Clairitec

Product Catalog
Turnkey Human-Machine Interface Solutions

- **HMI Soluition**
- **Programmable Displays**
- **Intelligent Displays**
- **HMI Boards**
- **Starter Kits**
- **Graphic services and quality**
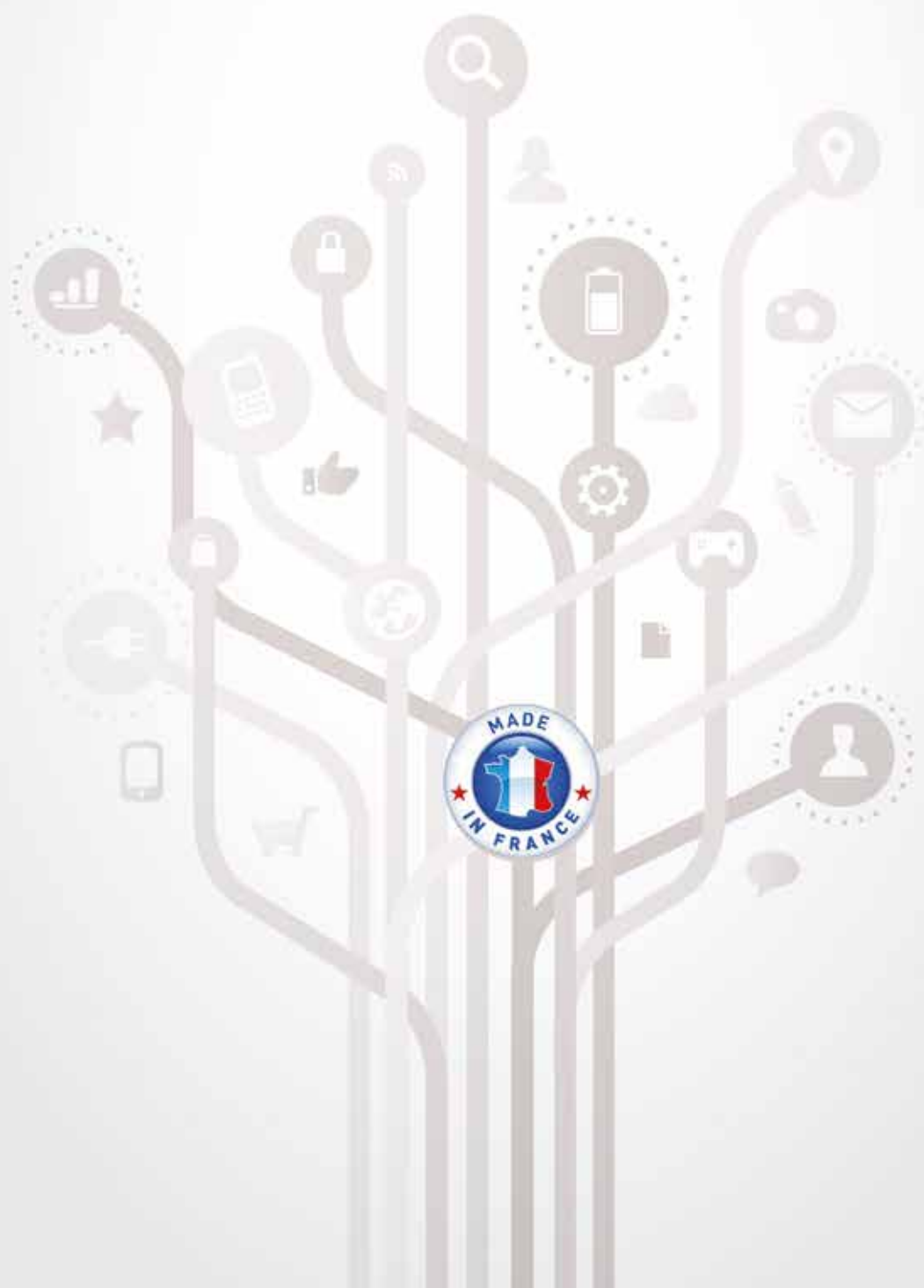
Introduction

Clairitec guides you throughout your graphical projects

Clairitec is a French designer and manufacturer that offers innovative graphic display and programmable controler solutions to answer the increasingly technical and specific demands from industries.

Since its creation in 1998, the company has put the customer at the heart of its dynamic innovation process in order to continuously offer high-quality technological products.

Moreover, as an electronic engineering company, we offer numerous additional services to accompany you throughout your development projects.

A range of products for all your Human-Machine Interface needs

Clairitec's turnkey HMI solution enables the design of fully customized graphic and touch HMIs in less than 4 weeks.

Our rich and complete range of products (HMI boards and plug & play modules and terminals) offers intelligent display solutions up to 12'' and SVGA.*

Contents

* Display screen sizes
QVGA: 320 x 240 pixels // WQVGA: 480 x 272 // VGA: 640 x 480 // WVGA: 800 x 480 // SVGA: 800 x 600

Clairitec's HMI solution

Thanks to a set of 25 commands and serial communication (CAN/RS232), Clairitec's HMI solution enables the creation and control of fully-customized Human-Machine Interfaces in less than 4 weeks.

The GraphConverter PC software program enables you to create the different pages of your graphic interface by freely placing all the elements (images, text zones, video windows and touch zones) according to your needs and preferences. These elements are then saved into the memory of the HMI board.

Range of products

We offer 3 main types of products:

Programmable Intelligent Displays

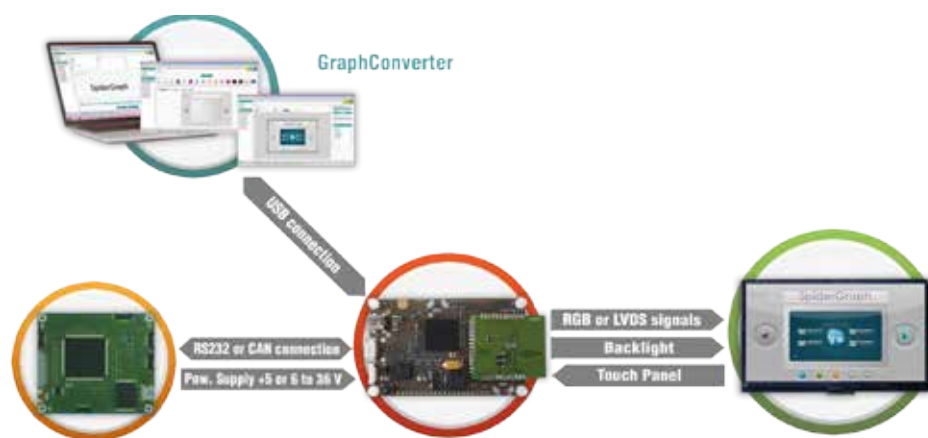Graphic/HMI controller terminals, programmable in C, coming in an EMC certified and IP65 protected casing. The terminals include a graphic touchscreen, several inputs/outputs to directly steer your equipment, as well as - depending on the version - a programmable board to host your main application.

Intelligent Displays

Ready-to-be installed and EMC pre-qualified HMI display modules.

HMI Boards

Adaptable to all types of displays to meet your individual HMI needs, also offering video inputs for real-time video functionality.

The product range of "HMI Boards" and "Intelligent Displays" are designed to complement a main application in order to add a graphic/touch HMI to it, either for new developments or also for the renewal of existing devices (connection to the mainboard of the main application via RS232/CAN).

The product range of "Programmable Intelligent Displays" can be used in two ways, either being steered by a master module (connection to the mainboard of the main application via RS232/RS485/CAN) or as standalone master terminals with an integrated mainboard and microprocessor.

Advantages of our solution

1. **Turnkey solution (hardware, firmware, HMI editor software)**
We provide all the necessary equipment for you to being able to create a customized HMI by yourself.

