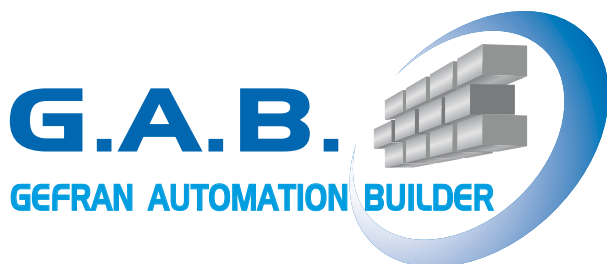


Gefran Software



Applications

- Operator Interface
- Plants monitoring
- Multizone temperature control
- Extrusion
- Dosers
- Heat treatment furnaces
- Plants automation

Characteristics

- Gefran Automation Builder Suite software
- Development of multiplatform solutions
- Programming according to IEC1131-3 standard
- 5 IEC1131 programming languages (LD, ST, IL, SFC, FBD)
- Advanced Java programming
- Advanced C programming
- OnLine Debug
- Configurability of all Gefran catalogue devices
- Integrated solution for Gefran Automation projects

Profile

GAB is an integrated development environment (IDE) for real time control applications of Gefran devices in the GF_VEDO, DIGISTAR II, I/O GILOGIK II, Drive and Sensor families.

Gefran Automation Builder (G.A.B.) can:

- Develop automation solutions by protecting the investment allocated to configuration of the application and reducing time to market
- Create applications for complete control of machines and plants and for configuration of graphic interface
- Develop multiplatform solution
- Cut learning time, provide guided development and eliminate configuration errors by exploiting graphic configuration
- Easily reuse parts of existing projects

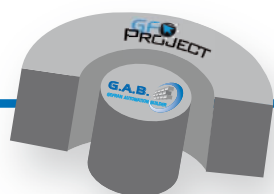
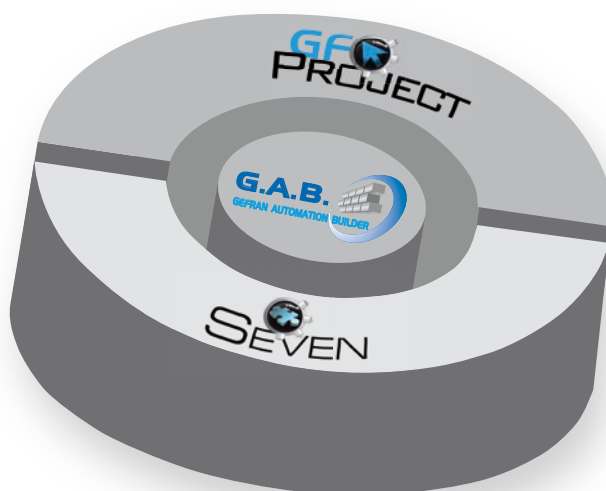
The G.A.B. software suite includes a series of tools to develop application solutions that satisfy various programming demands. Thanks to various types of custom installations, the programmer is given the best and most effective tools to develop an automation project.

This provides a visual and completely plug-and-play approach, thanks to which project configuration is completely graphic and guided.

The project can be customised further thanks to the use of C and Java languages, supporting an "open" approach. This solution exploits the advanced part of programming and lets you create high-performance applications in terms of scalability of the machine control part and of the operator interface.

Software components

G.A.B. consists of two installation modules: **GF_Project** and **SEVEN**.



>>> GF_PROJECT >>>

A “user-friendly” guided programming tool based on the use of icons or guided configuration menus. Especially suitable for developers who prefer a visual programming style.

GF_Project is composed of integrated software modules with specific functions that provide easy and intuitive configuration of automation projects.

