



Datasheet

# InnoAGE™

## M.2 S80 3TI7

- The World's first hybrid SSD with an Azure Sphere inside
- End-to-end security from edge to cloud
- Hardware level allows easy and simple development
- Supports out-of-band network management and diverse platforms
- Supports wireless 2.4/5GHz dual-band 802.11 a/b/g/n WiFi
- Supports Ethernet

### Introduction

The InnoAGE™ SSD comes with a Microsoft Azure Sphere inside, and is further integrated with Innodisk's customized firmware, software, and hardware technology. This new solution enables multifunctional management: smart data analysis and updates, data security, and remote control through the cloud, while benefitting from the power of the Azure Sphere to guarantee secured communications between the SSD and the cloud.

The InnoAGE™ SSD delivers an easy-to-use interface with its customized cloud management platform. In technical terms, the Innodisk-developed firmware receives commands from the Azure Sphere via a second connection to Azure. Therefore, it is able to execute SSD debugging messages as well as monitor read/write behavior patterns to increase the storage device's lifespan. Most importantly, system operators can quickly revert to the default settings from the cloud-based dashboard in the case of a device or system crash.

In other words, the InnoAGE™ SSD is designed for both in-band and out-of-band network management, providing full recovery even when the operating system has crashed or is severely impaired to the extent that in-band management would be of little help.

## Specifications



Interface	SATA III
Flash Type	3D TLC
Capacity	64GB~256GB
Flash Endurance	3,000 P/E cycles
Max. Channels	4
Sequential R/W (MB/sec, max.)*	560 / 255 MB/s
4KB Random (QD32) R/W (IOPS)**	85,000/70,000
Max. Power Consumption	3W
Thermal Sensor	✓
ATA Security	✓
S.M.A.R.T.	✓
Dimension (WxLxH)	22.00 X 80.00 X 3.50 mm
Environment	Vibration: 20G @7~2000Hz Shock: 1500G @ 0.5ms Storage Temperature: -55°C to +95°C MTBF: 3 million hours
* Performance based on CrystalDiskMark 5.01 with file size 1000MB	

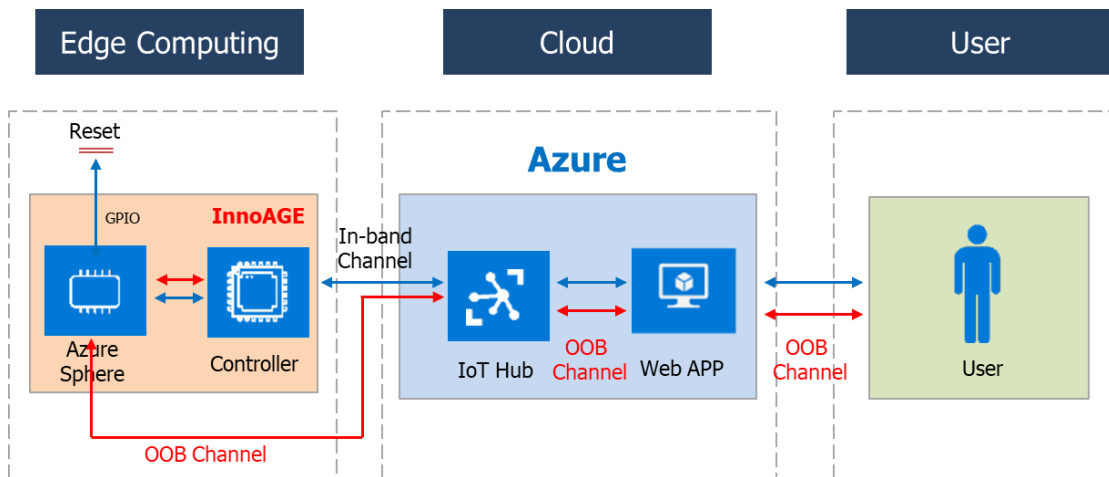
Quick Erase	Security Erase	Destroy	Recovery	iAnalyzer	S.M.A.R.T.
V	V	V	V	V	V
iData Guard	iPower Guard	ATA Security	TRIM	AES 256bits	
V	V	V	V	V	

