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SIMATIC IOT2040
Technical slides

siemens.com/iot2000

SIMATIC IOT2040
Addressing the challenges of Industrial IoT

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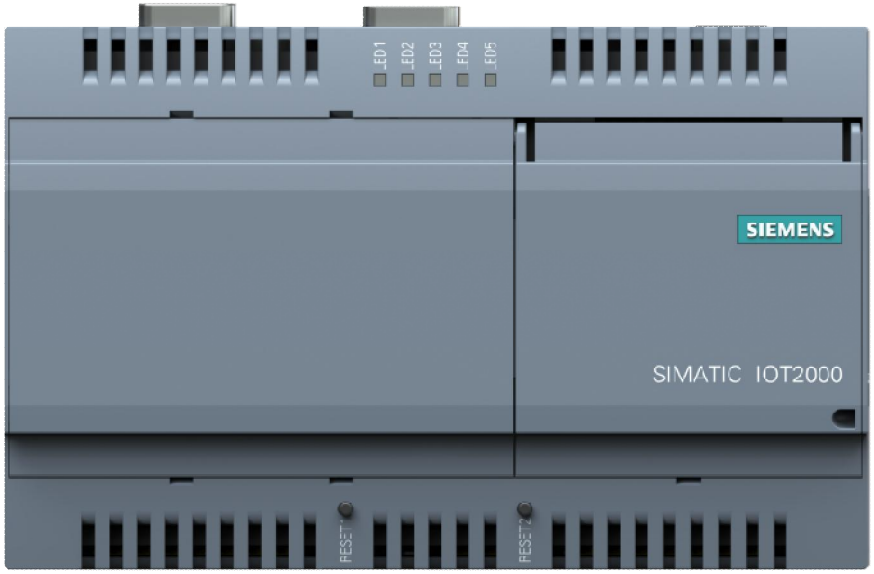
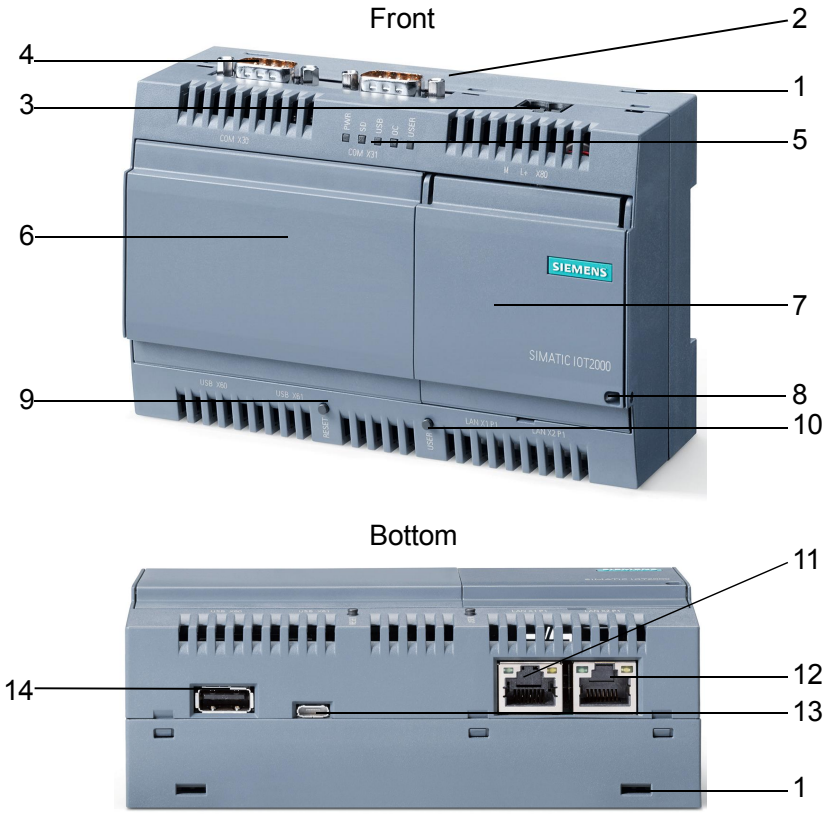


