

MIC-770

Compact Fanless System with 8th/9th Gen Intel® Core™ i CPU Socket (LGA 1151)



Features

- Intel® 8th/9th Gen Core™ i CPU socket-type (LGA1151) with Intel® Q370/H310 chipset
- Wide operating temperature (-10 ~ 50 °C)
- VGA and HDMI output
- 2 x GigaLAN, 2 x USB 3.1 and 6 x USB 3.0
- 2 x RS-232/422/485 and 4 x RS232 serial ports (Optional)
- 1 x 2.5" HDD/SSD, and 1 x mSATA
- 9 ~ 36 V_{DC} input power range
- IP40 dust proof for deployment in harsh environment
- Supports FlexIO and iDoor technology, flexible configure additional HDMI, DVI, Comport, DIO, Remote switch IO
- Supports Advantech i-Modules
- Supports Advantech SUSI-API and embedded software APIs
- Supports Intel® vPro™/AMT and TPM technologies
- Microsoft Azure PnP Certified

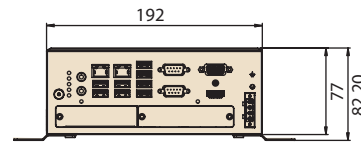
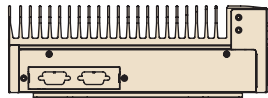
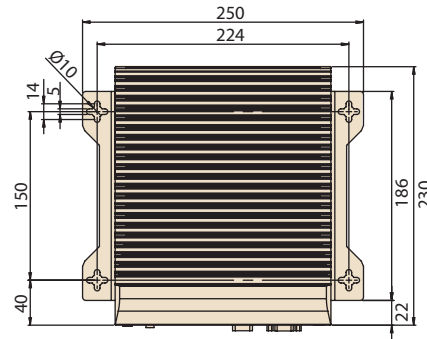
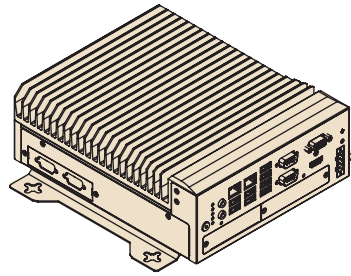


