

# MIC-770 V2

## Compact Fanless System with 10<sup>th</sup> Gen Intel® Xeon®/Core™ i CPU Socket (LGA 1200)

NEW



### Features

- Intel® 10<sup>th</sup> Gen Xeon®/Core™ i CPU socket-type (LGA1200) with Intel® W480E/H420E chipset
- Wide operating temperature (-10 ~ 60 °C)
- VGA and HDMI output
- 2 x GigaLAN, 2 x USB 3.2 (Gen2) and 6 x USB 3.2 (Gen1)
- 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<sub>DC</sub> 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
- Advantech iBMC remote out-of-band power management solution with WISE-DeviceOn
- Microsoft Azure PnP, AWS IoT Greengrass, Ubuntu Certified



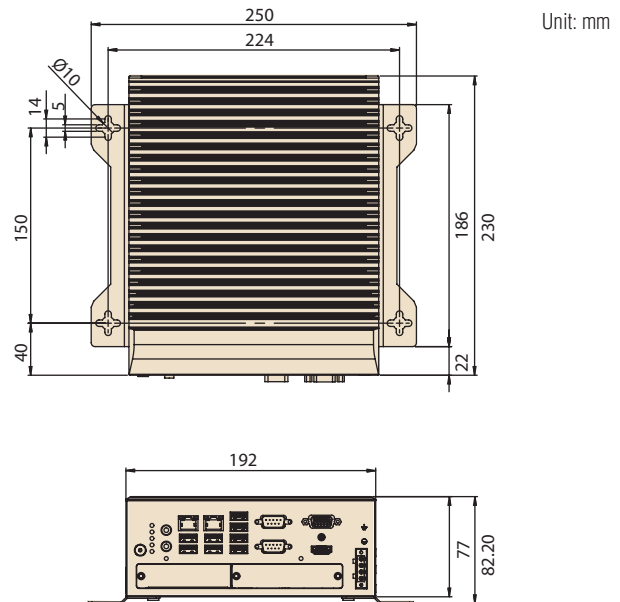
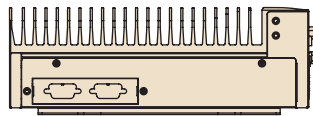
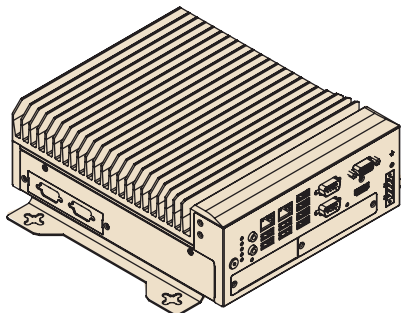
### Specifications

