



# Product catalog

## All-in-one HMI (+ I/O control) solution

**HMI Solution**

**Programmable Displays**

**Intelligent Displays**

**HMI Boards**

**Starter Kits**

**Graphic Services & Quality**



# Introduction

## Clairitec guides you throughout your graphical projects

Clairitec is a French designer and manufacturer that offers innovative graphic display and programmable controller 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 inspired by an ever-changing global market.

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










## A range of graphics and I/O management products for all your graphical interfaces

Clairitec's all-in-one HMI (+ I/O management) solution is a complete system allowing rapid development and easy HMI (Human Machine Interface) and I/O (Input/Output) management.

The solution - including hardware and software - allows engineers to integrate terminals, modules or HMI cards.

- graphics & HMI applications with touch screens
- graphics & HMI applications with touch screens and I/O management.

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# Overview of our products and solutions

## **Programmable Intelligent Displays**

Graphic control terminals, programmable in high-level language, EMC pre-qualified and protected IP65 on the front panel. The terminals include a graphical touch screen, several inputs/outputs for direct control of your equipment, as well as - depending on the version - a programmable card to host your main application.

## **Smart Displays**

HMI display modules prequalified for EMC and controlled directly via a serial link.

## **HMI boards**

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

# Range of products

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 you with all the tools you need to create your own GUI as well as a day of unlimited training and technical support for one year when you purchase a Starter Kit.

### 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)



HMI solution

# Logiciel GraphConverter PC software

Clairitec's HMI and I/O management solution contains all the necessary hardware and software to easily equip your devices with display modules or I/O control terminals and provide them with a personalized graphic and tactile HMI.

Thanks to the command set provided, you can program the HMI and I/O by making your graphical user interface and application functions more dynamic.

The GraphConverter PC software allows you to create the different pages of your graphic interface by freely placing your own elements (images, text areas, video windows and touch areas) according to your needs and preferences. These items are then saved in the memory of the HMI card.

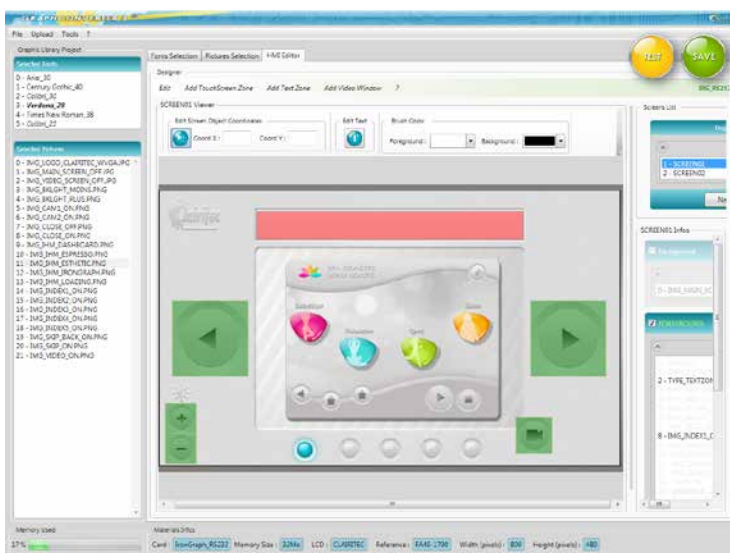


## Fonts and images

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 HumanMachine Interface and to upload them directly into the internal memory of the HMI boards.

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



## 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.



# How the Clairitec solution works

## A simple serial link to connect

All you have to do is connect your business card to our HMI card via a simple serial link (RS232, CAN, etc.). 2.0B or USB). The communication between the two cards is then carried out via a set of commands (supplied by default in language C).

The HMI card works as an «external graphics block» to complement your business card.

## A set of 25 commands to implement

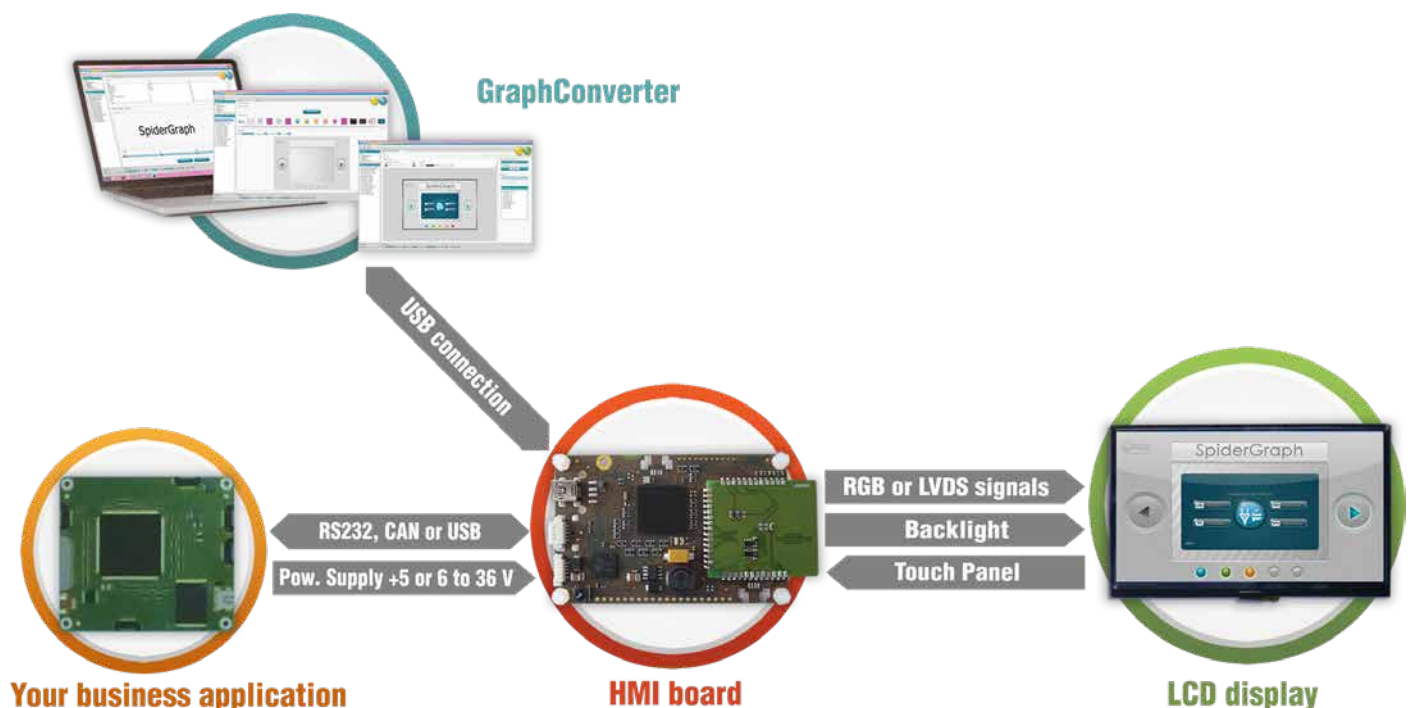
Contrary to most HMI solutions on the market which require a long and specific development, the graphics engine (firmware) of our cards is already developed. We provide you with a set of 25 simple commands, to be implemented directly into your business code to build and manage your GUI.

These specific commands are sent from your application to our HMI card via the serial port (RS232, CAN or USB) and thanks to the graphics engine integrated in the HMI card, they are transformed into a display on an LCD screen with or without touch panel. Some of them can also be used to integrate analog video and manage communication with the touch panel.

This allows you to display display primitives, fonts and images according to your needs.

## Simple and fast for efficient interfaces

Within the framework of your graphic project, additional development within your application is therefore limited to sending commands, sequencing and managing touch events.





