UBIQUITY

REMOTE ASSISTANCE SOLUTIONS

ASEM
DIGITAL AUTOMATION TECHNOLOGIES

Remote Assistance Features

- Malfunctioning analysis
  - Identify and submit any solution
  - Conscious setup of technical interventions
- Software edit and upgrade on automation devices
- Machinery/Plants activation/commissioning
- Machinery and Plants Monitoring
- Technical staff training

- Remote assistance is key to lower cost and provide customers with better services and reliable products

ASEM Objective

Make **remote assistance** easy to setup and use, **powerful**, **fast**, and **accessible to everyone.**

Breton Case Study

- Breton is a leader manufacturer of high speed machining centers, stone working, machines for processing marble and granite
- Installing Ubiquity solution on over 4000 plants worldwide on ASEM and third party systems
  - Activation
  - After sales assistance
- More than 30% after sales service cost reduction
- More than € 400.000,00 savings in travel expences
- Unprecedented proximity to customers for timely delivery and support

UBIQUITY Platform

- What is UBIQUITY?
  - **Safe** remote assistance **software platform** for automation devices through **Internet**
  - Released in 2010 to meet **machine-builders'** needs of remote assistance

- **UBIQUITY** runs on on-site systems and allows remote access through a **Internet** connection

What can I do with UBIQUITY?

- **HMI** access
  - Full access to automatic machines' HMI from concurrent multiple users

- **Automation systems** access
  - Subnet access
    - **Ethernet**
    - **Serial**
  - Remote programming of control systems, drivers, etc.
  - Malfunctioning analisys
  - Applications upgrade
  - Preventive maintenance

Highlights

- Powerful, complete, general-purpose
  - A unique software-based solution for any need
    - No further connection required (Es. FTP or VNC)
    - Available for **Win 32/64** and **WindowsCE**
    - Same features on both platforms
    - Unique solution for Windows CE-based remote assistance
      - Added value for ASEM HMIs
- Robust, reliable **industrial** solution, backward compatible with support and warranty

