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Hanlin 14/06/25, 18:52

Release Note for AIC SAS 6G 8643x28 2U12 Expander

Jun 25, 2014

Changelog

06/25/2014 (firmware 1.11.12.2 + mfg 1.12.2.5) - Part Number (B98-00XUXXE4111202 + B98-002JC5G0120205)
Old Part Number B98-002JC5G0120204 is replaced by B98-002JC5G0120205.
1. Resolve the drive mapping issue in Windows with SAS 12G HBA

06/06/2014 (firmware 1.11.12.2 + mfg 1.12.2.4) - Part Number (B98-00XUXXE4111202 + B98-002JC5G0120204)
1. Correct the description on the feature "How to power off the enclosure via inband SAS" from "PowerSupply02" to "PowerSupply00"

05/21/2014 (firmware 1.11.12.2 + mfg 1.12.2.4) - Part Number (B98-00XUXXE4111202 + B98-002JC5G0120204)
Old Part Number B98-00XUXXE4111201 is replaced by B98-00XUXXE4111202.
1. Support enabling/disabling the blue LED associated with a disk drive

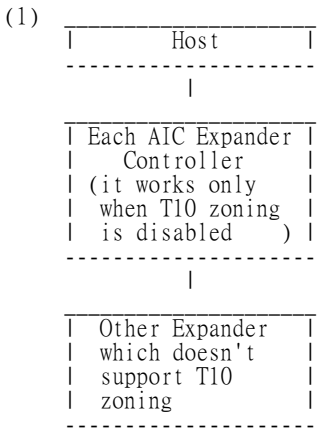
11/12/2013 (firmware 1.11.12.1 + mfg 1.12.2.4) - Part Number (B98-00XUXXE4111201 + B98-002JC5G0120204)
1. This initial-revision MFG is based on mfg2A12.0_1U16_v1.12.0.1 (Part Number: B98-001JG5G0120001) with supporting drive spinup control.

Definition of the visual LED indicators (blue and red) associated with a disk drive

Host Control Bit	Blue LED	Red LED
OK	ON	OFF
RSVD DEVICE	ON	OFF
HOT SPARE	ON	OFF
CONS CHECK	ON	Fast blink
IN CRIT ARRAY	ON	Slow blink
IN FAILED ARRAY	ON	Slow blink
REBUILD/REMAP	ON	Fast blink
R/R ABORT	ON	Slow blink
ACTIVE	ON	OFF
DO NOT REMOVE	ON	OFF
MISSING	ON	ON
INSERT	ON	Slow blink
REMOVE	ON	Slow blink
IDENT	Slow blink	Slow blink
FAULT	ON	ON
DEVICE OFF	ON	OFF

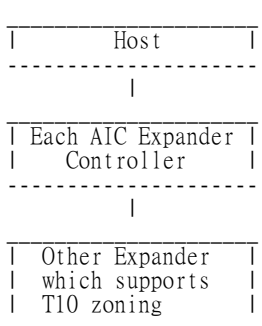
Supported Configuration

(1)

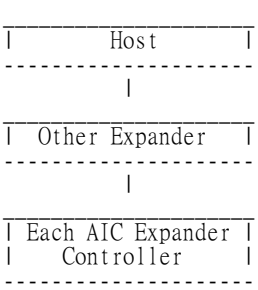


Most 3G Expanders don't support T10 zoning.

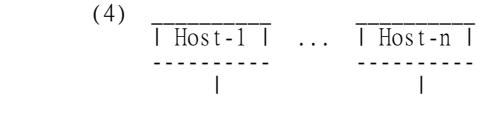
(2)



(3)



(4)



To have multiple host access support (the host number can be up to the number of wide ports on each AIC 6G Expander Controller), only the following drives are supported for shared access:

1. SAS drive
2. SATA drive with an interposer which provides SATA-to-SAS convertion

Unsupported Configuration

1. This only applies to the enclosure which supports dual AIC 6G Expander Controllers.
   The enclosure with dual AIC 6G Expander Controllers attached is inserted with a SATA drive without any interposer. It will cause the drive LEDs behaves incorrect.

