

# Solutions for the OpenAutomation

INDUSTRY 4.0



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ASEM designs and manufactures a wide range of Industrial PCs, HMI and PAC (Programmable Automation Controller) solutions based on x86 and ARM Cortex hardware platforms for the industrial automation market.

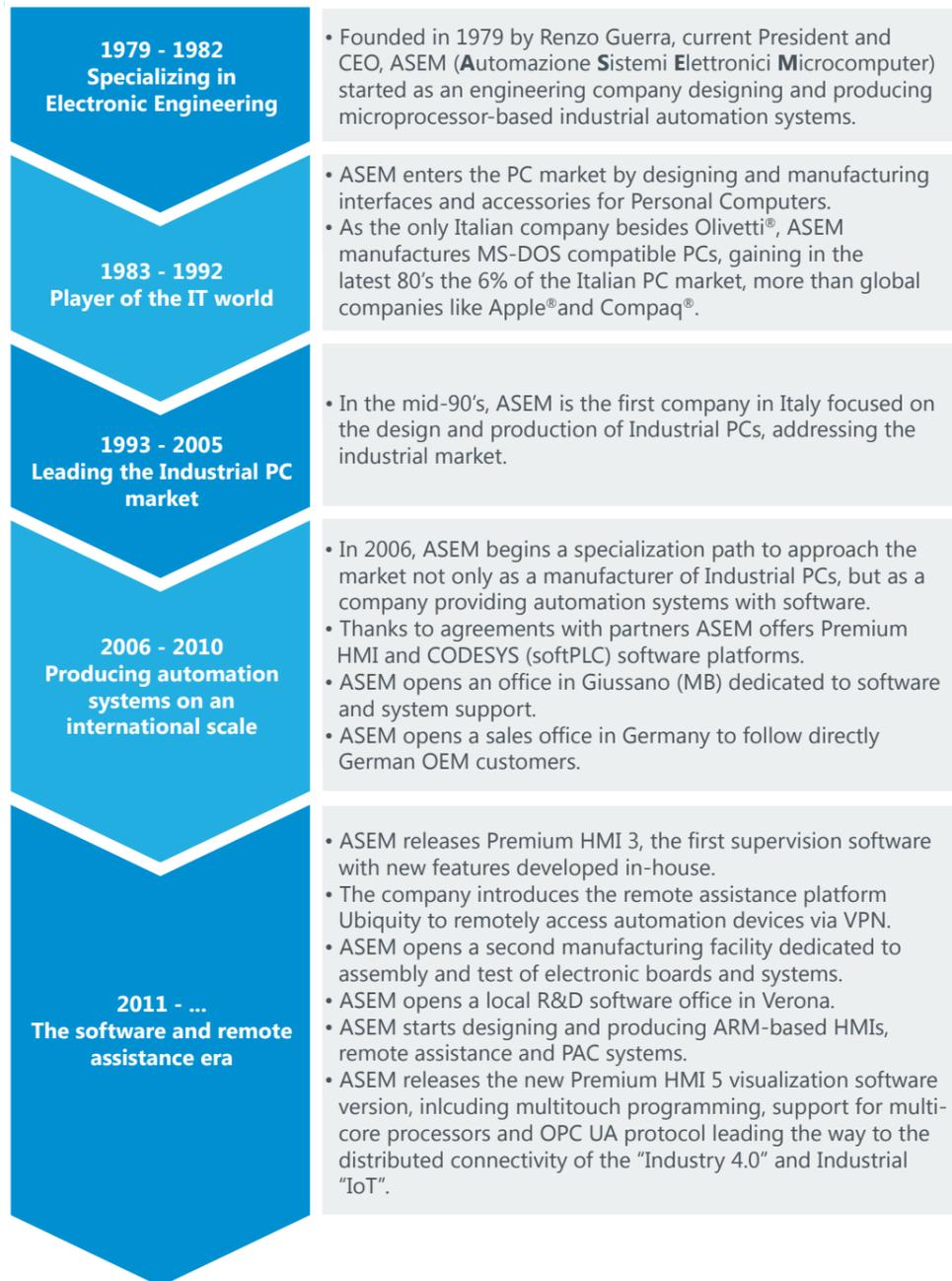
# 37 years of innovation **Made in Italy**

Since 1979, ASEM is a pioneer in the digital technologies integrations between Information & Communication Technology and Industrial Automation.

The performance, configurability, robustness and design of ASEM products and systems, are the result of 37 years of experience in designing and producing solutions for the

most demanding industrial applications. Exploring from the very beginning the potential of Open & Standard technologies into Factory Automation, and leveraging the first-class

know-how in developing hardware, firmware and software, ASEM has strengthened its leading position in Italy in the Industrial PCs, HMIs and remote assistance and control systems market.



# ASEM and the "Open Automation"



**Over 25 years of experience in design and production of IPCs and 10 years of specialization in PC-based systems for machine and process automation.**

Leading the "Open Automation" in Italy, ASEM is a reliable and professional partner able to guide customers through the evolution of HMI, control and remote assistance technology for the Industrial Automation market, developing and producing "Open & Standard" hardware platforms integrated with innovative, flexible and easy-to-use software. ASEM has its own complete hardware, firmware, software, mechanics and system design capability and manages internally all production phases, including board assembly and welding.

**ASEM: entrepreneurship, investments, innovation**  
Thanks to a constant focus on innovation and quality, combined with investments in human resources, technology and manufacturing assets, ASEM is now one of the European emerging companies in the industrial automation market, providing systems and solutions that are entirely designed, engineered and produced in-house. The company has been committed to anticipate customers' needs, convinced that machine builders should leave proprietary technologies, to embrace "Open & Standard" platforms, focusing on software application development.

The deep knowledge of "x86" (PC) and "ARM" technology and the investments in software design are in tune with the evolution of the industrial automation market needs. Market globalization and the economic crisis have forced machine builders to reduce costs and recover efficiency. At the same time end users (factories) modified their demand requiring price and delivery time reduction while increasing customization requests. Machine builders are then pushed to reduce development time and take an innovative approach using "Open & Standard" hardware platforms integrated with flexible and easy-to-use software development tools.

The integration of Information & Communication Technologies is now a need to produce automatic machines interconnected into a wider and more complex network where to exchange data and information. ASEM technological excellence is guaranteed by significant investments in R&D and continuous training of the entire workforce. The ability to understand and anticipate the fast market evolution, set and follow the right strategies, has enabled the company to maintain a steady growth momentum in the last 10 years.

**ASEM in numbers:**

- 2016 Revenues: 34 million Euros
- 175 employees
- 5.200 sqm Headquarters in Artergna (UD)
- 3.250 sqm manufacturing facility in Artergna (UD)
- R&D offices in Verona
- R&D offices in Giussano (MB)
- Sales offices in Germany

# R&D

## The seamless integration of hardware and software technologies is key to success

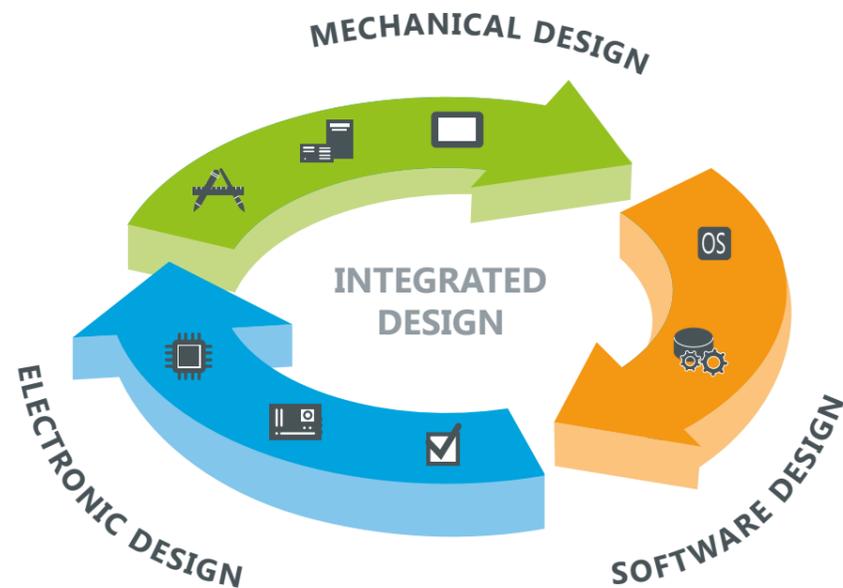
30% of ASEM human resources are dedicated to R&D. The team includes highly specialized engineers with complementary skills that cover all the electronic and mechanical design needs, as well as firmware and software development.

The close collaboration with leading technology trendsetters and the continuous dialogue with customers drive the specifications of hardware, firmware, software and systems engineering for each single product.

Thanks to the technological mastery of all system components and their perfect integration, ASEM designs performant, configurable, easy-to-use and reliable products for the most demanding industrial environments.

The different R&D teams work in synergy during the design process to ensure that hardware requirements and software features of each solution can be implemented in an integrated way.

The long experience and the high skills of the R&D engineers make ASEM a reliable technological partner to support machine builders and system integrators in the fast-changing industrial automation market.



# High tech & high quality production



**ASEM manufacturing plants comprise two modern industrial facilities covering a total area of 8.500 sqm.**

ASEM designs, engineers and manufactures electronic boards, products and systems internally. The decision to assemble electronic boards in its own Italian facility is in contrast with the industry trend to relocate electronics production activities in Eastern Europe and Far East, but the results in terms of quality and in terms of flexibility confirm the accuracy of the company's strategic decision, much appreciated by customers.

For the automatic assembly of boards, ASEM uses technologically advanced machinery, tools and equipment, such as precise and fast SMT Pick & Place positioners, selective soldering machines for "through all" components, ovens reflow and X-ray inspection ensuring high quality and flexibility. The in-house assembly of electronic boards and a constant dialogue between operations' managers and the R&D engineers increase the sensitivity of electronics and mechanical designers towards production and test phases, with a consequent advantage of an increased reliability of the overall system.

The electronic components are supplied by the major global manufacturers and are specifically selected to ensure a long life cycle of products. Mechanical parts are purchased from European suppliers selected with rigorous qualification procedures. 100% of the electronic boards are subject to burn-in and functional tests for a minimum of 12 hours in special designed climatic chambers. 100% of the assembled systems are subjected to functional tests for 12 consecutive hours.

### Continuity

The full control of design and production processes and the close cooperation with technology trend setters allow ASEM to ensure a 7/10 years life cycle of its systems and reparability of the same for at least 5 further years, with availability of spare parts. ASEM guarantees End of Life procedures lasting from 6 to 12 months for the Last Buy Order and deliveries.



# «Open Automation» driving force of the Industry 4.0

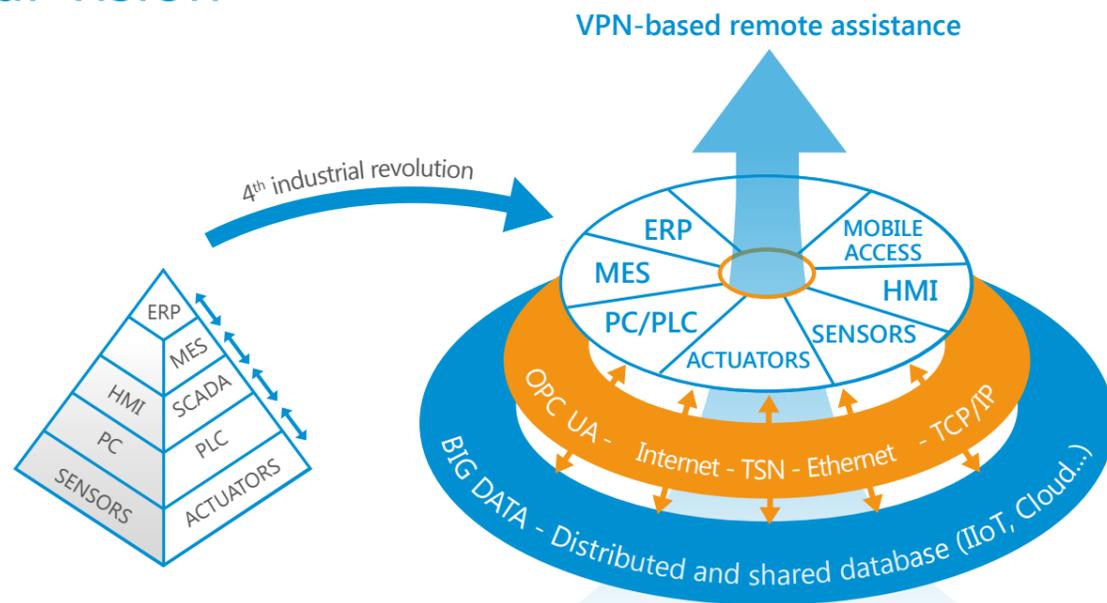


«Open & Standard» technologies integrated with flexible and user-friendly software solutions are leading the evolution to a digitalized industrial ecosystem, commonly known as "Industry 4.0". The industrial IoT (Internet of Things) and the growing number of distributed smart devices connected to the Internet, transform factories

in connected ecosystems in which sensors, automation devices, M2M («Machine to Machine») modules and software communicate and cooperate with each other and with humans in real time. These cyber-physical systems monitor physical processes, creating a virtual copy of the physical world enabling decentralized decision making.

This 4<sup>th</sup> Industrial Revolution is leading to a redesign of operations, services and Automation technologies providing the opportunity to significantly increase productivity, quality and flexibility of manufacturing systems.

## Our vision



Designing Ubiquity, an Internet-based software solution providing remote access to automated machines and plants, ASEM was one of the first companies understanding the value of Information and

Communication Technologies applied to the Automation. Nowadays ASEM is one of the few European companies mastering on its own all driver technologies of the current 4<sup>th</sup> Industrial Revolution covering

hardware development (x86, ARM platforms and OSs), and software, cloud and communication solutions design.

## Asem PC-based Automation

Open & Standard technologies for Industry 4.0

### Flexibility and openness

- Use of Open & Standard ARM and x86 technologies integrated with flexible and user-friendly software development tools
- Flexibility in creating distributed automation architectures

### Internet & Ethernet based communication

- Internet as a communication media among different plants, factories and devices
- Horizontal communication among automation devices based on Ethernet protocols
- Vertical integration among different automation and business management solutions (Enterprise Resource Planning, Manufacturing Execution Systems, etc.) by means of open, non-proprietary communication protocols (OPC UA)

### Open & Standard communication protocols

- OPC UA (Unified Architecture) is a non-proprietary M2M communication protocol for interoperability among different automation and business management solutions
- TSN, Time Sensitive Networking is an extension of Ethernet IEEE 802.1 standard, designed to obtain real-time performances

### Cyber Security

- Safety against threats and risks - physical integrity (hardware) and logical-functional (software) protection of the automation systems and content data

## Asem Software Solutions

An added value for every machine and plant

### HMI technology & Mobile devices

- Design of ergonomical user interfaces, able to provide users with all necessary information for a correct management of the production plant
- Use of mobile devices giving access to the plant and production data over the web

### Remote access technology: Ubiquity VPN

- Remote access to the plant by means of a VPN
- IEC 62443-3 & German BSI certification for security of internet based industrial communication

### IoT & Cloud technologies

- Ability of the automation systems to transfer information from sensors and field level to the cloud
- Information easily centralized and distributed
- The Cloud acts as a Gateway for an open and global interoperability of the smart factories
- Potentially unlimited data analysis power for the development of preventive and predictive maintenance models

### Control & Motion Control Technology

- Reduced design times thanks to modular, flexible and object oriented development tools, supported by real-time simulations
- Scalable control logic performances based on the choice of the CPU

### Data integration among different automation software solutions

## Smart Factory: manufacturing becomes intelligent

Ability of the smart factories to adapt to changing operating conditions and to sudden planning changes

- Fast access to production data
- Continuous production data diagnosis and analysis to obtain indications and results
- More information available for machine/plant operators, support staff, production planners and management for a better business management
- Condition monitoring: continuous monitoring of the machine / plant conditions
- Power monitoring: consumption analysis and research for a higher efficiency

# 1. Remote Assistance Solutions



# Ubiquity

## Ubiquity

The innovative remote assistance solution



**In 2011 ASEM presented Ubiquity, the innovative software platform for remote assistance and control.**

The development idea came up to solve customer requests for an easy-to-use tool to install and setup machinery and, in particular, to manage post-sales service, phases during which customers often require modifications, customizations and support.

Designed for machine builders, the remote assistance and control solution UBIQUITY allows to operate on the remote system and its sub-networks as if it was in your own office.

Traditionally, the most challenging aspect of meeting such needs is the availability of qualified technical resources, that would need the gift of **ubiquity**.



The software solution UBIQUITY enables the access to remote supervision and control systems (based on Windows CE and Windows 32/64 operative systems) and to the automation devices (PLC, drive, etc), connected to the Ethernet and Serial sub-networks of the HMI/controller, through a VPN (Virtual Private Network) based on proprietary technology comparable to a cable connection.

UBIQUITY does not require additional hardware and allows to operate in remote plants as if they were directly connected to your enterprise network. It enables technical support teams to solve any issue, eliminating the need for on-site assistance, dramatically reducing post-sale service costs.

This solution is particularly useful during machine setup and commissioning, to monitor remote applications, to modify and update software applications and remotely debug PLCs and other automation devices.

#### + What I can do with Ubiquity

- Remotely program, debug and update HMI/IPC/Controllers and automation devices (PLCs/drives, etc.) connected to Ethernet and Serial sub-networks
- Malfunctioning Analysis
- Software applications updates

#### + How it works

- Uses a simple internet connection
- Creates a VPN between the remote assistance PC and the remote device activating sub-networks access
- Activates safety procedures with end-to-end sessions without any intermediate
- Ensures reliability and service continuity thanks to a redundant and distributed server infrastructure

## Ubiquity

### Value added for all automation devices

#### + Highlights

- Remote control of the IPC/HMI/Controller
- Access to Ethernet and Serial devices connected to the IPC/HMI/controller sub-network
- Additional tools: remote desktop, file transfer, chat, etc.
- Proprietary VPN technology optimized for industrial communication
- Available with the same features for Windows 32/64 and Windows CE platforms
- No additional hardware required
- SSL/TLS safe connection and use of certificates
- Simple and easy-to-use interface
- Distributed and redundant server infrastructure ensuring service continuity
- Possibility to implement a private server infrastructure
- SDK (Software Development Kit) for programming the activation of the Control Center functions also by external applications
- Runtime with multiple connection support
- Built-in firewall:
  - VPN communication protocols filter
  - Higher security and bandwidth control
- Advanced user profiling and access control
- Trace of all Domain administration activities
- Trace of all session's activities
- Internet sharing for LAN devices
- Remote desktop via Web access
- Automatic update of the runtime
- Multimonitor remote desktop support
- IEC-62433-3 security certified



Ubiquity is a simple and ready-to-use solution. Its installation does not require any ICT expertise in network and firewalls configuration. It has a user-friendly interface that enables access to remote systems (PLCs, HMIs, drives, etc.) with a simple click through a VPN optimized for industrial communications.

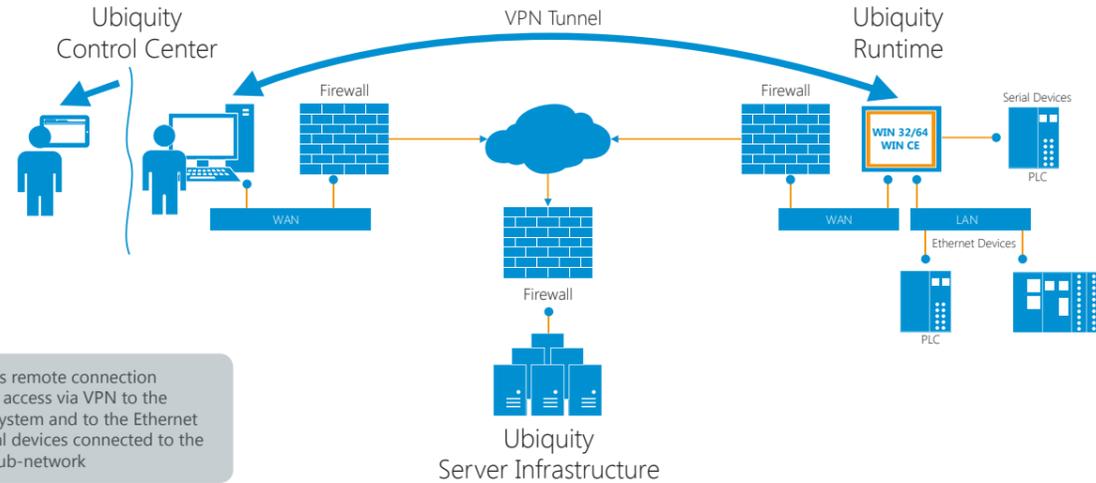
The solution allows transparent management of remote systems as if they were connected to the enterprise network and it does not require the support of network administrators for any NAT, proxy, firewall, public IP and reserved ports.

Ubiquity adds huge value in ASEM supervision and control system, but it is also a solution delivered as a software component to install on ASEM IPCs and third parties hardware.

Ubiquity is included in all ASEM Windows based HMIs, PACs and IPCs.

# Ubiquity

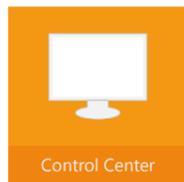
## The components



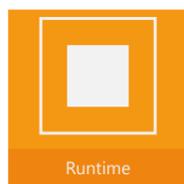
Ubiquity's remote connection diagram: access via VPN to the remote system and to the Ethernet and Serial devices connected to the system sub-network

Ubiquity platform is made up of "Control Center", the software tool to be installed on the remote assistance PC to manage the "Ubiquity Domain", of the Server infrastructure and different versions of Runtime.

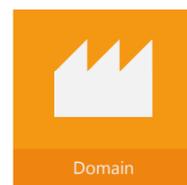
The connection between Control Center and the Runtime installed on the remote IPC/HMI/controller leverages on a safe end-to-end connection.



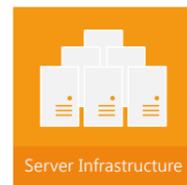
**Ubiquity Control Center**  
Control Center is installed and executed on the remote assistance PC and allows to manage the domain, the users and their privileges, and the connection with remote devices.



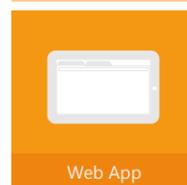
**Ubiquity Runtime**  
The runtime is the software component installed and executed on the remote IPC/HMI/controller that supervises or controls the automation process. It requires neither additional hardware nor network configuration and it uses the existing Internet connection.