2. **Completely personalized graphic and touch HMIs**
Use your own graphic elements and fonts without being restricted by an imposed and limited graphic library.

3. **Full control of costs and time**
Profit from an optimal foreseeability regarding the costs and time necessary to create and implement your HMI.

4. **Non-intrusive solution**
Keep your existing main application:
- Integration of commands into the firmware of your main application
- Adaptable to all programming languages

Graphic processor integrated into the HMI board:
- No need for a powerful main board in your application
- An 8-bit microprocessor is sufficient to run our HMI solution

Graphic elements stored in the HMI board:
- Only a few kb of data are loaded into your application's main board

5. **Quick and easy creation, implementation and maintenance**
Creation:
- Create your first HMI in less than 4 weeks thanks to GraphConverter

Implementation:
- Serial communication (RS232/CAN 2.0B)
- Set of 25 commands (by default provided in C language)
- It is sufficient to manage the serial communication and the sequence of HMI events

Maintenance and evolution:
- Update the HMI (uploading of the graphic elements) by using a USB stick or a PC

6. **Electromagnetic Compatibility (EMC)**
All of our products are in compliance with some of the highest EMC standards in industrial and medical sectors:

- NF-EN55022 B class (frequency range from 150 kHz to 2 Ghz)
- NF-EN61000-4-2 (8 kV contact discharge / 15 kV air discharge)
- NF-EN61000-4-3 (frequency range from 30 Mhz to 1 Ghz – 10 V/m)
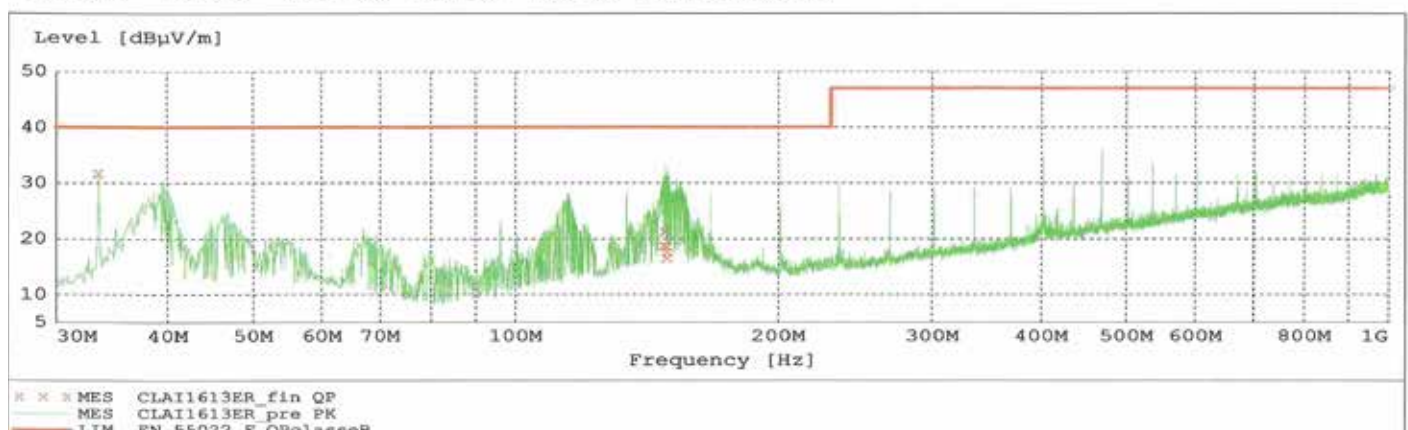
Clairitec's HMI solution

Create completely customized graphic and touch HMIs in a very easy and quick manner
due to our HMI boards, our GraphConverter software,
as well as due to serial communication and through a simple set of commands.

Select and place your own pictures and fonts,
define the touch areas in just a few clicks,
and discover the first screens of your HMI on your Starter Kit.

Turnkey HMI solution

Graphic and customizable HMIs

Select your own fonts and images (.bmp .jpg .png)

HMI development and editing software program

HMI update in a few clicks

Easy interaction with your business application

Logiciel GraphConverter PC software

Fonts and images

This PC software, developed by Clairitec, is essential for the creation and management of the graphic library of your HMI.

Powerful and user-friendly, GraphConverter enables you to select on your computer the fonts and pictures of your future Human-Machine Interface and to upload them directly into the internal memory of the HMI boards.
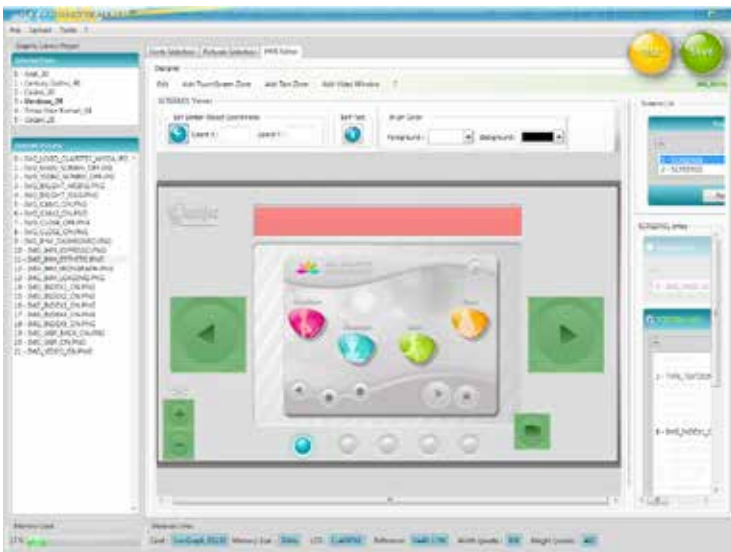
Screen creation

GraphConverter also allows you to create different HMI screens (graphic pages) by freely placing all the elements (images, text zones, video windows, touch zones) according to your needs and preferences.

The integrated project management enables you to save your configuration and modify the selection of graphical elements.

Thanks to GraphConverter, easily design your HMI from your graphic charter and/or pictures and fonts from your computer.

Serial communication and a set of 25 commands

You just need to connect the main board of your application to our HMI board via serial connection (RS232, CAN 2.0B or USB). The communication between the two boards then takes place through a set of commands (by default provided in C programming language), integrated into your application code.

The HMI board functions as an "external graphic module" to complement your main board.

Contrary to most HMI solutions in the market, which require a long and specific development, the graphic engine (firmware) of our boards is already developed. We provide a simple set of 25 commands to be implemented directly into your main application's code in order to manage your Human-Machine Interface (HMI). For the Programmable Intelligent Displays, an extra set of commands is provided to steer the various inputs/outputs.

These specific commands are sent from your main application board to our HMI board via the serial communication (RS232 or CAN 2.0B). Our HMI board, thanks to the **integrated graphic engine**, then processes these commands in order to display the respective graphic parts on a LCD screen (equipped with or without a touch panel). In this way you can display primitives, fonts and pictures, as well as pre-defined HMI screens according to your needs.

Some of these commands also enable you to integrate analog videos and to manage the communication with a touch panel.

