

# WB-N2T1-G/B TRAVIS Series Artificial Intelligence Vehicle Computer



WB-N2T1-G



WB-N2T1-B

Embedded System with NVIDIA® Jetson™ TX2



## Features

- Fanless solution
- Vehicle grade design
- Power Management
- Wide voltage input

Datasheet v 2.03

# Specification

	WB-N2T1-G	WB-N2T1-B
<b>System</b>		
Module	NVIDIA Jetson TX2	NVIDIA Jetson TX2
CPU on Module	ARM Cortex-A57 (quad-core) @ 2GHz + NVIDIA Denver2 (dual-core) @ 2GHz	ARM Cortex-A57 (quad-core) @ 2GHz + NVIDIA Denver2 (dual-core) @ 2GHz
GPU on Module	256-CUDA core Pascal @ 1300MHz	256-CUDA core Pascal @ 1300MHz
DRAM on Module	8GB 128-bit LPDDR4	8GB 128-bit LPDDR4
Storage on Module	32GB eMMC	32GB eMMC
<b>Storage</b>		
Expansion Storage (Optional)	Support by M.2 SSD	Support by M.2 SSD
<b>I/O</b>		
SD Socket	1 x SD Socket	1 x SD Socket
GMSL Camera Input	6 x GMSL camera with audio in 1920x1080@30fps 1280x720@30fps 640x480@30fps	N/A
Analog Camera Input/HDMI in	N/A	4 x TVI : 1080P(1920x1080)@30fps 720P(1280x720)@60fps 1 x HDMI Input : 1920x1080@60fps 1280x720@60fps 720x576@60fps 640x480@60fps
Display	1 x HDMI-out 1 x FPDLINK Display [1]-out (Optional)	1 x HDMI-out 1 x FPDLINK Display [1]-out (Optional)
Audio	1 x Line-in & 1 x MIC-in (3.5mm phone jack)	1 x Line-in & 1 x MIC-in (3.5mm phone jack)
USB	2 x USB3.0 2 x USB2.0 1 x Micro USB 2.0 (Reserve for SW update only)	2 x USB3.0 2 x USB2.0 1 x Micro USB 2.0 (Reserve for SW update only)
Ethernet	2 x GIGA LAN	2 x GIGA LAN
COM	2 x RS232 2 x RS422/RS485	2 x RS232 2 x RS422/RS485
DIO	DI x 4, DO x 4 With isolation circuits	DI x 4, DO x 4 With isolation circuits
<b>Connection</b>		
WWAN (Optional)	<b>For North America:</b> -LTE category 4, Max 150Mbps (DL) / 50Mbps (UL) -LTE FDD: B2/B4/B12 -WCDMA: B2/B4/B5 <b>For Europe:</b> -LTE category 4, Max 150Mbps (DL) / 50Mbps (UL) -LTE FDD: B1/B3/B5/B7/B8/B20 -WCDMA: B1/B5/B8 -GSM: B3/B8	<b>For North America:</b> -LTE category 4, Max 150Mbps (DL) / 50Mbps (UL) -LTE FDD: B2/B4/B12 -WCDMA: B2/B4/B5 <b>For Europe:</b> -LTE category 4, Max 150Mbps (DL) / 50Mbps (UL) -LTE FDD: B1/B3/B5/B7/B8/B20 -WCDMA: B1/B5/B8 -GSM: B3/B8
WLAN & BT (Default)	- 2x2 MIMO 802.11ac compliant (backwards compatible with legacy 802.11a/b/g/n) - Bluetooth 4.1 ready	- 2x2 MIMO 802.11ac compliant (backwards compatible with legacy 802.11a/b/g/n) - Bluetooth 4.1 ready
WLAN & BT (Optional)	- 2x2 MIMO 802.11ac compliant (backwards compatible with legacy 802.11a/b/g/n) - Bluetooth 4.2 - Adjustable country code / power table for optimal performance	- 2x2 MIMO 802.11ac compliant (backwards compatible with legacy 802.11a/b/g/n) - Bluetooth 4.2 - Adjustable country code / power table for optimal performance
SIM Socket	1 x SIM Socket (used by WWAN module)	1 x SIM Socket (used by WWAN module)
GPS (Optional)	- GNSS supported: BeiDou, Galileo, GLONASS, GPS / QZSS - Untethered Dead Reckoning (UDR) technology included	- GNSS supported: BeiDou, Galileo, GLONASS, GPS / QZSS - Untethered Dead Reckoning (UDR) technology included
CAN Bus	2 x CAN 2.0	2 x CAN 2.0

Mobile computing

Artificial Intelligence

Industrial IoT

Transportation

Digital signage

**Power**

Fuse	1	1
Power Input	9V ~ 36V DC Power Input @25C	9V ~ 36V DC Power Input @25C
Input protection tolerance (OVP, OCP, UVP)	Within +/- 5%	Within +/- 5%
UPS	Support external battery	Support external battery