**Ubiquity Domain**  
Ubiquity Domain is the "customer account" to make use of Ubiquity infrastructure and services.



**Ubiquity Server Infrastructure**  
Communication between Control Center and Runtime is ensured by a redundant server infrastructure built and maintained by ASEM which uses state-of-the-art security technologies for data exchange such as SSL/TLS, public key cryptography, safe, fault tolerant and redundant server farms to secure data privacy and adequacy.



**Web App**  
The Ubiquity web application allows, with a web browser, to access the desktop of the remote devices from PCs, tablets or smartphones. From the web portal [www.ubiquityweb.net](http://www.ubiquityweb.net) it is possible to gain access to the Ubiquity Domain, obtain the list of accessible devices and connect to the desktop of each connected remote system.

### Runtime versions

Runtime component is available in Basic and PRO versions for WinCE and WIN 32/64 operating systems. The Basic version provides access to the IPC/HMI/remote controller and provides

remote-desktop, remote task manager, remote file manager and chat with the remote operator. The PRO version enables also the access to all the automation devices (PLCs, drives, etc.) connected to the

Ethernet or Serial subnetwork of the IPC/HMI/remote controller. The Pro licence is available also as a portable licence, movable up to 20 times to different devices.

Ubiquity Runtime	Windows CE			Win32/64		
	Basic	Pro	Portable	Basic	Pro	Portable
Remote desktop, file & task management, chat, screenshot	✓	✓	✓	✓	✓	✓
VPN to the remote device	✓	✓	✓	✓	✓	✓
VPN with access to the Ethernet sub-network of the device/router	-	✓	✓	-	✓	✓
VPN with access to the Serial sub-network of the device/router	-	✓	✓	-	✓	✓
Integrated firewall	✓	✓	✓	✓	✓	✓
API to interface proprietary software applications	✓	✓	✓	✓	✓	✓
Runtime operations persistent log	✓	✓	✓	✓	✓	✓
Multiple connections from different Control Center	✓	✓	✓	✓	✓	✓
Structured Domain creation, users and remote devices management	✓	✓	✓	✓	✓	✓
Internet connection via PROXY for Control Center and Runtime	✓	✓	✓	✓	✓	✓
Functioning in local network without license	✓	✓	✓	✓	✓	✓
Runtime update procedure with automatic shutdown and restart of services	✓	✓	✓	-	-	-
Log & Audit of Domain administration activities	✓	✓	✓	✓	✓	✓
Log & Audit of session's activities (v7)	✓	✓	✓	✓	✓	✓
Internet sharing for LAN devices (v7)	-	✓	✓	-	✓	✓
Movable up to 20 times	-	-	✓	-	-	✓
Web access to the remote desktop	✓	✓	✓	✓	✓	✓
Automatic update of the runtime	✓	✓	✓	✓	✓	✓
Multimonitor remote desktop support	-	-	-	✓	✓	✓

### Domain types

Ubiquity Domain is available in three different versions: Single Entity-Single Access, Single Entity-Multi Access and Multi Entity-Multi Access. Single Entity Domains are

accessible by users of one only company, Multi Entity Domains are accessible by users of different companies. Single Access Domains give access to Ubiquity

infrastructure and services to one user at a time, Multi Access Domains give access to Ubiquity infrastructure and services to more users at the same time.

	Ubiquity Domain types		
	Single Entity-Single Access	Single Entity-Multi Access	Multi Entity-Multi Access
Domain accessible by	Users of one company	Users of one company	Users of more companies
Remote assistance services enabled for	One user per time	More users at the same time	More users at the same time

# Server infrastructure

To provide an excellent service ASEM built a redundant and globally distributed server infrastructure that counts two farms in Europe (Munich and Amsterdam), two in the United States (western and eastern coast) and two in Asia (Singapore and Honk Hong).



ASEM Server Infrastructure, does not give any limitation to the number of configurable users, devices, concurrent remote desktop and VPN sessions.

# Private Server Infrastructure

As ASEM provides a redundant and distributed Server infrastructure to manage Ubiquity services,

it is also possible to replicate and build up a **private server infrastructure** managed autonomously.



### Private Server

With the Private Server package, it is also possible to install a private server infrastructure in complete autonomy. The server application can be installed on dedicated systems or cloud servers.

The **Primary Server** is the basic software package and provides authentication security and communications as the ASEM server infrastructure.

#### Primary Server:

- Data storage: authentication, permission and security management
- Ubiquity Runtime licenses management
- Relay feature to implement end-to-end communication

The **Secondary Server** is an optional package to improve and increase the connectivity and performances. It is possible to buy several secondary server licences and install them in different locations worldwide.

#### Secondary Server (option):

- Relay feature to implement end-to-end communication
- You can install multiple instances to reduce latency and balance traffic load.

# Ubiquity Highlights



### Security Certified

Ubiquity 8 obtained the security certification for internet-based industrial communications. It has been certified in every component and confirms its full compatibility with the reference standards IEC 62443-3.

This certificate further confirms the value of Ubiquity solution setting the highest security standard of the industry.

### Proprietary VPN Differently from VPNs based on the IP layer, Ubiquity VPN works on the data-link layer bringing concrete advantages:

→ Remote assistance PC becomes part of the remote host network using the same physical IP addresses

→ Remote assistant can use broadcast-based protocols  
→ It is not necessary to configure the gateway of the remotely accessed devices. The remote assistant connection appears as a locally connected IP.



### Remotation of Serial Communication

Ubiquity installs a virtual serial port on the Control Center PC.

This virtual serial port can be mapped on a physical port of the remote device executing Ubiquity Runtime.

**Benefits:**  
→ Possibility to carry out supervision and diagnostics tasks on remote serial devices.



### Multi-client

Ubiquity Runtime supports multiple concurrent connections from different supervisors whether with interactive session (remote

desktop, file transfer, etc) or in VPN. Control Center can activate multiple interactive sessions with different devices and only one VPN connection to a remote device.

**Benefits:**  
→ Maximum productivity being able to operate simultaneously on the same system.

### Full compatibility with the existing firewalls

Ubiquity Control Center and Ubiquity Runtime connection are automatically configured

using outbound connections which are recognized as safe and therefore allowed by firewall policies.

**Benefits:**  
→ No need to configure the end-user's firewall and network. Only an outbound connection is necessary.

→ Ubiquity automatically uses enabled TCP and UDP protocols and can use HTTP, HTTPS or custom ports, ensuring compatibility with existing IT policies.



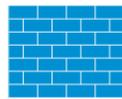
### Industrial Security

Ubiquity infrastructure uses the highest network security standards, such as:  
→ IEC-62433-3 security certified

→ SSL/TLS protocol via UDP or TCP  
→ Asymmetric cryptography and X509 certificates for authentication sessions

→ Symmetric cryptography for data transimission  
→ Message authentication codes (MAC) for data integrity.

# Ubiquity Highlights



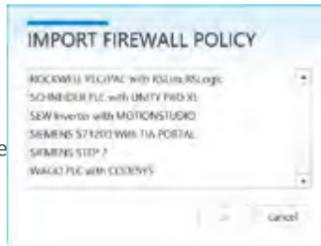
### Integrated firewall

Ubiquity's integrated firewall allows to control communication packets passing through the VPN. Introducing firewall policies, it is possible to filter Ethernet datagrams depending on communication protocols and target addresses.

The server infrastructure provides a library of policies that can be imported into the Domain and applied to devices and folders. Filtering rules can be assigned to single users or groups of users.

**Benefits:**

- Increased security and bandwidth control
- Increased flexibility in access permissions.



### Access profiling and control

Ubiquity allows the creation of an unlimited number of users, user groups, device groups, each with different access rules.

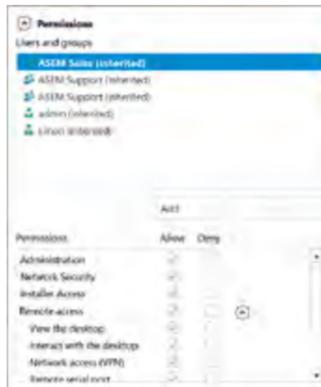
Permissions can be flexibly configured up to the single device or folder: possibility to create local and global users, and sub-domains.

Ubiquity provides 4 different user profiles: **Administration** enables folders and users management, **Device Installer** allows to add new devices in the Domain,

**Network security** enables configuration and set up of Firewall rules, **Remote access** allows to practice remote access sessions.

**Benefits:**

- Users can implement their own organizational structure (made up of users, administrators, power-users, third parties, limited users, etc.) to reach in a flexible and controlled way all customers around the world
- Access to remote devices is properly secured and restricted to the required personnel.



### Internet connectivity sharing with LAN devices

Internet connectivity can be shared with specific devices of the LAN network:

**Benefits:**

- Internet access from laptops of IP phones connected to the LAN network
- Usage of Ubiquity runtime services on LAN devices
- Access to the web servers of LAN devices

### Automatic updates

With Ubiquity it is now immediate to get information about the availability of an update for Ubiquity Runtimes and Ubiquity Routers selecting

which devices need to be updated and when. Updates can be executed immediately or scheduled within a specified time interval.

The process runs in safe mode and without the need for any presence on the field. In the same way, also Ubiquity Control Center supports notification for updates

availability, in order to keep it always aligned with the latest release.

### Modern user interface

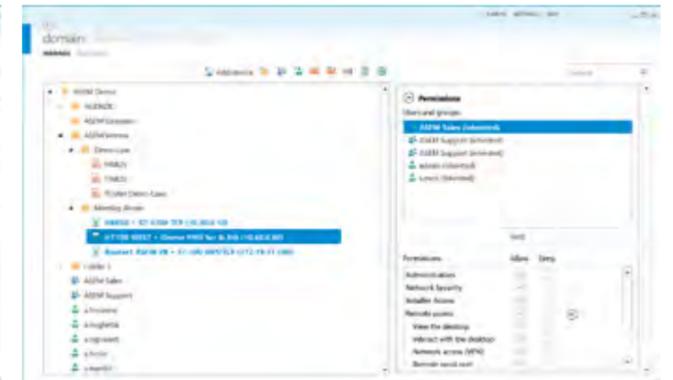
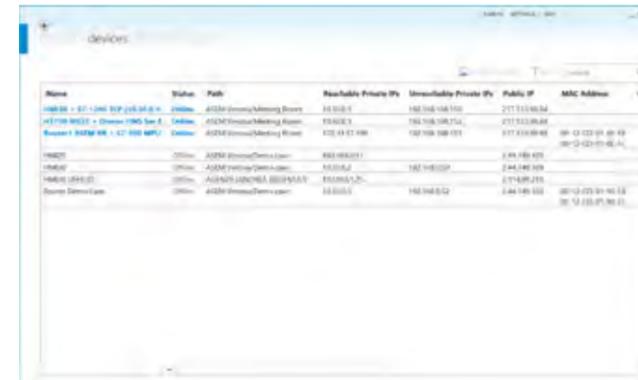
ASEM Ubiquity provides a completely redesigned graphic interface based on Modern-UI standards.

The new design presents additional controls and views, as the new table view that enables the "Search" function using the text field on the

right of the tree view that now gives also users (or groups of users) information.

**Benefits:**

- Ubiquity Control Center becomes clearer and more intuitive
- Users' daily operations are simplified and made more immediate.



### SDK Control Center

With the SDK (Software Development Kit) it is possible to program the activation of Ubiquity Control Center functions also by external applications. Control Center SDK is made of a .NET assembly and a user manual for the usage of the

API (Application Programming Interface) with the related code examples.

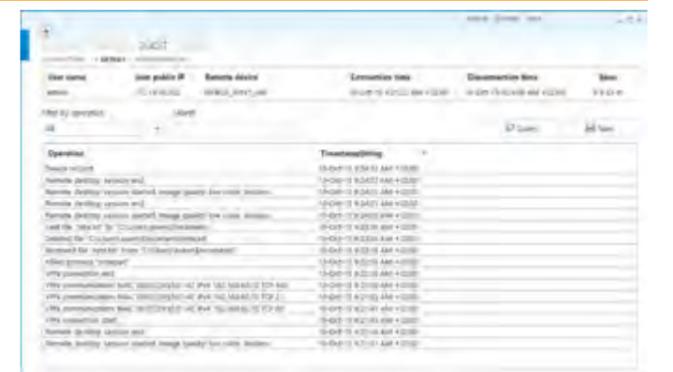
**With the available interfaces you can execute the following tasks:**

- Domain login/logout
- Browse domain
- Connect/disconnect remote device
- Connect/disconnect VPN

- Connect/disconnect virtual serial
- File transfer to and from the remote device
- Launch application on the remote device
- End process and restart

### Log and Audit of Domain and sessions' activities

- Trace of all Domain Administration activities with a simple audit tool
- Trace of all sessions' activities (v7): all activities and chat contents are registered for 30 days and accessible by domain administrators.



# Ubiquity Highlights



### Remote desktop

Control center includes remote desktop function.

**Benefits:**

→ No need to activate RDP services or to install optional utilities like VNC.



### File exchange

Control Center includes a complete tool to perform remote files download and upload.

**Benefits:**

→ No need to open shared folders or to install optional utilities like FTP servers.



### Statistics and Audit

Ubiquity records and stores on the Domain all the remote access activities.

**Benefits:**

→ The network administrator can verify anytime the post-sales support workload, the accuracy of the jobs carried

out and get statistics for customers, PCs and operators.



### Chat

Control Center and Runtime include a chat.

**Benefits:**

→ Instead of using the phone to communicate with remote operators, the user can simply take advantage of Ubiquity chat reducing costs.



### Cloud-based accessibility

Ubiquity domain is registered on the Cloud. This architectural paradigm allows service continuity and data safety.

**Benefits:**

→ Wherever the user is located, he can launch Control Center getting access to remote machines worldwide.



### Full support of Embedded platforms

Ubiquity Runtime is available for the following operative systems:

→ Windows XP, Vista, 7, 8 (32 and 64 bit)

→ Windows Embedded Standard 2009, Windows Embedded Standard 7E and 7P

→ Windows CE 5.0, 6.0, Windows Embedded Compact 7.0

### Connectivity quality measurement

Ubiquity provides a simple function that measures connectivity quality on both local and remote network. Performances are measured in terms of latency time, jitter and packet drop.



# Requirements

The following tables list the minimum hardware, software and network requirements for the correct installation and usage of Ubiquity.

Control Center		
SW Requirements	Operating System	HW Requirements
.Net Framework 4.0 Client Profile	Windows XP SP3	At least Celeron 1.6 GHz with 512 MB RAM
	Windows 7 32/64 bit	
	Windows 8.1 32/64 bit	
	Windows 10	
	Windows Server 2008 and Server 2008 R2	
	Windows Server 2012 and Server 2012 R2	

Runtime		
SW Requirements	Operating System	HW Requirements
.Net Compact Framework 3.5	Windows CE 5.0 (x86)	256 MB RAM
	Windows CE 6.0 (x86)	At least CPU 500 MHz
	Windows CE Compact 7.0 (ARM, x86)	
.NET Framework 2.0 SP1 or 3.5 (distributed with setup)	Windows XP SP3	512 MB RAM At least CPU 500 MHz
	Windows Embedded Standard 2009 (XPe)	
	Windows Embedded Standard 7E/7P 32/64 bit	
	Windows 7 32/64 bit	
	Windows 8.1 32/64 bit	
	Windows 10, Windows 10 IoT Enterprise	
	Windows Server 2008 and Server 2008 R2	
	Windows Server 2012 and Server 2012 R2	

Private Servers			
Primary Server		Secondary Server	
Hosting	Software	Hosting	Software
2 public IP addresses, one of them associated to an Internet Domain name	Windows 7 64 bit or later	1 public IP address	Windows 7 64 bit or later
	Windows Server 2008 64 bit or later		Windows Server 2008 64 bit or later
	SQL Server 2012 or later, Express edition or greater		
	.NET Framework 4.6.1 Client		.NET Framework 4.6.1 Client

# Ubiquity Router

## Ubiquity RK and RM Remote access and monitoring have no limits



**Ubiquity Routers complete the range of Remote Assistance Solutions with a combined hardware + software solution that ensures remote access and remote monitoring functionalities on every automation device.**

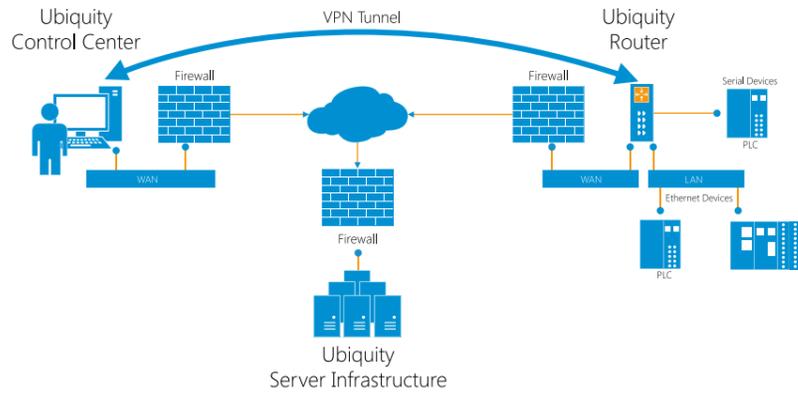
**With the built-in 2G/3G/3G+ modem of RK11 and RM11 it is possible to reach and monitor also plants and automation networks without a wired Internet connection.**

Ubiquity software creates a VPN between the Control Center PC and the router enabling access to automation devices connected via Ethernet and Serial ports. The features of Premium HMI, ASEM's HMI software, enable additional remote monitoring functionalities that allow RM10 and RM11 to directly access controller's memory and perform data sampling, archiving and monitoring, dispatch of alerts and notifications. Ubiquity Routers bring remote assistance services on plants and machinery where it is

not possible to install the Ubiquity software solution, as automation systems with HMI/IPC/controller with operating system other than WIN 32/64 and WIN CE, machinery controlled only by serial devices without Ethernet interface and even machines and plants without a wired internet connection. Furthermore Ubiquity Routers separate the automation devices from the external Internet connection adding a further protection to the Local Area Network.

# RK10 - RK11 - RK10 ET - RK11 ET

## Remote Access Industrial Routers



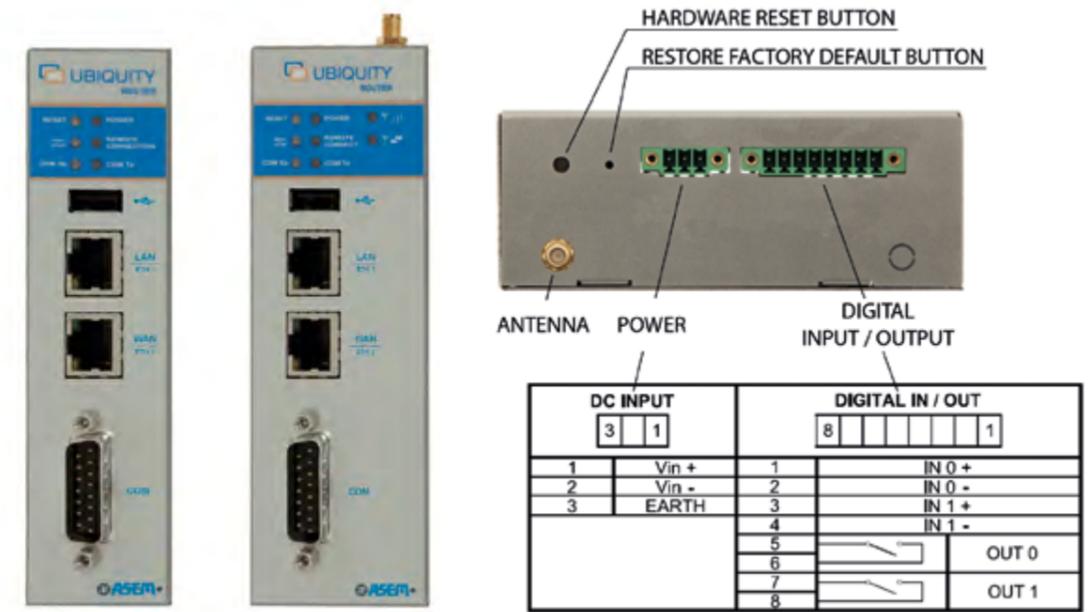
**RK10**  
**RK10 ET**

**RK11**  
**RK11 ET**

Ubiquity RK10 and RK11 are systems dedicated to remote assistance based on a 1 GHz ARM Cortex A8 processor enclosed in a "book mount" stainless steel case for DIN rail or wall mounting, with 9÷24 V DC power supply range. RK families have one 10/100 Mbps Ethernet WAN port for Internet connection, one 100 Mbps Ethernet LAN for automation devices connection, an optoisolated serial interface RS 232/422/485/MPI and one USB 2.0 port.

The systems include one 24 V DC digital input for the security key activation that activates the router also from remote and one 24 V DC digital input for the remote reset function. RK10 and RK11 include also a low voltage relay output to remote the "UBIQUITY RK enabled for WAN connection" signal and a relay output to remote the "ongoing remote assistance service" signal. RK11 integrates a built-in 2G/3G/3G+ EDGE/HSPA quadriband modem compatible with cellular networks worldwide.

