Industrial Automation

HMI - Product Catalogue

www.esahmi.com

Polymath

Polymath is an **extremely flexible and intuitive, state of the art software** for programming **all operator panels in the ESA range** and for developing **SCADA applications on PC platforms** for plant monitoring and control.
Polymath was developed with .NET technology and is equipped with a **modern and complete interface**, allowing for easy and intuitive programming, thereby optimising the project development and execution stages, both in terms of time and efficacy. Among the advantages offered by Polymath, there is the option to **import variables directly from PLC databases**, thus preventing any unnecessary waste of time for filling in the project variable table.

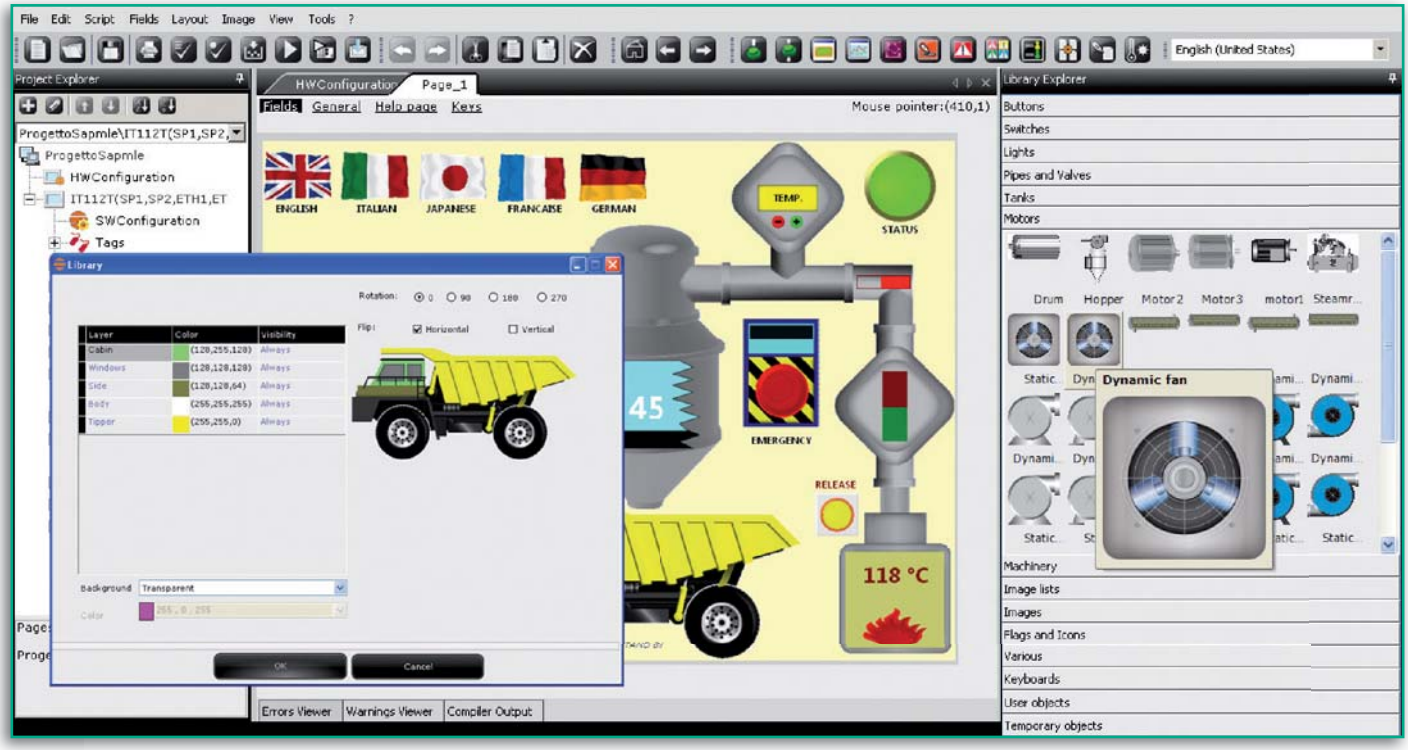
Thanks to the **immense number of supported communication protocols**, with Polymath there are no longer connectivity limitations both in the industrial environment and in the PC world. In addition, all the major communication buses, such as **Profibus, DeviceNet, Can and Profinet** are available.

