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APPLICATION NOTE 3919

Initialization and Configuration of the DS26303 LIU

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Abstract: This application note describes how to properly configure the DS26303 T1, E1, J1 Line Interface Unit (LIU). It contains C style example code and will ease the initial software development by allowing the designer to quickly achieve basic system operation.

Introduction

When developing software for a newly designed telecommunications system, the task of achieving basic device operation is often the toughest undertaking. The **DS26303** transceiver adds the complexity of an extensive set of functions and multiport operation. To ease the initial hurdle to getting the system up and running, Maxim created a C code style example which will initialize the devices for basic operation in either T1 or E1 mode. The software developer only has to modify the code for the desired operation and write code for two system-dependant functions. Once the code is compiled it should be ready to load onto the system for test and evaluation. It should be noted that there are two variants of the DS26303, these are the DS26303-120 and the DS26303-75. While the differences are very minor and only affect a couple of settings, one needs to be aware of which device is used in a design.

Code Example

The following code example in **Figure 1** will need some modification before it can be correctly compiled for use in the target system. The code for the function calls "write(address, data)" and "wait(millisecond)" are system-dependant, so they need to be written for the current microprocessor environment. The code assumes that the device is mapped into a 16-bit local bus at address offset 0x0000 and that the device data bus is only eight bits. If this is not the case, either the code can be modified or the function calls can be written to account for this. The code also contains many different settings for certain registers to give the developer several options for items like clock frequency, line coding, and more. Although the code covers a wide range of basic functionality, it is in no way complete. The data sheet should be referenced for any additional desired functionality.

```

/*
 * Configuration Example For DS26303-120 running in SI mode.
 *
 * This Example assumes SI operation as the function call for T1/E1 configuration
 * has been commented out. Simply comment out the SI configuration function
 * call and uncomment the SI configuration function call for SI operation. An
 * individual function call for J1 operation is not provided because it is very
 * similar to SI operation and would easily be implemented in that function.
 *
 * This file follows C style conventions. However actual code for the function
 * calls listed below are implementation specific and need to be added.
 *
 * Function Calls: write(address, data), wait(NumberOfCycles);
 *
 * The following comments only indicate some of the possible clock sources
 * that can be used for either SI or T1/E1 operation.
 *
 * Maxium clock configuration can use multiples of 6 * 1, 2, 4, or 8
 * MCLK = Can be a 6 x 1.544 or a 6 x 1.544 Mhz signal for SI or T1/E1 operation
 * TCCLK = Must be a 2.948 Mhz signal for SI operation
 * TCCLK = Must be a 1.544 Mhz signal for T1/E1 operation
 */
void initialization_demo()
{
    /* Global Initialization Begin */
    /* Reset all channels to their default states */
    write(ADDRESS, 0x00); /* ADDR: Set Address Pointer to Primary Register Bank
    write(ADDRESS, 0xFF); /* SWR: Reset All Channels
    /* Wait 1 us for reset to complete */
    wait (1);
    /* The Maxium Clock Select Register is updated for proper */
    /* device operation consult the data sheet for all possible configurations. */
    write(ADDRESS, 0x01); /* ADDR: Set Address Pointer to Individual I/O Register Bank
    write(ADDRESS, 0x00); /* MC: SI Mode Only MCLK=2.948, TCCLK & CLKM Disabled
    write(ADDRESS, 0x00); /* MC: T1/E1 Mode Only MCLK=2.948, TCCLK & CLKM Disabled
    write(ADDRESS, 0x01); /* MC: T1/E1 or SI Mode MCLK=1.544, TCCLK & CLKM Disabled
    write(ADDRESS, 0x01); /* MC: T1/E1 or SI Mode MCLK=3.098, TCCLK & CLKM Disabled
    write(ADDRESS, 0x01); /* MC: T1/E1 or SI Mode MCLK=4.134, TCCLK & CLKM Disabled
    write(ADDRESS, 0x01); /* MC: T1/E1 or SI Mode MCLK=8.268, TCCLK & CLKM Disabled
    write(ADDRESS, 0x01); /* MC: T1/E1 or SI Mode MCLK=16.536, TCCLK & CLKM Disabled
    write(ADDRESS, 0x01); /* MC: T1/E1 or SI Mode MCLK=33.072, TCCLK & CLKM Disabled
    write(ADDRESS, 0x01); /* MC: T1/E1 or SI Mode MCLK=66.144, TCCLK & CLKM Disabled
    write(ADDRESS, 0x01); /* MC: T1/E1 or SI Mode MCLK=132.288, TCCLK & CLKM Disabled
    /* Wait 1 us for clock to settle after configuration */
    wait (1);
    /* The UC register is able to globally control the ADS During LDM, Sleep Circuit */
    /* Protection: Line Control, DR Enable, DR Position, and DR Enable Function */
    write(ADDRESS, 0x00); /* ADDR: Set Address Pointer to Primary Register Bank
    write(ADDRESS, 0x00); /* UC: Enable DR Internal Impedance, Disable Model Control
    /* Global Initialization Complete */
    /* Configuration Begin */
    si_configure();
}

```

[Download complete code \(TXT, 16kB\)](#)

Figure 1. Code to initialize and configure the DS26303 line interface unit.

References

If you have additional questions on the LIU initialization and configuration, please contact the [Telecommunication Applications support team](#).

For more information about the DS26303 Octal T1/E1/J1 Line Interface Unit please consult the appropriate data sheet which is available on the Maxim website at [T/E Carrier and Packetized Products](#).

Related Parts

[DS26303](#)

3.3V, E1/T1/J1, Short-Haul, Octal Line Interface Unit

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More Information

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