




Hyperie 8300 H/W Guide

R1.41



Revision History

2020-07-31	Initial release	
2020-10-09	R1.1 Add DIDO interface jumper setting.	
2020-11-24	R1.2 Add ALM1/ALM2 description in DIDO session.	
2021-03-05	R1.3 Add product model.	
2023-04-11	R1.4 Add settings for Expansion daughter board connectors. Add settings for serial port mode selection. Update panel drawings.	
2024-01-18	R1.41 Update rear panel drawings. Update drawings of Appendix C and Appendix D. Add description for Digital Input polarities.	

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Product overview

Hyperie 8300 is a fanless, 19" rack mountable embedded computing platform designed for applications with critical environment requirements such as power industry and railway transportation industry. The hardware has high performance and low power consumption processor from Intel® Core™ i7-8665UE.

Hyperie 8300 is designed with modular and scalable concept that can be configured for various applications where multiple ethernet ports, serial ports and digital I/Os are required. (product name) adapts very wide operating temperature and is robust when it comes to harsh EMC environment.

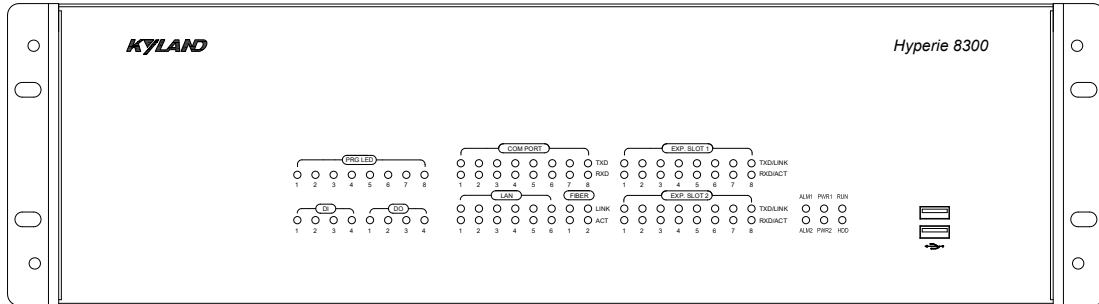
Product features

- High performance low power i7-8665UE Intel® Whiskey Lake processor
- 6x 10/100/1000Mbps Intel® Gigabit Ethernet
- 8x serial ports with RS232/485
- 8x programmable LED for user-specific application
- 2x dedicated expansion slots for multiple expansion I/Os
- Reliable -40°C start with pre-heating system
- Supports IRIG-B time synchronization
- Fanless, passive thermal dissipation

Hyperie 8300 hardware specification

ITEM	DESCRIPTION
CPU	Intel® Whiskey Lake i7-8665UE 1.70GHz, Max. 4.40GHz 4 Cores, 8 Threads, 8MB Cache
Memory	16GB / Max. 64GB DDR4-2400 SO-DIMM
Graphics	Intel® UHD Graphics 620
BIOS	AMI BIOS
Storage	2x Hot-swap 2.5" SSD with RAID 0/1 support
Expansion Module	2x expansion slots for use with the following items: a) Dual 1000M LC fiber Ethernet module b) Quad Ethernet module c) Octa digital I/O module
Ethernet Ports	6x Intel® i211-AT 10/100/1000Mbps
UART Controller	COM3-COM10 LPC-based Fintek 81866 + Fintek 81216
Serial Ports	8x DB9 RS232/485 (RS232 5-wire/RS485 2-wire, isolation)
Console	1x DB9 RS232 (9-wire, non-isolation)
USB	2x USB 2.0 (Front panel) 5x USB 3.0/2.0 (Rear panel) 1x USB 2.0 (Internal for USB dongle)
Digital I/O	4x 110V/220VDC digital input 4x digital output with relay contacts 2x alarm relay contacts
IRIG-B	1x IRIG-B TTL input 1x RS485 output
Power supply	110-220V AC/DC redundancy
LED indicator	TXD/RXD for serial ports LINK/ACT for Ethernet ports LED for expansion I/O cards 8x programmable LEDs 2x main power supplies 2x HDD active 1x System RUN 1x ALARM
H/W monitor	System temperature CPU temperature Physical LAN link Main power status Main voltages Watchdog Timer
Ambient temperature	Operating temperature -40°C ~ +75°C (Approximately 2 minutes of pre-heating is required for -40°C startup)
	Storage temperature -40 °C ~ +85 °C
Humidity	5%~95% (+40 °C Non-condensing)
Dimension	438W x 132H x 330D mm (w/o mounting bracket)
Relay contact rating	5A 250V AC, 5A 30V DC
Construction	Chassis: SECC 1.2mm / Heat sinker: AL6063
Net weight	TBD