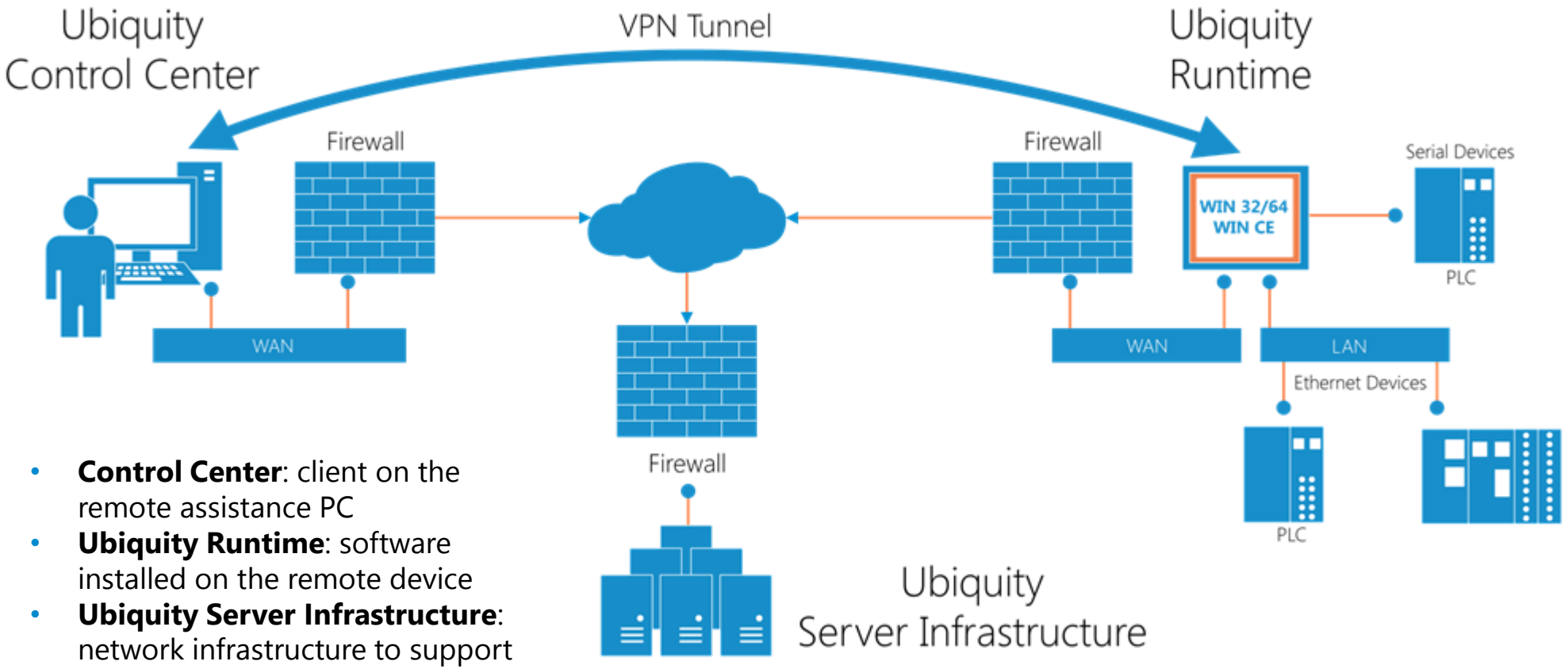
Highlights

- Outstanding **ease-of-use, setup** and **maintenance**
  - Compatible with the most widespread IT security policies
  - No need to adjust the network configuration of the controlled devices
  - Manual or automatic service activation
  - Simple, fast and safe upgrades

- Flexible **organization** of machinery fleet
  - Hierarchical organiztion of remote devices to simplify queries and maintain logical division
  - Users and remote operation profilation
  - Platform and service usage report

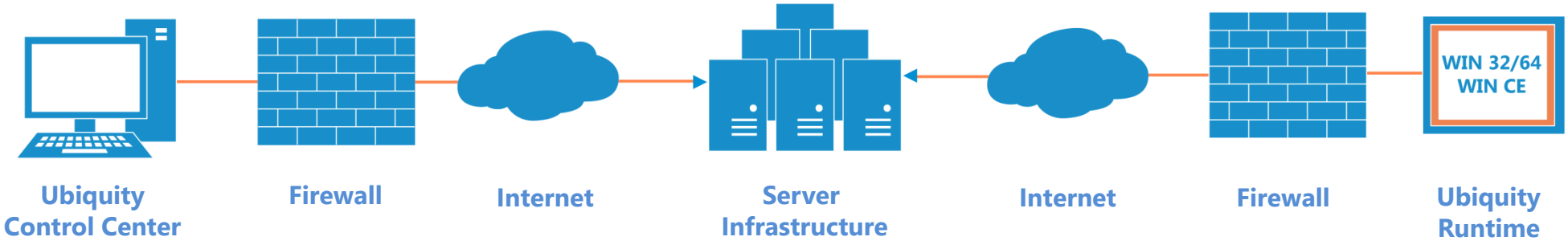
Architecture

UBIQUITY components



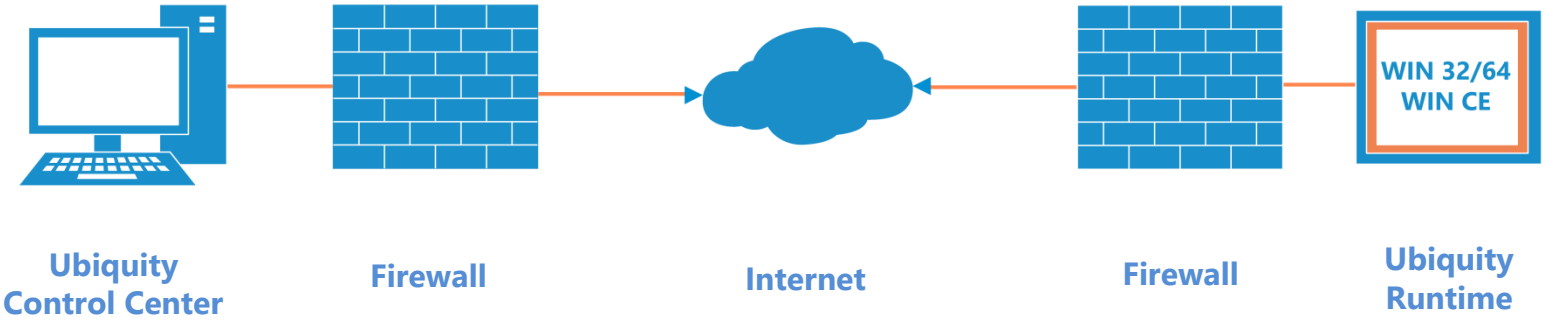
- **Control Center**: client on the remote assistance PC
- **Ubiquity Runtime**: software installed on the remote device
- **Ubiquity Server Infrastructure**: network infrastructure to support authentication and connection
- **Ubiquity Domain**: company account for service access and configuration data hosting (users/permissions and devices)