# Creating a GUI with GraphConverter

## 1. Selection of fonts

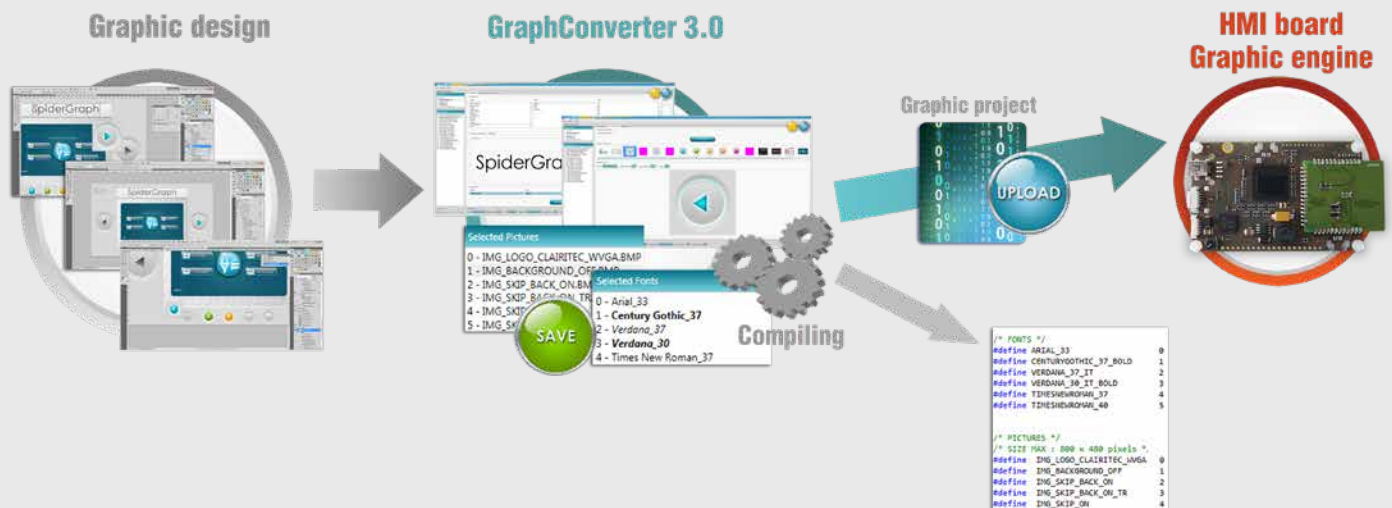
## 2. Selection and upload of the graphic elements of your choice (BMP, JPEG, PNG)

## 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:

- Images / fonts / Predefined screens in the Storage memory from the HMI card



## 5. Integration of the GraphicProject.h file into the code of your main application

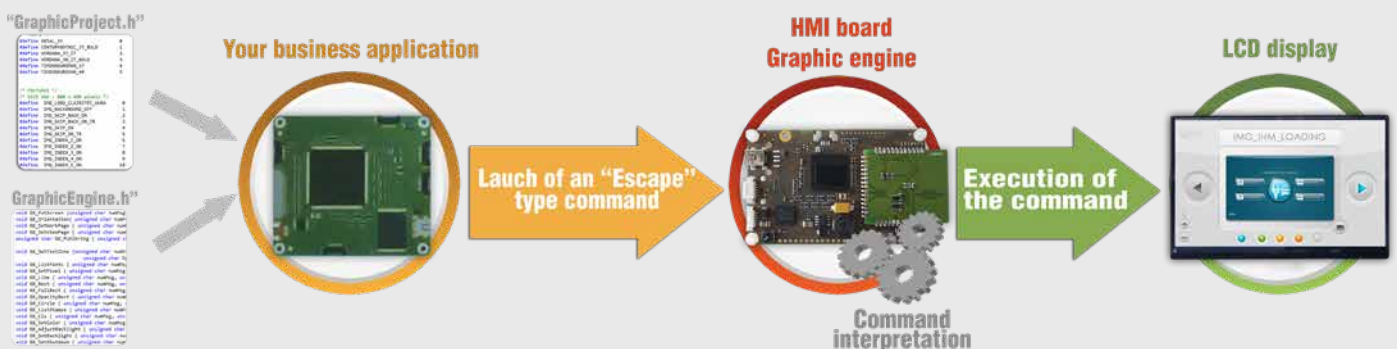
- Names and coordinates of images / touch areas / text zone
- Composition of the various predefined screens

## 6. Integration of the commands (by default provided in C)

- Into the code of your main application.

## 7. Possibility to test the various commands

- Ideal to get a first rendering of your HMI on the display





# Programmables Intelligent Displays

# Programmables Intelligents Displays

## With I/O management



Our Programmable Intelligent Displays can be easily and quickly integrated into your industrial equipment.

They are equipped with TFT Screens, with or without touch panel, a HMI card, several inputs and outputs, and possibly a programmable card (high level language) to host your main application.

All components are integrated in an EMC pre-qualified and IP65-protected case (front panel), allowing easy installation.

This new product range, while benefiting from the many advantages of Clairitec’s HMI solution, goes even further by also assuming the role of programmable logic controller driving your industrial equipment.



Available in 3 Sizes of Screens, equipped with a resistive or capacitive Touch Screen, this HMI terminal perfectly meets the new requirements of the industry. The terminal’s protective front glass is customizable, adapted to your needs.

## I/O management



The Programmable Intelligent Display is able to easily control inputs and outputs thanks to a set of dedicated commands provided by Clairitec and integrated into your application code in the same way as graphic commands (non-exhaustive list):

### Orders

### Functions

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

## Four types of mounting are possible



«Desk» version: on request only

## Two modes of operation

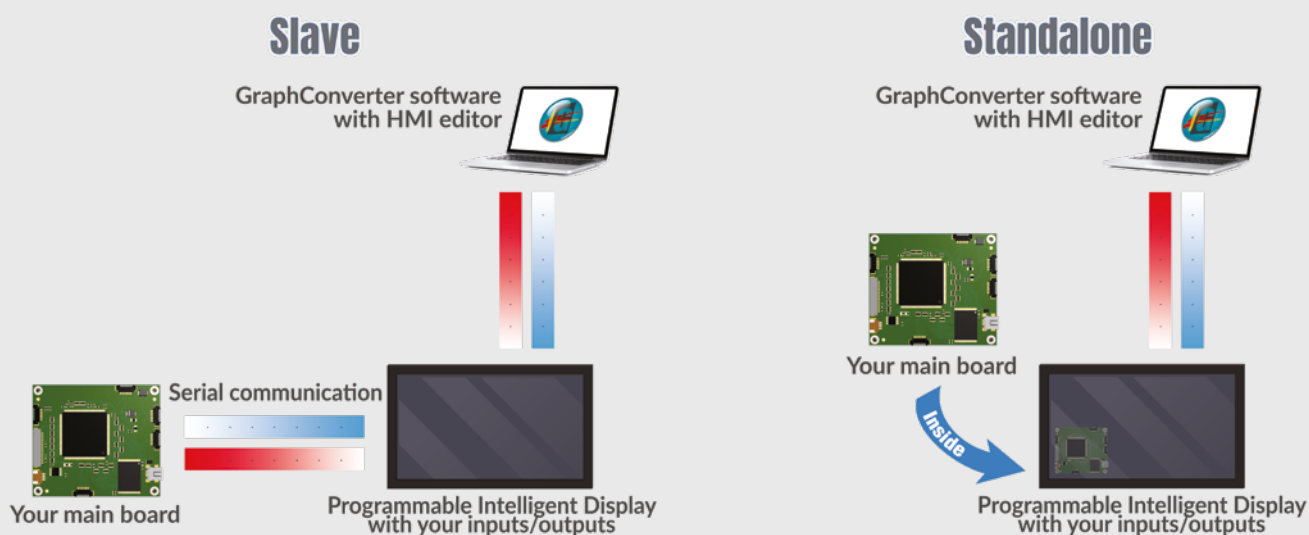
### Slave

In this mode, the Programmable Intelligent Display does not contain a programmable card. The main application board is located outside the case and connected via serial communication (similar to the Smart Displays).