In the course of your HMI project, after having designed and uploaded your graphic HMI with GraphConverter, **the additional development to be done in your main application is thus limited to sending of the commands and to managing the screen sequences and touch events.**
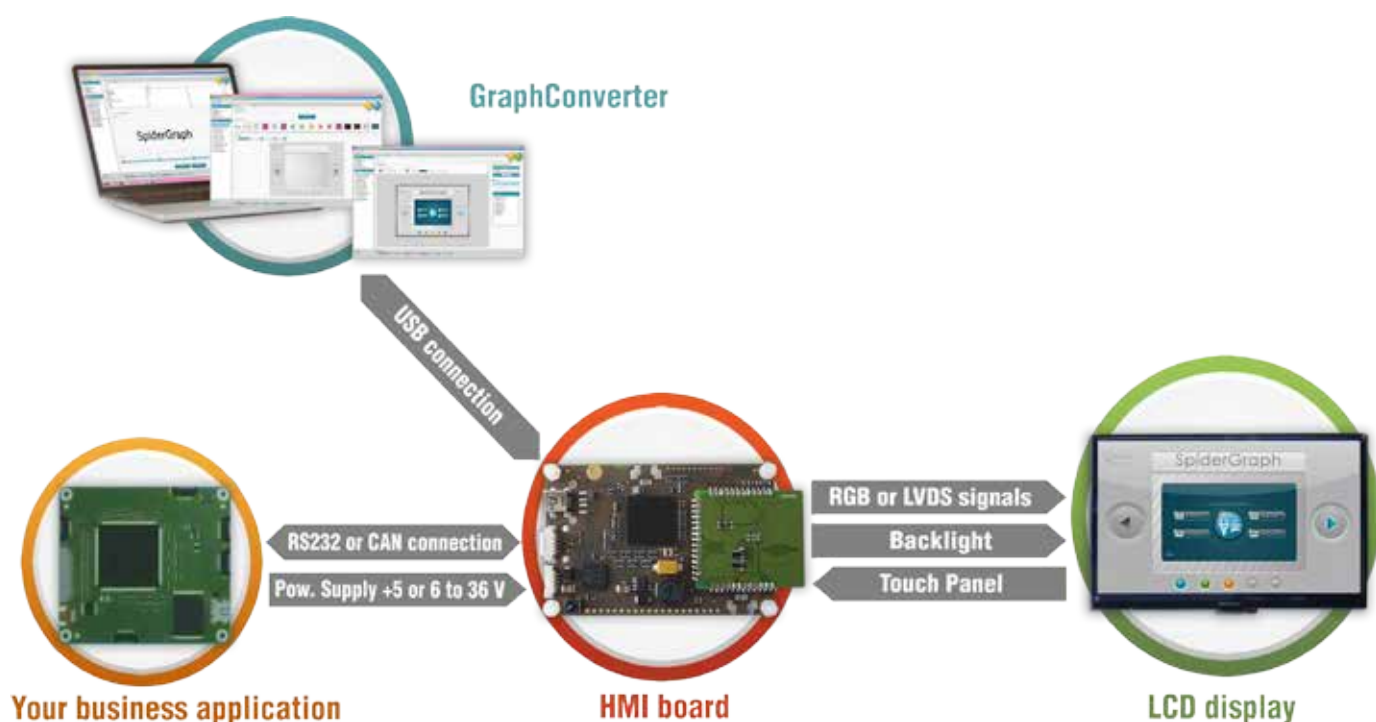
HMI creation with GraphConverter

1. Selection of fonts

2. Selection and upload of the graphic elements of your choice (BMP, JPEG, PNG)

3. Design of the personalized HMI:

- Placement of the elements on 2 graphic layers (static background and dynamic foreground images) and on several graphical pages (HMI screens)
- Definition of touch areas / text zones / video windows
- "WYSIWYG" (What You See Is What You Get)

4. Upload of the project (all elements and pre-defined HMI screens) into the flash memory of the HMI board

Graphic design   GraphConverter 3.0   HMI board Graphic engine

Graphic project

Compiling
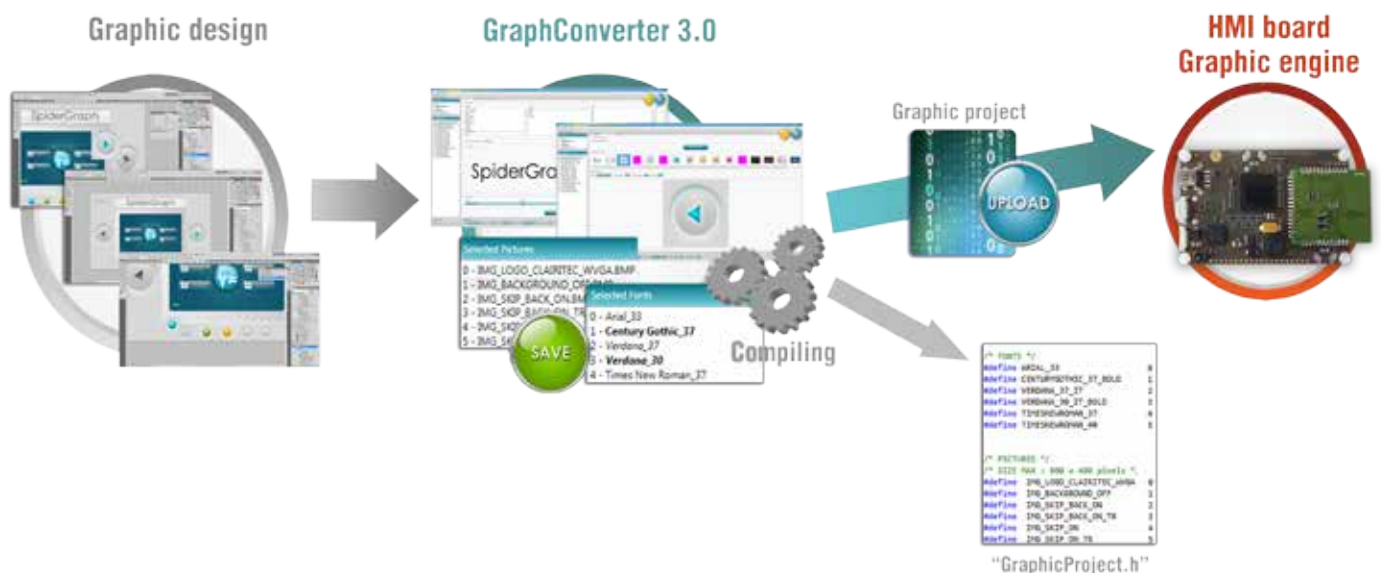
"GraphicProject.h"

5. Integration of the GraphicProject.h file (generated by GraphConverter) into the code of your main application

- Names and coordinates of images / touch areas / text zone
- Composition of the various predefined screens

6. Integration of the commands (by default provided in C) into the code of your main application.

7. Possibility to test the various commands in order to get a first impression of your HMI on the display

"GraphicProject.h"   Your business application   HMI board Graphic engine   LCD display

GraphicEngine.h

Lauch of an "Escape" type command

Execution of the command

Command interpretation
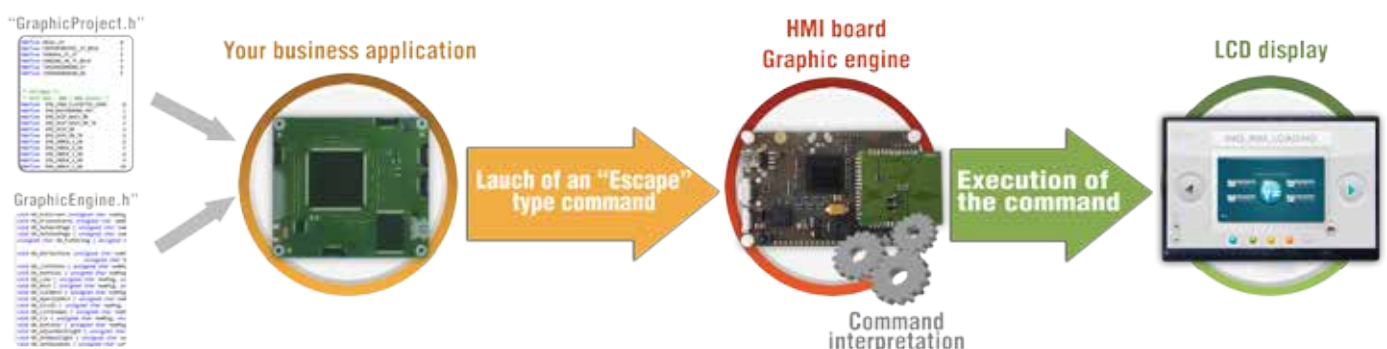
Programmable Intelligent Displays

The Programmable Intelligent Display is a controller and graphic display terminal, programmable in C.