## Ordering Information

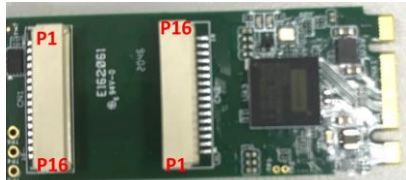
Capacity	Standard Temperature (0°C~70°C)	Industrial Temperature (-40°C~85°C)
64GB	DTM28-64GDK1*1C*2DFXXG	DTM28-64GDK1*1W*2DFXXG
128GB	DTM28-A28DK1*1C*2QFXXG	DTM28-A28DK1*1W*2QFXXG
256GB	DTM28-B56DK1*1C*2QFXXG	DTM28-B56DK1*1W*2QFXXG
Note	XXG: 10G-50G *1 E: Azure Cloud; J: Private Cloud *2 3: wafer connector type of PCBA with Ethernet daughter board; 4: wafer connector type of PCBA with Wi-Fi antenna	

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## Edge to Cloud System Architecture



## InnoAGE M.2 (S80) External Pin Definition



GND	GPIO	GPIO	GND	RC_RST	Recovery	GND	GPIO
Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
GPIO Group							

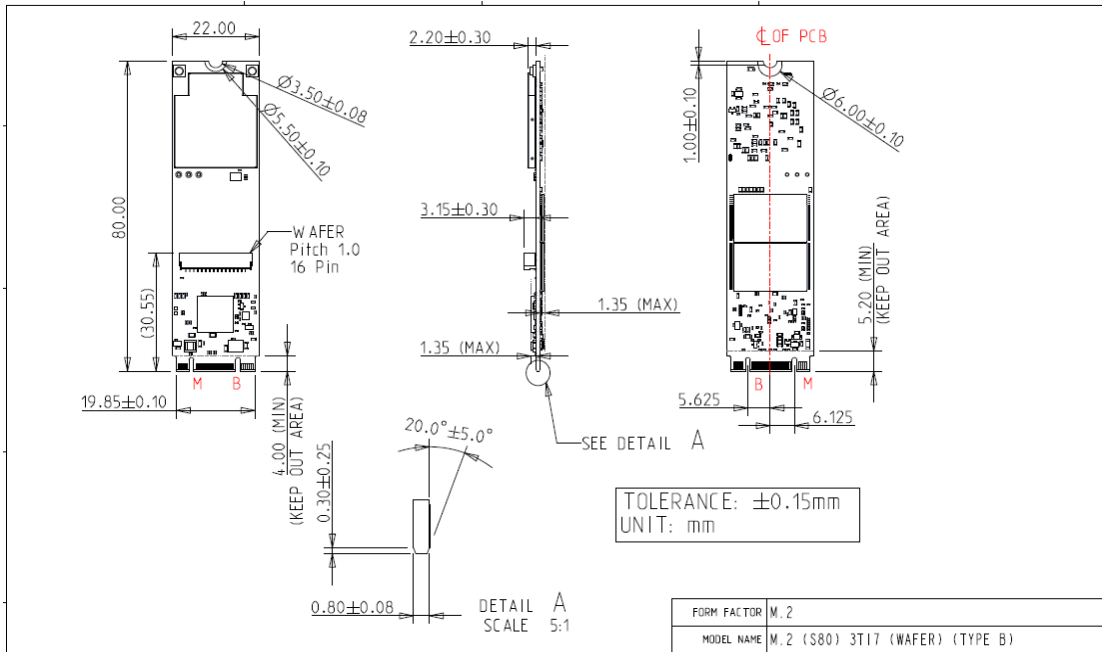
GND	3.3V	RST	CS	CLK	MOSI	MISO	INT
Pin 9	Pin 10	Pin 11	Pin 12	Pin 13	Pin 14	Pin 15	Pin 16
Ethernet Group							

Pin	Function	Direction	Notification
1	GND		System GND
2	GPIO	I/O	Bi-direction, function programmable
	RX	I	RX of UART, pair with pin 3
3	GPIO	I/O	Bi-direction, function programmable
	TX	O	TX of UART, pair with pin 2
4	GND		System GND