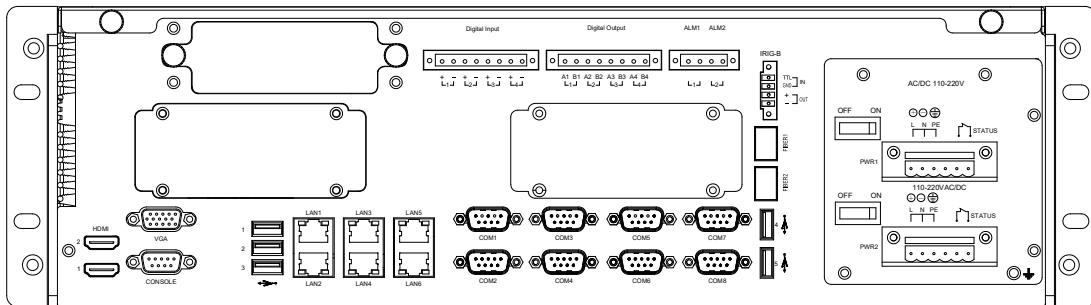
Front panel view



Front panel LED indicators

Refer to Appendix B for front panel LED indicators.

Rear panel view



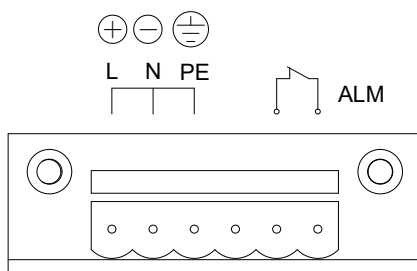
Rear panel ports and connectors

Refer to Appendix C for rear panel ports and connectors.

Mainboard information

Refer to Appendix A for mainboard connectors.

Power supply terminal



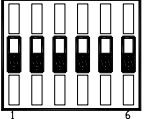
The power supply works with a wide range of input voltage, 110~220V AC/DC.

ALM pins are the dry contact of the internal relay built in the power supply, when the input voltage is missing or lower than the minimum allowable voltage and also when the output voltage is loss, the dry contact will become CLOSED to indicate a "POWER LOSS STATUS".

Console (COM1) pin define

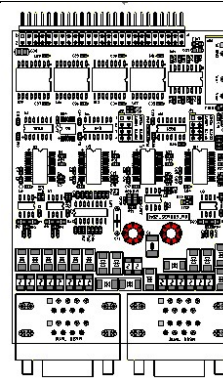
PIN	RS232	RS485	RS422
1	DCD	/	/
2	RXD	/	RX-
3	TXD	Data-	TX-
4	DTR	/	/
5	GND	GND	GND
6	DSR	/	/
7	RTS	Data+	TX+
8	CTS	/	RX+
9	RI	/	/

Console port is configurable with RS232/422/485 via an on-board DIP switch close to console port, the settings are as below table.