It can directly manage up to 14 inputs and 18 outputs.

- Controller terminal, programmable in C
- 3 sizes: 4,3" WQVGA, 7" WVGA and 9" WVGA
- RS232, RS485, CAN, Ethernet or USB connection
- EMC and IP65 certified for industrial environments
- Up to 14 inputs and 18 outputs
- Relays, PWM, digital/analog inputs and outputs, temperature

Programmable Intelligent Displays

NEW

With I/O management

The Programmable Intelligent Displays perfectly fit in with the core of our strategy: offering products which can easily and quickly be integrated into your industrial equipment.

It is equipped with a TFT display, with or without touch panel, an HMI board, steering several inputs and outputs, and optionally with a programmable board (programmable in C) to host your main application. All components are integrated into an EMC certified and IP65 protected (front side) casing, allowing an easy installation.

This new product line, while profiting from the numerous advantages of Clairitec's HMI solution, goes one step further by also taking over the role of a Programmable Logic Controller, steering your industrial equipment.

Available in 3 display sizes, equipped either with a resistive or capacitive touch panel, this HMI terminal perfectly responds to the new demands and requirements of the industry. The protective front glass of the terminal is customizable, tailored to your needs.

4 mounting types

From the front	From behind	Surface	Tilted table-top
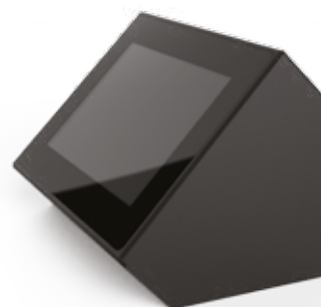
* Please refer to the configuration table (p27)

I/O Management

The Programmable Intelligent Display is able to easily steer inputs and outputs thanks to a set of dedicated commands which are provided by Clairitec and integrated into your application code (non-exhaustive list):

Command	Fonction
GX_InitAllDigitalInputs	Activation/deactivation of all digital inputs
GX_GetDigitalInput	Reading of a specific digital input
GX_InitAllAnalogInputs	Activation/deactivation of all analog inputs
GX_SetAnalogInput	Programming of analog input (unit, resolution, scale of values)
GX_GetAnalogInput	Reading of a specific analog input
GX_InitAllDigitalOutputs	Activation/deactivation of all digital outputs
GX_SetAllDigitalOutputs	Global command for digital outputs
GX_SetDigitalOutput	Command of a specific digital output
GX_GetFeedback	Reading feedback of a specific digital output
GX_InitAllRelays	Activation/deactivation of all relays
GX_SetAllRelays	Global command for relays

2 operating modes

Slave mode
In this mode, the Programmable Intelligent Display does not contain a programmable board. The main application board is located out of the casing and connected through serial communication (similar as the Intelligent Displays).

Standalone
The Programmable Intelligent Display integrates a programmable board:
- Standard Clairitec's programmable board
- Customized programmable board of the customer
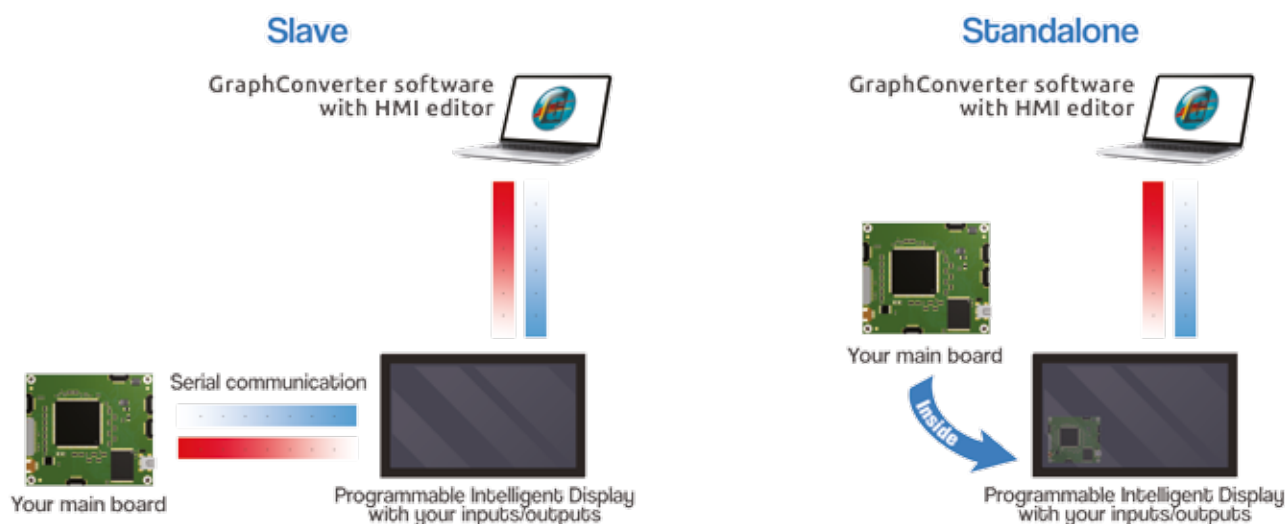
Expandable: further functionnalites or modules

It is possible to extend the type and number of basic connectors for specific needs.

For instance, it is possible to implement:
• Wireless communication such as Bluetooth, Sigfox, WiFi...
• Extra communication buses such as CANopen, Modbus...
• Particular sensors...

Operating and technical characteristics

Display sizes and resolutions	• 4,3'' WQVGA (480 x 272 pixels) • 7'' WVGA (800 x 480 pixels) • 9'' WVGA (800 x 480 pixels)
Casing	• Waterproof front side according to IP65 • 4 configurations (see page 11) • Customizable graphic design of the protective glass (front side) • Possibility to add a customized membrane keyboard
From 8 to 14 inputs (depending on version)	• Digital (0V to power supply) • Analog (0V to power supply) • Temperature (PT100/PT1000 + thermocouple) • Real time video (NTSC/PAL) (optional)
Fom 8 to 18 outputs (depending on version)	• Relays (NO/NC, NO) • Digital (0V to power supply) • PWM (Pulse Width Modulation) (0V to power supply) • Analog (0V to 10V)
Color LCD display management	• TFT active matrix, 24 bits (up to 16 million colors)
Viewing direction	• 6 hours
Viewing area	• 9'' : 198.0 (W) x 111.7 (H) mm • 7'' : 155.3 (W) x 94.3 (H) mm • 4,3'' : 96.7 (W) x 55.5 (H) mm
180° rotation	• 9'' : available • 7'' : not available • 4,3'' : not available
Backlight	• White LED • Lifetime: 25 kH to 40kH (depending on version)
Brightness	• 400 cd/m^2 for resistive version / 425 cd/m^2 for capacitive version
Vision angle	• 120° Vertical / 140° Horizontal
Touch panel	• 4 wires resistive or capacitive
Memory	• 32 Mb (other capacities available)*
Communication bus	• Serial RS232, speed from 9600 Bd to 355 kBd • CAN 2.0B, speed from 100 kBd to 500 kBd • RS485, speed from 9600 Bd to 355 kBd • USB • Set of provided commands to display graphic elements and steer the inputs/outputs
Max operating temperature	• -20°C ~ +70°C
Max storage temperature	• -30°C ~ +80°C
Power supply	• 12-36V (+/- 5%)
Max energy consumption	• 9'' : 9W • 7'' : 6W • 4,3'' : 3W
EMC compliance	• NF-EN55022 B class (frequency range from 150 kHz to 2 Ghz) • NF-EN61000-4-2 (8 kV contact discharge / 15 kV air discharge) • NF-EN61000-4-3 (frequency range from 30 Mhz to 1 Ghz – 10 V/m)
Outline dimension	• Depending on mounting type and display size
Weight	• Depending on mounting type and display size

Product reference**   Denomination

Product reference**	Denomination
FA49-02184	4,3'' Programmable Intelligent Display (RS232, PCAP panel, slave mode, front mounting)
FA49-02185	7'' Programmable Intelligent Display (RS232, PCAP panel, slave mode, front mounting)
FA49-02186	9'' Programmable Intelligent Display (RS232, PCAP panel, slave mode, front mounting)

* Please refer to the configuration table (p27)

** Non-exhaustive list

Intelligent Displays

Plug & play display modules,
EMC certified and ready to be integrated into your final equipment.