### Autonomous

The Programmable Intelligent Display additionally integrates a programmable microprocessor card with already developed base layers:

- Clairitec standard programmable card
- Customized programmable card of the industrialist



## Modular according to your needs

It is possible to expand the type and number of basic inputs/outputs for specific needs.

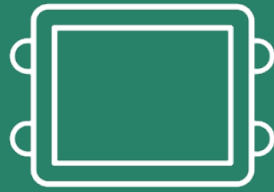
It is also possible to add additional features :

- Wireless communication such as Bluetooth, Sigfox, WiFi ...
- Additional bus communication such as CANopen, Ethernet, Modbus ...
- Special sensors ...

# Technical and mechanical characteristics

Display sizes and resolutions	<ul style="list-style-type: none"> <li>• 4,3" WQVGA (480 x 272 pixels)</li> <li>• 7" WVGA (800 x 480 pixels)</li> <li>• 9" WVGA (800 x 480 pixels)</li> </ul>
Casing	<ul style="list-style-type: none"> <li>• Waterproof front side according to IP65</li> <li>• 4 configurations</li> <li>• Customizable graphic design of the protective glass (front side)</li> </ul>
From 10 to 14 entrées (depending on version)	<ul style="list-style-type: none"> <li>• Digital (0V to power supply)</li> <li>• Analog (0V to power supply)</li> <li>• Temperature (PT100/PT1000 + thermocouple)</li> <li>• Real time video(NTSC/PAL) (optional)</li> </ul>
From 10 to 16 sorties (depending on version)	<ul style="list-style-type: none"> <li>• Relays (NO/NC, NO)</li> <li>• Digital (0V to power supply)</li> <li>• PWM (Pulse Width Modulation) (0V to power supply)</li> <li>• Analog (0V to 10V)</li> </ul>
Color LCD display management	<ul style="list-style-type: none"> <li>• TFT active matrix, 24 bits (up to 16 million colors)</li> </ul>
Viewing direction	<ul style="list-style-type: none"> <li>• 6 hours</li> </ul>
Viewing area	<ul style="list-style-type: none"> <li>• 9" : 198.0 (W) x 111.7 (H) mm</li> <li>• 7" : 155.3 (W) x 94.3 (H) mm</li> <li>• 4,3" : 96.7 (W) x 55.5 (H) mm</li> </ul>
180° rotation	<ul style="list-style-type: none"> <li>• 9" : available</li> <li>• 7" : not available</li> <li>• 4,3" : not available</li> </ul>
Backlight	<ul style="list-style-type: none"> <li>• White LED</li> <li>• Lifetime: 25 kH to 40 kH (depending on version)</li> </ul>
Brightness	<ul style="list-style-type: none"> <li>• 400 cd/m<sup>2</sup> for resistive version / 425 cd/m<sup>2</sup> for capacitive version</li> </ul>
Vision angle	<ul style="list-style-type: none"> <li>• 120° Vertical / 140° Horizontal</li> </ul>
Touch panel	<ul style="list-style-type: none"> <li>• 4 wires resistive or capacitive</li> </ul>
Memory	<ul style="list-style-type: none"> <li>• 32 Mo (other capacities availables)*</li> </ul>
Communication bus	<ul style="list-style-type: none"> <li>• Serial RS232, speed from 9600 Bd to 355 kBd</li> <li>• CAN 2.0B, speed from 100 kBd to 500 kBd</li> <li>• RS485, speed from 9600 Bd to 355 kBd</li> <li>• USB</li> <li>• Set of provided commands to display graphic elements and steer the inputs/ outputs</li> </ul>
Max operating temperature	<ul style="list-style-type: none"> <li>• -20°C ~ +70°C</li> </ul>
Max storage temperature	<ul style="list-style-type: none"> <li>• -30°C ~ +80°C</li> </ul>
Alimentation	<ul style="list-style-type: none"> <li>• 12-36V (+/- 5%)</li> </ul>
Max energy consumption	<ul style="list-style-type: none"> <li>• 9" : 9W</li> <li>• 7" : 6W</li> <li>• 4,3" : 3W</li> </ul>
EMC compliance	<ul style="list-style-type: none"> <li>• NF-EN55032 B class (frequency range from 150 kHz to 2 Ghz)</li> <li>• NF-EN61000-4-2 (8 kV contact discharge / 15 kV air discharge)</li> <li>• NF-EN61000-4-3 (frequency range from 30 Mhz to 1 Ghz – 10 V/m)</li> </ul>
Outline dimension	<ul style="list-style-type: none"> <li>• Depending on mounting type and display size</li> </ul>
Weight	<ul style="list-style-type: none"> <li>• Depending on mounting type and display size</li> </ul>

\* refer to the configuration table at the end of the document.



# Smart Displays

## A ready-to-install HMI module

The Intelligent Display is a ready-to-install EMC pre-qualified display module. It integrates a plug & play graphic display module combining Clairitec HMI board technology, a TFT display with integrated touch panel and 4 quick mounting points.

The Intelligent Display, connected to your motherboard via a serial connection (RS232, CAN2.0B, USB), is an extension of your main application. It is driven by a set of control commands provided to be integrated in the main code of your device.



The graphic display module concept is available as standard in 9", 7", 4.3" and 3.5" diagonals.

It is also possible to make customized versions for the display of your choice.

Example: Transflective screen for optimal readability in direct sunlight or 5.7" display.

## Enclosure & EMC pre-qualification

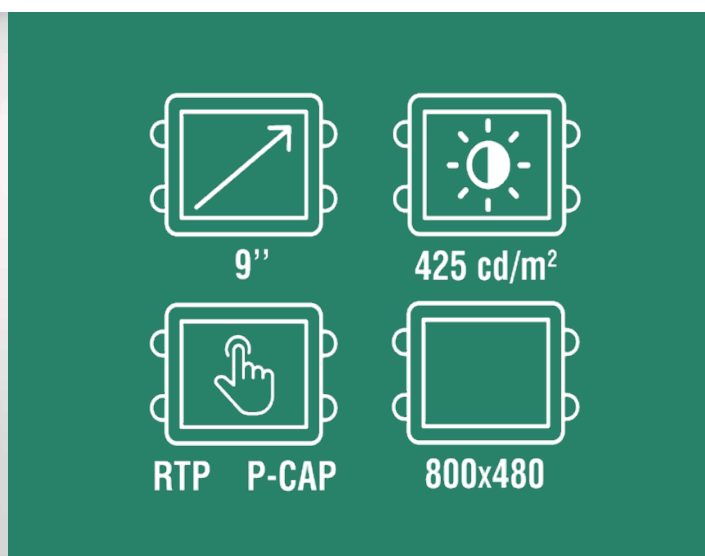
The display module is delivered in a stainless steel housing with 4 fixing points, which allows you to integrate it very quickly and easily into your device.

The Intelligent Display has been designed, tested and laboratory validated for electromagnetic compatibility (EMC) to ensure that no electromagnetic interference occurs when using the module in your device.

This is critical because the display and its connectors, when not properly shielded, often cause high emissions and unwanted interference with other components.