Specifications

8 th /9 th Generation Processor (TDP 35W)	CPU	I7-9700TE	I5-9500TE	I3-9100TE	I7-8700T	I5-8500T			
	Core/Thread number	8/8	6/6	4/4	6/12	6/6			
	Base Frequency	1.8GHz	2.2GHz	2.2GHz	2.4GHz	2.1GHz			
	Max Turbo Frequency	3.8GHz	3.6GHz	3.2GHz	4.0GHz	3.5GHz			
	L3 Cache	12MB	9MB	6MB	12MB	9MB			
Temperature	-10 ~ 50 °C (w/ industrial wide-temp SSD, 0.7m/s air flow)								
Chipset	Q370/H310								
BIOS	AMI 256Mb SPI Flash								
8 th /9 th Generation Processor (TDP 65W)	CPU	I7-9700E	I5-9500E	I3-9100E	I7-8700	I5-8500	I3-8100	G5400	G4900
	Core/Thread number	8/8	6/6	4/4	6/12	6/6	4/4	2/4	2/2
	Base Frequency	2.6GHz	3.0GHz	3.1GHz	3.2GHz	3.0GHz	3.6GHz	3.7GHz	2.9GHz
	Max Turbo Frequency	4.4GHz	4.2GHz	3.7GHz	4.6GHz	4.1GHz			
	L3 Cache	12MB	8MB	6MB	12MB	9MB	6MB	4MB	2MB
	Temperature	-10 ~ 40 °C (w/ industrial wide-temp SSD, 0.7m/s air flow)							
	Chipset	Q370/H310							
BIOS	AMI 256Mb SPI Flash								
Memory	Technology	Dual-channel DDR4 2400/2666 MHz (without ECC)							
	Socket	2 x 260-pin DDR4 SODIMM (up to 32GB per socket)							
	Maximum Capacity	64GB							
Display	Chipset	Q370: Intel® HD Graphics 630, supports DirectX 12 H310: Intel® HD Graphics 610, supports DirectX 12							
	VGA	1 x DB15, up to 1920 x 1200 maximum resolution							
	HDMI	1 x HDMI, up to 4096 x 2160@30Hz							
	Multiple Display	Q370: 3 x independent displays (with Flex I/O for 2nd HDMI, 1 x DVI or 1 x DP) H310: 2 x independent displays							
Ethernet	Controller	Q370 LAN1: Intel® I219LM, LAN2: Intel® i210IT H310 LAN1: Intel® I219V, LAN2: Intel® i210IT							
	Interface	2 x RJ45							
Storage	HDD	1 x 2.5" HDD/SSD (up to 2 x 2.5" SSD by optional kit; 2 x 3.5" HDD by i-Module)							
	mSATA	1							
	RAID	0/1/5/10 (Q370 SKU only)							
	SATA Conn.	Q370: 3 x SATA signal, 3 x SATA power H310: 2 x SATA signal, 2 x SATA power							
I/O	USB	Q370: 2 x USB3.1, 6 x USB3.0 and 1 x internal USB 2.0 H310: 4 x USB 3.0 and 4 x USB 2.0							
	Serial Port	2 x DB9, 2 x RS-232/422/485 support auto flow control; 4 x RS-232 (Optional)							
	Audio	2 (1 x line out and 1 x mic in)							
Expansion	Module	Supports Advantech i-Modules							
	Mini PCIe	Q370: 1 x mini PCIe (via USIM), 1 x mini PCIe/mSATA H310: 1 x mini PCIe (via USIM), 1 x mSATA							
LED and Switch	LED	2 (1 x Storage and 1 x Power), 4 for COM1 TX/RX and COM2 TX/RX							
	Button	1 x Power on/off switch							
	Remote Switch	Yes, 2pin terminal block (Optional)							
Power	Type	ATX/AT							
	Input Voltage	9 ~ 36 V _{DC}							
	Power consumption	Typical: 32.1W Maximum: 116W							
Watchdog Timer	Output	System reset							
	Interval	Programmable 1 ~ 255 sec/min							
Environment	Temperature	65W CPU w/ industrial wide-temp SSD -10 ~ 40 °C with 0.7 m/s air flow			35W CPU w/ industrial wide-temp SSD -10 ~ 50 °C with 0.7 m/s air flow		Non-operating -40 ~ 85 °C		
	Humidity	95% @ 40 °C (non-condensing)							
	Vibration	With SSD: 3 Grms @ 5 ~ 500 Hz, random, 1 hr/axis With 2.5" HDD: 1 Grms @ 5 ~ 500 Hz, random, 1 hr/axis							
	Shock	With SSD: 20G, IEC-68-2-27, half-sine wave, 11 ms duration							
Mechanical	Dimensions (W x H x D)	77 x 192 x 230 mm (3.07" x 7.55" x 9.05")							
	Weight	2.8 kg (6.17 lbs)							
	Installation	Desktop/wall mount							
Certifications	EMC	CE/FCC Class A, CCC, BSMI							
	Safety	CB/UL, CCC, BSMI							
OS Support	Windows 10, Windows 10 IoT, Linux OS								

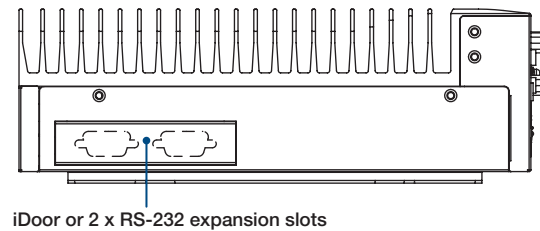
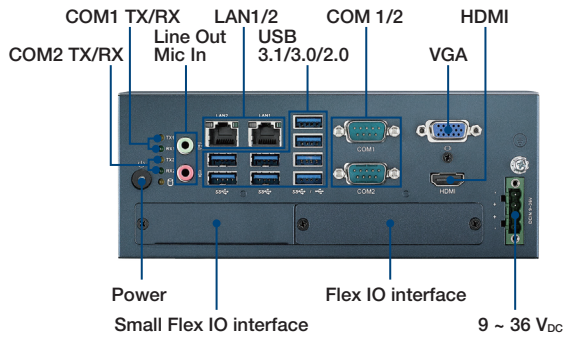
Dimensions