- Highlights**
- Ubiquity software creates a VPN between the Control Center PC and the Router enabling access to devices connected via Ethernet and Serial ports
- Debug, programming and update of the automation devices connected to the RK10/11 via Ethernet and Serial interfaces
- Proprietary VPN technology designed for Industrial communication
- MPI protocol support
- Immediate setup and configuration
- Firewall friendly
- RK11 integrates a built-in 2G/3G/3G+ modem to access machines and plants without a wired Internet connection



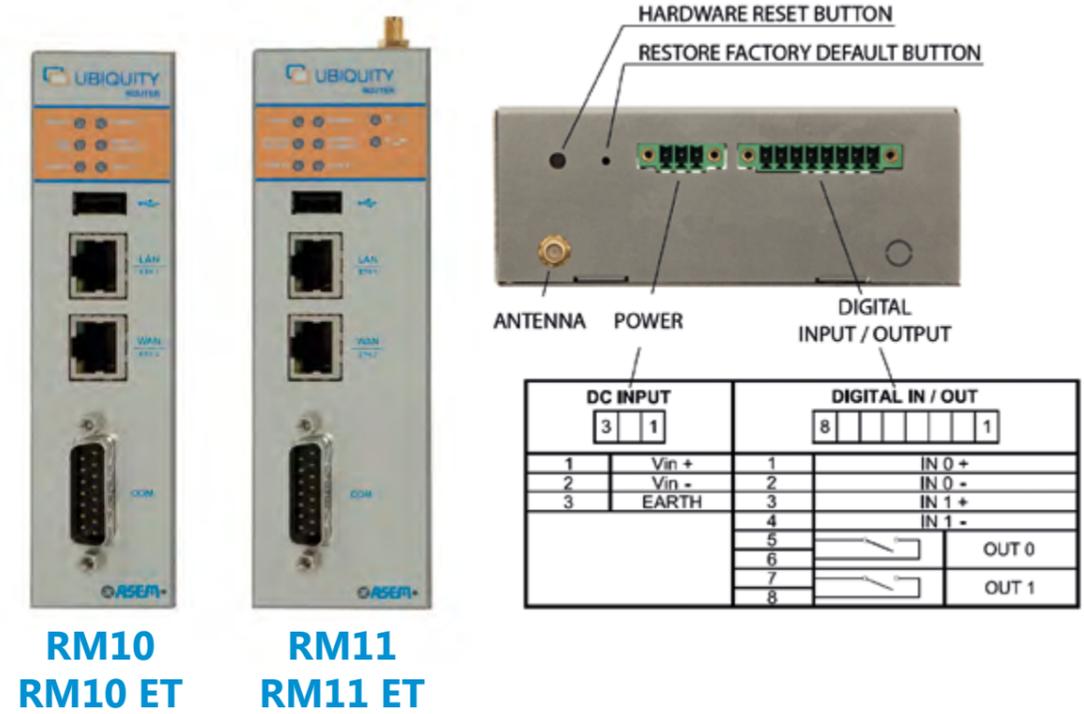
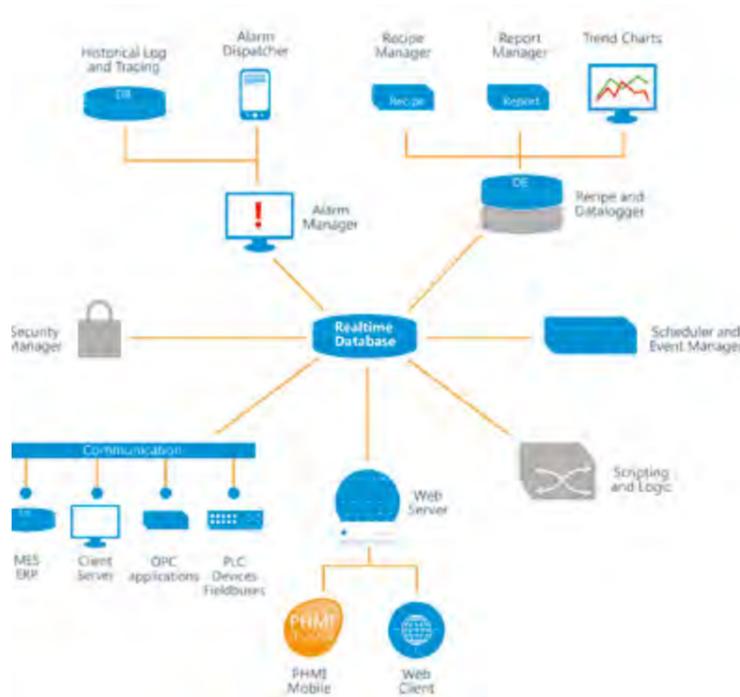
**RK10**  
**RK10 ET**

**RK11**  
**RK11 ET**

	RK10	RK10 ET	RK11	RK11 ET
CELLULAR NETWORK	Standard			2G/3G/3G+ EDGE/HSPA quadriband modem up to 5,76 Mbps upload / 14,4 Mbps download
	Antenna			1 x SMA connector (auxiliary Diversity antenna option)
	SIM			1 x SIM card socked push-push type
REMOTE ASSISTANCE SW	ASEM UBIQUITY Router Runtime			
O.S. INSTALLED	Microsoft Windows Embedded Compact 7 Pro			
CASE	Material	Stainless Steel		
	Mounting	DIN rail book mounting holders, Wall book mounting kit included		
	Dimensions	36x138x116 mm		45x138x116 mm
PROTECTION GRADE	IP20			
PROCESSOR	ARM Cortex A8 processor NXP i.MX535 1 GHz	ARM Cortex A8 processor NXP i.MX537 800 MHz	ARM Cortex A8 processor NXP i.MX535 1 GHz	ARM Cortex A8 processor NXP i.MX537 800 MHz
SYSTEM MEMORY - RAM	512 MB			
MASS STORAGE	256 MB Ready-Only NAND-Flash for operating system and runtime			
	4 GB eMMC (Solid State Disk) 8bit, file system organization for projects and applications	2 GB eMMC (Solid State Disk) 8bit, file system organization for projects and applications	4 GB eMMC (Solid State Disk) 8bit, file system organization for projects and applications	
LAN	LAN1 Ethernet 100 Mbps (RJ45) LAN2 Ethernet 10/100 Mbps (RJ45)			
USB	1 x USB 2.0			
SERIAL	1 x RS-232/422/485 (DB15M) optoisolated			
DIGITAL INPUT	INO	Security key for WAN connection activation. Function managed by Control Center		
	IN1	UBIQUITY Router software reset		
	Type	0÷24V DC, 500V optoisolated		
DIGITAL OUTPUT	OUT0	UBIQUITY Router WAN enabled connection signal		
	OUT1	Remote assistance service running signal		
	Type	Output with relay 200mA@24V DC max for contact (N.O. - normally open)		
BUTTONS	UBIQUITY Router hardware reset UBIQUITY Router factory default restore			
POWER SUPPLY UNIT	Input voltage 24V DC (9÷36 V DC)			
OPERATING TEMPERATURE	0°C ÷ +50°C	-20°C ÷ +70°C	0°C ÷ +50°C	-20°C ÷ +60°C
APPROVALS	CE, cULus			

# RM10 - RM11 - RM10 ET - RM11 ET

## Remote Access and Monitoring Industrial Routers



Ubiquity RM10 and RM11 add remote monitoring functionalities to the Ubiquity RK families providing a complete solution for applications where remote access needs to be supported by constant data monitoring. RM solutions provide flexible data monitoring and data collection functionalities managing efficiently real-time data, historical archives and instant notifications. Data is stored in the local memory of the RM10/11 and Ubiquity Control Center provides an easy way to export data and monitor the application from remote. Data monitoring features include alarm notifications via e-mail and SMS.

Premium HMI RM Runtime provides compatibility with PLC and controllers protocols allowing RM10/11 to connect directly to the PLC's memory for data acquisition. Data gateway is also supported and RM families can be programmed to transfer data between different communication drivers. Ubiquity RM families provide also VBA scripting functions that extend application flexibility providing a comprehensive solution to all common needs of a data monitoring device. Furthermore, RM families allow graphic screens programming and provide a web client that enables Web and Mobile HMI visualization

of local screens via Ubiquity Control Center and web browsers. HMI screens are also accessible from the local Wi-Fi network using the new Premium HMI Mobile App for iOS and Android devices. RM11 integrates a built-in 2G/3G/3G+ EDGE/HSPA quadriband modem compatible with cellular networks worldwide. RM10 and RM11 are a full-featured remote monitoring solution that leverages on the innovative remote assistance solution Ubiquity and Premium HMI 4 advanced functionalities.

**Highlights**

In addition to RK families features RM10 and RM11 provide:

- Flexible Scripting with integrated VBA Engine and multi-threading support
- Web and Mobile HMI using Ubiquity Control Center, web browser or Premium HMI Mobile App
- Data logging (with data export procedure)
- Alarms management
- SMS alarm and notification dispatcher based on SMPP protocol
- Recipe management
- Integrated gateway for multiple PLC drivers communication
- Programmable with Premium HMI Studio
- RM11 integrates a built-in 2G/3G/3G+ modem to access machines and plants without a wired Internet connection

	RM10	RM10 ET	RM11	RM11 ET
CELLULAR NETWORK	Standard			2G/3G/3G+ + EDGE/HSPA quadriband modem up to 5,76 Mbps upload / 14,4 Mbps download
	Antenna			1 x SMA connector (auxiliary Diversity antenna option)
	SIM			1 x SIM card socked push-push type
REMOTE ASSISTANCE SW	ASEM UBIQUITY Router Runtime			
REMOTE MONITORING SW	ASEM Premium HMI RM Runtime			
O.S. INSTALLED	Microsoft Windows Embedded Compact 7 Pro			
CASE	Material	Stainless Steel		
	Mounting	DIN rail book mounting holders, Wall book mounting kit included		
	Dimensions	36x138x116 mm	45x138x116 mm	
PROTECTION GRADE	IP20			
PROCESSOR	ARM Cortex A8 processor NXP i.MX535 1 GHz	ARM Cortex A8 processor NXP i.MX537 800 MHz	ARM Cortex A8 processor NXP i.MX535 1 GHz	ARM Cortex A8 processor NXP i.MX537 800 MHz
SYSTEM MEMORY - RAM	512 MB			
MASS STORAGE	256 MB Ready-Only NAND-Flash for operating system and runtime 4 GB eMMC (Solid State Disk) 8bit, file system organization			
LAN	LAN1 Ethernet 100 Mbps (RJ45) LAN2 Ethernet 10/100 Mbps (RJ45)			
USB	1 x USB 2.0			
SERIAL	1 x RS-232/422/485 (DB15M) optoisolated			
DIGITAL INPUT	INO	Security key for WAN connection activation. Function managed by Control Center.		
	IN1	UBIQUITY Router software reset		
	Type	0÷24V DC, 500V optoisolated		
DIGITAL OUTPUT	OUT0	UBIQUITY Router WAN enabled connection signal		
	OUT1	Remote assistance service running signal		
	Type	Output with relay 200mA@24V DC max for contact (N.O. - normally open)		
BUTTONS	UBIQUITY Router hardware reset UBIQUITY Router factory default restore			
POWER SUPPLY UNIT	Input voltage 24V DC (9÷36 V DC)			
OPERATING TEMPERATURE	0°C ÷ +50°C	-20°C ÷ +70°C	0°C ÷ +50°C	-20°C ÷ +60°C
APPROVALS	CE, cULus			



## 2. HMI Solutions

### HMI Solutions

Solutions satisfying all your automation requirements



#### Industrial machinery design and development time reduction.

Analysis demonstrate that software development costs account for over 80% on the costs of automation design. This is the reason why it is crucial to make use of design tools capable of saving time and money in development, accompanied and supported by a company like ASEM, acknowledged for the excellence of its customer service and technical support.

#### Openness and flexibility to meet the specific requirements of final customers.

Today machine manufacturers need «open & standard» software solutions providing a high level of flexibility in adapting applications to specific customer needs, protecting investments and know-how.

#### Perfect integration of Hardware and Software.

All ASEM software solutions are integrated in hardware systems designed, industrialized and entirely manufactured in company facilities and plants. The technological mastery of all the system components guarantees the high-quality level and the perfect integration between Hardware and Software platforms.



**With the HMI Solutions based on Premium HMI software platform, ASEM provides the market with high level HMI systems with a powerful and flexible development tool to implement open and scalable user interface projects.**

Transversality is an important strength of Premium HMI, as it allows the same project to be used either on HMI based on ARM or x86 platforms or with WinCE or WIN 32/64 Runtime, without the need to modify or change the settings of Premium HMI Studio development tool.

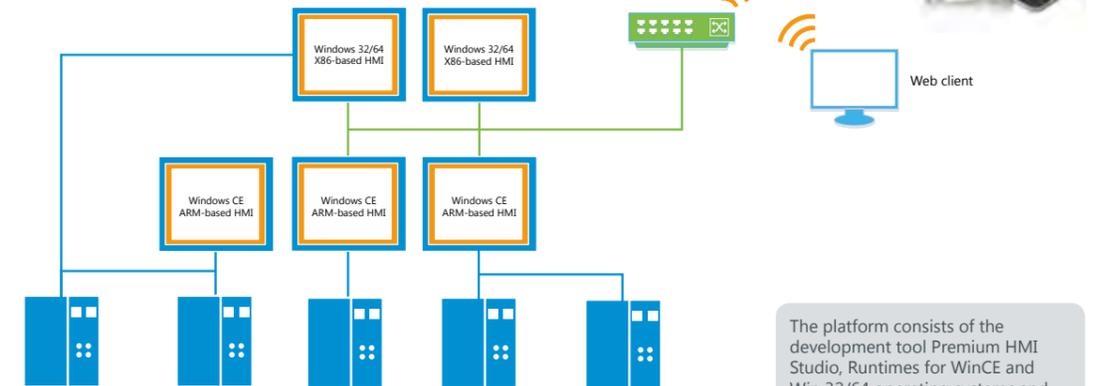
This feature is obviously appreciated by machine manufacturers who know the burdens of investments in software design and, in this way, can concentrate their focus on developing the distinctive features of their machinery.

To make Windows CE-based solutions more competitive, ASEM has decided to integrate the innovative remote assistance platform **Ubiquity** in the HMI25, HMI30, HMI40, HMI2150 and HMI2200, making it possible to access the system and its Ethernet and Serial sub-networks from remote.

Hardware design and manufacturing combined with software development ability, allow ASEM to offer full-featured HMI solutions suited to meet all requirements, from the simplest to the most complex requiring advanced functionalities as well as openness and flexibility.

# Premium HMI 5

## PREMIUM HMI 5



The platform consists of the development tool Premium HMI Studio, Runtimes for WinCE and Win 32/64 operating systems and Premium HMI Mobile, the mobile App for iOS and Android devices (only compatible with Advanced Runtimes).

With Premium HMI software platform, ASEM has been providing valuable visualization systems appreciated for the **quantity and quality of the functionalities** available and the **transversality** of the platform, which makes it possible to use the same project both on HMI solutions based on ARM or x86 hardware platforms (also with multicore architecture support), with WinCE or WIN 32/64 Runtimes without any need to modify or change settings in the 'Premium HMI Studio' development tool.

### Premium HMI 5

The new PHMI 5 supports the latest **Microsoft® XAML** visualization technologies that enable the design of advanced and modern operator interfaces, typical of latest generation mobile devices. PHMI 5 supports **16 million colors**, manages transparency and colour shade effects, supports **multitouch gestures** which further improve the user experience of HMI projects and provides a rich library of graphic objects particularly accurate from an aesthetic and ergonomic point of view making it possible to design unprecedented user interface screens. The user just needs to make a mouse click in the development tool to **convert existing projects introducing new graphic objects** without making any

changes, retaining all scripts assigned to graphic objects or variables linked to properties that vary dynamically. These characteristics make PHMI 5 a unique HMI platform in the competitive context and it becomes particularly interesting due to the fact that it can update the aesthetics and ergonomics of existing projects without investing in new developments and without the need for further application tests.

### Multitouch and OPC UA

Premium HMI 5 supports Multitouch programming for Win 32/64 and WEC 7 systems with Multicore processors and supports OPC UA protocol, leading the way to the distributed connectivity of the "Industry 4.0" and Industrial "IoT".

### "Total Cost of Ownership" reduction

With the intuitiveness of Premium HMI's object design, the project debugging tools and the possibility to use a single development tool for any type of application (from the simplest on operator panels to the most complex on Panel PCs or the most innovative on smart mobile devices), it becomes easy to save a considerable amount of time in learning, personnel training, application maintenance and end-user support and service.

### Runtime versions

To provide supervision systems that can meet different performance, functionality and price requirements ASEM offers two runtime versions for WinCE (Basic and Advanced) and three runtime versions for WIN 32/64 (Basic, Pro and Advanced).

Function	Premium HMI 5.0 BASIC for WinCE	Premium HMI 5.0 ADVANCED for WinCE	Premium HMI 5.0 BASIC for Win 32	Premium HMI 5.0 PRO for Win 32	Premium HMI 5.0 ADVANCED for Win 32
<b>RealTime DB</b>	Max. 1024 byte	Max. 8192 byte	Max. 2048 byte	Max. 2048 byte	Max. 4096 byte
Normalization	✓	✓	✓	✓	✓
ODBC Realtime	✓	✓	-	✓	✓
Trace DB	✓	✓	-	✓	✓
Data Structures	✓	✓	✓	✓	✓
OPC DA Client	✓	✓	✓	✓	✓
OPC UA Client	✓	✓	✓	✓	✓
OPC Client XML DA	-	-	✓	✓	✓
Networking	✓	✓	✓	✓	✓
Script's IntelliSense Tags	✓	✓	-	✓	✓
<b>Graphic User Interface</b>					
Vector Graphics Editor	✓	✓	✓	✓	✓
XAML Vector Graphics	✓ <sup>(1)</sup>	✓ <sup>(1)</sup>	✓	✓	✓
BMP, GIF, JPG, WMF, EMF support	✓	✓	✓	✓	✓
Gesture Recognition	✓	✓	✓	✓	✓
Objects Drag & Drop	-	-	✓	✓	✓
Dynamic Animation	✓	✓	✓	✓	✓
Symbols library	✓	✓	✓	✓	✓
Import/Export Symbols	✓	✓	✓	✓	✓
Public Symbols	✓	✓	-	✓	✓
Power Template (VBA Symbols)	✓	✓	-	✓	✓
Grid	✓	✓	-	✓	✓
Synapses	✓	✓	-	✓	✓
Schedulers	✓	✓	✓	✓	✓
Editing Menu	✓	✓	✓	✓	✓
Style Reference Management in Symbols	✓	✓	-	✓	✓
Dundas Potentiometer	-	-	✓	✓	✓
IP Video Camera Window	✓	✓	✓	✓	✓
Objects' Alias Management	✓	✓	-	✓	✓
Multitouch	✓	✓	✓	✓	✓
<b>Alarms and logs</b>	Max 1024 alarms	Max 4096 alarms	Max 2048 alarms	Max 2048 alarms	Max 4096 alarms
Alarm Management	✓	✓	✓	✓	✓
Historical Management (CSV)	✓	✓	✓	✓	✓
Historical Management (ODBC)	✓	✓	-	✓	✓
Alarm notification (SMS, E-Mail)	-	✓	-	-	✓
SMS sending via SMPP protocol	-	✓	-	-	✓
Alarm Areas	✓	✓	✓	✓	✓
Comment on ACK alarm	✓	✓	-	✓	✓
<b>Recipes - Data Logger</b>					
Recipes / Data Logger (XML)	✓	✓	✓	✓	✓
Recipes / Data Logger (ODBC)	Max -. 2	✓	-	✓	✓

(1) XAML vector graphics supported exclusively by Windows Embedded Compact 7 and newer

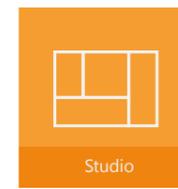
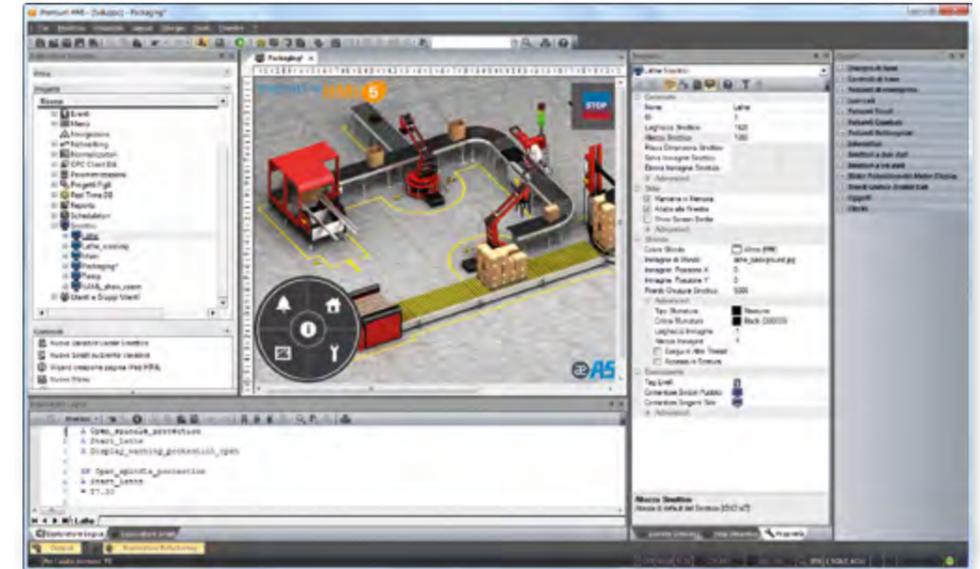
Function	Premium HMI 5.0 BASIC for WinCE	Premium HMI 5.0 ADVANCED for WinCE	Premium HMI 5.0 BASIC for Win 32	Premium HMI 5.0 PRO for Win 32	Premium HMI 5.0 ADVANCED for Win 32
<b>Reports</b>					
Text Reports	✓	✓	✓	✓	✓
Graphic Reports and Alarm Statistics	✓	✓	✓ with limitations (access to data only through IMDB)	✓	✓
<b>Trends</b>					
RealTime Trends	✓	✓	✓	✓	✓
Historical Trends on .CSV files	✓	✓	✓	✓	✓
Historical Trends (linked to Data Logger XML)	✓	✓	✓	✓	✓
Historical Trends on Database (ODBC)	✓	✓	-	✓	✓
<b>Users &amp; Password</b>					
1024 levels management	✓	✓	✓	✓	✓
Users' groups management	✓	✓	✓	✓	✓
CFR21	✓	✓	-	✓	✓
Runtime users	✓	✓	✓	✓	✓
Dynamic Multi-language	✓	✓	✓	✓	✓
Unicode Support	✓	✓	✓	✓	✓
<b>Drivers</b>					
Max number Drivers	Max -. 2	Max -. 4	Max -. 2	Max -. 2	Max -. 4
Tag Importer from PLC	✓	✓	✓	✓	✓
Event Objects	✓	✓	✓	✓	✓
Normaliser Objects	✓	✓	✓	✓	✓
Scheduler Objects	✓	✓	✓	✓	✓
<b>Logic</b>					
IL Logic (Step5-Step7)	✓	✓	✓	✓	✓
VBA Logic (WinWrap Basic)	✓	✓	Max 2 scripts	✓	✓
VBA Interface for communication drivers	✓	✓	-	✓	✓
Synapse Logic	✓	✓	-	✓	✓
Networking	✓	✓	✓	✓	✓
Child Projects	✓	✓	-	✓	✓
Synoptic Navigation	✓	✓	-	✓	✓
Integration to Visual Source Safe	✓	✓	✓	✓	✓
Web Client	-	Max 4 clients	-	-	Max 2 clients
Premium HMI Mobile	-	✓	-	-	✓
Touchscreen Support	✓	✓	✓	✓	✓
Crossed List	✓	✓	✓	✓	✓
Debugger	✓	✓	✓	✓	✓