# 9" WVGA Intelligent Display

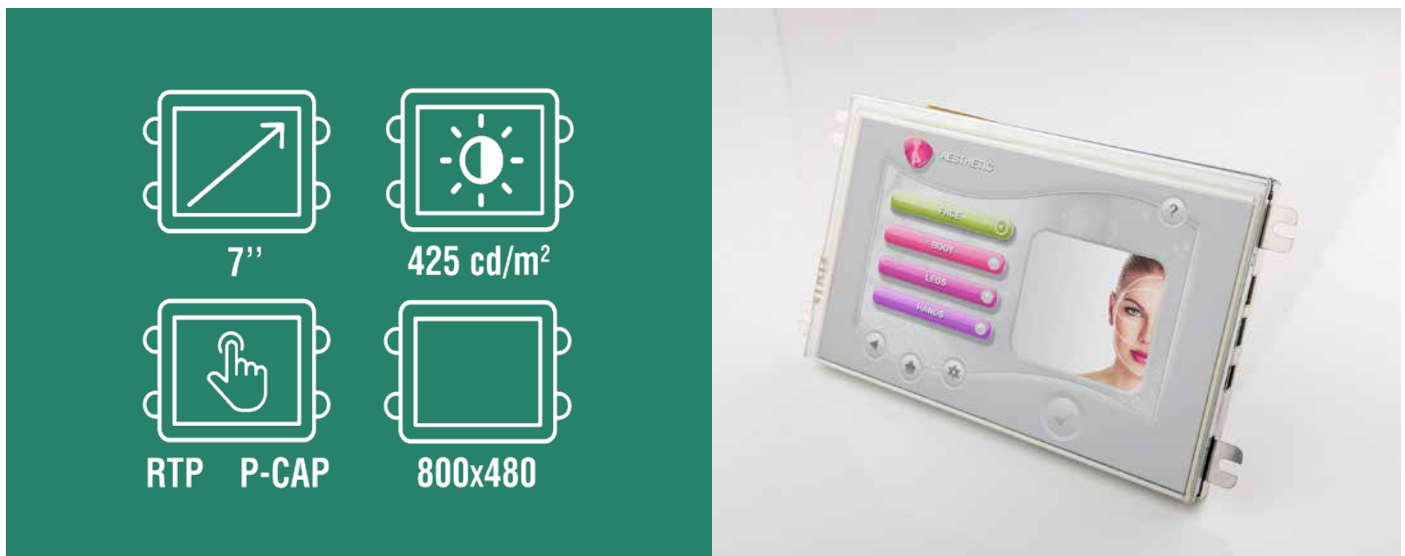


## Technical and mechanical characteristics

Size	• 9"
Resolution	• 800 x 480 pixels (WVGA) / portrait or landscape format
LCD screen management couleur	• 16 millions colors / TFT active matrix
Sense of vision	• 6 hours
Active Vision Zone	• 198.0 (W) x 111.7 (H) mm
Rotation 180°	• Available
Backlighting	• LED white
Brightness	• 400 cd/m² resistive / 425 cd/m² capacitive version
Viewing angle (typ.)	• 120° Vertical / 140° Horizontal
Touch panel	• 4 wires resistive or capacitive
Memory	• 32 Mo (other capacities available)*
Communication bus	<ul style="list-style-type: none"> <li>• RS232 (9600 Bd to 355 kBd)</li> <li>• CAN 2.0B (100 kBd to 500 kBd)</li> <li>• USB2 for firmware and graphic charter updates, using a USB stick or a PC</li> </ul>
Operating temperature (max.)	• -20°C ~ +70°C
Storage temperature (max.)	• -30°C ~ +80°C
Alimentation	• Two versions : 5V (+/- 5%) et de 6 à 36V (+/- 5%)
Maximum consumption	• 7W
EMC Standards	<ul style="list-style-type: none"> <li>• NF-EN55032 B class (frequency range 150 kHz to 2 Ghz)</li> <li>• NF-EN61000-4-2 (8 kV contact discharge / 15 kV air discharge)</li> <li>• NF-EN61000-4-3 (frequency range of 30 Mhz to 1 Ghz - 10 V/m)</li> </ul>
Overall dimensions	• 233.1 (W) x 126.5 (H) x 20 (D) mm
Weight	• 657 g. with stainless steel protective frame

\* refer to the configuration table at the end of the document.

# 7" WVGA Intelligent Display

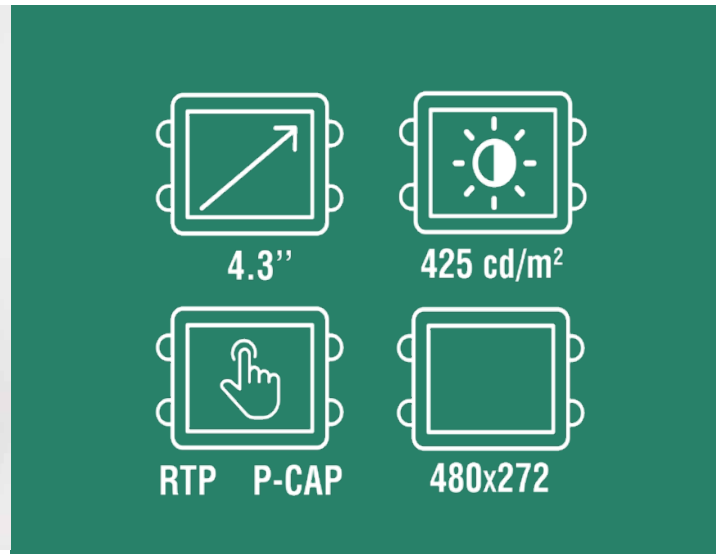


## Technical and mechanical characteristics

Size	• 7"
Resolution	• 800 x 480 pixels (WVGA) / portrait or landscape format
LCD screen management couleur	• 16 millions colors / TFT active matrix
Sense of vision	• 6 hours
Active Vision Zone	• 155.3 (W) x 94.3 (H) mm
Rotation 180°	• Not available
Backlighting	• LED white
Brightness	• 400 cd/m² resistive / 425 cd/m² capacitive version
Viewing angle (typ.)	• 120° Vertical / 140° Horizontal
Touch panel	• 4 wires resistive or capacitive
Memory	• 32 Mo (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, using a USB stick or a PC
Operating temperature (max.)	• -20°C ~ +70°C
Storage temperature (max.)	• -30°C ~ +80°C
Alimentation	• Two versions: 5V (+/- 5%) et de 6 à 36V (+/- 5%)
Maximum consumption	• 4.5W
EMC Standards	• NF-EN55032 B class (frequency range 150 kHz to 2 Ghz) • NF-EN61000-4-2 (8 kV contact discharge / 15 kV air discharge) • NF-EN61000-4-3 (frequency range of 30 Mhz to 1 Ghz - 10 V/m)
Overall dimensions	• 186.8 (W) x 104.4 (H) x 17.7 (D) mm
Weight	• 400 g. with stainless steel protective frame

\* refer to the configuration table at the end of the document.

