BL50S – Box PC for Storage Applications

- **AMD Embedded G-Series APU**
- **RAID 0/1, hot-pluggable on 2 HDD/SSD shuttles**
- **4-port Gb Ethernet switch with PoE**
- **1 Gb Ethernet uplink**
- **1 PCI Express® Mini Card slot with 2 SIM slots for WLAN, GSM (2G), UMTS (3G), LTE (4G), GPS or GLONASS functionality**
- **2 slots for IBIS, RS232, RS485, RS422**
- **24 and 36 VDC nom. (10 to 50.4 V) class S2 PSU, with ignition**
- **-40 to +85°C operating temperature**
- **Conformal coating**
- **Compliant to EN 50155 (railways)**
- **Prepared for E1 (automotive)**

The BL50S is a maintenance-free box computer that has been designed for storage applications such as content servers or video recorders. It offers two external SATA shuttles which support RAID 0/1 and hot-plugging.

On the front of the BL50S as many as 5 Gigabit Ethernet interfaces are accessible. Four of these ports share one Gigabit Ethernet port from the chipset via a switch, while one port is used exclusively as Gigabit Ethernet uplink. The four ports routed over the switch support Power-over-Ethernet.

One PCI Express® Mini Card slot with two SIM card slots offers the possibility to implement the wide range of functionality available on this form factor. This includes for example mobile service standards GSM (2G), UMTS (3G), LTE (4G) and derivates, wireless communication standards WLAN / Wi-Fi IEEE 802.11 and derivates as well as positioning systems GPS or GLONASS.

The BL50S is powered by an AMD Embedded G-Series APU (Accelerated Processing Unit), the T48N, running at 1.4 GHz. The G-Series combines low-power CPUs and advanced GPUs, in this case an AMD Radeon™ HD 6310, into a single embedded device. The use of the Embedded G-Series makes for high scalability in CPU (single/dual core) and graphics performance (various Radeon™ GPUs or none at all).

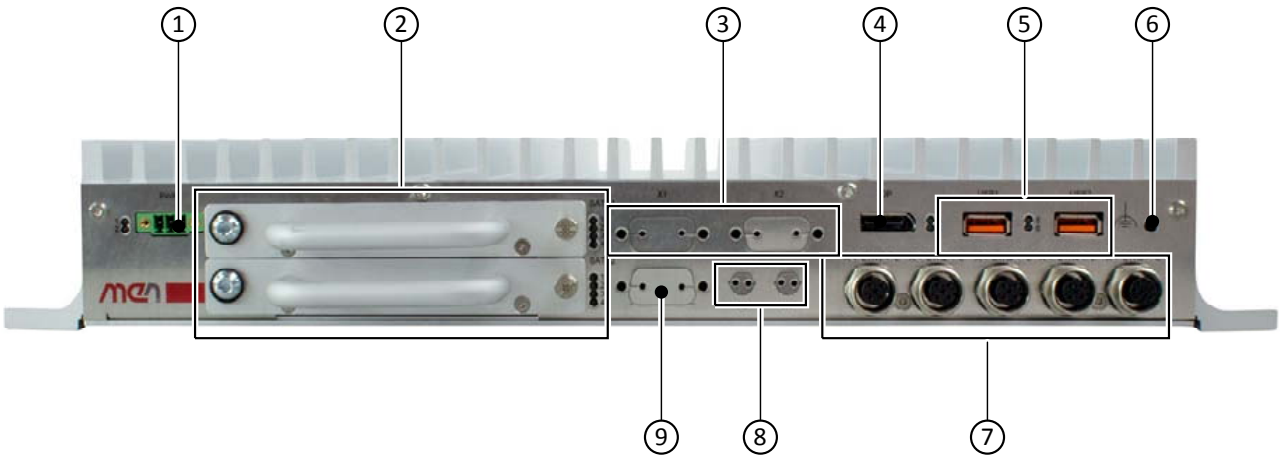
The BL50S is equipped with 2 GB of DDR3 SDRAM and offers SD card and mSATA slots. The system is designed for fanless operation at temperatures from -40 to +70°C (+85°C for up to 10 minutes), its special aluminum housing with cooling fins serves as a heatsink for the internal electronics and in this way provides conduction cooling.

The BL50S supports one DisplayPort® interface with a resolution of 2560×1600. In addition, a multitude of other I/O is available at the front panel, including two USB 2.0 and variable slots for legacy serial I/O (e.g. RS232) or CAN bus.

