

RS Series SAS4 Expander Backplane User Manual



Version 1.0
2025/1/6

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1. System Overview

1.1 Purpose of this Document

This user manual provides instructions for installing, configuring, and maintaining the In-Win RS Series Expander Board Module. It covers hardware overview, connectors, indicators, and environmental controls, as well as general operational guidelines.

1.2 Overview of SAS4 Technology

Serial Attached SCSI (SAS) 4th Generation (often referred to as SAS4 or 24G SAS) is the latest evolution of SAS technology, offering a theoretical transfer speed of up to 24 Gb/s per physical link. Key benefits of SAS4 include:

- Higher Throughput: Each lane supports speeds up to 24 Gb/s, doubling that of SAS3 (12 Gb/s).
- Scalability: SAS expanders allow multiple drives and hosts to communicate efficiently, making them ideal for large-scale storage arrays.
- Backward Compatibility: SAS4 devices can interoperate with older SAS protocols (e.g., SAS3, SAS2), protecting existing investments in drives and infrastructure.
- Enterprise-Class Features: SAS supports dual-porting, robust error detection/correction, and advanced enclosure management (SES), ensuring reliability and high availability.

1.3 Overview of In-Win RS Series Backplane

Physical Interface

- In-Win RS series backplane physically houses multiple drive connectors (e.g., SFF-8680 for SAS/SATA, SFF-8639 for NVMe/SAS/SATA, or MCIO for NVMe), providing the power and data pathways to each drive bay.
- It often includes indicators (power, activity, fail/locate LEDs), fan headers for cooling, and sensor lines for thermal management.

Hybrid Capability

- In-Win RS series backplanes include both SATA/SAS connectors and NVMe-capable connectors, allowing flexible drive configurations. This enables tiered storage (e.g., using SAS or SATA for capacity and NVMe for high-speed caching).

Management Signals

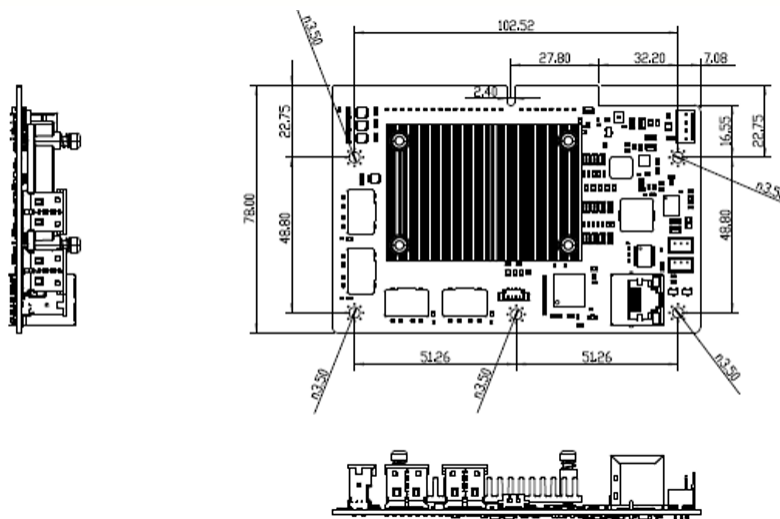
- In-Win RS series backplanes integrate sideband signals such as SGPIO, I²C, or I²C VPP (for tri-mode HBAs) to control drive LEDs, monitor temperature, and communicate drive presence or status to the host.

Form Factor

- In-Win RS series backplane is typically sized to fit a specific chassis height (e.g., 1U, 2U, etc.). For example, a 2U backplane may support up to 24 2.5" drive bays in a single row or multiple rows.

1.4 Expander Module Overview

In-Win RS Series Expander Board Module is built around a Broadcom SAS4x40 expander chip, which provides 40 SAS4 PHYs for flexible connectivity between host ports and storage devices. This module is typically mounted in a server/storage enclosure and interfaces with both the host system and the backplane.



1.4.1 Key Components and Connectors

Chip: Broadcom SAS4x40 Expander

- Up to 40 SAS4 PHYs at 24 Gb/s each
- Manages traffic between multiple hosts and a large number of SAS/SATA drives

Host Interface:

- SLIMSAS-4i Connector ×4
 - Host x2: Main connections to the server or host adapter
 - Extension x2: For daisy-chaining expanders or adding more drives

Backplane Interface:

- PCB Gold Finger (Samtec HSEC8-1100-01-L-DV-A-K)
- Exports expander PHY signals and control signals to an external backplane (e.g., SAS4 Hybrid Backplane)

Ethernet:

- RJ45 Management LAN Port for out-of-band management and monitoring

SMART UART Port:

- Console CLI Management
- Allows direct command-line interaction for configuration, diagnostics, and system management

DBG UART Port:

- Debug/Recovery
- Used for firmware recovery or backup procedures in case of corruption or upgrade failures

EXT-I2C Header:

- Provides external I²C control or monitoring functionality
- Enables additional environmental sensors or management devices

