

Individual.
Embedded.
Systems.

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We develop innovative
and sustainable embedded
products and services for the
digital world of tomorrow –
driven by passion and
partnerships.

Your Digital Heroes.



COMPANY

Embedded systems are used in almost all industries. We have specialized in the following five:



Building Automation
& Smart Home |
Factory | City



Laboratory
& Measurement



eMobility
& Transportation



Machinery
& Plant engineering



Medical Technology
& Healthcare

DH electronics is specialized in embedded systems and provides both standard products and customized solutions. As a full-service provider, we offer everything from the first idea to the finished product: hardware and software development, construction, testing and certification, logistics, after sales service, lifecycle and obsolescence management.

Our System on Modules (DHSOM), Human Machine Interfaces (DHMI), Industrial IoT Gateways (DHCON) and Development and Carrier Boards are Engineered and Made in Germany to meet industrial needs.



EMBEDDED PRODUCTS



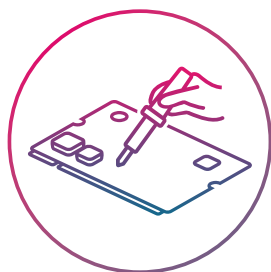
Control any type of application with our System on Modules (DHSOM).



Interact with machines and systems using our Human Machine Interfaces (DHMI).



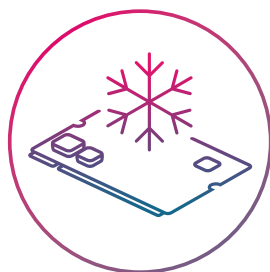
Connect devices to each other or to the cloud using our IoT Gateways (DHCON).



Use our Development and Carrier Boards for your prototyping and find out what solution fits best.



Learn how to realize energy-efficient applications with our Low Power Solutions.



Learn more about our Cooling Solution that eliminates the need for heat sinks.

EMBEDDED SERVICES

Our Digital Heroes provide support from the idea to the finished product and take care of hardware and software development as well as lifecycle management. We also work closely with our long-standing sales and technology partners from the DH ecosystem.

SOFTWARE DEVELOPMENT

- Mainline Linux Debian & Yocto
- Artificial Intelligence
- Board Support Packages
- User Interface Design

HARDWARE DEVELOPMENT

- Lifecycle and Obsolescence Management
- Engineered and Made in Germany
- Customization of standard products to customer needs
- Prototyping, Tests, Certifications

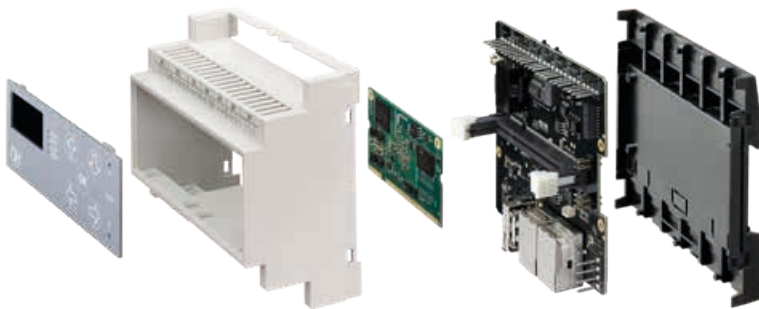
LIFECYCLE MANAGEMENT

- Guaranteed long-term availability of 10+ years
- Obsolescence Management
- Aftersales Service

INDIVIDUAL SOLUTIONS

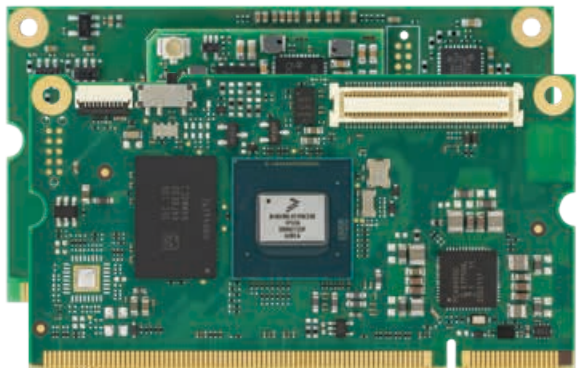
Customized Embedded Systems

Thanks to our modular system, we can develop individual embedded solutions quickly, easily and cost-effectively. Especially for the Customization of Human Machine Interfaces and IoT Gateways we build up on existing components and thus enable a short time-to-market for individual developments.