GF_Project consists of:

- Hardware
 - Configurator software for configuration of devices used to control machine/plant
- Control logic (PLC)
 - Software component for configuration of machine/plant control logic
- User interface (HMI)
 - Software component for configuration of graphics pages for the user interface

» GF_Net - Hardware configuration

The GF_Net module is dedicated to the configuration of project hardware, and lets you:

- Define the system architecture and the configuration of individual devices used in the automation project, exploiting an intuitive and guided configuration environment
- Define and parameterise the devices in the GEFAN product catalogue and describe their interconnection in an automation architecture
- Configure a single device or a network of devices
- Share variables among interconnected devices
- Integrate third-party CANopen devices by importing the EDS descriptive file
- Integrate devices with third-party Modbus TCP and Modbus RTU protocol
- Configure data sharing with higher level systems (Scada) by exploiting a Modbus TCP/RTU connection

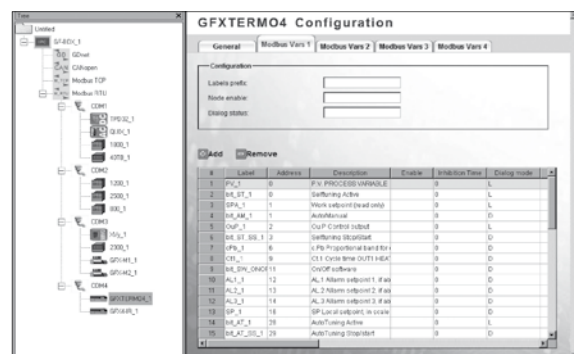
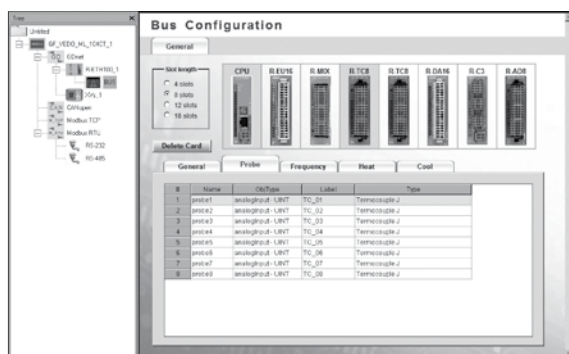
The Gefran product lines configurable with GF_Net (selection at network configuration level depends on availability of Fieldbus connection to the network) are:

- **Automation**
 - Industrial PC (DIGISTAR II series)
 - Operator Panels (GF_VEDO series)
 - Remote I/Os (GILOGIK II series)
 - IP67 remote I/Os (GLK series)
 - Fieldbus keyboards (TF series)
- **Components**
 - Controllers (GFX4 series)
 - Controllers (GFXTERMO4 series)
 - Controllers (2000 series)
 - Controllers (1000 series)
 - Indicators (40 series)
- **Sensors**
 - K series
 - I series
 - M series
- **Drive**
 - SIEIDrive XvY series
 - SIEIDrive ADV series
 - SIEIDrive AGy series
 - SIEIDrive TPD series



Depending on the type of target selected and used to configure an automation network, the types of Fieldbus available in GF_Net are:

- GNet (Ethernet Real Time)
- Modbus RTU (Serial)
- Modbus TCP (Ethernet)
- CANopen



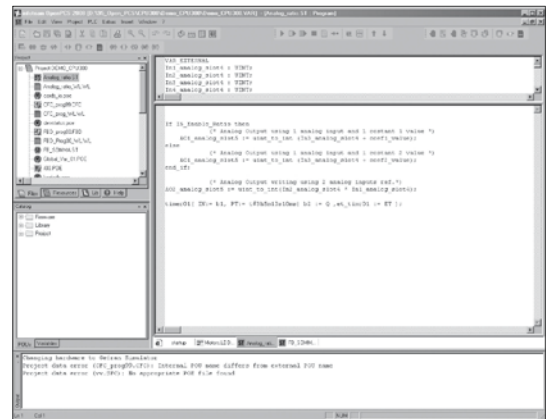
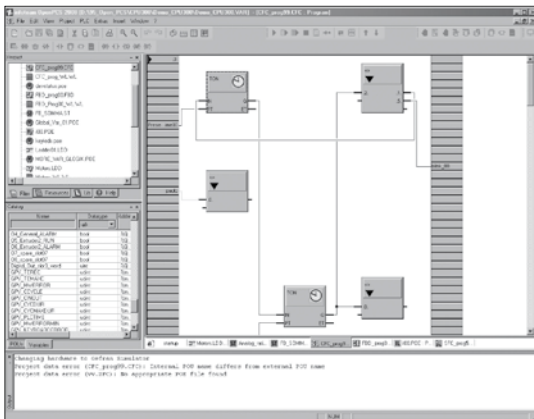
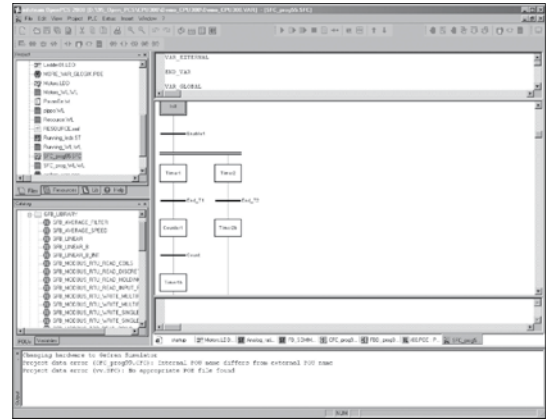
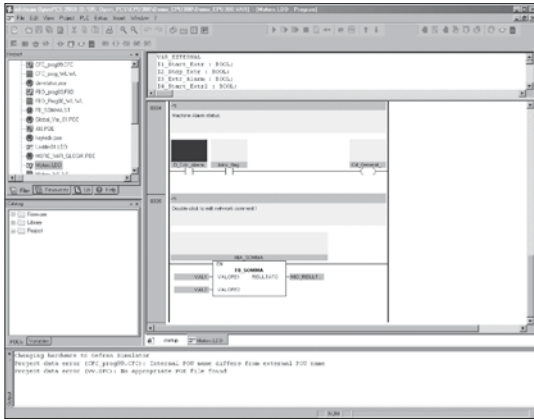
» OpenPCS - Programming Logic Control (PLC)

