

Nuvis-534RT **Ouick Installation Guide**

🖄 Warning

- · Only qualified service personnel should install and service this product to avoid injury.
- Observe all ESD procedures during installation to avoid damaging the equipment.

1 Preparing tools

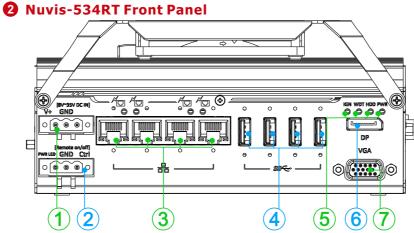
Unpack the equipment and make sure the following tools are available and delivered contents are correct before you begin the installation procedure.

1-1. User-provided tools

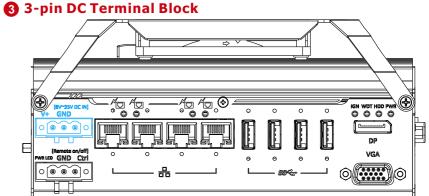
Anti-static wrist wrap

1-2. Packing List

Item	Description	Qty
01	Nuvis-534RT system	1
02	Drivers & utilities disc	1
03	3-pin pluggable terminal block	2
04	DIN-rail mount clip	1
05	Screw package	1
06	TB-10	1
07	SCIS-68 male to SCSI-68 male 100cm cable	1

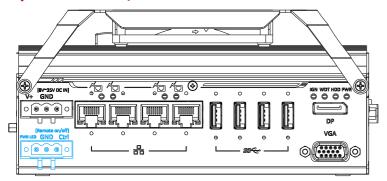


No.	Item	Description
1	<u>3-pin DC terminal</u> block	Compatible with DC power input from 8~35V.
2	<u>3-pin Remote on/</u> off control	Allows for external switch extension when the system is placed inside a cabinet.
3	Gigabit PoE+ ports	Gigabit Power over Ethernet (PoE) port can provide both data and electric power to devices.
4	USB 3.1 Gen1 port	USB 3.1 Gen1 port, up to 5 Gbit/s data transfer bandwidth
5	System status LED	Four system LEDs, IGN (Reserved), WDT (Watchdog Timer), HDD (Hard Disk Drive) and PWR (Power).
6	DisplayPort output	The DisplayPort is a high-resolution graphics output supporting up to 4096 x 2160 @ 30Hz.
7	VGA port output	VGA output supports resolution up to 1920x1200@60Hz



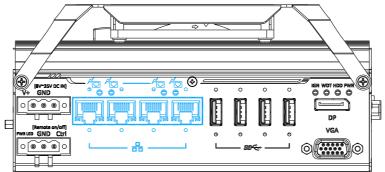
Warning

4 3-pin Remote On/ Off



The "Remote On/ Off" 3-pin connection allows for external switch extension. It is useful when the system is placed in a cabinet or a not easily accessed location. You may connect an external remotewith an external status LED indicator(15mA) by connecting toPWR LED and GND.

IEEE 802.3at Power over Ethernet Port

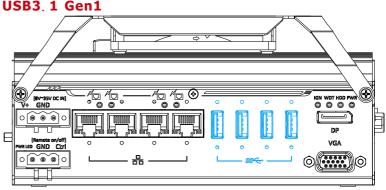


The Gigabit Power over Ethernet(PoE) port supply power and data on a standard CAT-5/CAT-6 Ethernet cable. Acting as a PSE (Power Sourcing Equipment), compliant with IEEE 802.3at,each port delivers up to 25W to a Powered Device(PD). PoE automatically detects and determine if the connected device is PoE PD or not before supplying power, making it compatible with standard Ethernet devices as well.

Active/Link LED (Right)

LED Color	Status	Description					
	Off	Ethernet port is disconnected					
Green	On	Ethernet port is connected and no data transmission					
	Flashing	Ethernet port is connected and data is transmitting/receivin					
peed LED (I	_eft)	526 					
LED Color	Status	Description					
	Off	10 Mbps					
Green or Orange	Green	100 Mbps					
orange	Orange	1000 Mbps					

6 USB3. 1 Gen1

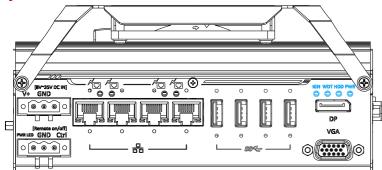


The system offers four USB 3.1 Gen1(SuperSpeed USB) ports on its front panel. They are backward compatible with USB 2.0, USB 1.1 and USB 1.0 devices. Legacy USB support is also provided so you can use USB keyboard/mouse in DOS environment while USB3.1 Gen1 driver is supported natively in Windows10.