|                                                    |                                                        |                                                                                                                              |           |           |            |                 |                 |            |          |          |
|----------------------------------------------------|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|------------|-----------------|-----------------|------------|----------|----------|
| 10 <sup>th</sup> Generation Processor<br>(TDP 35W) | CPU                                                    | W-1290TE*                                                                                                                    | W-1270TE* | W-1250TE* | i9-10900TE | i7-10700TE      | i5-10500TE      | i3-10100TE | G6400TE  | G5900TE  |
|                                                    | Core/Thread number                                     | 10/20                                                                                                                        | 8/16      | 6/12      | 10/20      | 8/16            | 6/12            | 4/8        | 2/4      | 2/2      |
|                                                    | Base Frequency                                         | 1.80 GHz                                                                                                                     | 2.00 GHz  | 2.40 GHz  | 1.80 GHz   | 2.00 GHz        | 2.30 GHz        | 2.30 GHz   | 3.20 GHz | 3.00 GHz |
|                                                    | Max Turbo Frequency                                    | 4.50 GHz                                                                                                                     | 4.40 GHz  | 3.80 GHz  | 4.50 GHz   | 4.40 GHz        | 3.70 GHz        | 3.60 GHz   |          |          |
|                                                    | L3 Cache                                               | 20 MB                                                                                                                        | 16 MB     | 12 MB     | 20 MB      | 16 MB           | 12 MB           | 6 MB       | 4 MB     | 2 MB     |
|                                                    | Temperature                                            | -10 ~ 60 °C (w/ industrial wide-temp SSD, 0.7m/s air flow)                                                                   |           |           |            |                 |                 |            |          |          |
|                                                    | Chipset                                                | W480E/H420E *Xeon CPU supported by W480E SKU. G6400TE/G5900TE CPU supported by H420E only.                                   |           |           |            |                 |                 |            |          |          |
| BIOS                                               | AMI SPI Flash 256Mb for W480E SKU, 128Mb for H420E SKU |                                                                                                                              |           |           |            |                 |                 |            |          |          |
| 10 <sup>th</sup> Generation Processor<br>(TDP 65W) | CPU                                                    | i9-10900E                                                                                                                    | i7-10700E | i5-10500E | i3-10100E  | G6400E<br>(58W) | G5900E<br>(58W) |            |          |          |
|                                                    | Core/Thread number                                     | 10/20                                                                                                                        | 8/16      | 6/12      | 4/8        | 2/4             | 2/2             |            |          |          |
|                                                    | Base Frequency                                         | 2.80 GHz                                                                                                                     | 2.90 GHz  | 3.10 GHz  | 3.20 GHz   | 3.80 GHz        | 3.20 GHz        |            |          |          |
|                                                    | Max Turbo Frequency                                    | 4.70 GHz                                                                                                                     | 4.50 GHz  | 4.20 GHz  | 3.80 GHz   |                 |                 |            |          |          |
|                                                    | L3 Cache                                               | 20 MB                                                                                                                        | 16 MB     | 12 MB     | 6 MB       | 4 MB            | 2 MB            |            |          |          |
|                                                    | Temperature                                            | -10 ~ 50 °C (w/ industrial wide-temp SSD, 0.7m/s air flow)                                                                   |           |           |            |                 |                 |            |          |          |
|                                                    | Chipset                                                | W480E/H420E *G6400E/G5900E CPU supported by H420E only.                                                                      |           |           |            |                 |                 |            |          |          |
| BIOS                                               | AMI SPI Flash 256Mb for W480E SKU, 128Mb for H420E SKU |                                                                                                                              |           |           |            |                 |                 |            |          |          |
| Memory                                             | Technology                                             | Dual-channel DDR4 2933/2666 MHz (W480E SKU with W and i3 CPU supports ECC)                                                   |           |           |            |                 |                 |            |          |          |
|                                                    | Socket                                                 | 2 x 260-pin DDR4 SODIMM (up to 32GB per socket)                                                                              |           |           |            |                 |                 |            |          |          |
|                                                    | Maximum Capacity                                       | 64GB                                                                                                                         |           |           |            |                 |                 |            |          |          |
| Display                                            | Chipset                                                | Xeon and Core i: Intel® HD Graphics 630, supports DirectX 12<br>Pentium/Celeron: Intel® HD Graphics 610, supports DirectX 12 |           |           |            |                 |                 |            |          |          |
|                                                    | VGA                                                    | 1 x DB15, up to 1920 x 1200 maximum resolution                                                                               |           |           |            |                 |                 |            |          |          |
|                                                    | HDMI                                                   | 1 x HDMI, up to 3840 x 2160 @30Hz (with Flex I/O for 2nd HDMI, 1 x DVI or 1 x DP)                                            |           |           |            |                 |                 |            |          |          |
|                                                    | Multiple Display                                       | W480E: 3 x independent displays (third display output via Flex I/O)<br>H420E: 2 x independent displays                       |           |           |            |                 |                 |            |          |          |
| Ethernet                                           | Controller                                             | W480E LAN1: Intel® I219LM, LAN2: Intel® i210IT (iBMC supported)<br>H420E 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 (W480E SKU only)                                                                                                    |           |           |            |                 |                 |            |          |          |
|                                                    | SATA Conn.                                             | W480E: 3 x SATA signal, 3 x SATA power<br>H420E: 2 x SATA signal, 2 x SATA power                                             |           |           |            |                 |                 |            |          |          |
| I/O                                                | USB                                                    | W480E: 2 x USB3.2 (Gen2), 6 x USB3.2 (Gen1), 1 x USB 2.0 (Internal)<br>H420E: 4 x USB3.2 (Gen1), 4 x USB2.0                  |           |           |            |                 |                 |            |          |          |
|                                                    | Serial Port                                            | 2 x DB9, 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/mSATA                                        | W480E: 1 x mini PCIe (via Nano-SIM), 1 x mini PCIe/mSATA<br>H420E: 1 x mini PCIe (via Nano-SIM), 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)                                                                                          |           |           |            |                 |                 |            |          |          |

