

ENG

# AUTOMATION PLATFORMS



# GEFRAN

BEYOND TECHNOLOGY





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BEYOND TECHNOLOGY

More than fifty years of experience, an organization with a strong focus on the customer's needs and constant technological innovation have made Gefran a benchmark in the design and production of sensors, systems and components for industrial process automation and control. Expertise, flexibility and process quality are the factors that distinguish Gefran in the production of integrated tools and systems for specific applications in various fields of industry, with consolidated know-how in the plastics, mobile hydraulics, heating and lift sectors.

Technology, innovation and versatility represent the catalogue's added value, in addition to the ability to create specific application solutions in association with the world's leading machine manufacturers.

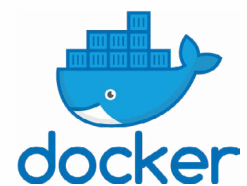
# GEFRAN G-MATION BEYOND THE MACHINE CONTROL

## THE PLATFORM THAT LOOKS TO THE FUTURE

Gefran is looking to the future of industrial automation with its new G-Mation programmable automation platform, designed to take advantage of the latest trends in scalability, customization, connectivity, cybersecurity and ease-of-use. At the heart of G-Mation is a powerful processor that supports the implementation of custom applications, thanks to dedicated resources, while ensuring the continuity of the industrial process.

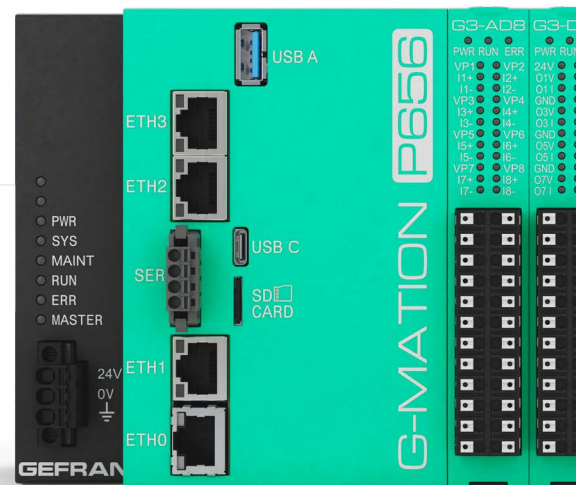
### DESIGNED

for Docker Applications



### HTML OPERATOR INTERFACE

with integrated Web Server



### COMMUNICATION

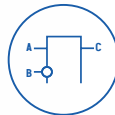
EtherCAT native



Designed from the ground up for cybersecurity, G-Motion is expandable and scalable through Ethercat interconnectivity, allowing you to build a system that grows with your needs.

