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Software User's Guide (Linux)

PMC-BISERIAL-III HW2

32 channel

Bi-directional Manchester, SDLC and

Asynchronous Interface

PMC Module

PMC-BiSerial-III HW2
Bi-Directional Serial Data Interface
PMC Module

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Connection of incompatible hardware is likely to cause serious damage.



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Product Description

The PMC-BiSerial-II HW2 can simultaneously support 8 ports of HW1, and 6 ports of ASYNC/SDLC modes. In addition, a parallel port is supported. The parallel port may utilize any of the 34 I/O channels which are not consumed by the protocol ports.

For a detailed description of the hardware including register definitions, see HW User Manual, PMC-BiSerial-III HW2.

Software Description

The v2.0.0 PMC-BiSerial-III HW2 driver contained in this release has been validated on an i7 Ubuntu server running version 3.8.0-39 x86_64 kernel (64 bit). Only SDLC has been validated on this release. Further idles are turned off in this release. Next release will validate all modes of operation as well as providing a config parameter for controlling idle transmission.

The driver implements the standard Linux char device driver. It supports read, write, and custom ioctl file operations. This release supports simultaneous operation of all 3 protocols, namely HW1, ASYNC, and SDLC. In addition, parallel port operation is supported for all unused I/O lines. The lower 32 I/O channels are shared with protocol operation. Channels 34 and 33 are always available for the parallel port.

SDLC and ASYNC ports consist of 2 port groups, 8-10 and 11-13. All ports in a group must be configured to the same protocol mode. This is a hardware requirement enforced by SW during port configuration.

Installation

- 1) Copy de_BiSerHw2.c and de_BiSerHw2.h to your module build directory. Invoke the system `make`
- 2) Copy the resulting de_BiSerHw2.ko module to the target platform.
- 3) Copy the startup script bnm to the target.
- 4) Invoke the script (`./bnm`), it will the devices required by the HW2 driver and performs an `insmod` of the module. You may invoke this script from the systems `rc.local` file as well

Application Programming model

After a port is opened, it must be configured for the desired mode of operation via the `DE_CONFIG_PT` ioctl. See `de_BiSerHw2.h` for details of the parameters for this ioctl. Both blocking and non-blocking modes of operation are supported. This behavior is set via the standard file flags upon open. In addition, a compile time option allows the user to open the port in non-blocking mode, but reads remain blocking. See parameter `DE_BLOCKING_RDS` at the beginning of the file `de_BiSerH2.h`.

Sample application

A sample application, `de_loApp.c` is provided to demonstrate configuration, ioctl invocation, and execution of various modes. The application assumes a Dynamic Engineering Loopback fixture is attached.

- 1) Compile the sample application for your platform, the output executable for this example is `dyn_io`. The input file name is `de_loApp.c`
 - a. Nominal compilation `gcc`
`gcc . Wall . o dyn_io de_loApp.c`
The app should compile without warnings

Usage is as follows:

```
dyn_io h(w1)|a(sync)|s(dlc) 0|1|2|3 (port group) r(eader)| w(riter)
frame_len(in 32 bit words optional)
```

Note that at least 2 instances of the app must be invoked one as reader, the other as writer. Reader should be invoked first.

The first parameter specifies which port group is exercised. The second parameter specifies the mode for port groups 1 and 2, otherwise it is ignored:

- 0 = HW1 ports 0-7 (hardwired)
- 1,2 = ASYNC or SDLC ports (configurable)
- 3 = Parallel port (`DE_PAR_PORT`)

Each ASYNC port can have 2 channels (0 or 1). SDLC ports have only 1 channel. The application first opens and configures the specified channel group. Upon completion of configuration, a write/read loop is executed continuously until interrupted by `<CTRL-C>`.

Parallel port operation may be invoked if no other instance of this application are executing, or only I/O channels 34 and 33 are used. I/O channels are shared

with the protocol ports. If an attempt to configure the parallel port with I/O channels already consumed by protocol ports, the ioctl will fail and return an error.

The application first opens and configures the parallel port, then performs a write, followed by a read operation. The parallel port is then closed, and the application exits.

Warranty and Repair

Please refer to the warranty page on our website for the current warranty offered and options.

<http://www.dyneng.com/warranty.html>

Service Policy

Before returning a product for repair, verify as well as possible that the suspected unit is at fault. Then call the Customer Service Department for a RETURN MATERIAL AUTHORIZATION (RMA) number. Carefully package the unit, in the original shipping carton if this is available, and ship prepaid and insured with the RMA number clearly written on the outside of the package. Include a return address and the telephone number of a technical contact. For out-of-warranty repairs, a purchase order for repair charges must accompany the return. Dynamic Engineering will not be responsible for damages due to improper packaging of returned items. For service on Dynamic Engineering Products not purchased directly from Dynamic Engineering contact your reseller. Products returned to Dynamic Engineering for repair by other than the original customer will be treated as out-of-warranty.

Out of Warranty Repairs

Out of warranty repairs will be billed on a material and labor basis. The current minimum repair charge is \$150. Customer approval will be obtained before repairing any item if the repair charges will exceed one half of the quantity one list price for that unit. Return transportation and insurance will be billed as part of the repair and is in addition to the minimum charge.

For Service Contact:

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