Discover all our models and choose a very competitive turnkey solution.

Plug & play graphic modules

Simplified use and integration

4 wires resistive or capacitive touch panel

Anti-vandalism version

EMC certified for industrial & domestic environments

4 standard sizes: from 3.5" QVGA to 9" WVGA

The Intelligent Displays

Our objective? To simplify the development of an HMI and its integration into your final equipment.

Relying on our expertise in the design and development of HMI boards, we diversified and expandes our range of products to meet our customers expectations.

Therefore, we have launched the Intelligent Display: a plug & play graphical module which combines Clairitec's HMI board technology, a TFT display with integrated touch panel, and an easy fixing system.

To facilitate the integration and reduce the time to market, this graphical module is EMC certified for industry and domestic standards, making it a unique product on the market.

Available in several screen diagonals, with a resistive or capacitive touch panel, it is perfectly adapted to the current expectations of industries.

Moreover, we have developed a specific version for a usage in environments with significant constraints (outdoor, shockproof…).

This **"anti-vandalism"** version meets at least the standards of the **IK 07 certification**, thanks to the addition of a protective tempered glass on the capacitive panel.

This graphical display module concept is available in serial version with screen diagonals of 9", 7", 4.3" and 3.5". It is also possible to **build custom versions, adapted to a display of your choice** (e.g. **a transflective display for an optimal readability in the sun**).

9" WVGA Intelligent Display

This is the largest version in this range of graphical display modules.

It enables to display up to WVGA with a 425 cd/m² brightness for the capacitive version.

It is also available as «anti-vandalism» version.

Operating and technical characteristics

Display size	• 9''
Resolution	• 800 x 480 pixels (WVGA) / landscape or portrait format
Color LCD display management	• 16 millions colours / TFT active matrix
Viewing direction	• 6 hours
Viewing area	• 198.0 (W) x 111.7 (H) mm
180° rotation	• Available
Backlight	• White LED • Lifespan: 20 kH
Brightness	• 400 cd/m² for resistive version/ 425 cd/m² for capacitive version
Vision angle	• 120° Vertical / 140° Horizontal
Touch panel	• 4 wires resistive or capacitive
Memory	• 32 Mb (other capacities available)*
Communication bus	• RS232 (9600 Bd to 355 kBd) • CAN 2.0B (100 kBd to 500 kBd) • USB2 for firmware and graphic charter updates through USB stick or PC
Max operating temperature	• -20°C ~ +70°C
Max storage temperature	• -30°C ~ +80°C
Power supply	• Two versions: 5V (+/-5%) and from 6 to 36V (+/-5%)
Max energy consumption	• 7W
EMC compliance	• NF-EN55022 B class (frequency range from 150 kHz to 2 Ghz) • NF-EN61000-4-2 (8 kV contact discharge / 15 kV air discharge) • NF-EN61000-4-3 (frequency range from 30 Mhz to 1 Ghz – 10 V/m)
Outline dimension	• 233.1 (W) x 126.5 (H) x 20 (D) mm
Weight	• 657 g. with stainless steel protective case

Product reference**   Denomination

Product reference**	Denomination
FA49-02032	9" Intelligent Display without panel (RS232/6-36V)
FA49-02033	9" Intelligent Display with resistive panel (RS232/6-36V)
FA49-02034	9" Intelligent Display with projective capacitive panel (RS232/6-36V)

* Please refer to the configuration table (p27)
** Non-exhaustive list

7" WVGA Intelligent Display

Thanks to the very popular display diagonal of 7» in the industry, this is the flagship model in the range of graphical display modules

It enables to display up to WVGA with a 425 cd/m² brightness for the capacitive version.

It is also available as «anti-vandalism» version.

Operating and technical characteristics

Display size	• 7''
Resolution	• 800 x 480 pixels (WVGA) / landscape or portrait format
Color LCD display management	• 16 millions colours / TFT active matrix
Viewing direction	• 6 hours
Viewing area	• 155.3 (W) x 94.3 (H) mm
180° rotation	• Not available
Backlight	• White LED • Lifespan: 40 kH
Brightness	• 400 cd/m² for resistive version / 425 cd/m² for capacitive version
Vision angle	• 120° Vertical / 140° Horizontal
Touch panel	• 4 wires resistive or capacitive
Memory	• 32 Mb (other capacities available)*
Communication bus	• RS232 (9600 Bd to 355 kBd) • CAN 2.0B (100 kBd to 500 kBd) • USB2 for firmware and graphic charter updates through USB stick or PC
Max operating temperature	• -20°C ~ +70°C
Max storage temperature	• -30°C ~ +80°C
Power supply	• Two versions: 5V (+/-5%) and from 6 to 36V (+/-5%)
Max energy consumption	• 4.5W
EMC compliance	• NF-EN55022 B class (frequency range from 150 kHz to 2 Ghz) • NF-EN61000-4-2 (8 kV contact discharge / 15 kV air discharge) • NF-EN61000-4-3 (frequency range from 30 Mhz to 1 Ghz – 10 V/m)
Outline dimension	• 186.8 (W) x 104.4 (H) x 17.7 (D) mm
Weight	• 400 g. with stainless steel protective case

Product reference**	Denomination
FA49-02029	7" Intelligent Display without panel (RS232/6-36V)
FA49-02030	7" Intelligent Display with resistive panel (RS232/6-36V)
FA49-02031	7" Intelligent Display with projective capacitive panel (RS232/6-36V)

* Please refer to the configuration table (p30)
** Non-exhaustive list

This is the flagship model for small interfaces.

It enables to display up to WQVGA with a 425 cd/m² brightness for the capacitive version.

It is also available as «anti-vandalism» version.

Operating and technical characteristics

Display size	• 4.3''
Resolution	• 480 x 272 pixels (WQVGA) : landscape or portrait format
Color LCD display management	• Up to 16 millions colours (depending on version) / TFT active matrix
Viewing direction	• 6 hours
Viewing area	• 96.7 (W) x 55.5 (H) mm
180° rotation	• Not available
Backlight	• White LED • Lifespan: 25 kH
Brightness	• 400 cd/m² for resistive version / 425 cd/m² for capacitive version
Vision angle	• 120° Vertical / 140° Horizontal
Touch panel	• 4 wires resistive or capacitive
Memory	• 16 MB (other capacities available)*
Communication bus	• RS232 (9600 Bd to 355 kBd) • CAN 2.0B (100 kBd to 500 kBd) • USB2 for firmware and graphic charter updates through USB stick or PC
Max operating temperature	• -20°C ~ +70°C
Max storage temperature	• -30°C ~ +80°C
Power supply	• Two versions: 5V (+/- 5%) et de 6 à 36V (+/- 5%)
Max energy consumption	• 1.7W
EMC compliance	• NF-EN55022 B class (frequency range from 150 kHz to 2 Ghz) • NF-EN61000-4-2 (8 kV contact discharge / 15 kV air discharge) • NF-EN61000-4-3 (frequency range from 30 Mhz to 1 Ghz – 10 V/m)
Outline dimension	• 123.5 (W) x 67.5 (H) x 15.9 (D) mm
Weight	• 158 g. with stainless steel protective case

Product reference**	Denomination
FA49-02026	4.3" Intelligent Display without panel (RS232/6-36V)
FA49-02027	4.3" Intelligent Display with resistive panel (RS232/6-36V)
FA49-02028	4.3" Intelligent Display with projective capacitive panel (RS232/6-36V)

* Please refer to the configuration table (p27)
** Non-exhaustive list

3.5" QVGA Intelligent Display

This is the latest model of this range of products.

