atop
Technologies

FEATURE HIGHLIGHTS

- Ideal for IoT and IIoT applications.
- Wide -40°C~85°C temperature range for Industrial-grade reliability
- 2 x 10/100Mbps Ethernet port or 2x 100/1000 SFP slot
- 4 x RS-232/422/485 port – models available with or without isolation
- 1 x USB2.0 high speed OTG port
- Optional 802.3af PoE models can be powered by Ethernet cable
- ATOP customized Linux SDK environment with reliable APIs
- Rugged metal housing with wall or DIN-Rail mount support
- Industrial EMC protection

PRODUCT DESCRIPTION

Providing connectivity for the Internet of Things

ATOP's Industrial Embedded Computer is your ideal flexible Gateway to the Internet of Things. It provides Serial and Ethernet connectivity, redundant power input and a relay output in a reliable and powerful Industrial Grade platform that can unlock your potential. Based on your specific application, it allowing almost any serial device to be connected, providing and retrieving the data you need to and from the cloud, no matter what provider you're using.

Programmability

Write your customized application in C language and Run it on its powerful Industrial low-power 800MHz ARM Cortex A8 TI Sitara AM3354 CPU. Make flexible use of your peripherals, no matter storage, Serial, or USB are needed.

SE5904D is available as a SDK/BSP. The SDK development environment reserves the maximum flexibility. Bottom to top editable software architecture allowed easily to customize or add the IoT applications for different using scenarios. Included Linux kernel source extend the capability of the kernel layer. Changeable WEB pages allowed to easily customize proprietary style. With the SE5904D, it will extend your possibility while building your IoT applications.

Rugged and flexible for advanced developments

SE5904D embeds *high EMC protection, wide temperature operation*, programming and installation flexibility in one device. A dedicated *PoE version* allows you to power on the device through Power over Ethernet (IEEE802.3af) without the need of separate and space consuming power supply. *SFP version* enhances the device providing long range fiber optic connectivity capability, in the need of a stable and remote fiber connection.

APPLICATION

The **IoT** (Internet of Things) or **IIoT** (Industrial Internet of Things) is a trending topic these days. It's all about bringing devices, sensors, actuators, data and commands to the cloud, with the ultimate goal to improve the quality of life, the services Smart Cities can offer, saving energy or saving money. This requires two things: to vehiculate the collected data to the cloud in a format that can be recognized and processed and to process, compute and analyze all this amount of data in real time.

It is not a concept far from reality. Imagine you'd like to bridge a Modbus Sensor to the cloud. And you'd like to have the application running on the cloud to be able to process multiple sensors' data, and to trigger some event in some specific stations along the network. You may also have the need to override the cloud control and manage the application locally. Any application has its story.
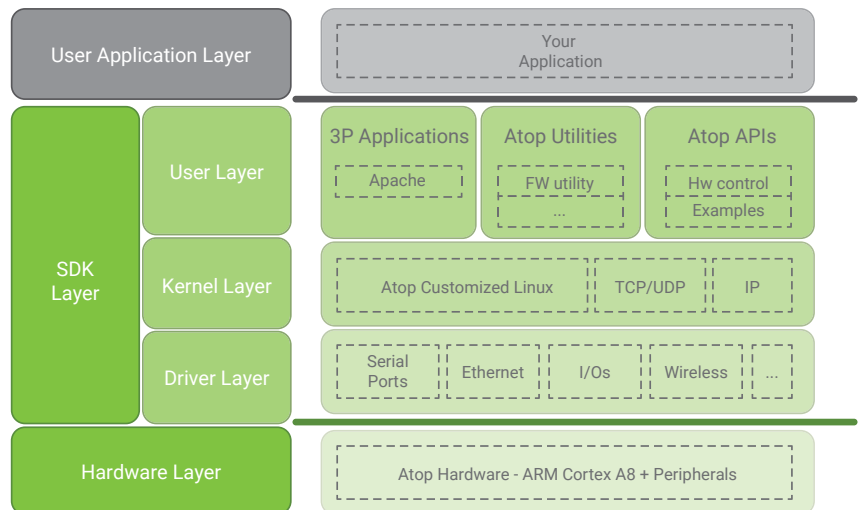
Here at ATOP, we understand these different needs and we are providing you different working models, based on what your needs are.