With Polymath, the user can also make use of a tool for **importing and exporting recipes, alarms, translations and variables in standard Excel format**, and has a **dictionary** for automatic terms translation.

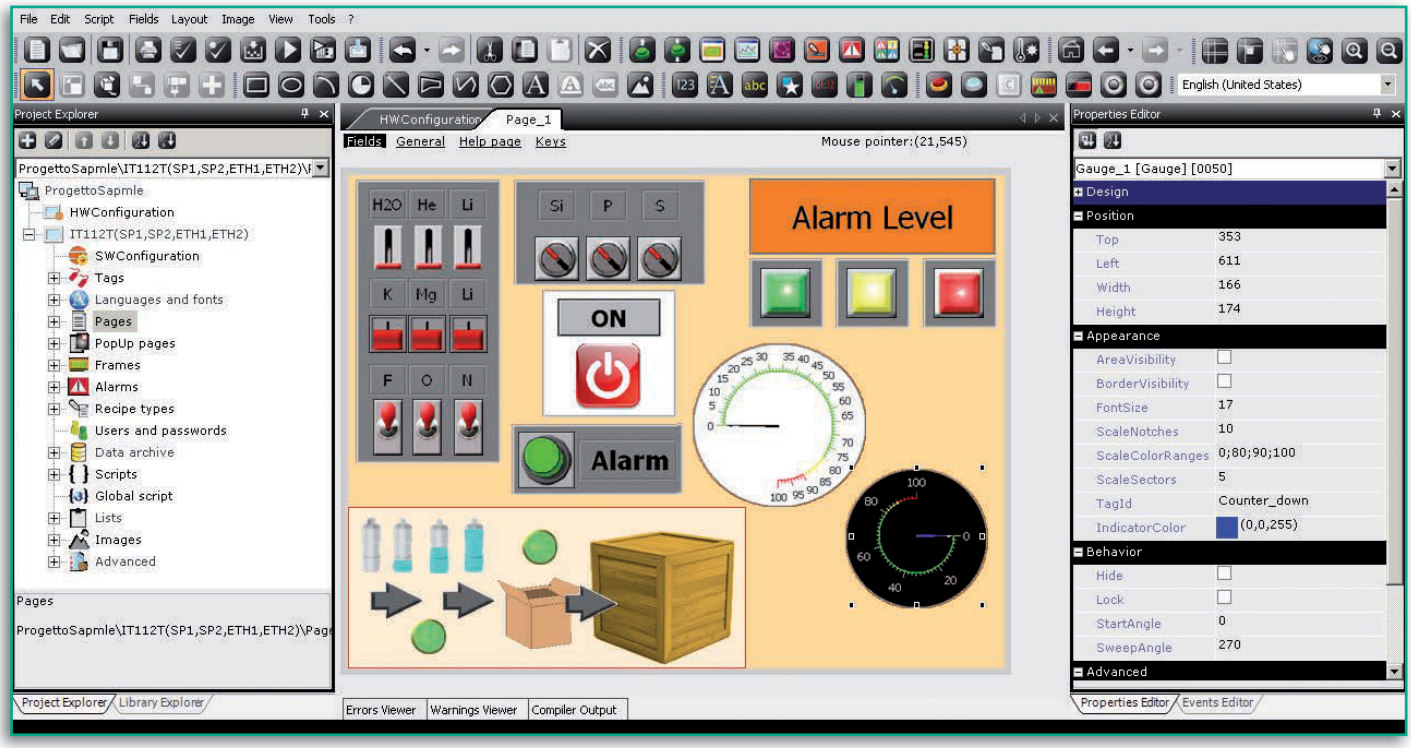
Choose your own style

You can choose the style best suited to your needs; with Polymath you can change the type of interface at any time (even while modifying a project), choosing from:

- **Double click**, intended for all those who require extreme ease of use, thanks to an intuitive interface where a large library is displayed by means of drag-and-drop object placement in double click configuration.



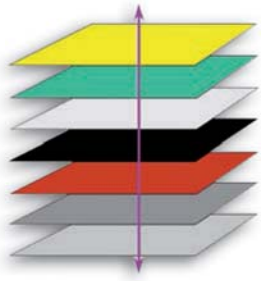
- **Extended**, intended for those who wish to carefully monitor every aspect of a project and constantly keep all of the properties of each element under control.