It fulfills the increasing demand for displays of very small diagonals, especially in QVGA.

Its brightness in the capacitive version is 475 cd/m².

Operating and technical characteristics

Display size	• 3.5''
Resolution	• 320 x 240 pixels (QVGA) / landscape or portrait format
Color LCD display management	• Up to 16 millions colours (depending on version) / TFT active matrix
Viewing direction	• 6 hours
Viewing area	• 73.7 (W) x 55.3 (H) mm
180° rotation	• Not available
Backlight	• White LED • Lifespan: 20 kH
Brightness	• 450 cd/m² for resistive version / 475 cd/m² for capacitive version
Vision angle	• 70° Vertical / 80° Horizontal
Touch panel	• 4 wires resistive or capacitive
Memory	• 16 MB (other capacities available)*
Communication bus	• RS232 (9600 Bd to 355 kBd) • CAN 2.0B (100 kBd to 500 kBd) • USB2 for firmware and graphic charter updates through USB stick or PC
Max operating temperature	• -20°C ~ +70°C
Max storage temperature	• -30°C ~ +80°C
Power supply	• Two versions: 5V (+/- 5%) et de 6 à 36V (+/- 5%)
Max energy consumption	• 1W
EMC compliance	• NF-EN55022 B class (frequency range from 150 kHz to 2 Ghz) • NF-EN61000-4-2 (8 kV contact discharge / 15 kV air discharge) • NF-EN61000-4-3 (frequency range from 30 Mhz to 1 Ghz – 10 V/m)
Outline dimension	• 95.8 (W) x 64.5 (H) x 15.9 (D) mm
Weight	• 103 g. with stainless steel protective case

Product reference**	Denomination
FA49-02023	3.5" Intelligent Display without panel (RS232/6-36V)
FA49-02024	3.5" Intelligent Display with resistive panel (RS232/6-36V)
FA49-02025	3.5" Intelligent Display with projective capacitive panel (RS232/6-36V)

* Please refer to the configuration table (p27)
** Non-exhaustive list
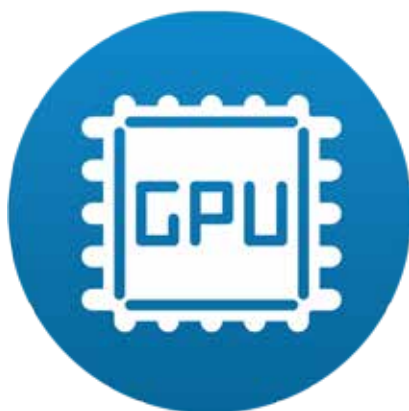
HMI Boards

5 models of boards that enable you
to rapidly design touch and fully customized graphic HMIs,
giving you full flexibility with regard to your specific needs.

An optimal choice for a unique result.

Display up to SVGA (800 x 600 pixels)

Compatible with every display

5 models of HMI boards

Serial RS232 or CAN connection

Integrated graphic engine and storage memory

10 years supplying period

The HMI Boards

You wish to integrate a Human-Machine Interface (HMI) into your application, using a LCD display, but this is not your core business?

While completely taking care of the graphic part of your project, without any advanced development required, Clairitec's HMI boards enable you to design HMIs very easily to be displayed on **LCD displays from a QVGA** (320 x 240) **to SVGA** (800 x 600) **resolution**.

The HMI boards leave you full flexibility with regard to the choice of a specific display model and with regard to the way of integratig the technology into device.

Indeep, ther are 5 models of HMI boards **compatible with every industrial display in the market**. Choose our HMI boards and develop your HMI directly from your business application with a simple set of commands.

Thanks to IronGraph, it is now possible to design extensive and customized HMIs with integrated real-time video up to SVGA (800 x 600 pixels).

This new feature is managed inside the board and enables you to be at the cutting edge of technology.

Equipped with a BGA case, guarantee of quality and reliability, the IronGraph board is compatible with 100% of the displays in the market thanks to an innovating process: a **"daughterboard" dedicated to each reference of display is mounted on the "motherboard" for a better flexibility.**

Technical and mechanical characteristics

LCD screen management	• TFT active matrix • Resolution: QVGA to SVGA, portrait or landscape format • 24-bits TTL LCD output, (16 millions colors), LVDS optional • LED backlighting management • Compatible with every display on the market thanks to a daughterboard dedicated to connectivity
Touch panel management	• Resistive or capacitive type • Integrated clicking calibration • Advanced clicking area processing
Video input management	• 2 inputs: NTSC, PAL or SECAM Composite
Integrated graphic engine	• Advanced display algorithms (CPU Risc 32 bits, 266 MHz) • 2 graphic pages and 1 video page, dynamically managed • Storage memory from 16 MB to 256 MB
Graphic charter management	• The GraphConverter software program enables to select the graphic elements and to upload them into the internal memory of the HMI board
Communication bus	• RS232 serial, programmable speed of 9600 Bd to 530 kBd • CAN2.0B serial, speed of 100 kBd to 500 kBd • USB2 for firmware and graphic charter updates, using a USB stick or a PC
Power supply	• 2 versions: 5V (+/- 5%) and from 6 to 36V (+/- 5%) • Maximum consumption: 800 mW without display
Size	• 85mm x 54mm

Product reference*	Denomination
FA01-1308	IronGraph HMI board

** Non-exhaustive list

StarGraph
Ideal for resolutions up to SVGA: 800 x 600 pixels

StarGraph enables to design extensive and customized HMIs by taking advantage of the latest innovations from GraphConverter (see page 4).

In the same manner as the IronGraph board, it is optimized for a display up to SVGA.

Equipped with a BGA case, guarantee of quality and reliability, the StarGraph board is compatible with 100% of the displays in the market thanks to an innovating process: a **"daughterboard" dedicated to each reference of display is mounted on the "motherboard" for a better flexibility.**

Technical and mechanical characteristics

LCD screen management	• TFT active matrix • Resolution: QVGA to SVGA, portrait or landscape format • 24-bits TTL LCD output, (16 millions colors), LVDS optional • LED backlighting management • Compatible with every display on the market thanks to a daughterboard dedicated to connectivity
Touch panel management	• Resistive or capacitive type • Integrated clicking calibration • Advanced clicking area processing
Integrated graphic engine	• Advanced display algorithms (CPU Risc 32 bits, 266 MHz) • 2 graphic pages dynamically managed • Storage memory from 16 MB to 256 MB
Graphic charter management	• The GraphConverter software program enables to select the graphic elements and to upload them into the internal memory of the HMI board
Communication bus	• RS232 serial, programmable speed of 9600 Bd to 530 kBd • CAN2.0B serial, speed of 100 kBd to 500 kBd • USB2 for firmware and graphic charter updates, using a USB stick or a PC
Power supply	• 2 versions: 5V (+/- 5%) and from 6 to 36V (+/- 5%) • Maximum consumption: 800 mW without display
Size	• 85mm x 54mm

Product reference*	Denomination
FA42-02035	StarGraph HMI board

* Please refer to the configuration table (p27)
** Non-exhaustive list

GraphLight is optimized for a resolution up to WQVGA (480 x 272 pixels) regardless of the display diagonal.

Its very limited mechanical size enables an easy integration into an electronic environment.

