USER MANUAL

Thinvent® Neo R/4 Mini PC

R-i3_12l-32-m256-12_7-X-DOS-0



Edition November 2026

Serial number: _____

Thinvent Technologies Private Limited · www.thinvent.in

Contents

1. Before you start	3
2. What is in the box	3
3. Specifications	3
4. Ports and controls	4
5. Setting up	4
6. Using the computer	4
7. Operating system	4
8. Inside the computer: the motherboard	5
9. Internal connectors and headers	6
10. Jumpers and switches	9
11. BIOS setup	9
12. Drivers	9
13. Care	10
14. Troubleshooting	10
15. Support	10

1. BEFORE YOU START

The Neo R/4 is Thinvent's steel mini PC for transport, banking, hospitality and healthcare. It takes a Mini-ITX or Thin Mini-ITX board and holds an M.2 SSD and a 2.5 inch drive, and runs Windows or Linux.

- Keep the vents clear, and keep the computer away from water and direct sunlight.
- Use only the power adapter supplied with the mini PC. Another adapter can damage it and affects the warranty.
- Do not cover the ventilation slots or block the air vents. Never run the mini PC with the cover or a side panel removed.
- When the mini PC is plugged in, power reaches the system board. Unplug the power cable before you open the mini PC.
- Be properly grounded when you touch a component, and avoid contact with pins, leads and circuitry.
- Keep the adapter wires undamaged. A damaged wire can cause a short circuit.
- Do not let the power adapter touch your skin or a soft surface while the mini PC runs.
- The mini PC contains a lithium coin cell battery. Do not take it apart, crush, puncture or short it, put it in water or fire, or expose it to temperatures above 60 °C. Do not recharge it. Return used batteries to Thinvent or its authorised partners, not to the household waste.
- Change BIOS settings only with the help of trained service personnel. Wrong settings cause instability or boot failure.
- Contact Thinvent support before you upgrade memory or storage. Some models have a fixed configuration.
- Do not remove or tamper with the warranty seal. Repair or modification by the customer or an unauthorised third party is outside the warranty.

Drivers, other files for this computer and the latest edition of this manual are on the Thinvent Support Downloads page: www.thinvent.in/support/downloads. Enter the serial number or the order number of your computer.

2. WHAT IS IN THE BOX

- Thinvent® Neo R/4 Mini PC
- Power adapter

3. SPECIFICATIONS

Processing	
Generation	12th
Series	i3
Processor Brand	Intel
Processor Model	1215U
Cores	6
Max Frequency	4.4 GHz
Cache	10 MB
Main Memory	32 GB
SSD Storage	256 GB
Display	
HDMI	1
VGA	1
Audio	
Speaker Out	1
Mic In	1
Connectivity	
USB 3.2	2
RS485 Option	1
Networking	
Ethernet	1000 Mbps
Ethernet Ports	2
Power	
DC Voltage	12 Volts
DC Current	7 Amps
Power Input	100~275 Volts AC, 50~60 Hz, 1.5 Amps maximum
Cable Length	2 Metre

Environmental

Operating Temperature	0°C ~ 40°C
Operating Humidity	20% ~ 80% RH, non condensing
Certifications	BIS, RoHS, ISO

Physical

Form Factor	Mini PC
Dimensions	198mm × 200mm × 73mm
Packing Dimensions	335mm × 240mm × 110mm
Housing Material	Steel
Housing Finish	Powder Coated
Housing Colour	Black
Net and Gross Weight	1.68kg, 2.10kg

Operating System

Operating System	FreeDOS

4. PORTS AND CONTROLS

Front

From left to right:

#	Port	Description
1	Power button	Switches the mini PC on or off. Press it gently to switch on. Hold it for at least 4 seconds to force a switch off when the mini PC does not respond.

