



**Intel Atom® / Celeron® Processor
Modular-Designed Box IPC**

BMAL Box Module



Features

- Support Adaptive Display Platform
- Supports 24V / 9~48V Power Board Module
- Accessible 2.5" SATA Drive Bay
- 12V/24V/48V Ignition Power Control
- Wide Operating Temperature: -40 to 70°C



Overview

DFI's BMAL box module offers the option of built-in power ignition management and two internal Mini PCIe slots suitable for in-vehicle applications and automatic guided vehicle market. With the extended power input from 9 to 48V DC and OVP/OCP/ESD surge protection, the system can power on and operate safely.

The BMAL box module also supports DFI's Adaptive Display Platform (ADP) Technology. It is an innovative panel PC solution that offers the flexibility of modularized integration of panel PC components for expedited product development and shortened time to market.

System





Standard Ratio Specifications

SYSTEM	Processor	Intel Atom® x5-E3940 Processor, Quad Core, 2M Cache, 1.6GHz (1.8GHz), 9.5W Intel® Celeron® Processor N3350, Dual Core, 2M Cache, 1.1GHz (2.4GHz), 6W
	Memory	One 204-pin SODIMM up to 8GB Single Channel DDR3L 1866MHz
	BIOS	Insyde SPI 128Mbit (supports UEFI boot only)
GRAPHICS	Controller	Intel® HD Graphics
	Feature	OpenGL 4.2, Direct X 11.1, OpenCL 1.2, OGL ES 3.0 HW Decode: H.264, MPEG2, VC1, VP8, H.265, MPEG4 HW Encode: H.264, MPEG2, MPEG4
	Display	1 x DP++ 1 x VGA or DVI-D (DVI-D available upon request) DP++: resolution up to 4096x2160 @ 60Hz VGA: resolution up to 2560x1600 @ 60Hz DVI-D: resolution up to 1920x1200 @ 60Hz
Triple Displays	Panel Module, DP++, VGA or DVI-D	
STORAGE	External	1 x 2.5" SATA 3.0 Drive Bay (accessible) 1 x mSATA (shared by Half-size Mini-PCIe Socket)
EXPANSION	Interface	1 x Full-size Mini PCIe (USB/PCIe) 1 x Half-size Mini PCIe (USB/PCIe/mSATA) 1 x SIM Slot
AUDIO	Audio Codec	Realtek ALC262
ETHERNET	Controller	2 x Intel® I210IT PCIe (10/100/1000Mbps)
LED	Indicators	1 x Power LED 1 x HDD LED
I/O	Serial	2 x RS-232/422/485 (DB9) Support 5V/12V Power 2 x RS-232/422/485 (available upon request)
	Ethernet	2 x GbE (RJ-45) (10/100/1000Mbps) 802.3 af PoE (PSE), Individual Port 15.4W (available upon request) Support Jumbo Frame, IEEE1588v2, WOL, PXE
	DIO	4 x DI / 4 x DO (10-pin terminal block) (available upon request)
	Buttons	1 x Power Button 1 x Reset Switch
	Wi-Fi Antennas	4 x Wi-Fi Module Antenna Hole
	USB	2 x USB 3.0 (type A) 2 x USB 2.0 (available upon request) 2 x USB 2.0 (type A)
	Display	1 x DP++ 1 x VGA or DVI-D (DVI-D available upon request)
	Audio	1 x Line-out 1 x Mic-in
	Switch	1 x AT/ATX Switch 1 x Ignition Power On/Off Switch
	Remote Power On/Off	1 x 2-pin Terminal Block
WATCHDOG TIMER	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds
ENVIRONMENT	Operating Temperature	-40 to 70°C
OTHER FUNCTIONS	Ignition Power On/Off	Auto Detect Boot-up & Shut-down Voltage for Low Power Protection Support 12V/24V/48V DC Input 7-level Delay Time On/Off Configuration I/O Switch Selectable Ignition Power On/Off
	Watchdog Timer	System Reset, Programmable via Software from 1 to 255 Seconds
	Antenna	4 x Antenna Hole
POWER	Type	24 VDC Input (available upon request) 9~48 VDC Input (available upon request)
	Connector	3-pin Terminal Block
OS SUPPORT		Windows 10 IoT Enterprise 64-bit Linux
STANDARDS AND CERTIFICATIONS	Certifications	CE / FCC Class A / RoHS
PATENT NO. (Taiwan)		I670589



BMAL Box Module

Optional Items

Optional Items	Part Number	Description
HDD	785-H25500G	2.5" SATA HDD, 500GB, RoHS
	785-H25320G	2.5" SATA HDD, 320GB, RoHS
	785-S25512G	2.5" SATA SSD, 512GB MLC, RoHS
	785-S25256G	2.5" SATA SSD, 256GB MLC, RoHS
	785-S25128G	2.5" SATA SSD, 128GB MLC, RoHS
	785-S25064G	2.5" SATA SSD, 64GB MLC, RoHS
	785-S25032G	2.5" SATA SSD, 32GB MLC, RoHS
mSATA	785-MS128GMF	mSATA mini, 128GB MLC, RoHS
	785-MS64GMF	mSATA mini, 64GB MLC, RoHS
	785-MS32GMF	mSATA mini, 32GB MLC, RoHS
	785-MS16GMF	mSATA mini, 16GB MLC, RoHS
Wi-Fi	761-110091-000G	Wi-Fi Kit, RoHS
Power Cord	785-PWRD	Power Cord, Standards (USA/EUR/CH), 1.8m, RoHS
Power Adapter	671-106013-000G	60W: 12VDC/5A, DC Cord 5.5*2.5mm, Pitch 5mm, LV6, RoHS
	671-112005-100G	120W: 24VDC/5A, DC Cord 5.5*2.5mm, Pitch 5mm, LV6, RoHS
VESA Mount	761-TPC000-000G	ACCESSORY WALL MOUNT KITS

785-XXX is a group number instead of a unique part number. Please contact your regional sales representative if you need more information.

Matrix List

		Panel Module								
		PMKS070	PMKS101	PMKS121	PMKS150	PMKS156	PMKS170	PMKS185	PMKS190	PMKS215
Box Module	BMAL	V	V	V	V	V	V	V	V	V
	BMSD				V	V	V	V	V	V
	BMKH				V	V	V	V	V	V

Packing List

• 1 Single box
• 1 3 pin Terminal Block Connector
• 1 2 pin Terminal Block Connector
• 2 Mini PCIe screw
• 4 SATA screw

Assured Systems

Assured Systems is a leading technology company with over 1,500 regular clients in 80 countries, deploying over 85,000 systems to a diverse customer base in 12 years of business. We offer high-quality and innovative rugged computing, display, networking and data collection solutions to the embedded, industrial, and digital-out-of-home market sectors.

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