The OpenPCS module is dedicated to the PLC.

This module uses the IEC1131-3 configuration standard and rapidly and easily configures the machine control cycle.

- Programming based on IEC1131-3 standard provides 5 different programming languages. When writing the control programme, the programmer can divide the logic into single programmes and, for each one, use one of the 5 available languages. The 5 languages are:
 - LD (Ladder Diagram)
 - FBD (Function Block Diagram)
 - SFC (Sequential Function Chart)
 - ST (Structured Text)
 - IL (Instruction List)

- The intuitive programming interface allows rapid learning of configuration operations and reduces software development time
- A Function and Function Block library (developed by Gefran) is available, with functions such as:
 - Linearisation of analogue signals
 - Ramp generator
 - PID control
 - PID control for valves
- The on-line test function for the running programme displays variables in real time and allows forcing
- Similar projects can be reused thanks to modular configuration of the PLC programme
- Function Block and Custom Function configuration is possible, for independent creation of a function library that easily integrates in later projects



» GF_View - Operator Interface Programming (HMI)

The GF_View module is dedicated to configuration of the Operator Interface (HMI).

This module uses a development environment based on icons and graphic components to create and configure the graphic pages of the HMI.

- Configuration of components on single pages is based on the use of Widgets, available in a library of Gefran components. By means of a series of **Properties**, **Events** and **Conditions**, the Widgets let you configure dynamic pages.

Properties: a series of configurations that define the graphic components of the Widget inserted on the page. Available properties can be configured with a constant or dynamic value based on the values in the application project

Event: a series of functions which, matched to commands made to the Widget on a page, let you run actions such as:

- Change page
- Write a variable at a fixed value
- Run a library function
- Run a script

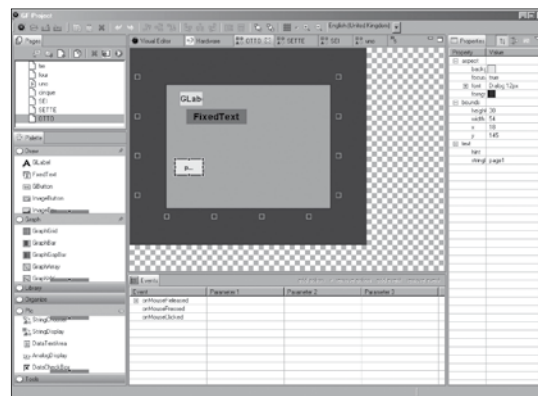
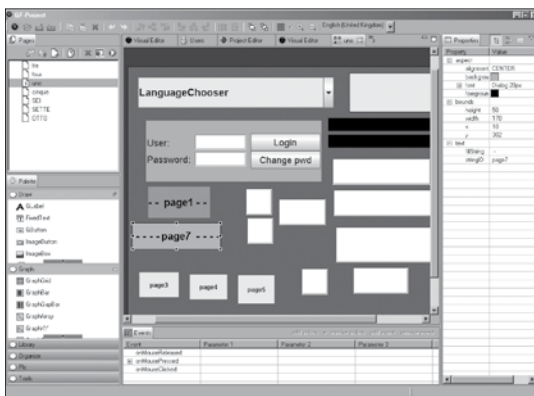
Condition: a series of configurations that let you change the run-time of properties on selected components

