DA-IRIGB-4DIO-PCI104-EMC4

Quick Installation Guide

First Edition, April 2015

Overview

The DA-IRIGB-4DIO-PCI104-EMC4 module features 3 digital inputs and 4 digital outputs, and provides precision timing information using IRIG-B input signals. The module is designed for embedded computers that support the PCI/104 interface. The DA-IRIGB-4DIO-PCI104-EMC4 module includes two DB9 connectors for IRIG-B input signals and DIOs in embedded computers.

The following model is available:

- DA-IRIGB-4DIO-PCI104-EMC4: 1 IRIG-B, RS485/TTL and 24V 3 DIs, 4DOs

Package Checklist

The DA-IRIGB-4DIO-PCI104-EMC4 package contains the following items:

- DA-IRIGB-4DIO-PCI104-EMC4 module
- 2 DB9 connectors
- 4 15mm M/F M3x6/M3x7 spacers
- 4 4.8mm M/F 4-40x7/4-40x4.75 spacers
- 4 screws
- Quick Installation Guide
- Warranty card

Note: *If any of the above items are missing or damaged, please contact your sales representative.*

Hardware Installation

Note: You must install the DA-IRIGB-4DIO-PCI104-EMC4 module in an embedded computer before you install the driver.

Complete the following steps to install the module in the embedded computer:

STEP 1: Turn off the embedded computer.

STEP 2: Connect the cables. Complete the following actions:

    a. Connect the 2-wire IRIG-B input signal cable.

    b. Connect the 4-wireIRIG-B output signal cable.

    c. Connect the 10-wire DIO signal cable.

STEP 3: Install the four 15 mm spacers on the embedded computer.

STEP 4: Insert the module firmly into an available PCI/104 slot.

STEP 5: Install the four screws to secure the module in place.

STEP 6: Secure the DB9 connectors on the rear panel of the embedded computer.

STEP 7: Turn on the embedded computer. The BIOS will automatically set the IRQ and I/O address.

For detailed information on hardware installation, refer to the *DA-IRIGB-4DIO-PCI104-EMC4 module User's Manual* that you can download from the Moxa web site at www.moxa.com.

Software Installation

> **NOTE** The driver for the DA-IRIGB-4DIO-PCI104-EMC4 module supports only Debian 7 Linux distribution (kernel version 3.2.x). Before you install the driver in a different Linux distribution or kernel version, contact your Moxa sales representative for assistance.

You can install the Linux driver for the DA-IRIGB-4DIO-PCI104-EMC4 module on the embedded computer using one of the following methods:

- Online from Moxa's APT server
- Off-line

Online Installation

1. Make sure that your embedded computer has access to the Internet.
2. If the unzip package is not installed on the computer, run the following command the install it.

```
root@Moxa:~# sudo apt-get install unzip
```

3. Download Moxa's Debian server public key (NEW-MOXA-SYS-DEBIAN-KEY) to the /home/ directory on your target computer.

```
root@Moxa:~# sudo wget
http://www.moxa.com/drivers/UC/MOXA_SYS_DEB_KEY/MOXA-SYS-DEBIAN-KEY.zip
```

4. Unzip and install Moxa's public key file on the embedded computer (for example, DA-682A).

```
root@Moxa:~# sudo unzip MOXA-SYS-DEBIAN-KEY
root@Moxa:~# cd MOXA-SYS-DEBIAN-KEY
root@Moxa:~# sudo apt-key add NEW-MOXA-SYS-DEBIAN-KEY
```

5. In the /etc/apt/sources.list file, insert one of the following lines to add the Moxa APT server:

```
deb http://220.135.161.42/debian wheezy main
deb http://debian.moxa.com/debian wheezy main
```

The following figure shows an example.

```
root@Moxa:~# sudo vi /etc/apt/sources.list
...
# Add Moxa's apt server
deb http://220.135.161.42/debian wheezy main
```

6. Install the irigb package from Moxa' APT server. Complete the following steps:

    a. Update the package list.

```
root@Moxa:~# sudo apt-get update
```

    b. Check the irigb package.

```
root@Moxa:~# sudo apt-cache search irig
da-682a-irigb-driver - Moxa DA-682A IRIG-B module
device driver
da-682a-irigb-timesync-daemon - Moxa DA-682A IRIG-B
time sync daemon
```

    c. Install the IRIG-B driver and the timesync daemon. Follow the on-screen instruction. The following figure shows the installation screen for the DA-682A.

```
root@Moxa:~# sudo apt-get install
da-682a-irigb-timesync-daemon

Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  da-682a-irigb-driver

The following NEW packages will be installed:
  da-682a-irigb-driver da-682a-irigb-timesync-daemon

0 upgraded, 2 newly installed, 0 to remove and 83 not
upgraded.

Need to get 77.8 kB of archives.
After this operation, 0 B of additional disk space will
be used.
Do you want to continue [Y/n]? Y
Get:1 http://220.135.161.42/debian/ wheezy/main
da-682a-irigb-driver amd64 1.1 [67.7 kB]
Get:2 http://220.135.161.42/debian/ wheezy/main
da-682a-irigb-timesync-daemon amd64 1.2 [10.1 kB]
Fetched 77.8 kB in 0s (851 kB/s)
Selecting previously unselected package
da-682a-irigb-driver.
(Reading database ... 31660 files and directories
currently installed.)
```