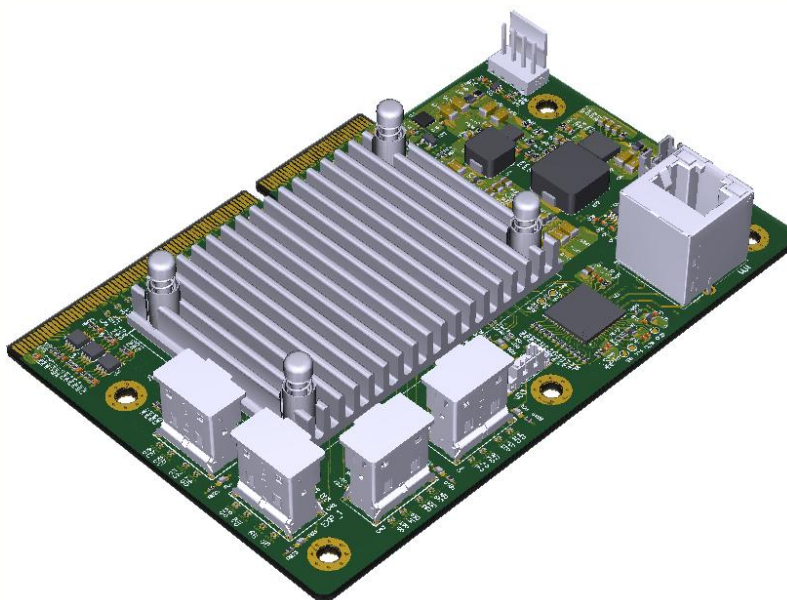
PWM FAN Connector:

- For cooling system control
- Typically manages at least one fan to maintain optimal temperature around the expander

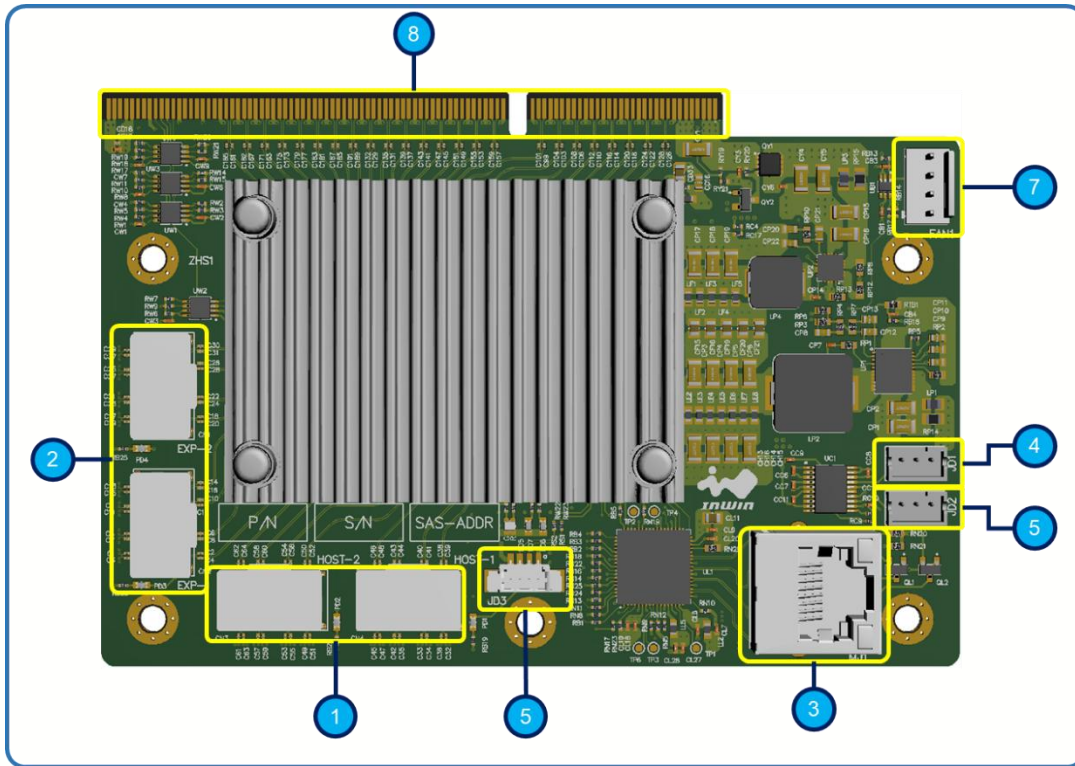
Indicators:

- Activity LED: Blinks green when the Host/Extension PHY is active (e.g., drive access, data transfer)
- Status LED: Indicates general system health or operational status
- System Error LED: Alerts for over-temperature or fan failure conditions