	RS232	1-2	ON
	RS422	3-5-6	ON
	RS485	4-5-6	ON

COM3-10 pin define

PIN	RS232	RS485
1	/	/
2	RXD	/
3	TXD	Data-
4	/	/
5	GND	GND
6	/	/
7	RTS	Data+
8	CTS	/
9	/	/



RS232/RS485 mode setting

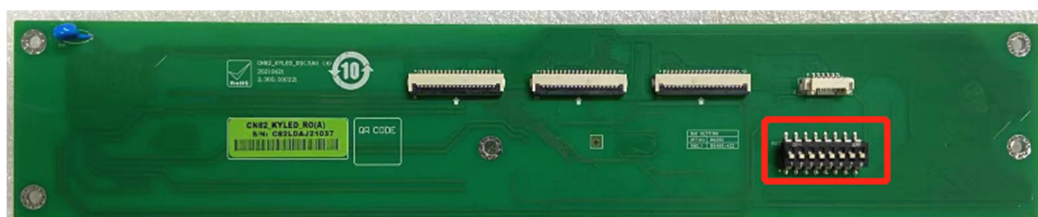
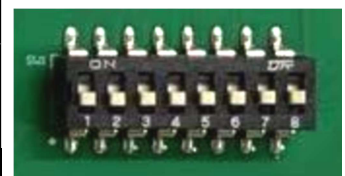
There are two ways for serial ports to switch between RS232/485, either via hardware setting or software configuration.

Hardware mode selection

You can use the DIP switch (SW1) to switch between RS232/485, the DIP switch is located on the rear side of the front panel LED board, the DIP settings are as below, each PIN controls a serial port.

RS232 mode is also used for software selection in the OS, software selection is made possible only in RS232 mode.

Mode	SW1 Setting
RS232 (Software selection mode)	OFF (Default)
RS485	ON



The above picture illustrates the location of the DIP switch.

Software mode selection

Set the DIP switch on the LED board to OFF position.

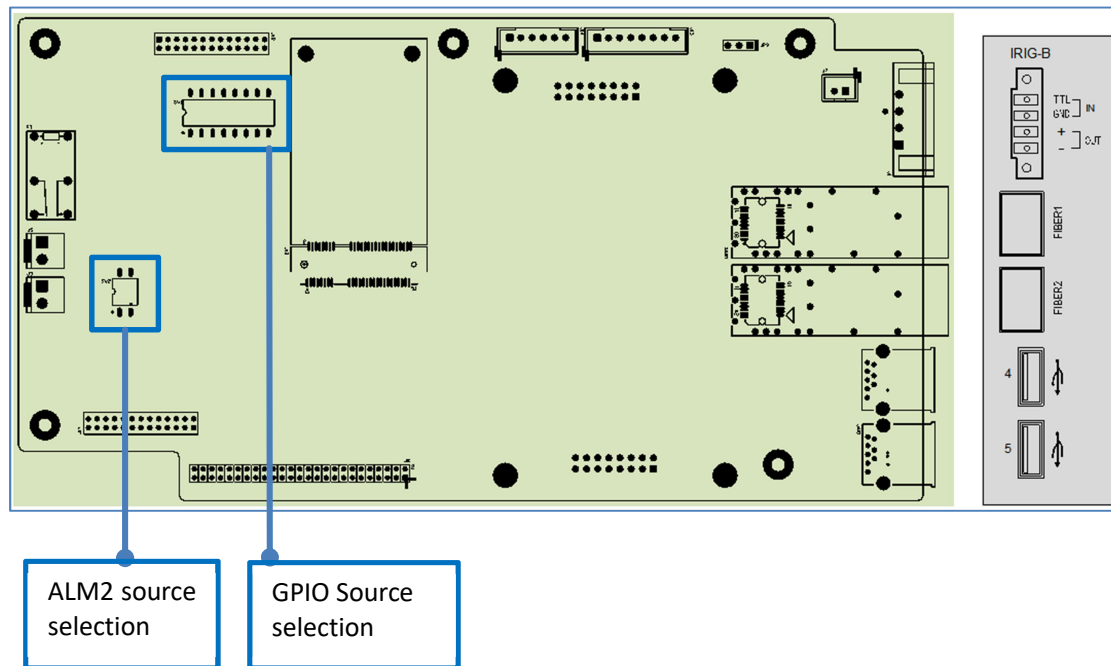
Run the a command to configure the serial port mode. Please refer to [Software Guide for Serial Port Mode](#) for details.