Authentication



- **Control Center** and **Runtime** connect to the Ubiquity server infrastructure by means of a secure SSL/TLS connection
  - The **outgoing connections** are permitted by the firewall policies as they are recognized as safe
  - Usable TCP ports: **443**, **80**, **5935**
  - The **UDP ports** eventually available are automatically used to improve performances
- The **Runtime** authenticates with the Server infrastructure by means of a digital certificate received at the moment of the Domain association (the certificate is valid for a single system)
- **Control Center** authenticates with the Server infrastructure by means of the Domain name, the user name and the password

Remote connection



- In the moment Control Center requires to connect to a remote Runtime, a **secure end-to-end** connection is established between Control Center and Runtime (the two "**peers**")

- The connection can be **direct** (not going through the server) or served by **Relay servers** that only forward the encrypted messages without decoding them

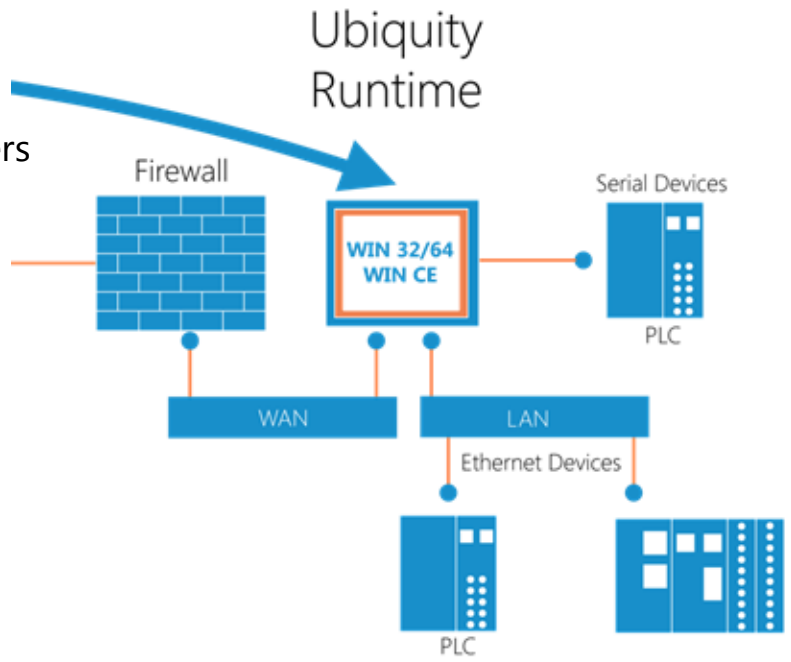
Server Infrastructure

- **Redundant** server infrastructure (load balancing and fault tolerance)
- Servers located in **6 farms** distributed world wide
  - 2 Europe, 2 America, 2 ASIA
- **No limits** to the number of connected **devices**
- **Direct connections** are privileged
- Performances are only depending from local and remote Internet connection quality

➔**Scalability and service Continuity**

Two levels of remote assistance

- **Interaction with the HMI system**
  - Remote Desktop
    - Also with multiple RDP sessions on Windows Servers
  - File Transfer
  - Remote Task Manager
  - Chat
  - Simultaneous access to multiple systems
- **Connection to the sub-network**
  - Optimized **VPN** for industrial communication
  - ISO/OSI Data-link layer encapsulation
    - No need to add any routing rule
    - The remote assistance PC gets a real IP from the remote sub-network addressing space
      - Broadcast messages support
      - No need to change the remote device gateway configuration
  - Access to **separated sub-networks** (ex. PLC 192.168.0.x and Drives 10.20.0.x)
  - Integrated **Firewall**
  - Automatic **IP conflict resolution**



Security

- Secure **SSL/TLS** connections and use of **certificates**

Connection info
Valid server certificate
Cipher version: TLSv1/SSLv3 Key exchange: RSA Authentication: RSA Encoding: AES(128) Mac: SHA1