## PLC PROGRAMMING

standard IEC611331-3



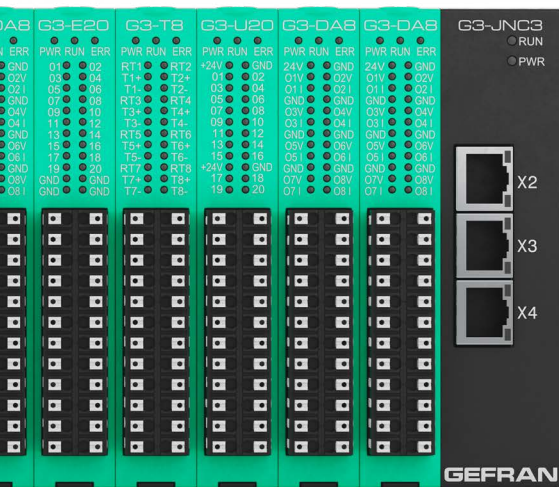
Scalable



Programming language  
compliant IEC 61131-3

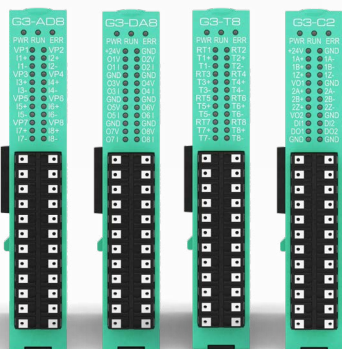


Real-time execution



## MODULAR

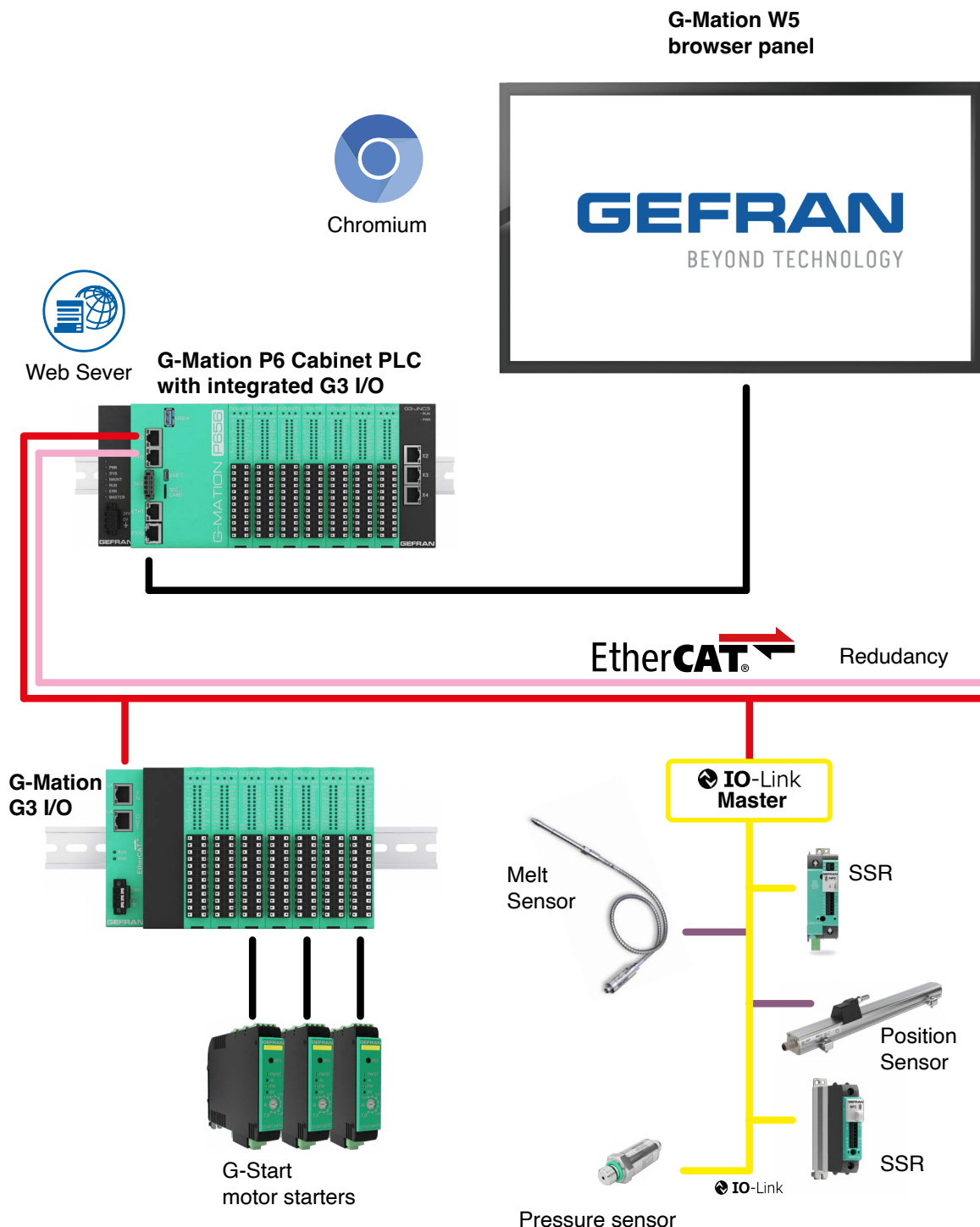
G3 series I/O Modules



## CYBERSECURITY



# G-MATION AUTOMATION ARCHITECTURE



### SYSTEM ARCHITECTURE

- CPU Intel Atom – 4 cores up to 1.9 GHz (0.25/0.5 ms cycle time)
- Flexible configuration: Integrated I/Os (up to 20 modules) or remote
- Ethercat/Profinet/Ethernet IP slave options for complex architectures

### FULL USE OF ETHERCAT

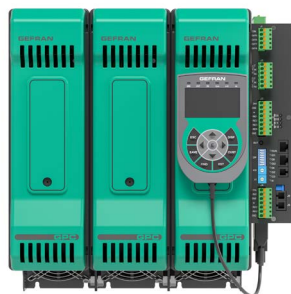
- Controller with double Ethercat master, distributed clock and redundancy
- Up to 4 Ethernet gigabit port freely configurable for TCP or Ethercat
- Integrated switch or stand-alone for star or tree topology

### INDUSTRY 4.0 INTEGRATION

- Ensures machines functionality improvements with Docker technology
- NodeRed, MQTT, OPC UA, Modbus TCP, Euromap, SQL/noSQL DBs...

### FLEXIBLE VISUALIZATION

- HTML Web server or HMI legacy operator interface
- PowerOverEthernet option for HMI direct power supply



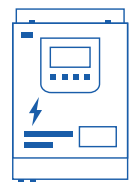
Electric Heating  
Controller



Electric Heating  
Controller



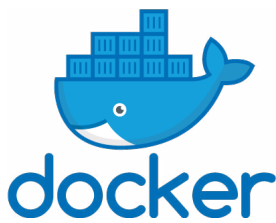
Position  
Sensor



Drive



# GEFRAN G-MATION BEYOND THE MACHINE CONTROL



## DOCKER TECHNOLOGY

The **P6** Series supports the installation of **Docker** applications to add functionality to new and existing machines without impacting PLC performance and without modifying machine software.

Docker technology allows applications to directly access the resources of the controller or connected devices, integrating the edge directly into the machine.

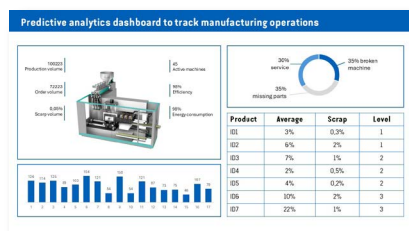
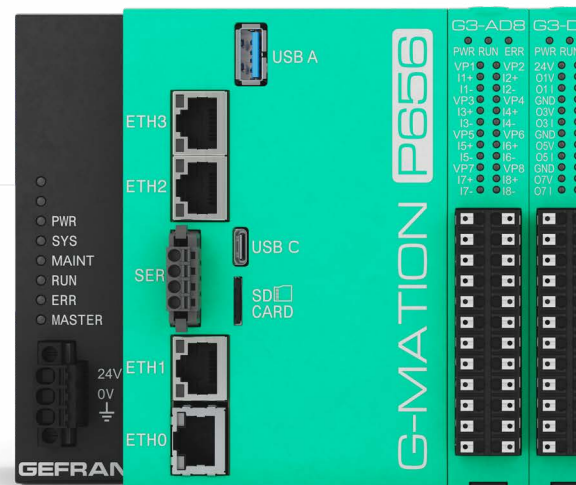
Monitoring production metrics, controlling energy consumption, advanced diagnostics, tooling and maintenance utilities, digital twin, predictive maintenance, are just a sample of the potential.