# 4.3" WQVGA Intelligent Display

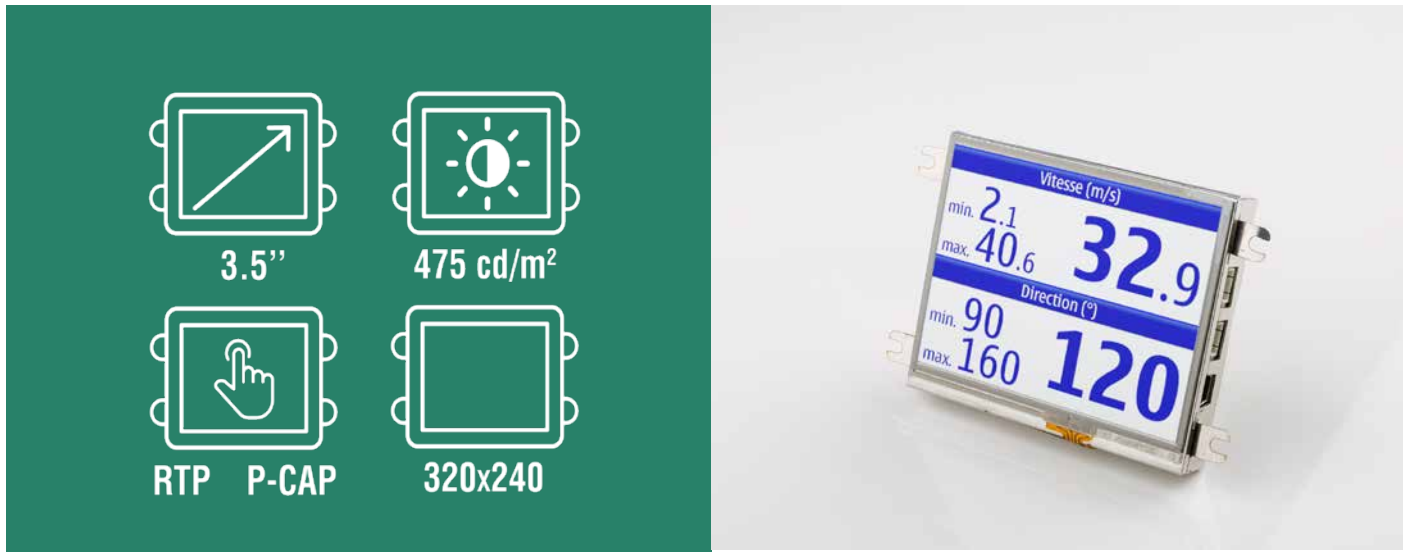


## Technical and mechanical characteristics

Size	• 4.3"
Resolution	• 480 x 272 pixels (WQVGA) / portrait or landscape format
LCD screen management couleur	• Up to 16 million colors (depending on model) / TFT active matrix
Sense of vision	• 6 hours
Active Vision Zone	• 96.7 (W) x 55.5 (H) mm
Rotation 180°	• Not available
Backlighting	• LED white
Brightness	• 400 cd/m² resistive / 425 cd/m² capacitive version
Viewing angle (typ.)	• 120° Vertical / 140° Horizontal
Touch panel	• 4 wires resistive or capacitive
Memory	• 32 Mo (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, using a USB stick or a PC
Operating temperature (max.)	• -20°C ~ +70°C
Storage temperature (max.)	• -30°C ~ +80°C
Alimentation	• Two versions : 5V (+/- 5%) et de 6 à 36V (+/- 5%)
Maximum consumption	• 1.7W
EMC Standards	• NF-EN55032 B class (frequency range 150 kHz to 2 Ghz) • NF-EN61000-4-2 (8 kV contact discharge / 15 kV air discharge) • NF-EN61000-4-3 (frequency range of 30 Mhz to 1 Ghz - 10 V/m)
Overall dimensions	• 123.5 (W) x 67.5 (H) x 15.9 (D) mm
Weight	• 158 g. with stainless steel protective frame

\* refer to the configuration table at the end of the document.

# 3.5" QVGA Intelligent Display

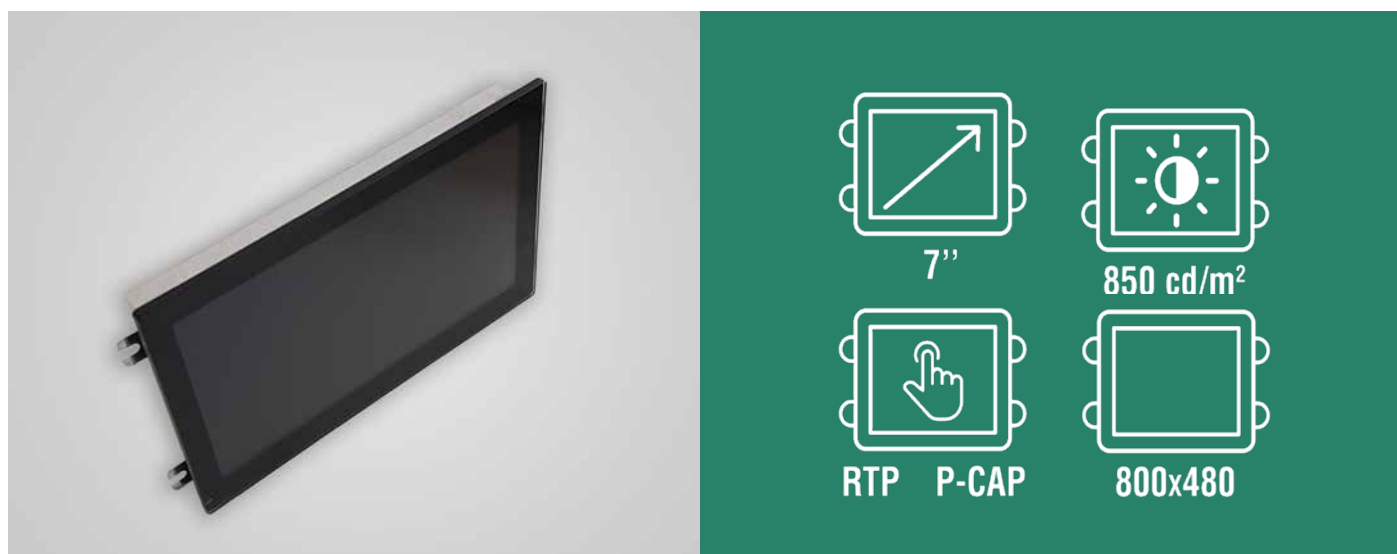


## Technical and mechanical characteristics

Size	• 3.5"
Resolution	• 320 x 240 pixels (QVGA) / portrait or landscape format
LCD screen management couleur	• Up to 16 million colors (depending on model) / TFT active matrix
Sense of vision	• 6 hours
Active Vision Zone	• 73.7 (W) x 55.3 (H) mm
Rotation 180°	• Not available
Backlighting	• LED white
Brightness	• 450 cd/m² resistive / 475 cd/m² capacitive version
Viewing angle (typ.)	• 70° Vertical / 80° Horizontal
Touch panel	• 4 wires resistive or capacitive
Memory	• 32 Mo (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, using a USB stick or a PC
Operating temperature (max.)	• -20°C ~ +70°C
Storage temperature (max.)	• -30°C ~ +80°C
Alimentation	• Two versions : 5V (+/- 5%) et de 6 à 36V (+/- 5%)
Maximum consumption	• 1W
EMC Standards	• NF-EN55032 B class (frequency range 150 kHz to 2 Ghz) • NF-EN61000-4-2 (8 kV contact discharge / 15 kV air discharge) • NF-EN61000-4-3 (frequency range of 30 Mhz to 1 Ghz - 10 V/m)
Overall dimensions	• 95.8 (W) x 64.5 (H) x 15.9 (D) mm
Weight	• 103 g. with stainless steel protective frame

\* refer to the configuration table at the end of the document.

# IK09-10 Intelligent Display anti-vandalism



## Technical and mechanical characteristics

### Screen

Size	• 7" (can be adapted in 4.3" or 9")
Resolution	• 800 x 480 pixels
Brightness	• 850 cd/m2 (with 4mm of glass), sunlight readability
Contraste	• 400 : 1
Colors	• 262, 144
Angles of vision	• 130° vertical / 140° horizontal
LED lifetime	• 50 K hours
Temperature	• -20°C to 70°C

### Protective glass and touch panel

Type	• 4 mm toughened glass
Protection anti-choc	• IK09 or IK10
Size	• Tailor-made, depending on the integration
Silk-screen printing	• Ceramic paint in option
UV resistance	• Specific treatment in option
Behaviour with water	• No untimely leaning in the rain

### Montage

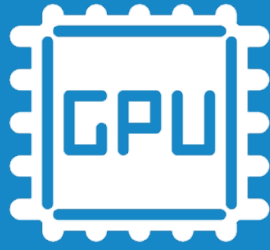
Optical bonding	• OCA (protective glass, touch screen)
Lamination	• +400% contrast ratio (protective glass, Touch Screen)

### Communication

The intelligent display is connected to the motherboard via RS232, CAN 2.0B or USB.