1.4.2 Specifications



Feature	Description
Expander IC	Broadcom SAS4x40
SAS Link Speed	Up to 24 Gb/s per physical link (SAS4)
Host Interface	4x SLIMSAS-4i connectors (2x for Hosts, 2x for Expansion)
Backplane Interface	Gold finger connector
Fan Connector	1× PWM
LAN Port	1× RJ45 for management
UART Ports	SMART UART for console management DBG UART for firmware recovery/debug
I ² C Header	external I ² C control and monitoring
Indicators	Activity LED (Green blink) Status LED System Error LED
Operating Temperature	Typically 0 °C to 55 °C



Connector and Component Locations

No	Description
1	Host facing interface : HOST-1 / HOST-2
2	Expansion facing interface : EXP-1 / EXP-2
3	Management LAN Port : MJ1
4	EXP Smart Console Mode Connector : JD1
5	EXP Debug Console Mode Connector : JD2
6	External I2C Header : JD3
7	Expander FAN Connector : FAN1
8	Export the Expander PHY & Control signaling to Backplane : GF1

2. Installation and Connections

Important: Before installation, ensure the host system and backplane are powered off.

2.1 Mounting the Expander Module

1. Locate the dedicated slot or mounting area within the chassis where the expander module is intended to be installed.
2. Align the module's gold finger connector with the corresponding connector on the backplane or mezzanine board.
3. Secure the module with screws or standoffs as recommended by the chassis documentation (if applicable).

2.2 Host/Extension Connections

1. Connect SLIMSAS-4i cables from the Host ports (HOST-1 and HOST-2) to your server's HBA, RAID card or other SAS controller.
2. For expansion or daisy-chaining multiple SAS4 expanders, use the Extension connectors (EXP-1 and EXP-2) with compatible SLIMSAS-4i cables.

2.3 Management from LAN Port

If out-of-band management is required, connect an Ethernet cable to the MJ1 port and to your network switch or management console.

2.4 UART Ports (JD1 and JD2)

1. JD1 (SMART UART): Attach a RS-232 cable if you need command-line access for routine configuration or diagnostics.
2. JD2 (DBG UART): Reserved for firmware recovery, advanced debugging, or engineering use.

2.5 FAN Connector

Plug the system's PWM fan into the FAN1 header if necessary. Ensure the expander chip temperature below 95°C

3.1 Command Line Interface (CLI)

The In-Win RS SAS4 series backplanes and expander provide flexible and useful commands to monitor and manage hard disk, expanders and backplane system. Users can use telnet or console applications to manage the system with CLI commands.

help

List all command list and the usage

Syntax

```
help [Command]
- X means a mandatory argument described as x
- [X] means an optional argument
- <X> means replace argument with value
- X(D) means a decimal value
- X(H) means a hexadecimal value
- X(*) means special formatting is specified
- X(s) means a decimal value in seconds
- X(ms) means a decimal value in milliseconds
- opt1|opt2|opt3 means literally specify "opt1", "opt2", or "opt3"
- X1 X2 ... means a variable number of arguments
```

Example

```
cmd >help

=====

Test                Command

=====

Show/Set Backplane  bpsys [ default 0      |
System parameters to  mute <0|1>             |
control              thermal <37~52>|
                     test <0|1>  |
                     reset 1     ]

Show Sensors         sensor

I2C Get/Set          i2c

Get/Set Telnet/HTTPD user [<account> <pwd>]
account and password

Manufacture setting  manufacture

Show SES information  sesinfo

Print all Keys        printkeys
```

```
cmd >help fdl

=====

Test                Command

=====

File download       fdl <BufferID(H)> <Offset(H)> <Erase(*)>
                    - Erase is replaced with "Y" or "N"

=====
```

rev

Show vendor ID, product ID, active firmware and firmware version information

Syntax

```
rev
```

Example

```
cmd >rev

=====
Hardware Revision Information:-
=====

Vendor ID           :IN-WIN
Product ID          :RS-224-09
Product Revision Level :Minor = 0x00, Unit = 0x01
Component Type       :Sas4x
Component ID         :0x0240 (Bond Option :48)
Component Revision Level :1      (B0)
Security Mode        :Hard Secure

=====
Firmware Revision Information:-
=====

Active Firmware: Firmware Copy 2

Boot Image:
Location      : SPI NOR CS
Revision      : 1.0.0.0
Platform Name: IN-WIN SAS4 Expander System
Version Name  : SAS4xFW-01.00.00.00 10/29/24
Firmware Family: 64  OemFamily: 0

Firmware Copy 1:
Location      : SPI NOR CS
Revision      : 1.0.1.0
Platform Name: IN-WIN SAS4 Expander System
Version Name  : SAS4xFW-01.00.01.00 12/27/24
Firmware Family: 64  OemFamily: 0

Firmware Copy 2:
Location      : SPI NOR CS
Revision      : 1.0.1.0
```

```
Platform Name:  IN-WIN SAS4 Expander System
Version Name :  SAS4xFW-01.00.01.00 12/27/24
Firmware Family: 64  OemFamily: 0
=====
SDK Revision:-
=====

HAL Revision: 0.9.2.0
SPI Revision: 0x14001800
SES Revision: 0.9.2.0
SCE Revision: 0.9.2.0

SerDes M0 FW: 0x41b0

=====
Current Toolchain Revision:-
=====
ARM v.5060750
```