Rear

From left to right, seen from the back:

#	Port	Description
1	DC-IN	12 V or 19 V DC power jack, 5.5 × 2.5 mm
2	HDMI	HDMI 2.0 output, 4096 × 2160 or 3840 × 2160 at 60 Hz
3	VGA	VGA output, 1920 × 1080 at 60 Hz
4	USB3.2	Two stacked USB 3.2 Gen 1 ports, 5 Gbps
5	LAN1	RJ45 Gigabit Ethernet port
6	LAN2	A second RJ45 Gigabit Ethernet port
7	LINE_OUT	Audio output jack (green)
8	MIC_IN	Microphone input jack (red)

5. SETTING UP

Connect and switch on

1. Plug the power adapter into the DC Power In jack on the rear panel.
2. Plug the power adapter into a 100 to 240 V AC power source.
3. Connect a monitor with an HDMI cable to the HDMI port, or with a VGA cable to the VGA port. To use two monitors, connect one to each port.
4. Connect a USB keyboard and mouse to any of the USB ports. A USB dongle for a wireless keyboard and mouse also works.
5. Connect an Ethernet cable to the LAN port.
6. Press the Power button gently.

6. USING THE COMPUTER

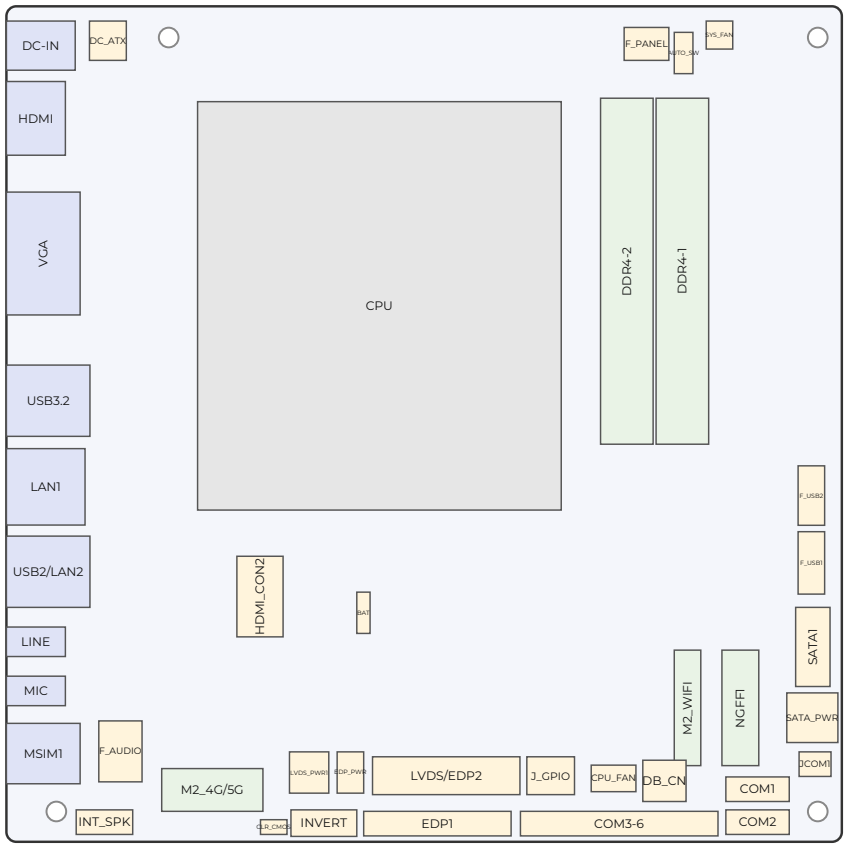
Switch the mini PC on and off

1. Press the Power button gently to switch on.
2. If the mini PC does not respond, hold the Power button for at least 4 seconds until it switches off.

7. OPERATING SYSTEM

This computer comes with FreeDOS.

8. INSIDE THE COMPUTER: THE MOTHERBOARD



170 mm × 170 mm

Component side of the board. Positions are approximate.