A group of graphical commands is provided to display images, texts, activate the touch panel, add simple drawings, etc ...





HMI boards



# HMI boards

## Total flexibility for your project with embedded HMI boards

On-board HMI boards give you total flexibility in choosing a specific display model and how to integrate the on-board HMI technology into your device.

All embedded HMI cards contain an integrated graphics processor and a dedicated Storage memory from storage for your graphical user interface. The display (+ touch panel) are directly connected and driven by the Clairitec HMI card.

Unlike Programmable Intelligent Displays and Smart Displays, which are terminals or display modules delivered in a ready-to-install case, HMI cards give you the freedom to integrate the card and the display into your device.

## Adaptable to all display models

You can use the HMI boards with the standard Clairitec display models (9", 7", 4,3", 3,5"), or you can use the display of your choice:

- Adaptable to all types of TFT screens
- RGB or LVDS interface compatibility

The ability to adapt the on-board HMI boards to any display model gives you a wide range of options for your application :

- Work with a display size of your choice (e.g. 2.7 " , 5.7", ...)
- Use a display that precisely meets your requirements (viewing angles, lifetime, consumption, etc.).
- Use a manufacturer's specific display reference
- Work with particular display technologies (e.g. transfective displays, ...).



IronGraph integrates the management of two cameras simultaneously.

The card is compatible with 100% of the displays on the market thanks to a «daughter» card dedicated to each display reference.



RTP P-CAP



NTSC / PAL



800x600 MAX



## Technical and mechanical characteristics

LCD screen management	<ul style="list-style-type: none"> <li>• TFT active matrix</li> <li>• Resolution: QVGA to SVGA, portrait or landscape format</li> <li>• 24-bits TTL LCD output, (16 millions colors), LVDS in option</li> <li>• LED backlighting management</li> <li>• Compatible with every display on the market thanks to a daughterboard dedicated to connectivity</li> </ul>
Touch panel management	<ul style="list-style-type: none"> <li>• Resistive or capacitive type</li> <li>• Integrated clicking calibration</li> <li>• Advanced clicking area processing</li> </ul>
Video input management	<ul style="list-style-type: none"> <li>• 2 inputs: NTSC, PAL ou SECAM Composite</li> </ul>
Integrated graphic engine	<ul style="list-style-type: none"> <li>• Advanced display algorithms (CPU Risc 32 bits, 266 MHz)</li> <li>• 2 graphic pages and 1 video page, dynamically managed</li> <li>• Storage memory from 16 Mo to 256 Mo</li> </ul>
Graphic charter management	<ul style="list-style-type: none"> <li>• The GraphConverter software program enables to select the graphic elements and to upload them into the internal memory of the HMI board</li> </ul>
Communication bus	<ul style="list-style-type: none"> <li>• RS232 serial, programmable speed of 9600 Bd to 530 kBd</li> <li>• CAN2.0B serial, speed of 100 kBd to 500 kBd</li> <li>• USB2 for firmware and graphic charter updates, using a USB stick or a PC</li> </ul>
Alimentation	<ul style="list-style-type: none"> <li>• 2 versions: 5V (+/- 5%) and from 6 to 36V (+/- 5%)</li> <li>• Maximum consumption: 800 mW without display</li> </ul>
Size	<ul style="list-style-type: none"> <li>• 85mm x 54mm</li> </ul>



With StarGraph, you can design rich, custom GUIs with the latest innovations from GraphConverter.

The card is compatible with 100% of the displays on the market thanks to a «daughter» card dedicated to each display reference.



800x600 MAX



RTP P-CAP

## Technical and mechanical characteristics

LCD screen management	<ul style="list-style-type: none"> <li>• TFT active matrix</li> <li>• Resolution: QVGA to SVGA, portrait or landscape format</li> <li>• 24-bits TTL LCD output, (16 millions colors), LVDS in option</li> <li>• LED backlighting management</li> <li>• Compatible with every display on the market thanks to a daughterboard dedicated to connectivity</li> </ul>
Touch panel management	<ul style="list-style-type: none"> <li>• Resistive or capacitive type</li> <li>• Integrated clicking calibration</li> <li>• Advanced clicking area processing</li> </ul>
Integrated graphic engine	<ul style="list-style-type: none"> <li>• Advanced display algorithms (CPU Risc 32 bits, 266 MHz)</li> <li>• 2 graphic pages dynamically managed</li> <li>• Storage memory from 16 Mo to 256 Mo</li> </ul>
Graphic charter management	<ul style="list-style-type: none"> <li>• The GraphConverter software program enables to select the graphic elements and to upload them into the internal memory of the HMI board</li> </ul>
Communication bus	<ul style="list-style-type: none"> <li>• RS232 serial, programmable speed of 9600 Bd to 530 kBd</li> <li>• CAN2.0B serial, speed of 100 kBd to 500 kBd</li> <li>• USB2 for firmware and graphic charter updates, using a USB stick or a PC</li> </ul>
Alimentation	<ul style="list-style-type: none"> <li>• 2 versions: 5V (+/- 5%) and from 6 to 36V (+/- 5%)</li> <li>• Maximum consumption: 800 mW without display</li> </ul>
Size	<ul style="list-style-type: none"> <li>• 85mm x 54mm</li> </ul>

Its very small mechanical format allows it to be easily integrated into an electronic system.



480x272 MAX



RTP P-CAP



## Technical and operational characteristics

### LCD screen management

- TFT active matrix
- Resolution: from QVGA to WQVGA portrait or landscape format
- 16-bit TTL LCD output, (4,096 colors encoded in 4:4:4 RGB), LVDS in option
- LED backlighting management
- Compatible with all displays 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 Mo to 256 Mo

### 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

### Alimentation

- 2 versions: 5V (+/- 5%) and from 6 to 36V (+/- 5%)
- Maximum consumption: 550 mW without display

### Size

- 59mm x 39mm

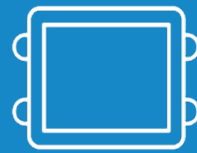
\* PCB modification required (contrary to previous boards which are equipped with a «daughter» board)



The μModule card is based on the hardware of the StarGraph card but has no connectors.

It is compatible with all displays and has the same functionalities as StarGraph.

The latter remains to be developed by you for a better competitiveness. It is therefore particularly attractive for high volume production projects.