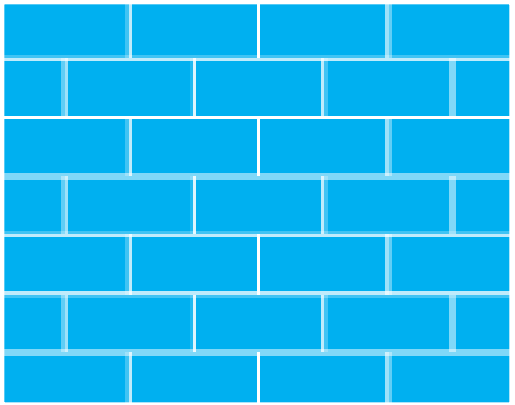
- Attack protection
- Signed application with digital certificate anti-tampering
- **Safe identity check** for users and remote devices
- Session recording for **Audit trail**
- VPN server on Runtime side, not on the server

User Profiles and Access Control

- Domain users can be defined with **global scope** or **local** to sub-folders
- **Four** different **profiles** with predefined access rights
  - **Administration**
    - Managin of existing devices, folders organization, users and user groups management
  - **Network Security**
    - Firewall configuration
  - **Installer**
    - Add new devices to the domain and managing of existing ones
  - **Remote Access**
    - Desktop (view/interact)
    - VPN
    - Serial Passthrough
    - File manager (read/write)
    - Chat
    - System and Task Manager
- **Permissions** are assigned to **folders** and to **single devices**
  - Permissions are **inherited** with **exception** handling

Integrated Firewall

- **Security** and **traffic** control over the VPN
- Support for **no-IP** protocols
- Availability of **predefined rules** (common protocols) @server, always updated and ready to be **imported** into the Domain
- **Rules** can be applied directly to a **single device**, but also to **entire folders** with inheriting and exception handling
- Possibility to provide **access control** over a **part** of the **sub-network**



Why choose UBIQUITY

Why choose UBIQUITY

- Unique software solution for remote assistance compatible with WinCE, equipped with the same features of Win32/64
  - No additional hardware required
- **Optimized data-link** layer **VPN** for industrial communication with neither mediator nor routing rules
  - Equivalent to a switch LAN cable connection
- Ensuring performances through **end-to-end** connection
- **Unlimited users**
- **Unlimited concurrent sections**
- Ease-of-use
  - Setup
  - Configuration
  - Use
  - Maintenance
- Structured and flexible organization of users and devices
- **State of the art security** for authentication, confidentiality, access control

UBIQUITY Router

General overwiew

- «**Hardware + Software**» solution to integrate UBIQUITY offer for remote assistance on every device.

- UBIQUITY Router brings remote assistance services on machinery in which the software solution can’t be installed
  - Automation systems with HMI and controller with dedicated operative systems or different from Win32/64 e WinCE
  - Automation systems controlled via serial interface
  - Automation systems where there is a physical separation among control devices and remote assistance equipment