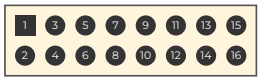
Label	Connector or component
DDR4-1	DDR4 SO-DIMM slot, one of two
DDR4-2	DDR4 SO-DIMM slot, one of two
CPU	Processor under the heatsink and fan
F_USB2	Front USB 2.0 header, two USB 2.0 ports
F_USB1	Front USB 2.0 header, two USB 2.0 ports
SATA1	SATA 3.0 data connector
SATA_PWR	Power connector for a SATA drive, 12 V and 5 V
JCOM1	Jumper header that sets the voltage on pin 9 of COM1
COM2	COM2 serial header, RS-232
COM1	COM1 serial header, RS-232, RS-422 or RS-485 set in the BIOS
NGFF1	M.2 Key-M slot for an SSD, NVMe or SATA
M2_WIFI	M.2 Key-E slot for a Wi-Fi and Bluetooth card
DB_CN	Header labelled DB_CN on the board
CPU_FAN	Processor fan header, 4 pins
COM3-6	Serial header for COM3 to COM6, RS-232
J_GPIO	GPIO header, 4 inputs and 4 outputs
LVDS/EDP2	Screen header, LVDS by default or eDP2
EDP1	eDP1 screen header, 30 pins
EDP_PWR	Jumper that sets the eDP1 screen voltage
INVERT	Screen backlight power header
LVDS_PWR1	Jumper that sets the LVDS/eDP2 screen voltage
CLR_CMOS	Jumper that clears the CMOS
M2_4G/5G	M.2 Key-B slot for a 5G or 4G module
F_AUDIO	Front audio header
INT_SPK	Internal speaker header
HDMI_CON2	Second HDMI output on a 16-pin header

BAT	CMOS battery connector
SYS_FAN	System fan header, 3 pins
AUTO_SW	Jumper for automatic power-on
F_PANEL	Front panel header with power switch, reset switch and LEDs
DC_ATX	4-pin power input
DC-IN	DC power jack, 5.5 × 2.5 mm, 12 V or 19 V
HDMI	HDMI 2.0 output
VGA	VGA output (DP output on the DP option)
USB3.2	Two stacked USB 3.2 Gen 1 ports
LAN1	RJ45 Gigabit Ethernet port, Intel I219-V
USB2/LAN2	Two stacked USB 2.0 ports on the single LAN boards, a second RJ45 port (LAN2) on the dual LAN boards
LINE	LINE_OUT audio output (green)
MIC	MIC_IN microphone input (red)
MSIM1	SIM card slot for a 5G or 4G module

9. INTERNAL CONNECTORS AND HEADERS

HDMI_CON2: Second HDMI header

16-pin, 2.0 mm header with its own HDMI signals. It supports 4096 × 2160 or 3840 × 2160 at 30 Hz. Connect the cable with its pin 1 on pin 1 of the header. A cable connected the wrong way round gives no display.

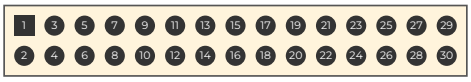


Pin 1 is square.

Pin	Signal	Pin	Signal
1	HDMI_TXD2P	2	HDMI_TXD1P
3	HDMI_TXD2N	4	HDMI_TXD1N
5	GND	6	GND
7	HDMI_TXD0P	8	HDMI_TXC0P
9	HDMI_TXD0N	10	HDMI_TXC0N
11	GND	12	HDMI_5V
13	HDMI_CLK	14	HDMI_5V
15	HDMI_DATA	16	HDMI_HPD

EDP1: eDP1 screen header

30-pin, 2.0 mm header for an eDP-C screen cable, which carries the backlight on the same cable. It supports 4096 × 2160 or 3840 × 2160 at 60 Hz. Connect the cable with its pin 1 on pin 1 of the header. A cable connected the wrong way round can burn the screen and the board.

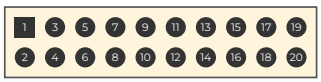


Pin 1 is square.