showmfg

Show manufacture configuration version information

Syntax

```
showmfg
```

Example

```
cmd >showmfg
=====
Manufacturing Image Version Information:-
=====
Product ID :          17
Platform ID:          7
Associated Firmware Revision: 1:0:1:0
Mfg Revision:         1:0:1:0
Product Name:         RS-224-09
Platform Name:        SAS4 BOARD
Mfg Image Creation time stamp: 12/27/24 10:58 (mm/dd/yy hr:min)
```

sasaddr

display expander's SAS address

Syntax

```
sasaddr
```

Example

```
cmd >sasaddr

Expander SAS Addresses -

SxP Port 0 SAS Address: 0x500605B0000272BD
SxP Port 1 SAS Address: 0x500605B0000272BF
SxP Port 2 SAS Address: 0x0000000000000000
```

SxP Port 3 SAS Address: 0x0000000000000000

date

Show or set current date time. There are no RTC in system. System always starts up at incorrect date. System log will record event with datetime. User can set datetime and broadcast the new value to other expanders by 'date send'

Syntax

```
date [ set <newdate(*)> |
      send [<SasAddrHi(H)> <SasAddrLow(H)>] |
      recv [<SasAddrHi(H)> <SasAddrLow(H)>] ]
- no arguments, output local expander date/time and uptime
- 'set <newdate(*)>' Set local expander date/time using format for <newdate> of
  YYYYMMDDHHMMSS
- 'send [sas_addr]' If sas_addr set then set the remote expander's clock using the
  local expander's current clock value. If sas_addr not specified then set clock for
  all expanders in the domain.
- 'recv [sas_addr]' If sas_addr set then fetch the remote expander's current clock
  and output the result. If sas_addr not specified then get and output the current
  clock for all expanders in the domain.
```

Example

```
cmd >date
Fri Dec 27 11:40:28 2024
Current expander uptime is 0 days, 1 hours, 15 minutes, 15 seconds

cmd >date set 20250103131300
Expander date/time set to Fri Jan 3 13:13:00 2025
```

showlogs

Show the current system logs

Syntax

```
showlogs [hex|detail|default]
```

Example

```
cmd >showlogs
<Dec 06 2024 16:43:56.506>:PLATFORM:Firmware initialization started
<Dec 06 2024 16:43:56.814>:EXP:FW COPY 2 REG: FW image missing
<Dec 06 2024 16:43:56.814>:CONFIG:Expander MFG image is not valid
```

```
<Dec 06 2024 16:44:37.517>:RWBUFFER:MFG download Start:Reg 03 BufferId 01
<Dec 06 2024 16:45:13.051>:RWBUFFER:MFG download End:Reg 03 BufferId 01
<Dec 06 2024 16:43:56.400>:PLATFORM:Firmware initialization started
```

clearlogs

Clear the system logs

Syntax

```
clearlogs
```

Example

```
cmd >clearlogs

cmd >showlogs

cmd >
```

showpost

Show POST (Power-On-Self-Test) status of expander

Syntax

```
showpost
```

Example

```
cmd >showpost

POST status of expander on-chip devices

=====

On-Chip Device          POST Status
=====

Smart Serial            :PASS
Watchdog Timer           :PASS
Timer 1                 :PASS
Timer 2                 :PASS
Timer 3                 :PASS
Timer 4                 :PASS
PLLS                    :PASS
Interrupt               :PASS
Phy Loopback            :PASS
ISTWI Channel 00        :PASS
ISTWI Channel 01        :PASS
ISTWI Channel 02        :Fail
ISTWI Channel 03        :Fail
ISTWI Channel 04        :Fail
ISTWI Channel 05        :PASS
```

```
ISTWI Channel 06      :PASS
ISTWI Channel 07      :PASS
True Random Num Generator:PASS
Internal RAM Test     :PASS
Forced ECC Error Test  :PASS
SXP Port Buffers Test  :PASS
```

```
=====
```

sesinfo

Display SES-2 devices information

Syntax

```
sesinfo
```

Example

```
cmd >sesinfo
Show SES Enclosure Elements

Current Fan Level(1~8): 2
Fan01      FanSpd: 1980  SpdCode: 2  Fail: 0
Fan02      FanSpd: 1860  SpdCode: 2  Fail: 0
Fan03      FanSpd: 0     SpdCode: 1  Fail: 0
Fan04      FanSpd: 0     SpdCode: 1  Fail: 0
Fan05      FanSpd: 0     SpdCode: 1  Fail: 0
Fan06      FanSpd: 0     SpdCode: 1  Fail: 0
ExpanderDie Fail: 0 Tempt: 40  UWarn: 0  UTFail: 0  OTWarn: 0  OTFail: 0
BP.Left     Fail: 0 Tempt: 25  UWarn: 0  UTFail: 0  OTWarn: 0  OTFail: 0
BP.Right    Fail: 0 Tempt: 25  UWarn: 0  UTFail: 0  OTWarn: 0  OTFail: 0
1_8V        180
5_0V        510
12_0V       1180
```