The Widgets in the library provide the following functions:

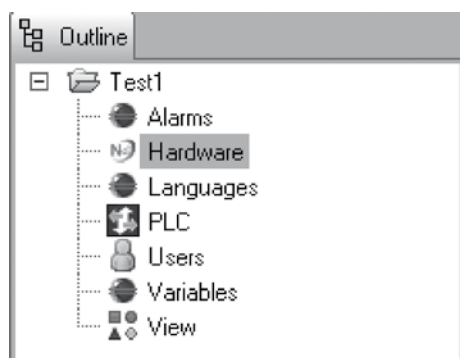
- Display and change a data item
- Display an image (jpeg or gif format)
- Display a series of images conditioned by a data item
- Display a text with multilanguage function
- Display one or more data items in Trend form
- Display historical and current alarms file
- Select data item with Combo Box
- Select data item with Check Box
- Display multiple Widgets with layer management and selectable runtime
- Select current operator level (login and logout)
- Select language in case of multilanguage management
- Save and load recipe data files

To simplify and improve the configuration of graphics pages, GF_View offers additional functions such as:

- Display with preview of real image of selected product. Thanks to this function, the programmer has a complete and real view of the developed graphics pages. In addition, if the selected product has integrated function keys, they can be easily and intuitively configured on the development environment pages
- Automatic resize of pages if the automation project calls for the use of graphics pages with different size panels. In this way, all of the components on the page can be scaled, guaranteeing reuse of configured pages on different targets
- Configuration of a library of borders for internal definition of a page of 4 different types of borders called Top, Left, Right and Bottom. The configured borders are collected in a custom library that can be reused on all project pages. The hereditary characteristic of each border allows the change to be transferred to a single panel on all pages where that component is used
- PC executor for dynamic display of pages. The PC executor lets you check page changes, value display, checks interaction of pages/control sequence, and general characteristics of the HMI. These operations, run before updating, configure off-line from the plant and limit malfunctions



Additional software components



For project development, in addition to the main software components, a series of additional configurations can be used to define the entire automation project.

Alarms configuration

- Configuration of project variables indicating machine/plant alarm states
- Definition of alarm type and message to be displayed on graphics page
- Multilanguage management of alarm message display
- Display of active alarms and historical alarms via dedicated Widget library

Multilanguages management

- Configuration of multilanguage management (dynamic translation of texts displayed on a page). In this way, you can configure a single user interface and guarantee its use by operators of different nationalities
- Selection of languages for a project and insertion of texts translated in all selected languages
- Configuration of languages using special characters (example Chinese, Russian, Koran) thanks to Unicode standard
- Exporting of complete list of texts in a CSV format file to facilitate translation of texts in active languages of project. The new file generated can be imported to the project to ensure easy and rapid updating

Users/Password configuration

- Insertion of users, each with password, for whom specific privileges are provided at the machine interface level
- 10 levels for which there are no limits on the number of users matched with each level.
The level code can be used in the system to:
 - Limit the change of a value
 - Limit access to a specific page
 - Limit access to specific configurations
 - Make the Widgets on a page invisible

Variables management

- Management/display of all project variables
- Insertion of variables needed to configure the machine cycle (PLC)
- Configuration of characteristics of variables (type of data, description, retentive data, recipe, etc.)

Firmware updating

- Check of Firmware version installed on the target, with activation of update.
This lets you align the Firmware version with the version required by the development environment.

Technical Data

Operating system

- Windows XP (SP2)
- Windows Vista

Minimum PC configuration

- CPU Pentium IV 1 GHz or higher
- RAM 1 GB minimum
- Available hard-disk space > 300 MB
- XGA monitor (1024x768)
- N. 1 RS232 serial port
- N. 1 Ethernet port
- DVD drive





>>> SEVEN >>>

Open programme with use of high-level languages (C and Java).

Thanks to command line programming and to limited use of preconfigured interfaces, SEVEN is especially suitable for developing applications that require a high level of customisation.