## REMOTE ASSISTANCE

Secure VPN tunnel for remote assistance and remote monitoring G-Mation P6 allows connection to the Gefran cloud through a simple docker application that can be installed at any time. Once connected, the machine will also benefit from OTA updates and fleet management policies.

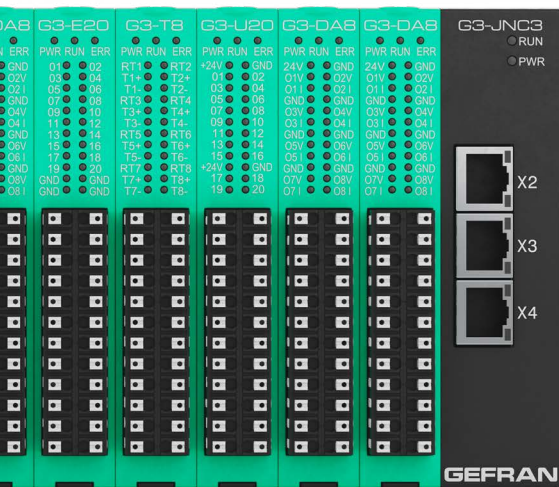


## SECURE VPN TUNNELING



## DATA ACQUISITION, ANALYSIS AND SAFE TRANSMISSION

The PLC records data and process states directly from the field and makes them securely available to remote systems (edge or cloud) for processing by systems such as AI or MES. All of this is accomplished by implementing communication standards such as MQTT and OPC UA and supporting systems to buffer data for transfer to the cloud.



The G-MATION platform plays a key role in cybersecurity, protection of communication channels both at the cloud level and with other machines, advanced user management allows the controller and all devices in the machine network to be protected.

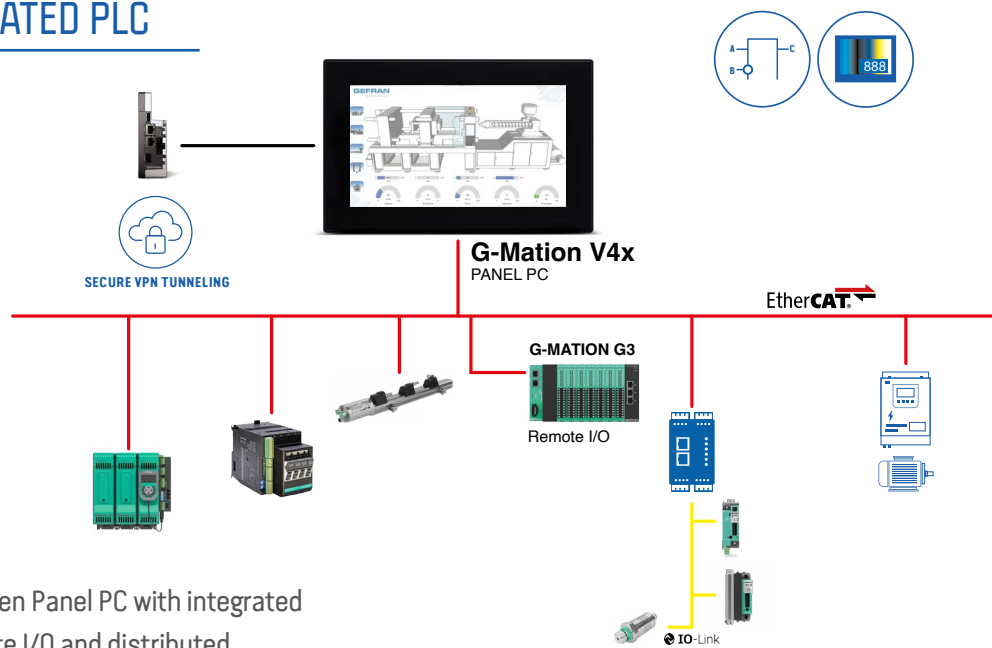


G-MATION is designed in accordance with the latest standards and allows the user to achieve the Security Level required by the application, while maintaining core functionality such as monitoring, support and remote update



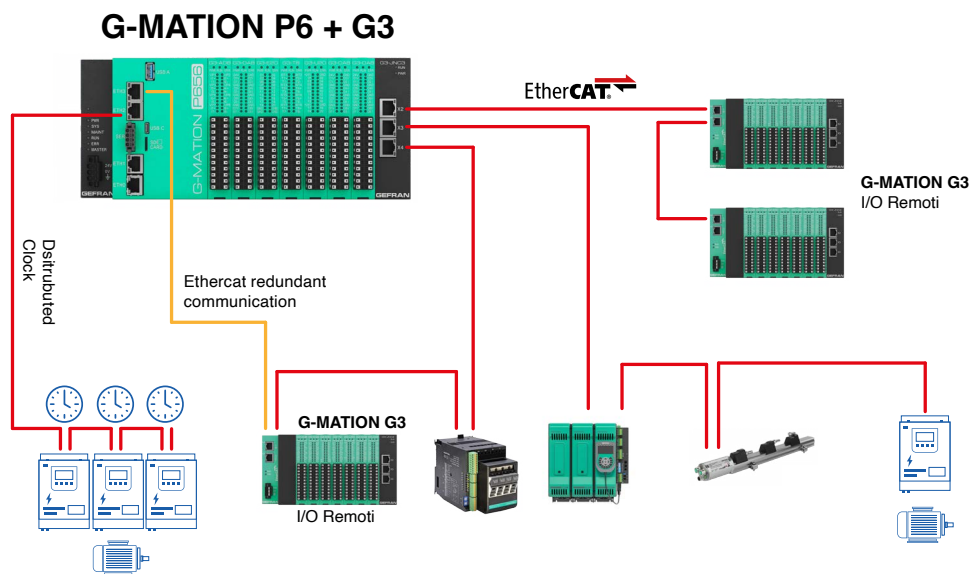


## PANEL PC WITH INTEGRATED PLC



Touchscreen Panel PC with integrated PLC, remote I/O and distributed EtherCAT architecture

## FULL ETHERCAT ARCHITECTURE

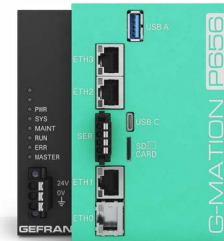


Cabinet installation modular PLC controller with double EtherCAT Master, redundancy and distributed clock.