sensor

Display backplane system sensor information

Syntax

```
sensor
```

Example

```
cmd >sensor
Expander Sensor
Voltage(V): 1.80
Temperature(C): 40.0
BP Sensor
Description: RS224-09,HW:1.0,SW:1.0.2
Connect: 5
Temperature(C): 25.0, 25.0
Voltage(V): 5.1, 11.8
SES Cooling Level: 2
Fan PWM: 43, 0
Fan RPM: 1980, 1800, 0, 0
Option Fan RPM: 0, 0
```

phyinfo

Display bays hard disk PHY information

Syntax

```
phyinfo
```

Example

```
cmd >phyinfo
```

PHY ID	DEV TYPE	PHY CNL	STMSTMA CNG	SSSSSSS PPPPPPT	ATTACHED	SAS ADDR	ROUTE TYPE	ZONE GRP	CTRL BUS	CONN TYPE	ELEM INDX	CONN LINK	MAP PHY ID	PHY FR BL
00		0x0	0x03	-----			D	0x01	0x04	0x20	0x01	0x00	000	--
01		0x0	0x03	-----			D	0x01	0x04	0x20	0x02	0x00	001	--
02		0x0	0x03	-----			D	0x01	0x04	0x20	0x03	0x00	002	--
03		0x0	0x03	-----			D	0x01	0x04	0x20	0x04	0x00	003	--
04		0x0	0x03	-----			D	0x01	0x04	0x20	0x05	0x00	004	--
05	END	22.5G	0x08	-----1	500605B0_00027285		D	0x01	0x04	0x20	0x06	0x00	005	11
06	END	22.5G	0x04	---1---	58CE38EE_22EAF1DE		D	0x01	0x04	0x20	0x07	0x00	006	--
07	END	22.5G	0x04	-----1	500605B0_00027287		D	0x01	0x04	0x20	0x08	0x00	007	11
08		0x0	0x05	-----			D	0x01	0x04	0x20	0x09	0x00	008	11
09		0x0	0x05	-----			D	0x01	0x04	0x20	0x0A	0x00	009	--
10		0x0	0x05	-----			D	0x01	0x04	0x20	0x0B	0x00	010	--
11		0x0	0x03	-----			D	0x01	0x04	0x20	0x0C	0x00	011	11
12		0x0	0x03	-----			D	0x01	0x04	0x20	0x0D	0x00	012	11
13		0x0	0x03	-----			D	0x01	0x04	0x20	0x0E	0x00	013	11
14		0x0	0x03	-----			D	0x01	0x04	0x20	0x0F	0x00	014	11
15		0x0	0x03	-----			D	0x01	0x04	0x20	0x10	0x00	015	11
16		0x0	0x03	-----			D	0x01	0x04	0x20	0x11	0x00	016	11
17		0x0	0x03	-----			D	0x01	0x04	0x20	0x12	0x00	017	11
18		0x0	0x03	-----			D	0x01	0x04	0x20	0x13	0x00	018	11
19		0x0	0x03	-----			D	0x01	0x04	0x20	0x14	0x00	019	11
20		0x0	0x03	-----			D	0x01	0x04	0x20	0x15	0x00	020	11
21		0x0	0x03	-----			D	0x01	0x04	0x20	0x16	0x00	021	11
22		0x0	0x03	-----			D	0x01	0x04	0x20	0x17	0x00	022	11
23		0x0	0x03	-----			D	0x01	0x04	0x20	0x18	0x00	023	11
24		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	024	11
25		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	025	11
26		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	026	11
27		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	027	11
28		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	028	11
29		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	029	11
30		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	030	11
31		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	031	11
32		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	032	11
33		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	033	11
34		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	034	11
35		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	035	11
36		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	036	11
37		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	037	11
38		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	038	11
39		0x0	0x03	-----			T	0x01	0x04	0x00	0x19	0x00	039	11
SXP0	END	22.5G	0x01	--11---	500605B0_000272BD		D	0x01	0x04	0x2F	0x19	0x00	040	
SXP1	END	22.5G	0x01	1----1-	500605B0_000272BF		D	0x01	0x04	0x2F	0x19	0x00	041	
SXP2		0x0	0x00	-----			D	0x00	0x04	0x00	0x00	0x00	042	
SXP3		0x0	0x00	-----			D	0x00	0x04	0x00	0x00	0x00	043	

```

Expander Change Count: 00ad
Zone Configuring: 0
Self Configuring: 0
Configuring: 0

```

bpsys

Display backplane system control parameters that are saved in persistent storage (flash)

Syntax

```
bpsys
```

Example

```
cmd >bpsys
BP MCU Status:
  NVMe SSD Install: 18 00
  SES3 Cooling Level: 2
  Test Enable: 0
  Fan Control Max Temperature: 45
  Mute Enable: 0
MB Fan Control Disable: 0
```

bpsys default <0>

reset backplane system configuration to default

Syntax

```
bpsys default <0>
```

Example

```
cmd >bpsys default 0
Reset bpsys to default configuration!
Reboot system to use the new setting
```

bpsys thermal <37~52>

Set maximum temperature (Celsius) for fan speed maximum level control.

