NACx006-01

Network Attached Controller for Power Shelves

The NACx006-01 is a shelf level controller providing monitoring and control functions through a 10/100MB base Ethernet port and can be connected directly to the data center management network. It is hot-pluggable and supplied via the 12 V standby provided by the power supplies in the shelf. The controller provides a web interface for upgrading the controller, the backplane and power supplies; the monitoring and control functions are accessed through SNMPv1/2c/3.

The NACx006-01 meets international safety standards and displays the CE-Mark for the European Low Voltage Directive (LVD).

RoHS Compliant

Key Features & Benefits

- 10/100MB Ethernet port
- HP Auto MDI/MDI-X to reliably detect and correct crossover cables
- Web interface for easy setup
- SNMPv1/2c/3 protocol with TRAP, SET and GET over Ethernet
- Directly supplied from shelf standby voltage; Low consumption
- Hot-plug capable
- Fits in all OCP shelfs; front accessible
- Small form factor: 43.5 x 20.0 x 160.0 mm
- Robust RS485 communication to shelf backplane
- RoHS Compliant
- 2 Status LEDs; Reset button; Ethernet activity LED
- Supports IPv4 and IPv6

Applications

- High Performance Servers / Power Shelves
- OCP Racks
- General Computer Racks

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Please read our datasheet & drawing disclaimer here.

1. ORDERING INFORMATION

NAC	x006	-	01	COMMENT
Product Family	**Number**	**Dash**	**Options**	
AC NAC	1006	-	01	NAC for AC/DC 240 / 277 VAC Power Shelves
DC NAC	2006	-	01	NAC for DC/DC (-48 VDC), HVDC/DC (+380 VDC) Power Shelves

2. OVERVIEW

The NAC is a highly integrated shelf controller which interfaces with the backplane controller and power supplies of SPSPFE3 (NAC1006) and SPSPFF3 (NAC2006) high density power shelves for server applications. It is hot-pluggable and provides a front accessible 10/100MB Ethernet port and also USB/HID port for direct access with the Bel Power graphical user interface.

A MIB file allows the easy integration of the power shelf into a data center management tool. Static and dynamic data content is made available through the MIB definition for the controller, the backplane and each power supply including serial number information, revisions, date code, input voltage/current/power, output voltage/current/power and temperatures. It further allows to upgrade the power supplies via the network.

Figure 1 provides an overview of the controller interfaces with the different components in the shelf.