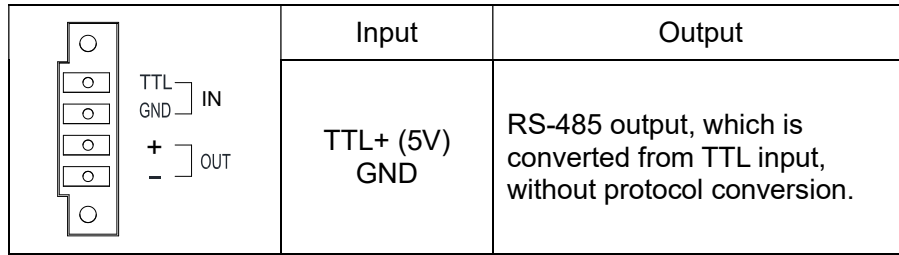
Expansion daughter board connectors

The daughter board is an accessory board that connects to the mainboard, which integrates IRIG-B time synchronization module and dual fiber ethernet ports as well as two USB3.0 ports to provide more I/O controllers for Hyperie 8300. This daughter board provides a pre-heating control system which detects the ambient temperature and determines if the device needs to be heated before mainboard really power on.

On-board Devices

- 2x 1Gbps Intel-based fiber ethernet ports, supports 1Gb link with LC connectors.
- 2x USB3.0 ports
- IRIG-B input/output connector
- IRIG-B time synchronization module
- Optional add-on IRIG-B hold module
- Optional CPLD-based DIDO add-on module
- 1x pre-heating controller system



IRIG-B Connector**ALM2 source selection**

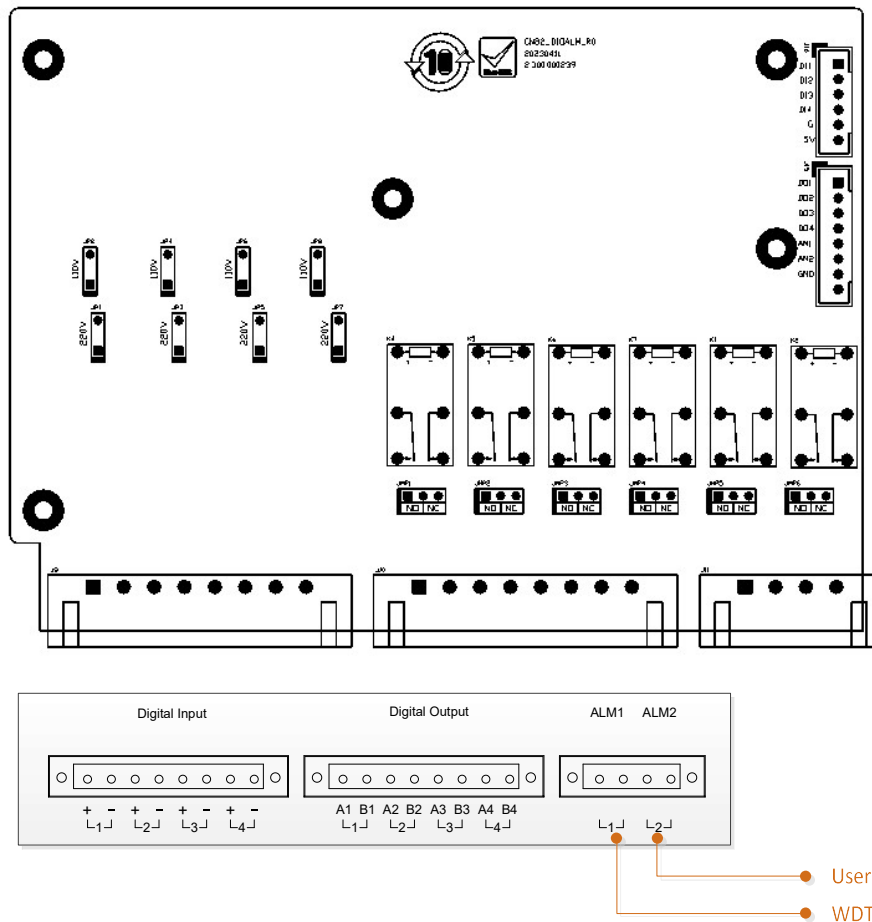
DIP Switch SW2	
1 - ON	SIO_GPIO17
2 - ON	I2C_P17