The system accepts a wide range of DC power input from 8 to 35Vvia a 3-pin pluggable terminal block, which is fit for field usage where DC power is usually provided. The screw clamping mechanism on the terminal block offers connection reliability when wiring DC power.

Please make sure the voltage of DC power is correct before you connect it to the system. Supplying a voltage over 35V will damage the system.

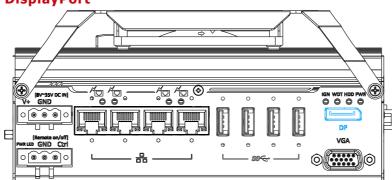
System Status LED



There are four LEDs on the front panel: IGN (reserved), WDT, HDD and PWR. The descriptions of these four LEDs are listed in the following table.

Indicator	Color	Description
IGN	Reserved	Reserved
WDT	Yellow	Watchdog timer indicator, flashing when watchdog timer has started
HDD	Red	Hard drive indicator, flashing when SATA HDD is active
PWR	Green	Power indicator, lid when system is on

8 DisplayPort

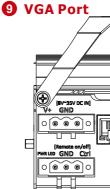


The system has a DisplayPort (DP) output which is a digital display interface that mainly connect video source and carry audio to a display device. When connecting a DP, it can deliver up to 4K UHD (4096 x 2160@ 30Hz) in resolution. The system is designed to support passive DP adapter/ cable. You can connect to other display devices using DPto-HDMI cable or DP-to-DVI cable.



The system supports dual independent display outputs by connecting display devices to VGA and DisplayPort connection. To support dual display outputs and achieve best DisplayPort output resolution in Windows, you need to install corresponding graphics drivers.

DP-to-DV

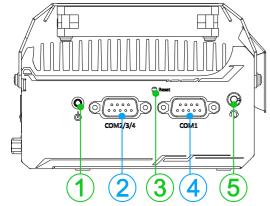


VGA connector is the most common video display connection. The VGA output supports up to 1920x1200@60Hz resolution. The system supports dual independent display outputs by connecting display devices to VGA and DisplayPort connection. To support dual display outputs and achieve best VGA output resolution in Windows, you need to install corresponding graphics drivers.

Note

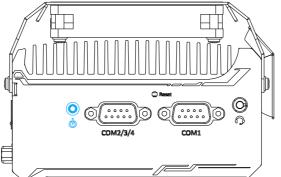
Please make sure your VGA cable includes SDA and SCL (DDC clock and data) signals for correct communication with monitor to get resolution/timing information. A cable without SDA/ SCL can cause blank screen on your VGA monitor due to incorrect resolution/timing output.

1 Nuvis-534RT COM Port Panel



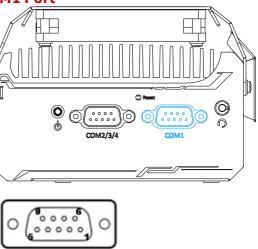
No.	Item	Description
1	Power button	Use this button to turn on or shutdown the system.
		Can be configured as:
2	COM port 2/ 3/ 4	COM2: single RS-422/ 485 port
		COM2/ COM3/ COM4: three 3-wire RS-232 ports
3	Reset button	Use this button to manually reset the system.
4	COM port 1	Software programmable RS-232/ 422/ 485 port.
5	3.5mm speaker-out/ microphone-in jack	3.5mm jack for speaker-out or microphone-input.

D Power Button



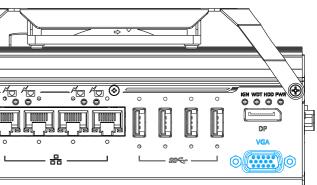
The power button is a non-latched switch for ATX mode on/off operation. Press to turn on the system, PWR LED should light up and to turn off, you can either issue a shutdown command in the OS, or just press the power button. In case of system halts, you can press and hold the power button for 5 seconds to force-shutdown the system. Please note that there is a 5 seconds interval between two on/off operations (i.e. once turning off the system, you will need to wait for 5 seconds to initiate another power-on operation).

