VINETIC

Voice and Internet Enhanced Telephony Interface Circuit

VINETIC-4VIP, PEB 3324, V1.4

VINETIC-4M, PEB 3314, V1.4

VINETIC-0, PEB 3322, V1.4

VINETIC-4C, PEB 3394, V1.4

VINETIC-4S, PEB 3304, V1.4

VINETIC Reinitialization

Wireline Communications

Infineon technologies

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Page	Subjects (major changes since last revision)
9	delay added after command wSTEDSP
10	comment to also restore OFR register

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1 Introduction

For normal operation the VINETIC needs a variety of optional and mandatory downloads and setups (PHI download, EDSP firmware, ALM-DSP, DCCTL, CRAM coefficients, general register settings, operation mode setting). After powering up of the system these downloads and setups need to be done completely.

If a reset occurs or has to be done after the system had been already configured completely, the downloads do not need to be done again, but need to be reactivated (if the supply voltages of the VINETIC always stayed within the specified ranges). A reset via the RESET pin of the VINETIC or a reset because of a VINETIC internal reset condition does not clear the download memory, therefore time consuming downloads can be avoided.

It has to be noted, that additional to an external reset applied at RESET pin of the VINETIC, the VINETIC itself autonomously performs a reset under following conditions:

1. PCLK clock fails for more than 4 µs
2. VINETIC is set to deep sleep mode (all analog channels set to Sleep Power Down Resistive operating mode and command “Power Control” with DS = 1)
3. 1.8 V supply failing: VINETIC has an on-chip voltage supervision of the 1.8 V supply. If the 1.8 V supply gets out of the specified range, a reset is performed

If the VINETIC gets an external reset or autonomously performs a reset in case of the above mentioned conditions, a RESET interrupt is generated (cannot be masked).

In case 1) and 2) (clock fail and deep sleep condition), the RAMs for storing the downloads are not cleared. Therefore it is not necessary to do the time consuming downloads again. But it is required to reactivate the downloads.

In case of a supply voltage fault condition, a complete download has to be done as it cannot be guaranteed that the VINETIC internal memories remain unaffected by supply voltages drops. Supply voltages for the VINETIC have to be monitored externally.

This document describes the required steps to reactivate and reconfigure the VINETIC after a reset (conditions 1) and 2)) without doing the downloads for PHI, ALM-DSP, DCCTL, EDSP and CRAM.

2 VINETIC Reinitialization

All download RAMs (PHI, EDSP firmware, DCCTL, ALM-DSP, CRAM coefficients) are not cleared by a reset and just need to be reactivated again. Whereas all configuration and register settings are cleared by a reset and need to be programmed again.

Table 1 VINETIC Downloads/Configurations

Sequence	Type	Mandatory /Optional	Status after Reset	Activation after Reset
1.	PHI download	optional	still in VINETIC RAM	reactivation
2.	Command/Packet In-Box Size	optional	cleared	reprogramming
3.	EDSP firmware	mandatory	still in VINETIC RAM	reactivation
4.	ALM-DSP download	mandatory	still in VINETIC RAM	reactivation
5.	DCCTL download	optional	still in VINETIC RAM	reactivation
6.	CRAM coefficients	optional	still in VINETIC RAM	reactivation
7.	SOP registers (ALM)	mandatory	cleared	reprogramming
8.	IOP registers (e.g. Interrupt masks)	optional	cleared	reprogramming
9.	EOP commands (Firmware configuration)	mandatory	cleared	reprogramming
10.	Analog Line Module Operating Mode	mandatory	cleared	reprogramming

2.1 Reactivation of PHI Download

Depending on the VINETIC version and also on the type of µController interface used, the VINETIC may require a PHI download. This is the first download which needs to be reactivated.

A PHI download consists of 4 start, 4 branch addresses and the PHI program code itself. In order to reactivate the PHI download, the start and branch addresses need to be set again.

Start and branch addresses are different for each PHI download. The commands described below must be modified according to the start and branch addresses of each particular PHI download file. See also **Chapter 3**.

The reactivation of the PHI download start and branch addresses needs to be done in the order given below:

1. Set start address 1 (register address 8021_H)
2. Set start address 2 (register address 8023_H)
3. Set start address 3 (register address 8025_H)
4. Set start address 4 (register address 8027_H)
5. Set branch address 1 (register address 8020_H)
6. Set branch address 2 (register address 8022_H)
7. Set branch address 3 (register address 8024_H)
8. Set branch address 4 (register address 8026_H)

Command Structure for Reactivation for Start or Branch Address

1. Command word: 08_H + high address byte (NWD)
2. Command word: low address byte + length (NWD)
3. Command word: start or branch address value (EOM)

Each of the start or branch addresses needs to be set with a separate command.