SIMATIC IOT2040

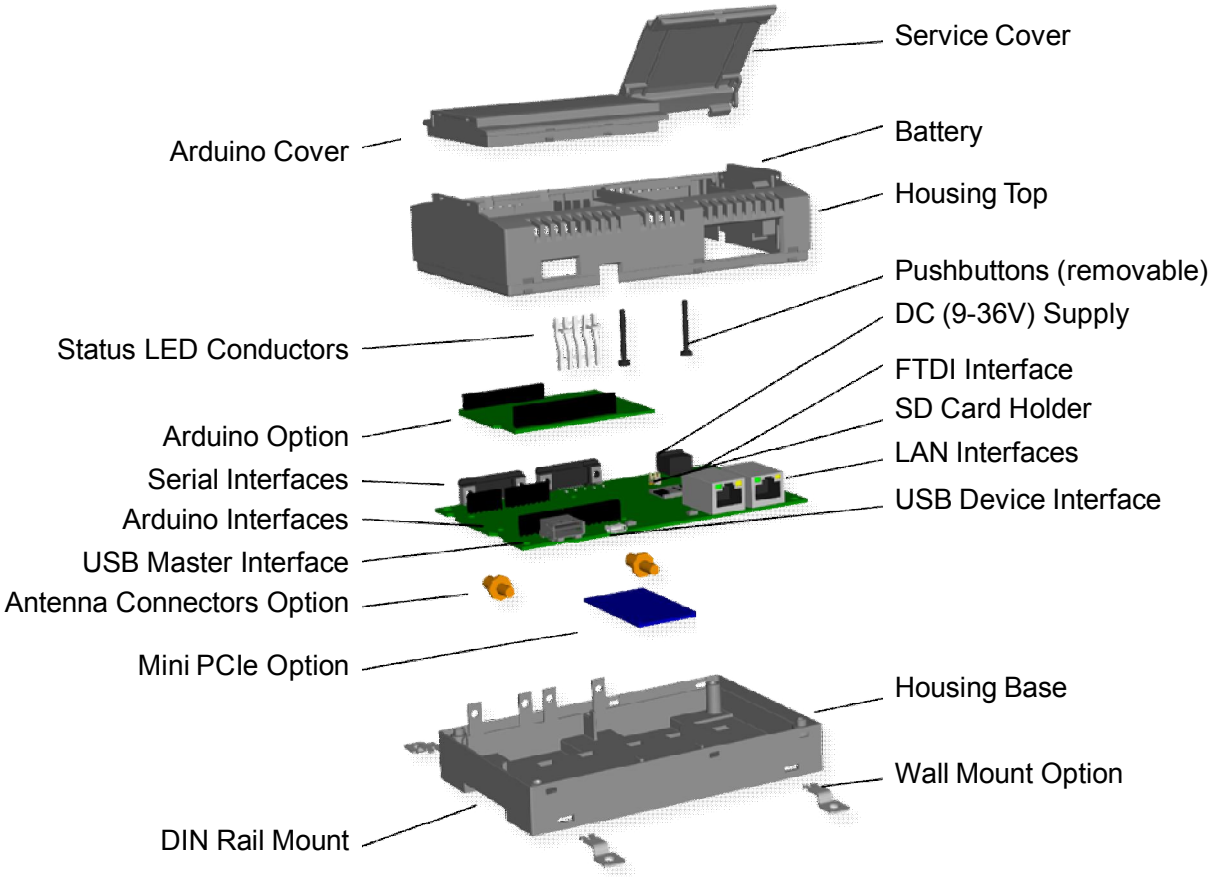
- Intel-Quark based Mini-PC for gateway applications in Industrial IoT solutions
- Robust
  - Designed for 24/7 operation
- Scalable
  - with Arduino-Shields or miniPCIe cards
  - Access to internal interfaces / SD-Card-Slot
- Programmable in High Level languages
  - Several IDEs / Compiler available for LINUX

SIMATIC IOT2040
External interfaces



1) Openings for push-in lugs for wall mounting
2) Markings for the installation of antennae
3) Power supply connector
4) COM interfaces (RS232/422/485)
5) LEDs
6) Cover on left (Arduino interface)
7) Cover on right (µSD card, battery)
8) Securing device
9) RESET button for the CPU
10) USER button, programmable
11) Ethernet interface 10/100 Mbps
12) Ethernet interface 10/100 Mbps, prepared for PoE
13) USB Type Micro B
14) USB Type A

SIMATIC IOT2040
Internal interfaces - Expandability



SIMATIC IOT2040
Technical Data (1)

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	SIMATIC IOT2040
CPU	Intel Quark x1020 (x86 400 MHz)
Security features	yes
RAM / Flash / SRAM	1 GB / 8 MB / 256 kB
Graphic interface	no
Ethernet interfaces	2x 10/100 Ethernet RJ45
Serial interfaces	2x RS232/422/485 (switchable)
USB interfaces	1x USB Controller + 1x Device
LED	4x System + 1x User
Buttons	1x Reset + 1x User
RtC	Battery buffered Real-time-Clock
System monitoring	Watchdog

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Technical Data (2)

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	SIMATIC IOT2040
Arduino Extension / Pinout	Arduino Uno R3 compatible 18x General Purpose I/Os
mPCIe Extension	1x mPCIe Full Size 2x defined breakouts for antenna
Internal Interfaces	FTDI-interface (System console) TTL-232R-3V3
Mass storage	microSD Card Slot SDHC up to 32 GB
Battery	Changeable
Housing	Protectable against unauthorized access
Covers	Service Cover (µSD-Card, Battery, FTDI-interface) Arduino cover (Arduino shield)
Mounting	DIN rail mount / Wall mount (accessories)