GPIO source selection

DIP Switch SW1			
PIN#	FUNC	ON	OFF
1-4	Digital Input	SPI	I2C
5-8	Digital Output	SPI	I2C

Digital I/O and ALARM output interface

The digital I/O and ALARM output interface board is an accessory for implementing digital input function as well as digital output function and also outputs WDT RESET event by closing the relay contacts, therefore an external device will be able to read the status that the Hyperic 8300 is reset due to a Watchdog Reset Event.



Digital input

Digital input channels support 110V/220V DC as input signals, the input voltage is configurable by the on-board jumper settings. Refer to [Digital I/O and ALARM Jumper Settings](#) session for detail. Make sure of the input polarities, incorrect input polarities may damage the I/O interface.

Digital output

Digital outputs come with relay contacts controlled by GPIOs either from SPI or I2C bus by setting the on-board DIP switches.

Optionally, a CPLD-based add-on module can be used to implement the function for software compatibility.

Refer to [Digital I/O and ALARM Jumper Settings](#) session for detail.

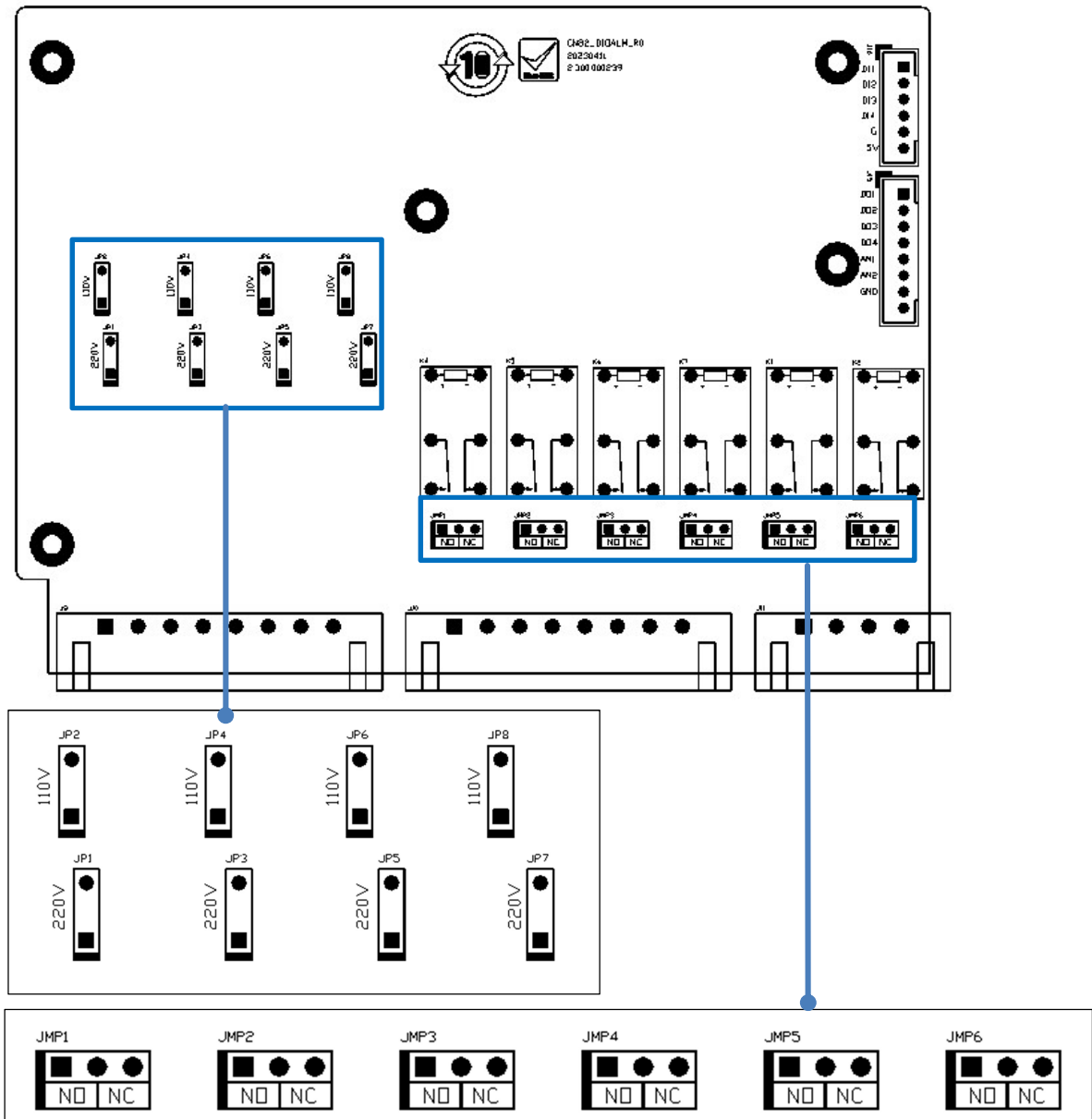
ALM1 output

ALM1 features watchdog timer output, when a watchdog reset triggers the relay contacts to become CLOSED, the contacts will remain CLOSED until the system resets the hardware.

ALM2 output

ALM2 is a user-defined relay contact output.

Digital I/O and ALARM jumper settings



Digital Input Voltage Settings

Jumper	Definition
JP1 JP3 JP5 JP7	SHORT for 220VDC input
JP2 JP4 JP6 JP8	SHORT for 110VDC input