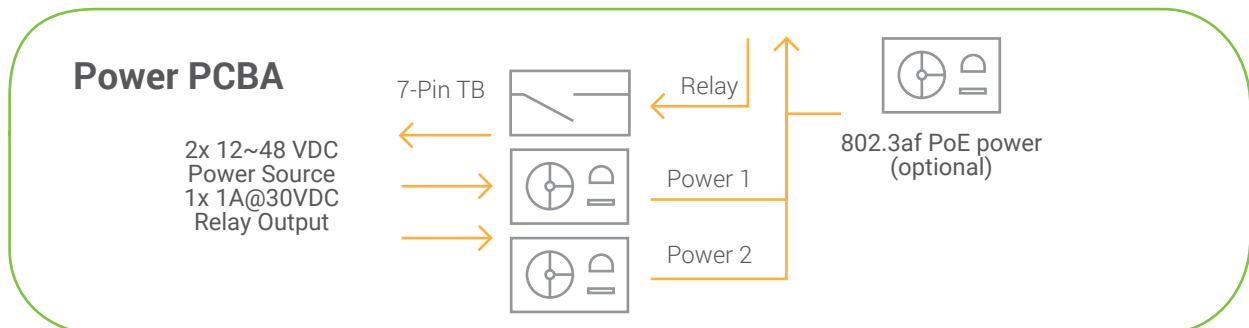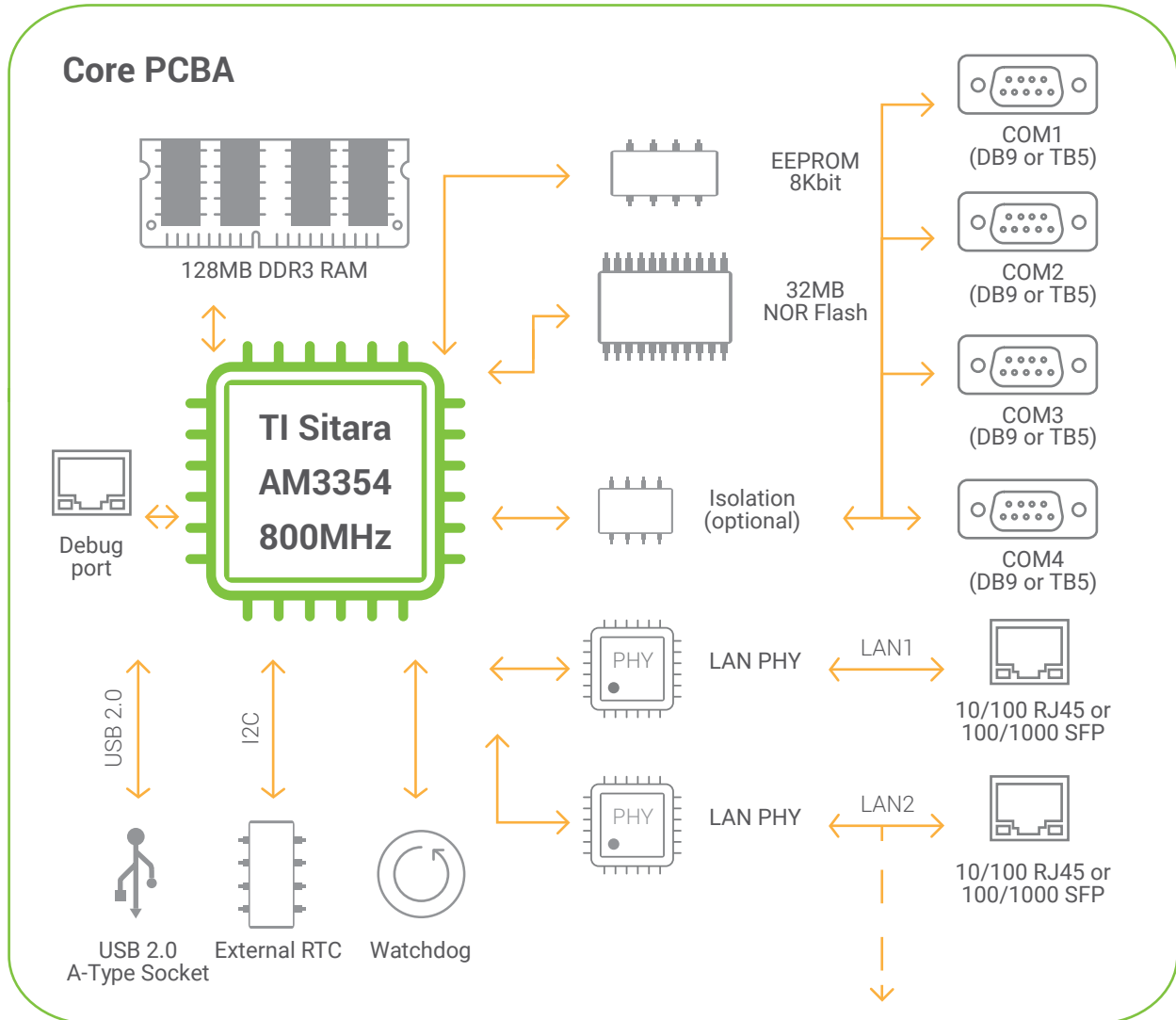## Use the Standard SDK, programmable embedded computer if:

• You are familiar with Linux OS

• You have ANSI C programming skills

• Your application is strictly time/
  performance sensitive

• Your application has very critical
  exception handling requirements

Our SDK products provide:

• _Ported, proven and tested peripherals (such as I/Os, Ethernet, Serial, Relays) and integrated drivers_

• _ATOP customized Linux Kernel and network protocols_

• _Ported, debugged and proven third party applications_

• _Utilities and APIs to control the hardware in an easy and effective way_

• _Opened software architecture to create your own system image_

• _Linux source code to extend the kernel capability_

• _Modifiable WEB contents to customize proprietary WEB style_

• _Example of source code_

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BLOCK DIAGRAM

Core PCBA

128MB DDR3 RAM

TI Sitara
AM3354
800MHz

Debug port

EEPROM
8Kbit

32MB
NOR Flash

Isolation
(optional)

COM1
(DB9 or TB5)

COM2
(DB9 or TB5)

COM3
(DB9 or TB5)

COM4
(DB9 or TB5)

USB 2.0

I2C

USB 2.0
A-Type Socket

External RTC

Watchdog

PHY — LAN PHY — LAN1
10/100 RJ45 or
100/1000 SFP

PHY — LAN PHY — LAN2
10/100 RJ45 or
100/1000 SFP

Power PCBA

7-Pin TB

2x 12~48 VDC
Power Source
1x 1A@30VDC
Relay Output

Relay

Power 1

Power 2

802.3af PoE power
(optional)

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SPECIFICATIONS

Hardware Specifications	
CPU	Texas Instruments Sitara ARM Cortex A8 AM3354 800MHz
Flash	32 MB NOR Flash
RAM	SDK version: 512 MB DDR3
EEPROM	24LC64
Watchdog	ADM706
Real Time Clock (RTC)	Yes - with external chip
Buzzer	Yes
Console port	Yes - on-board connector
Reset button	Yes
Network Interface	
Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X) and 100BaseF(X) IEEE 802.3z for 1000Base-X
Ethernet Ports	2x 10/100 Mbps RJ-45 or 2x 100/1000 Mbps SFP slot (SFP version)
Power over Ethernet	IEEE 802.3af on LAN2 (PoE version only)
Serial Interface	
Connector	D-Sub9 RS-232/485 software selectable (DB model) 5-Pin 5.08mm Terminal Block (TB and SiS model)
Ports	4 port RS-232/422/485 (2 and 4-wire) + 1 RJ45 console port
Serial Port Isolation	3 kV (SiS version only)
Pull-high / Pull-low /Term. resistors	Software selectable.