5	RC_RST*	O	Active low
	GPIO	I/O	Bi-direction, function programmable
6	Recovery*	I	Active low
	GPIO	I/O	Interrupt-capable and bi-direction, function programmable
7	GND		System GND
8	GPIO	I/O	Interrupt-capable and bi-direction, function programmable
	PWM	O	PWM control, frequency/duty TBD
9	GND		System GND
10	3V3		System power 3.3V
11	RST	I	SSD module reset pin, active low
12	CS*	O	CS of SPI interface, pair with pin 3/5/6
	CTS	I	CST of UART, pair with pin 3/5/6
	GPIO	I/O	Bi-direction, function programmable
13	CLK*	O	CLK of SPI interface, pair with pin 3/6/8
	TX	O	TX of UART, pair with pin 3/6/8
	GPIO	I/O	Bi-direction, function programmable
14	MOSI*	O	MOSI of SPI interface, pair with pin 3/5/8
	CLK	I/O	CLK of I2C interface, pair with pin 3
	RTS	O	RTS of UART, pair with pin 3/5/8
	GPIO	I/O	Bi-direction, function programmable
15	MISO*	I	MISO of SPI interface, pair with pin 5/6/8
	DATA	I/O	CLK of I2C interface, pair with pin5
	RX	I	RX of UART, pair with pin 5/6/8
	GPIO	I/O	Bi-direction, function programmable
16	INT*	I	Interrupt-capable GPIO
	PWM	O	PWM control, frequency/duty TBD
	GPIO	I/O	Bi-direction, function programmable

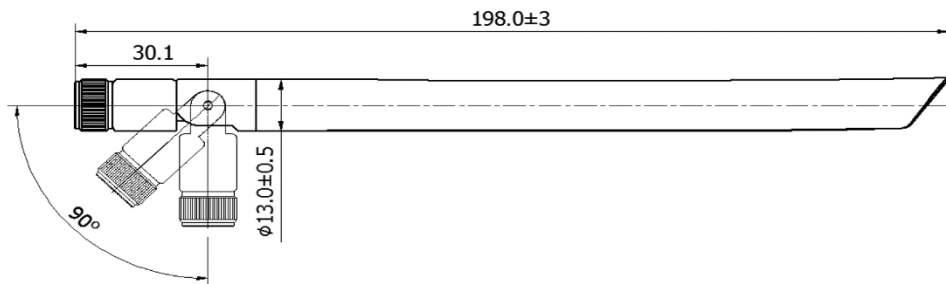


**\*DTM28-xxxDK1xxx3(4)xxxFxxG – TYPE A (Optional)**



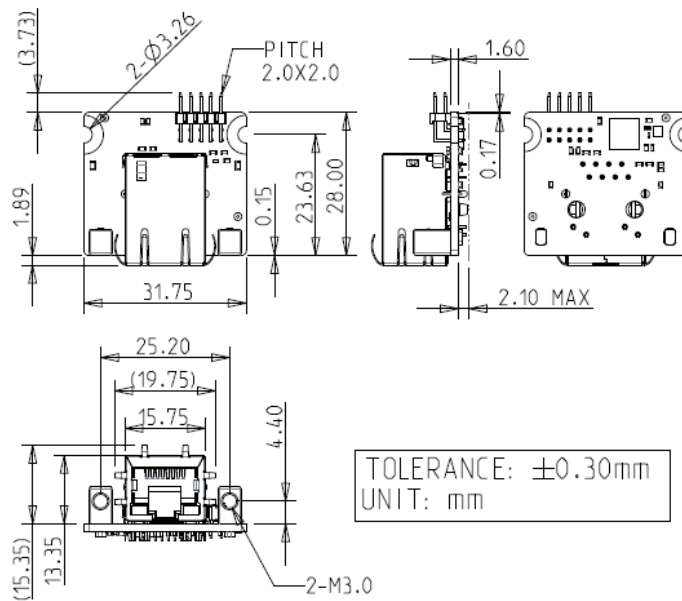
**2. WiFi Antenna**

Standard	IEEE 802.11 a/b/g/n and 802.11 ac
Frequency	2.4 to 2.49 GHz, 4.9 to 5.8GHz
Peak gain	3.5 dBi @2.44 GHz, 5.8 dBi @5.5 GHz
CSWR	<2.1
Feed impedance	50 ohms
Power handling	30 dBm
Interface	RPSMA
Antenna dimensions	Φ 13.0mmx198.0mm
Weight	27.8g
Temperature range	-30°C to 75°C
Cover material (color)	Plastic (black)
Humidity range	5% to 95%