# G-MATION CPU SERIES

## G-MATION P6

G-Mation P6 is the modular CPU of the G-Mation family, conforming to the EN61131-2 standard expandable with G-Mation G3 series I/O modules. Developed with EtherCAT native communication with support for multimaster, distributed clock and redundancy.



G-MATION P6	
Function	Modular PLC inside cabinet
Processor	ATOM x6414RE 1.5 GHz quad core
Memory	
System	4GB, DRAM type DDR 4
Mass Memory	32 GB Flash
Extension	Micro SD Card slot
Ethernet	
Port	up to 4
Port PoE	1
FTP	YES
OPCUA	Client/server
HTML5, Webserver	YES
Docker Expansion	YES
EtherCAT	
Master number	2
Redundancy	YES
Distributed clock	YES
Communication	
Ethercat	Slave
Profinet	Slave
Ethernet/IP	Slave
Modbus TCP/RTU	Master / Slave
CAN	Master / Slave
Serial	RS485
IP Protection	IP20
Power supply	24 VDC $\pm$ 25%
Programming software	GF_Project

ORDER CODE P6	CODING P6	DESCRIPTION P6
F098813	G-MATION-P6-5-0-00-0-00	CPU Intel Atom 1,5 GHz quad core, 3 ETH ports
F098814	G-MATION-P6-5-0-00-P-00	CPU Intel Atom 1,5 GHz quad core, 3 ETH ports, POE
F098815	G-MATION-P6-5-3-00-0-00	CPU Intel Atom 1,5 GHz quad core, 3 ETH ports, CAN port, RS485 port
F098816	G-MATION-P6-5-3-00-P-00	CPU Intel Atom 1,5 GHz quad core, 3 ETH ports, CAN port, RS485 port, POE
F098817	G-MATION-P6-5-5-00-0-00	CPU Intel Atom 1,5 GHz quad core, 4 ETH ports, CAN port
F098818	G-MATION-P6-5-5-00-P-00	CPU Intel Atom 1,5 GHz quad core, 4 ETH ports, CAN port, POE
F098819	G-MATION-P6-5-6-00-0-00	CPU Intel Atom 1,5 GHz quad core, 4 ETH ports, RS485 port
F098820	G-MATION-P6-5-6-00-P-00	CPU Intel Atom 1,5 GHz quad core, 4 ETH ports, RS485 port, POE

# G-MATION

## CONTROL PANELS

### G-MATION W5x

G-Mation W5x Series panel browsers are designed to support the most demanding automation applications that require a powerful, high-performance control HMI.



	W5-101	W5-156	W5-215	W5-240
Function				
Display	10,1"	15,6"	21,5"	24"
Touch	Capacitive			
Keyboard	No			
Resolution	1280x800	1920 x1080		
Backlight	LED			
Processor	Intel			
Memory				
Flash	128GB			
RAM	8GB			
Connections				
Ethernet	2 Gigabit Port			
USB	2			
IP Protection	IP65 front IP20 back			
Power supply	24Vdc			
Current consumption	0.7 A at 24 Vdc	1.0 A at 24 Vdc	1.2 A at 24 Vdc	1.7 A at 24 Vdc
Operative system	Linux			
Order code	F101830	F101831	F101832	F101833

# G-MATION CONTROL PANELS

## G-MATION V4x

Powerful widescreen multitouch panel PCs with advanced graphics and integrated PLC.

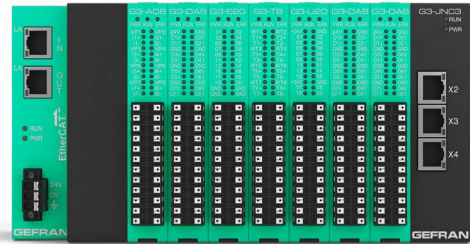


	V45-070	V45-101	V45-156	V45-215	V44-070	V44-101	V44-156	V44-215
Function	Panel control [PLC+HMI]				Panel control [PLC+HMI]			
Display	7"	10,1"	15,6"	21,5"	7"	10,1"	15,6"	21,5"
Touch	Capacitive				Capacitive			
Keyboard	No				No			
Resolution	800 x 480	1280 x 800	1366 x 768	1920 x 1080	1024 x 600	1280 x 800	1366 x 768	1920 x 1080
Backlight	LED				LED			
Processor	Quad core RISC at 64 bit - 1,6 GHz				Quad core RISC at 64 bit - 1,6 GHz			
	<b>Memory</b>				<b>Memory</b>			
Flash	4GB				4GB			
RAM	2GB				2GB			
SD card slot	SI				NO			
	<b>Connections</b>				<b>Connections</b>			
Ethernet	3 (port 0 - 10/100/1000, port 1 - 10/100, port 2 - 10/100)				1 (10/100 PoE)			
USB	2 (Host V2.0, max. 500 mA)				1 (Host V2.0, max. 500 mA, special cable available)			
Serial	1 (RS-232, RS-485, RS-422, configurable software)				-	-	-	-
Sensor	-	-	-	-	Temperature, 3-Axis Accelerometer			
Buzzer	SI				SI			
NFC	-	-	-	-	ISO / IEC 14443A			
WIFI	-	-	-	-	IEEE 802.11a / b / g			
IP Protection	IP66 front IP20 back				IP67 full (requires accessories and cables approved)			
Power supply	+24 Vdc (10 to 32Vdc)				IEEE 802.3af PoE			
Current consumption	0.7 A at 24 Vdc	1.0 A at 24 Vdc	1.2 A at 24 Vdc	1.7 A at 24 Vdc	10W	14W	21W	32W
Operative system	Linux RT				Linux RT			
Programming software	GF Designer HD / GF Project VX				GF Designer HD / GF Project VX			
Order code	"F086923 G-MATION V45- 070-54-00-00"	"F086929 G-MATION V45- 101-54-00-00"	"F086933 G-MATION V45- 156-54-00-00"	"F086941 G-MATION V45- 215-54-00-00"	"F086925 G-MATION V44- 070-54-00-00"	"F086931 G-MATION V44- 101-54-00-00"	"F086937 G-MATION V44- 156-54-00-00"	"F086947 G-MATION V44- 215-54-00-00"
Runtime PLC license	Code F100964				Code F100964			