The BL50S comes with its own integrated class S2 wide-range power supply with 24 and 36 VDC nominal input voltage (10 to 50.4 V) and a power consumption of 30 W and is compliant with EN 50155 and prepared for E1 certification. The power can be switched on and off using an ignition signal on the power connector, and a run-down time after switching off the power can be adjusted by software.

The combination of the various CPU/GPU options with the available selection of external interfaces makes for an extremely flexible system design that can quickly be tailored to a vast number of applications.

Diagram



1. PSU connector (10V-50.4V)
2. 2 Hard Disk Shuttles
3. 2 SA-Adapter cutouts for RS232, RS485/422, CAN, IBIS master, IBIS slave or GPIO
4. 1 DisplayPort
5. 2 USB 2.0
6. Earthing Stud
7. 5 Gigabit Ethernet
8. 2 antenna connector cutouts for PCI Express Mini Card
9. Cutout for HD Audio

Technical Data

CPU	■ AMD Embedded G-Series T48N □ Dual-Core □ 1.4 GHz processor core frequency □ Accelerated Processing Unit (APU), also includes GPU (see Graphics)
Controller Hub	■ AMD A55E
Memory	■ 64 KB L1 and 512 KB L2 cache ■ 2 GB DDR3 SDRAM system memory □ Soldered □ 1066 MT/s
Mass Storage	■ One SD card slot ■ One mSATA slot □ Transfer rate up to 3 Gbit/s ■ Serial ATA (SATA) □ Two external shuttles for 2.5" SATA HDD/SSD drive □ SATA Revision 3.x support □ Transfer rates up to 600 MB/s (6 Gbit/s) □ Hot-pluggable (with independent devices) □ RAID 0/1 support
Graphics	■ AMD Radeon™ HD 6310 □ Maximum resolution: 2560x1600 ■ 3D Graphics Acceleration □ Full DirectX® 11 support, including full speed 32-bit floating point per component operations □ Shader Model 5 □ OpenCL™ 1.1 support □ OpenGL® 4.0 support ■ Motion Video Acceleration □ Dedicated hardware (UVD 3) for H.264, VC-1 and MPEG2 decoding □ HD HQV and SD HQV support: noise removal, detail enhancement, color enhancement, cadence detection, sharpness, and advanced de-interlacing □ Super up-conversion for SD to HD resolutions
Ethernet	■ 4-port Gigabit Ethernet switch □ Via four M12 connectors □ Usable as Power-over-Ethernetsource devices (IEEE 802.3af / IEEE 802.3at, Type 1) □ Up to 35 W flexibly shared between the 4 ports: □ 1x 25 W PoE+ (Class 4) □ 2x 12.96 W (Class 3 / class 0) □ 4x 6.5 W (Class 2) ■ 1 Gigabit Ethernet uplink □ Via one M12 connector
Front I/O	■ 1 DisplayPort® 1.1a interface □ AUX channel and hot plug detection ■ 2 USB 2.0 □ Via Series A connector ■ 2 SA-Adapter™ slots for legacy serial I/O □ For RS232, RS422/485, CAN, IBIS master, IBIS slave, GPIO ■ 24 status LEDs □ 10 for Ethernet link and activity status □ 2 for general board status □ 4 user LEDs □ 8 SATA LEDs