The position of start and branch address within the PHI download file is shown in **Table 2**. Please note that the sequence of start and branch addresses in the PHI download file is different from the command sequence to be sent to set the start and branch addresses again (see example in column 4 of **Table 2**).

Table 2 Example PHI Download File with Start and Branch Addresses

Download File [Data]	Description	Associated Command for Reactivation	Sequence of Commands for Reactivation
0x4300	wLPMP command		Not to be sent
0x01E4	Branch Address 1	0880_H, 2001_H, $01E4_H$	5.
0x024B	Branch Address 2	0880_H, 2201_H, $024B_H$	6.
0x0438	Branch Address 2	0880_H, 2401_H, 0438_H	7.
0x0000	Branch Address 3	0880_H, 2601_H, 0000_H	8.
0x0800	Start Address 1	0880_H, 2101_H, 0800_H	1.
0x0801	Start Address 2	0880_H, 2301_H, 0801_H	2.
0x0A36	Start Address 3	0880_H, 2501_H, $0A36_H$	3.
0x021F	Start Address 4	0880_H, 2701_H, $021F_H$	4.
0x0400	PHI download data		Not to be sent
0x00A2	PHI download data		Not to be sent
....	PHI download data		Not to be sent

A list with commands for reactivation of each of the different PHI downloads is given in appendix **Chapter 3**.

2.2 Configure Command/Packet In-Box Size

The command and packet in-box size can be configured for two different settings:

- Short command wMINCBX (command in-box: 31 words and packet in-box: 255 words). This setting is recommended for applications with packetized voice handling.
- Short command wMAXCBX (command in-box: 255 words and packet in-box: 31 words).

A reset configures the command in-box for 31 words and the packet in-box for 255 words. If a different setting is required, the corresponding short command (wMINCBX or wMAXCBX) has to be sent.

Note:

1. *The configuration of the command and packet in-box size can only be done prior to a start of the EDSP (short command wSTEDSP)*
2. *Commands wMINCBX and wMAXCBX are only allowed to be sent while BXSR2:MBX-EMPTY = 1 (mailbox empty).*

2.3 Restart of EDSP Firmware

The EDSP firmware is restarted with short command wSTEDSP (4240_H).

Note: After starting the EDSP (command "wSTEDSP"), a delay of 2 ms is required before any further access to the VINETIC can be done.

2.4 Reactivation of ALM-DSP Download

The ALM-DSP download needs to be reactivated for each of the two analog line modules separately. The VINETIC includes two analog line modules. The first analog line module includes analog channels A and B, the second analog line module includes analog channels C and D.

Reactivation of the ALM-DSP download is done by setting CCR:JUMP-AC3 to 1 for each of the two analog line modules. This has to be done with SOP write commands (one time with CHAN field set to 0000_B for channels A and B and one time with CHAN field set to 0010_B for channels C and D).

2.5 Reactivation of DCCTL Download

An optional DCCTL download needs to be reactivated for each of the analog line channels. This is done by setting BCR1:PRAM-DCC = 1 for each of the analog line channels.

2.6 Reactivation of CRAM Coefficients

Typically the CRAM coefficients are used to control the analog line channels. After a reset the CRAM coefficients need to be selected again for each of the analog line channels. Whether CRAM or ROM coefficients are used is controlled with three different bit settings:

- BCR1:CRAM-EN (coefficients for AC and DC)
- BCR2:LPRX-CR (coefficients for improved modem transmission performance)
- DSCR:PTG (coefficients for tone generators)

Reactivation of CRAM coefficients is done by setting these bits to 1 for each of the analog line channels.

2.7 Configuration of Application Specific Settings

Each VINETIC application requires specific settings of SOP and IOP registers and programming of the EDSP via EOP commands. A reset sets all SOP and IOP register to their default values. The operating mode of all analog channels is set to power down high impedance mode. Also all settings via EOP commands are cleared with a reset.

In order to recover from a reset, all settings via SOP, IOP and EOP commands need to be redone.

It has to be noted that also the content of SOP register OFR (DC Offset register) gets reset. Therefore either a new DC Offset calibration procedure has to be done or the value of a previously performed DC calibration sequence has to be reloaded to OFR register (OFR DC offset calibration value is specific for each channel).

Also the operating mode of the analog line channels needs to be restored (short commands).

Note: Prior to any of these operations (SOP, IOP. EOP) an EDSP firmware restart has to be performed.