Polymath integrates a **large number of optimised functions** to provide you with **simple and powerful management** of your projects, allowing you to draw on a **rich library of preconfigured objects that can be customised** to meet any requirement.

Rich object library

Polymath has a **rich library of objects with fantastic** graphical and functional **impact**. Such objects are **divided by category** and can be easily placed in the pages by **simply dragging and dropping them**. Furthermore, the library can be **customized and shared** with other installations inside the same network.



Level project page management:

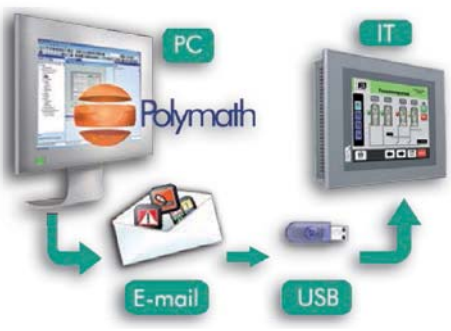
This function allows **dividing in levels the project page** to be edited in order to **make their creation and modification (if any) easier**. This way, it will be easier to display the desired objects among all those in the page, in order to correct them **quickly without any errors**.

Importing/exporting project data

Polymath provides convenient utilities for **importing and exporting all the data** used for creating a project, such as **recipes, alarms, list of variables and texts**. Polymath also allows importing variables directly from PLC databases (e.g., **Siemens, Allen-Bradley, Omron and Codesys**).

Transferring stored data

Polymath allows you to **export any type of stored data on the panel** (alarms, recipes, trend chronology, variable values, etc.) directly to **removable USB pen drives** or Secure Digital, MMC and Compact Flash memory cards (using **CSV** format). You can also make use of functions for **transferring, even automatically**, stored data directly to a **remote PC folder** through a LAN or FTP connection.



Project back-up and restore

Polymath allows you to create a **single compressed file containing all the information** required for transferring or updating an IT project or a PC SCADA application. The created file can, for example, be **sent by e-mail** to the end user, who can copy it onto the device by following a **simple guided procedure**.

Terminal orientation

Polymath allows for the definition of **the horizontal or vertical orientation** of every terminal in the IT range **directly from the programming environment**. This way, the product can be configured to easily adapt to various installation requirements and fit into **constricted spaces**.

OFF-LINE and ON-LINE simulator

A Polymath project can be **simulated OFF-LINE directly on a PC** without having to transfer it to the terminal. **The ON-LINE simulator** function, on the other hand, allows testing the developed project by **connecting the devices to be tested**, such as a PLC, **directly to your PC**, thus allowing you to confirm perfect operation of the project without necessarily having a panel available.

Dictionary

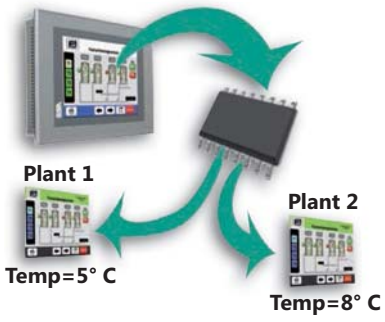
Polymath also offers a **convenient utility for the automatic translation of texts** into **36 languages**, with a database of **400,000 words, short sentences and technical terms**. This allows for globalization of your project with minimum effort, translating the texts in any required language starting from any of the 36 supported languages. Dictionaries can also be shared with other Polymath installations.

Automatic project storage

Through this setting **Polymath will automatically save the project** being edited at regular intervals, **thereby preventing losing any work**, in the event, for example, of a **sudden voltage shortage**.

Device memory balance

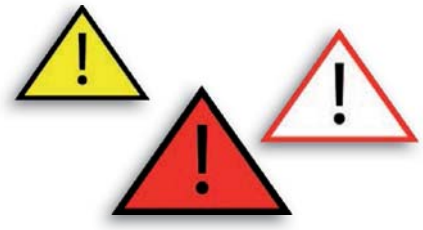
Polymath allows access to **numerous utilities** that **simplify and speed up project implementation and commissioning activities**, such as viewing **memory occupied in the** connected **devices** (allowing for immediate identification of the allocated areas)



Indirect addressing

The **indirect addressing** function allows for considerably reducing **project development time**, especially in the case of **complex projects** with many **similar pages and functions**. Thanks to this function, the value of the variables is **determined dynamically at runtime**; this way, specific **pages and functions can be designed immediately**.