Technical Data

1 PCI Express® Mini Card slot	■ For functions such as □ Mobile service standards: GSM (2G), UMTS (3G), LTE (4G) and derivates □ Wireless communication: WLAN / WiFi IEEE 802.11 and derivates □ Positioning: GPS, GLONASS, GALILEO ■ 2 SIM card slots (Dual SIM) ■ PCI Express® and USB interface
Real-Time Clock	■ Buffered by Gold Cap for up to 12 h
Electrical Specifications	■ Isolation voltage 1,500 VDC □ Ethernet port 1-4, Ethernet port 5, power input, ground/shield, USB interface, DisplayPort® interface, audio interface ■ Supply voltage: □ 24V and 36V nominal input voltage according to EN50155 □ 24V nominal input voltage according to E1 (automotive) □ 10 to 50.4 V input voltage range □ EN 50155 power interruption class S2 □ Ignition signal at the front ■ Power consumption: tbd
Mechanical Specifications	■ Dimensions: Height 66mm x Width 400mm x Length 240mm ■ Weight: approx. 3 kg ■ IP43 protection when installed with connectors down, connector side protected according to IP20
Environmental Specifications	■ Temperature range (operation): □ -40°C to 70°C (screened), with up to 85°C for 10 minutes according to class Tx (EN 50155) □ Fanless operation ■ Temperature range (storage): -40..+85°C ■ Relative humidity (operation): max. 95% non-condensing ■ Relative humidity (storage): max. 95% non-condensing ■ Altitude: -300 m to +3,000 m ■ Shock: 50 m/s², 30 ms (EN 61373) ■ Vibration (function): 1 m/s², 5 Hz - 150 Hz (EN 61373) ■ Vibration (lifetime): 7.9 m/s², 5 Hz - 150 Hz (EN 61373) ■ Conformal coating of internal components on request
MTBF	■ tbd @ 40°C according to IEC/TR 62380 (RDF 2000)
Safety	■ Flammability □ PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers ■ Electrical Safety □ Insulation measurement test according to EN 50155 (12.2.9.1) □ Voltage withstand test according to EN 50155 (12.2.9.2) □ Information technology equipment test according to EN 60950
EMC Conformity (Automotive)	■ Radiated Emission: 2004/104/EC, 2005/83/EC, CISPR 25, CISPR 16 ■ Conducted Emission (Power Line): 2004/104/EC; 2005/83/EC; ISO7637-2 ■ Conductive Immunity (Power line): 2004/104/EC; 2005/83/EC; according to ISO7637-2 ■ ESD: according to ISO 10605 ■ Radiation Immunity: ISO11452-5 ■ Prepared for certification according to E1 requirements of the German Federal Motor Transport Authority
EMC Conformity (Railway)	■ EN 55011 (radio disturbance) ■ IEC 61000-4-2 (ESD) ■ IEC 61000-4-3 (electromagnetic field immunity) ■ IEC 61000-4-4 (burst) ■ IEC 61000-4-5 (surge) ■ EN 50121-3-2 (conducted HF immunity)
BIOS	■ InsydeH2O™ UEFI Framework

Technical Data

Software Support	■ Windows® 7 ■ Windows® Embedded Standard 7 ■ Windows® XP Embedded ■ Linux ■ For more information on supported operating system versions and drivers see Downloads.

Configuration & Options

Options

APU	■ AMD T56N, 1.65 GHz Dual Core, 18W, AMD Radeon™ HD 6320 ■ AMD T56E, 1.65 GHz Dual Core, 18W, AMD Radeon™ HD 6250 ■ AMD T48N, 1.4 GHz Dual Core, 18W, AMD Radeon™ HD 6310 ■ AMD T48E, 1.4 GHz Dual Core, 18W, AMD Radeon™ HD 6250 ■ AMD T40N, 1.0 GHz Dual Core, 9W, AMD Radeon™ HD 6290 ■ AMD T40E, 1.0 GHz Dual Core, 6.4W, AMD Radeon™ HD 6250 ■ AMD T52R, 1.5 GHz Single Core, 18W, AMD Radeon™ HD 6310 ■ AMD T44R, 1.2 GHz Single Core, 9W, AMD Radeon™ HD 6250 ■ AMD T40R, 1.0 GHz Single Core, 5.5W, AMD Radeon™ HD 6250 ■ AMD T16R, 615 MHz Single Core, 4.5W, AMD Radeon™ HD 6250 ■ AMD T48L, 1.4 GHz Dual Core, 18W ■ AMD T30L, 1.4 GHz Single Core, 18W ■ AMD T24L, 1000 MHz Single Core, 5W
Memory	■ Up to 4 GB DDR3 SDRAM system memory ■ SATA hard-disk/solid state drive (mounted within housing)
Graphics	■ Maximum resolution depending on GPU □ 2560x1600 (all DisplayPort® interfaces) with Radeon™ HD 6310 and 6320 □ 1920x1200 (all DisplayPort® interfaces) with Radeon™ HD 6250 and 6290
I/O	■ Ethernet □ Five Fast Ethernet interfaces on five M12 connectors or □ One Gigabit Ethernet uplink and four Fast Ethernet interfaces on five M12 connectors ■ HD audio interface □ HD audio codec □ Audio stereo in □ Audio stereo out □ SPDIF out ■ Antenna connectors □ Various types available on the market (SMA, reverse SMA, QMA, FME...) ■ SA-Adapters™ □ Serial interfaces: RS232, RS422/485, GPIO □ Fieldbus: IBIS master, IBIS slave, CAN bus
Miscellaneous	■ Real-time clock □ 72 h buffer time
Electrical Specifications	■ Input voltages of 48V, 72V and 110V can be implemented on request

As the product concept is very flexible, there are many other configuration possibilities. Please contact our sales team if you do not find your required function in the options. Please note that some of these options may only be available for large volumes.

