

**3.5" SBC Supports 11th Gen 10nm Intel® Atom™ or Celeron®
On-board SoC with Dual HDMI, DP, Triple GbE LAN Port, M.2, COM,
SATA 6Gb/s, USB 3.2 Gen 2, Audio and RoHS**

WAFER-JL-N5105

Quick Installation Guide

Version 1.0

February 22, 2022

Package List

WAFER-JL-N5105 package includes the following items:

- 1 x WAFER-JL-N5105 single board computer
- 1 x SATA with power cable kit
- 1 x QIG



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Specifications

- CPU:
11th Gen 10nm Intel® Celeron® N5105
- Memory:
One 260-pin 2933 MHz dual-channel DDR4 SO-DIMM slot, supporting up to 16 GB
- BIOS:
AMI UEFI BIOS
- Graphics Engine:
11th Gen Intel® UHD Graphics
- Display Output:
Dual independent displays
1 x HDMI 1.4
1 x DP 1.4
- Ethernet:
3 x PCIe 2.5 GbE with Intel® I225-V (colay with I225-LM)
- External I/O Interface:
2 x USB 3.2 Gen 2x1 (10Gb/s)
- Internal I/O Interface:
1 x SATA 6Gb/s with 5V SATA power connector (No RAID)
2 x USB 2.0 (2x4 pin, p=2.0)
2 x RS-232 (1x9 pin, p=1.25) from EC
- Embedded Controller:
ITE IT5571
- Audio:
1 x HD Audio (2x5 pin, support 7.1 channel HD Audio by AC-KIT-888HD-R10)
- Front Panel:
1 x Power LED & HDD LED (1x6 pin, p=2.0)
1 x Power button (1x2 pin, p=2.0)
1 x Reset button (1x2 pin, p=2.0)

- LAN LED:
3 x LAN LED (1x2 pin, p=2.0)
- Expansions:
1 x M.2 A-Key 2230 for Wi-Fi & Bluetooth
1 x M.2 B-Key 3042/2280 for 5G with SIM slot (PCIe)
- Digital I/O:
1 x 12-bit digital I/O (2x7 pin, p=2.0)
- SMBus:
1 x SMBus (1x4 pin, p=1.25)
- TPM: integrated in CPU
- Fan Connector:
1 x System fan connector (1x4 pin, p=2.54)
- Power Supply:
+12V DC input power (AT/ATX mode)
- Power Consumption:
2V@2.45A (Intel® Pentium® Silver N6000 3.30 GHz TDP 6W
with one 16 GB 2933 MHz DDR4 memory)
- Watchdog Timer:
Software programmable support 1–255 sec. system reset
- Operation Temperature: -20°C – 60°C
- Storage Temperature: -30°C – 70°C
- Operation Humidity: 5% – 95%, non-condensing
- Dimensions: 115 mm x 165 mm
- Weight: GW:600 g / NW:250 g

Ordering Information

- **WAFER-JL-N5105-R10:**
3.5" SBC Supports 11th Gen 10nm Intel® Atom™ or Celeron® On-board SoC with Dual HDMI, DP, Triple GbE LAN Port, M.2, COM, SATA 6Gb/s, USB 3.2 Gen 2, Audio and RoHS
- **CB-USB02A-RS:**
Dual-port USB 2.0 cable, 210mm, p=2.0
- **32005-003500-200-RS:**
RS-232/422/485 cable, 250mm, p=1.25
- **19XM0B619-0002001-000-RS:**
Cooler module, 157 mm x 100 mm x 20 mm, with pad and fan
- **19XM0B619-0002002-000-RS:**
Cooler module, 157 mm x 100 mm x 20 mm, with pad

All the drivers and utility for the WAFER-JL-N5105 are available on IEI Resource Download Center. Type WAFER-JL-N5105 and press Enter to find all the relevant software, utilities, and documentation. To install software from the downloaded ISO file, mount the file as a virtual drive to view its content.

IEI Resource Download Center

<https://download.ieiworld.com>



Jumpers Setting and Connectors

LABEL	FUNCTION
J_CMOS1	Clear CMOS button
J_ATX_AT1	AT/ATX power mode setting
ME_FLASH1	ME override setting jumper
AUDIO1	Internal audio connector
PWR1	ATX 12V power connector
DIO1	Digital I/O connector
CPU_FAN1	Fan connector
F_PANEL1	Power LED & HDD LED connector
JLAN_LED1	LAN1 link LED connector
JLAN_LED2	LAN2 link LED connector
JLAN_LED3	LAN3 link LED connector
PWR_BTN1	Power button connector
RST_BTN1	Reset button connector
COM1, COM2	RS-232 serial port connectors
SATA1	SATA 6Gb/s connectors
SATA_PWR1	SATA power connector
I2C1	SMBus connector
JSPI1	Flash SPI ROM connector
USB2_CN1	Internal USB 2.0 connector
M2_1	M.2 B-key slot
M2_A1	M.2 A-key slot
SIM1	SIM slot
LAN1, LAN2, LAN3	External 2.5GbE RJ-45 connectors
USB1	External USB 3.2 Gen 2x1 Type-A connector