**Environment**

Operating Temperature	-20°C ~ 60°C (Fanless) -20°C ~ 70°C (with Fan Module)	-20°C ~ 60°C (Fanless) -20°C ~ 70°C (with Fan Module)
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**Mechanical**

Dimension	77(H) x 200(W)x 216mm(D) (Fanless)	77(H) x 200(W) x 216mm(D) (Fanless)
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<sup>1</sup> FPDLINK Display are currently available with 4.3", please contact sales for further information

	Verification	Standards
CE	RF	EN 301511 / EN 301908 / EN 300328 /EN 301893 /EN 303413
	EMC	EN 301489-1-17-24-19 EN 55032/24
	Safety	EN 62368
	MPE	-----
FCC	RF	Part 15C
	EMC	Part 15B
E-Mark	R10	E13

# Accessory

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## GMSL Camera



Lens		
Resolution	2Megapixel	
Aperture	F/2.0	
F.O.V.	1) 2.8mm: 120° ±5% (Horizontal) OR 2) 6mm: 54° ±5% (Horizontal)	
Image Format	IMX290 is 1/2.8"	
Image Sensor		
Chipset	1/2.8" Progressive CMOS For Automotive	
Minimum Illumination	Color	0.1Lux
	B/W	0.05Lux
Dynamic Range	Up to 72 dB	
ISP		
Chipset	ISP LSI For CMOS Image Sensor For Automotive	
White Balance	Auto/ Manual (1800K - 10500K)	
WDR	DOL+ATR	
S/N Ratio	50dB (AGC OFF)	
Serializes		
Transmission Distance	15M	
Transmission Audio	I2S / Up to 48kHz Sample Rate	
General		
Video Output	MIPI CSI-2 2 LANE YUV422 8 bit	
Connector	Rosenberger HSD[4+2]	
Audio Input Support	Built-in Mono Microphone x 1	
Audio Effective Range	3 meters (Max.)	
Power Input	DC 12V ±10% With HSD[4+2]	
Power Consumption	4.2W (Max.)	
Environment Temperature	Operation	-20~60 ° C
	Storage	-30~70 ° C
Dimensions	61mm(W) x 61mm(H) x 40mm(D)	
Cable		
Cable Length	10M / 15M	
Connector	Rosenberger HSD Mechanical Life Cycle: 20 times	

## Display



LCM & Touch	
LCD Type	4.3" TFT
Resolution	480 (RGB) x 272 dots
Display Mode	TN / Transmission
View Angle	Horizontal: 80°
(CR>10)	Vertical: 80°
Luminous Intensity	400 cd/m2 (min.)
Uniformity	80% (typ.)
Contrast Ratio (Center)	400 (min.)
Backlight Color	White
Touch Type	4-Wire Resistive
Touch Response Time	<= 10ms
General	
SerDes Solution	TI FPD-Link III
Transmission Distance	10 meters
Built-in Speaker	Mono, 2 Watt (max.)
Function keys	Power On&Off/Volume Up/Volume Down/ Brightness Up/Brightness Down/Key Backlight On&Off
I/O Connector	Rosenberger HSD 4+2
Power Input	DC 12V ±10% (supplied by system)
Operating Temperature	-20C to 60C
Dimensions (Draft ID)	122.5(W)*105.2(H)*29.2 mm(D)
Weight	TBD

\*\*This spec will be finalized and confirmed after validation.

## Camera/Display Cable

General	
GMSL Camera Cable	10m, 15m available
4.3" Display Cable	10m available
Rosenberger Cable	
Features	<ul style="list-style-type: none"> <li>- Rosenberger HSD connector used</li> <li>- Shielded and impedance controlled</li> <li>- Suitable for high speed data application (frequency: DC to 2.0GHz)</li> <li>- Additional pins for camera power delivery</li> </ul>

## I/O View



WB-N2T1-B



WB-N2T1-G



## Order Information

Part Number	Description
SWBN2T1G	WB-N2T1-G
SWBN2T1B	WB-N2T1-B
A055RFA0000040000P	WLAN & BT with antenna
A024MDWIFI4G01000S	LTE Cat 4 4G module with antenna
MWBN2T1GCAM28	GMSL CAMERA, W/MIC, V1.1, LENS: 2.8MM x 1
MWBN2T1GCAM60	GMSL CAMERA, W/MIC, V1.1, LENS: 6MM x 1
CWBN2T1GCAMCABLE10	CAMERA CABLE; 10M F/GMSL CAMERA x 1
CWBN2T1GCAMCABLE15	CAMERA CABLE; 15M F/GMSL x 1

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