Pin	Signal	Pin	Signal
1	VCC	2	VCC
3	GND	4	GND
5	TX0P	6	TX0N
7	GND	8	GND
9	TX1P	10	TX1N
11	GND	12	GND
13	TX2P	14	TX2N
15	GND	16	GND
17	TX3P	18	TX3N
19	GND	20	GND
21	AUXP	22	AUXN
23	GND	24	HPD
25	BKLT_CTL	26	BKLT_EN
27	GND	28	GND
29	BLPWR	30	BLPWR

LVDS/EDP2: Screen header, eDP2 signals

30-pin, 2.0 mm header. The board ships with LVDS on it; the eDP2 option uses the same pins and an eDP-B screen cable (20 pins, backlight on a separate cable). Pins 21 to 30 carry no signal in eDP2 mode. eDP2 supports 4096 × 2160 or 3840 × 2160 at 60 Hz.

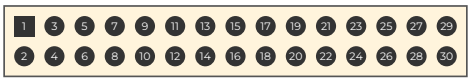


Pin 1 is square.

Pin	Signal	Pin	Signal
1	VCC	2	VCC
3	VCC	4	HPD
5	GND	6	GND
7	TX0N	8	TX0P
9	TX1N	10	TX1P
11	TX2N	12	TX2P
13	GND	14	GND
15	AUX-	16	AUX+
17	TX3N	18	TX3P
19	NC	20	NC

LVDS/EDP2: Screen header, LVDS signals

The same header with LVDS signals, which supports 2K at 60 Hz. Connect the screen cable with its pin 1 on pin 1 of the header. A cable connected the wrong way round can burn the screen and the board.



Pin 1 is square.

Pin	Signal	Pin	Signal
1	VCC	2	VCC
3	VCC	4	GND
5	GND	6	GND
7	ADO0-	8	ADO0+
9	ADO1-	10	ADO1+
11	ADO2-	12	ADO2+
13	GND	14	GND
15	ACLK-	16	ACLK+
17	ADO3-	18	ADO3+
19	BDO0-	20	BDO0+
21	BDO1-	22	BDO1+
23	BDO2-	24	BDO2+
25	GND	26	GND
27	BCLK-	28	BCLK+
29	BDO3-	30	BDO3+

INVERT: Backlight power header

6-pin, 2.0 mm header for the LVDS backlight.

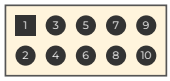


Pin 1 is square.

Pin	Signal	Pin	Signal
1	+12V	2	+12V
3	ON/OFF (backlight switch)	4	ADJ (backlight brightness)
5	GND	6	GND

J_GPIO: GPIO header

10-pin, 2.0 mm header. The direction of each GPIO pin can be changed on request.

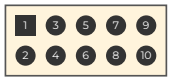


Pin 1 is square.

Pin	Signal	Pin	Signal
1	GND	2	+5V
3	GPIO_IN0	4	GPIO_OUT0
5	GPIO_IN1	6	GPIO_OUT1
7	GPIO_IN2	8	GPIO_OUT2
9	GPIO_IN3	10	GPIO_OUT3

COM1 / COM2: Serial port headers

Two 10-pin, 2.54 mm headers with the same pin order. COM1 is RS-232, RS-422 or RS-485 and the BIOS sets the mode. COM2 is RS-232 only. In RS-485 mode on COM1, pin 1 is S485- and pin 2 is S485+. In RS-422 mode on COM1, pin 1 is TXD-, pin 2 is TXD+, pin 3 is RXD+ and pin 4 is RXD-. The pin table below is for RS-232.

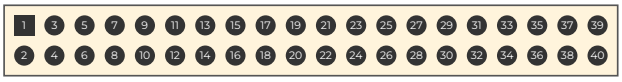


Pin 1 is square.

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	NC

COM3-6: Serial port header for COM3 to COM6

40-pin, 2.0 mm header with four RS-232 ports, 10 pins each. It is fitted on the 6-COM boards.