Digital Output Jumper Settings

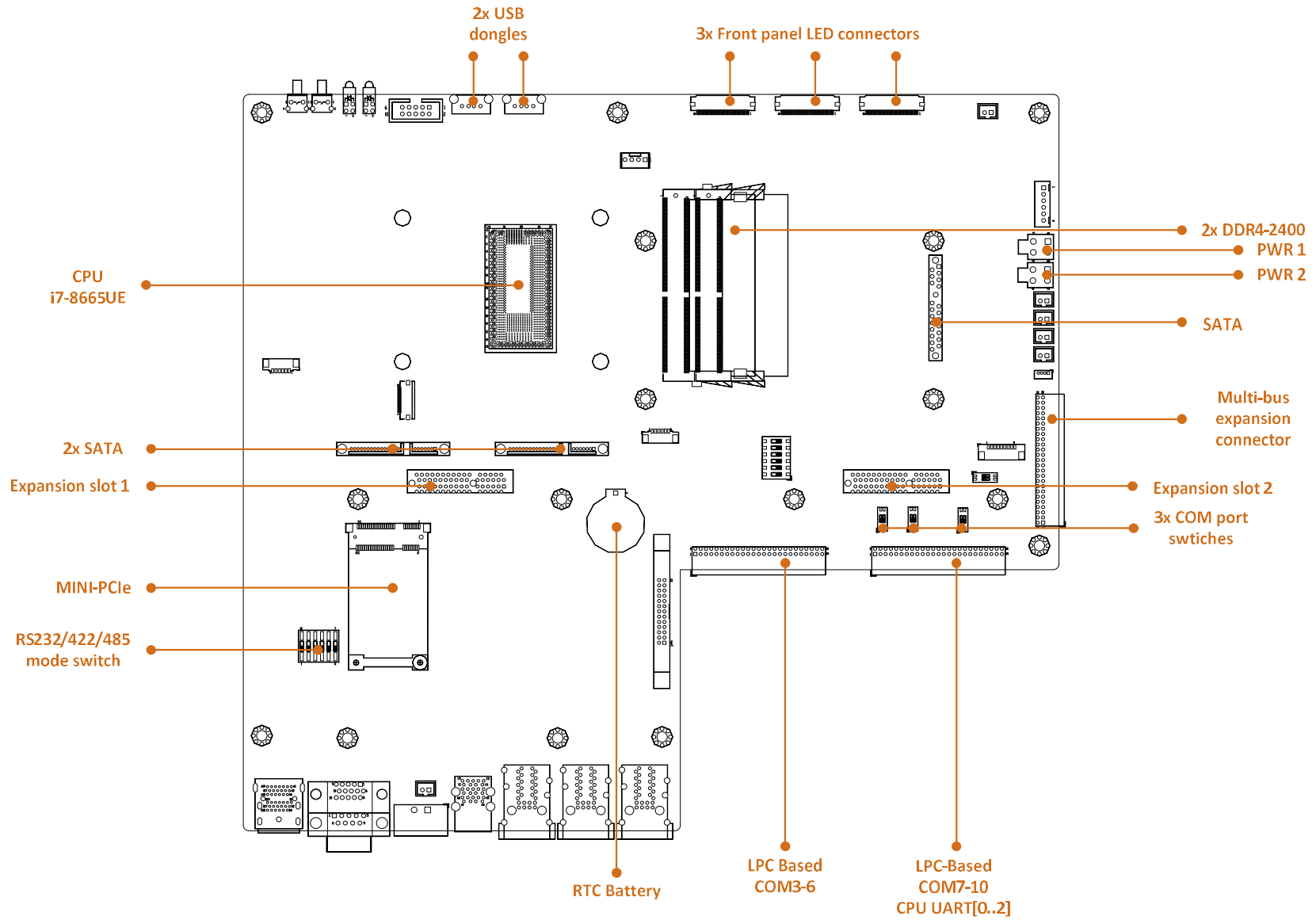
Jumper	Definition	
JM1~JM6	Normally Open (Default)	
	Normally Close	