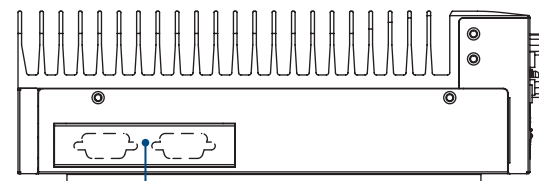
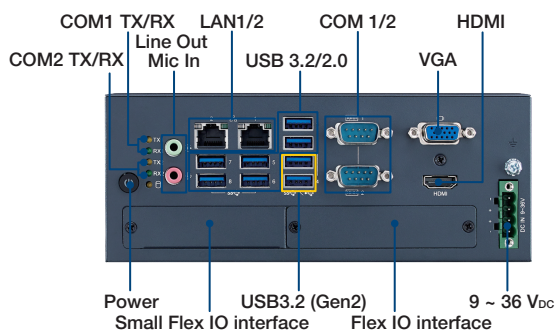
## Specifications (Cont.)

|                |                                                    |                                                                                                                                                                                                                                                                                                                                                                           |                                                                           |                              |
|----------------|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------|
| Power          | Type                                               | ATX/AT                                                                                                                                                                                                                                                                                                                                                                    |                                                                           |                              |
|                | Input Voltage                                      | 9 ~ 36 V <sub>DC</sub>                                                                                                                                                                                                                                                                                                                                                    |                                                                           |                              |
|                | Power consumption                                  | Typical: 35.3W<br>Maximum: 112W                                                                                                                                                                                                                                                                                                                                           |                                                                           |                              |
| Watchdog Timer | Output                                             | System reset                                                                                                                                                                                                                                                                                                                                                              |                                                                           |                              |
|                | Interval                                           | Programmable 1 ~ 255 sec/min                                                                                                                                                                                                                                                                                                                                              |                                                                           |                              |
| Environment    | Temperature                                        | 65W CPU w/ industrial wide Temp. SSD<br>-10 ~ 50 °C with 0.7 m/s air flow                                                                                                                                                                                                                                                                                                 | 35W CPU w/ industrial wide Temp. SSD<br>-10 ~ 60 °C with 0.7 m/s air flow | Non-operating<br>-40 ~ 85 °C |
|                | Humidity                                           | 95% @ 40 °C (non-condensing)                                                                                                                                                                                                                                                                                                                                              |                                                                           |                              |
|                | Vibration                                          | With SSD: 3 Grms @ 5 ~ 500 Hz, random, 1 hr/axis<br>With 2.5" HDD: 1 Grms @ 5 ~ 500 Hz, random, 1 hr/axis                                                                                                                                                                                                                                                                 |                                                                           | 2G                           |
|                | Shock                                              | With SSD: 20G, IEC-68-2-27, half-sine wave, 11 ms duration                                                                                                                                                                                                                                                                                                                |                                                                           | 50G 11 ms                    |
|                | Dimensions (W x H x D)                             | 77 x 192 x 230 mm (3.07" x 7.55" x 9.05")                                                                                                                                                                                                                                                                                                                                 |                                                                           |                              |
| Mechanical     | Weight                                             | 2.8 kg (6.17 lbs)                                                                                                                                                                                                                                                                                                                                                         |                                                                           |                              |
|                | Installation                                       | Desktop/wall mount                                                                                                                                                                                                                                                                                                                                                        |                                                                           |                              |
| Certifications | EMC                                                | CE/FCC Class A, CCC, BSMI                                                                                                                                                                                                                                                                                                                                                 |                                                                           |                              |
|                | Safety                                             | CB/UL, CCC, BSMI, RED Compliance<br>Note: RED Compliance is bundled with MIC-770W-20A1 (standard unit) , <b>EXM-CMPF1-M2E01E</b> (Mini-PCIe to M.2 adapter), and <b>EWM-W192K1</b> (Intel WiFi-AC9260 M.2 2230 module+cable+antenna), i-Module is not included. EWM-W192K1 includes Module: EWM-W192M201E*1, Cable: 1750007965-01*2, and Dipole antenna: 1750008717-01*2. |                                                                           |                              |
| OS Support     | Windows 10, Windows 10 IoT, Linux OS, Ubuntu 20.04 |                                                                                                                                                                                                                                                                                                                                                                           |                                                                           |                              |