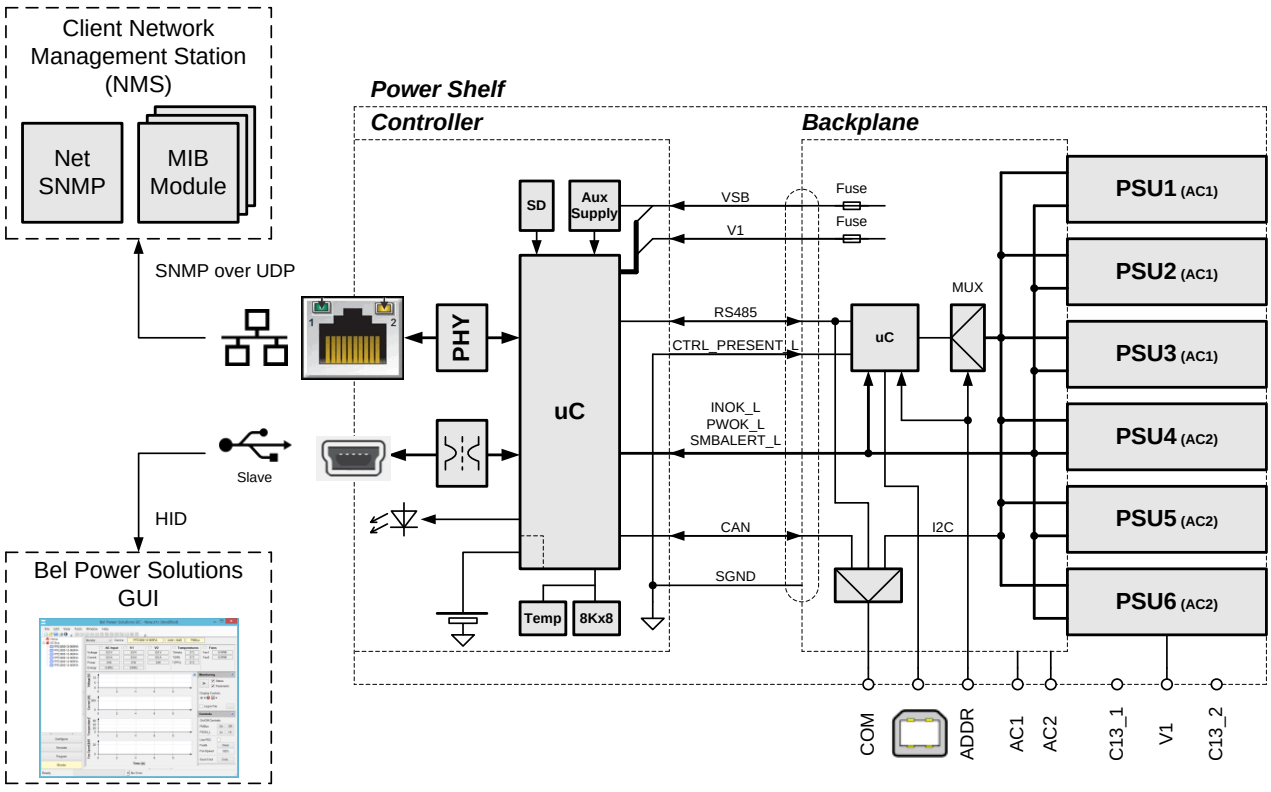


Figure 1. NACx006-01 block diagram and its integration into SPSPFx3 power shelves

3. SUPPLY VOLTAGE

Stresses in excess of the absolute maximum ratings may cause performance degradation, adversely affect long-term reliability, and cause permanent damage to the supply.

The supply voltage is directly provided by the power supply units in the SPSPFx3 shelf which is typically 12 V. A separate fuse is provided on the backplane to protect the wiring to the controller and the controller itself.

PARAMETER		CONDITIONS / DESCRIPTION	MIN	MAX	UNITS
Vi maxc	Maximum Input	Continuous		13.2	VDC
Pi	Power Consumption	Vi = 12 V		1.5	W

4. LAN PORT

The LAN should be connected to the RJ45 connector on the front of the NACx006-01. The Ethernet port is galvanically isolated from the PSU output and is connected to a 10Base-T/100Base-TX physical-layer transceiver for transmission and reception of data over standard CAT-5 unshielded twisted pair (UTP) cables. The built-in HP Auto MDI/MDI-X function allows to reliably detect and auto correct straight-through and crossover cable connections. The transceiver will automatically negotiate the and select the highest link-up speed (10/100Mbps) and duplex (half/full) configuration.

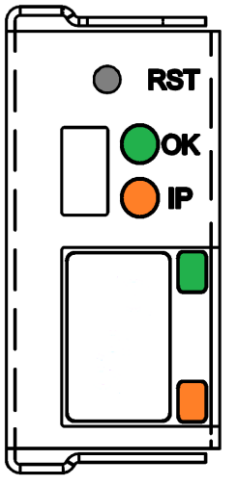
Once the interface has received an IP address on the network, the yellow LED on the controller is disabled. On the RJ45 connector only the green LED is active and lights up when there is traffic activity on the network.

5. USB PORT

The front USB port is a slave connection and implements an HID interface which can be used in conjunction with the Bel Power Solutions graphical user interface.

NOTE: This functionality is in the present version of Network Attached Controllers not yet activated.