Hardware monitor functionality

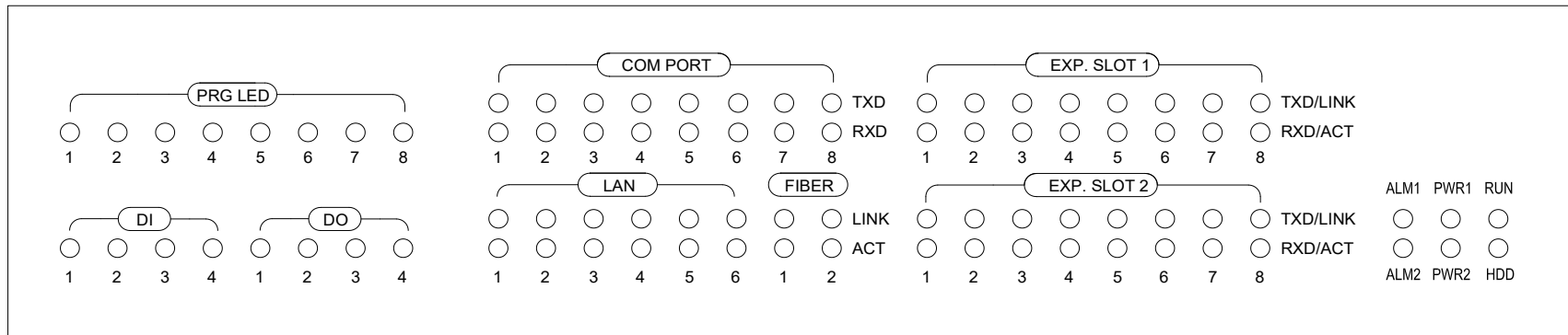
The following hardware status can be monitored via software interface.