Default value is 45°C. Fan controller get thermal sensors' readings in Celsius and use the maximum value to map the SES fan level for PWM(or RPM) control.

User can adjust fan speed control level by the command.

Below figure 1 shows “bpsys thermal 42” and “bpsys thermal 45” cases. For example, the highest value in backplane temperature sensors (not including expander die temperature) is 40.1°C. If configure “bpsys thermal 42” then the fan speed will reach the **Highest** level (full fan speed). If configure “bpsys thermal 45” then the fan speed will reach the **Second Highest** level. Because the hard divers or SSDs may install partial and make cooling airflow too much or less. User can adjust the value to find the efficient fan speed profile.

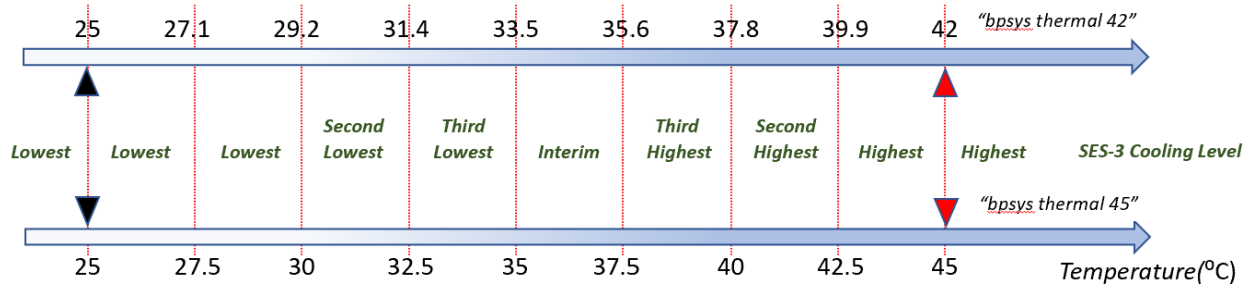


FIGURE 2 BPSYS THERMAL EXAMPLE

Syntax

```
bpsys thermal <37~52>
```

Example

```
cmd >bpsys thermal 45
Set Fan Control Max Temperature (37C~55C): 45
```

bpsys mute <0|1>

Set backplane system buzzer to mute mode. Default (0) is to enable beeping when system occurs some errors.

Syntax

```
bpsys mute <0|1>
```

Example

```
cmd >bpsys mute 1
Set Mute Enable: 1
```

bpsys id <0|1>

Turn backplane system ID LED on or off. The value is not saved to storage. Default (0) is to turn off ID LED. This command enable user to turn on ID LED from remote.

Syntax

```
bpsys id <0|1>
```

Example

```
PRIMARY>bpsys id 1
ID LED Enable: 1
```

bpsys test <0|1>

Set backplane system to test mode that blinks all LEDs and play buzzer for test. The value is not saved to storage. Default (0) is to quit the test mode.

Syntax

```
bpsys test <0|1>
```

Example

```
cmd >bpsys test 1
Test Enable: 1
```

bpsys reset <1>

Make backplane system to reset backplane MCU and power-down expander.

Syntax

```
bpsys reset <1>
```

Example

```
cmd >bpsys reset 1
Reset MCU System
```

ipconfig

Show or configure network interface IP address for RJ-460-08 bridge board.

ipconfig [verbose]

Display bridge expander module ethernet port configuration that are saved in persistent storage (flash). Default setting is static IP address (192.168.100.1).

Syntax

```
ipconfig [verbose]
```

Example

```
cmd >ipconfig

=====
Physical Address . . . . . : FA-E1-90-00-00-00
IPv6 Enabled . . . . . : No
DHCP Enabled . . . . . : No
AUTOIP Enabled . . . . . : No
DHCPv6 Enabled . . . . . : No
IP Address . . . . . : 192.168.100.1
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.100.254
IPv6 Address . . . . . : 0000:0000:0000:0000:0000:0000:0000:0000
Ethernet Link Status . . . . . : Up
Ethernet Link Speed . . . . . : 1000 Mbps
Ethernet Link Duplex Mode . . . . . : Full
=====

cmd >ipconfig verbose

=====
Physical Address . . . . . : FA-E1-90-00-00-00
IPv6 Enabled . . . . . : No
DHCP Enabled . . . . . : No
AUTOIP Enabled . . . . . : No
DHCPv6 Enabled . . . . . : No
IP Address . . . . . : 192.168.100.1
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.100.254
```

```
IPv6 Address . . . . . : 0000:0000:0000:0000:0000:0000:0000:0000
Ethernet Link Status . . . . . : Up
Ethernet Link Speed . . . . . : 1000 Mbps
Ethernet Link Duplex Mode . . . . . : Full
Ethernet speed/duplex initial setting: 0
Host Name . . . . . : SAS4X_fa:e1:90:0:0:0
VLAN Enabled . . . . . : No
VLAN CFI/PCP/ID . . . . . : 0/6/ffe
WakeLan Magic Packet Wakeup Enabled : No
WakeLan Unicast Packet Wakeup Enabled: No
=====
```

ipconfig dhcp

configure ethernet port IP address to DHCP mode.