800x480 MAX



RTP P-CAP

## Technical and mechanical characteristics

LCD screen management	<ul style="list-style-type: none"> <li>• TFT active matrix</li> <li>• Resolution: from QVGA to WVGA, landscape or portrait format</li> <li>• 24-bits TTL LCD output, (65,535 colors encoded in 5:6:5 RGB), LVDS in option</li> </ul>
Touch panel management	<ul style="list-style-type: none"> <li>• Resistive or capacitive type</li> <li>• Integrated clicking calibration</li> <li>• Advanced clicking area processing</li> </ul>
Integrated graphic engine	<ul style="list-style-type: none"> <li>• Advanced display algorithms (CPU Risc 32 bits, 200 MHz)</li> <li>• 2 graphic pages dynamically managed</li> <li>• Storage memory from 16 Mo à 64 Mo</li> </ul>
Graphic charter management	<ul style="list-style-type: none"> <li>• The GraphConverter software program enables to select the graphic elements and to upload them into the internal memory of the HMI board</li> </ul>
Communication bus	<ul style="list-style-type: none"> <li>• RS232 serial, programmable speed of 9600 Bd to 530 kBd</li> <li>• CAN2.0B serial, speed of 100 kBd to 500 kBd</li> <li>• USB2 for firmware and graphic charter updates, using a USB stick or a PC</li> </ul>
Alimentation	<ul style="list-style-type: none"> <li>• 3,3V</li> <li>• Maximum consumption: 750 mW without display</li> </ul>
Size	<ul style="list-style-type: none"> <li>• 58mm x 48mm</li> </ul>



It is a unique concept adapted to very high volume graphic needs. The Clairitec graphic concept is directly integrated on a flex adapted to the Screen of your choice up to WQVGA (480 x 272 pixels).

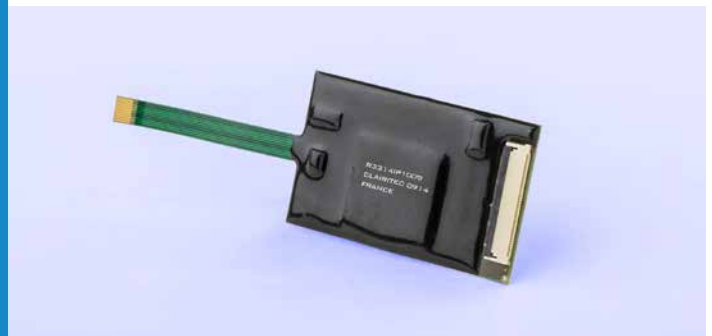
Flexibility, technology, competitiveness and production time savings for manufacturers wishing to integrate HMIs on equipment produced in volume.



480x272 MAX



RTP P-CAP



## Technical and operational characteristics

LCD screen management	<ul style="list-style-type: none"> <li>• TFT active matrix</li> <li>• Resolution: from QVGA to WQVGA, landscape or portrait format</li> <li>• 16-bit TTL LCD output, (4,096 coded coded 4:4:4 RGB), LVDS in option</li> <li>• Backlighting and brightness management</li> <li>• Compatible with all displays on the market</li> </ul>
Touch panel management	<ul style="list-style-type: none"> <li>• Resistive or capacitive type</li> <li>• Integrated clicking calibration</li> <li>• Advanced clicking area processing</li> </ul>
Integrated graphic engine	<ul style="list-style-type: none"> <li>• Advanced display algorithms</li> <li>• 2 graphic pages dynamically managed</li> <li>• Storage memory from 16 Mo to 256 Mo</li> </ul>
Graphic charter management	<ul style="list-style-type: none"> <li>• The GraphConverter software program enables to select the graphic elements and to upload them into the internal memory of the HMI board</li> </ul>
Communication bus	<ul style="list-style-type: none"> <li>• RS232 serial, programmable speed of 9600 Bd to 128 kBd</li> <li>• CAN2.0B serial, speed of 100 kBd to 500 kBd</li> <li>• USB2 for firmware and graphic charter updates, using a USB stick or a PC</li> </ul>
Alimentation	<ul style="list-style-type: none"> <li>• 5V (+/-5 %)</li> <li>• Maximum consumption: 550 mW without display</li> </ul>
Size	<ul style="list-style-type: none"> <li>• 32mm x 50mm (without flexible ribbon)</li> <li>• Custom made flexible ribbon adaptable to every display</li> </ul>
Connectique client	<ul style="list-style-type: none"> <li>• 0.5 mm flexible ribbon</li> </ul>



E-paper screens are becoming more and more popular thanks to their very low power consumption (ideal for battery-powered systems) and their good readability in the sun.

Faced with the lack of information on these displays and their complexity of piloting, Clairitec has developed a board that can be adapted to several references of e-paper displays in order to meet the growing needs of industrialists.



RTP P-CAP



3200x2560 MAX

## Technical and operational characteristics

Gestion d'Screen EPD	<ul style="list-style-type: none"> <li>• Resolution max : 3200 x 2560</li> <li>• 65,535 colors ou 16 shades of grey</li> <li>• Management of multi-power supplies for EPD screens</li> </ul>
Touch panel management	<ul style="list-style-type: none"> <li>• Resistive or capacitive type</li> <li>• Integrated clicking calibration</li> <li>• Advanced clicking area processing</li> </ul>
Integrated graphic engine	<ul style="list-style-type: none"> <li>• Advanced display algorithms (CPU Risc 32 bits, 200 MHz)</li> <li>• 2 graphic pages dynamically managed</li> <li>• Storage memory from 16 Mo à 64 Mo</li> </ul>
Graphic charter management	<ul style="list-style-type: none"> <li>• The GraphConverter software program enables to select the graphic elements and to upload them into the internal memory of the HMI board</li> </ul>
Communication bus	<ul style="list-style-type: none"> <li>• RS232 serial, programmable speed of 9600 Bd to 530 kBd</li> <li>• CAN2.0B serial, speed of 100 kBd to 500 kBd</li> <li>• USB2 for firmware and graphic charter updates, using a USB stick or a PC</li> </ul>
Alimentation	<ul style="list-style-type: none"> <li>• 3,3V</li> <li>• Maximum consumption: 750 mW without display</li> </ul>
Size	<ul style="list-style-type: none"> <li>• 58mm x 48mm</li> </ul>





Starter Kits

# Starter Kits

## The first step in the design of Human-Machine Interfaces



The Starter Kit is designed to help you build your HMI and test it directly on a screen. You will be able to appreciate the rendering quality of the first images of your HMI on the Starter Kit as soon as you start using it.

As an option, with the purchase of a Starter Kit, you can benefit from training based on our expertise in GUI development and graphic design. This knowledge will help you to design your interface in accordance with your specifications, and will allow you to considerably reduce your development time.

You will then have in your possession all the material necessary for the development of your future graphic interface:

- An Intelligent Display with capacitive or resistive touch panel.
- The GraphConverter software with an example of graphic project.
- The technical documentation.
- An example of application.
- The connection cables.
- Power supply 12 V / 1 A.

We propose to you:

- 4 models in «Intelligent Display» version (9", 7", 4.3" or 3.5").
- Technical support included for the 1st year, allowing you to start your project in optimal conditions.

### In option :

- 1 or 2 days of training on our premises.

## Training in the design of Man-Machine Interfaces


Clairitec is approved as a certified training organisation and registered with the Prefect of the New-Aquitaine Region.

As such, the training part included in the Starter Kit can be taken care of by your OPCA. Do not hesitate to contact your OPCA (Organisme Paritaire Collecteur Agréé) for more information.



# Configurations

**Summary of Clairitec graphic products**

	Resolution					Com.			Power supply				Touch			Memory					Video	Inputs / Outputs				Cert.	
	QVGA (320 x 240)	WQVGA (480 x 272)	VGA (640 x 480)	WVGA (800 x 480)	SVGA (800 x 600)	RS232	CAN	USB <sup>3</sup>	3V3	5 V	6 to 36 V	LED Backlight Mgt.	Non Touch	Resistive panel	PCAP panel	16 Mo	32 Mo	64 Mo	128 Mo	256 Mo	PAL / NTSC	Relays	Analog / Digital	PWM	EMC	IP65	
Programmable Intelligent Display	•	•	Δ	•	Δ	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Δ	•	•	•	•		
Intelligent Display 9"				•		•	•	•	Δ	•	•	•	•	•	•	Δ	•	Δ			Δ				•		
Intelligent Display 7"				•		•	•	•	Δ	•	•	•	•	•	•	Δ	•	Δ			Δ				•		
Intelligent display 4.3"						•	•	•	Δ	•	•	•	•	•	•	Δ	Δ	Δ			Δ				•		
Intelligent Display 3.5"	•					•	•	•	Δ	•	•	•	•	•	•	Δ	Δ	Δ							•		
IronGraph board	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			¹		
StarGraph board	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					¹		
SpiderGraph board	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Δ							¹		
GraphLight board	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					¹		
µModule board	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Δ							¹		
FlexGraph board	•	•	•	•	•	•	•	•	Δ	•	Δ	•	•	•	•	•	•	•	•	•					¹		
Starter Kit Programmable intelligent display	•	•	Δ	•	Δ	•	•	•	Δ	•	•	•	•	•	•	•	•	Δ	Δ	Δ	Δ						

Key:

- Standard
- Interface on application board
- Δ On demand

<sup>1</sup> Electronic board without display. Complete system compliance is the customer's responsibility.