COM1 Port





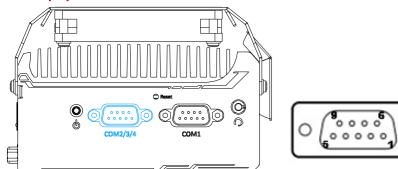
	_
Pin#	
1	
2	
3	
4	
5	
6	
7	
8	
9	



Implemented using industrial-grade ITE8786 Super IO chip (-40 to 85°C) and provide up to 921600 bps baud rate, COM1 is a software-configurable RS-232/422/485 portvia 9-pin D-Sub male connector. The operation mode, slew rate and termination of COM1can be set in BIOS setup utility. The following table describes the pin definition of COM ports.

COM1						
RS-232 Mode	RS-422 Mode	RS-485 Mode (Two-wire 485)				
DCD						
RX	422 TXD+	485 TXD+/RXD+				
TX	422 RXD+					
DTR	422 RXD-					
GND	GND	GND				
DSR						
RTS						
CTS	422 TXD-	485 TXD-/RXD-				
RI						

COM2/3/4 Port



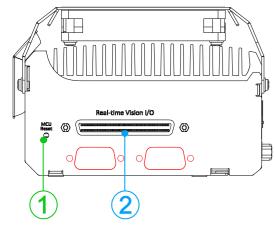
Implemented using industrial-grade ITE8786 Super IO chip (-40 to 85°C) and provide up to 921600 bps baud rate, the D-Sub male connector (COM2/3/4) can be configured in the BIOS as single RS-422/485 port (COM2) or three 3-wire RS-232 ports (COM2/COM3/COM4).

	3-port RS-232 COM2/ 3/ 4							
Pin#	COM2	COM2 COM3						
1								
2	RX							
3	ТХ							
4		ТХ						
5	GND	GND	GND					
6		RX						
7			ТХ					
8			RX					
9								

	Single port RS-422/ 485						
Pin#	RS-422	RS-485					
1							
~	TxD+	TxD+/					
2		RxD+					
3	RxD+						
4	RxD-						
5	GND	GND					
6							
7							
8	TxD-	TxD-/ RxD-					
9							

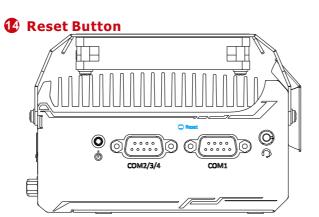
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1 Real-time Vision IO Panel



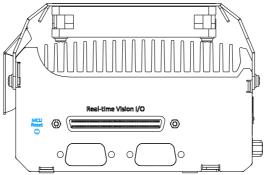
The real-time vision I/O panel has an MCU reset button, a real-time vision I/O connector and reserved DB9 openings.

No.	ltem	Description					
1	MCU Reset Button	Use a pin-like object to press the MCU button to reset the MCU without resetting the whole system.					
2	Real-time Vision I/O	Vision specific trigger/ strobe control input/ output for vision/ imagery purposes.					
0	$\bigcirc \circ$	Reserved DB9 port opening					

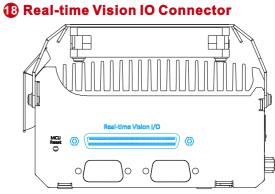


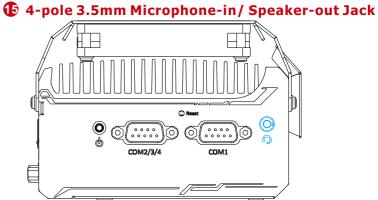
The reset button is used to manually reset the system in case of system halt or malfunction. To avoid unexpected reset, the button is purposely placed behind the panel. To reset, please use a pin-like object (eg. tip of a pen) to access the button.





You may use the MCU reset button to manually reset the MCU without resetting the whole system. To avoid unexpected resets, the button is purposely placed behind the panel. To reset, please use a pin-like object (eg. tip of a pen) to access the reset button.





There is a female 4-pole audio jack for headphone (speaker) output and microphone input. To utilize the audio function in Windows, you need to install corresponding drivers.

Real-time vision I/O is managed by Neousys' patented MCU-based architecture and DTIO/ NuMCU firmware for microsecond-scale realtime I/O control. It also supports various machine vision peripherals such as CC/CV lighting controller, quadrature encoder input, PWM output, isolated DI/ DO, 12V camera trigger output etc.