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Technical Data (3)

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	SIMATIC IOT2040
Operating temperatures	0 - 50° C (horizontal) / 0 - 45° C (vertical)
Vibration / Shock	1 g / 15 g
Protection class	IP20
Power supply	9..36 V DC
Power consumption	typ. 2,2 W / max. 3,5 W
Power for extensions	Arduino: 4 W, mPCIe: 0 W Arduino: 2 W, mPCIe: 1 W Arduino: 0 W, mPCIe: 2 W USB: each 2,5 W
Certificates	CE, UL, KCC
Dimensions (b x h x d)	144 x 90 x 53 mm

SIMATIC IOT2040
Software scope of delivery

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	SIMATIC IOT2040
Operating System	Yocto V2.1 (Krogoth) based Linux • SD Card Image provided by Forum
Drivers included	• Ethernet • Serial Interfaces • Quark related features (SRAM, WD…) • MRAA (easy access of ARDUINO shield)
Build environment	Poky / Bitbake based Build • Description for generation/expansion provided by Forum
Firmware	Flash firmware preinstalled

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	Eclipse IDE	ARDUINO IDE
Suitable for	Full featured programming	Fast start with low programming knowledge
Programming language	C / C++, Java (JRE not included in base image)	Arduino (reduced C, but additional API for shield access)
Multitasking / Priorities	Yes	No (only setup() and loop())
ARDUINO Shield access	By MRAA bibliothek	direct
Use of drivers / protocols	full	Limited bindings inside application
Profinet support	Yes	No
Available for	Windows, Linux	Windows, Linux

SIMATIC IOT2040
Image development

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	SIMATIC IOT2040
SD Card Image	Base Image as Binary available as download in forum for quick start

Extending the Image for customers needs	• Description for building Images (example Base Image) provided by Forum
	• Standard Yocto build environment
	  • SIEMENS IOT2000 Layer
	  • unchanged Yocto build process (*.bb recipes)
	  • Download all by github
	• Desktop based Linux necessary (e.g. Debian, Ubuntu, SUSE)

Siemens support	FAQs and Getting Started by Forum

SIMATIC IOT2000 forum

Managed forum with getting started, application support and FAQs

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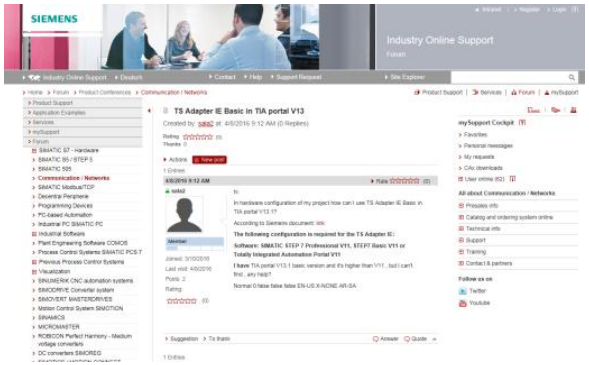
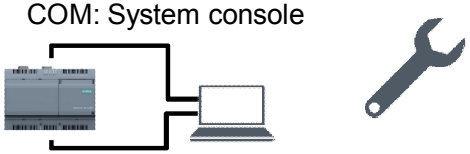
SIMATIC IOT2000 SIOS Online Forum



COM: System console



LAN: Download, Shell, Debugging,…

Development environment

- System console incl. drivers for debugging
- Arduino-IDE: for beginners (incl. Arduino shield access)
- Yocto Linux Eclipse-IDE: for advanced programmers

Base image

- SD Card base image for download
- Usage of all onboard interfaces possible

Getting started examples

- How to videos for setting up / getting to run IOT2000 applications

Initial content provided by Siemens

Application examples

- e.g. cloud connect use case
- e.g. big data handling example
- e.g. domestic use cases

Q & A

- FAQs (e.g. sampling rate analog inputs using Arduino shield, max. current feed GPIOs using arduino shield)

Further content provided by IOT2000 community and Siemens

SIMATIC IOT2040
List of Links

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FTDI driver	http://www.ftdichip.com/Drivers/VCP.htm
Win32DiskImager	https://sourceforge.net/projects/win32diskimager/
Intel System Studio IoT Edition (Eclipse) **Java JRE (optional)**	https://software.intel.com/en-us/iot/tools-ide/ide https://www.java.com/en/download/
ARDUINO IDE	https://software.intel.com/en-us/iot/tools-ide/ide https://www.arduino.cc/en/Main/Software
Yocto project quick start	https://www.yoctoproject.org/documentation
POKY	git://git.yoctoproject.org/poky.git
Meta_iot2000	git@code.siemens.com/meta-iot2000.git
Forum	https://support.industry.siemens.com/tf/ww/en/threads/303/?page=0&pageSize=10

Thank You for Your Attention

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