Highlights

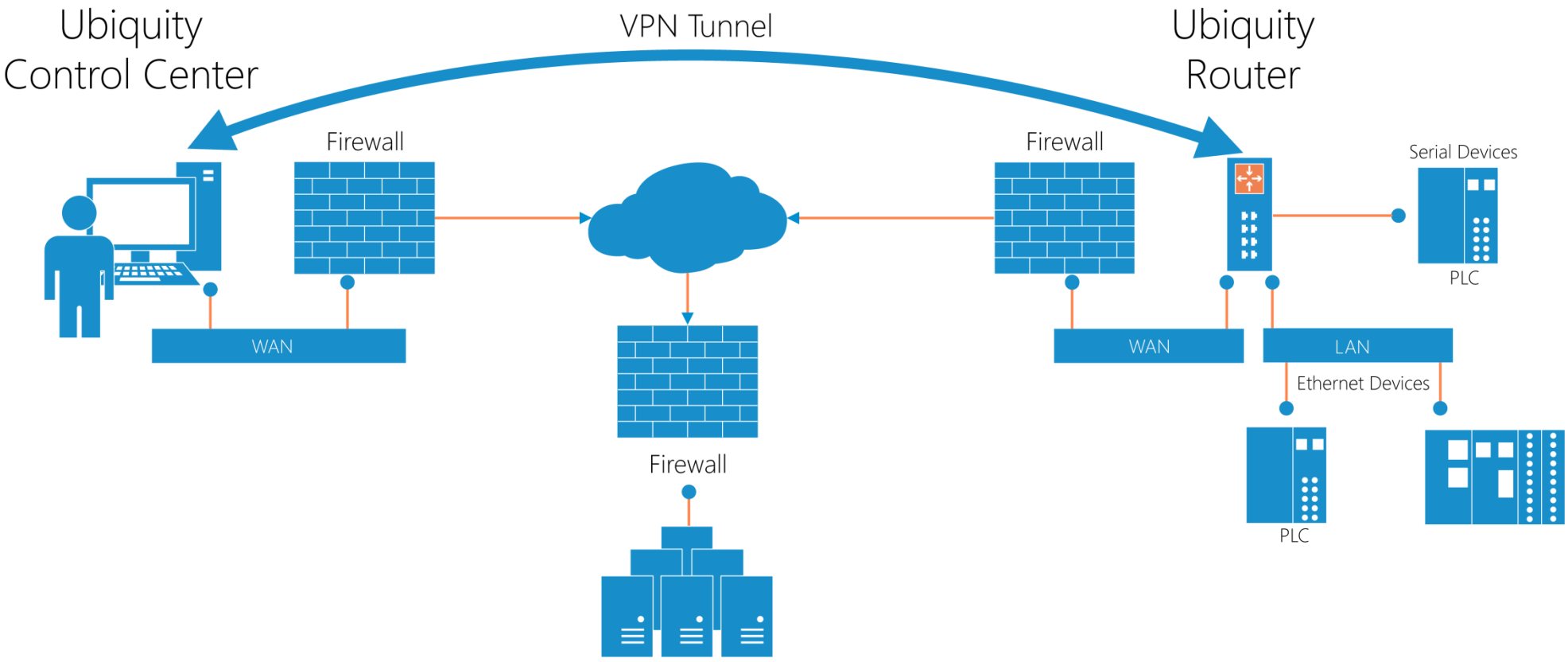
- Provides the **same features** of the Software solution

- **Easy** setup and **ease-of-use**
  - **Setup via local network** from Control Center
  - **Setup** via Flash disk **USB**
  - **Setup** with **web interface** (local network)
  - Operating state **alert**
    - LED
    - Relay digital output with **feedback** of command
  - **External command** feedbacks
    - Digital input

Highlights

- **Easy update** of alle the firmware and hardware components
  - One file, one click!
- «Restore Factory Default» Button
- **Serial** port RS-232/422/485 e MPI **virtualization** support
- **Protection** against non-authorized **Domain change**
  - Restoring factory default si not necessary to change the connection of a Router to a Domain
- WAN/LAN **Routing**

Operative scheme



WAN: Wide Area Network
LAN: Local Area Network

Ubiquity Router: the models

RK10

RK11
RK10 **+ modem 2G\3G\3G+**

RM10
RK10 + **data monitoring**
Data collection, real-time data, historical archives and instant notifications, web HMI
Premium HMI Runtime
Integrated, programmable with **PHMI Studio**