Protocols / devices	Interface			Operating System		
	Serial	Ethernet	HW add-on	WinCE		Win32/64
				ARM	x86	x86
CODESYS, ELAU, KEB, PARKER,...	-	✓	-	✓ <sup>(1)</sup>	✓	✓
Rockwell DF1 and Data Highway	✓	-	-	✓	✓	✓
Rockwell EtherNet/IP	-	✓	-	✓	✓	✓
Rockwell EtherNet/IP 1800	-	✓	-	✓	✓	✓
Applicon cards	-	-	Applicon Cards	-	-	✓
B&R PVI with protocol INA2000 <sup>(2)</sup>	✓	✓	-	✓	✓	✓
B&R TCP <sup>(3)</sup>	-	✓	-	✓	✓	✓
BACNET IP	-	✓	-	-	-	✓
Beckhoff Twincat (ADS protocol) <sup>(4)</sup>	-	✓	-	✓	✓	✓
CANOpen Master	-	-	NETCoreX CANOpen Master	-	✓	✓
CANOpen Slave only PDO	-	-	NETCoreX CANOpen Slave	-	✓	✓
KNX (EIBUS Konnex)	✓	✓	-	-	-	✓
ELAP	✓	-	-	✓	✓	✓
FATEK TCP	-	✓	-	✓	✓	✓
GE FANUC SNP-X	✓	-	-	-	✓	✓
GE SRTP2	-	✓	-	-	✓	✓
Hilscher DPM in PROFIBUS, CANOPEN	-	-	CIF cards	-	✓	✓
Hilscher MPI	-	-	CIF card	-	✓	✓
Hilscher NETLINK	-	✓	-	-	✓	✓
Hilscher NETX MPI	-	-	NETCoreX MPI	-	✓	✓
Hilscher NETX PROFIBUS Slave	-	-	NETCoreX PROFIBUS SLAVE	-	✓	✓
Hitachi PLC serie H	✓	-	-	-	-	✓
IBH Softech	-	✓	-	✓	✓	✓
KEB DIN66109-II	✓	-	-	✓	✓	✓
LENZE LECOM AB	✓	-	-	✓	✓	✓
LonWorks	✓	✓	-	-	-	✓
Mitsubishi MELSEC A	-	✓	-	-	-	✓
Mitsubishi MELSEC FX	✓	-	-	✓	✓	✓
Mitsubishi MELSEC Q	✓	✓	-	✓	✓	✓
Mitsubishi FX3U TCP	-	✓	-	-	-	✓
Modbus RTU Master / Slave	✓	-	-	✓	✓	✓
Modbus TCP IP	-	✓	-	✓	✓	✓
Moeller SUCOM	✓	-	-	✓	✓	✓
OMRON FINS	✓	✓	-	✓	✓	✓
OMRON Host Link	✓	-	-	✓	✓	✓
OMRON EtherNet/IP	-	✓	-	✓	✓	✓
PANASONIC FP MEWTOCOL	✓	✓	-	✓	✓	✓
ROBOX	-	✓	-	✓	✓	✓
SAIA via SCOMM DLL	✓	✓	-	-	-	✓
SAIA S-BUS	✓	✓	-	✓	✓	✓
SCHNEIDER UNITELWAY SLAVE	✓	-	-	✓	✓	✓
SIEMENS MPI PC ADAPTER	✓	-	-	✓	✓	✓
SIEMENS S5 CPU	✓	-	RS-232 to Current Loop Converter	✓	✓	✓
SIEMENS S5 DK3864R	✓	-	-	✓	✓	✓
SIEMENS S7 200 PPI	✓	-	-	✓	✓	✓
SIEMENS S7 300/400 MPI <sup>(5)</sup>	✓	-	-	✓	✓ <sup>(6)</sup>	-
SIEMENS S7 TCP 300/400	-	✓	-	✓	✓	✓
SIEMENS SAPI S7	✓	-	SIEMENS CP5611, 5613, 5614, 5412 e SIEMATIC NET	-	-	✓
SIEMENS Simotion	-	✓	-	✓	✓	✓
SIEMENS S7 TIA <sup>(7)</sup>	-	✓	-	✓	✓	✓
SIEMENS S7 Profinet <sup>(8)</sup>	-	✓	-	✓	✓	✓

(1) Requires CODESYS Gateway running on controller side  
 (2) Requires PLC communication support program supplied by ASEM  
 (3) PVI communication libraries supplied by B&R are mandatory  
 (4) ADS communication libraries supplied by Beckhoff are mandatory  
 (5) "Ethernet-MPI Gateway" function, local or remote using UBIQUITY, supported ONLY with PHMI5

(6) Only OT600/HMI600/Smartbox  
 (7) Supports the variable import from TIA Portal and communication S7-1200 / S7-1500 controllers via absolute addressing (no symbolic)  
 (8) Supports the variable import from TIA Portal and communication S7-1200 / S7-1500 controllers via symbolic addressing

# Premium HMI Features



**Premium HMI Studio**  
 A unique development tool to realize HMI projects for Windows CE and Windows 32/64 operating systems on ARM and x86 hardware platforms

- **Object-oriented programming** to drastically reduce use of code in project development, thus saving time not only in designing but also in project debugging and maintenance
- **Ergonomic** and highly configurable **development tool** (floating and traditional windows, shortcuts and configuration pop-ups) to fully adapt to every kind of requirement

- **Wizard for project quick development** (templates, automatic creation of project pages, title headings, navigation keys, alarm model and Data Logger model)
- Project explorer with **hierarchical tree view of resources** (selection of multiple objects and single components of a group, copy/paste function support)
- Support of **level programming** with level visibility management (configured objects of the various synoptics can be attributed to different levels)

- **Distributed project planning** with support of "Father project / Child project" philosophy which dynamically links and integrates decentralised projects (the Father project includes all the resources of the Child project as if they were its own)
- Export and import of variables, languages and translations, alarms and logs in .CSV format
- Wide **graphic symbols library** (also with integrated animation logic), organised in categories with immediate display of preview and Drag&Drop in synoptics. Possibility to create new symbols and new categories.

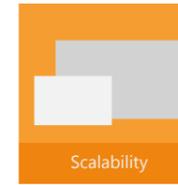


**Latest generation graphic user interface**  
**Premium HMI offers the most advanced graphic technologies based on XAML standards and it is the only visualization solution supporting XAML vector graphics also on Windows CE operating system.**  
 → Premium HMI introduces a **new 16 million colors graphic rendering engine** supporting XAML advanced graphic technologies  
 → Sophisticated management of **transparency and shading effects**

→ **Automatic re-Dimensioning of screens** for devices with different graphic resolutions; this feature of Premium HMI allows existing projects to be easily reused on different systems regardless of the graphic resolution of the display  
 → **Rich gallery of vector graphic objects** (buttons, switches, analogue displays, sliders, etc.) to realise unprecedented user interface projects

→ Complete set of **graphic animations** (including movement of objects along definable routes)  
 → **«Alias» support and inheritance of symbols** with definition of public symbols and automatic propagation of modifications from parent object to child object  
 → Integrated support for multi-monitor systems

**Recognition of pointing gestures**  
**Support of Multitouch gestures for an intuitive interaction with the HMI project**  
 → Scroll ↑  
 → Flick ↔  
 → Dual Touch: simultaneous touch of two different command objects  
 → **Objects drag & drop on Win 32/64 runtime**



**Scalability**  
**Premium HMI offers a unique development environment to realise the user interface of all ASEM HMI solutions based on ARM Cortex and x86 architectures with Windows CE and Windows 32/64 operating systems**

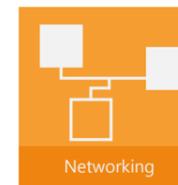
→ Premium HMI allows the company to keep just one software platform to meet all visualization needs, from the simplest projects to more demanding supervision applications, thus saving time in learning, updating and personnel training

**Connectivity and communication**  
**Premium HMI has a complete communication drivers library for the most used PLCs on the market**  
 → Specific **wizards** allow the import and automatic configuration of **project Variables** (Tags) directly from the PLC project, reducing configuration time and errors  
 → Premium HMI 5 integrates **OPC UA Client** and **OPC**

**DA Client** technology (the product meets the certification criteria established by the OPC Foundation)  
 → Automatic tag import from CODESYS Workbench for a better integration of control and visualization environments  
 → VBA interface for dynamic control of communication parametres (in runtime)

**Premium HMI also provides:**  
 → High performance and reactivity of controls to meet the most demanding requirements of machine manufacturers that need **fast data updating and a prompt dispatch of commands** to actuators  
 → Support for **multi-protocol** interfacing with data transfer function (**gateway**) between communication channels  
 → Real-Time I/O ODBC Link provides connectivity towards

company's information systems. Each variable (Tag) has the reading-writing connectivity to an **external relational DB**. Therefore the Real-Time DB of the project can be shared automatically (partially or entirely) on a DB table, allowing sharing of plant's real-time data with the company's ERP  
 → Availability of normalisers for the application of **non-linear transformations** to the variables



**Networking**  
**Premium HMI 5 has sophisticated Networking technology able to connect different HMI stations via Ethernet with multilevel Client/Server architecture**

→ The Client/Server architectures are supported by integrated functionalities that allow online distribution of both dynamic information and projects  
 → Local execution of Client projects works by loading the project from servers

→ Efficiency and performance are guaranteed by the **«event-driven» architecture** for data synchronisation  
 → The **server stations** can be based indifferently on **Windows CE or Windows 32/64**

**Openness and flexibility**  
**Premium HMI is based on XML, ODBC, OPC, VBA, TCP/ IP and SQL standard technologies, integrated in the platform to guarantee easy access and data transparency**  
 → Projects are stored in XML format, which can be edited even with external Editors

→ Support of data sharing on shared memory  
 → Data storage management on relational database (MS SQL Server, Oracle, MySQL, MS Access, SQL, etc.)  
 → Native support of Microsoft Visual Source Safe, a tool allowing online management of projects which is used by development teams to

guarantee security, multi-users, changes traceability, maintenance and recovery of project versions



**Data logger, Trends and Data Analysis - Traceability of data and historical archives**

The Data Logger is the main tool for process data recording. In addition Premium HMI offers sophisticated tools such as Trends and Data Analysis objects to analyse and represent logged data

- Simple configuration of process data sampling options
- Data can be recorded by frequency (time), or at event or variation (with dead band)
- Data storage on Database and text file both in local and remote

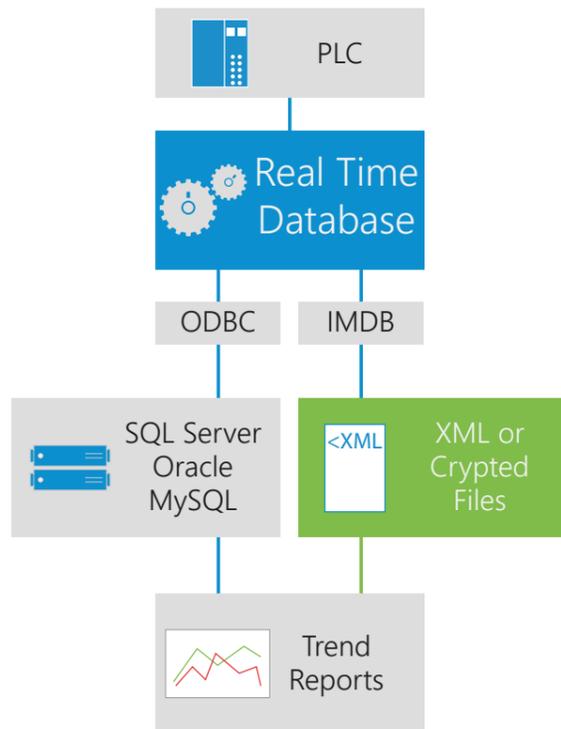
→ Trends are graphic objects representing curves regarding the tendency of process data

- Trends can be either dynamic or historical and have multiple features to represent graphically value. They are directly linked to Data Loggers and allow you to represent data by time period or other types of filters, zooms, pen selection, logarithmic scale, average value, compressed representation of the whole graph on one page, etc.
- Data Analysis objects are more sophisticated than Trends and allow you to analyse and graphically represent logged data recorded by Data Loggers

→ Data Analysis objects execute quick analyses at pre-set periods, comparisons and overlapping of curves (analyses with sample curves or comparative analyses of different periods, difference between values of two different graphs, etc.)

**Premium HMI provides also:**

- Traceability of variable modifications, with storage of the old and new value and modification's author
- Visualization of events history, both from local database and network server (view of server HMI alarms from Client interface)
- Data archive export in .CSV format



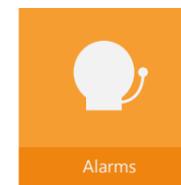
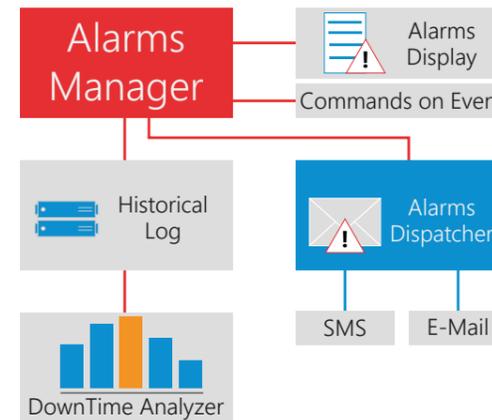
**Recipe manager**  
**Production recipes allow you to manage archives containing operating parameters of the production process of different products**

→ Production recipes are managed by objects with the same recording techniques as Data Loggers, both on Database and on text files

- Selecting the desired product, it is possible to activate parameter values relating to the process variables
- Possibility to have multiple recipe structures inserted inside one another to design complex modular machines
- Simplified configuration with project structures for recipe use.

The object technology allows you to create a "recipe" object and, once the related variable has been assigned to it, a specific "wizard" automatically generates the recipe management window, with a fully customisable user interface (fonts, colours, etc.)

- As an alternative, a simple grid viewer object allows you to manage recipe data traditionally
- Recipe data can be exported and imported in .CSV format



**Alarm manager**  
**Premium HMI provides maximum reliability in events management, guaranteeing continuous and immediate system/machine monitoring, improving its efficiency and minimising production downtime**

→ Alarms are managed according to ISA S-18 standards, but they are entirely customizable with high-configurable objects and templates-oriented programming (threshold alarms, digital alarms, warning messages without recognition cycle, etc.)

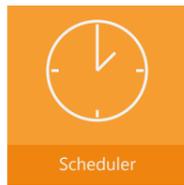
- Simple definition and configuration of repetitive alarms using templates
- Fixed or variable triggering thresholds determine activation of the alarm, managing the four standard operating statuses (ON,

OFF, ACK and RST) and the consequent representation of active alarms in visualization objects, managed by Windows or Banners with several filters (by time, area, priority, period, etc.) and the possibility to dynamically combine help and wizards on external files (CHM, HTML, PDF)

- Library tools for the organic visualization of active alarms, alarms awaiting acknowledgement and the alarm log with the possibility to apply visualization filters for a simple search and analysis
- The **Alarms Window** and the **Historic Log Window** are the tools to visualize active or stored alarms and can be inserted and configured as objects in any screen
- Premium HMI introduces the possibility to select an active alarm and directly view its **history in the alarm window**

→ The Alarm Log automatically records all the events (Alarms, Driver Events or System Events) on the relational database (even on Windows CE) or on text files

- Alarm Dispatcher to promptly send alarms or messages via **SMS** or **E-mail**; the notification is sent to the specific User or Group of Users and can be customised depending on timetables, calendars, work shifts, etc.
- SMS notification dispatcher based on SMPP protocol (dispatches SMSs via internet without modem).



**Scheduler and Event generator**  
**Scheduler objects offer maximum configurability of commands executed on a temporal base in Runtime**

→ Premium HMI schedulers manage **time-based programming** of any control, with flexibly

configurable timetables. The operator has full freedom to establish commands, events and periods  
 → The schedulers are supported also by Windows CE and Web Client  
 → "Event Objects" define lists of commands that can be flexibly configured

"Event Objects" drastically reduce the need to use code, executing command actions associated to events generated by variables (Tags) or by actions bound to command objects (e.g. buttons, menus, etc.)

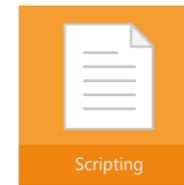


**Security and standards**  
**Premium HMI applications guarantee maximum level of safety and reliability in compliance with CFR21 part 11 standards**

→ Users and Passwords management has been expressly designed to guarantee simple and integrated implementation of projects conforming with the severe **CFR21 part 11** standards of the

American **FDA** (Food & Drug Administration)  
 → Maximum protection of data and system access by managing criteria according to **1024** User levels and **16 access areas**  
 → Data recording (Data Loggers, Events or any other data) is performed both on safe relational database (e.g. Ms SQL Server or Oracle) and in proprietary format (.DAT or .XML formatted

text) encrypted with 128 bit encryption  
 → Additional tools: electronic signature, control of tampering attempts, password expiration, automatic log-off and management of **Audit Trails**



**Scripting and integrated languages**  
**Premium HMI integrates a powerful VBA Engine (both for Windows CE and for Windows 32/64), able to execute codes that are perfectly compatible with the VBA standard (Visual Basic for Application) and to use a wide range of API for the most different project features**

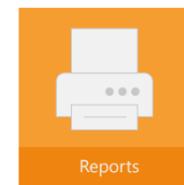
→ Scripts can be executed as normal routines or "encapsulated" in objects in response to events (graphic objects, alarm objects, data loggers etc.)  
 → Scripts support **multi-threading**, the simultaneous execution of different scripts. Premium HMI provides also:  
 → **VB.Net** syntax support and management of software components based on .Net

technology (only on Windows 32/64)  
 → VBA expression generator to edit **logic expressions** directly on objects instead of assigning variables  
 → Support of sequential combinational language, typical of PLCs (Instructions List IL or AWL)  
 → Openness to integration of ActiveX, OCX, DLL software components



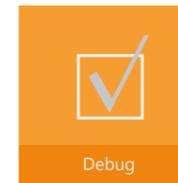
**Multi-language support**  
**Each Premium HMI project can contain all the text strings in a virtually unlimited number of languages and with any Unicode character, even with UTF-16 code for Asiatic and Arab characters**  
 → Editing texts in different languages is facilitated by import/export tools.

Texts are managed in the project string table, compatible with Copy/Paste operations of Editors like Microsoft Excel  
 → Any language can be changed and activated both in Editor and in Runtime modes  
 → A specific language can be activated when a specific Audit Trail user logs on



**Print reports**  
**Premium HMI integrates a simple and flexible tool in the development environment to make multi-language printing reports**  
 → Possibility to fully customize printing pages with Copy/Paste operations of variables and objects from the project pages (even graphs like trends, plotters, etc.)

Premium HMI provides also:  
 → Printing of objects with values which change dynamically over time  
 → Printing of variables present in the Data Logger, both on the Database and in .CSV format  
 → Printing on file, **printer** and creation of **PDF files**



**Debugging tools**

**Premium HMI has an integrated simulator to execute debugging without transferring the project in the target. The simulator allows communication with the protocols configured in the project**

→ Powerful **online debugger** to analyse and simulate the project, both locally and remotely (even during execution)

→ Possibility of full project recovery from the target hardware device for a safe and protected modification of the password (with re-transmission of the modified project to the target device)  
 → In case of multi-language projects, control/verification of non-translated text strings

**Premium HMI provides also:**

→ Verification and reporting of variables not used in the project (**Cross Reference**)  
 → "Refactoring" tools for the automatic design error correction

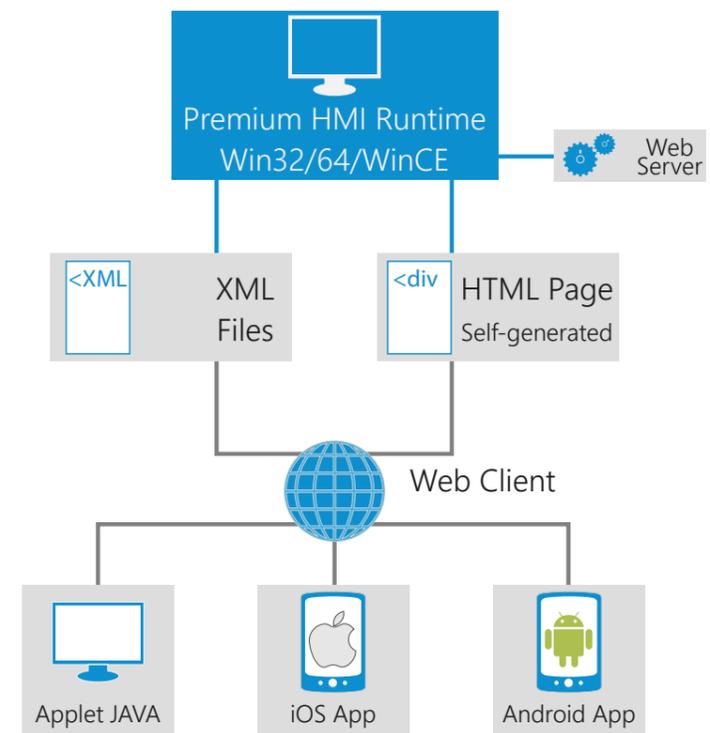


**Support for Web Client remote control**

**Premium HMI offers the best Web Client technology with remote access independent from local operation**

→ Remote control of projects with "**Premium HMI Mobile App**" for iOS and Android

devices (needs Premium HMI 3.0.1102 or later releases)  
 → The Web Client with JAVA-based architecture allows the server and projects to be accessed via **Internet browser** from any platform and operating system



# Premium HMI Mobile



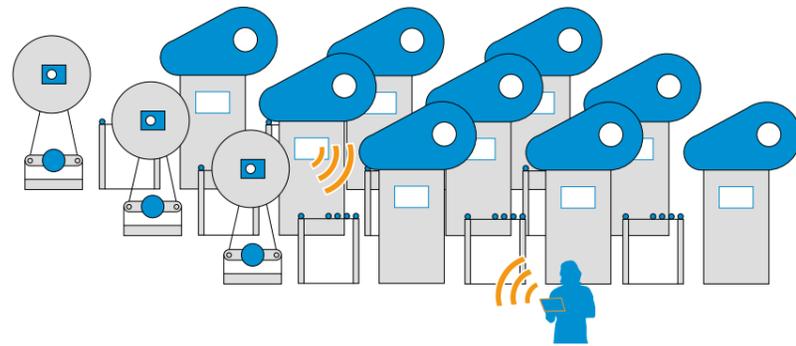
**Premium HMI Mobile** is the new App released by ASEM to view and interact with Premium HMI projects, running on Machine HMIs, via mobile devices (iOS and Android) connected to the enterprise Wi-Fi network. The new app provides mobile and multitouch support to the HMI project running on Machine Operator Panels/ Panel PCs.

