b, and (B8-12), profile 17a
    - Data rates: 100 Mbit/s symmetrically or unsymmetrically, granularity 8 kbit/s
    - IU\_VDSL24: line codes for ISDN service: 4B3T or 2B1Q
    - PSD shaping
    - RFI bands (up to 16 RFI bands at once, preconfigured or freely programmable)
    - Power reduction (upstream and downstream)
    - Adjustable lowest impulse noise protection (INP)
    - Adjustable maximum delay
    - Bitrate granularity (in accordance with standard, 8 kbit/s)
    - Dynamic Transmission Power Control
- The usability of this feature depends on the type of VDSL2 and on the CPE implementation.  
This feature is supported for VDSL2 in accordance with ITU G.997.1.

- ADSL2+ (BWC) in acc. with ITU-T G.992.5 Annex B

- ADSL2+ according ITU-T G.992.5
- ADSL2+ over ISDN (Annex B)
- Data rates:
  - Downstream: 64 kbit/s to about 25,000 kbit/s
  - Upstream: 64 kbit/s to about 1500 kbit/s.
- Latency paths:

A single latency path is supported for each ADSL2+ port. The maximum delay and the minimum impulse noise protection (INP) level are separately set for each ADSL2+ port.
- Extended framing

The IU\_VDSL24/IU\_VDSL24P supports extended framing. This allows to transmit data rates greater than 7.6 Mbit/s also in operation mode "Interleaved" with a typical INP protection of two symbols together with a maximum delay of 16 ms.

## General

- DELT ( double-ended line test) for VDSL2, ADSL2 and ADSL2+.
- The ADSL card supports single-ended line test.
- Besides the power management functionalities implemented in the chipset, other configure operations are also supported in the software:
  - Enable/disable L2 or L3 state on the specified port
  - Configure the state transfer timer thresholds/parameters on the specified port
  - Change the ADSL/VDSL power management status of specified port to appointed status by forced
  - Display power management link status for the specified port
- RFI Notches

The information is derived from "SURPASS hiX 5625/30/35 R2.6 System Description"  
For details refer to this document please.

## hiX5300 Rel. 1.2.2 Interface Description

### ADSL Linecards

SUADSL:64I:IFX      S50010-M1282-A101      64 ADSL ports, ISDN, Infineon  
 SUADSL:64IX:IFX      S50010-M1367-A101      Next generation 64 ADSL ports, ISDN, Infineon  
 SUADSL:64IXA:IFX      S50010-M1434-B101      Next generation 64 ADSL ports, ISDN, Geminax.max

G.992.1 Annex B non overlap (ADSL with ISDN)  
 G.992.3 Annex B non overlap (ADSL2 with ISDN)  
 G.992.5 Annex B non overlap (ADSL2+ with ISDN)

Unit	ADSL	ADSL 2	ADSL 2+	Notes
P50	X			
SUADSL16	X			Legacy product supports a maximum of 800 kbit/s upstream
SUADSL32	X			Legacy product
SUADSL64	X			Geminax.D and TI chipsets
SUADSL64IX SUADSL64PX	X	X		Next generation Geminax.bis chipset
SUADSL64IXA SUADSL64PXA	X	X	X	Next generation Geminax.max chipset

Standard	ADSL, ADSL2, and ADSL2+
Modulation type	Discrete Multitone (DMT)
Maximum transmission rate ADSL-Signal	
Downstream	8.16 Mbit/s ADSL 10 Mbit/s ADSL for next generation SUs 13 Mbit/s ADSL 2 25 Mbit/s ADSL 2+
Upstream	1024 kbit/s for next generation SUs 896 kbit/s for SU_ADSL64 and P50 1536 kbit/s ADSL 2 and ADSL 2+

Frequency ranges:		Bins		kHz	
Type	Standard	Upstream <sup>1</sup>	Down-stream	Upstream	Down-stream
ISDN-BA	ITU G.992.1 Annex B	29–59	60–255	123–257	257–1102
	ITU-T G.992.3 Annex B	29–59	60–255	123–257	257–1102
	ITU-T G.992.5 Annex B	29–59	60–511	123–257	257–2204
POTS	ITU G.992.1 Annex A and ANSI T1.413	6–31	33–255	24–136	140–1102
	ITU-T G.992.3 Annex A	6–31	33–255	24–136	140–1102
	ITU-T G.992.3 Annex L wide spectrum upstream	6–24	33–127	24–106	140–551
	ITU-T G.992.3 Annex L narrow spectrum upstream	6–14	33–127	24–62	140–551
	ITU-T G.992.5 Annex A	6–31	33–511	24–136	140–2206

1) Deutsche Telekom AG-specific subrack configuration enables you to disable bins 29–32 for ISDN in the upstream direction.

### Margin and Bit Error Rate

In basic mode, you only need to set the target margin. Margin in this document refers to the signal-to-noise ratio margin in dB. The ADSL line attempts to train with the configured line rate to the target margin. Earlier versions referred to target as desired margin. If the default minimum margin (also known as retrain margin in earlier versions of hiX 5300) does not meet your needs, you can enable expert mode and configure the value yourself. For most applications, this 6 dB gap is appropriate.

### Interleaving and Fast Mode

When working in ADSL1 mode (ADSL acc. ITU G.992.1) there is a mapping to the 3 latency modes which have been available on older versions of hiX 5300. Additionally there exists the delay "no bound" configuration.

Configured max. interleaving delay (ms)	Max. interleaving delay (ms)	Min. impulse noise protection (symbols)	Latency mode
0	0 to 16	0 to 2	no bound
1 to 4	—	0	Fast
5 to 15	4	0.5	Low
≥ 16	16	2	High

With ADSL2 (acc. ITU-T G.992.3) and ADSL2+ (acc. ITU-T G.992.5) you can configure the following:

- Minimum impulse noise protection (1/2, 1, or 2 symbols from transient spikes)
- Maximum interleaving delay (0 ms to 24 ms).

**Rate adaption mode**

Manual, Automatic and Dynamic

Dynamic rate adaptation mode is only supported with ADSL 2 and ADSL 2+.

**Power Management**

ADSL 2 and ADSL 2+ support power management according to ITU-T 992.3. Once enabled, you can select which modes in addition to L0 an ADSL port supports.

**Spectral Shaping and RFI**

ADSL 2 and ADSL 2+ support spectral shaping and radio frequency interference (RFI)

**Integrated Line Supervision and for ADSL**

To monitor the condition of an ADSL line in service, you can use the OS workstation supervise the line conditions. The tests performed are according to ITU-T G.992.3 and ITU-T G.997.1

**Dual-ended Line Test**

ADSL 2 and ADSL 2+ support dual-ended line test (DELT)

The information is derived from "Information SURPASS hiX 5300 V1.2.2 Technical Description (TED)"  
For details refer to this document please.