Technical and mechanical characteristics

LCD screen management	• TFT active matrix • Resolution: QVGA to WQVGA, portrait or landscape format • 16-bits TTL LCD output, (4,096 colors encoded in 4:4:4:4 RGB), LVDS optional • LED backlighting management • Compatible with every display on the market*
Touch panel management	• Resistive or capacitive type • Integrated clicking calibration • Advanced clicking area processing
Integrated graphic engine	• Advanced display algorithms (CPU Risc 32 bits, 144 MHz) • 2 graphic pages dynamically managed • Storage memory from 16 MB to 256 MB
Graphic charter management	• The GraphConverter software program enables to select the graphic elements and to upload them into the internal memory of the HMI board
Communication bus	• RS232 serial, programmable speed of 9600 Bd to 128 kBd • CAN2.0B serial, speed of 100 kBd to 500 kBd • USB2 for firmware and graphic charter updates, using a USB stick or a PC
Power supply	• 2 versions: 5V (+/- 5%) and from 6 to 36V (+/- 5%) • Maximum consumption: 550 mW without display
Size	• 59mm x 39mm

Product reference**	Denomination
FA01-1716	GraphLight HMI board

* PCB modification required (unlike other products equipped with the «daughterboard»)
** Non-exhaustive list

µModule
Ideal for high volumes: connection to be developped

The mechanical size of µModule is adaptable to your business application in order to create a 100% customized graphic and touch HMI up to WVGA.

This board is **based on the hardware of existing HMI boards but is not having connectors installed upon**. Their development remains to be done by yourself for a better competitiveness.

This board is especially interesting for projects with high production volumes.

µModule remains compatible with every displa.

Technical and mechanical characteristics

LCD screen management	• TFT active matrix • Resolution: QVGA to WVGA, portrait or landscape format • 16-bits TTL LCD output, (65,535 colors encoded in 5:6:5 RGB), LVDS optional
Touch panel management	• Resistive or capacitive type • Integrated clicking calibration • Advanced clicking area processing
Integrated graphic engine	• Advanced display algorithms (CPU Risc 32 bits, 200 MHz) • 2 graphic pages dynamically managed • Storage memory from 16 MB to 64 MB
Graphic charter management	• The GraphConverter software program enables to select the graphic elements and to upload them into the internal memory of the HMI board
Communication bus	• RS232 serial, programmable speed of 9600 Bd to 530 kBd • CAN2.0B serial, speed of 100 kBd to 500 kBd • USB2 for firmware and graphic charter updates, using a USB stick or a PC
Power supply	• 3.3V • Maximum consumption: 750 mW without display
Size	• 58mm x 48mm

Product reference*	Denomination
FA42-1107	µModule HMI board

** Non-exhaustive list

FlexGraph# FlexGraph

This is the one latest innovation from our engineering department: a unique concept optimized for graphic needs with very high volumes. Benefing from the same technology as the Graphlight HMI board, the FlexGraph board already has flexible circuit connecting cables installed. This makes the mechanical integration into a final device very fast and easy, and is thus an optional choice for hight volume production.

The FlexGraph board can be adapted to a display of your choice up to WQVGA (480 x 272 pixels).

Technical and mechanical characteristics

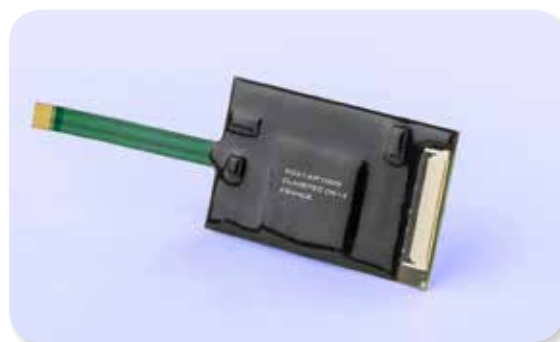|	
LCD screen management	• TFT active matrix • Resolution: QVGA to WQVGA, portrait or landscape format • 16-bits TTL LCD output, (4,096 colors encoded in 4:4:4:4 RGB), LVDS optional • Backlighting and brightness management • Compatible with every display on the market
Touch panel management	• Resistive or capacitive type • Integrated clicking calibration • Advanced clicking area processing
Integrated graphic engine	• Advanced display algorithms • 2 graphic pages dynamically managed • Storage memory from 16 MB to 256 MB
Graphic charter management	• The GraphConverter software program enables to select the graphic elements and to upload them into the internal memory of the HMI board
Communication bus	• RS232 serial, programmable speed of 9600 Bd to 128 kBd • CAN2.0B serial, speed of 100 kBd to 500 kBd • USB2 for firmware and graphic charter updates, using a USB stick or a PC
Power supply	• 5V (+/- 5%) • Maximum consumption: 550 mW without display
Size	• 32mm x 50mm (without flexible ribbon) • Custom made flexible ribbon adaptable to every display
Customer connectivity	• 0.5mm flexible ribbon

Product reference*	Denomination
FA01-1717	FlexGraph HMI board

* Non-exhaustive list

Configuration table of Clairitec's graphic products

Category	Feature	Programmable Intelligent Display (4,3")	Programmable Intelligent Display (7"/9")	9" Intelligent Display	7" Intelligent Display	4.3" Intelligent Display	3,5" Intelligent Display	IronGraph board	StarGraph board	GraphLight board	µModule board	FlexGraph board	Starter Kit HMI board	Starter Kit Intelligent Display	Starter Kit Programmable Intelligent isplay
Certi.	IP65	●	●												●
Certi.	EMC	●	●	●	●	●	○[1]	●[1]	●[1]	●[1]	●[1]	●[1]			●
Inputs / Outputs	PWM	●	●												●
Inputs / Outputs	Analog / Digital	●	●												●
Inputs / Outputs	Relays	●	●												●
Video	PAL / NTSC	△	●	△	△	△		●						●	△
Memory	256 MB	△	△	△	△	△	△	△	△	△		△		△	△
Memory	128 MB	△	△	△	△	△	△	△	△	△		△		△	△
Memory	64 MB	△	△	△	△	△	△	△	△	△	△	△		△	△
Memory	32 MB	●	●	●	●	●	●	●	●	●		●		●	●
Memory	16 MB	●	●	●	●	●	●	●	●	●	●	●		●	●
Touch	PCAP panel	●	●	●	●	●	●	●	●	●	○	△	△		
Touch	Resistive panel	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Touch	Non Touch	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Power Supply	LED Backlight Mgt.	●	●	●	●	●	●	●	●	●	○	○	●	●	●
Power Supply	12 to 36V	●	●												●
Power Supply	6 to 36V			●	●	●	●	●	●	●		△	●	●	●
Power Supply	5V			●	●	●	●	●	●	●		△	●	●	
Power Supply	3V3										●	●			
Com.	Ethernet	△	△												
Com.	RS485	●	●												●
Com.	USB²	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Com.	CAN	●	●	●	●	●	●	●	●	●	○	○	●	●	●
Com.	RS232	●	●	●	●	●	●	●	●	●	○	○	●	●	●
Resolution	SVGA							●	●			△		△	
Resolution	WVGA		●	●	●			●	●			●	●	●	●
Resolution	VGA							●	●	●		△		△	
Resolution	WQVGA	●				●		●	●	●		●	●	●	●
Resolution	QVGA						●	●	●	●	●	●	△	●	●

Key:

● Standard

○ Interface on application board

△ On demand

[1] Electronic board without display. Complete system compliance is the customer's responsibility.

² Standard USB for the upload into the memory of the HMI board, on demand for graphical commands

See datasheets for detailed information.

Starter Kits

The Starter Kits are the first step to easily and efficiently access Clairitec's products and solutions.

They include all necessary tools for the autonomous creation of your HMI.

Thanks to our detailed documentation, you will be able to design your interface on your own from your business application.