() Vision Specific I/O: TB-10 Pin Connector



Signal		ISO5V				ISOGND	PHA	PHB	ISOGND	DI4L	DI4H	DI5L	DI5H	DI6L	DI6H	DI7L	DI7H
Pin	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
Pin	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Signal		DOGND				ISOGND	IDX			DIOL	DIOH	DI1L	DI1H	DI2L	DI2H	DI3L	DI3H
			8						20 C								
Signal	LED0+	LED0-	LED1+	LED1-	DOGND	DOO	DOGND	D01	DOGND	DO2	DOGND	DO3	VDD	DOGND	TRIGO	DOGND	TRIG1
Signal Pin	LED0+	LED0- 2	LED1+ 3	LED1- 4	DOGND 5	DO0 6	DOGND 7	DO1 8	DOGND 9	DO2	DOGND 11	DO3	VDD 13	DOGND 14	TRIGO 15	DOGND 16	TRIG1 17
	LED0+ 1 35	2 36	LED1+ 3 37	LED1- 4 38	DOGND 5 39	DO0 6 40	DOGND 7 41										

Signal	Function Description					
	LED driving output					
	LED0~LED3 are used to directly drive LED lights in the vision					
	system. Each channel can be configured to output 24V constant					
	voltage or user-programmable, up to 2A constant current to drive					
	either CV or CC LED light using DTIO or NuMCU library. The LED					
LED0+/ LED0-	driving output also supports digital dimming control by adjusting					
LED1+/ LED1-	duty cycle from 0 to 100%. When connecting LED lights, wire					
LED2+/ LED2-	LED+ to positive polarity (anode) and LED- to negative polarity					
LED3+/ LED3-	(cathode).					
	Note					
	Total power budget for four LED output channels is limited to 80W. Users shall					
	cautiously program the LED outputs and make sure all connected LED lights					
	consume less than 80W at the same time.					
DO0/ DOGND	Isolated digital output (high-current)					
DO1/ DOGND	DO0~DO3 are open-drained DO channels designed to control					
DO2/ DOGND	external actuator devices, such as relay, valve and motor. Each					
DO3/ DOGND	channel can carry up to 24VDC, 500mA rated current.					
	Isolated digital output (high-speed) or PWM output					
DO4 (PWM0)/ DOGND	DO4~DO7 are open-drained DO channels implemented using					
DO5 (PWM1)/ DOGND	Darlington transistors. It offers <1us propagation delay and is ideal					
DO6 (PWM2)/ DOGND	for high-speed signals such as triggers. Users can also configures					
DO7 (PWM3)/ DOGND	these channels as PWM function in DTIO or NuMCU to generate					
	PWM signals (external voltage source required). Each channel					
	can carry up to 24VDC, 50mA rated current.					
	12V camera trigger output					
TRIG0/ DOGND	TRIG0~TRIG3 are camera trigger output channels that offer					
TRIG1/DOGND	isolated 12V output (push-pull DO). Users can simply wire TRIGx					
TRIG2/ DOGND	and DOGND to camera's trigger-in/GND directly without the need					
TRIG3/ DOGND	of external voltage source. Each channel can offer maximal 50mA					
	current output with <1us propagation delay.					

DIOH/DIOL	DI5H/DI5L	Isolated digital input				
DI1H/DI1L	DI6H/DI6L	DI0~DI7 are opto-isolated channels for digital input. Each chan				
DI2H/DI2L	DI7H/DI7L	has separated ground pin so users shall wire DI signal to DIxH				
DI3H/DI3L		DIxL. The isolated DI is logic low when input voltage is 0~1.5V				
DI4H/DI4L		logic high when input voltage is 5~24V.				
		Quadratur	e encoder input			
		PHA, PHB and IDX are pins for quadrature encoder input. It				
		support either single-ended encoder or differential encoder by				
		jumper selection. Please refer to the following table for correct				
		wire your o	uadrature encoder.			
		Single-ended encoder		Differential encoder		
		Pin#	Wire to encoder's	Pin#	Wire to encoder	
PHA		57	GND	57	A-	
PHB		58	A	58	A+	
IDX		59	В	59	B+	
ISOGND		60	GND	60	B-	
		23	GND	23	Z-	
		24	Z	24	Z+	