Configuration	Baud Rate	50 ~ 921,600bps
	Data Bits	7, 8
	Stop Bits	1, 2
	Flow Control	None, Xon/Xoff, RTS/CTS (RS-232 only)

Other interfaces	
USB ports	1 x USB A Type (USB 2.0) - High-Speed OTG + power
Software	
Bootloader	U-boot 2014.07
Linux kernel	Linux 3.14.26
Linux toolchain	Linux 32 bits toolchain gcc (C/C++ PC cross compiler), glibc
Linux sample code	RS232, RS485, RTC, watchdog, LED, Relay, Buzzer, Button, network socket

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Power	
Input Voltage	12~48 VDC IEEE802.3 af (PoE) through LAN 2 - PoE version only
Power Redundancy	Yes, 2 independent power inputs
Relay Output	1x 1A @30 VDC (normal open)
Connector	7-Pin 5.08mm Lockable Terminal Block
Power Consumption	0.65A @ 9VDC (6 W Max)
Reverse Polarity Protection	Yes
Environmental limits	
Operating Temperature	-40°C~85°C (-40°F~185°F)
Storage Temperature	-40°C~85°C (-40°F~185°F)
Ambient Relative Humidity	5%~95%, (Non-condensing)
Mechanicals	
Housing	IP30 protection, SPCC metal housing
Dimensions(W x H x D)	55 x 145 x 113 mm
Installation	DIN-Rail or Wall-Mount (optional kit)
Weight	400 g
Reset Button	Yes

DIMENSIONS & LAYOUT

Front View

RJ45 DB9 Type   RJ45 TB5 Type   SFP DB9 Type   SFP TB5 Type

Top View   **Bottom View**

Side View

145   50   141,8   177,8

113   12,5

Rear View

54   30   161,8   46

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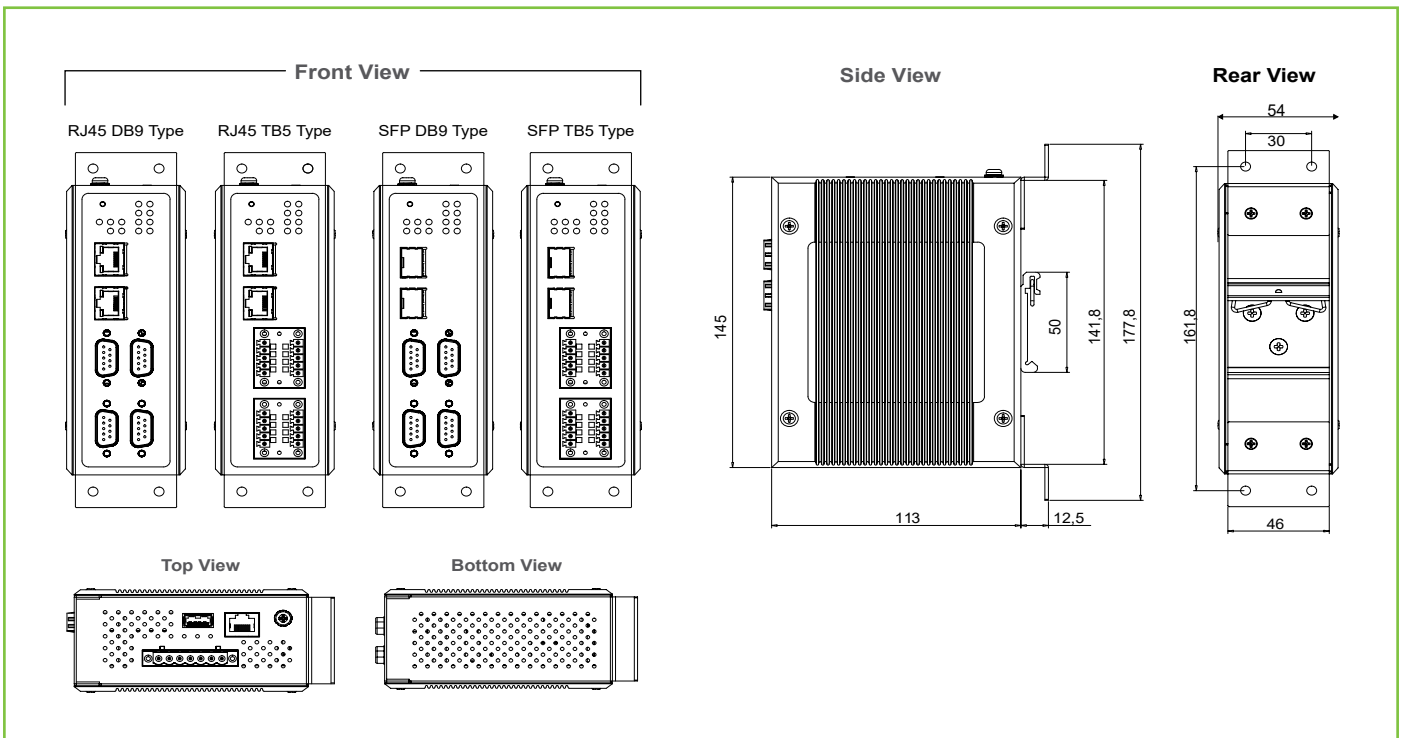
REGULATORY APPROVALS