Premium HMI Mobile requires Premium HMI "Advanced" Runtime licence and it is available for free on App Store and Google Play.

# Benefits of Premium HMI Mobile App

## Better control in production lines

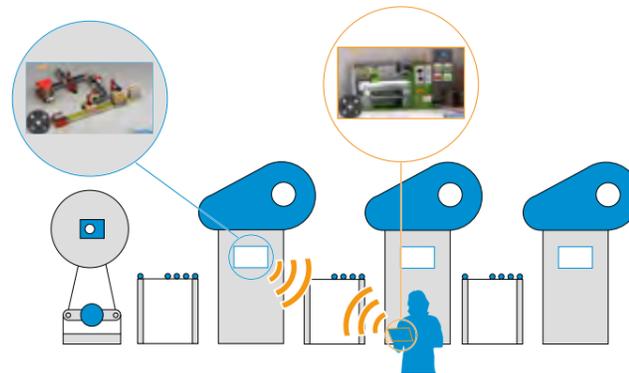
With Premium HMI Mobile, machinery supervision becomes more flexible and efficient. The user can control machines directly from the factory floor, even in large plants or applications with several production lines.



## Independent project visualization

→ The native configuration of Premium HMI web server, allows you to independently manage projects on PHMI Mobile, while the local user can continue working on the machinery HMI.

→ Premium HMI Mobile manages the iOS/Android device screen resolution independently from the machine LCD resolution.



## Security and users management

Premium HMI mobile supports the same security and user management features of Premium HMI. The access to pages and commands can be controlled as any Premium HMI project. Whether the application has access protection, all Premium HMI Mobile sessions will be exclusively activated through access credentials.

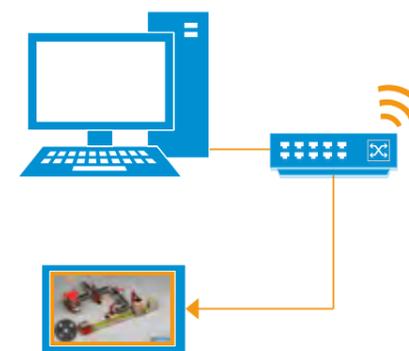


# Premium HMI Mobile Configuration



## 1 Enable Premium HMI Mobile connectivity with Premium HMI Studio

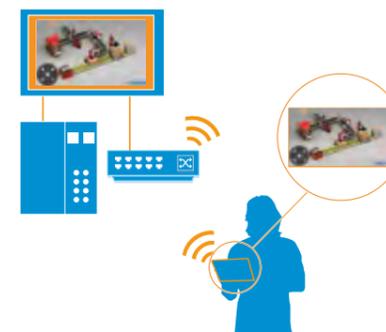
To run a project on Premium HMI Mobile, the user has to include the "System Variables" by right-clicking on the Variable database icon and selecting "Add System Variables".



## 2 Connect the mobile device to the wireless infrastructure network

When the project is transferred to the Panel PC / HMI, the device must be connected to the wireless network which will be used by the iOS/Android device<sup>1</sup>.

1. Premium HMI Mobile performances may vary according to wireless signal strength and to the processor of the device running Premium HMI Runtime "Advanced" licence.



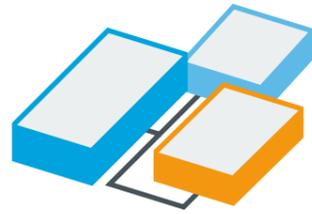
## 3 Connect the mobile device to the IPC / HMI

Once the installation of "Premium HMI Mobile" on the iOS/Android device is completed, connect it to the wireless network, insert access credentials on the home screen (IP address, screen name, username, password and resolution desired) and click on the connection button to start remotely interacting with the project.

# HMI Panels



# ASEM System Manager



**ASEM SYSTEM MANAGER**  
ASEM System Manager is a set of utilities developed to improve the usage of ASEM WinCE-based ARM and x86 platforms. Installed directly in production, ASEM System

Manager is accessible from the OS control panel and includes a series of features that allow to backup the whole system or to selectively backup the applications, to manage the screen saver and to

implement the antialiasing rendering for a better characters visualization. ASEM System Manager can be installed also on existing systems.

### Clone, Backup and Restore

The Clone feature offers the possibility to backup the OS image (ARM systems) and the registry of the system. Selective Backup allows to backup only specific and selected files and applications settings. The backup is saved in a single file with ".ASR" (ASEM System Repository) extension. With the Restore feature it is possible to retrieve the backup by selecting the files to be restored.

### OS update for ARM systems

The ASEM System Manager allows to update the operating system without reinstalling all the applications. Before the update, ASEM System Manager will automatically make a temporary backup of all ASEM applications and the related settings. Once the update is completed, the backup is automatically restored in a safe and open way. On the download area of the ASEM website there is a database with all OS image versions in ".ASR" format.

### Screen Saver

The Screen Saver function allows to reduce the display brightness or to switch off the display after a period of inactivity when systems are powered but not used in a continuous way by the operator. This feature extends the lifetime of the displays.

### Kiosk Mode

The utility enables the execution of Premium HMI Runtime in "kiosk" mode without showing any detail of the operating system. The kiosk mode is very useful when you need the HMI application to be launched with no evidence of the operating system presence.

### System reboot

The utility allows you to reboot the device without acting on the power supply.

### eMMC Usage

The utility provides useful information about the actual use of the eMMC memory along with an indication of "lifetime" of the support expressed in expected duration time.

### Antialiasing

Antialiasing is a technique for minimizing the character edges compared with their matrix enabling a better character visualization. The utility allows to choose between two different representation, according to users preferences.

### Scrollbar

The utility lets you change the operating system scrollbar dimension. Some of these controls are in fact used in the HMI applications so you can freely adapt the size.

### Touch Buzzer

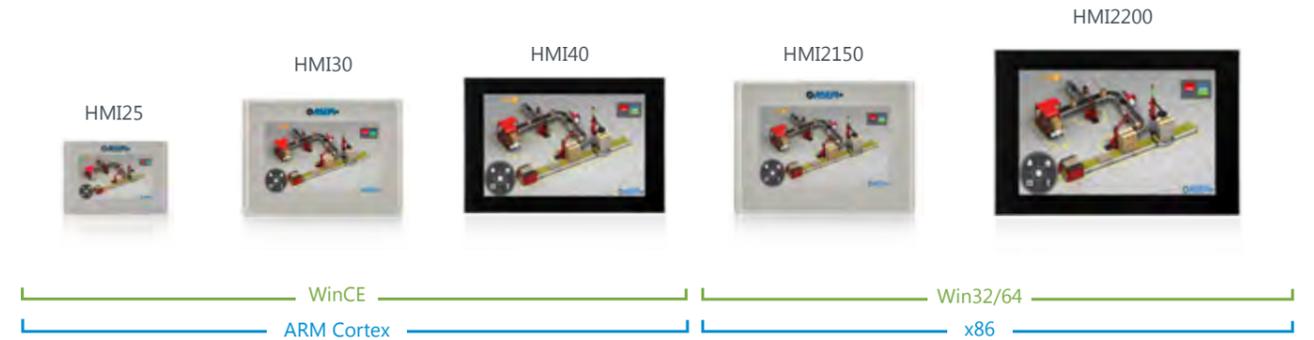
The utility allows you to activate the sound feedback of touch activation.

### Language Settings

The utility allows you to easily install the font support for non-European languages in the HMI applications.

System compatibility						
Hardware platform (WinCE)	Preinstalled	Post sales installation	Backup/Restore	Backup/Restore with OS clone	Font antialiasing setting	Screen Saver
ARM	✓	✓	✓	✓	✓	✓
x86	-	✓	✓	-	-	-
RMxx	-	✓	✓	✓	✓	-
Hardware platform (WinCE)	Touch Buzzer	eMMC Usage	Kiosk Mode	Language Settings	Scrollbar	System Reboot
ARM	✓	✓	✓	✓	✓	✓
x86	-	-	-	✓	✓	-
RMxx	-	✓	-	✓	✓	-

# HMI Solutions Overview



HMI Solutions include a wide range of families based on ARM Cortex and x86 architectures and include the remote assistance software Ubiquity and the visualization software PremiumHMI.



- **HMI25** (ARM Cortex A8, 1 GHz)
- **HMI30** (ARM Cortex A8, 1 GHz)
- **HMI40** (ARM Cortex A9, 1 GHz multicore)
- **HMI2150** (Intel® Celeron J1900 quad core 2,0 GHz)
- **HMI2200** (Intel® Celeron J1900 quad core 2,0 GHz)

x86 based solutions have expansion slots that allow the integration of ASEM industrial networking cards supporting a wide range of fieldbuses.

ARM Cortex A8, A9  
Win CE

x86  
Win 32/64

# HMI25

## Entry Level visualization systems



HMI25 are the entry level operator panels of the ASEM portfolio. With competitive price HMI25 provides an incomparable number of functionalities with the advanced features of PHMI 5 visualization software, in Basic or Advanced version, and the remote assistance software platform ASEM UBIQUITY. They are available with 16 million colors TFT LED backlight LCD displays in

4.3" and 7" sizes with 16:9 aspect ratio, with Aluminium or Aluminium True Flat front panels. HMI25 are based on an ARM Cortex A8 processor, 1 GHz (NXP i.MX535) and Windows Embedded Compact 7 Pro operating system. The motherboard includes the ASEM Smart Memory System, with 1 GB system RAM (DDR3-800), a write-protected 256 MB Nand-Flash for the operating system

and Runtime storage, 4 GB eMMC pseudo-SLC memory for storage and management of HMI project data, an RS-232/422/485 configurable serial port with MPI protocol support, a USB 2.0 interface and a 100 Mbps Ethernet interface. HMI25 includes the ASEM System Manager, a series of software utilities to improve the operator panels management.

### Highlights

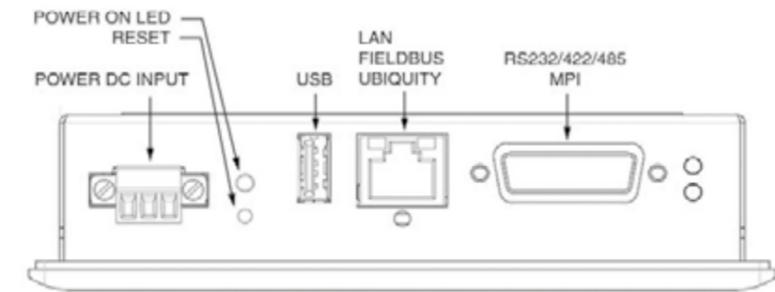
- Ubiquity Remote Assistance Software with remote access to the system and to Ethernet and Serial sub-networks
- ARM Cortex A8 Processor at 1 GHz
- ASEM Smart memory system
- 4.3" and 7" displays in 16:9 aspect ratio
- Front panel in Aluminium or Aluminium True Flat
- IP66 front degree of protection - Enclosure type 4X (Indoor use only)
- Operating temperature 0°C ÷ +50°C
- UL 508 listed component



## Gallery



## I/O shield



## Technical data

	HMI25 / HMI25-TF
HMI Software	PREMIUM HMI 5 BASIC   ADVANCED
REMOTE ASSISTANCE SW	ASEM UBIQUITY PRO
O.S. INSTALLED	Windows Embedded Compact 7 Pro
PROCESSOR	ARM Cortex A8 1GHz i.MX535
DRAM / SYSTEM MEMORY	1 GB DDR3 soldered
MASS STORAGE	256 MB NAND-FLASH 4 GB eMMC pseudo-SLC
LED backlight TFT LCD	4.3" W - 480x272 7" W - 800x480
TOUCHSCREEN	Resistive 4 wires
FRONT PANEL	Aluminium   Aluminium True Flat
PROTECTION DEGREE	IP66 front panel
INTERFACES	1 x LAN 100Mbps 1 x USB 2.0 (Type-A, rear) 1 x RS232/422/485 with MPI support (187Kb/s)
POWER SUPPLY UNIT	24VDC input voltage
OPERATING TEMPERATURE	0° - 50°C
APPROVALS	CE, cULus LISTED (508)

# HMI30

Visualization systems from 5.7" to 15.6"



HMI30 operating panels integrate the numerous and advanced features of Premium HMI visualization software, in Basic or Advanced version, and the remote assistance software platform Ubiquity with Windows Embedded Compact 7 Pro operating system.

The HMI30 panels are available with 16 million color TFT LED Backlight LCDs, from 5.7" up to 15.6", 4 with 5 wires resistive touchscreens and Aluminium/Aluminium True Flat front panels and

Aluminium True Flat with glass projected capacitive multitouch-screen. The motherboard provides 1 GB system RAM (DDR3-800), a writeprotected 256 MB Nand-Flash for the operating system and Runtimes storage, 4 GB eMMC pseudo-SLC memory for storage and management of HMI project data and a slot for a removable SDHC memory card.

The motherboard has a RS-232/422/485 configurable serial port with MPI protocol

support, two USB 2.0 interfaces, one Ethernet interface 10/100 Mbps and one Ethernet interface 100 Mbps. The HMI30 panels have a 24VDC power supply with an optional MicroUPS. HMI30 includes the ASEM System Manager, a series of software utilities to improve the operator panels management.



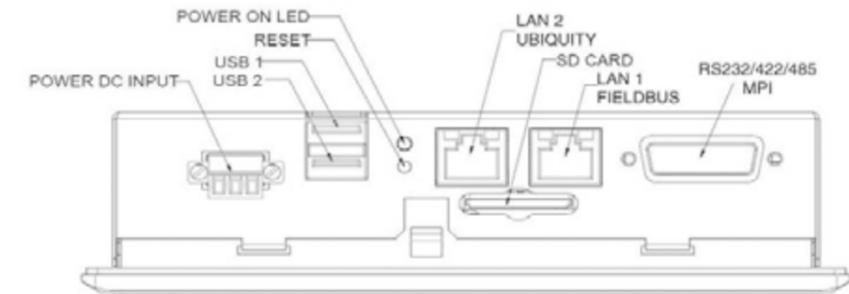
### Highlights

- Ubiquity Remote Assistance Software with remote access to the system and to Ethernet and Serial sub-networks
- ARM Cortex A8 Processor at 1 GHz / 800 MHz
- ASEM Smart memory system
- 5.7", 8.4", 10.4", 12.1", 15" displays in 4:3 aspect ratio, 10.1" and 12.1" displays in 16:10 aspect ratio, and 7" and 15.6" displays in 16:9 aspect ratio
- Front panel in Aluminium or Aluminium True Flat
- IP66 front degree of protection - Enclosure type 4X (Indoor use only)
- Operating temperature 0°C ÷ +50°C
- UL 508 listed component
- ATEX approval Zone 2/22

## Gallery



## I/O shield



## Technical data

	HMI30	HMI30-TF	HMI30-TFC
<b>HMI Software</b>	PREMIUM HMI 5 BASIC   ADVANCED		
<b>REMOTE ASSISTANCE SW</b>	ASEM UBIQUITY PRO		
<b>O.S. INSTALLED</b>	Windows Embedded Compact 7 Pro		
<b>PROCESSOR</b>	ARM Cortex A8 1GHz i.MX535		
<b>DRAM / SYSTEM MEMORY</b>	1 GB DDR3 soldered		
<b>MASS STORAGE</b>	256 MB NAND-FLASH 4 GB eMMC pseudo-SLC External SD/SDHC		
<b>LED backlight TFT LCD</b>	5.7" - 640x480 7" W - 800x480 8.4" - 800x600 10.1" W - 1280x800 10.4" - 800x600 12.1" - 800x600 12.1" - 1024x768 12.1" W - 1280x800 15.0" - 1024x768 15.6" W - 1366x768		7" W - 800x480 10.1" W - 1280x800 12.1" W - 1280x800 15.6" W - 1366x768
<b>TOUCHSCREEN</b>	Resistive 4 / 5 wires		P-CAP projected capacitive
<b>FRONT PANEL</b>	Aluminium	Aluminium True Flat	Aluminium True Flat
<b>PROTECTION DEGREE</b>	IP66 front panel		
<b>INTERFACES</b>	1 x LAN 100 Mbps 1 x LAN 10/100 Mbps 2 x USB 2.0 (Type-A, rear) 1 x RS232/422/485 with MPI support (187Kb/s)		
<b>POWER SUPPLY UNIT</b>	24VDC input voltage / MicroUPS (optional)		
<b>OPERATING TEMPERATURE</b>	0° - 50°C		
<b>APPROVALS</b>	CE, cULus LISTED (508), ATEX zone 22, II 3 D	CE, cULus LISTED (508), ATEX zone 2/22, II 3 G D	

# HMI40 [new]

## Multicore ARM based visualization systems



HMI40 operating panels integrate the numerous and advanced features of Premium HMI visualization software, in Basic or Advanced version, and the remote assistance software platform Ubiquity with Windows Embedded Compact 7 Pro operating system. HMI40 panels are available with a wide range of 16 million colors LED backlight TFT LCD sizes with Aluminium

(resistive touchscreen), Aluminium True Flat (resistive touchscreen) or Aluminium True Flat Multitouch front panels (glass projected capacitive touchscreen). HMI40 systems are based on the ARM Cortex A9 1.0 GHz processor (NXP i.MX6 Dual Lite or QuadPlus) with 1 or 2 GB system RAM (DDR3-1600/800), 4 GB eMMC pseudo-SLC memory and a slot for a removable MicroSD

memory card. The motherboard includes the isolated 24 VDC power supply, two 10/100/1000 Mbps Ethernet interfaces, an RS-232/422/485 configurable serial port with MPI protocol support, two USB 2.0 interfaces and an optional MicroUPS (removable). HMI40, optionally, can be supplied with an isolated CAN interface or an additional isolated RS-485 serial port.



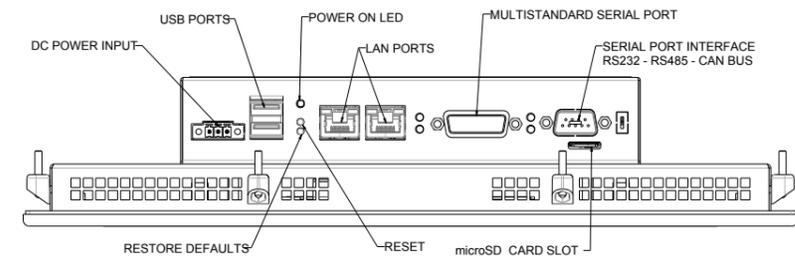
### Highlights

- Ubiquity Remote Assistance Software with remote access via VPN to the system and to Ethernet and Serial sub-networks
- ARM Cortex A9 multicore processors (NXP i.MX6 DualLite or QuadPlus)
- ASEM Smart memory system
- 8.4", 10.4", 12.1", 15" displays in 4:3 aspect ratio; 10.1" and 12.1" displays in 16:10 aspect ratio, 7", 15.6" and 18.5" displays in 16:9 aspect ratio
- Optional MicroUPS (removable and easily exchangeable)
- Optional isolated CAN interface or additional isolated RS485 port
- Front panel in Aluminium or Aluminium True Flat with resistive touchscreen
- Front panel in Aluminium True Flat Multitouch with glass projected capacitive touchscreen (for 16:10 and 16:9 aspect ratio front panels)
- IP66 front degree of protection - Enclosure type 4X (Indoor use only)
- Isolated 24 VDC power supply
- Operating temperature 0°C ÷ +50°C
- UL 61010 listed component and ATEX approval Zone 2/22

## Gallery



## I/O shield



## Technical data

	HMI40	HMI40-TF	HMI40-TFM
<b>HMI Software</b>	PREMIUM HMI 5 BASIC   ADVANCED		
<b>REMOTE ASSISTANCE SW</b>	ASEM UBIQUITY PRO		
<b>O.S. INSTALLED</b>	Windows Embedded Compact 7 Pro		
<b>PROCESSOR</b>	ARM Cortex A9 1GHz NXP i.MX6 DualLite or QuadPlus		
<b>DRAM / SYSTEM MEMORY</b>	1 GB DDR3 soldered		
<b>MASS STORAGE</b>	4 GB eMMC pseudo-SLC		
	1x microSD slot on board with external access		
<b>LED backlight TFT LCD</b>	7" W - 800x480 8.4" - 800x600 10.1" W - 1280x800 10.4" - 800x600 12.1" - 800x600 12.1" - 1024x768 12.1" W- 1280x800 15.0" - 1024x768 15.6" W - 1366x768		7" W - 800x480 10.1" W - 1280x800 12.1" W - 1280x800 15.6" W - 1366x768
<b>TOUCHSCREEN</b>	Resistive 4 / 5 wires		P-CAP Multitouch
<b>FRONT PANEL</b>	Aluminium	Aluminium True Flat	Aluminium True Flat Multitouch
<b>PROTECTION DEGREE</b>	IP66, Enclosure type 4x - front		
<b>INTERFACES</b>	2 x LAN 10/100/1000 Mbps 2 x USB 2.0 (Type-A, rear) 1 x RS232/422/485 (DB15M) with MPI support (187Kb/s) 1 x RS485 isolated (DB9M) with terminations (optional) 1 x CAN isolated channel (DB9M) and terminations (optional)		
<b>POWER SUPPLY UNIT</b>	24VDC isolated MicroUPS removable (optional)		
<b>OPERATING TEMPERATURE</b>	0° - 50°C		
<b>APPROVALS</b>	CE, cULus LISTED (61010) pending, ATEX zone 22, II 3 D	CE, cULus LISTED (61010) pending, ATEX zone 2/22, II 3 G D	

# HMI2150 [new]

## Entry level advanced visualization systems with Intel® Bay Trail™ platform



The fanless HMI family HMI2150 is an entry-level x86 solution (is available with small LCD sizes) that offers an excellent performance/price ratio. It is based on the Celeron J1900 2GHz quad core 64 bit processor of the Intel® Bay Trail™ System On Chip (SoC) platform. It is supplied with Windows Embedded Standard 7E or 7P operating system and

integrate the numerous and advanced functionalities of Premium HMI visualization software, in Basic, Pro or Advanced versions and ASEM Ubiquity remote assistance software. The "all in one" motherboard provides two Ethernet 10/100/1000Mbps ports, that support "Jumbo Frame" and "Wake on Lan" functionalities, a USB 3.0 port, a USB 2.0 port, a SATA II CFast slot with rear

access, an mSATA connector for SATA II SSD, up to 4 GB RAM with one DDR3 SODIMM module and an internal connector for additional serial or USB interfaces. HMI2150 systems are available with 16 million color LED Backlight TFT LCDs form 6.5" to 15.6", in 4:3 and Wide aspect ratio, with Aluminium or Aluminium True flat front panels, 5 wires resistive touchscreen and an additional

USB 2.0 port on front. All version with Wide LCDs are also available with TrueFlat Multitouch front panels, with glass projected capacitive touchscreen. HMI2150 systems have an isolated 24 VDC power supply input and are available in two versions, the SL with a reduced depth and the S0 with the possibility to install additional interfaces.