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

See datasheets for detailed information.



Product adaptations  
and engineering studies

## Adaptation of existing products

As a designer and manufacturer, Clairitec is able to carry out any type of adaptation, from the customization of an existing product to the complete development of a new product based on specifications and the production of a brand new product:

- Adaptation of the HMI card to a specific display,
- Hardware modification (e.g. addition of a new connector, mechanical adaptation of the PCB, addition of I/O...),
- Modification of the embedded software (e.g. communication protocol),
- Addition of a communicating brick (2G, 4G, Bluetooth, Wifi, LoRa, Sigfox...),
- Etc

## Development and integration of the GUI

In order to accelerate the development of your product while concentrating on your core business, you have the possibility to outsource your HMI project in part or in full:

- Creation of custom graphic elements and GUI pages,
- Analysis of your main application and its functionalities,
- Programming of HMI (+ I/O) functions and integration into your application,
- Complete creation of products and applications around your Clairitec GUI
- Tests and validation
- Prototypes then series production

## Graphic design

An intuitive and ergonomic HMI allows a better use of control systems used in industrial environments. The greatest attention must therefore be paid to the design and graphic quality of your future user interface.

From the study to the complete design of your HMI, we offer various graphic services:

- Ergonomic study according to functional specifications,
- Design and creation of the graphic elements of an interface with Photoshop,
- Creation of the GraphConverter project for HMI cards,
- Complete creation of your GUI.



Learn more about us



# Guaranteed quality and supply period

Since its creation, the entire Clairitec team has been committed to a total quality approach.

Customer satisfaction is at the heart of our decisions and is an integral part of our internal and external processes. This continuous improvement process was recognised in 2006 when we obtained ISO 9001:2015 certification from AFNOR.

At Clairitec, it is our customers who define the evolutions of our HMI solution and our products.

Renewed for three years in 2019, this certification validates all the actions carried out daily by our team but also our involvement in major social and environmental issues.



## Guaranteed supply period

Clairitec undertakes to supply its electronic HMI cards over a period of at least 10 years from the date of creation of the latest version of the card\*.

More specifically, Clairitec guarantees:

- the availability of HMI cards
- preservation of the different functionalities of the HMI cards.
- preservation (or even improvement) of the performance of HMI cards
- preservation of the dimensions of the HMI cards

This commitment takes effect on the first delivery of an electronic card and includes the following cards:

- IronGraph (year of creation: 2014, commercial continuity extended to 2029)
- StarGraph (year of creation: 2014, commercial continuity extended to 2029)
- GraphLight (year of creation: 2016, commercial continuity extended to 2029)
- SpiderGraph (year of creation: 2014, not recommended for new projects)

\* In case of obsolescence of a component that needs to be replaced by a more expensive alternative, an additional cost may be incurred be applied to the board.

The products of the «Intelligent Displays» and «Programmable Intelligent Displays» (AIP) range are equipped with IronGraph, StarGraph or GraphLight HMI cards as well as a programmable card in the case of AIP. These cards are covered by the same guaranteed supply period.



*AFNOR's ISO 9001:2015 certification as well as the complete declaration concerning the guaranteed supply period can be provided on request.*

Clairitec, an entity of the St@rtec Développement group



## St@rtec Développement

St@rtec Développement contributes to the creation of a more ecological and responsible world through its activities in the field of electronics and sustainable development. Thanks to its focus on innovation, the group is set to become a major player in the global energy transition.

In addition to Clairitec, St@rtec Développement comprises two other companies: BMS PowerSafe and Neogy.



## BMS PowerSafe

With its proven expertise in the hardware and software design of electronic cards for lithium battery management (BMS), BMS PowerSafe guarantees the performance and safety of these batteries for all types of applications.

The capitalization of experience in lithium battery management makes BMS PowerSafe one of the leaders in the following markets:

- Hybrid and pure electric EV/HEV cars;
- renewable energies ;
- telecommunications ;
- energy storage and backup power systems.



## Neogy

Neogy specializes in the design and production of energy storage systems from a few Wh to several hundred kWh for various applications: electromobility, robotics, aeronautics, home automation, stationary energy storage systems, etc.

Its activities can be summed up in 4 sectors: Lithium / Ni-MH batteries, solar batteries, lithium / hydrogen cell hybridisation systems and complex multi-energy storage systems (solar panels, wind turbines, thermal engines, electrical networks, etc.).



## e-Mersiv

e-Mersiv offers high-performance lithium-ion batteries for electric and hybrid vehicles.

e-Mersiv uses immersion cooling technology which allows rapid charging and discharging of the battery using a dielectric fluid without putting the battery at risk.

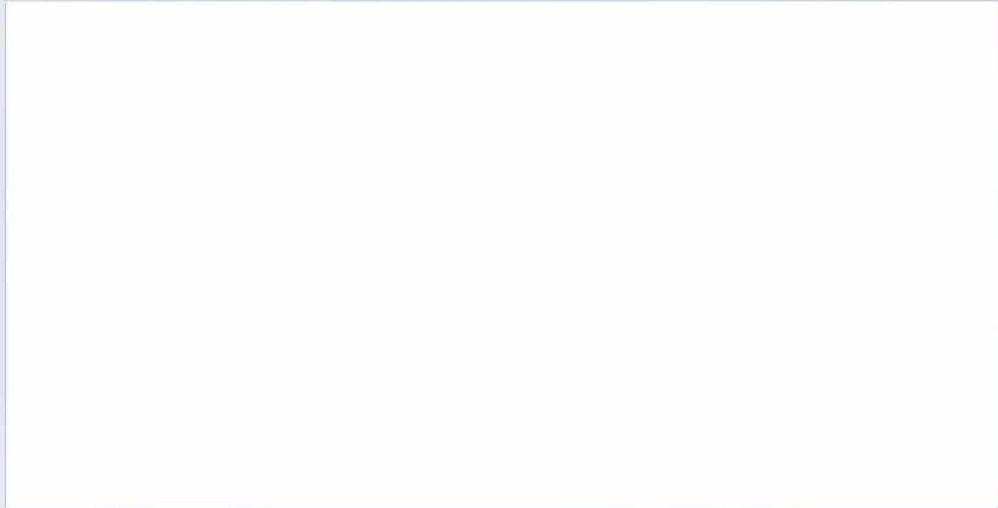
This new technology, different from all those currently available on the market, reduces the cost and weight of the battery, making the electric vehicle more accessible and functional.





For more than 20 years, Clairitec has been developing graphic products for the design and development of HMIs for all industries.

All our products are designed and manufactured in France.



11 avenue Becquerel - 33700 MERIGNAC - FRANCE

Tel : +33 (0)5 56 13 04 68

Email : [contact@clairitec.com](mailto:contact@clairitec.com)

[www.clairitec.com](http://www.clairitec.com)