Ordering Information

Standard BL50S Models	**09BL50S00**	BL50S, box computer with 2 shuttles for 2.5" HDD/SDD, 24 VDC PSU, AMD Dual Core T48N, 1.4 GHz, 2 GB RAM, SD card slot, mSATA slot, 1x DisplayPort®, 5x Gb Ethernet, 2x USB, 1x SA-Adapter™ slot (UARTs, fieldbuses), 1x PCI Express® Mini card slot, 2x SIM card slot, -40..+70(+85)°C screened, conformal coating, IP40, EN 50155, prepared for E1
Related Hardware	**08AE63-00**	DisplayPort® to LVDS converter, temperature sensor, ambient light, touch input, key control, input voltage 12V..24V, -40°..+85°C screened
	15PX01-00	GLONASS & GPS PCI Express® MiniCard (full size), 3-axis Gyro sensor, -40..+85°C with qualified components
Memory	**0710-0038**	SATA (1,5GB/s) hard disk drive 2.5", 100 GB, 4200rpm, -10°C..+70°C
	0710-0044	Hard Disk Drive 2,5 Zoll 24/7Interface: SATACapacity: 500 GByteRPM: 5400Temp.-range: 0...+60°CPackage: 100 x 70 x 6,8 mmWorking: 24 hours / 7 days
	0751-0047	SD card, 4GB, -40..+85°C
	0751-0051	SSD mSATA, 8 GB, -40..+85°C
	0754-0005	SSD SATA 160 GB, 2,5", MLC, 0..+70°C
	0754-0007	SSD SATA 256 GB, 2.5" MLC, 0..+70°C
SA-Adapters™	**08SA01-06**	RS232, not optically isolated, -40..+85°C screened
	08SA02-07	RS422/485, full duplex, optically isolated, -40..+85°C screened
	08SA03-01	1 RS232, optically isolated, -40..+85°C screened
	08SA08-01	CAN ISO high-speed, optically isolated, -40..+85°C screened
	08SA15-00	8 digital I/O channels, -40..+85°C with qualified components, no RoHS
	08SA22-00	IBIS master SA-Adapter™, -40..+85°C screened
	08SA22-01	IBIS slave SA-Adapter™, -40..+85°C screened

Ordering Information

Miscellaneous Accessories	**05BC00-00**	Starter Kit for BoxPC: 1x AC/DC power supply, 1x DisplayPort® to DVI adapter (active), 2x M12 to RJ45 Gbit Ethernet cable, 4x HF cable with U.FL plug to RP-SMA plug
	05BL00-00	2.5" shuttle mechanics for BoxPCs; HDD/SSD to be ordered separately
	0780-0005	DisplayPort® to DVI-D adapter, 20 cm
	0780-0006	Active DisplayPort® (DP) to single link DVI-D adapter, 20cm, max. resolution 1920x1200, AMD / ATI Eyefinity technology
	0781-0002	HF antenna cable with U.FL connector to RP-SMA connector, 200 mm
	0799-0003	UMTS PCIe® Mini Card GTM661W, half-size card with adapter for full-size slot, -10° C..+55°C operating temperature, -40°C..+85°C storage temperature Note: when using wireless modules the R&TTE Guide of the EU has to be observed. See the R&TTE website For the module's driver see Option's website
	0799-0004	WLAN PCIe® MiniCard 6205, 802.11n 2x2 MIMO, 2.4 GHz and 5 GHz, half-size card with adapter for full-size slot, operating temperature 0°C..+80°C, storage temperature -40°..+85°C Note: when using wireless modules the R&TTE Guide of the EU has to be observed. See the R&TTE website For the module's driver see Intel®'s website
	15PX01-00	GLONASS & GPS PCI Express® MiniCard (full size), 3-axis Gyro sensor, -40..+85°C with qualified components
Software: Linux	This product is designed to work under Linux. See below for potentially available separate software packages from MEN.	
	13SC24-90	Linux I2C controller driver (MEN) for SC24, AE51, BC50M, BC50I and BL50W
	13Y004-06	MDIS5™ low-level driver sources (MEN) for generic SMBus driver for F14, F15, F17, F18, F19P, F21P, F22P, G20, G22, D9, D601, F600 and F601, A19, A20, F217, SC24, BC50M, BC50I and BL50W
	13Z010-06	MDIS4™/2004 / MDIS5™ low-level driver sources (MEN) for 16Z076_QSPI
	13Z015-06	MDIS5™ low-level driver sources (MEN) for 16Z029_CAN (MSCAN/Layer2)
	13Z016-06	MDIS5™ driver (MEN) for 16Z029_CAN (CANopen master)
	13Z017-06	MDIS5™ low-level driver sources (MEN) for 16Z034_GPIO, 16Z037_GPIO and 16Z127_GPIO