Syntax

```
ipconfig dhcp
```

Example

```
cmd >ipconfig dhcp

Please reboot for new setting

cmd >reset

cmd >ipconfig

=====
Physical Address . . . . . : FA-E1-90-00-00-00
IPv6 Enabled . . . . . : No
DHCP Enabled . . . . . : Yes
AUTOIP Enabled . . . . . : No
DHCPv6 Enabled . . . . . : No
IP Address . . . . . : 172.22.22.199
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 172.22.22.254
IPv6 Address . . . . . : 0000:0000:0000:0000:0000:0000:0000:0000
Ethernet Link Status . . . . . : Up
Ethernet Link Speed . . . . . : 1000 Mbps
Ethernet Link Duplex Mode . . . . . : Full
=====
```

ipconfig static <ip_addr> <netmask> <gateway>

Configure ethernet port to static mode and assign the IP address, netmask and gateway.

Syntax

```
ipconfig static <IP_addr> <Netmask> <Gateway>
```

Example

```
cmd >ipconfig static 192.168.1.1 255.255.255.0 192.168.1.254

Please reboot for new setting
```

```
cmd >reset

cmd >ipconfig

=====
Physical Address . . . . . : FA-E1-90-00-00-00
IPv6 Enabled . . . . . : No
DHCP Enabled . . . . . : No
AUTOIP Enabled . . . . . : No
DHCPv6 Enabled . . . . . : No
IP Address . . . . . : 192.168.1.1
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.1.254
IPv6 Address . . . . . : 0000:0000:0000:0000:0000:0000:0000:0000
Ethernet Link Status . . . . . : Up
Ethernet Link Speed . . . . . : 1000 Mbps
Ethernet Link Duplex Mode . . . . . : Full
=====
```

fdl

fdl <0|1> <0> <y>

Download firmware or manufacture config (MFG) image from console or telnet.

The download protocol is XMODEM, refer to Figure 3

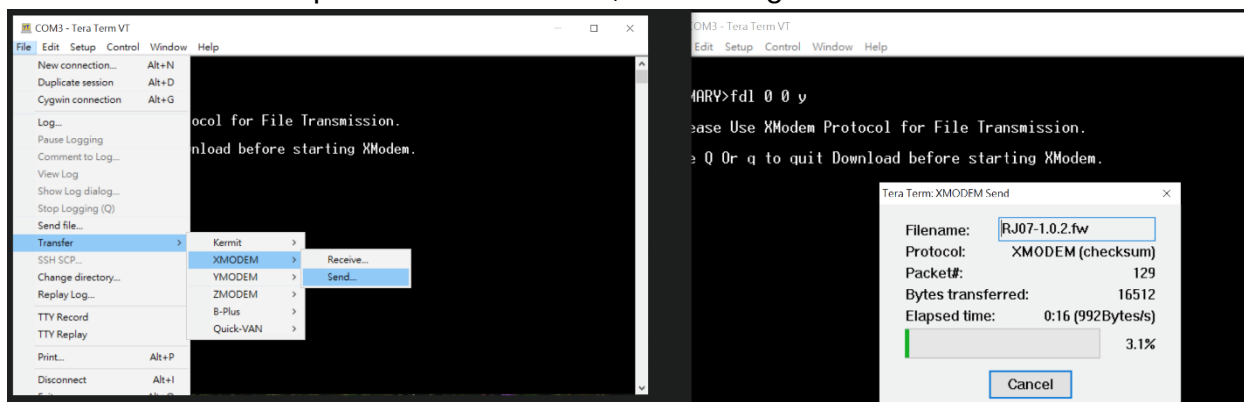


FIGURE 4 FIRMWARE UPGRADE BY XMODEM

Syntax – Download Firmware

```
fdl 0 0 y
```

Syntax – Download MFG

```
fdl 1 0 y
```

Example

```
PRIMARY>fdl 0 0 y

Please Use XModem Protocol for File Transmission.

Use Q Or q to quit Download before starting XModem.

Received 533760Bytes
```

```
Buffer Download Complete
```

```
PRIMARY>fdl 1 0 y
```

```
Please Use XModem Protocol for File Transmission.
```

```
Use Q Or q to quit Download before starting XModem.
```

```
Received 65536Bytes
```

```
Buffer Download Complete
```

tftpfdl

tftpfdl <0|1> <0> <y> <tftp_server_ip> <filename>

To upgrade firmware through TFTP, open a TFTP server (Figure 5) on your console host and specify the path in TFTP server to the directory where the firmware is stored. Please be sure the TFTP server is reachable for expander.