The advanced Polymath controls allow for the management of data structures, such as **Recipes, Trends, Data Logs, active and historical alarms and User management** in a **quick and intuitive** manner. Once you have chosen the required control, it can be placed inside the project page end **easily configured**.

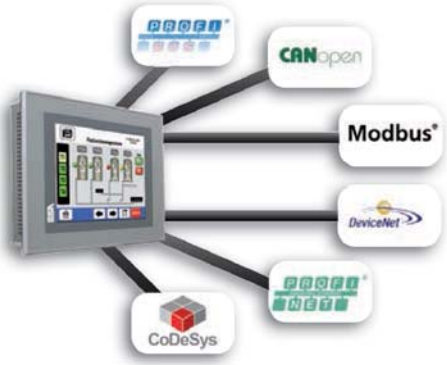


Alarm management

Polymath allows for the management of both **active and historical alarms** that are easy to use and provide the best result. Alarms have two operation modes: one in compliance with **ISA standards** and the other for **management of simple events**. **Alarms** can also be divided **into groups or by priority**.

Project documentation

Polymath allows for **automatically generating detailed** project **documentation in PDF, RTF or HTML** format. This means accurately drafting documents with no time wasted and in the format that best suits your requirements.



Multiple protocols

Along with the **vast availability of communication drivers** (supporting almost **200 protocols**), ESA allows for a lot of **flexibility**, allowing you, for example, to use **several protocols** simultaneously. You can manage up to **6 different protocols with the same terminal** and connect, for example, **through a single Ethernet port**, with several **Ethernet PLCs** that use **two different** communication **protocols**. Supporting **several protocols simultaneously** also allows for the integration of the **protocol conversion** or "**Bridge**" function.

Multi-structure recipes

Multi-structure recipes, i.e., recipes that each contain a number of different variables can also be used. This way, you can prepare **various sets of data for different production methods**.

User management

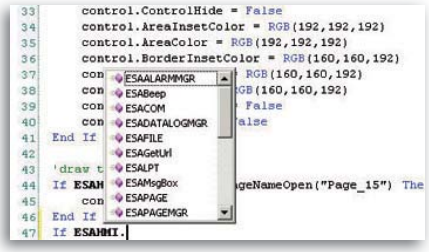
Polymath allows for the management of up to **10 levels of application access**. This way, any **element or function** can be **password-protected** and be accessed by a selected number of users.

Data and trend storage

Polymath allows for the **monitoring, over time, of the value of any variable** by means of the **Data Logging** function. This function **displays** the value trend of a variable, as well as **exporting** the value chronology **on your screen**, in table format, through **Excel or CSV** files. **Polymath** allows for the configuration of two types of Trend: the classic **Trend Buffer**, through which you can monitor the trend of a variable over time, and **Trend XY**, that displays a **graph where** the value trends of **two different variables are correlated**.

Passthrough

The passthrough mode allows you to **control a PLC,** such as Omron (Host-link, CJ1, CP1, CS1) and Panasonic (FP Series, FP Sigma), and run any operation supported by the software, **remaining comfortably connected to the panel with your PC**; in fact, the panel will act as a bridge (PASSTHROUGH) for the connection between the devices and the software.



VB script with intellisense

Polymath offers a further level of customized **application** with **VBScript programming language**, allowing you to **create your own routines for managing the project elements in an easy and intuitive way**. Thanks to the **"Intellisense" function**, the user can access (through a convenient context menu) **a library of powerful functions developed by ESA** for its operator terminals.

Pop-ups and Frames

Polymath allows for the comfortable management of **pop-up pages at several levels** (particularly useful for immediate notifications regarding events and operations, without having to change the main application context) and "**frames**", which allow **creating single portions of pages** to be inserted several times in different parts of the project.