SEVEN is the software component used as a development platform for applications developed by Gefran for specific sectors (Extrusion, Injection, Blowing), and consists of single software modules for the specific configuration of all typical functions of an automation project.

The main components of SEVEN are:

- Hardware
 - **GF_Net** configures and parameterises components and variables used in Gefran automation architecture. With graphic interface and guided programming/configuration menus, you can configure all of the devices in the Gefran automation catalogue
- Control logic (PLC)
 - **OpenPCS** configures the machine/plant control. It is a development environment for PLC applications based on IEC 61131-3 specifications, and programmes the cycle by exploiting one of 5 available languages. OpenPCS contains an FB and F library developed by Gefran that provides some typical functions of an automation project
 - **C/SEVEN code** is used for advanced programming of machine/plant control. It is a development environment based on C programming language that includes compilation and debug functions. This module allows advanced programming of specific machine cycle functions for a high level of customisation
- User interface (HMI)
 - **VISUAL** develops the operator interface. It is a programming environment based on Java language, and contains a library of classes developed by Gefran that simplifies configuration of the HMI

» GF_Net - Hardware configuration

The GF_Net software module is dedicated to configuration of system hardware and uses the functions available in GF_Project.

» OpenPCS and SEVEN - Programming Logic Control (PLC)

The OpenPCS software module is dedicated to the PLC and uses the graphics functions provided in GF_Project. In addition to a graphics environment, the SEVEN command line programming environment is provided for a more open programming level. This environment uses standard C language and offers a high level of flexibility and optimisation of the automation process. This environment requires extensive programming experience.

A series of functions facilitates the development and integration of special applications.

In case of special control requirements, you can combine the high level of configurability provided by code written in C with the simplicity of IEC 61131-3 configuration.

```

//Esempio di codice C per la configurazione di un sistema di automazione
//Il codice è organizzato in file separati per le diverse parti del sistema
//Il file principale è il file di configurazione del sistema

#include "se7en.h"
#include "se7en_cfg.h"

int main()
{
    //Inizializzazione del sistema
    InitSystem();

    //Ciclo di lavoro
    while(1)
    {
        //Esecuzione del ciclo di lavoro
        RunCycle();

        //Riposo
        Sleep();
    }

    //Fine del programma
    return 0;
}
  
```

» VISUAL - Operator Interface Programming (HMI)

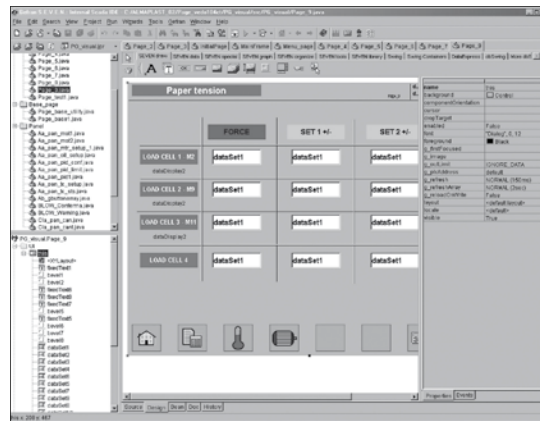
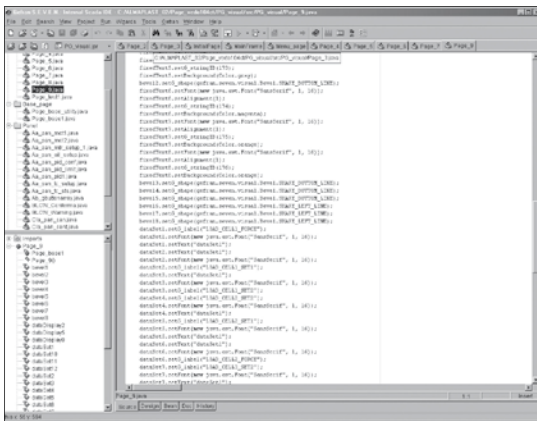
The VISUAL module is dedicated to configuration of the Operator Interface (HMI).

This module uses a development environment based on Java language to create and configure the graphics pages of the HMI. The Java programming languages lets the developer configure operator pages with a high level of customisation.