6. FRONT LEDs / BUTTON



OK LED: Green
- Blinking 0.9/0.1 sec: Normal operation / active
- Off: Initiating cold start (see RST button)
- Blinking 0.1/0.1 sec: Initiating factory reset (see RST button)

IP LED: Orange
- On: Ethernet not active / no IP address
- Off: Ethernet on, received IP address
- Blinking 0.3/0.7 sec: Ethernet on, received IPv4 address, no IPv6 address
- Blinking 0.7/0.3 sec: Ethernet on, received IPv6 address, no IPv4 address

RJ45 LED: Green
- Blinks on Ethernet link activity.

RJ45 LED: Orange
- Not used

RST Button: (use a pen to press the recessed button)
- Pressing < 1 sec: no function.
- Pressing > 1 sec: Green OK LED switches off indicating that if button is released, a cold start will be initiated.
- Releasing button after > 1 sec and < 7 sec: cold start is executed.
- Pressing button > 7 sec: Green OK LED starts blinking at a rate of 0.1/0.1 sec indicating that if button is released, a factory reset will be initiated.
- Releasing button after > 7 sec: factory reset is being initiated.

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7. WEB INTERFACE

The controller hosts a web interface reporting basic information of the controller, the backplane controller and the power supplies. Further it also gives access to the MIB file content which can then be used to monitor the shelf via SNMP.

The web interface is accessed through the secure https protocol (port 443) at the controller IP address with any browser (IE, Chrome or Firefox). A log-in is required to access the web interface (see Software Documentation).

Figure 2. NACx006-01 Web interface

8. SNMP / MIB

In order to use the monitoring/control feature of the NAC through SNMPv1/2c/3, the corresponding Management Information Base (MIB) file should be loaded into a Network Management Station (NMS). The MIB file for the controller can be accessed through the web interface under “SnmpMIB”. A link is provided which will open the MIB text file within the browser window. Use the “Save as” feature of the browser to save a local copy of the file.

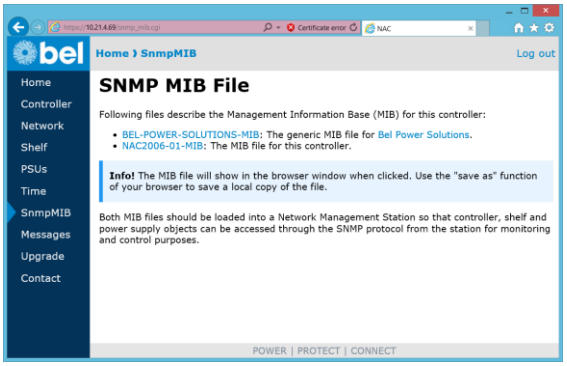

Figure 3. NACx006-01 Web interface to access the SNMP MIB file.

9. SAFETY / APPROVALS

This device has been designed to meet IEC/EN 60950, and UL 60950. It provides a functional galvanic isolation for the Ethernet and USB port. Electric isolation tests should not be repeated in the field. Bel Power Solutions will not honor any warranty claims resulting from electric isolation field tests.

10. ENVIRONMENTAL

PARAMETER			MIN	NOM	MAX	UNIT
T_A	Ambient Temperature		0		+45	°C
T_S	Storage Temperature	Non-operational	-40		+70	°C
	Cooling	Natural convection				

11. MECHANICAL

PARAMETER		DESCRIPTION / CONDITION	MIN	NOM	MAX	UNIT
	Dimensions	Width		43.5		mm
		Height		20.0		mm
		Depth		160.0		mm
m	Weight			155		g