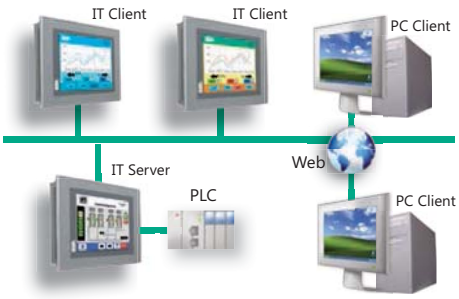
Scheduler

The execution of events can be scheduled in daily and weekly time slots, if necessary, in combination with customised festivity calendars.
By using specially designed widgets, you can even manage heating and cooling in building automation contexts.

Handling objects

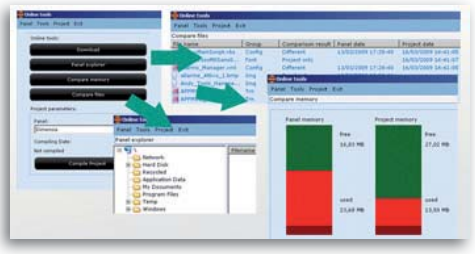
This function allows you to visually set the **movement of one or more objects according to the value of a variable**.

Polymath is an extraordinary tool for problem-free **interaction with any device**, creating **panel networks** and powerful **supervision systems**, as well as for carrying out **any remote activity** and being always on-line thanks to **notifications sent via e-mail and SMS**.



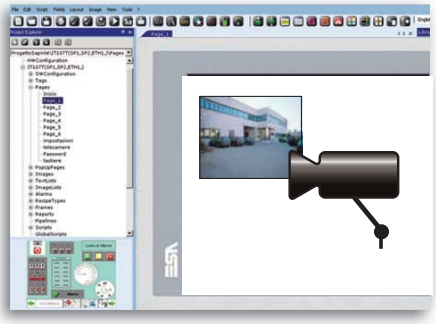
Network projects

The creation of network projects allows you to **share and transmit data from one device to another** within a corporate network. Data can be accessed and displayed through the **corporate intranet and the Internet** through **client-server connections between the panels**. An efficient network allows you to view and **monitor every station in a plant from any other workstation**.



Remote panel management

Polymath allows you to l**ook through the resources of an** IT **operator panel** directly from a **remote PC**, as well as activating the **FTP server function** and performing **operations, such as copying, modifying and moving** files. Further utilities allow you to **compare** various **projects** in real time and even compare a local project with one already installed on the panel.



Video camera feeds

This function allows for the display of **IP video camera feeds** in the project pages. Such feeds can be handled either in **full screen** or in **several windows for viewing** various feeds **simultaneously**.

Remote project download

Polymath allows you to **update a project** directly **from a PC connected to a corporate network or via the Internet**. This function is particularly useful for those who need to carry out **maintenance operations from a remote workstation**, offering the option of remotely downloading or updating a project by means of a simple Internet connection.

Notifications via e-mail and sms

Polymath allows you to send **event and alarm notifications via SMS and e-mail**. Every single event or specific alarm occurrence can be associated with an **SMS and/or a customised e-mail**. With Polymath you can limit such notifications **by selecting groups of users** according to specific **time slots or days of the week**.

Automatic connection to relational databases

This dedicated Tool allows **exporting data from HMI panel or Polymath PC application to the most popular relational databases**, such as **SQL server**. The data is recovered and arranged autonomously **relieving the system from any other task**. This way, you can **freely manage the data structure** to be exported in order to **perfectly adapt to existing situations** without annoying and expensive conversion operations.

The **operator panels in the IT range** and **Polymath PC Machine Edition** can be connected to a production plant and the production **data can be exported directly to a remote Database (such as SQL Server)** using the integrated Ethernet port. Just indicate the names of the variables to be monitored and, when necessary, their values are automatically read by the PLC and inserted in the specific location of the chosen database.

Codes and descriptions	
ESADBCONNECT	ESA Database Connection Software License

Remote control

Today, thanks to **PC Remote Access**, having **all your production plants constantly under control** without geographical constraints and in a completely safe environment is possible. With this application, all you need is an **internet connection** to **monitor** every industrial plant **in real-time**, with no limitation and **from anywhere in the world**.