P/N: 1802006820210

```
Unpacking da-682a-irigb-driver
(from .../da-682a-irigb-driver_1.1_amd64.deb) ...
Selecting previously unselected package
da-682a-irigb-timesync-daemon.
Unpacking da-682a-irigb-timesync-daemon
(from .../da-682a-irigb-timesync-daemon_1.2_amd64.d
eb) ...
Setting up da-682a-irigb-driver (1.1) ...
WARNING: -e needs -E or -F
Setting up da-682a-irigb-timesync-daemon (1.2) ....
```

7. Verify that the driver is loaded and that the timesync daemon is running.
   a. Use the `lsmod` command to check whether the IRIG-B module is loaded.

```
root@Moxa:~# lsmod|grep irig
moxa_irigb            12683  1
```

   b. Verify that the timesync daemon is running with the default configuration.

```
root@Moxa:~# root@Moxa:~# ps aux|grep ServiceSyncTime
root    3078  0.0  0.1  16136  1140 ?        S
10:43   0:00 /usr/sbin/ServiceSyncTime -t 1 -i 10 -B
```

Off-line Installation

1. Download the driver from the Moxa web site at
   http://www.moxa.com.

2. Upload or copy the following files to the embedded computer (for example, DA-682A):
   • NEW-MOXA-SYS-DEBIAN-KEY
   • DA-682A-irigb-driver-1.1_amd64.deb
   • DA-682A-irigb_timesync_daemon_1.2_amd64.deb

3. Install Moxa's public key file on the embedded computer (for example, DA-682A).

```
root@Moxa:~# sudo apt-key add NEW-MOXA-SYS-DEBIAN-KEY
```

4. Install the IRIG-B driver and the timesync daemon. Follow the on-screen instruction.

```
root@Moxa:/home/moxa/DebianServer# dpkg -i
DA-682A-irigb-driver-1.1_amd64.deb
Selecting previously unselected package
da-682a-irigb-driver.
(Reading database ... 31660 files and directories
currently installed.)
Unpacking da-682a-irigb-driver (from
DA-682A-irigb-driver-1.1_amd64.deb) ...
Setting up da-682a-irigb-driver (1.1) ...
root@Moxa:/home/moxa/DebianServer# dpkg -i
DA-682A-irigb_timesync_daemon_1.2_amd64.deb
```

```
Selecting previously unselected package
da-682a-irigb-timesync-daemon.
(Reading database ... 31661 files and directories
currently installed.)
Unpacking da-682a-irigb-timesync-daemon (from
DA-682A-irigb_timesync_daemon_1.2_amd64.deb) ...
Setting up da-682a-irigb-timesync-daemon (1.2) ...
```

5. Verify that the IRIG-B module is running.
   a. Use the `lsmod` command to check whether the IRIG-B module is loaded.

```
root@Moxa:~# lsmod|grep irig
moxa_irigb            12683  1
```

   b. Verify that the timesync daemon is running with the default configuration.

```
root@Moxa:~# root@Moxa:~# ps aux|grep ServiceSyncTime
root    3078  0.0  0.1  16136  1140 ?        S
10:43   0:00 /usr/sbin/ServiceSyncTime -t 1 -i 10 -B
```
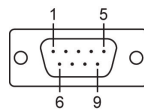
For detailed information on software installation, refer to the *DA-IRIGB-4DIO-PCI104-EMC4 Module User's Manual* that you can download from the Moxa web site at www.moxa.com.
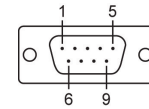
Pin Assignments

This section includes the pin assignments for the male DB9 connectors to connect to an IRIG-B signal source or a digital input (DI) or digital output (DO) device.

IRIB-B Signal Input

Pin	Differential	TTL
1	–	–
2	–	–
3	Data +	TTL
4	Data -	GND
5	–	–
6	–	–
7	–	–
8	–	–
9	–	–

Digital Input/Digital Output

Pin	DI/DO
1	DO 0
2	DO 1
3	DO 2
4	DO 3
5	DO COM
6	DI 0
7	DI 1
8	DI 2
9	DI Source

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