# G-MATION MODULAR I/O

## G-MATION G3

Next-generation remote modular I/O based on  
EtherCAT communication. Does not require backplane.  
Modular mechanism designed for efficient installation and maintenance



	G3-E20 F092700	G3-U20 F092702	G3-EU20 F092703	G3-U16 F099391	G3-AD8 F092704	G3-AU4 F092705	G3-DA8 F092706	G3-AM8 F092708	G3-T8 F092709	G3-C2 F092711	G3-SSI2 F092712
Total Channel	20	20	20	16	8	4	8	8	8	2	2
Analogue Input											
Voltage 0...10V DC					8	4		4			
Voltage -10...+10V DC					8	4		4			
Current 0/4...20mA					8	4		4			
Strain gauge 0...25mV DC						4					
Strain gauge 0...30mV DC						4					
Strain gauge 0...60mV DC						4					
Strain gauge 0...100mV DC						4					
Temperature RTD 2/3 fti									8		
Temperature TC									8		
Current transformer 0...50mA AC						1					
Potentiometer						4					
Transducer power supply +10V DC						4					
Transducer power supply +24V DC						4					
Analogue Output											
Voltage -10...+10V DC							8	4			
Current 0/4...20mA							8	4			
Digital Input											
24 V DC	20		10								
Digital Output											
24 V DC		20	10	16							
Encoder-Counter											
Incremental encoder										2	
Encoder power supply +5V										2	
Encoder power supply +24V										2	
Counter	4									2	
Transducer SSI											2

## ETHERCAT INTERCONNECTION MODULES

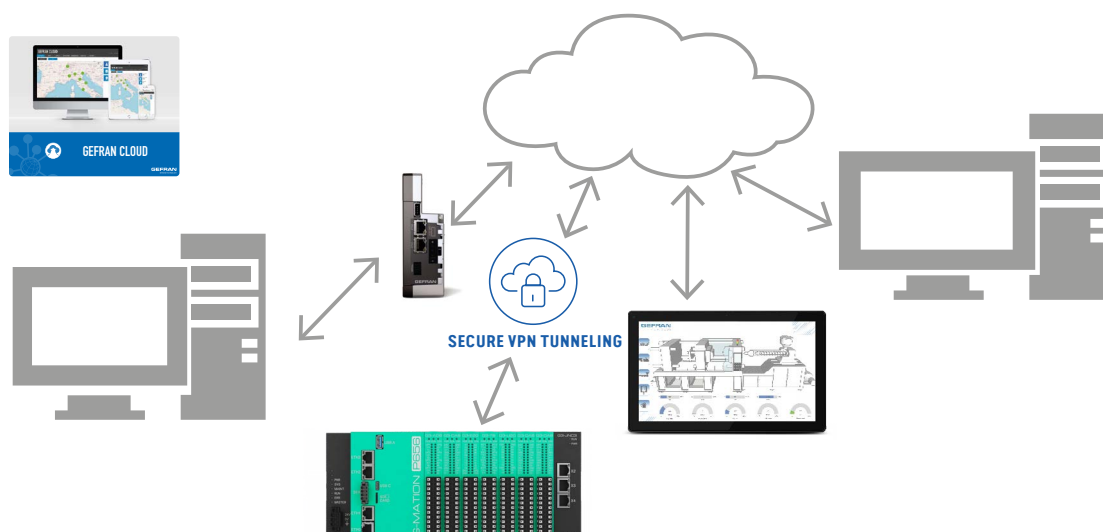
	G3-ECAT	G3-JNC3	G3-JNC4
Function	Coupler	Junction 3 ports	Junction 4 ports
Order code	F092613	F099392	F095040

# G-MATION CLOUD, GATEWAY

**Gefran Cloud** is Gefran's multi-user remote monitoring and remoter assistance, according to Cyber Security standards, provides:

- Secure connection through SSL VPN technology (OpenVPN)
- Remote assistance
- Access to machine control from any remote device using a standard browser interface.

Gefran cloud can be reached directly from **G-Mation P6** series controllers with **Docker SSL VPN** app or through **GF\_Connect** where a gateway is needed for production lines consisting of multiple machines.