Malfunctions and temporary unavailability may cause serious production losses: this solution provided by ESA allows you to **remotely** carryout **maintenance operations** or **fix possible malfunctions**, thus preventing unnecessary trips and wasting time.

With PC Remote Access you can **use any PC to connect** to your plant and interact as if you were actually in front of the operator panel. You can also, for example, **monitor several production sites** and view trends, production data, alarms, load and amend recipes, run scripts, view feeds from video cameras connected to the panel and much more. VPN (Virtual Private Network), corporate LANs and Web connections are fully supported, allowing PC Remote Access to be used in any situation, meeting any requirement.

Codes and descriptions	
PCREMOTEACCESS	PC Remote Access License

POLYMATH Smart*Click*

Polymath Smart*Click* is the configuration software dedicated to ESA operator panels of the SC family. Easy to use, you can **download it directly from the website www.esahmi.com**

www.esahmi.com

POLYMATH HMI

Polymath HMI is the configuration software specially designed for developing applications for ESA terminals in the IT, SC and VT range.

Codes and description

POLYMATHKIT	Kit software Polymath - HMI Version
The kit includes the following cables and adapters:	
CVUSB11102	PC USB-A ->IT USB-B programming cable
CVADUSBB9M	USB-B – 9-pin male adapter
CVAD9F25M	9-pin female- 25-pin male adapter

POLYMATH Advanced

Polymath Advanced is an integrated programming system, that allows developing applications for the entire ESA range of products: from VT text terminals, to advanced supervision projects on PC, passing through the IT family of products.

Codes and description

POLYMATHKIT	Kit software Polymath - Advanced Version
The kit includes the following cables and adapters:	
CVUSB11102	PC USB-A->IT USB-B programming cable
CVADUSBB9M	USB-B – 9-pin male adapter
CVAD9F25M	9-pin female- 25-pin male adapter

POLYMATH Premium

Polymath Premium is the Polymath licence, that allows owners of a Polymath HMI licence to upgrade to the Advanced version and use all the Polymath Advanced functions.

Codes and description

POLYMATHPREMIUM	Kit software Polymath - Premium Version
The kit includes the following cables and adapters:	
CVUSB11102	PC USB-A->IT USB-B programming cable
CVADUSBB9M	USB-B – 9-pin male adapter

	Polymath Smart*Click*	Polymath HMI	Polymath Advanced
Programmable products			
VT terminals		✓	✓
SC terminals	✓	✓	✓
IT terminals		✓	✓
PC			✓
Alarms			
ISA	✓	✓	✓
Banner		✓	✓
Logging			
Trend Buffer	✓	✓	✓
Trend X-Y	✓	✓	✓
Data log	✓	✓	✓
Data export			
Database (SQL, relational, etc.)		✓	✓
CSV	✓	✓	✓
XML	✓	✓	✓
Pendrive, SD, CF, ETH	✓	✓	✓
Security			
Users management	✓	✓	✓
Password	✓	✓	✓
Script			
VB Script (with Intellisense)	✓	✓	✓
Debug			
Offline simulator	✓	✓	✓
Online simulator		✓	✓
Project			
Popup pages	✓	✓	✓
Layer		✓	✓
Frame		✓	✓
Multilanguage	✓	✓	✓
Recipes	✓	✓	✓
Network project		✓	✓
Utility			
Dictionary: automatic translation		✓	✓
Functionalities			
Backup/restore		✓	✓
Passthrough		✓	✓
Indirect address		✓	✓
Scheduler		✓	✓
Remote control (ESA Remote Access)		✓	✓
Email and SMS		✓	✓
Offline Update		✓	✓
Remote download		✓	✓
FTP server		✓	✓

Polymath is compatible with Windows 2000 SP4, Windows XP, Windows Vista and Windows Seven.

Polymath
PC Machine Edition

Any project made in the **Polymath Advanced** development environment **can also be run on PC** with Microsoft Windows 2000 SP4, XP, Vista and Seven, as well as on **all ESA industrial PCs**. With **Polymath PC Machine Edition**, an ordinary computer becomes a **powerful supervision and control station**, that can connect directly to the system and manage a **massive number of** communication **protocols**, including **Profibus-DP, CanOpen** and **DeviceNet**.