NOTE: A 3D step file of the casing is available on request

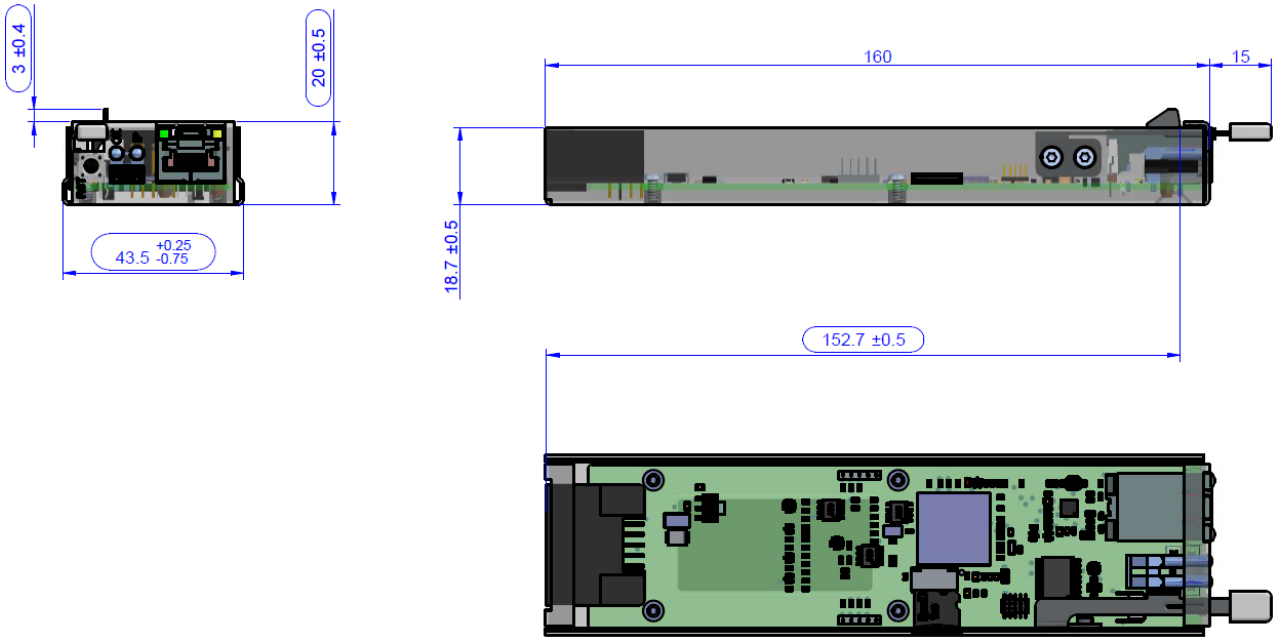

Figure 4. Front, side, top view

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12. CONNECTORS

Connection to backplane:	FCI Connectors P/N: 51939-920LF Note: A1 and A2 are Trailing Pin (short pins) Counterpart: FCI P/N: 10129998-020
USB Connection:	USB Mini-B
Ethernet	RJ45

PIN	NAME	DESCRIPTION
A1	CTRL_PRESENT_L	Controller present active low (connected to SGND)
B1	PWOK_L	Power OK active low (input)
C1	12V	12 V supply (only used for sense)
D1	VSB12V	Standby 12 V supply
A2, B2, C2, D2	SGND	Signal ground return
A3, C3	N.C.	No connects
B3, D3	RS485A / B	RS485 A/B communication
A4	SMBALERT_T	Power Management Bus SMBALERT signal low active (input)
B4, D4	SGND	Signal ground return
C4	N.C.	No connects
A5	INOK_L	Input OK signal active low (input)
A2	PRESENT_L	Power supply present (trailing pin): active-low
B5, D5	CAN_H/_L	CAN H/L communication
C5	N.C.	No connects

Figure 5. Pin assignment

13. ACCESSORIES

ITEM	DESCRIPTION	ORDERING PN	SOURCE
	I²C Utility Windows Vista/7/8 compatible GUI to program, control and monitor PFE Front-Ends (and other I²C units)	N/A	belfuse.com/power-solutions

14. REVISION HISTORY

REV	DESCRIPTION	PRODUCT VERSION	DATE	AUTHOR
001	Initial draft	V001	24-10-2017	AC
002	Add HVDC/DC for NAC2006-01. Add Disclaimer: Power Management Bus is a registered trademark of SMIF, Inc.	V003	23-01-2018	AC
AA	Add IPv6 support and update IP LED behavior	V004	19-06-2018	DL

For more information on these products consult: tech.support@psbel.com

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