Ordering Information

Software: Windows®	This product is designed to work under Windows®. See below for potentially available separate software packages from MEN.	
	10F014-78	Windows® XP Embedded BSP (MEN) for F11S, F14, F15, F17, F18, F19P, F21P, G20, XM1, XM1L, XM2, MM1, MM2, SC21, SC24, DC1, DC2, RC1, BC50I, BC50M and BL50W
	10Y000-78	Windows® Embedded Standard 7 BSP for F11S, F19P, F21P, F22P, G20, G22, XM1L, XM2, MM1, MM2, SC21, SC24, SC27, BC50M, BC50I, BL50W, BL50S, F206, F210, F215, F216, G215, P506, P507 and P511
	13SC24-77	Windows® Installset (MEN) for SC24, BC50M, BC50I and BL50W (Includes all free drivers developed by MEN for the supported hardware.)
	13T010-70	Windows® 32-bit network driver (Intel®) for XM1, XM1L, XM2, MM2, F11S, F18, F18E, F19P, F21P, F22P, G20, G22, GM1, GM2, G211, G211F, SC24, BC50I, BC50M and BL50W
	13T020-70	Windows® 64-bit network driver (Intel®) for F18, F18E, F19P, F21P, F22P, G20, G22, GM1, GM2, G211, G211F, XM2, SC24, BC50I, BC50M and BL50W
	13T025-70	Windows® XP GPU and chipset driver (AMD) for BC50M, BC50I, BL50W and SC24
	13T026-70	Windows® Vista™ / Windows® 7 GPU and chipset driver (AMD) for BC50M, BC50I, BL50W, SC24 and G214
	13Z010-70	MDIS5™ Windows® driver (MEN) for 16Z076_QSPI devices
	13Z015-70	MDIS4™/2004 / MDIS5™ Windows® driver (MEN) for 16Z029_CAN (MSCAN/Layer2)
	13Z016-70	MDIS5™ Windows® driver (MEN) for 16Z029_CAN (CANopen master)
	13Z017-70	MDIS4™/2004 / MDIS5™ Windows® driver (MEN) for 16Z034_GPIO devices

For operating systems not mentioned here contact MEN sales**.**

Contact Information

Germany

MEN Mikro Elektronik GmbH
Neuwieder Straße 3-7
90411 Nuremberg
Phone +49-911-99 33 5-0
Fax +49-911-99 33 5-901

info@men.de
www.men.de

France

MEN Mikro Elektronik SA
18, rue René Cassin
ZA de la Châtelaine
74240 Gaillard
Phone +33 (0) 450-955-312
Fax +33 (0) 450-955-211

info@men-france.fr
www.men-france.fr

USA

MEN Micro Inc.
860 Penllyn Blue Bell Pike
Blue Bell, PA 19422
Phone (215) 542-9575
Fax (215) 542-9577

sales@menmicro.com
www.menmicro.com

The date of issue stated in this data sheet refers to the Technical Data only. Changes in ordering information given herein do not affect the date of issue. All brand or product names are trademarks or registered trademarks of their respective holders.
MEN is not responsible for the results of any actions taken on the basis of information in the publication, nor for any error in or omission from the publication.
MEN expressly disclaims all and any liability and responsibility to any person, whether a reader of the publication or not, in respect of anything, and of the consequences of anything, done or omitted to be done by any such person in reliance, whether wholly or partially, on the whole or any part of the contents of the publication.
The correct function of MEN products in mission-critical and life-critical applications is limited to the environmental specification given for each product in the technical user manual.The correct function of MEN products under extended environmental conditions is limited to the individual requirement specification and subsequent validation documents for each product for the applicable use case and has to be agreed upon in writing by MEN and the customer.Should the customer purchase or use MEN products for any unintended or unauthorized application, the customer shall indemnify and hold MEN and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim or personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that MEN was negligent regarding the design or manufacture of the part.
In no case is MEN liable for the correct function of the technical installation where MEN products are a part of.

Copyright © 2013 MEN Mikro Elektronik GmbH. All rights reserved.