## GF\_CONNECT

Gateway & Edge controller dedicated to those who need to have Industry 4.0 connectivity and communication services even when programmable automation products are not present

GF_Connect RA	
Processor	ARM Cortex-A8 - 1 GHz
Flash	4GB
RAM	512 Mb
Connessioni	
Ethernet port	2 (port 0 - 10/100, port 1 - 10/100)
USB port 1	Host v2.0, max. 500mA
Serial port 1	RS-232, RS-485, RS-422, configurable software
SD card	SI
Expansion	1 slot
Power supply	24 Vdc (10 to 32 Vdc)
IP Protection	IP20
Programming software	GF_Designer HD
Order code	"F071519 GF_Connect RA"

Note: For the GF\_Connect accesories refer to G-mation V45

# CONTROL PANELS

## ACCESORIES

### G-MATION V45

#### PLUG-IN MODULES



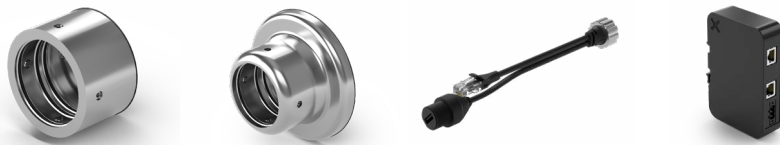
	GV_PLUG-LTE	GV_PLUG-LTE_GNSS_WIFI	GV_PLUG-CAN	GV_PLUG-232	GV_PLUG-485
Function	Expansion module LTE	Expansion module LTE/4G+WIFI+GNSS	Plugin module CAN	Plugin module RS-232	Plugin module RS-485
Order code	"F093066 GV_PLUG-LTE"	"F089429 GV_PLUG-LTE_GNSS_WIFI"	"F086949 GV_PLUG-CAN"	"F086951 GV_PLUG-232"	"F086953 GV_PLUG-485"

#### PLUG-IN MODULES ACCESORIES



	GV_PLUG-3G-EXT	GV_PLUG-WIFI_ANT	GV_PLUG-LTE_ANT
Function	RF extension cable for 3G antenna -1.5m	WIFI Antenna 2.4GHZ/5.5GHZ RP-SMA	Antenna 4G-LTE SMA
Order code	"F081120 GV_PLUG-3G-EXT"	"F089430 GV_PLUG-WIFI_ANT"	"F089431 GV_PLUG-LTE_ANT"

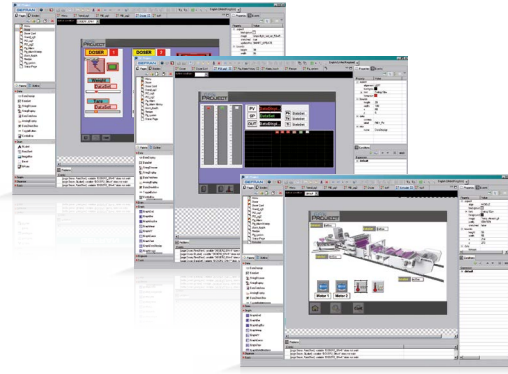
### G-MATION V44



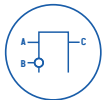
	GV_R-SUP67-10	GV_R-SUP67-21	GV_R-CAV-POE4-USB1.5	GV_POE2460
Function	48mm tube support for sizes <=10"	48mm tube support for sizes <=15"	"Cable PoE - USB USB 1m ETH 5m"	DIN Rail POE power supply
Order code	"F073744 R-SUP67-10"	"F073745 R-SUP67-21"	"F073743 GV_CAV-POE4-USB1.5"	"F083637 GV_POE2460"



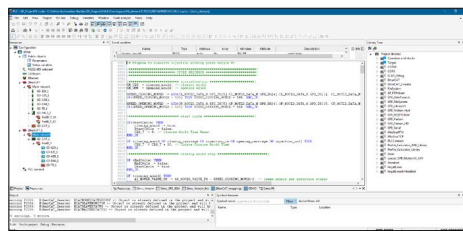
## OPERATOR INTERFACE (HMD)



Man/machine interface graphic  
pages configuration.



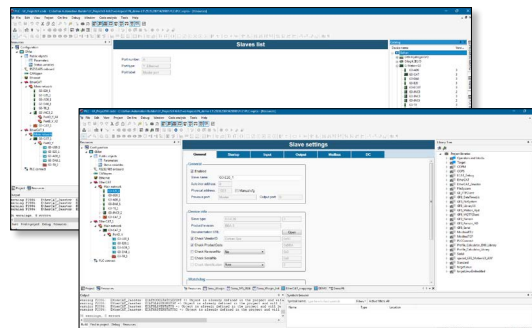
## MACHINE CONTROL SEQUENCE (PLC)



Configuration of the machine  
control part for Real Time  
solutions.  
Standard language IEC61131-3



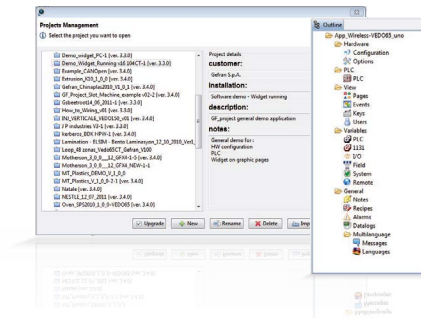
## HW + SYSTEM ARCHITECTURE



Configuration of the individual  
devices used and the type of  
communication adopted.



## PROJECT MANAGER



A common style of configuration and clear graphic display of project modules aids and simplifies configuration.  
The following modules are available:

- Alarm management
- Multilingual management (Unicode)
- Recipes
- Users



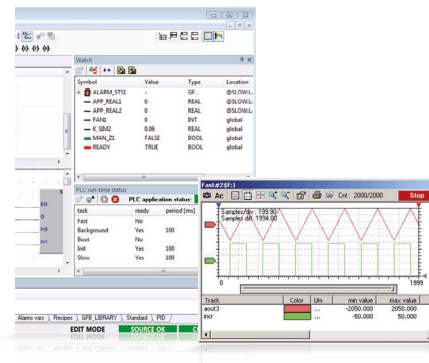
## PROCESS LIBRARY



The library module contains a structured series of FB libraries that facilitate and reduce the development time of an automation project.