Unlimited connectivity: Polymath PC Machine Edition allows you to remotely verify the correct operation of a system by means of a simple **internet connection**, thanks to a tried and tested system **compatible with corporate firewalls**.

Ethernet protocols are managed directly through the Ethernet port found on any PC, while for other types of protocols, special adapters are available. ESA expansion cards are **field interfaces equipped with a dedicated microprocessor**, which fully and autonomously manage communication, thus relieving the PC from that task and **ensuring** that **communication time** with the various protocols is **respected** (even in real-time).

Polymath PC Machine Edition is compatible with Windows 2000 SP4, Windows XP, Windows Vista and Windows Seven.

Windows

Codes and descriptions

PCMACHINE-512	Polymath PC Machine Edition runtime license – 512 variables
PCMACHINE-1024	Polymath PC Machine Edition runtime license – 1024 variables
PCMACHINE-2048	Polymath PC Machine Edition runtime license – 2048 variables
PCMACHINE-4096	Polymath PC Machine Edition runtime license – 4096 variables

Polymath PC Machine Edition

Remote supervision

Polymath Machine PC Edition is the perfect solution for **supervision and remote control**. Using Polymath Machine Edition PC you will have the opportunity to **connect the PC directly to the field** through a multitude of integrated communication protocols. All Polymath communication drivers are supported, as well as the most common fieldbuses used in the industrial sector, such as **Profibus-DP** and **CanOpen**.

Drivers for the following manufacturers

ABB	Modbus (Serial-Ethernet), AC550 PM (Codesys)
AEG MODICON	COMPACT-MICRO 984
Allen Bradley	SLC 500 5/03 - 5/04 DF1, Ultra 5000 DF1, DeviceNet Slave (1756-DNB)
	Micrologix 1500, Ethernet IP Micrologix-Contrologix
	PLC5/Contrologix 5 series, AB Ethernet
Beckhoff	BC 7300/BK7300/BX3100, KL 6001/KL6021
	TwinCAT ADS (Codesys)
Berthel	ModuCon-S7, Com-Con S7 Industrial Ethernet
CAN OPEN	CAN OPEN Master, Berger-Lahr Twin Line
	CAN Lenze Master-Slave
Control Techniques	CT Modbus RTU/ETH
Crouzet	Millenium M3
Danfoss	VLT-2800/5000/6000/FC-302
Datalogic	DL 910 Hw-Sw
Delta	DVP series
Eaton-Moeller	PS 306-316-416 CPU 223, PS 416 CPU 400, PS4 201-341 MM1
Elau	PacDrive C400
Erhardt+Leimer	DI G000 (Tcp/IP Codesys)
Eurotherm	605/590plus, 650v/690plus
Galil	DMC 2x00 series Eth
Ge Fanuc	Robotics SNP-X Eth, Series 90-30, VersaMax,RX3i
Helmholz	Ethernet Adapter S7 300-400
Hengstler	901/906

Hitachi	EH150, H250-252-B-C, H302, H702, H1002-2002-4002
Keb	F0-F4-C-FAF-F4S-S4 Series Combivert F5-Eth
	CombiControl C5(Tcp/IP Codesys)
Kernel Sistemi	Kernel protocol
Kuhnke	Kubes, Ventura (serial Codesys), Ventura 100 PLC (Tcp/IP Codesys)
	Ventura Skaleo (Tcp/IP Codesys)
Mitsubishi	A series, FX Series, FX2 Series
Modbus	RTU Master fast and slow, RTU Slave, Tcp/IP Master and Slave
Omron	3G3EV, CS1-CJ1 Eth, CS1-CJ1-CP1, Host Link
Panasonic	FP series Eth, FP series-FP Sigma
Parker Automation	6K-6000-Zeta, GT6-GV6 Controller
Saia	Profi-S-Bus, S-Bus, Ether-S-Bus
Schneider Telemecanique	Altivar, TSX Premium (Tcp/IP), Twido
	Unitelway TSX07-37-47-57 (Premium), Unitelway TSX17, Zelio
Siemens	Profibus, Simovert, S5 90-95-100-115-up to 944,S7 1200 Eth
	S7 200 PPI 9.6 up to 187.5 Kb, S7 300-400 MPI, S7 300-400 Eth
Stober	MDS 5000
Trio Motion	Trio Motion
Vigor	M/VB series
Vipa	CPU 214-215-216, CPU 241-242-243-244
Wago	750-841 (Tcp/IP Codesys)
West	6100-6600