DHCOM family concept enables scalability and highest flexibility

Thanks to the family concept, our pluggable DHCOM System on Modules can be replaced by a higher-performant SOM at any time. They use the SODIMM-200 socket and are pin-compatible to each other. Therefore DHCOM modules can be interchanged without the need for a complete redesign. The DHCOM family concept guarantees high scalability, flexibility and availability. It saves development costs and time and reduces the consumption of resources.



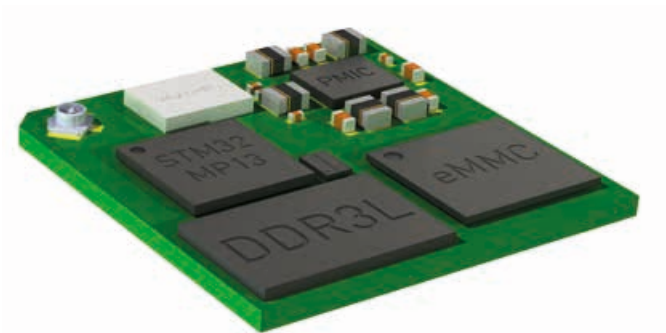
SYSTEM ON MODULES



DHCOR STM32MP13

Cost and energy efficient System on Module running mainline Linux

- Compact, robust, cost- and energy-efficient SoM with enhanced security features
- Solderable SoM with Cortex-A7 up to 1 GHz in smallest size (29 x 29 mm)
- All SoC features available on mainboard
- Equipped with DDR3L, eMMC and SPI boot flash, WiFi/BT
- Supports Dual GB Ethernet and Dual CAN-FD.
- Low power modes supported by STPMIC1
- Guaranteed long-term availability of 10+ years



for more information

SYSTEM ON MODULES



DHCOM i.MX8M Plus

Powerful dual or quad Cortex-A53 processor with Neural Processing Unit.

- Real-time control, machine learning, AI, advanced multimedia, industrial automation
- NPU with up to 2.3 TOPS enables matrix calculations e.g. for pattern, speech, object recognition
- Advanced image and video processing via video encoding and decoding
- Compatible with other modules from the DHCOM family (SODIMM-200 socket)
- No heat sink necessary thanks to 5-Cent Cooling Solution
- Guaranteed long-term availability of 10+ years



for more information

SYSTEM ON MODULES



DHCOMSTM32MP15

STM32MP1 in the 800 MHz variant for even more performance.

- Dual Core ARM Cortex-A7 CPU with Cortex-M4 subsystem
- MPU from the famous STM32MP1 series by STMicroelectronics
- Mainline open source Linux with Etnaviv GPU driver support
- Advanced hardware encryption and Secure Boot
- Dual Band WiFi and Dual Mode Bluetooth 5
- Compatible with other modules from the DHCOM family (SODIMM-200 socket)
- Guaranteed long-term availability of 10+ years



for more information

SYSTEM ON MODULES



DHCOR STM32MP15

Based on MPU from STM32MP1 family.

- Solderable system on module in postage stamp size with only 29 x 29 x 3.2 mm
- MPU from the famous STM32MP1 series by STMicroelectronics
- Solder-on module enables cost-effective, automated assembly
- Optimal for motor control due to PWM synchronized AC timer
- Suitable for powerful graphical user interfaces
- Avenger96 as reference design
- Guaranteed long-term availability of 10+ years



for more information

SYSTEM ON MODULES



DHCOM i.MX6UL(L)

High performance, low power, low cost.

- High performance with pre-certified Bluetooth and WiFi
- Powerful ARM Cortex-A7 CPU from NXP with up to 900 MHz
- Cost-effective and extremely energy-saving
- Compatible with other modules from the DHCOM family (SODIMM-200 socket)



for more information

SYSTEM ON MODULES



DHCOR i.MX6UL(L)

Space-saving, cost-efficient, power-saving.

- Solderable computer module in smallest design with only 29 x 29 x 3.2 mm
- Solder-on module enables cost-effective, automated assembly
- WiFi, Bluetooth and Dual Ethernet on board
- Supply voltage: 5.0 VDC at typ. 0.5 W
- Guaranteed long-term availability of 10+ years



for more information

SYSTEM ON MODULES



DHCOM i.MX6

Powerful all-rounder with Solo, Dual, DualLite or Quad Core.