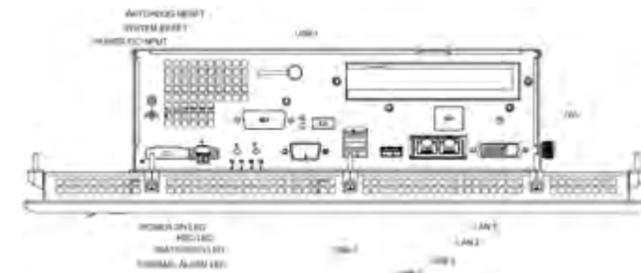
### + Highlights

- Ubiquity remote assistance software providing remote access to the system
- Intel® Bay Trail™ SoC platform
- 6.5", 8.4", 10.4", 12.1" and 15" LCD in 4:3 aspect ratio, 7", 10.1", 12.1" and 15.6" LCDs in Wide aspect ratio
- Front panel in Aluminium or Aluminium True Flat with resistive touchscreen
- Front panel in Aluminium True Flat Multitouch with glass projected capacitive touchscreen
- Isolated 24 VDC power supply
- Operating temperature 0°C ÷ +50°C
- CE, cULus LISTED (61010) certifications

## Gallery



## I/O shield



## Technical data

	HMI2150 Win32	HMI2150-TF Win32	HMI2150-TFM Win32
<b>HMI Software</b>	PREMIUM HMI 5 BASIC / PRO / ADVANCED		
<b>REMOTE ASSISTANCE SW</b>	ASEM UBIQUITY PRO		
<b>O.S. INSTALLED</b>	Microsoft Windows Embedded Standard 7E Microsoft Windows Embedded Standard 7P		
<b>LED backlight TFT LCD</b>	7" W - 800x480 8.4" - 800x600 10.1" W - 1280x800 10.4" - 800x600 12.1" - 800x600 12.1" - 1024x768 12.1" W - 1280x800 15.0" - 1024x768 15.6" W - 1366x768		7" W - 800x480 10.1" W - 1280x800 12.1" W - 1280x800 15.6" W - 1366x768
<b>TOUCHSCREEN</b>	Resistive 5 wires GFG (optional)	Resistive 5 wires	P-CAP Multitouch
<b>FRONT PANEL</b>	Aluminium	Aluminium True Flat	Aluminium True Flat Multitouch
<b>PROTECTION GRADE</b>	IP66 - front panel		
<b>PROCESSOR</b>	Intel® Celeron J1900 2.00Ghz a 64 bit, 4 cores / 4 threads, 2MB L2 cache, soldered		
<b>VIDEO CONTROLLER</b>	Intel® HD Graphics integrated in microprocessor, 688MHz Clock 854MHz Turbo, LVDS 8bit/color digital interface		
<b>SYSTEM MEMORY - RAM</b>	2GB or 4GB (1 x SODIMM DDR3 module)		
<b>MASS STORAGE</b>	32GB / 64GB SSD mSATA SATA II MLC		
<b>LAN</b>	2 x LAN 10/100/1000Mbps (2 x Intel® I210)		
<b>USB</b>	1 x USB 3.0 (Type-A, rear) 1 x USB 2.0 (Type-A, rear) 1 x USB 2.0 (Type-A, front)		
<b>ADD-ON INTERFACES</b>	1 x RS232/422/485 (DB15M)+ 1 x USB 2.0 (Type-A) (optional, max 1) 1 x RS232/422/485 (DB15M) isolated + 1 x USB 2.0 (Type-A) 2 x RS232 (DB9M) 1 x USB 2.0 (Type-A)		
<b>POWER SUPPLY UNIT</b>	24VDC isolated		
<b>OPERATING TEMPERATURE</b>	0°- 50°C		
<b>APPROVALS</b>	CE, cULus LISTED (61010) pending		

# HMI2200

## Advanced visualization systems with Intel® Bay Trail™ platform



HMI2200 panels are based on the Intel® Celeron™ J1900 2,0GHz quad core processor of the Bay Trail SoC platform and on Windows Embedded Standard 7E/7P operating systems. The HMI2200 family integrates Premium HMI visualization software available in Win32/64 Basic, Pro or Advanced versions and ASEM Ubiquity remote assistance software. The all-in-one motherboard features one rear access USB 3.0 port, two USB 2.0 ports, two 10/100/1000 Mbps Ethernet ports, one serial

RS232 interface, one rear external access CFast SATA II slot, one DVI-I (DVI-D + VGA) video output and RAM configuration up to 4 GB DDR3 SODIMM. HMI2200 family is available with 10.4", 12.1" and 15" in 4:3 aspect ratio, 17" and 19" in 5:4 aspect ratio, 10.1" and 12.1" in 16:10 aspect ratio, 15.6", 18.5", 21.5", 24" in 16:9 Wide aspect ratio 16 million color TFT LED Backlight LCDs and aluminium (HMI) or aluminium True Flat (HMI-TF) with 5 wires resistive touchscreen front panels with one USB port.

The versions with 10.1", 12.1", 15.6", 18.5", 21.5" and 24" Wide LCDs are also available with Aluminium True Flat front panels with glass projected capacitive Multitouch-screen (HMI-TFM). HMI2200 can be equipped with ASEM NETcore® X boards to communicate with industrial fieldbuses as Profibus, MPI or CANopen. HMI2200 has isolated 24 VDC power supply input and optionally an integrated UPS with external battery pack.



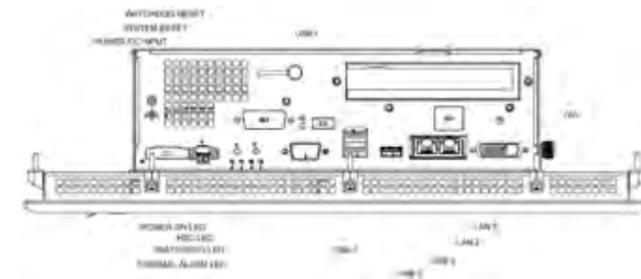
### Highlights

- Ubiquity remote assistance software providing remote access to the system
- Intel® Bay Trail™ SoC platform
- 10.1" and 12.1" in 16:10 wide aspect ratio, 10.4", 12.1" and 15" in 4:3 aspect ratio, 17" and 19" in 5:4 aspect ratio, 15.6", 18.5", 21.5", 24" in 16:9 wide aspect ratio TFT LCDs
- Front panel in Aluminium or Aluminium True Flat with resistive touchscreen
- Front panel in Aluminium True Flat Multitouch with glass projected capacitive touchscreen
- Isolated 24 VDC power supply with optional UPS
- Operating temperature 0°C ÷ +50°C
- CE, cULus LISTED (61010) certifications

## Gallery



## I/O shield



## Technical data

	HMI2200 Win32	HMI2200-TF Win32	HMI2200-TFM Win32
HMI Software	PREMIUM HMI 5 BASIC / PRO / ADVANCED		
REMOTE ASSISTANCE SW	ASEM UBIQUITY PRO		
O.S. INSTALLED	Microsoft Windows Embedded Standard 7E Microsoft Windows Embedded Standard 7P		
LED backlight TFT LCD	10.1" W - 1280x800 10.4" - 800x600 12.1" - 800x600 12.1" - 1024x768 12.1" W - 1280x800 15.0" - 1024x768 15.6" W - 1366x768 17" - 1280x1024 18.5" W - 1366x768 19" - 1280x1024 21.5" W - 1920x1080 24" W - 1920x1080		10.1" W - 1280x800 12.1" W - 1280x800 15.6" W - 1366x768 18.5" W - 1366x768 21.5" W - 1920x1080 24" W - 1920x1080
TOUCHSCREEN	Resistive 5 wires GFG (optional)	Resistive 5 wires	P-CAP Multitouch
FRONT PANEL	Aluminium	Aluminium True Flat	Aluminium True Flat Multitouch
PROTECTION GRADE	IP66 - front panel		
PROCESSOR	Intel® Celeron J1900 2.00GHz a 64 bit, 4 cores / 4 threads, 2MB L2 cache, soldered		
VIDEO CONTROLLER	Intel® HD Graphics integrated in microprocessor, 688MHz Clock 854MHz Turbo, LVDS 8bit/color digital interface		
SYSTEM MEMORY - RAM	2GB or 4GB (1 x SODIMM DDR3 module)		
MASS STORAGE	32GB / 64GB SSD mSATA SATA II MLC		
LAN	2 x LAN 10/100/1000Mbps (2 x Intel® I210)		
USB	1 x USB 3.0 (Type-A, rear) 2 x USB 2.0 (Type-A, rear) 1 x USB 2.0 (Type-A, front)		
SERIAL	1 x RS232 (DB9M)		
VIDEO OUTPUT	1 x DVI-I (DVI-D + VGA with adapter)		
ADD-ON INTERFACES	1 x RS232/422/485 (DB15M)+ 1 x USB 2.0 (Type-A) (optional, max 1) 1 x RS232/422/485 (DB15M) isolated + 1 x USB 2.0 (Type-A)		
POWER SUPPLY UNIT	24VDC isolated UPS (optional)		
OPERATING TEMPERATURE	0° - 50°C		
APPROVALS	CE, cULus LISTED (508)		



## 3. PAC Solutions

# PAC - Programmable Automation Controller

## The new frontier of control systems

Industrial automation is moving away from embedded controls, programmable controllers and industrial computers towards a new architecture called PAC, Programmable Automation Controller.

The term **PAC - Programmable Automation Controller** - indicates compact or hybrid modular controllers that combine the features and capabilities of a control system based on PC architecture with those of a typical PLC - programmable logic controller.

The basic difference between a PAC and a PLC is the **software component**, which provides an intuitive graphic programming language, similar to a flow chart, but linked to **real-time operating systems** and with the possibility to program reconfigurable hardware. The control programs are generally developed with generic software tools that allow to design the program so that it can be shared with several computers, processors, HMI terminals or other components of the control system architecture. PACs are especially suited for communications that leverage standard protocols and network interfaces. They are usually enclosed in chassis not bigger than a common PLC.

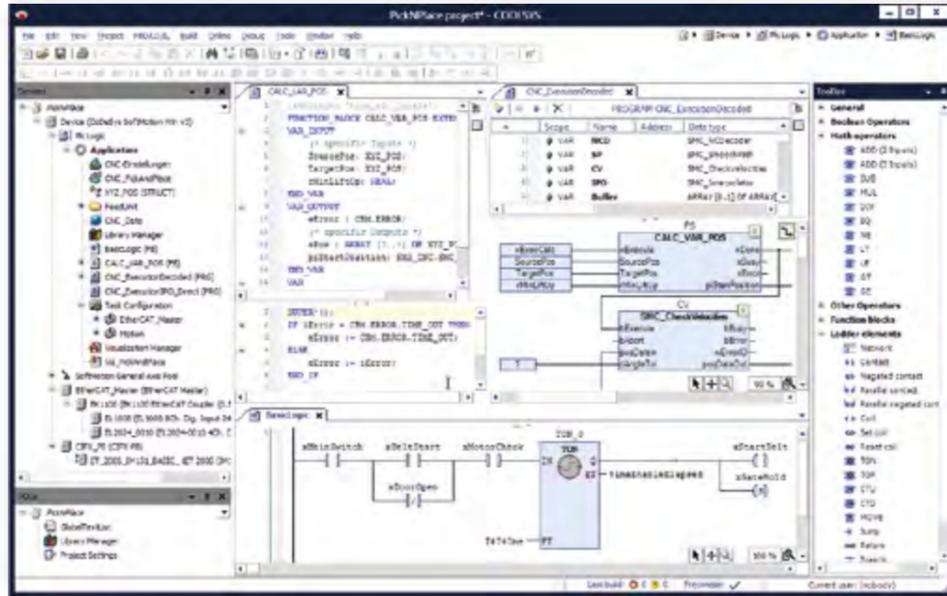
This space provides room for an advanced microprocessor, several storage modules (both volatile and permanent), axis control modules and different types of communication interfaces. The on-board intelligence is supplied with the tools of a typical real-time operating system, capable of offering reduced latency times and a determinism suitable to fulfil critical tasks, and with an advanced application software usually implemented on PC development platforms and then "downloaded" to the device.

In a competitive context where machine manufacturers are compelled to renew their automation solutions by integrating **standard, open and flexible technological structures** that quickly respond to the growing demands of customization, delivery time reduction and lower costs, it becomes suitable for producers to consider and evaluate the possibility to develop control functions with PAC

systems, with **enhanced scalability in calculation power, wide availability of communication interfaces for industrial networking, data storage and archiving functions, making use of several storage modules** (both volatile and permanent).

The most advanced PACs support also graphic video interfaces, optimising automation costs by integrating control and visualization activities into a single system. PACs with high-performance processors further optimize automation costs by integrating Motion Logic (SoftMotion) and Control Logic (SoftPLC) into one integrated PLC-CNC control system.

# ASEM PAC Solutions



ASEM logic controllers base their PLC functionalities on the consolidated and widespread CODESYS SoftPLC of the German 3S, with a highly efficient implementation of version 3.5 which guarantees the deterministic execution of PLC control logic with WinCE and Win 32 operating systems. It transfers projects between various operating systems and hardware platforms without the need to change the project code. Like all traditional PLCs, CODESYS platform also has a development environment, CODESYS Engineering, to realise projects which are

then executed by the runtime. CODESYS provides availability of the most used industrial fieldbuses in master mode (such as CANopen, Profibus, Profinet, Ethernet IP, EtherCAT, Modbus RTU and Modbus TCP) to communicate with field devices.

**CODESYS - The number 1 control tool in the world**  
With over a million installations, CODESYS by 3S-Smart Software Solutions has become a global standard in Industrial Automation, being the number one platform (excluding Multinational PLC manufacturers) in the world.



# CODESYS

# CODESYS Highlights



### Flexible PLC and Motion logic control in a single development tool

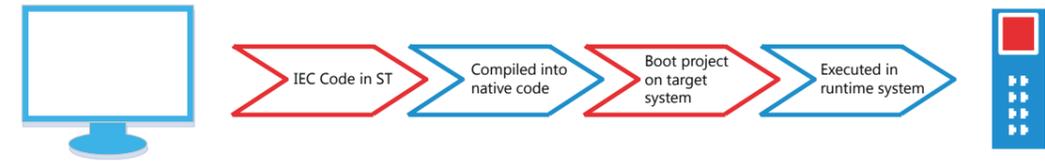
- Perfect integration of auxiliary components for automation engineering:
  - SoftPLC
  - SoftMotion
  - CNC
- CODESYS SoftMotion covers all motion functions, from motion management of single axis to 3D CNC interpolations
- The possibilities offered by the standard IEC 61131-3 give no limits to the complexity of the tasks to be assigned

### Transferability of projects to different platforms

- A project can be used on different platforms and operating systems without the need to modify or change settings in the development tool

### 5 different programming languages in one flexible development tool

- **Text editor:**
  - **IL** (Instructions List) similar to the Assembler programming language
  - **ST** (Structured Text) similar to programming in PASCAL or C
- **Graphic editors:**
  - **LD** (Ladder) allows the programmer to virtually combine relay contacts and coils
  - **FBD** (Function Block Diagram) allows the user to quickly program both Boolean and analogue expressions
  - **SFC** (Sequential Function Chart) suitable to program sequential processes



### Performance guaranteed with the proprietary compiler integrated in the development tool

- Proprietary compilers integrated in the development environment transform the code created by CODESYS into native code for machinery (binary code) then downloaded on the controller
  - The compiler does not weigh on the machinery hardware, lightening the load and therefore optimising controller performances
  - Performance is much improved compared to controllers executing an interpreted code

### High potential and usability for the effective implementation of complex automation projects

- Fast machine code for different devices and complex applications, generated by compilers widely tested in industrial environments
- Scalable function - usable both on simple configurators and potent auxiliary tools for the static analysis of the code or integrated UML diagrams
- Modular programming philosophy orientated to the repeated use of functional blocks in the libraries

### Several debugging functions help in writing and maintaining applications

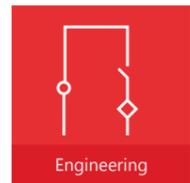
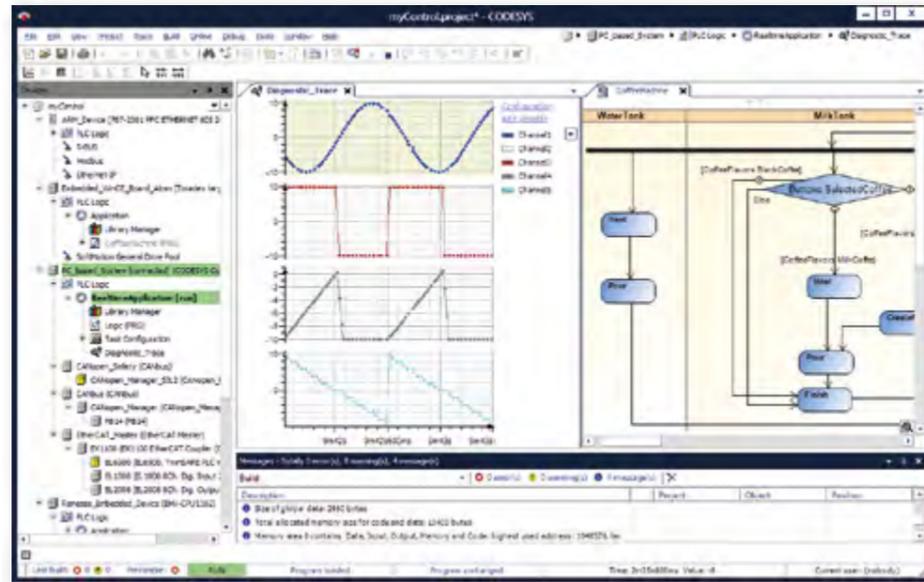
- Breakpoint
- Force
- Trace
- Debugging
- Online change
- Multi application
- Recipe
- Symbol management
- Multi-user operation

> CODESYS integrated property compiler functioning



# CODESYS

## The components



**CODESYS advanced development tool includes different programming languages for the development of applications in a single expandable platform**

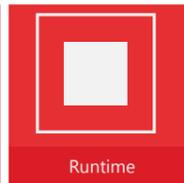
→ Modern development platform with editor and debugger compliant with IEC 61131-3 standards.

→ Integrated compilers transform the code created by CODESYS into **native code** for machinery (binary code) then downloaded on the controller, thus enhancing performance of the system for industrial applications.

→ Once online, CODESYS offers debugging features such as monitoring/writing/forcing of variables by setting single passages of breakpoints/performing or recording variable values online in the controller in a ring buffer (Sampling Trace)

→ Availability of additional tools for easier high-level programming language.

→ Modular expandability with specific plug-ins.



**The installation of CODESYS Control Runtime System converts any type of industrial PC into a powerful scalable PLC, leveraging the performance of the PC itself. Several ASEM systems can be programmed with the CODESYS development tool, becoming real controllers based on ARM Cortex or x86 processors.**

→ ASEM offers controllers based on Windows 32 bit or Windows CE operating systems

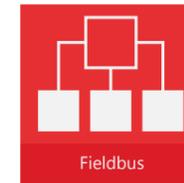
→ ASEM integrates the CODESYS Control Runtime on three PAC systems (Programmable Automation Controller) dedicated to control:

- LP30/31 (ARM based)
- LP40 (ARM based)
- LP2200 (x86 based)
- LBM40 (x86 based)
- LBM2200 (x86 based)
- LBM3400 (x86 based)

→ The CODESYS Control Runtime System can also be installed on all other x86 families of the ASEM Industrial PC range, able to support also SoftMotion + CNC applications

# CODESYS

## The components



**CODESYS - Fieldbus**

**The CODESYS development environment integrates the support of different fieldbuses such as CANopen, Profibus, EtherCAT or Ethernet IP, including additional protocol stacks**

→ Support for the most used fieldbuses with integrated configurator: CANopen, Modbus, Profibus, etc.

→ Support for real-time Ethernet systems: EtherCAT, EtherNET/IP, etc.

