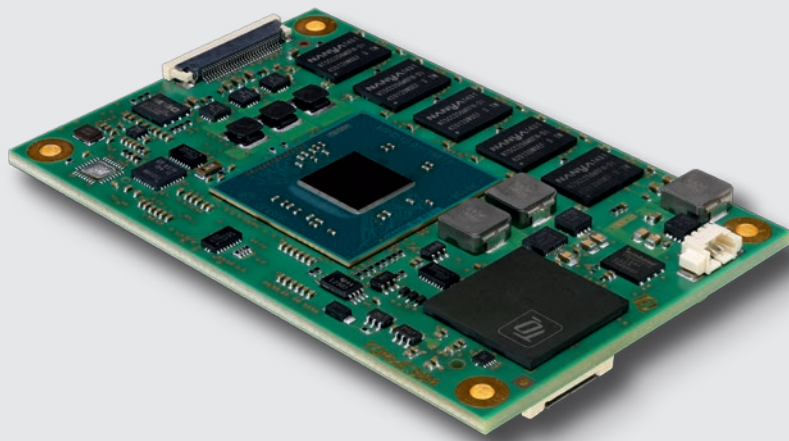




**Rugged Interconnect™**  
TECHNOLOGIES  
*Technologies evolve, our commitment remains*



# TQMxE38M

COM Express™ Minimodule with Intel® Atom™ E3800

Based on

**COM Express**

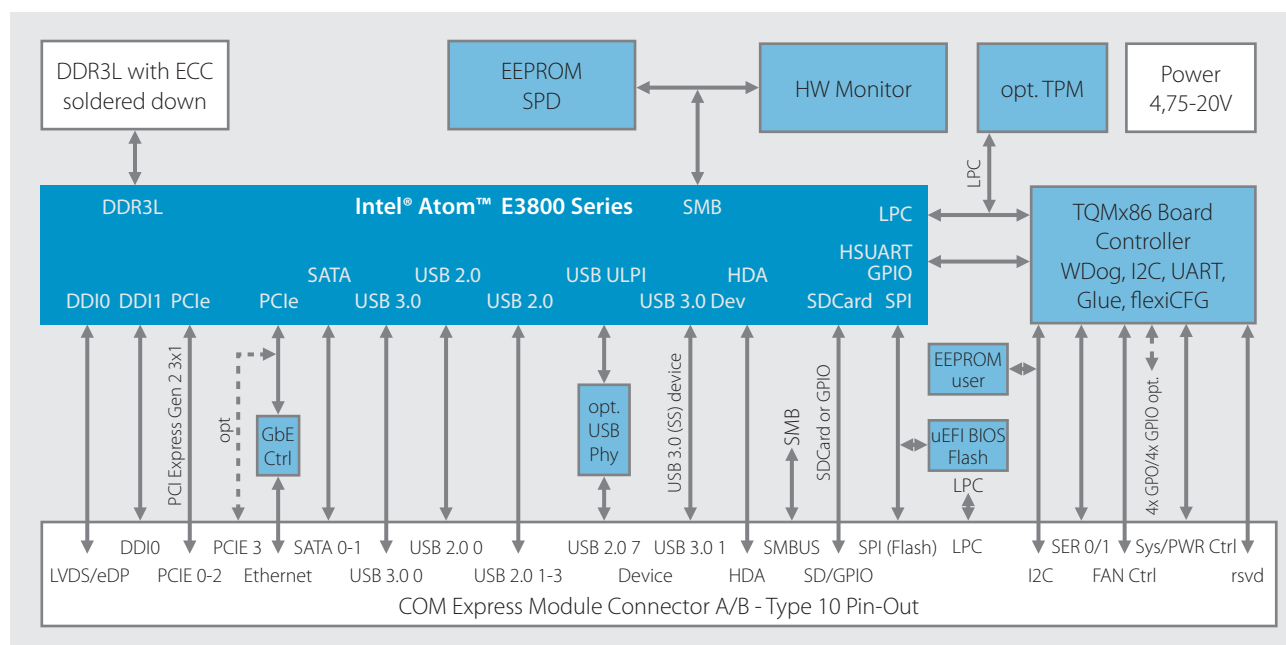


The TQ Minimodule TQMxE38M enables the implementation of powerful but also economical x86 based systems based on the international established PICMG™ standard COM Express™ Mini (COM.0 R2.1). At the type 10 compliant pin out the user has access to all fundamental interfaces of the CPU. For that all capabilities of the Intel® Atom™ processor could be used. The direct access to the interfaces like digital display interface (DDI) / embedded DisplayPort (eDP) and the USB device interface gives the user the unlimited freedom to use the features of the CPU in the most suitable way for his application. The compact and robust design as well as the option of formal coating extends the use cases to applications within rugged industry, railway and aviation environments. Based on the very low power consumption and the extended temperature support it is also possible to realize outdoor applications in an easy and reliable way.