Unit: mm



Front View

Side View



Ordering Information

Part Number	VGA	HDMI	2.5" HDD/SSD	mSATA	USB 3.1	USB 3.0	USB 2.0	GbE	COM	PCIe	Power
MIC-770Q-00A2	1	1	1	1	2	6	0	2	2, up to 6 (Optional)	i-Module (optional)	9 ~ 36V _{DC}
MIC-770H-00A2	1	1	1	1	0	4	4	2	2, up to 6 (Optional)	i-Module (optional)*	9 ~ 36V _{DC}

*MIC-770H does not support MIC-75M40, MIC-75M20-01 and MIC-75G30

Packing List

Part Number	Description	Quantity
MIC-770	MIC-770 barebone system	1
2041077000	MIC-770 startup manual (ENG+TC+SC)	1
1652003234	4-pin Phoenix power connector	1
1960070543T005	2 x Mounting bracket	2
1700013095-01	SATA cable	1
1700024372-01	SATA power cable	1
2170000093-01	CPU thermal grease	1
1990019498N000	RAM thermal pad	2

Optional i-Modules*

Part Number	Description
MIC-75M10-00A2	1-slot expansion module (1 x PCIe)
MIC-75M11-00B1	2-slot expansion module (1 x PCIe and 1 x PCI slots)
MIC-75M13-00B1	4-slot expansion module (1 x PCIe and 3 x PCI slots)
MIC-75M20-00C1	2-slot expansion module (2 x PCIe slots)
MIC-75M20-01A2**	2-slot expansion module (2 x PCIe slots)
MIC-75M40-00A2**	4-slot expansion module (4 x PCIe slots)
MIC-75G20-10B1	GPU card expansion module (2 x PCIe and 2 x removable 2.5" storage bay)
MIC-75G30-00B1**	Dual GPU card expansion module (3 x PCIe and 2 x removable 2.5" storage bay)
MIC-75GF10-00A1	MXM GPU expansion module (1 x PCIe and 2 x removable 2.5" storage bay, 1 x HDMI, 3 x DP)
MIC-75S00-00A1	2 x removable 2.5" storage bay
MIC-75S20-00A2	2-slot expansion and storage module (2 x PCIe and 2 x removable 2.5" storage bay)
98R17520301	2 x 3.5" HDD kit

*Please refer to i-Module datasheet for more detail.

** Q370 SKU only

Embedded OS

Part Number	Description
20706WX9HS0005	img MIC-770H Win10 IOT Enterprise 2019 LTSC 64b high end
20706WX9VS0007	img MIC-770H Win10 IOT Enterprise 2019 LTSC 64b value
20706WX9ES0010	img MIC-770H Win10 IOT Enterprise 2019 LTSC 64b entry
20706WX9HS0004	img MIC-770Q Win10 IOT Enterprise 2019 LTSC 64b high end
20706WX9VS0006	img MIC-770Q Win10 IOT Enterprise 2019 LTSC 64b value
20706WX9ES0009	img MIC-770Q Win10 IOT Enterprise 2019 LTSC 64b entry