→ Management of I/O assignment and diagnosis independent from fieldbuses

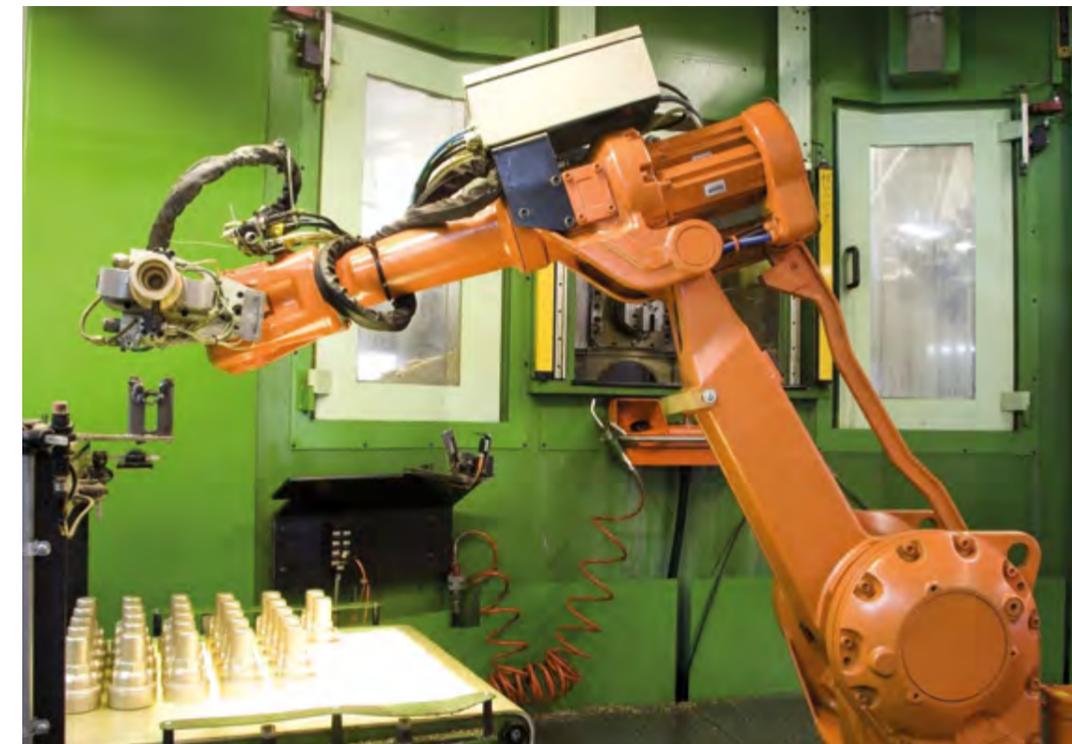


**CODESYS Motion+CNC**

**Logic control and Motion control in one development tool. An optional modular solution is completely integrated in the CODESYS programming system to manage complex movements with a IEC 61131-3 programmed controller**

→ Management of any type of application, from simple basic Motion applications to complex CNC controls

→ Library modules for the control of interpolations and transformations and for axis control - PLCopen



# Panel PACs

## ASEM PAC Solutions



The current portfolio of ASEM PAC solutions includes the LP30/31 family with ARM Cortex A8 (NXP i.MX535 1GHz or i.MX537 800 MHz) processors, the LP/LBM40 family with ARM Cortex A9 (NXP i.MX6 DualLite or QuadPlus 1,0 GHz) and Windows Embedded Compact 7 Pro operating system, the LP/LBM2200 family with Intel® Celeron J1900 quad core (2,00 GHz) processor, the LBM3400 family with Intel® Skylake 6<sup>th</sup> Core processors and Windows Embedded Standard 7E/7P operating systems.

In addition to the SoftPLC, ASEM PAC systems provide simultaneous execution of Premium HMI visualization software and UBIQUITY remote assistance software, representing the new frontier of "Ready to Automation" systems.

For further information regarding CODESYS control software on ASEM Industrial PCs, visit our website: <http://www.asem.it/en/products/industrial-automation/control-software/>

# LP30 / LP31

## Entry Level PAC



LP30/31 systems are the only ARM-based Panel PACs - Programmable Automation Controllers - on the market combining visualization, control and remote assistance functions. They integrate the numerous and advanced features of PHMI 5 visualization software, in Basic or Advanced versions, CODESYS SoftPLC 3.5 and ASEM UBIQUITY remote assistance software with Windows Embedded Compact 7 Pro. The LP30/31 panels are available with 16 million color

TFT LED Backlight LCDs, from 5.7" up to 15.6", 4 with 5 wires resistive touchscreens and Aluminium/Aluminium True Flat front panels and Aluminium True Flat with glass projected capacitive multitouch-screen. The motherboard provides 1 GB system RAM (DDR3-800), a writeprotected 256 MB Nand-Flash for the operating system and Runtimes storage, 4 GB eMMC pseudo-SLC memory for storage and management of HMI project data and a slot for a removable SDHC memory card.

The motherboard has a RS-232/422/485 configurable serial port with MPI protocol support, two USB 2.0 interfaces, one Ethernet interface 10/100 Mbps, one Ethernet interface 100 Mbps. The LP30/31 panels have an isolated 24V DC power supply with MicroUPS. LP30/31 includes the ASEM System Manager, a series of software utilities to improve the operator panels management. LP31 has also a CAN interface.

## Gallery



## I/O shield



## Technical data

	LP30 / LP30-TF	LP30-TFC	LP31 / LP31-TF	LP31-TFC
<b>CONTROL SOFTWARE</b>	CODESYS SP v3.x			
supported protocols	EtherCAT Master, MODBUS TCP Master, MODBUS RTU Master		EtherCAT Master, MODBUS TCP Master, MODBUS RTU Master, CANopen Master	
<b>HMI Software</b>	PREMIUM HMI 5 BASIC   ADVANCED			
<b>REMOTE ASSISTANCE SW</b>	ASEM UBIQUITY PRO			
<b>OS INSTALLED</b>	Microsoft Windows Embedded Compact 7 Pro			
<b>LED backlight TFT LCD</b>	5.7" - 640x480 7" W - 800x480 8.4" - 800x600 10.1" W - 1280x800 10.4" - 800x600 12.1" - 800x600 12.1" - 1024x768 12.1" W - 1280x800 15.0" - 1024x768 15.6" W - 1366x768	7" W - 800x480 10.1" W - 1280x800 12.1" W - 1280x800 15.6" W - 1366x768	7" W - 800x480 8.4" - 800x600 10.1" W - 1280x800 10.4" - 800x600 12.1" - 800x600 12.1" - 1024x768 12.1" W - 1280x800 15.0" - 1024x768 15.6" W - 1366x768	7" W - 800x480 10.1" W - 1280x800 12.1" W - 1280x800 15.6" W - 1366x768
<b>TOUCHSCREEN</b>	Resistive 4 / 5 wires	P-CAP projected capacitive	Resistive 4 / 5 wires	P-CAP projected capacitive
<b>FRONT PANEL</b>	Aluminium Aluminium True Flat	Aluminium True Flat	Aluminium Aluminium True Flat	Aluminium True Flat
<b>PROTECTION GRADE</b>	IP66, Enclosure type 4x - frontal			
<b>PROCESSOR</b>	ARM Cortex A8 i.MX535 a 1 GHz		ARM Cortex A8 i.MX537 a 800 MHz	
<b>SYSTEM MEMORY - RAM</b>	1 GB DDR3 soldered on board			
<b>MASS STORAGE</b>	256 MB NAND-Flash 4 GB eMMC pseudo-SLC 1 x Slot SD/SDHC v2.0			
<b>LAN</b>	LAN1 Ethernet 100 Mbps (RJ45) LAN2 Ethernet 10/100 Mbps (RJ45)			
<b>USB</b>	2 x USB 2.0 (Type A, rear)			
<b>SERIAL</b>	1 x RS-232/422/485 (DB15M)			
<b>FIELDBUS INTERFACES</b>	-		1 x CAN optoisolated channel (DB9M) with FlexCAN integrated controller	
<b>POWER SUPPLY UNIT</b>	24VDC		24VDC isolated	
<b>OPERATING TEMPERATURE</b>	MicroUPS max 500ms, with supercapacitors 0° - 50°C			
<b>APPROVALS</b>	CE, cULus LISTED (508), ATEX zone 22, II 3 D (LP30) ATEX zone 2/22, II 3 G D (LP30-TF, LP30-TFC)			



### Highlights

- CODESYS SoftPLC for control applications with retentive data management via MicroUPS
- EtherCAT, Modbus TCP/IP, Modbus RTU and CANopen fieldbuses
- Premium HMI visualization software
- Ubiquity Remote Assistance Software with remote access to the system and to Ethernet and Serial sub-networks
- ARM Cortex A8 (1 GHz processor - LP30, 800 MHz processor - LP31)
- ASEM Smart memory system
- 5.7", 8.4", 10.4", 12.1", 15" displays in 4:3 aspect ratio, 10.1" and 12.1" displays in 16:10 aspect ratio, and 7" and 15.6" displays in 16:9 aspect ratio
- Front panel in Aluminium or Aluminium True Flat
- IP66 front degree of protection - Enclosure type 4X (Indoor use only)
- Operating temperature 0°C ÷ +50°C
- UL 508 listed component and ATEX approval Zone 2/22 (only LP30)

# LP40 new

## PAC based on ARM Cortex A9 multicore processors



LP40 ARM-based Panel PACs - Programmable Automation Controllers - combine visualization, control and remote assistance functions. They integrate the numerous and advanced features of PHMI 5 visualization software, in Basic or Advanced versions, CODESYS SoftPLC 3.5 and ASEM UBIQUITY remote assistance software with Windows Embedded Compact 7 Pro. LP40 panels are available with a wide range of 16 million colors LED backlight TFT LCD

sizes with Aluminium (resistive touchscreen), Aluminium True Flat (resistive touchscreen) or Aluminium True Flat Multitouch front panels (glass projected capacitive touchscreen). LP40 systems are based on the ARM Cortex A9 1.0 GHz processor (NXP i.MX6 DualLite or QuadPlus) with 1 or 2 GB system RAM (DDR3-1600/800), 4 GB eMMC pseudo-SLC memory, a slot for a removable MicroSD memory card and 512kb MRAM memory

(Magnetoresistive RAM) for retentive data storage at power down to be used in combination with the MicroUPS (removable). The motherboard includes the isolated 24 VDC power supply, two 10/100/1000 Mbps Ethernet interfaces, an RS-232/422/485 configurable serial port with MPI protocol support and two USB interface. HMI40, optionally, can be supplied with an isolated CAN interface or an additional isolated RS-485 serial port.



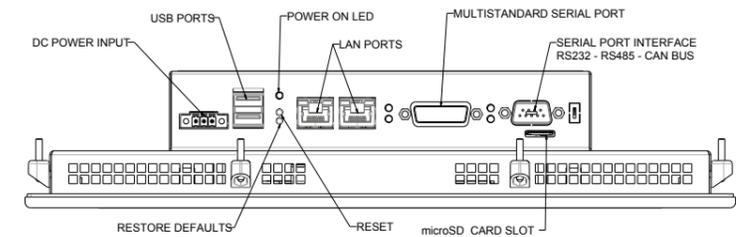
### + Highlights

- CODESYS SoftPLC for control applications with retentive data management via MicroUPS
- EtherCAT, Modbus TCP/IP, Modbus RTU and CANopen fieldbuses
- Premium HMI visualization software
- Ubiquity Remote Assistance Software with remote access via VPN to the system and to Ethernet and Serial sub-networks
- 8.4", 10.4", 12.1", 15" displays in 4:3 aspect ratio; 10.1" and 12.1" displays in 16:10 aspect ratio, 7", 15.6" and 18.5" displays in 16:9 aspect ratio
- ARM Cortex A9 multicore processors (NXP i.MX6 DualLite or QuadPlus)
- MicroUPS (removable and easily exchangeable)
- Optional isolated CAN interface or additional isolated RS485 port
- Front panel in Aluminium or Aluminium True Flat with resistive touchscreen
- Front panel in Aluminium True Flat Multitouch with glass projected capacitive touchscreen (for 16:10 and 16:9 aspect ratio front panels)
- IP66 front degree of protection - Enclosure type 4X (Indoor use only)
- Isolated 24 VDC power supply input
- Operating temperature 0°C ÷ +50°C

## Gallery



## I/O shield



## Technical data

	LP40	LP40-TF	LP40-TFM
<b>CONTROL SOFTWARE</b>	CODESYS SP v3.x		
supported protocols	EtherCAT Master, MODBUS TCP Master, MODBUS RTU Master, CANopen Master		
<b>HMI Software</b>	PREMIUM HMI 5 BASIC   ADVANCED		
<b>REMOTE ASSISTANCE SW</b>	ASEM UBIQUITY PRO		
<b>O.S. INSTALLED</b>	Windows Embedded Compact 7 Pro		
<b>PROCESSOR</b>	ARM Cortex A9 1GHz NXP i.MX6 DualLite or QuadPlus		
<b>DRAM / SYSTEM MEMORY</b>	1 GB DDR3-1600/800 soldered on board		
<b>MASS STORAGE</b>	4 GB eMMC pseudo-SLC		
	1x microSD slot on board with external access		
<b>LED backlight TFT LCD</b>	7" W - 800x480 8.4" - 800x600 10.1" W - 1280x800 10.4" - 800x600 12.1" - 800x600 12.1" - 1024x768 12.1" W- 1280x800 15.0" - 1024x768 15.6" W - 1366x768		7" W - 800x480 10.1" W - 1280x800 12.1" W - 1280x800 15.6" W - 1366x768
<b>TOUCHSCREEN</b>	Resistive 4 / 5 wires		P-CAP Multitouch
<b>FRONT PANEL</b>	Aluminium	Aluminium True Flat	Aluminium True Flat Multitouch
<b>PROTECTION DEGREE</b>	IP66, Enclosure type 4x - front		
<b>INTERFACES</b>	2 x LAN 10/100/1000 Mbps		
	2 x USB 2.0 (Type-A, rear)		
	1 x RS232/422/485 (DB15M) with MPI support (187Kb/s)		
	1 x RS485 isolated (DB9M) with terminations (optional)		
	1 x CAN isolated channel (DB9M) and terminations (optional)		
<b>POWER SUPPLY UNIT</b>	24VDC isolated		
	MicroUPS with 512K Magnetoresistive RAM removable		
<b>OPERATING TEMPERATURE</b>	0° - 50°C		
<b>APPROVALS</b>	CE, cULus LISTED (61010) pending, ATEX zone 22, II 3 D	CE, cULus LISTED (61010) pending, ATEX zone 2/22, II 3 G D	

# LP2200

## PAC with advanced functionalities



The LP2200 family, based on Windows Embedded Standard 7E/7P operating systems, integrates the SoftPLC CODESYS 3.X, PremiumHMI 5 visualization software and ASEM UBIQUITY remote assistance software. The all-in-one motherboard features one rear access USB 3.0 port, two USB 2.0 ports, two 10/100/1000 Mbps Ethernet ports, one serial RS232 interface, one rear external access CFast SATA II slot, one DVI-I (DVI-D + VGA) video output and RAM

configuration up to 4 GB DDR3 SODIMM. LP2200 family is available with 10.4", 12.1" and 15" in 4:3 aspect ratio, 17" and 19" in 5:4 aspect ratio, 10.1" and 12.1" in 16:10 aspect ratio, 15.6", 18.5", 21.5", 24" in 16:9 Wide aspect ratio 16 million color TFT LED Backlight LCDs and aluminium (LP) or aluminium True Flat (LP-TF) with 5 wires resistive touchscreen front panels with one USB port. The versions with 10.1", 12.1", 15.6", 18.5", 21.5" and 24" Wide LCDs are also available

with Aluminium True Flat front panels with glass projected capacitive Multitouch-screen (LP-TFM). The LP2200 PAC family, by means of CODESYS SoftPLC, can manage EtherCAT, Modbus TCP/IP and Modbus RTU (serial). Together with ASEM NETcore® X cards, LP2200 support also CANopen, Profibus, Profinet and Ethernet IP master fieldbuses to control automation I/Os and devices.



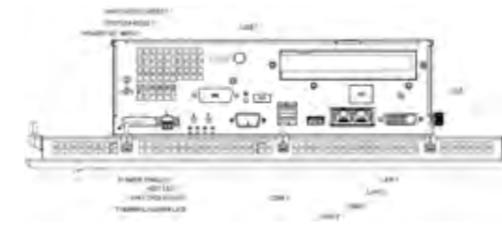
### Highlights

- SoftPLC CODESYS for control applications with retentive data management via NV RAM card or UPS
- Supported fieldbuses: EtherCAT, Modbus TCP/IP, Modbus RTU, CANopen, Profibus, Profinet, Ethernet IP
- Premium HMI visualization software
- Ubiquity remote assistance software with remote access to the system and to the Ethernet and Serial sub-networks
- Intel® Celeron J1900 quad core (2,0GHz) processor
- Front panel in Aluminium or Aluminium True Flat
- IP66 front degree of protection - Enclosure type 4x (Indoor use only)
- Operating temperature 0°C ÷ +50°C
- Isolated 24 VDC power supply input
- Optional UPS (Uninterruptible Power Supply) for power failures
- UL 508 listed component

## Gallery



## I/O shield



## Technical data

	LP2200 Win32	LP2200-TF Win32	LP2200-TFM Win32
<b>CONTROL SOFTWARE</b>	CODESYS SP RTE v3.x		
supported protocols	EtherCAT Master, MODBUS TCP Master, MODBUS RTU Master, PROFIBUS Master/Slave, CANopen Master, Profinet IO Controller/Device		
<b>HMI SOFTWARE</b>	PREMIUM HMI 5 BASIC   PRO   ADVANCED		
<b>REMOTE ASSISTANCE SW</b>	ASEM UBIQUITY PRO		
<b>OS INSTALLED</b>	Microsoft Windows Embedded Standard 7E 32 bit Microsoft Windows Embedded Standard 7P 32 bit		
<b>LED backlight TFT LCD</b>	10.1" W - 1280x800 10.4" - 800x600 12.1" - 800x600 12.1" - 1024x768 12.1" W - 1280x800 15.0" - 1024x768 15.6" W - 1366x768 17" - 1280x1024 18.5" W - 1366x768 19" - 1280x1024 21.5" W - 1920x1080 24" W - 1920x1080		10.1" W - 1280x800 12.1" W - 1280x800 15.6" W - 1366x768 18.5" W - 1366x768 21.5" W - 1920x1080 24" W - 1920x1080
<b>TOUCHSCREEN</b>	Resistive 5 wires GFG (Optional)	Resistive 5 wires	P-CAP projected capacitive
<b>FRONT PANEL</b>	Aluminium	True Flat Aluminium	
<b>PROTECTION GRADE</b>	IP66 - frontal		
<b>PROCESSOR</b>	Intel® Celeron J1900 quad core 2.0GHz, 4 cores / 4 threads, 2MB L2 cache, soldered		
<b>VIDEO CONTROLLER</b>	Intel® HD Graphics integrated in microprocessor, 688MHz Clock 854MHz Turbo, LVDS 8bit/color digital interface		
<b>SYSTEM MEMORY - RAM</b>	4GB (1 x SODIMM DDR3 module)		
<b>MASS STORAGE</b>	32GB / 64GB SSD mSATA SATA II MLC		
<b>LAN</b>	2 x LAN 10/100/1000Mbps (2 x Intel® I210)		
<b>USB</b>	1 x USB 3.0 (Type-A, rear) 2 x USB 2.0 (Type-A, rear) 1 x USB 2.0 (Type-A, front)		1 x USB 3.0 (Type-A, rear) 2 x USB 2.0 (Type-A, rear)
<b>SERIAL</b>	1 x RS232 (DB9M)		
<b>VIDEO OUTPUT</b>	1 x DVI-I (DVI-D + VGA with adapter)		
<b>ADD-ON INTERFACES</b>	1 x RS232/422/485 (DB15M)+ 1 x USB 2.0 (Type-A) (optional, max 1) 1 x RS232/422/485 (DB15M) optoisolated + 1 x USB 2.0 (Type-A)		
<b>FIELDBUS &amp; I/O</b>	PROFIBUS Master/Slave, CANopen Master, Profinet IO Controller/Device		
<b>RETENTIVE MEMORY (optional)</b>	512kB NVRAM		
<b>POWER SUPPLY UNIT</b>	24VDC isolated UPS (optional)		
<b>OPERATING TEMPERATURE</b>	0° - 50°C		
<b>APPROVALS</b>	CE, cULus LISTED (508)		

# Book Mounting PACs

## Book Mounting Solutions



The current portfolio of ASEM Book Mounting PAC solutions includes the LBM40 with ARM Cortex A9 DualLite or QuadPlus processors (NXP i.MX6 1,0 GHz) and Windows Embedded Compact 7 Pro operating system, the LBM2200, based on Intel® Celeron J1900 Quad Core (2,00 GHz) processor,

the LBM3400 family, based on Intel® Celeron and 6<sup>th</sup> generation Core™ i3, i5, i7 processors and Windows Embedded Standard 7E/7P 32 bit operating systems. LBM40, LBM2200 and LBM3400 combine control and remote assistance functions.

For further information regarding CODESYS control software on ASEM Industrial PCs, visit our website: <http://www.asem.it/en/products/industrial-automation/control-software/>

# LBM40 [new]

## Book Mounting PAC based on ARM Cortex A9 multicore processors



The DIN rail Mounting ARM based PAC LBM40 is based on the ARM Cortex A9 1GHz DualLite processor (NXP i.MX6), Windows Embedded Compact 7 Pro operating system and integrate the numerous and advanced functionalities of Codesys SoftPLC 3.5 and ASEM Ubiquity remote assistance software.

LBM40 has a plastic chassis with 24 VDC isolated power supply input, optionally the MicroUPS based on supercapacitors, and 512kB MRAM (Magnetoresistive RAM) for the retentive data backup in case of power down. The motherboard provides one 10/100 Mbps and one 10/100/1000 Mbps Ethernet

ports, two USB 2.0 ports, a DVI-I video output and the signaling LEDs. The motherboard also provides a slot for a removable MicroSD memory card and 2 GB DDR3 RAM. LBM40, optionally, can be provided with an additional isolated RS232/422/485 serial port or with a CAN interface.