- High flexibility through free choice of processor: ARM Cortex-A9 from NXP (Solo, Dual, DualLite, Quad Core).
- Mainline open source Linux with Etnaviv GPU driver support
- CPU with 2D/3D graphics accelerator and image processing unit
- No heat sink required thanks to 5-Cent Cooling Solution
- Compatible with other modules from the DHCOM family thanks to SODIMM-200 socket
- Guaranteed long-term availability of 10+ years



for more information

HUMAN MACHINE INTERFACE



DHMI 10.1

High quality HMI with 10.1" and optional frame.

- Robust and compact solution for human-machine interaction
- Powerful and energy-saving DHCOM module as computing unit
- Use in industrial applications thanks to EN6100-6-2 and EN6100-6-3
- No heat sink required thanks to 5-cent cooling solution
- Thanks to the family concept, the module can be replaced by a higher-performance module at any time



for more information

HUMAN MACHINE INTERFACE



DHMI 8

8" Human Machine Interface for industrial and building automation.

- Robust and compact solution for human-machine interaction.
- Powerful and energy-saving DHCOM module as computing unit
- Use in industrial and commercial applications thanks to EN6100-6-2 and EN6100-6-3
- No heat sink required thanks to 5-cent cooling solution
- Thanks to the family concept, the module can be replaced by a higher-performance module at any time



for more information

HUMAN MACHINE INTERFACE



DHMI 7

7" HMI for harsh industrial environments.

- Robust and compact solution for human-machine interaction
- Powerful and energy-saving DHCOM module as computing unit
- Use in industrial and commercial applications thanks to EN6100-6-2 and EN6100-6-3
- No heat sink required thanks to 5-cent cooling solution
- Thanks to the family concept, the module can be replaced by a higher-performance module at any time



for more information

HUMAN MACHINE INTERFACE



DHMI 4.3

HMI with 4.3" is perfect for industrial applications.

- Robust and compact solution for human-machine interaction
- Powerful and energy-saving DHCOM module as computing unit
- Use in industrial and commercial applications thanks to EN6100-6-2 and EN6100-6-3
- No heat sink required thanks to 5-cent cooling solution
- Thanks to the family concept, the module can be replaced by a higher-performance module at any time



for more information

INDUSTRIAL IOT GATEWAYS



IoT Gateway DRC02

The heart of all (Industrial) Internet of Things applications.

- Connects sensors, IoT modules and smart devices to the cloud
- Allows data filtering, visualization and complex analysis
- Individual solution based on our standard components: fast, simple, cost-efficient
- Computing power can be determined by the choice of computer module, depending on requirements
- All common network and industrial interfaces
- Extension modules for NB-IoT/LTE, EnOcean, LON, RS-485 available and more under development



for more information

INDUSTRIAL IOT GATEWAYS



IoT Gateway DRC Compact

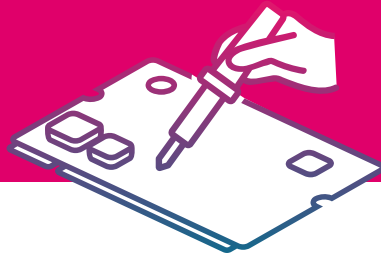
Connects sensors, IoT modules and sensors to the cloud.

- Based on the STM32MP1 DHCOR, the DRC Compact represents a cost-effective and performant unit
- DIN Rail Controller (DRC) connects sensors, IoT modules and smart devices to the cloud
- Allows data filtering, visualization and complex analysis
- Features all common network and industrial interfaces such as RS485, RS232, CAN, Ethernet, USB, WiFi and BT
- Operating system is Mainline Linux Debian or Yocto
- Guaranteed long-term availability of 10+ years and more under development



for more information

DEVELOPMENT AND CARRIER BOARDS



Premium Developer Kit

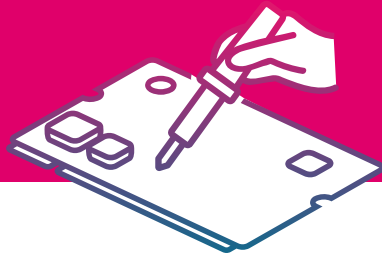
The Premium Developer Kit for all pluggable DHC0M modules.