Optional Accessories

Part Number	Description
Adaptor	
96PSA-A230W24P4-3*	ADP A/D 100-240V 230W 24V C14 TERMINAL BLOCK 4P
96PSA-A150W19P4-3	ADP A/D 100-240V 150W 19V C14 TERMINAL BLOCK 4P
1702002600	Power cord (USA) UL/CSA, 3-pin, 10A, 125V, 1.83 M, 180 D
1700000237-31	Power Cord PSE 3P 12A 125V 183cm
1702002605	Power Cord (EU), 3-pin, 10A, 250V 1.83M, 90D
Din Rail PSU	
96PSD-A240W24-MN	A/D 100-240V 240W 24V NDR DIN RAIL
1700031170-01	DC-DC power cord, A cable TEM*4/TEM*4 UL2464 18AWG 150cm
1700029720-01	AC-DC power cord (US), M cable AC CONN 3P 183cm
1700030520-01	AC-DC power cord (CN), M cable conn 3P CCC 10A 250V 150cm
1700034561-01	AC-DC power cord (EU), M cable Type E 3P/TEMx3 80CM

* Please use 230W adaptor when i-Module is added.

Note:

1. MIC-770 supports Advantech iDoor modules (both MOS and PCM series), excluding the PoE model.
2. The **PCM** series module requires a bracket (**P/N: 1960065854N021**) that must be ordered separately.

Optional Flex I/O* & Kits

Part Number	Description
Flex I/O	
AIIS-DIO32-00A1E**	AIIS GPIO module (32 bit)
PCA-TPM-00B1E	TPM 2.0 module
98R17500001	MIC DVI FIO
98R17500101	MIC HDMI/Remote power on/off FIO
98R17500301	MIC HDMI kit FIO
98R17500401	MIC Remote power on/off FIO
98R17500601	MIC COMport kit FIO (4x COM RS-232 via 2x dual DB9 cable)
98R17500701	MIC Remote power on/off kit for SFIO
98R17500801	MIC Reset/Remote power on/off/5VDC kit FIO
98R17500901	MIC GPIO kit FIO
Advanced Flex I/O***	
98R10770301	MIC NVMe + 4 LAN Advanced FIO
98R10770401	MIC NVMe Advanced FIO
98R10770501****	MIC 4 PoE Advanced FIO
Storage Kit	
98R1752010E	2nd 2.5" HDD/SSD kit (used in 2-slot i-Module)
98R1752020E	2 x 2.5" SSD kit (Thickness: 7mm, used insides of MIC-770 V2)
Mounting Kit	
98R17500210	MIC Din Rail Mounting kit
98R17500501	MIC Wall Mounting kit
Fan Kit	
98R17501303	MIC Fan Kit

* Please refer to Flex I/O datasheet for more detail.

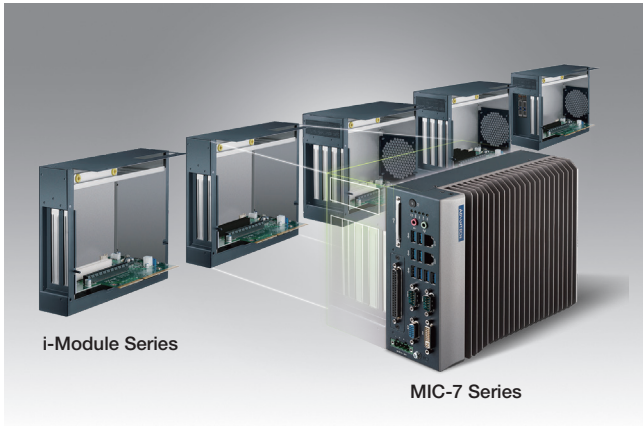
** Can only be placed in the small FIO location and can't be installed with other flex IO.

*** Q370 SKU only

**** Can't be installed with other flex IO.

i-Module Series

Expansion Module for MIC-7 Series



Features

- Flexible expansion via PCIe/PCI slot
- MIC-7 series compatible
- Optional smart fan for thermal optimization
- Provide additional 12Vdc power source for add-on card
- Maximum 85W for add-on card power consumption
- Support 350W power consumption and MXM GPU card by GPU i-Module
- Expansion for 2.5" and 3.5" HDD/SSD bay
- 2 x 2.5" Swappable HDD/SSD supported

Introduction

MIC i-Module Series provide flexible expansion function for MIC-7 Series system. MIC i-Module Series support PCIe/PCI I/F add-on card, such as frame grabber, GPU and motion control cards, etc.. Except for the power from PCIe/PCI slot, i-Module reserves additional 12VDC power via the on-board connector for cards that need more power. To better control over the heat generated from add-on cards, optional system fans are supported with intelligent Smart Fan feature for better thermal management. With additional HDD/SSD bays in i-Module, customer can have more rooms for massive data storage. Removable storage bays are also supported.