## Dimensions



## Front View



iDoor or 2 x RS-232 expansion slots

## Ordering Information

| Part Number   | VGA | HDMI | 2.5" HDD/SSD | mSATA | USB3.2 (Gen2) | USB3.2 (Gen1) | USB 2.0 | GbE | COM                   | PCIe                 | Power                 |
|---------------|-----|------|--------------|-------|---------------|---------------|---------|-----|-----------------------|----------------------|-----------------------|
| MIC-770W-20A1 | 1   | 1    | 1            | 1     | 2             | 6             | 0       | 2   | 2, up to 6 (Optional) | i-Module (optional)  | 9 ~ 36V <sub>DC</sub> |
| MIC-770H-20A1 | 1   | 1    | 1            | 1     | 0             | 4             | 4       | 2   | 2, up to 6 (Optional) | i-Module (optional)* | 9 ~ 36V <sub>DC</sub> |

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

## Packing List

| Part Number    | Description                          | Quantity |
|----------------|--------------------------------------|----------|
| MIC-770 V2     | MIC-770 V2 barebone system           | 1        |
| 2041077030     | MIC-770 V2 startup manual (EN+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, 1 x HDMI, 1 x DP)    |
| 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 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.

\*\* W480E SKU only

## Embedded OS

| Part Number    | Description                                          |
|----------------|------------------------------------------------------|
| 20706WX9HS0120 | img MIC-770V2H Win10 IoT Ent 2019 64b 1809, High End |
| 20706WX9VS0124 | img MIC-770V2H Win10 IoT Ent 2019 64b 1809, Value    |
| 20706WX9ES0134 | img MIC-770V2H Win10 IoT Ent 2019 64b 1809, Entry    |
| 20706WX9HS0121 | img MIC-770V2W Win10 IoT Ent 2019 64b 1809, High End |
| 20706WX9VS0125 | img MIC-770V2W Win10 IoT Ent 2019 64b 1809, Value    |
| 20706WX9ES0135 | img MIC-770V2W Win10 IoT Ent 2019 64b 1809, Entry    |
| 20706U20DS0015 | img Ubun20.4 MIC-770V2W 64b 2004 ENU                 |

## Optional Accessories

| Part Number         | Description                                               |
|---------------------|-----------------------------------------------------------|
| <b>Adaptor</b>      |                                                           |
| 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              |
| <b>Din Rail PSU</b> |                                                           |
| 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:

- MIC-770 V2 supports Advantech iDoor modules (both MOS and PCM series), excluding the PoE model.
- The **PCM** series module requires a bracket (P/N: **1960065854N001**) that must be ordered separately.

## Optional Flex I/O\* & Kits

| Part Number                 | Description                                                  |
|-----------------------------|--------------------------------------------------------------|
| <b>Flex I/O</b>             |                                                              |
| 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                                             |
| 98R17501001                 | MIC DP kit FIO                                               |
| <b>Advanced Flex I/O***</b> |                                                              |
| 98910770301                 | MIC NVMe + 4 LAN Advanced FIO                                |
| 98910770401                 | MIC NVMe Advanced FIO                                        |
| 98910770501****             | MIC 4 PoE Advanced FIO                                       |
| <b>Storage Kit</b>          |                                                              |
| 98R1752010E                 | 2nd 2.5" HDD/SSD kit (used in 2-slot i-Module)               |
| 98R1752020E                 | 2 x 2.5" SSD kit (7mm thick SSD, used insides of MIC-770 V2) |
| <b>Mounting Kit</b>         |                                                              |
| 98R17500210                 | MIC Din Rail Mounting kit                                    |
| 98R17500501                 | MIC Wall Mounting 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.

\*\*\* W480E SKU only

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