- A LCD with HMI Board or an Intelligent Display
- GraphConverter PC software program
- HMI board technical documentation
- Quick start guide and project examples
- Unlimited technical support for one year
- 1 day of training eligible to your dedicated budget

The Starter Kit

The first step in the conception of your Human-Machine Interface

The Starter Kit allows you to **design your graphic and touch HMI and to test it directly on a display**. You will be able to appreciate the rendering of the first images of your HMI on the display.

With the acquisition of a Starter Kit you will benefit from our expertise and skills in graphic design and HMI development. These will help you design your interface according to your specifications and will enable you to significantly reduce development time.

All of our products are available as «Starter Kits».

You will be in possession of **all the equipment needed to develop your future graphical interface**:

- One Clairitec HMI board and a touch LCD display
  or one Intelligent Display with capacitive or resistive touch panel
- GraphConverter software program with a graphical project example
- Quick Start Guide
- Technical documentation
- An application example
- Connecting cables
- Power supply 12V / 1A

Optional:
- One-day training within our premises
- Unlimited technical support for one year

Try our Starter Kit for free during one month!

Get trained in Human-Machine Interface creation

Clairitec is an authorized training organization according to the French law and registered under number 72 33 09191 33 to the prefect of "Region Aquitaine".

As such, **the training included in the Starter Kit can be attributed to your dedicated budget if applicable**. Don't hesitate to enquire at your joint commission for collective training (OPCA in France).

Graphic services and engineering studies

By choosing Clairitec's HMI solution, you will benefit from a strong expertise
in the creation and design of user-friendly interfaces.

You can also rely on the competence of our graphic designers
to help you imagine your fully customized interface.

We also offer custom electronic designs, mechanical adjustments,
protocol studies or other services on demand.

- Usability and effectiveness study of your HMI
- Creation of your graphic library
- Graphic elements design
- HMI screens division
- Project creation with GraphConverter
- Electronics services on demand

Graphic services

A user-friendly and intuitive HMI enables an easier use and controlling of industrial equipment.

Special attention must therefore be paid to the design and the graphic quality of your future user interface.

Thanks to our additional offer of graphic services, **you can rely on our experience and focus on your business application.**

From the study to the complete design of your HMI, we offer diverse graphic services to best meet your needs.

Study of the user-friendliness and effectiveness according to your specifications:

- Definition of the interface functionalities, user actions, sequence of the different screens, choice of menus…

Design of the graphical elements of your interface with Photoshop:

- Complete design of the graphic library according to your brand and the context of use of the product: colors choice, background, buttons, widgets, icons…
- Design of graphical elements according to visual guidelines (model provided)
- Graphical modernization of an existing HMI

Creation of the project for the HMI boards:

- HMI screens division
- Measurement of coordinates for texts and pictures
- Definition and measurement of touch area coordinates
- Provision of all coordinates in form of a .h file in #define
- Creation of the GraphConverter project to be uploaded into the board

Complete creation of your HMI:

- Usability and effectiveness study
- Graphic design
- Project creation for the HMI boards

As designer and manufacturer, all our products can be adapted on demand (hardware and software).

Quality and guaranteed supplying period

ISO 9001 certification since 2006

Focus on customer satisfaction

Continuous improvement

10 years guaranteed supply period

Guarantee of product availability

Preservation of functionalities/performances/dimensions

Quality

Since its creation, the entirety of Clairitec is committed to a quality approach.

The **satisfaction of our customers is central to our decisions** and an integral part of our internal and external processes.
This process of continuous improvement was **recognized in 2006 by obtaining the ISO 9001 certification** from AFNOR.

Renewed for three years in 2015, this certification validates all the actions carried out daily by our team but also our involvement in the major social and environmental issues.

Guaranteed supplying period

Clairitec commits itself to supply its electronic HMI boards during a period of at least 10 years, starting from the date of creation of the board.

More precisely, Clairitec guarantees:

- the **availability** of the HMI boards
- the **preservation of the various functionalities** of the HMI boards
- the **preservation (or even improvement) of the performance** of the HMI boards
- the **preservation of the dimensions** of the HMI boards

This commitment takes effect with the first delivery of an electronic board and includes the following boards:

- IronGraph (year of creation : 2014)
- StarGraph (year of creation : 2014)
- GraphLight (year of creation : 2015WWWW)

The products from the "Intelligent Display" and "Programmable Intelligent Display" (PID) product range are equipped with the HMI boards IronGraph, StarGraph, or GraphLight, as well as with a programmable board in the case of the PID. These are covered by the same guaranteed supply period.

The ISO 9001 certification from AFNOR as well as the complete declaration about the guaranteed supply period can be provided on request.

St@rtec Developpement

Clairitec is a member of the St@rtec Developpement group which was created in 2015.

St@rtec Developpement contributes to the creation of a greener world through its activites in the field of electronics and sustainable development. Thanks to a strong focus on innovation, the group is destined to become a major actor in global energy transition.

Besides Clairitec, St@rtec Developpement is composed of two other companies: Ventec and Neogy.

Ventec

Leveraging on its wide and proven expertise in the hardware and software design of electronic boards for the management of lithium batteries (BMS), Ventec ensures the performance and the safety of such batteries for all kind of applications.

The capitalization of experience in the management of lithium batteries makes Ventec one of the leader in the following market:
• Energy storage
• Electric transportation devices (electric bikes, scooters, go-karts...)
• Electric and hybrid vehicles
• Back-up energy systems
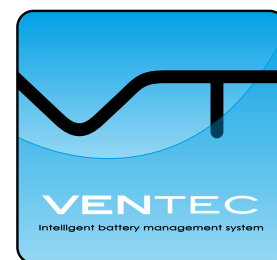
Neogy

Founded in 2016, Neogy designs and produces autonomous and mobile systems for the production, the storage and the delivery of renewables energies:

• **Respect of the environment**: the energy is produced from renewable and clean energy (solar panels, wind turbines, fuel cells, biomass ...).
• **Autonomy**: these systems are mobile and can work off grid.
• **Hybridization of energy** sources to erase the weaknesses inherent in each type of renewable energy source.
• **Efficiency**: conversion between energy yields are maximized to reduce energy losses.

For 20 years, Clairitec has been offering graphic products to design fully customizable HMIs for all industries.

Every product is designed, manufactured and tested in France.
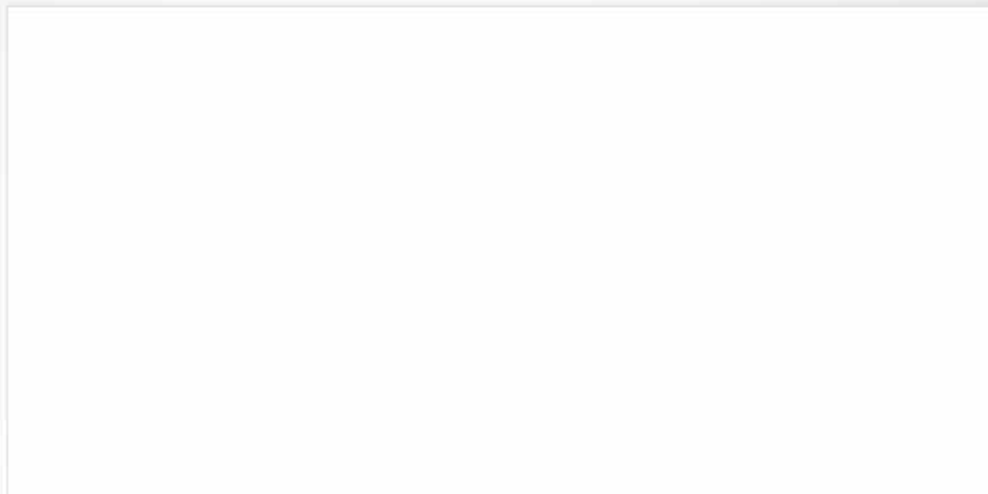
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