Compatible Table

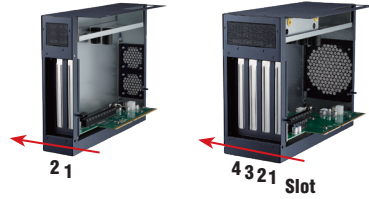
i-Module		1-slot		2-slot		3-slot	4-slot	
		MIC-75M10	MIC-75M20	MIC-75M20-01	MIC-75M11	MIC-75M40-01	MIC-75M40	MIC-75M13
MIC-7 System								
MIC-7500		✓	✓	✓	✓	–	✓	✓
MIC-7700	Q SKU	✓	✓	✓	✓	–	✓	✓
	H SKU	✓	✓	–	✓	–	–	✓
MIC-770 V1	Q SKU	✓	✓	✓	✓	–	✓	✓
	H SKU	✓	✓	–	✓	–	–	✓
MIC-770 V2	W SKU	✓	✓	✓	✓	–	✓	✓
	H SKU	✓	✓	–	✓	–	–	✓
MIC-770 V3	W SKU	✓	✓	✓	✓	✓	–	✓
	H SKU	✓	✓	–	✓	–	–	✓
MIC-7900		✓	✓	✓	✓	–	✓	✓

i-Module		Featured					98R17520301*
		MIC-75S20	MIC-75G20	MIC-75G30	MIC-75GF10	MIC-75S00	
MIC-7 System							
MIC-7500		✓	✓	✓	✓	–	–
MIC-7700	Q SKU	✓	✓	✓	✓	✓	✓
	H SKU	✓	✓	–	✓	–	–
MIC-770 V1	Q SKU	✓	✓	✓	✓	✓	✓
	H SKU	✓	✓	–	✓	✓	✓
MIC-770 V2	W SKU	✓	✓	✓	✓	✓	✓
	H SKU	✓	✓	–	✓	✓	✓
MIC-770 V3	W SKU	✓	✓	✓	✓	✓	✓
	H SKU	✓	✓	–	✓	✓	✓
MIC-7900		✓	✓	✓	✓	✓	✓

* 3.5" HDD not included

Selection Table

i-Module slot number starts from the inner side, as the image on the right.