- Reference design for DHC0M modules, circuit diagram is available
- Signals can be separated and measured by jumper
- All interfaces of the DHC0M family concept are connected on board and available externally
- DHC0M 5-cent cooling solution is integrated on board
- Display Connector for the possibility to adapt a customer specific display
- Integrated measurement amplifier to determine the current consumption of the DHC0M module
- Integrated audio codec



for more information

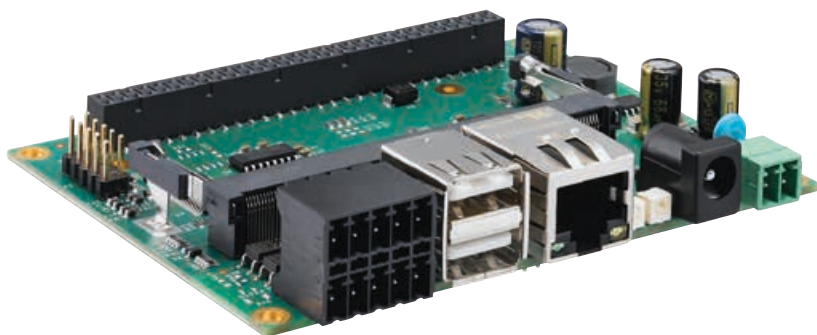
DEVELOPMENT AND CARRIER BOARDS



picolTX Carrier Board

The Pico ITX compatible carrier board for all DHCOMs.

- Ideal for fast and easy prototyping
- Compatible with all pluggable DHCOM modules with SODIMM-200 socket
- Space saving with only 100 x 72 x 18 mm
- No heat sink thanks to 5-Cent Cooling Solution



for more information

Prototyping made easy with 96Boards.

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LOW POWER SOLUTIONS



What are ARM processors?

In our System on Modules we only use energy-efficient ARM processor architectures such as Cortex-A7, Cortex-A8 or Cortex-A9. Due to low-power concepts, smallest design and low heat generation, ARM processors are particularly popular in the embedded industry and are produced for example by ST and NXP. The performance of ARM processors has increased even more due to computing cores with 64-bit architecture and dual core processors like in our DHCOM STM32MP15 or DHCOR STM32MP15 enable higher performance.

Climate change is a global problem that we can tackle together by saving energy. Our goal is therefore to develop our products as energy-efficient as possible. In doing so, we not only rely on (ultra) low power and standby modes but also use only energy-saving ARM processors. Furthermore, our embedded products enable the intelligent control of machines, plants or buildings and thus contribute to higher energy efficiency.

Embedded solutions enable energy efficiency

The collective terms smart buildings, smart cities, and smart industries describe ideas and concepts for smart solutions on the way to greater energy efficiency and sustainability. Embedded products and services enable the connection of sensors, actuators and devices with each other or with a cloud. Intelligent control means that devices and systems are only switched on when they are really needed. Otherwise, standby and low power modes minimize energy consumption. With our System on Modules, Human Machine Interfaces and IoT Gateways we provide the basis for the implementation of smart solutions in different areas.

Example: Low Power Modes DHCOM STM32MP15

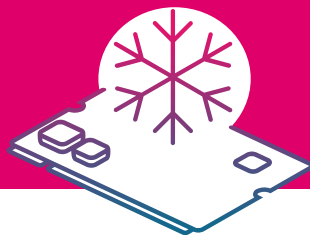
With the low-power strategy for our DHCOM STM32MP15, the power consumption of the SOM can be reduced to 10% compared to operation and the power consumption in run mode from typ. 1.4 -2 W to a few milliwatts. The Linux system is put into standby mode while the external RAM is in self-refresh mode. In addition, the pluggable DHCOM STM32MP1 has three modes that the Cortex-M4 can be in while the Cortex-A7 is in standby mode.

275 mW: Cortex-M4 in Active-Mode (can still operate)