Regulatory Approvals				
Safety	IEC/EN 61010-1, UL61010-1, IEC/EN 61010-2-201, UL61010-2-201, EN62368-1			
EMC	FCC Part 15, Subpart B, Class A EN 55032, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-4			
Test	**Item**		**Value**	**Level**
IEC 61000-4-2	ESD	Contact Discharge	±6kV	3
		Air Discharge	±8 kV	3
IEC 61000-4-3	RS	Radiated (enclosure)	10 V/m	3
IEC 61000-4-4	EFT	DC Power Port	±2.0KV	3
		Signal Port	±2.0KV	4
IEC 61000-4-5	Surge	DC Power Port	Line-to Line±1.0KV	3
		DC Power Port	Line-to Earth±1.0KV	2
		Signal Port	Line-to Earth±2.0KV	3
IEC 61000-4-6	CS	Conducted (enclosure)	10 V rms	3
IEC 61000-4-8	PFMF	Enclosure	30 A/m	4
Shock	MIL-STD-810G Method 516.7			
Drop (Freefall)	MIL-STD-810G Method 516.7			
Vibration	STD-810G Method 514.7			
RoHS II	Yes			
MTBF	model average 14.56 Years (according to MIL-HDBK-217F)			
Warranty	5 years			

ORDERING INFORMATION

Please note the following suffixes to be added to he chosen model name:
- SDK version suffix: (SDK)

Ordering information		
Model name	**Part Number**	**Description**
SE5904D-4P-DB	1P1SE5904D000BG	Ind. 4-Port Serial Device Server, 10/100BASET(X), DB9
SE5904D-4P-TB	1P1SE5904D000CG	Ind. 4-Port Serial Device Server, 10/100BASET(X), TB5
SE5904D-4P-Sis	1P1SE5904D000DG	Ind. 4-Port Ser. Dev. Serv,10/100BASET(X), 3kV Isolated
SE5904D-4P-PoE-DB	1P1SE5904D0008G	Ind. 4-Port Ser. Dev. Serv, 10/100BASET(X)with PoE, DB9
SE5904D-4P-PoE-TB	1P1SE5904D0009G	Ind. 4-Port Ser. Dev. Serv, 10/100BASET(X)with PoE, TB5
SE5904D-4P-PoE-Sis	1P1SE5904D000AG	Ind. 4-Port Ser. Dev. Serv, RJ45, PoE, 3kV Isolated

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Optional Accessories

Model name	Part Number	Description
SDR-75-24	50500752240001G	75W/3.2A DIN-Rail 24VDC power supply with 88~264VAC / 124~370VDC input
CBL-RJ45(8P)-DB9(F)-90-C	50891971G	8-pin RJ45-DB9 debug cable, 90cm
GDC-120	59906861G	120mm copper woven grounding cable
ADP-DB9(F)-TB5	59906231G	Female DB9 to Female 3.81mm TB5 Converter
WMK-450-Black	70100000000052G	Aluminum wall mount kit