- Main power supply inputs
- LAN link status

Appendix A - Mainboard connectors



Appendix B - Front panel LED indicators



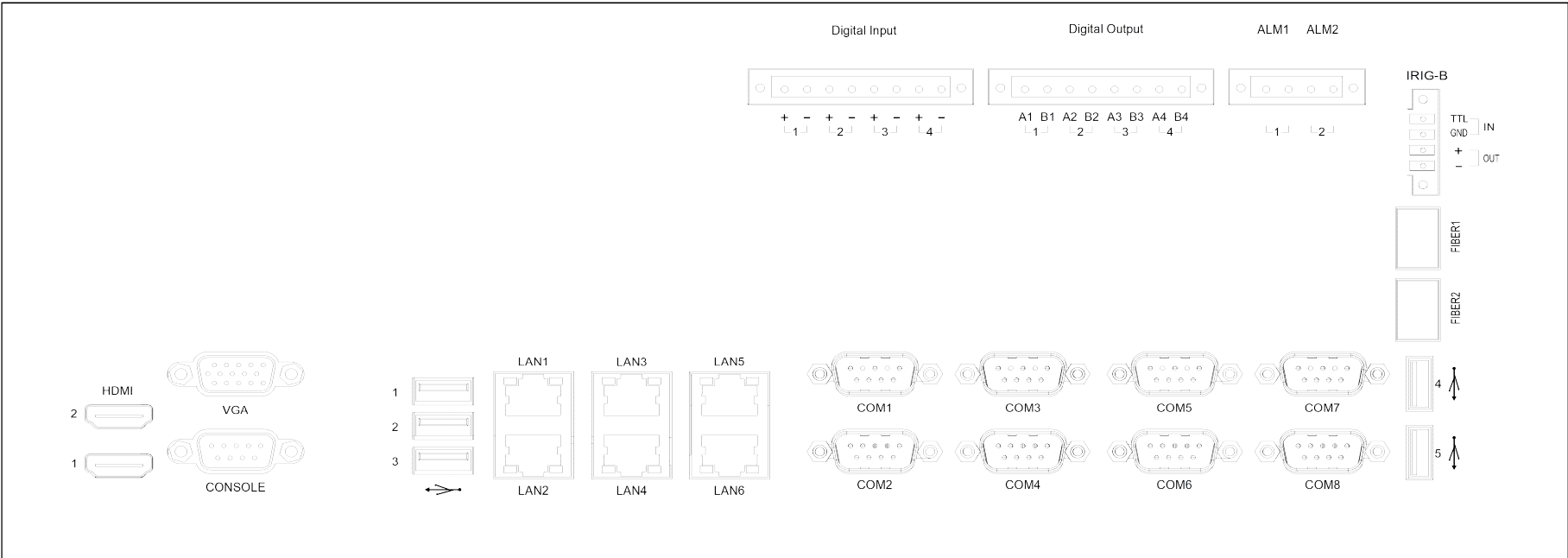
System Function LEDs

LED	Description
RUN	System boot status
HDD	Indication for SSD/HDD storage active
PWR1	Power supply #1 status
PWR2	Power supply #2 status
ALM1	Watchdog reset event
ALM2	User-defined alarm event

Programmable LEDs

H/W ADDR	LED#	PORT [n]	Bit [n]
0x4E	1	Port 0	Bit 0
	2	Port 0	Bit 1
	3	Port 0	Bit 2
	4	Port 0	Bit 3
	5	Port 0	Bit 4
	6	Port 0	Bit 5
	7	Port 0	Bit 6
	8	Port 0	Bit 7

Appendix C - Rear panel connectors



Appendix D – Dimension drawing