RM11
RM10 **+ modem 2G\3G\3G+**

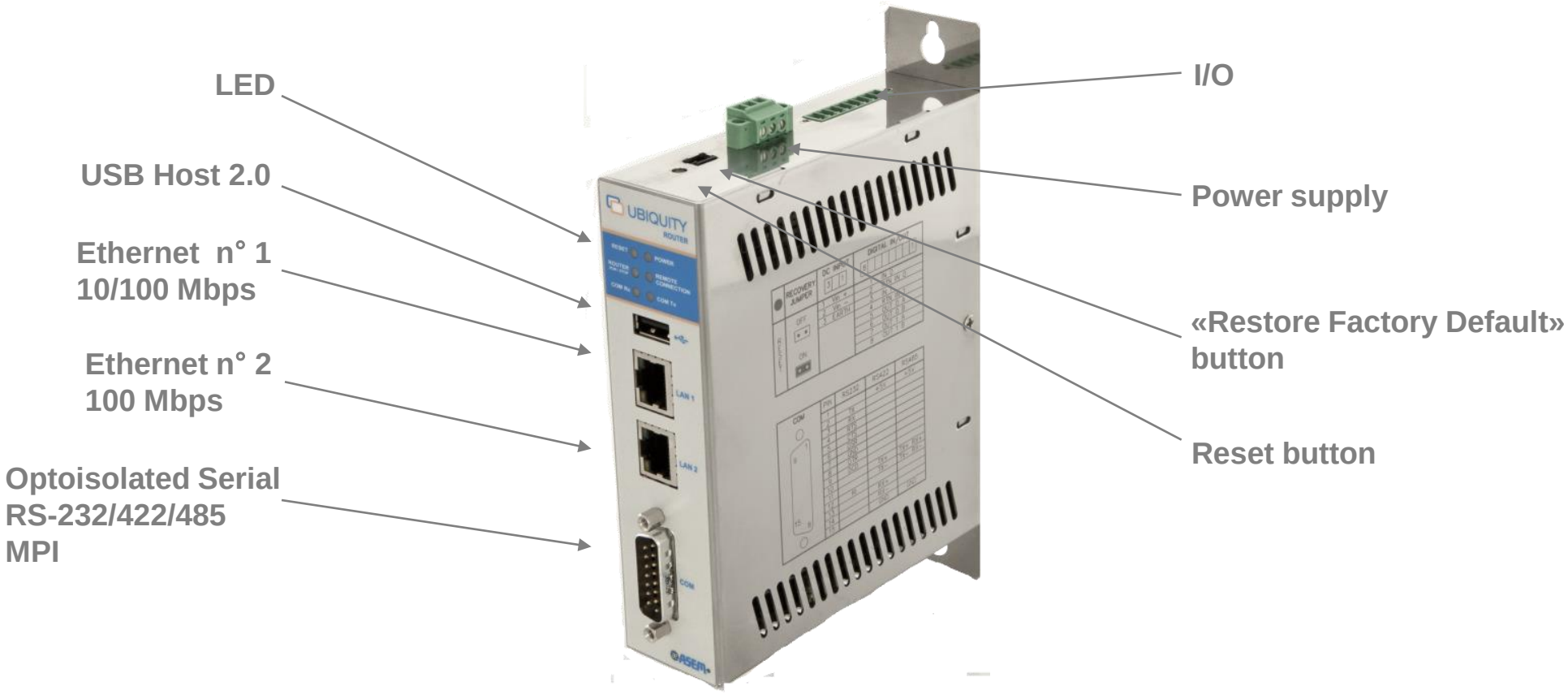
Hardware

- Magnetic Stainless still Case
  - Book and DIN Rail mounting
- 9 to 36 V DC supply range
- ARM Cortex A8 processor (1,0 GHz)
- Ethernet interface 10/100 Mbps WAN for Internet connection
- Ethernet interface 10/100 Mbps LAN for the automation network
- RS-232/RS-485/RS-422 **Optical isolated** serial port with **MPI** support up to 187 Kbit/s
- USB 2.0 interface for system configuration and updates

Alerts and Commands

- Front panel LEDs for device status and operation report
- Digital input 24 VDC for the remote Router activation from security key
- Digital input 24 VDC for Router remote reset
- Digital output to report the status of “Ubiquity Router connected and authenticated to the Domain”
- Relay Digital output to report “ongoing remote assistance service”
- Hardware reset button
- «Restore factory Default» button

Device view (RK10)



W: 36 mm, H: 138 mm, L: 116 mm

Datasheet (RK10)

	Ubiquity RK10	
PROCESSOR	ARM Cortex A8 - Freescale i.MX535 1GHz	
ROM	ASEM Smart Memory System	256MB NAND-Flash - Read Only
DRAM		512MB DDR3-800
MASS STORAGE		2GB eMMC (Solid State Disk)
ETHERNET	1 x 10/100 Mbps WAN 1 x 100 Mbps LAN	
USB	1 x USB 2.0 Host	
SERIAL	1 x RS232/422/485 full optoisolated	
DIGITAL INPUT	2 x IN (24V DC, optoisolated)	
DIGITAL OUTPUT	2 x OUT relay (200mA@24V DC, Normally Open)	
POWER SUPPLY UNIT	Input voltage 24V DC (9÷36V DC)	
WATCHDOG	Hardware Watchdog	
BUTTONS	Reset button «Restore factory default» button	
CASE	Stainless Steel case (36x125x105 mm)	
OPERATING TEMPERATURE	0° - 50° C	
REMOTE ASSISTANCE SW	ASEM UBIQUITY WinCE PRO	
OPERATING SYSTEM	Win Embedded Compact 7 PRO	
CERTIFICATION	CE, UL-508 (in progress)	

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