i-Module	MIC-75M10	MIC-75M11	MIC-75M20	MIC-75M20-01	MIC-75M40	MIC-75M40-01	MIC-75M13	MIC-75S20	MIC-75G20	MIC-75G30	MIC-75GF10	MIC-75S00	98R17520301
Slot 1	PCIe x16*	PCIe x16*	PCIe x4*	PCIe x8*	PCIe x4	PCIe x4	PCIe x16*	PCIe x16*	–	–	–	–	–
Slot 2	–	PCI	PCIe x16*	PCIe x8*	PCIe x8	PCIe x8	PCI	PCIe x4*	–	PCIe x16 (Signal x8)	PCIe x4	–	–
Slot 3	–	–	–	–	PCIe x4	PCIe x4	PCI	–	PCIe x16	–	PCIe x16 for MXM	–	–
Slot 4	–	–	–	–	PCIe x4	–	PCI	–	PCIe x4	PCIe x16 (Signal x8)	–	–	–
Slot 5	–	–	–	–	–	–	–	–	–	PCIe x4	–	–	–
SATA Port	–	–	–	–	–	–	1	–	–	–	–	–	–
SATA PWR	–	–	–	–	–	–	1	–	–	–	–	–	–
2.5" HDD/SSD Bay	–	–	1**	–	–	2	–	2 x Swappable + 2 x Internal	2 x Swappable	2 x Swappable	2 x Swappable	2 x Swappable	–
3.5" HDD Bay	–	–	–	–	–	–	–	–	–	–	–	–	2
N.W. (kg)	0.64	–	0.87	–	–	1.16	–	1.60	2.99	5	3.5	2	0.8
G.W. (kg)	1.71	–	2.02	–	–	2.47	–	2.98	4.79	7	5	3	2
i-Module (W x H x D)	24 x 192 x 230	–	50 x 192 x 230	–	–	90 x 192 x 230	–	–	130 x 192 x 385	207 x 192 x 384	113 x 192 x 230	27 x 192 x 230	42 x 192 x 230
MIC-7300/7500/7900 + i-Module (W x H x D)	97 x 192 x 230	–	123 x 192 x 230	–	–	163 x 192 x 230	–	–	203 x 192 x 385	280 x 192 x 385	187 x 192 x 230	100 x 192 x 230	115 x 192 x 230
MIC-77X + i-Module (W x H x D)	101 x 192 x 230	–	127 x 192 x 230	–	–	167 x 192 x 230	–	–	207 x 192 x 385	284 x 192 x 385	190 x 192 x 230	104 x 192 x 230	119 x 192 x 230
System Fan	–	–	98R1752000E (Optional)***	–	–	98R1751300E (Optional)***	–	–	Embedded	Embedded	–	–	–
12V _{oc} Conn	–	–	–	–	–	1	–	–	–	–	–	–	–
12V _{oc} Conn. for GPU	–	–	–	–	–	–	–	–	2	4	–	–	–
PCI/PCIe Card Max. Length (with fan)	–	–	190.2 mm	–	–	184.75 mm	–	–	334.6 mm	334.6 mm	–	–	–
PCI/PCIe Card Max. Length (without fan)	–	–	–	–	–	210.4 mm	–	–	–	–	210.4 mm	–	–

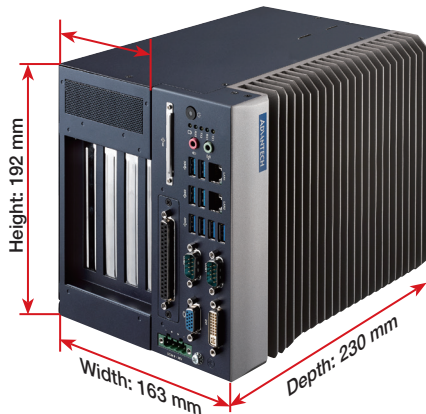
* If install on MIC-7300, this slot is PCIe x1 signal.

** Need to order 98R1752010E (2.5" HDD/SSD kit for 2-slot i-Module)

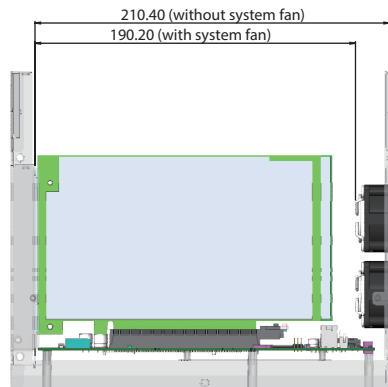
*** Suggest to add optional system fan if power consumption of add-on card is more than **45W** for better thermal management.