The Java development environment offers two different programming styles that can be used in parallel:

- Style based on Widgets configured with predefined menus
- Style based on command line, calling for programming of user pages by writing their Java source code (this style requires the developer's knowledge of Java programming language rules)

The VISUAL module also has a series of classes, divided into categories by type of function, that simplify the configuration of application pages both with Widget programming and with command line programming.



Technical Data

Operating system

- Windows 2000
- Windows XP

Minimum PC configuration

- CPU Pentium IV 1 GHz or higher
- RAM 1 GB minimum
- Available hard-disk space > 500 MB
- XGA monitor (1024x768)
- N. 1 RS232 serial port
- N. 1 Ethernet port
- DVD drive



Order code

GF_PROJECT

FO48390	GF_Project-00	Integrated development environments for GEFRAN Automation solutions. Includes HW configuration, IEC1131 language PLC programming and graphic page editing for HMI interface. The product licence allow the full environment functionality limited to max. 30 variables. Variable count is based only to I/O variables and Fieldbus variables. The product licence allow only n. 1 installation on development PC. Available from web site - Free.
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	GF_Project-300	Integrated development environments for GEFRAN Automation solutions. Includes HW configuration, IEC1131 language PLC programming and graphic page editing for HMI interface. The product licence allow the full environment functionality limited to max. 300 variables. Variable count is based only to I/O variables and Fieldbus variables. The product licence allow only n. 1 installation on development PC. Self-installing DVD.
FO48376	GF_Project-300-4	For licence number from 1 to 4 (*)
FO48709	GF_Project-300-9	For licence number from 5 to 9 (**)
FO48710	GF_Project-300-99	For licence number above to 9 (***)

	GF_Project-1000	Integrated development environments for GEFRAN Automation solutions. Includes HW configuration, IEC1131 language PLC programming and graphic page editing for HMI interface. The product licence allow the full environment functionality limited to max. 1000 variables. Variable count is based only to I/O variables and Fieldbus variables. The product licence allow only n. 1 installation on development PC. Self-installing DVD.
FO48377	GF_Project-1000-4	For licence number from 1 to 4 (*)
FO48711	GF_Project-1000-9	For licence number from 5 to 9 (**)
FO48712	GF_Project-1000-99	For licence number above to 9 (***)

	GF_Project-FULL	Integrated development environments for GEFRAN Automation solutions. Includes HW configuration, IEC1131 language PLC programming and graphic page editing for HMI interface. The product licence allow the full environment functionality without limitation on variables count. Self-installing DVD.
FO48378	GF_Project-FULL-4	For licence number from 1 to 4 (*)
FO48713	GF_Project-FULL-9	For licence number from 5 to 9 (**)
FO48714	GF_Project-FULL-99	For licence number above to 9 (***)

follows >>>

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GF_PROJECT Upgrade, Training and Applications

	GF_Project-UPGRADE-300-1000	Upgrade licence from GF_Project 300 to GF_Project 1000
F048715	GF_Project-UPGRADE-300-1000-4	For licence number from 1 to 4 (*)
F048716	GF_Project-UPGRADE-300-1000-9	For licence number from 5 to 9 (**)
F048717	GF_Project-UPGRADE-300-1000-99	For licence number above to 9 (***)

(*) For licence from 1 to max. 4, multiply licence for unit price

(**) For licence from 5 to max. 9, multiply licence for unit price

(***) For licence > 9, multiply licence for unit price

	GF_Project Training	Includes 2 days of GF_Project development environment training for 1 technician at our headquarter in Provaglio d'Iseo (Italy) (travel and lodgings expenses excluded). Training course will cover items relate to HW configuration, PLC programming and graphic page development.
	GF_Project Application	GF_Project application configuration support. The service support could be combine with training course. The price list is for working day (8 hours) at our headquarter in Provaglio d'Iseo (Italy) (travel and lodgings expenses excluded).

SEVEN

F043762	GAB - SEVEN	Advanced programming and configuration environment for Gefran IPC and GF_VEDO control and visualization unit composed by: <ul style="list-style-type: none"> • SEVEN • Visual • GF_Net • OpenPCS • Self-installing DVD The product licence allow only n. 1 installation on development PC. Includes 3 days of training at our headquarter in Provaglio d'Iseo (Italy) (travel and lodgings expenses excluded). The training course will cover items related to C code programming, Visual (Java) and HW configuration. Training require knowledge of software development base for Java and C language.
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