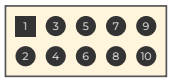


Pin 1 is square.

Pin	Signal	Pin	Signal
1	COM3_DCD	2	COM3_RXD
3	COM3_TXD	4	COM3_DTR
5	GND	6	COM3_DSR
7	COM3_RTS	8	COM3_CTS
9	COM3_RI	10	NC
11	COM4_DCD	12	COM4_RXD
13	COM4_TXD	14	COM4_DTR
15	GND	16	COM4_DSR
17	COM4_RTS	18	COM4_CTS
19	COM4_RI	20	NC
21	COM5_DCD	22	COM5_RXD
23	COM5_TXD	24	COM5_DTR
25	GND	26	COM5_DSR
27	COM5_RTS	28	COM5_CTS
29	COM5_RI	30	NC
31	COM6_DCD	32	COM6_RXD
33	COM6_TXD	34	COM6_DTR
35	GND	36	COM6_DSR
37	COM6_RTS	38	COM6_CTS
39	COM6_RI	40	NC

F_USB1 / F_USB2: Front USB 2.0 headers

Two 10-pin, 2.54 mm headers with the same pin order. Each header carries two USB 2.0 ports.



Pin 1 is square.

Pin	Signal	Pin	Signal
1	VCC+5V	2	VCC+5V
3	DATA0-	4	DATA1-
5	DATA0+	6	DATA1+
7	GND	8	GND
9	NC	10	GND

CPU_FAN: Processor fan header

4-pin, 1.25 mm header. The fan speed follows the temperature.



Pin 1 is square.

Pin	Signal	Pin	Signal
1	GND	2	+12V
3	TAC (fan speed detection)	4	CTL (fan speed control)

SYS_FAN: System fan header

3-pin, 2.54 mm header.

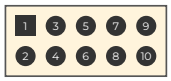


Pin 1 is square.

Pin	Signal	Pin	Signal
1	GND	2	+12V
3	TAC (fan speed detection)		

F_AUDIO: Front audio header

10-pin, 2.54 mm header.



Pin 1 is square.

Pin	Signal	Pin	Signal
1	MIC-L	2	GND
3	MIC-R	4	NC
5	LINE OUT-R	6	MIC_JD
7	FAUDIO_JD	8	NC
9	LINE OUT-L	10	LINE_JD

INT_SPK: Internal speaker header

4-pin, 2.0 mm header for a speaker with an amplifier, 5 W.



Pin 1 is square.

Pin	Signal	Pin	Signal
1	L+	2	L-
3	R-	4	R+

DC_ATX: 4-pin power input

Second power input, 4.2 mm pitch. Use it instead of the DC jack.

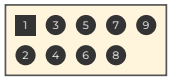


Pin 1 is square.

Pin	Signal	Pin	Signal
1	GND	2	GND
3	+12V	4	+12V

F_PANEL: Front panel header

10-pin, 2.54 mm header. Pins 1 and 3 take the hard disk LED, with pin 1 the positive end; the LED flashes while the drive works. Pins 2 and 4 take the power LED, with pin 2 the positive end; the LED is lit while the board has power. Pins 5 and 7 take a reset switch. Pins 6 and 8 take the power switch. The board also has its own power switch.



Pin 1 is square.

Pin	Signal	Pin	Signal
1	HDLED+	2	PWRLED+
3	HDLED-	4	GND
5	RST	6	P_SW IN
7	GND	8	GND
9	NC		

SATA: SATA data connector

7-pin SATA 3.0 connector, up to 6 Gbps.



Pin 1 is square.

Pin	Signal	Pin	Signal
1	GND	2	SATA_TXP
3	SATA_TXN	4	GND
5	SATA_RXN	6	SATA_RXP
7	GND		

SATA_PWR: SATA power connector

4-pin, 2.54 mm connector. Pin 1 outputs 12 V and pin 4 outputs 5 V. Use the power cable Thinvent supplies; a different cable can burn the drive.