225 mW: Cortex-M4 in Stop-Mode

185 mW: Cortex-M4 in Off-Mode

COOLING SOLUTIONS



How the 5-Cent Cooling Solution works

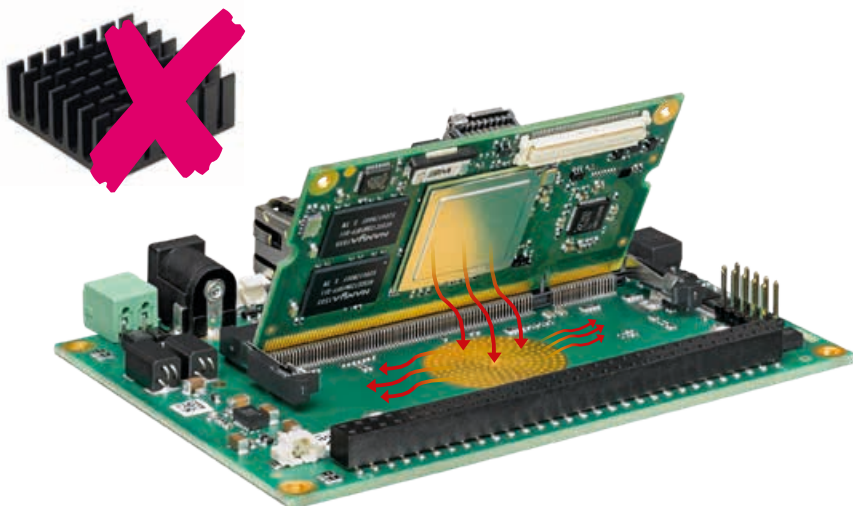
With our Cooling Solution, heat is dissipated from the processor through thermal vias into the inner copper layers of the PCB via a 5-Cent copper surface with the aid of a gap pad. There, the heat is distributed evenly over the carrier board and is dissipated by it to the environment primarily by convection and thermal radiation. The even heat distribution protects the remaining components from overheating. If required, additional heat dissipation can be connected to the 5-Cent copper area on the underside of the carrier board. For example, the case can be used for optimum heat dissipation via another gap pad.

Advantages of our innovative cooling solution

- Cost saving: only gap pad needed, no costs for heat sink and mounting
- Space-saving: slim product design, no space needed for heat sink
- Time-saving: easy handling of gap pads by simply sticking them on
- Robust: cooling solution with low weight is shock and vibration resistant

The 5-Cent Cooling Solution can be combined with the following DHCOM modules:

- | | |
|---|-------------------|
| ■ DHCOM i.MX8M Plus | ■ DHCOM AM335x |
| ■ DHCOM i.MX6 Solo DualLite Dual Quad | ■ DHCOM STM32MP15 |



CASE STUDIES

Smart Heating: intelligent heating with modern heat pumps

The interface module developed individually by DH for Kermi serves as the central interface in building automation and is used in all new heat pumps.



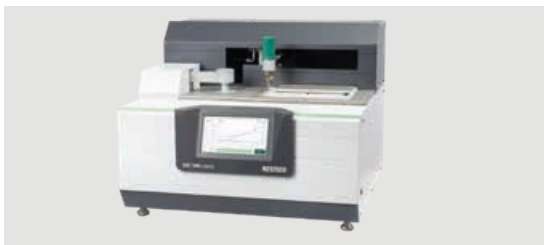
Smart Building: remote maintenance and energy optimization with IoT Gateway

With the IoT Gateway, DH electronics provides the perfect hardware basis for plug-and-play solutions for IoT applications from Juconn.



7" HMI for thermal analysis devices

DH electronics convinces as a full-service provider: capacitive touch, carrier board, SOM, assembly, bonding, BSP.



CASE STUDIES

Smart garage: automation of intelligent doors

DH electronics equips the heart of the maveo ecosystem with the matching DHCOR i.MX6UL(L) solder-in module.



Independent battery test for used electric vehicles

The powerful DualCore STM32MP1-based computer modules convince all along the line.



System for detecting errors in the broadcasting infrastructure

DH electronics convinces with DHCOM STM32MP1, guaranteed long-term availability of 10+ years and technical support.



PARTNERSHIPS

Technology Partners



Sales Partners



AWARDS

With our Digital Heroes team, we have been able to win various awards over the past few years:

- TOP 100 Innovator
- Leading Employer
- Kununu Top Company



CAREER



We are always looking for members in our Digital Heroes Team. You can find current job advertisements on our website or send us an unsolicited application.

Your advantages as a Digital Hero:

- Thanks to mobile work and flexitime without core working hours, you can work when and where you want
- You can choose your own weekly working hours according to your personal preference
- We care about your future and offer training opportunities, child allowance, company pension plan, team events and more
- Your new colleagues will accompany you during your orientation and help you settle into the Digital Heroes team
- Of course you get free fruit and drinks, but above all you can expect exciting and varied tasks

Scan the qr code to get to
the job ads on our website:



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