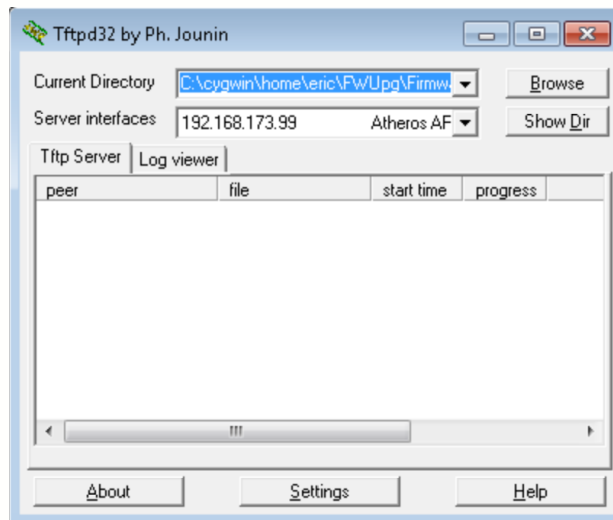


FIGURE 6 TFTP SERVER FOR UPGRADE

Syntax – Download Firmware through TFTP

```
tftpfdl 0 0 y <tftp_server_ip> <fw_filename>
```

Syntax – Download MFG through TFTP

```
tftpfdl 1 0 y <tftp_server_ip> <mfg_filename>
```

Example

```
PRIMARY>tftpfdl 0 0 y 192.168.173.99 SAS4-1.0.2.fw
```

```
TFTP Downloading.....
File Size: 645192
Burning...OK
```

user

Assign or show user account and password for WEB and TELNET login

The login session will be closed after 5 minutes (timeout) if no activities

The default user account is '**account**'

The default user password is '**password**'

Syntax

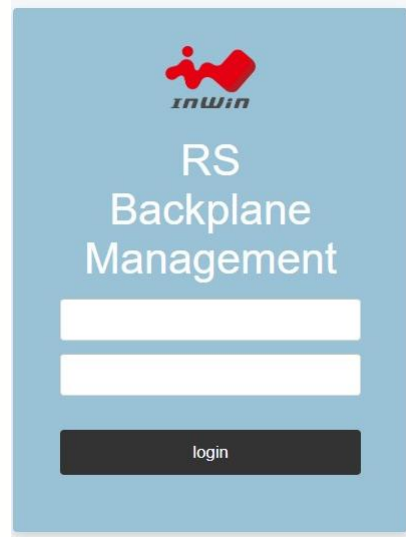
```
user [<account> <password>]
```

Example

```
PRIMARY>user  
  
ACCOUNT: account  
PASSWORD: password  
  
PRIMARY>user test 123  
  
New ACCOUNT: test  
New PASSWORD: 123
```

Appendix - Web Pages

Login



The login page features the InWin logo at the top, followed by the title "RS Backplane Management". Below the title are two input fields for username and password, and a "login" button at the bottom.

Version



- Version
- System
- Network
- HardDisk

Management Board

Model	RS-224-09
Board ID	0
Serial Number	36222C01480017
SAS Address	5FAE1901_200015BF
MAC Address	FA.E1.90.00.15.BF
Hardware Version	1.0
Firmware Version	1.0.1.0
MFG Version	1.0.1.0
Build Date	Dec 27 2024 10:25:13
Backplane MCU	RS224-09,HW:1.0,SW:1.0.2

Enclosure

Enclosure Height	2U
Bay Number	24
HDD Type	2.5"

System



Version

System

Network

HardDisk

Temperature Status (C)

ExpanderDie	39.0
BP.Left	28.0
BP.Right	27.2

Voltage Status (V)

Expander 1.8V	39.0
BP 5V	5.1
BP 12V	11.8

Fan Status (RPM)

Network



Version

System

Network

HardDisk

Network Status

Physical Address	fa:e1:90:00:00:00
Ethernet Link Status	Up
Ethernet Link Speed	1000 Mbps
Ethernet Link Duplex Mode	Full
DHCP Enabled	No
AUTOIP Enabled	No
IP Address	192.168.100.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.100.254
Host Name	SAS4X_fa:e1:90:0:0:0
VLAN Enabled	No
VLAN CFI/PCP/ID	0/6/ffe

Hard Disk



Version

System

Network

HardDisk

Disk Slot Status

Bay#	Link	SAS Address	Disk Type
1	22.5G	500605B0_000272BF	
2	22.5G	500605B0_000272BF	
3	22.5G	500605B0_000272BF	
4	22.5G	500605B0_000272BF	
5	22.5G	500605B0_000272BF	
6	22.5G	500605B0_000272B5	SATA
7	22.5G	500605B0_000272B6	SATA
8	22.5G	58CE38EE_22EAF1DE	SAS