Power on/off the enclosure via RS232

The RS232 setting - baud rate: 9600 bps, data bits: 8, parity: odd, stop bits: 1, flow control: none
The power-on command is "RemoteStart\n" where "\n" means Carriage Return and Linefeed. The power-off command is "RemoteStop\n". When the host RS232 receives "RemoteStart\n" or "RemoteStop\n" from the enclosure after the same command was sent to the enclosure, that means the enclosure accepts the command sent by the host. The reference script below runs on Linux.

```
#########################################################################
#!/bin/bash

PORT="/dev/ttyS0"
BAUDRATE="9600"
NOFLOW="-ixon -ixoff -crtscts"
SOFTFLOW="ixon ixoff -crtscts"
DEFAULT="-inpck clocal -istrip ignbrk ignpar opost onlcr -iexten"

if [ $# -eq 0 ] ; then
    echo "Usage: $0 start/stop"
    exit 1
fi

[ ! -e "$PORT" ] && echo "Console closed..."
stty -F $PORT $BAUDRATE cs8 parenb parodd -cstopb $NOFLOW opost onlcr

case $1 in
    start)
        echo "RemoteStart"
        echo -e  "\n" > $PORT
        echo -e  "RemoteStart\n" > $PORT
        echo -e  "RemoteStart\n" > $PORT
        echo -e  "RemoteStart\n" > $PORT
        echo -e  "RemoteStart\n" > $PORT
        echo -e  "RemoteStart\n" > $PORT
        ;;
    stop)
        echo "RemoteStop"
        echo -e "\n" > $PORT
        echo -e "RemoteStop\n" > $PORT
        echo -e "RemoteStop\n" > $PORT
        echo -e "RemoteStop\n" > $PORT
        echo -e "RemoteStop\n" > $PORT
        echo -e "RemoteStop\n" > $PORT
        ;;
esac
#########################################################################
```

Command Line Interface Operation

1. How to enable/disable T10 zoning
   The default T10 zoning configuration is off.

(A) Check the current zoning state
cmd> phyzone state
Zoning is OFF

(B) Enable zoning
cmd> phyzone on

(C) Disable zoning
cmd> phyzone off

2. How to configure T10 zoning

After enabling T10 zoning, three predefined groups are Group1, Group8, and Group9. Each PHY should be in one of the three group, and all PHYs in a wide port should be in the same group. Each PHY in Group1 can access any PHY in other groups, and vice versa. Each PHY in Group8 cannot access any PHY in Group9, and vice versa.

The default configuration, which allows two wide ports can access all drives, follows.
(A) PHY0 - PHY3 for the UP wide port (the first port) : Group8
(B) PHY4 - PHY7 for the UP/DOWN wide port (the second port) : Group1
(C) PHY8 - PHY11 for the third port if available : Group1
(D) PHY12 - PHY35 for drive : Group1

The command syntax is "phyzone phy_index group". The following example shows how to setup one drive accessed only the first port and another drive accessed only by the second port.

Step 1: Read the current group for PHY4
cmd> phyzone 4
Phy 4 for Zone Group 1

Step 2: Assign the second port (PHY4 - PHY7) for Group9
cmd> phyzone 4 9
cmd> phyzone 5 9
cmd> phyzone 6 9
cmd> phyzone 7 9

Step 3: Assign the drive on PHY12 to be accessed only by the first port instead of the second port
cmd> phyzone 12 8

Step 4: Assign the drive on PHY13 to be accessed only by the second port instead of the first port
cmd> phyzone 13 9

Step 5: Reset

3. How to get all revisions in AIC SAS 6G Expander
(A) Expander firmware revision
cmd> rev

(B) Expander configuration revision
cmd> showmfg

(C) Microchip firmware for managing sensors
cmd> sensor

4. How to configure temperature sensor

Four temperature settings in Celsius are T1, T2, warning threshold, and alarm (critical) threshold.
(A) Get the current temperature settings
cmd> temperature
Temperature in Celsius (t1=20 C, t2=55 C, warning=50 C, alarm=55 C)

(B) Set temperature with new T1=18 C, T2=52 C, warning threshold=48 C, and alarm threshold=54 C. The new setting will take effect after reset.
cmd> temperature 18 52 48 54
cmd> reset

5. How to enable/disable the enclosure alarm by your software

The "REQUEST FAILURE" and "REQUEST WARNING" for Enclosure are defined in the bit1, byte3 and bit0, byte3 of the "Enclosure control element" in the SES-3 specification. Setting either one can enable the enclosure alarm. Clearing both settings disables the enclosure alarm. Please install a software package "sg_utils" on your host computer, and have a SAS HBA and a cable to connect your host with AIC SAS 6G Expander. We use Linux for example.