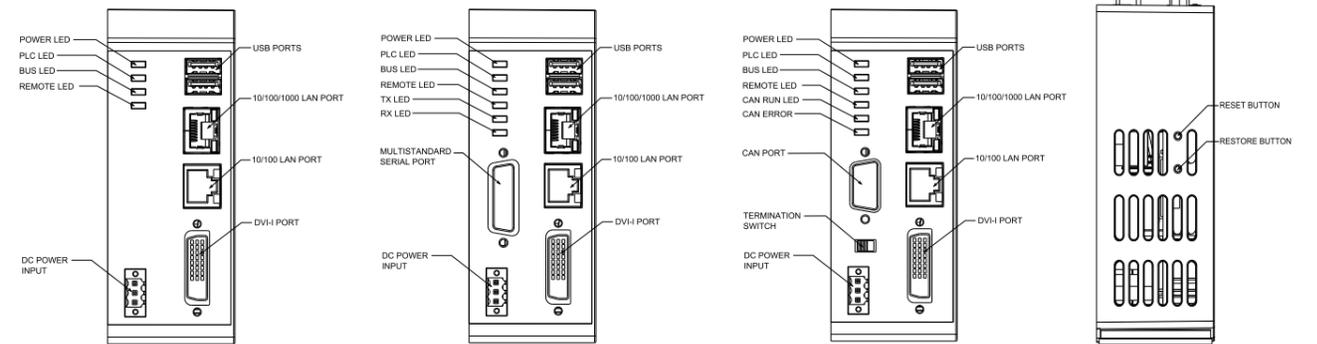
### Highlights

- Ubiquity remote assistance software providing remote access to the system
- CODESYS SoftPLC for control applications with retentive data management via MicroUPS
- MicroUPS with supercapacitors and 512kB MRAM
- ARM Cortex A9 DualLite processor (NXP i.MX6)
- Operating temperature 0°C ÷ +50°C
- CE, cULus LISTED (508) certifications

## Gallery



## I/O shield



## Technical data

	LBM40
OS AVAILABLE	Microsoft Windows Embedded Compact 7 Pro Embedded Linux distribution based on Yocto Project No OS
PROCESSOR	ARM Cortex A9 1GHz NXP i.MX6 DualLite
SYSTEM MEMORY - RAM	1 GB with DDR3 chips soldered
NVRAM	512kB magnetic RAM
MASS STORAGE	4 GB eMMC pseudo-SLC (Solid State Disk) 8bit, file system organization for projects and applications 1 x Slot microSD
LAN	1 x Ethernet 10/100/1000 Mbps (Intel 82574L, RJ45); 1 x Ethernet 10/100 Mbps (RJ45)
USB	2 x USB 2.0 (Type-A)
SERIAL	1 x RS-232/422/485 (DB15M) 1 x RS232/485 isolated (DB15M) (optional, alternative to CAN)
FIELDBUS	1 x CAN isolated channel (DB9M) with terminations (optional, alternative to RS232/485)
BATTERY	1 x CR2032 Removable (internal)
VIDEO OUTPUT	1 x DVI-D
POWER SUPPLY UNIT	24VDC isolated Backup for microinterruption, max 500ms, with supercapacitors
OPERATING TEMPERATURE	0° - 50°C
APPROVALS	CE, cULus (508) pending

# LBM2200 new

## Book mounting PAC based on Intel® Bay Trail™ platform



The Book Mounting fanless PAC LBM2200 is based on the Celeron J1900 2GHz quad core 64 bit processor of the Intel® Bay Trail™ System On Chip (SoC) platform. It is supplied with Windows Embedded Standard 7E/7P 32 bit operating system and integrates the numerous and advanced functionalities of CODESYS SoftPLC and ASEM Ubiquity remote assistance software. LBM2200 systems are

supplied with a sturdy Aluminium chassis, highly refined in every aesthetic and ergonomic detail. The "all in one" motherboard provides, on top, two Ethernet 10/100/1000Mbps ports, that support "Jumbo Frame" and "Wake on Lan" functionalities, two USB 2.0 ports, a DVI-I (DVI-D + VGA) video output or, as an alternative, a Remote Video Link connector (RJ45); on front, a USB 3.0 port, a SATA II CFAST slot, a slot for

the extractable system battery and the signaling LEDs. The motherboard has also an mSATA connector for a SATA II SSD, a SATA II connector for a 2,5" SSD/HDD, up to 8 GB RAM with one DDR3 SODIMM module and an internal connector for additional serial or LAN interfaces. LBM2200 systems have an isolated 24 VDC power supply input with MicroUPS or optionally an integrated UPS with external battery pack.



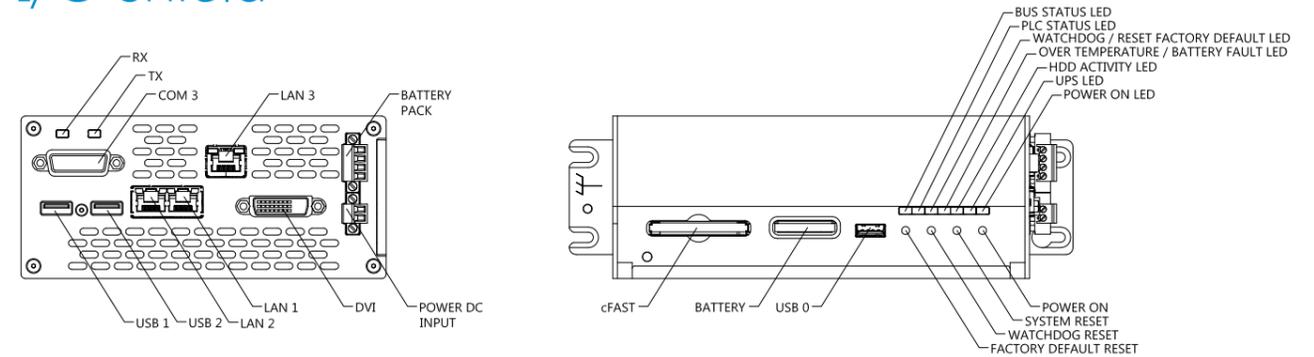
### Highlights

- Ubiquity remote assistance software providing remote access to the system
- CODESYS SoftPLC for control applications with retentive data management via MicroUPS and MRAM
- EtherCAT Master, EtherNet IP Scanner, MODBUS TCP Master, MODBUS RTU Master, CANOpen Master
- MicroUPS with supercapacitors and 512kB MRAM
- High performance Intel® Bay Trail™ SoC platform
- Operating temperature 0°C ÷ +50°C
- Remote Video Link - remotation of DVI-D and USB 2.0 signals up to 100 mt with an RJ45 connector output (LBM2200 RVL)
- CE, cULus LISTED (508) certifications

## Gallery



## I/O shield



## Technical data

		LBM2200
PROCESSOR		Intel® Celeron J1900 2.00GHz, 4 cores / 4 threads, 2MB L2 cache, soldered
VIDEO CONTROLLER		Intel® HD Graphics integrated in microprocessor, 688MHz Clock 854MHz Turbo, LVDS 8bit/color digital interface
SYSTEM MEMORY - RAM		1GB or 2GB or 4GB or 8GB (1 x SODIMM DDR3 module)
MASS STORAGE		1 bootable CFAST slot on board with external access (front) 1 x SSD mSATA SATA II or 1 x SSD or 1 x HDD 2,5" SATA II 512 kB MRAM memory (Magnetoresistive RAM) for retentive data storage
LAN		2 x LAN 10/100/1000Mbps (2 x Intel® I210)
USB		1 x USB 3.0 (Type-A, front) 2 x USB 2.0 (Type-A, top)
BATTERY		1 x CR2032 Removable (front)
VIDEO OUTPUT		1 x DVI-I (DVI-D + VGA with adapter, top)
ADD-ON INTERFACES		1 x RS232/422/485 (DB15M) + 2 x RS232 (DB9M) 1 x RS232/422/485 (DB15M) isolated + 2 x RS232 (DB9M) 1 x RS232/422/485 (DB15M) + 1 x LAN 10/100/1000Mbps (Intel® I210) 1 x RS232/422/485 (DB15M) isolated + 1 x LAN 10/100/1000Mbps (Intel® I210)
REMOTATION		Transmission module integrated for Video signals and USB transmission up to 100mt (optional)
POWER SUPPLY UNIT		24VDC isolated with MicroUPS with supercapacitors 24VDC isolated with UPS (optional) with external battery pack
CASE	Installation	Wall book mounting
	Material	Alluminium alloy 6082/5754/5056
O.S. CERTIFIED		Microsoft Windows Embedded Standard 7E/7P 32 bit
OPERATING TEMPERATURE		0° - 50°C 0° - 45°C with HDD 24x7 5° - 45°C with standard HDD
APPROVALS		CE, cULus LISTED (508) pending

# LBM3400 [new]

## Book mounting PAC based on Intel® Skylake™ platform



The Book Mounting fanless PAC LBM3400 is based on Celeron, Core™ i3, i5 and i7 dual and quad core 64 bit processors of the Intel® Skylake™ platform. It is supplied with Windows Embedded Standard 7E or 7P 32 bit operating system and integrates the numerous and advanced functionalities of CODESYS SoftPLC and ASEM Ubiquity remote assistance software. LBM3400 has a sturdy Aluminium chassis, highly refined in every aesthetic and ergonomic details. The "all in one" motherboard provides, on top, four Ethernet 10/100/1000Mbps ports, that

support "Jumbo Frame" and "Wake on Lan" functionalities, two USB 2.0 ports, two USB 3.0 ports, one DVI-D video output and, as an option, one or two Remote Video Link connectors (RJ45); on front, a USB 3.0 port, a SATA III CFast slot, a slot for the extractable system battery, the signaling LEDs and optionally two slots for extractable storage units drawers. The motherboard has also an mSATA connector for a SATA III SSD, two SATA III connector for 2,5" SSD/HDDs, the possibility to set the mass storage devices in RAID 0, 1 configuration, up to 32 GB RAM with two DDR4 SODIMM modules

and an internal connector for additional serial or USB interfaces. LBM3400 systems are provided with 24 VDC power supply input with the MicroUPS functionality, based on supercapacitors and 512kB MRAM (Magnetoresistive RAM), for the retentive data backup in case of power down, or optionally an integrated UPS with external battery pack. The systems are available in two versions, the S0 with the possibility to install additional interfaces and the S2 with two PCI/PCIe expansion slots.

### Highlights

- Ubiquity remote assistance software providing remote access to the system
- CODESYS SoftPLC for control applications with retentive data management via MicroUPS and MRAM
- EtherCAT Master, EtherNet IP Scanner, MODBUS TCP Master, PROFINET Controller / Device, MODBUS RTU Master, Profibus DP Master / Slave, CANOpen Master
- MicroUPS with supercapacitors and 512kB MRAM
- High performance Intel® Skylake™ platform
- Operating temperature 0°C ÷ +50°C
- One or two Remote Video Link - remotation of DVI and USB 2.0 signals up to 100 mt via Cat 5e SF/UTP or Cat 6A S/FTP cable (optional)
- CE, cULus LISTED (61010) certifications

## Gallery



## Technical data

LBM3400	
PROCESSORS	Intel® Celeron G3900E 2.40GHz 64bit, 2 cores / 2 threads, 2MB Smart cache, soldered Intel® Core i3-6100E 2.70GHz 64bit, 2 cores / 4 threads, 3MB Smart cache, soldered Intel® Core i5-6440EQ 2.70GHz (3.40GHz Turbo) 64bit, 4 cores / 4 threads, 6MB Smart cache, soldered Intel® Core i7-6820EQ 2.80GHz (3.50GHz Turbo) 64bit, 4 cores / 8 threads, 8MB Smart cache, soldered
VIDEO CONTROLLER	Intel® HM170 PCH (Platform Controller Hub)
PROCESSORS	Intel® HD Graphics 510 integrated in Celeron 3900E processor • 350MHz/950MHz • DirectX 12 and OpenGL 4.4 support Intel® HD Graphics 530 integrated in Core i3-6100E processor • 350MHz/950MHz • DirectX 12 and OpenGL 4.4 support Intel® HD Graphics 530 integrated in Core i5-6440EQ, Core i7-6820EQ processors • 350MHz/1,00GHz • DirectX 12 and OpenGL 4.4 support
SYSTEM MEMORY - RAM	4GB or 8GB or 16GB or 32GB (2 x SODIMM DDR4 modules)
MASS STORAGE S0 / S2	1 bootable CFast embedded on board with external access (front) 1 x SSD mSATA SATA III
S0	without RVL: 1 x SSD/HDD 2,5" SATA 3 or max 2 x SSD/HDD 2,5" SATA 3 with front extractable drawer with RVL: 1 x SSD/HDD 2,5" SATA 3 or 1 x SSD/HDD 2,5" SATA 3 with front extractable drawer
S2	max 2 x SSD/HDD 2,5" SATA 3 or max 2 x SSD/HDD 2,5" SATA 3 with front extractable drawer
RAID	RAID 0, 1
LAN	4 x LAN 10/100/1000Mbps (3 x Intel® I210 + 1 x Intel® I219LM)
USB	1 x USB 3.0 (Type-A, front) 2 x USB 2.0 (Type-A, top) + 2 x USB 3.0 (Type-A, top)
SERIAL	1 x RS232 (DB9M)
BATTERY	1 x CR2032 Removable from the front
VIDEO OUTPUT	1 x DVI-D (top) 1 or 2 x RJ45 connectors Remote Video Link (DVI-D and USB 2.0 signals remotation up to 100 m, optional)
ADD-ON INTERFACES (optional)	1 x RS232/422/485 (DB15M) + 1 x USB 2.0 (Type-A) 1 x RS232/422/485 (DB15M) isolated + 1 x USB 2.0 (Type-A) 2 x RS232 (DB9M) 2 x USB 2.0 (Type-A) 1 x RS232/422/485 (DB15M) + 1 x LAN 10/100/1000Mbps
EXPANSION SLOTS S2	2 x PCIe x4 or 1 x PCI + 1 x PCIe x4 (5 Gb/s)
POWER SUPPLY UNIT	24VDC isolated with MicroUPS with supercapacitors 24VDC isolated with UPS (optional) with external battery pack
CASE Installation	For book mounting
Material	Alluminium alloy 6082/5754/5056
O.S. CERTIFIED	Microsoft Windows Embedded Standard 7E/7P 32 bit
OPERATING TEMPERATURE	0° - 50°C 0° - 45°C with HDD 24x7 or S2 versions 5° - 45°C with standard HDD
APPROVALS	CE, cULus LISTED (61010) pending



# Remote I/O

## ARIO 500 Modular remote I/O system

ARIO 500 is a compact and modular remote I/O system, composed by fieldbus couplers, power modules and I/O modules. To improve interchangeability and maintenance, the I/O modules are composed by two separable parts: the mechanical part, including a jagged clamp (that allows tidy wiring), the communication bus contacts, the power contacts and the hooking system for the 35mm DIN rail, and the electronic I/O part.

**Mounting and maintenance**  
The installation is immediate and doesn't imply the use of specific tools. Every module include the mechanical DIN rail fastening by means of a lever lock and can be replaced without removing the adjoining ones. Thanks to the 'slide&plug' mechanism, it is possible to replace the electronic part without removing the mechanical one, nor its wiring («Permanent Wiring»). The electrical connection diagram of the module is printed on the side of the electronic part.



**Signalling**  
Every module includes status signalling LEDs for the single I/O and diagnostic LEDs.



**I/O identification**  
To identify every single I/O, removable and customizable tags are inserted on each module.

# Fieldbus coupler and power modules



### Fieldbus coupler

The coupler manages the communication with the control system via the fieldbus and the communication with the single I/O modules via the internal high performance bus. Every coupler is bundled with a power module, that comes physically paired at delivery.

The ARIO 500 system includes three fieldbus couplers, with the following standards:  
 → EtherCAT  
 → CANOpen  
 → Modbus TCP



### Power modules

The power modules, depending on the quantity and the type of installed modules, integrate the power supplied by the coupler.

# I/O modules



### Digital modules

The digital modules, with 4 or 8 channels, include input units with rates of response up to 2µs and output units with 0,5A and 2A. Some of the modules include diagnostic functionalities.

### Analog modules

Analog modules, with 2 or 4 channels and 16bit resolution, include input and output units for tension or current, and temperature measure units for the most common sensors. All modules include diagnostic functionalities.

### Encoder modules

The counter/encoder modules, with 1 or 2 channels, include TTL and HTL incremental encoders and SSI absolute encoders.



### System configurability

The couplers can support up to 64 I/O modules. Depending on their configuration it may be necessary to integrate their power supply with the specific additional modules. The couplers are bundled with a plastic terminal cover to protect the contacts of the last module.

# Integrated control systems

The ARIO 500 system completes the ASEM PAC portfolio, based on the CODESYS soft-PLC. The fieldbus coupler and the I/O modules are completely configurable and programmable with the CODESYS development framework.



Programmable Automation Controller  
Panel or Book Mounting



FIELDBUS



ARIO 500 system

# Technical data

FIELDBUS COUPLER				
<b>CANOpen</b>	Up to 64 I/O modules	16 Rx and 16 Tx PDO	Support for all transfer rate	
<b>EtherCAT</b>	Up to 64 I/O modules	CANopen over Ethernet support		
<b>MODBUS TCP</b>	Up to 64 I/O modules	I/O access from max 8 stations	Parametrization via integrated web server	Auto negotiation and auto crossover
DIGITAL INPUT				
<b>DI 4x3ms 24VDC</b>	4 digital inputs	IEC 61131-2, type 1 input curve	Edge input delay 3ms	
<b>DI 8x3ms 24VDC</b>	8 digital inputs	IEC 61131-2, type 1 input curve	Edge input delay 3ms	
<b>DI 4x2µs+3ms 24VDC</b>	4 digital inputs	IEC 61131-2, type 1 input curve	Parametrizable input delay 2µs+3ms	
<b>DI 8x0,5ms 24VDC</b>	8 digital inputs	IEC 61131-2, type 1 input curve	Edge input delay 500µs	
<b>DI 8x100µs 24VDC dgn</b>	8 digital inputs	IEC 61131-2, type 3 input curve	Parametrizable 100µs+20ms input delay	Diagnostic function
DIGITAL OUTPUTS				
<b>DO 4x0.5A 24VDC</b>	8 digital outputs	Output current 0,5A	Edge Output delay 0→1: 30µs Edge Output delay 1→0: 175µs Switching frequency up to 1kHz	
<b>DO 8x0.5A 24VDC</b>	4 digital outputs	Output current 0,5A	Edge Output delay 0→1: 100µs Edge Output delay 1→0: 175µs Switching frequency up to 1kHz	
<b>DO 4x2A 24VDC</b>	4 digital outputs	Output current 2A	Edge Output delay 0→1: 100µs Edge Output delay 1→0: 250µs Switching frequency up to 1kHz	
<b>DO 8x0.5A 24VDC dgn</b>	8 digital outputs	Output current 0,5A	Edge Output delay 0→1: 350µs Edge Output delay 1→0: 350µs Switching frequency up to 1kHz	Diagnostic function
ANALOG INPUT				
<b>AI 4x16bit ±10V</b>	4 analog inputs, 16bit	Frequency suppression 50/60Hz	Conversion time 480µs	Diagnostic and interrupt functions
<b>AI 4x16bit 0/4...20mA</b>	4 analog inputs, 16bit	Frequency suppression 50/60Hz	Conversion time 240µs	Diagnostic and interrupt functions
ANALOG OUTPUT				
<b>AO 4x16bit ±10V</b>	4 analog outputs, 16bit	Conversion time 200µs Diagnostic function		
<b>AO 4x16bit 0/4...20mA</b>	4 analog outputs, 16bit	Conversion time 400µs Diagnostic function		
ANALOG MEASURE				
<b>AI 2x16bit TC</b>	2 analog inputs, 16bit	For J, K, N, R, S, T, B, C, E, L type sensor For voltage measuring range ±80mV	Internal temperature compensation	Diagnostic and interrupt functions
<b>AI 4x16bit R / RTD</b>	4 analog inputs, 16bit	Resistive sensors 0÷3000Ω and measure with 2, 3 and 4 wires Pt100, Pt1000, NI100 and NI1000 sensors	Diagnostic function Complete parameter list (22)	
<b>AI 4x16bit R / RTD</b>	4 analog inputs, 16bit	Resistive sensors 0÷3000Ω and measure with 2, 3 and 4 wires Pt100, Pt1000, NI100 and NI1000 sensors	Diagnostic function Partial parameter list (8)	
INCREMENTAL ENCODER				
<b>CNT RS422 1x32bit</b>	1 32bit counter, 5V DC differential	AB 1/2/4-fold evaluation or pulse and direction Comparison value, set value, input filter, reset	Max counting frequency 2MHz	Diagnostic and interrupt functions with µs time stamp µs time stamp for counter value
<b>CNT HTL 2x32bit</b>	2 32bit counters, 24V DC	AB 1/2/4-fold evaluation or pulse and direction Comparison value, set value, input filter, reset	Max counting frequency 400kHz	Diagnostic and interrupt functions with µs time stamp µs time stamp for counter value
ABSOLUTE ENCODER				
<b>SSI RS422 1x32bit</b>	1xSSI 8..32bit, 125kHz÷2MHz	Integrated gray/dual conversion Normalization of encoded value	Clock for master/listening modes	Diagnostic and interrupt functions with µs time stamp µs time stamp for counter value
POWER MODULES				
<b>PS 24VDC/10A</b>	10A / 24VDC for power integration of the I/O on the filed		Overvoltage protection Polarity inversion protection	
<b>PS 5VDC/2A 24VDC/4A</b>	4A / 24VDC for power integration of the I/O on the filed 2A / 5VDC for electronic modules power supply		Overvoltage protection Polarity inversion protection	

## Technical support and service

### Customer oriented philosophy

Providing a meticulous attention and a complete pre and post sales service are the foundational concept of our customer oriented service. All internal processes aim to ensure an excellent

product quality and a higher degree of flexibility, in order to be responsive to the ever-changing market needs. To ensure product and process quality, ASEM has adopted the standard UNI EN ISO 9001:2008 for its quality management system.

Introduced in 1999 and certificated by Intertek Moody Certification, the quality system is up-to-date to improve efficiency and effectiveness of our operations.



**Intertek**  
9809792

### Customer care

The customer care service is led by a team of technical specialists that answer with immediacy and clarity to customers' needs, not only by telephone and via the Internet, but also with on-site visits and technical training courses. To optimize the process of support and repair of systems and to minimize response time, ASEM offers some effective services:

#### "HELP DESK PHONE"

**SERVICE** can be accessed calling +39/0432/967250, from Monday to Friday from 09:00 to 12:30 and from 14:00 to 17:30. A qualified technician provides initial assistance, or starts the procedure for repairing or replacing the product (Return Material Authorization). Based on needs and the type of support required, the call may be turned to the most suitable ASEM specialist.

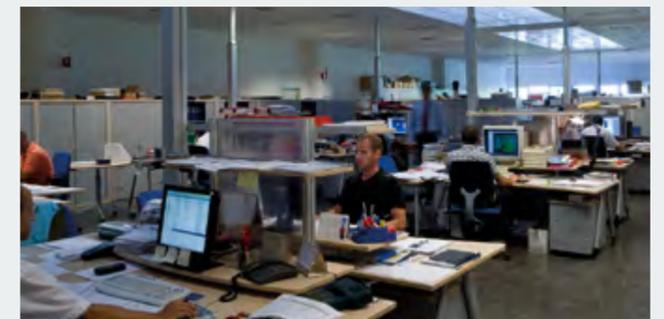
#### "HELP DESK ONLINE"

**SERVICE** allows access to the ASEM customer care service directly online, through the company website [www.asem.it](http://www.asem.it). This easy and quick tool allows to request technical assistance for any repair service, with real-time monitoring of the request status. In addition to these services, you can send any request for hardware, firmware and software support to the e-mail address [suptec@asem.it](mailto:suptec@asem.it).

### Technical support

ASEM offers an excellent service of hardware and software consulting and assistance. It also includes a prompt and efficient system service assistance with the creation of ad hoc operating system images, which allows to shrink the memory space needed for the installation of the operating systems (Microsoft Windows® CE,

Windows® XP and Windows® XP Embedded, Windows® 7, Windows® 7 Embedded, Microsoft Windows, Windows 8.1, Windows 10 2016, Windows 10 IoT Enterprise 2016, Linux and OS real time) maintaining only the necessary components for the proper functioning of the industrial PCs and the integration with the main applicative software.



# Technical support & Services







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