### Highlights:

- Intel® Atom™ E3800 ("Bay Trail-I")
- Up to 8 GB DDR3L with ECC support
- Optimized for ultra low power
- Extended temperature support
- Reach featured uEFI BIOS with easy-config, multi-setup and touch support
- TQMx86 board controller with flexible customization options (flexiCFG)
- TPM 1.2 / 2.0
- iRTC (highly accurate industrial real time clock)
- "Green ECO-Off" (minimum of standby power)
- Watchdog und thermal management
- Highest reliability, 24/7 certified
- Very robust design, formal coating capability

### Block diagram TQMxE38M



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## Technical details

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### CPU

Intel® Atom™ E3800 („Bay Trail-I“)  
E3815: 1x 1.46 GHz, 512 KB L2-Cache, 5W  
E3805: 2x 1.33 GHz, 1 MB L2-Cache, 3W, without graphics  
E3825: 2x 1.33 GHz, 1 MB L2-Cache, 6W  
E3826: 2x 1.46 GHz, 1 MB L2-Cache, 7W  
E3827: 2x 1.75 GHz, 1 MB L2-Cache, 8W  
E3845: 4x 1.91 GHz, 2 MB L2-Cache, 10W

### Memory

DDR3L: 2 GB, 4 GB, (8 GB) with ECC support  
EEPROM: 32 kbit (24LC32)

### Graphics

2x Digital Display Interface (DDI)  
for eDP 1.3, DP 1.1a, DVI, HDMI 1.4a  
or LVDS (with external converter)

### System interfaces

1x Gigabit Ethernet (Intel® i210)  
(external IEEE1588 sync optional through TQ flexiCFG)  
1x USB 3.0  
3x USB 2.0  
1x USB 3.0 device

### Peripheral interfaces

2x SATA 2.0 (up to 3Gb/s), eSATA capable  
3x PCIe 2.0 (up to 5Gb/s)  
(4th lane optional, if no Ethernet)  
1x LPC bus  
1x Intel® HD audio (HDA)  
1x I<sup>2</sup>C, (2nd I<sup>2</sup>C optional) (master/slave capable)  
1x SMBus  
1x SPI (for external uEFI BIOS flash)  
2x Serial port (Rx/Tx, legacy compatible)  
(4 wire optional through TQ flexiCFG)  
1x SD card interface / optional 8x GPIO (multiplexed)

### Security components

TPM (SLB9660 TPM 1.2, alternatively SLB9665 TPM 2.0)

### Others

TQm86 board controller with watchdog and flexiCFG  
Industrial real time clock (iRTC)  
Hardware monitor

### Power supply

Voltage: 4.75 V - 20 V  
4.75 V - 20 V Standby (optional)  
3 V Battery / GoldCAP (optional)  
Power: typ. 3 - 6 W / max. 12 W  
(Green ECO-Off: < 0.1W)

### Environment

Extended temperature: -40°C...+85°C

### Form factor / dimensions

COM Express™ Mini, type 10, 84 mm x 55 mm

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## Ordering information

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### TQMxE38M-xx

The current standard variants can be found on the TQ product website [www.tq-group.com/en/TQMxE38M](http://www.tq-group.com/en/TQMxE38M)

### Options:

CPU, memory, TPM, iRTC, USB device, special configurations

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## Accessory

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### TQMxE38M-HSP

Heatspreader for TQMxE38M according to the COM Express™ specification

### TQMxE38M-HSP-LP

Heatspreader for TQMxE38M, low profile for very flat designs

### Evaluation platform MB-COME10-1

Mainboard for COM Express™ Minimodules, Type 10  
Interfaces: DP, eDP/LVDS, 2x Gb Ethernet, 4x USB, USB device,  
3x COM, audio, mini PCIe, mSATA, 2.5" SSD, SD card,  
riser extension with PCIe and USB, fan, debug  
170 mm x 170 mm

### TQMx86 software tools

for uEFI BIOS programming and to adapt / configure setup  
default values (including multi config), boot logo,...

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>> Quicklink: [www.tq-group.com/en/TQMxE38M](http://www.tq-group.com/en/TQMxE38M)