## DIAGNOSTICS



The diagnostic module provides a complete, efficient set of simple tools for all steps in system testing and verification.

# APPLICATION

## PLASTIC PROCESS



BLOW MOLDING



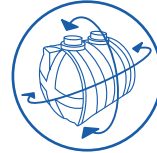
PLASTIC INJECTION



EXTRUSION



THERMOFORMING



ROTOMOLDING



BLOW FILM



STRETCH BLOW MOLDING



PLASTIC RECICLVING



LABORATORY EXTRUSION

## METAL HEAT TREATMENT



CONTINUOUS FURNACES



BATCH FURNACES



VACUUM FURNACES



LABORATORY FURNACES



AUTOClaves

## OTHER PROCESSES



GLASS PRODUCTION



METAL WORKING



PAPER



FOOD INDUSTRY





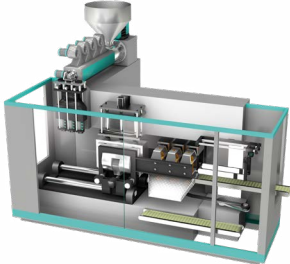

BENCH TEST

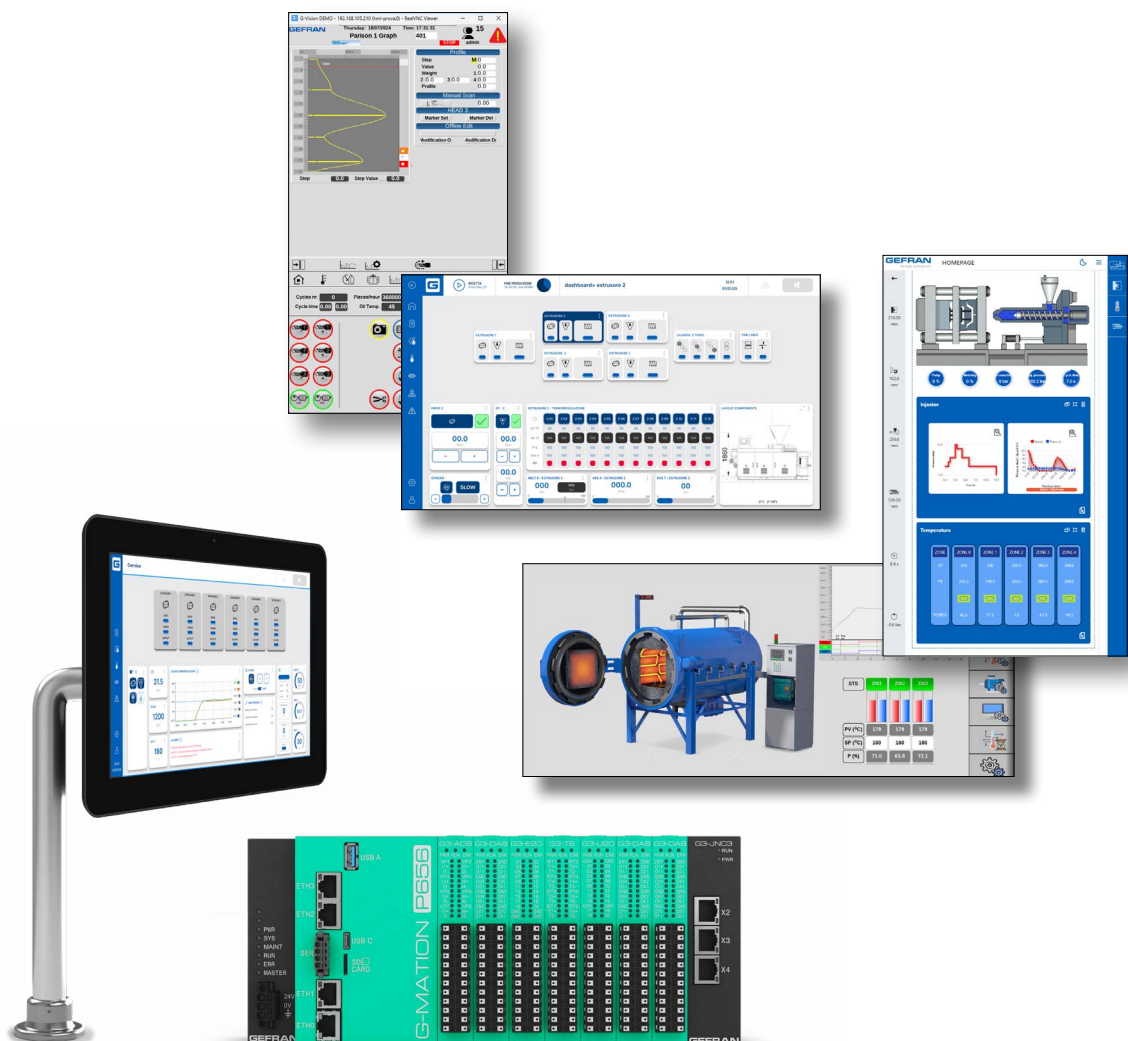


DIE CASTING

# APPLICATION TEMPLATES

Templates are specific software developed by Gefran for defined applications to help OEMs and system integrators create their machine applications. They are complete, ready-to-use SWs that can be updated with little effort. They are also open, so that they can be used as a basis for generic application development.