Pin 1 is square.

Pin	Signal	Pin	Signal
1	+12V	2	GND
3	GND	4	+5V

BAT: CMOS battery connector

2-pin, 1.25 mm connector for the coin cell.



Pin 1 is square.

Pin	Signal	Pin	Signal
1	Negative	2	Positive

10. JUMPERS AND SWITCHES

EDP_PWR: eDP1 screen voltage

Setting	Function
1-2	+3.3 V
3-4	+5 V
5-6	+12 V

LVDS_PWR1: LVDS/eDP2 screen voltage

Setting	Function
1-2	+3.3 V
3-4	+5 V
5-6	+12 V

JCOM1: Voltage on pin 9 of COM1

Setting	Function
1-2	+5 V on pin 9
3-4	+12 V on pin 9
5-6	No voltage on pin 9 (0 V) (default)

AUTO_SW: Automatic power-on

Setting	Function
1-2	Automatic power-on off
2-3	Automatic power-on on

CLR_CMOS: Clear CMOS

Setting	Function
1-2	Normal start (default)
2-3	Clears the CMOS and sets the BIOS to its factory settings

11. BIOS SETUP

Press **Del** right after power-on to open BIOS setup. Open the Save & Exit menu to save the settings and restart, or press **F10**. Press **F9** to load the default settings.

Updating the BIOS

> Keep the power connected during a BIOS update. A power cut during the update leaves the board unable to start.

1. Email Thinvent support at support@thinvent.in with the serial number of your device to get the BIOS update for this board. Thinvent support sends the BIOS file and the steps for your board.
2. Keep the power adapter connected during the update.

12. DRIVERS

Install the drivers in this order. Each one is on the Support Downloads page.

#	Driver	Version
1	Intel Chipset INF Utility for Windows 10 and 11	10.1.20658.8883
2	Intel graphics driver (11th-14th Gen and N-series) for Windows 10 and 11	31.0.101.7092

3	Intel Ethernet driver (I219-V) for Windows 10 and 11	31.2.2
4	Realtek audio driver (UAD) for the i3-1215U board	6.0.9597.1
5	Intel Smart Sound Technology driver	10.29.00.8102

Other files for this computer

These files are on the Support Downloads page, www.thinvent.in/support/downloads.

File	Kind	Version
Neo user manual	manual	1
Realtek Audio Console	utility	1.48.312.0

13. CARE

- Keep the mini PC away from excessive moisture, direct sunlight and extremes of heat and cold.
- Keep liquids away from the mini PC.
- Clean the air vents on all vented sides now and then. Unplug the mini PC first, because lint and dust block the vents and limit the airflow.
- Use the mini PC on a hard, flat surface. Do not place it on a lap, a pillow, a rug or clothing.
- Do not stack other computers on top of the mini PC.
- If you run the mini PC inside a separate enclosure, give the enclosure intake and exhaust ventilation.

14. TROUBLESHOOTING

The mini PC does not switch on

1. Check that the power adapter is firmly plugged into the DC Power In jack and into the wall socket.
2. Check that the socket supplies the correct voltage (100 to 240 V AC).
3. Use only the adapter that came with the mini PC.
4. Press the Power button gently.

The monitor stays blank after you connect the mini PC

1. Check that the monitor is switched on and set to the input you connected.
2. Check that the HDMI or VGA cable is firmly connected at both ends.
3. Try the other video port, or another monitor.

The mini PC runs slowly

1. Close applications you do not need.
2. Put the mini PC where the air moves freely and clean dust from the vents.
3. Check that the mini PC is not overheating.

The headphones do not work in the Mic and Speaker jacks

1. Connect the headphones through a converter, or use USB headphones.

15. SUPPORT

Support Downloads	www.thinvent.in/support/downloads
Email	support@thinvent.in
Phone	+91-11-411-71494
WhatsApp	+91 9990344247

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