ESA offers three different models to meet any communication requirement:

- **PC-USB SP**: serial version with RS232/RS485 interface towards the field supporting all the **serial drivers** in Polymath and Siemens **MPI** (both at the speed of 187,500 KBit/s and 1.5Mbit/s)
- **PC-USB DP**: version supporting **Profibus DP**
- **PC-USB CAN**: version supporting **CANOpen** and **Devicenet** protocols

Codes and descriptions

PCUSBADP0SP2	External module to connect PC in RS232/485
PCUSBADP0CAN	External module to connect PC in CAN/DeviceNet
PCUSBADP0DP	External module to connect PC in Profibus-DP

Connection cables

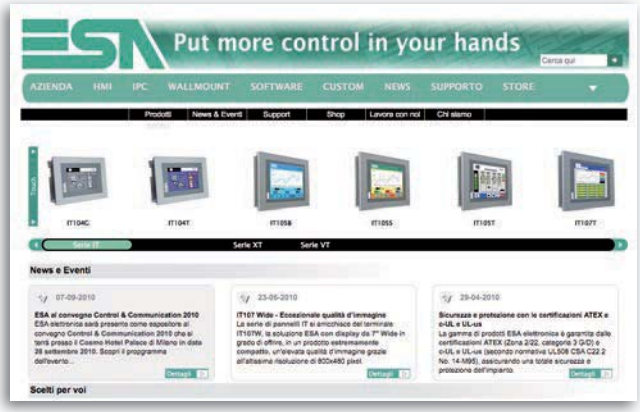
ESA provides **professional cables** for connecting operator terminals with all supported **PLCs, drives and temperature controllers**. Made in compliance with **EMI standards**, they help save time and prevent connection errors.

Repairs and **Spare Parts**

The **ESA repair service** relies on a well-equipped laboratory adjacent to standard production and on highly qualified personnel. The **repaired product passes through all the stages provided for production**, including an 8-hour 'Burn-In' and a 48-hour 'Run-In', in order to guarantee total reliability of the repaired product.

Moreover, **ESA** can also **supply single spare parts** in order to **replace any component of the product autonomously and safely directly on-site**. ESA also provides a **manual** with hundreds of pictures and explanatory drawings, allowing anybody to repair and **replace the** terminal **parts** in a **safe**, **quick and easy way**. This manual is a particularly useful tool, providing great added value.

Codes and descriptions	
SPARE PARTS CD	CD with Spare Parts manual and Price List in Italian and English

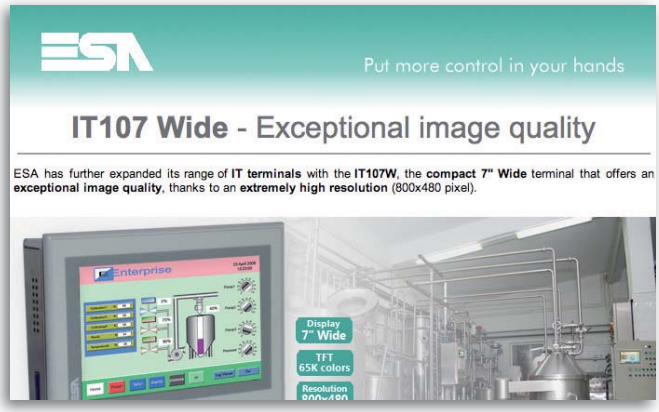


ESA web site: www.esahmi.com

- Direct contact with all ESA subsidiaries worldwide
- Fast interaction with the ESA world
- Comprehensive and easy-to-consult catalogue
- Guided product search
- News download sections (always up to date)
- Quality Desk and Reserved Area
- On-line shop

Customer service

- High level of expertise
- Many years of experience
- Prompt response to all requirements and questions
- Free of charge assistance
- Test laboratory
- Software and hardware testing



Newsletter

The use of new communication channels, such as the Internet and our website, allow us to always be in close touch with our clients and provide them with timely announcements and up-to-date news.

Refresher Training

- Highly qualified trainers
- Basic courses
- Advanced courses