DP1	External DisplayPort connector
HDMI1	External HDMI connector

J_CMOS1: Clear CMOS Button	
PIN NO.	DESCRIPTION
NC (default)	Keep CMOS Setup (Normal Operation)
Press button	Clear CMOS Setup

J_ATX_AT1: AT/ATX Power Mode Setting	
PIN NO.	DESCRIPTION
Short A - B	ATX Power Mode (default)
Short B - C	AT Power Mode

ME_FLASH1: ME Override Setting Jumper	
PIN NO.	DESCRIPTION
Open	Disable (default)
Short	Enable

AUDIO1 : Internal Audio Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HDA_SYNC_R	2	HDA_BIT_CLK_R
3	HDA_SDOOUT_R	4	HDA_PCBEEP_R
5	HDA_SDIN_R	6	HDA_RST#_R
7	P5V	8	GND
9	P12V	10	GND

PWR1: ATX 12V Power Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	3	+12V
2	GND	4	+12V

DIO1 : Digital Input/Output Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	DOUT5	4	DOUT4
5	DOUT3	6	DOUT2
7	DOUT1	8	DOUT0
9	DIN5	10	DIN4
11	DIN3	12	DIN2
13	DIN1	14	DIN0

CPU_FAN1: Fan Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+12V
3	FANIO	4	PWM

F_PANEL1: Power LED & HDD LED Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	PWR_LED+	4	PWR_LED-
5	HDD_LED+	6	HDD_LED-

JLAN_LED1: LAN1 Link LED Connector			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	+3.3V	2	LAN1_LED_LNK#_ACT

JLAN_LED2: LAN2 Link LED Connector			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	+3.3V	2	LAN2_LED_LNK#_ACT

JLAN_LED3: LAN2 Link LED Connector			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	+3.3V	2	LAN3_LED_LNK#_ACT

RST_BTN1: Reset Button Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Reset+	2	Reset-

PWR_BTN1: Power Button Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PWR_BTN+	2	PWR_BTN-

COM1, COM2: RS-232 Serial Port Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	RXD	4	RST
5	TXD	6	CTS
7	DTR	8	RI
9	GND		

SATA1: SATA 6Gb/s Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	5	SATA_RX-
2	SATA_TX+	6	SATA_RX+
3	SATA_TX-	7	GND
4	GND	8	N/C

SATA_PWR1: SATA Power Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5V	2	GND

I2C1: SMBus Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	3	SMB_CLK
2	SMB_DATA	4	+5V

JSPI1: Flash SPI ROM Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3V	2	SPI_CS#
3	SPI_SO	4	SPI_CLK
5	SPI_SI	6	GND

USB2_CN1: Internal USB 2.0 Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	USB_DATA-	4	USB_DATA+
5	USB_DATA+	6	USB_DATA-
7	GND	8	VCC

M2_1: M.2 B-key Slot			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	CONFIG_3	2	+3.3V
3	GND	4	+3.3V
5	GND	6	POWER_OFF
7	USB_D+	8	W_DISABLE
9	USB_D-	10	DAS/DSS#
11	GND	12	Module Key
13	Module Key	14	Module Key
15	Module Key	16	Module Key
17	Module Key	18	Module Key
19	Module Key	20	N/C
21	CONFIG_0	22	N/C
23	N/C	24	N/C
25	N/C	26	GNSS_DISABLE
27	GND	28	N/C
29	PCIE_RXN1	30	UIM_RST
31	PCIE_RXP1	32	UIM_CLK
33	GND	34	UIM_DATA
35	PCIE_TXN1	36	UIM_VCC
37	PCIE_TXP1	38	DEVSLP

39	GND	40	N/C
41	PCIE_RXN0	42	N/C
43	PCIE_RXP0	44	N/C
45	GND	46	N/C
47	PCIE_TXN0	48	N/C
49	PCIE_TXP0	50	PERST#
51	GND	52	CLKREQ#
53	REFCLKN	54	PEWAKE
55	REFCLKP	56	N/C
57	GND	58	N/C
59	N/C	60	N/C
61	N/C	62	N/C
63	N/C	64	N/C
65	N/C	66	N/C
67	WWAN_RST	68	N/C
69	PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	CONFIG_2		

M2_A1: M.2 A-key Slot			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+V3.3A
3	USB+	4	+V3.3A
5	USB-	6	NC
7	GND	8	Module Key
9	Module Key	10	Module Key
11	Module Key	12	Module Key
13	Module Key	14	Module Key
15	Module Key	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	GND	24	GND

25	NC	26	NC
27	NC	28	NC
29	GND	30	GND
31	NC	32	NC
33	GND	34	NC
35	PCIE_TX0+	36	GND
37	PCIE_TX0-	38	NC
39	GND	40	NC
41	PCIE_RX0+	42	NC
43	PCIE_RX0-	44	NC
45	GND	46	NC
47	CLK_PCIE0+	48	NC
49	CLK_PCIE0-	50	NC
51	GND	52	BUF_PLT_RST#
53	PCIE_CLKREQ#	54	Pull Up +V3.3A
55	PCIE_WAKE#	56	Pull Up +V3.3A
57	GND	58	NC
59	PCIE_TX1+	60	NC
61	PCIE_TX1-	62	NC
63	GND	64	NC
65	PCIE_RX1+	66	NC
67	PCIE_RX1-	68	NC
69	GND	70	NC
71	CLK_PCIE1+	72	+V3.3A
73	CLK_PCIE1-	74	+V3.3A
75	GND		