Dimension Guide

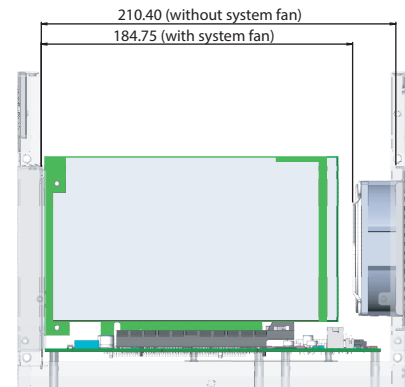
i-Module Width: 90 mm



i-Module Add-on card Dimension Guide



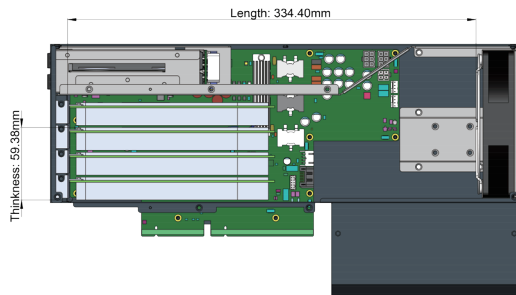
2-slot i-Module



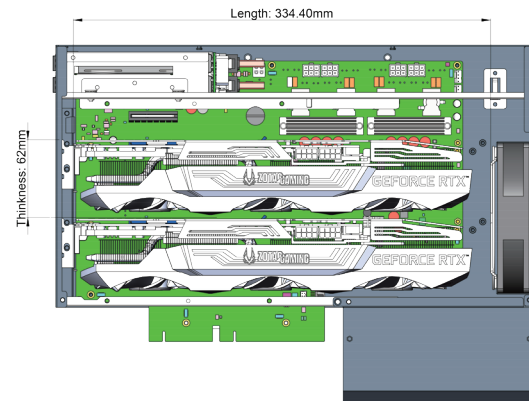
4-slot i-Module

Example: MIC-7500 + MIC-75M40
Using MIC-77xx, width will be increased by 4mm.

MIC-75G20 GPU Dimension Guide



MIC-75G30 GPU Dimension Guide



HDD/SSD Support Table

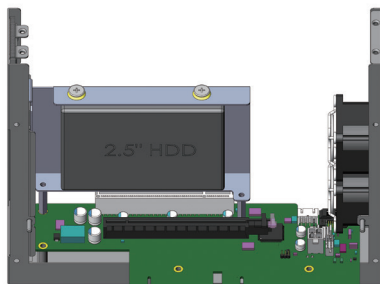
Every MIC-7 Series can support one HDD/SSD bay in system. With i-Module added, the total 2.5" HDD/SSD bay quantity as below.

MIC-7 Series	MIC-7500	MIC-7700		MIC-770 V1		MIC-770 V2		MIC-770 V3		MIC-7900	
		MIC-7700Q	MIC-7700H	MIC-770Q	MIC-770H	MIC-770W	MIC-770H	MIC-770W	MIC-770H		
System SATA port count	1	3	1	3	2	3	2	3	2	4	
2.5" HDD/SSD in MIC						1					
Total 2.5" HDD/SSD with i-Module added	MIC-75M10					1					
	MIC-75M11*					1					
	MIC-75M20*					1					
	MIC-75M20-01*	1	1	-	1	-	1	-	1	-	1
	MIC-75M40	2	3	-	3	-	3	-	-	-	3
	MIC-75M40-01	-	-	-	-	-	-	-	3	-	-
	MIC-75M13	2	3	2	3	3	3	3	3	3	3
	MIC-75S20	2	4	2	4	3	4	3	4	3	5
	MIC-75G20	2	3	2	3	3	3	3	3	3	3
MIC-75G30	2	3	2	3	-	3	-	3	-	3	
3.5" HDD with i-Module	98R17520301	-	2	-	2	2	2	2	2	2	

* Can order 98R1752010E to install 2nd 2.5" HDD/SSD.

Note: i-Module BUS has only one channel SATA signal between i-Module and MIC-7 system.