EXTRUSION	INJECTION	BLOW MOLDING	METAL HEAT TREATMENT
			



# G-MATION OVERVIEW

## PLC CONTROLLER

### G-MATION P6



AUTOMATION CONTROLLER

### MASTER / SLAVE

EtherCAT®

CANopen®

Modbus TCP/RTU

### SLAVE

PROFI<sup>®</sup>  
NET

EtherNet/IP<sup>®</sup>  
ODVA

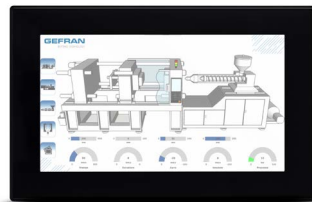
## OPERATOR INTERFACE

### G-MATION W5



BROWSER PANEL

### G-MATION V45



PANEL PC

### G-MATION V44



PANEL PC

## I/O MODULES

### G-MATION G3



MODULAR I/O

### MODULES



ECAT I/O



DIGITAL I/O



ANALOG I/O



MIXED I/O

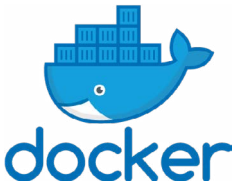








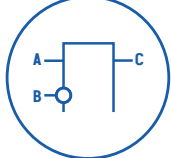


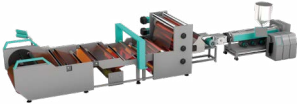

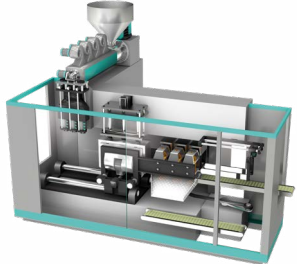
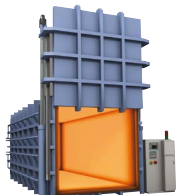


COUNTER  
FREQUENCY

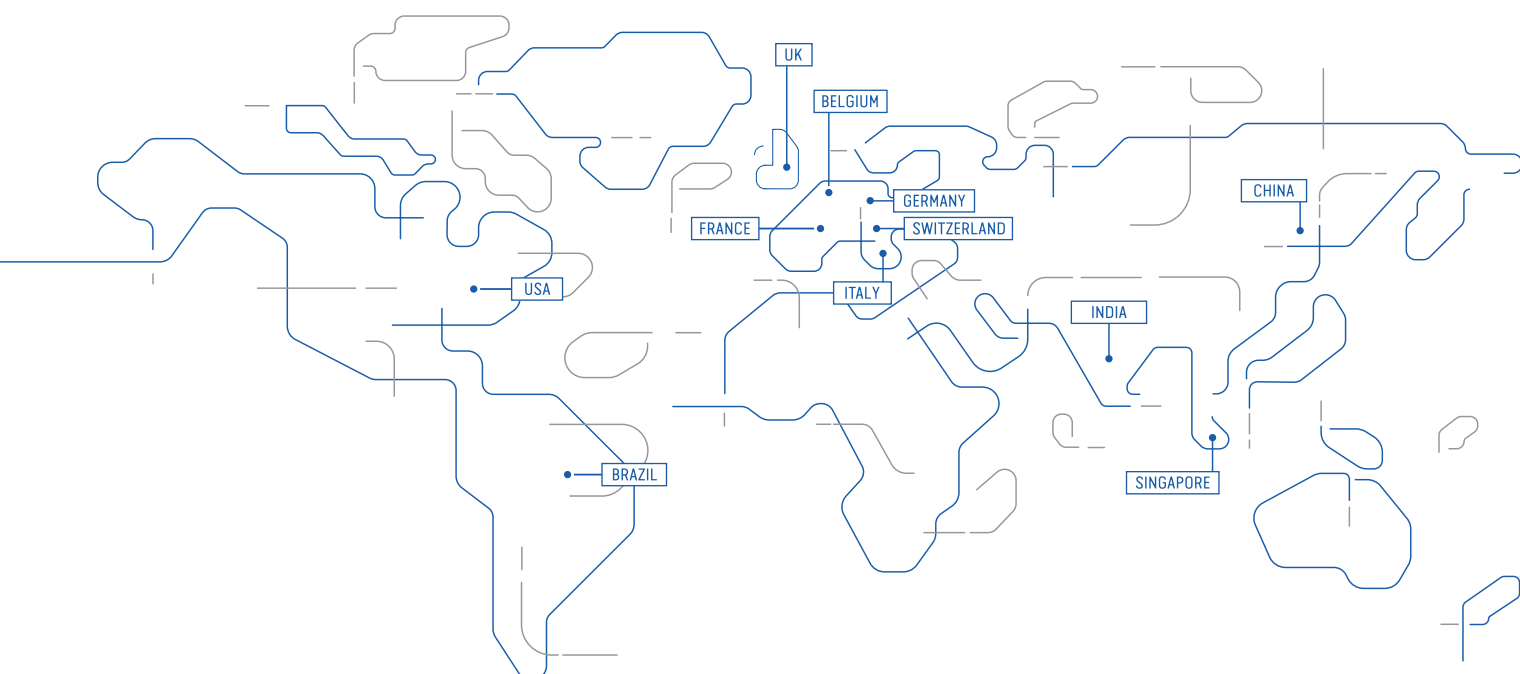


ETHERCAT JUNCTIONS

# G-MATION OVERVIEW

CONNECTIVITY AND APPS	INTEGRATED DEVELOPMENT ENVIRONMENT	APPLICATION TEMPLATE
      <b>SECURE VPN TUNNELING</b>  <b>GF_CONNECT</b>	  <b>GRAPHIC</b>  <b>CONTROL</b>  <b>ARCHITECTURE</b>  <b>DIAGNOSTICS</b>	 <b>EXTRUSION</b>  <b>INJECTION</b>  <b>BLOW MOLDING</b>  <b>HEAT TREATMENT</b>

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