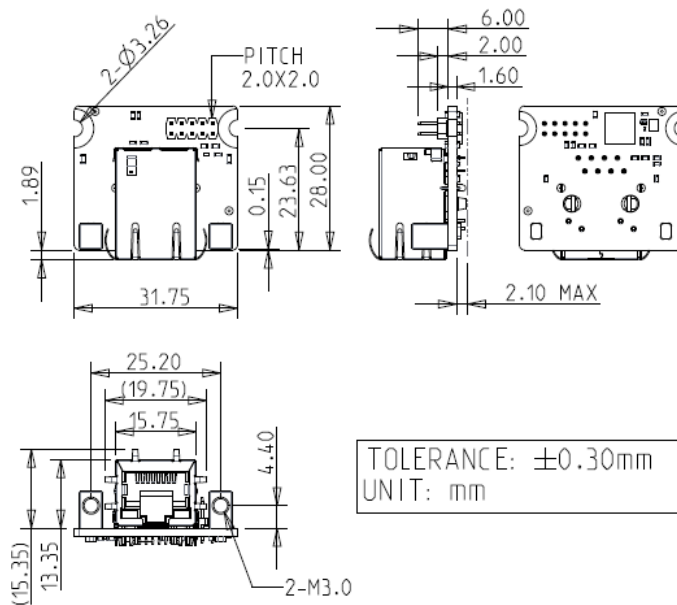


### 3. Ethernet Daughter Board

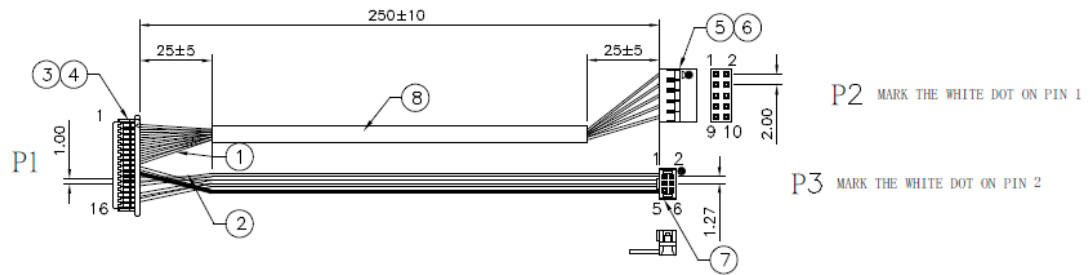
#### (1) Horizontal type



#### (2) Vertical type



## 4. Cable Connection to Ethernet Daughter Board (Wafer Connector TYPE)



P1	WIRE COLOR	P2	P3
1	BROWN	10	
2	ORANGE	8	
3	GREEN	5	
4	BLUE	6	
5	PURPLE	3	
6	WHITE	4	
7	RED	1	
8	BLACK	2	
9	GRAY		6
10	RED		5
11	GRAY		1
12	GRAY		2
14	GRAY		4
15	GRAY		3

ITEM	PARTS	DESCRIPTION	Q'TY
1	WIRE	UL10109 28AWG(-40°C~200°C).	8
2	WIRE	UL2678 30AWG 6C GRAY PH:0.635mm(-40°C~105°C).	1
3	HOUSING	TU1001HN0-1*16P(SHR) PITCH 1,0mm(-40°C~85°C).	1
4	TERMINAL	TU1001TPO-AE.	14
5	HOUSING	TU2003HN0-2*5 PITCH 2.0mm BLACK (-40°C~85°C).	1
6	TERMINAL	TU2003TPO-GO.	8
7	CONN	IDC 1.27*1.27 2*3P TWO-PIECE WITH BUMPS WITHOUT SR. (-40°C~105°C).	1
8	TUBE	HEAT SHRINK TUBE BLACK L=200mm.	1