SIM1: SIM Card Slot			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
C1	SIM_VCC	C5	GND
C2	SIM_RST	C6	SIM_VPP
C3	SIM_CLOCK	C7	SIM_DATA

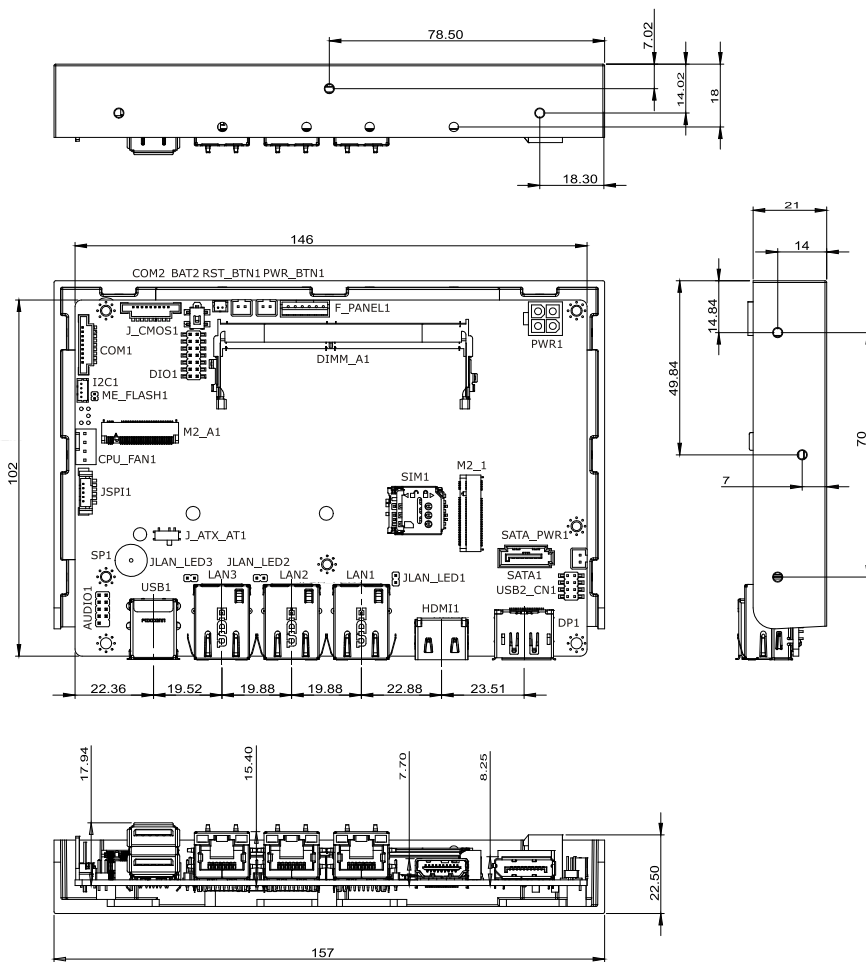
LAN1, LAN2, LAN3: External 2.5GbE RJ-45 Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MDI0P	5	MDI2P
2	MDI0N	6	MDI2N
3	MDI1P	7	MDI3P
4	MDI1N	8	MDI3N

DP1: External DP Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DATA_0P	11	GND
2	GND	12	DATA_3N
3	DATA_0N	13	CONFIG1
4	DATA_1P	14	CONFIG2
5	GND	15	AUX_P
6	DATA_1N	16	GND
7	DATA_2P	17	AUX_N
8	GND	18	DP HPD
9	DATA_2N	19	GND
10	DATA_3P	20	DP PWR

HDMI1: External HDMI Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HDMI2_DATA2	2	GND
3	HDMI2_DATA2#	4	HDMI2_DATA1
5	GND	6	HDMI2_DATA1#
7	HDMI2_DATA0	8	GND
9	HDMI2_DATA0#	10	HDMI2_CLK
11	GND	12	HDMI2_CLK#
13	N/C	14	N/C
15	HDMI2_SCL	16	HDMI2_SDA
17	GND	18	+5V
19	HDMI2_HPD		

USB1: External USB 3.2 Gen 2 Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	10	VCC
2	USB_DATA0-	11	USB_DATA1-
3	USB_DATA0+	12	USB_DATA1+
4	GND	13	GND
5	USB3_RX0-	14	USB3_RX1-
6	USB3_RX0+	15	USB3_RX1+
7	GND	16	GND
8	USB3_TX0-	17	USB3_TX1-
9	USB3_TX0+	18	USB3_TX1+

Board Layout: Jumper and Connector Locations



(Unit: mm)