2.5" HDD/SSD kit for 2-slot i-Module



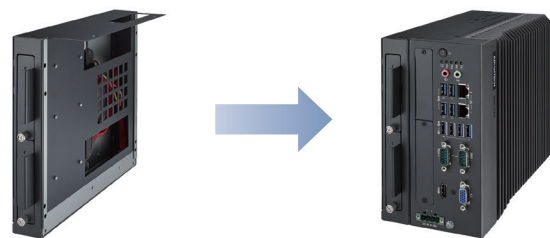
Ordering information: 98R1752010E

Supportable i-Module: MIC-75M20, MIC-75M20-01, MIC-75M11

Limitation: Slot 2 will be occupied

Support up to 15mm 2.5" HDD/SSD

2 x Removable 2.5" Storage kit



Supportable system: MIC-7700Q, MIC-770 V1, MIC-770 V1/V2/V3, MIC-7900

Example: Assembled with MIC-770

Ordering information: MIC-75S00-00A1

Support up to 15mm 2.5" HDD/SSD

2 x 3.5" HDD Storage kit



Ordering Information: 98R17520301
Supportable system: MIC-7700Q,
MIC-770 V1/V2/V3, MIC-7900

Example: Assembled with MIC-770

2.5" HDD/SSD Thickness Guide

Swappable HDD/SSD
Supportable i-Module: MIC-75S20, MIC-75G20,
MIC-75G30
Support up to 15mm 2.5" HDD/SSD



Internal HDD/SSD
Supportable i-Module: MIC-75M40, MIC-75M13, MIC-75S20
Support 1x 9.6mm + 1x 15mm, or 2x 9.6mm 2.5" HDD/SSD

Example: MIC-75S20

Optional i-Modules*

Part Number	Description
MIC-75M10-00A2	1-slot expansion module (1 x PCIe)
MIC-75M11-00B1	2-slot expansion module (1 x PCIe and 1 x PCI slots)
MIC-75M13-00B1	4-slot expansion module (1 x PCIe and 3 x PCI slots)
MIC-75M20-00C1	2-slot expansion module (2 x PCIe slots)
MIC-75M20-01A2	2-slot expansion module (2 x PCIe slots)
MIC-75M40-00A2	4-slot expansion module (4 x PCIe slots)
MIC-75M40-01A2	3-slot expansion module (3 x PCIe slots)
MIC-75G20-10B1	GPU card expansion module (2 x PCIe and 2 x removable 2.5" storage bay)
MIC-75G30-00B1	Dual GPU card expansion module (3 x PCIe and 2 x removable 2.5" storage bay)
MIC-75GF10-00A1	MXM GPU expansion module (1 x MXM, 1 x PCIe and 2 x removable 2.5" storage bay, 1 x HDMI, 3 x DP)
MIC-75S00-00A1	2 x removable 2.5" storage bay
MIC-75S20-00A2	2-slot expansion and storage module (2 x PCIe and 2 x removable 2.5" storage bay)
98R17520301	2 x 3.5" HDD kit

*Please refer to MIC-75G20, MIC-75G30, and MIC-75GF10 datasheet for more product information.

Optional Accessories

Part Number	Description
98R1751300E	8-cm fan for 4-slot i-Modules
98R1752000E	2 x 4-cm fan for 2-slot i-Modules
98R1752002E	2x 4cm 23,000 RPM fan for 2-slot i-Module (for passive GPU card)
98R1752010E	2.5" HDD/SSD kit for 2-slot i-Module
1700024858-01	4-pin 12V _{DC} power cable (15cm, for PoE card)
MIC-75G20 / MIC-75G30*	
96PSD-A480W24-MS	480W PSU (for MIC-75G20)
1700029474-01	PSU Y-Cable, 1.5M (for MIC-75G20)
XMIC-HRPG-1000-24	100-240V, 1008W, 24V PSU (for MIC-75G30)
1700031413-01	PSU DC-DC power cable, 1M (for MIC-75G30)
1700029720-01	PSU power cord (USA), AC Conn., 3-pin, 10A, 125V, UL/CSA, 1.83M
1700030520-01	PSU power cord (CN), AC Conn., 3-pin, 10A, 250V, CCC, 1.5M
1700031408-01	M cable conn 3P/G-TEM*3 80CM (EU)
1700034561-01	M cable Type E 3P/TEMx3 80CM
1700022074-11	4-pin 12VDC power cable (40cm, for PoE card)