(A) Show the device for AIC Expander Controller

```
$ sg_map -i

/dev/sg1   AIC CORP   SAS 6G Expander   0b0c
```

(B) Enable the enclosure alarm
```
$ sg_ses --descriptor=EnclosureElement01 --set=3:1:1 /dev/sg1
or
$ sg_ses --descriptor=EnclosureElement01 --set=3:0:1 /dev/sg1
```

(C) Disable the enclosure alarm
```
$ sg_ses --descriptor=EnclosureElement01 --clear=3:1:1 /dev/sg1
$ sg_ses --descriptor=EnclosureElement01 --clear=3:0:1 /dev/sg1
```

6. How to identify the enclosure

The power LED is used for the enclosure identity. The "RQST IDENT" for Enclosure is defined in the bit7, byte1 of the "Enclosure control element" in the SES-3 specification. Please install a software package "sg_utils" on your host computer, and have a SAS HBA and a cable to connect your host with AIC SAS 6G Expander. We use Linux for example.

(A) Show the device for AIC Expander Controller
```
$ sg_map -i

/dev/sg1   AIC CORP   SAS 6G Expander   0b0c
```

(B) Enable the enclosure identity
```
$ sg_ses --descriptor=EnclosureElement01 --set=1:7:1 /dev/sg1
```

(C) Disable the enclosure identity
```
$ sg_ses --descriptor=EnclosureElement01 --clear=1:7:1 /dev/sg1
```

7. How to power off the enclosure via inband SAS

The "RQST ON" for Power Supply is defined in the bit5, byte3 of the "Power Supply control element" in the SES-3 specification. Clear the bit to power off the enclosure. Please install a software package "sg_utils" on your host computer, and have a SAS HBA and a cable to connect your host with the AIC SAS 6G Expander. We use Linux for example.

(A) Show the device for AIC Expander Controller
```
$ sg_map -i

/dev/sg1   AIC CORP   SAS 6G Expander   0b0c
```

(B) Power off the enclosure
```
$ sg_ses --descriptor=PowerSupply01 --clear=3:5:1 /dev/sg1
or
$ sg_ses --descriptor=PowerSupply00 --clear=3:5:1 /dev/sg1
```

8. How to configure SAS standby timer

This feature is applicable for SAS drives instead of SATA drives. SAS standby timer is in units of minutes. Setting SAS standby timer with 0 minute disables this feature.

(A) Get the current SAS standby timer
```
cmd> sas_standby_timer
SAS standby timer : 0 minutes
```

(B) Set the SAS standby timer with 10 minutes. The new setting will take effect after reset.
```
cmd> sas_standby_timer 10
cmd> reset
```

9. How to configure wide port checker

This feature is applicable for SAS drives instead of SATA drives. If there is no connection with any active SAS initiator by checking all wide ports, AIC Expander Controller stops all attached SAS drives to save power consumption of SAS drives. Otherwise, AIC Expander Controller starts all attached SAS drives to provide drive access service to any active SAS initiator.

(A) Get the current state of wide port checker
```
cmd> check_wide_port
Checking wide port is OFF
```

(B) Enable checking wide port. The new setting will take effect after reset.
```
cmd> check_wide_port on
cmd> reset
```

(C) Disable checking wide port. The new setting will take effect after reset.
```
cmd> check_wide_port off
cmd> reset
```

10. How to enable/disable the blue LED associated with a disk drive

The "Report" for a drive slot is defined in the bit0, byte2 of the "Array Device Slot status element" in the SES-3 specification. Set the bit to disable a slot blue LED, and vice versa. Please install a software package "sg_utils" on your host computer, and have a SAS HBA and a cable to connect your host with the AIC SAS 6G Expander. We use Linux for example.

(A) Show the device for AIC Expander Controller
```
$ sg_map -i

/dev/sg1   AIC CORP   SAS 6G Expander   0b0c
```

(B) Get the current state of a slot blue LED. In this example the "Report=0" means the slot blue LED is enabled.
```
$ sg_ses --page=2 /dev/sg1

Element 0 descriptor:
  Ready to insert=0, RMV=0, Ident=0, Report=0
```

(C) Get the descriptor of a slot blue LED
```
$ sg_ses --page=7 /dev/sg1

Element 0 descriptor: Disk001
```

(D) Disable a slot blue LED
```
$ sg_ses --descriptor=Disk001 --set=2:0:1 /dev/sg1
```

(E) Enable a slot blue LED
```
$ sg_ses --descriptor=Disk001 --clear=2:0:1 /dev/sg1
```