3 Appendix: List of PHI Download Reactivation

3.1 PHI Download Reinitialization for VINETIC V1.3

Table 3 PHI Download 2442_16D_02.pth

Command #	Command Description	Comment
1.	0880_H, 2101_H, 0800_H	Set start address 1
2.	0880_H, 2301_H, 0801_H	Set start address 2
3	0880_H, 2501_H, $0A36_H$	Set start address 3
4.	0880_H, 2701_H, 0800_H	Set start address 4
5.	0880_H, 2001_H, $01E4_H$	Set branch address 1
6.	0880_H, 2201_H, $024B_H$	Set branch address 2
7.	0880_H, 2401_H, 0438_H	Set branch address 3
8.	0880_H, 2601_H, 0000_H	Set branch address 4

Table 4 PHI Download 2442_16M_02.pth

Command #	Command Description	Comment
1.	0880_H, 2101_H, 0800_H	Set start address 1
2.	0880_H, 2301_H, 0801_H	Set start address 2
3	0880_H, 2501_H, $0A36_H$	Set start address 3
4.	0880_H, 2701_H, 0800_H	Set start address 4
5.	0880_H, 2001_H, $01E4_H$	Set branch address 1
6.	0880_H, 2201_H, $024B_H$	Set branch address 2
7.	0880_H, 2401_H, 0438_H	Set branch address 3
8.	0880_H, 2601_H, 0000_H	Set branch address 4

Table 5 PHI Download 2442_8D_11.pth

Command #	Command Description	Comment
1.	0880_H, 2101_H, 0800_H	Set start address 1
2.	0880_H, 2301_H, 0802_H	Set start address 2

Table 5 PHI Download 2442_8D_11.pth (cont'd)

Command #	Command Description	Comment
3	0880_H, 2501_H, 0803_H	Set start address 3
4.	0880_H, 2701_H, $0A38_H$	Set start address 4
5.	0880_H, 2001_H, $04FF_H$	Set branch address 1
6.	0880_H, 2201_H, $01E4_H$	Set branch address 2
7.	0880_H, 2401_H, $024B_H$	Set branch address 3
8.	0880_H, 2601_H, 0185_H	Set branch address 4

Table 6 PHI Download 2442_8M_11.pth

Command #	Command Description	Comment
1.	0880_H, 2101_H, 0800_H	Set start address 1
2.	0880_H, 2301_H, 0802_H	Set start address 2
3	0880_H, 2501_H, 0803_H	Set start address 3
4.	0880_H, 2701_H, $0A38_H$	Set start address 4
5.	0880_H, 2001_H, $04FF_H$	Set branch address 1
6.	0880_H, 2201_H, $01E4_H$	Set branch address 2
7.	0880_H, 2401_H, $024B_H$	Set branch address 3
8.	0880_H, 2601_H, 0185_H	Set branch address 4

3.2 PHI Download Reinitialization for VINETIC V1.4

Table 7 PHI Download 2484_16M_01.pth

Command #	Command Description	Comment
1.	0880_H, 2101_H, 0800_H	Set start address 1
2.	0880_H, 2301_H, 0800_H	Set start address 2
3	0880_H, 2501_H, 0800_H	Set start address 3
4.	0880_H, 2701_H, 0800_H	Set start address 4
5.	0880_H, 2001_H, $03DF_H$	Set branch address 1
6.	0880_H, 2201_H, 0000_H	Set branch address 2
7.	0880_H, 2401_H, 0000_H	Set branch address 3
8.	0880_H, 2601_H, 0000_H	Set branch address 4

Table 8 PHI Download 2442_8D_01.pth

Command #	Command Description	Comment
1.	0880_H, 2101_H, 0800_H	Set start address 1
2.	0880_H, 2301_H, 0800_H	Set start address 2
3	0880_H, 2501_H, 0800_H	Set start address 3
4.	0880_H, 2701_H, 0800_H	Set start address 4
5.	0880_H, 2001_H, $01BA_H$	Set branch address 1
6.	0880_H, 2201_H, 0000_H	Set branch address 2
7.	0880_H, 2401_H, 0000_H	Set branch address 3
8.	0880_H, 2601_H, 0000_H	Set branch address 4

Table 9 PHI Download 2484_8M_01.pth

Command #	Command Description	Comment
1.	0880_H, 2101_H, 0800_H	Set start address 1
2.	0880_H, 2301_H, 0800_H	Set start address 2
3	0880_H, 2501_H, 0800_H	Set start address 3
4.	0880_H, 2701_H, 0800_H	Set start address 4
5.	0880_H, 2001_H, $01BA_H$	Set branch address 1

Table 9 PHI Download 2484_8M_01.pth (cont'd)

Command #	Command Description	Comment
6.	0880_H, 2201_H, 0000_H	Set branch address 2
7.	0880_H, 2401_H, 0000_H	Set branch address 3
8.	0880_H, 2601_H, 0000_H	Set branch address 4

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