Process computer for the complete control of the greenhouse.

DESIGNED&PRODUCED BY **SPAGNOL**

Process

{....with the new technologies cultivate becomes easier and more dynamic....}

Computerized control of a greenhouse is aimed at increasing cultivation growth. Temperature, humidity, CO2, light, irrigation and nourishment are essential elements for the regular growth of the cultivation. Photosynthesis, transpiration and nutrition are processes that must be managed with the utmost care.
Process constantly measures the signals coming from the sensors installed inside and outside the greenhouse and, on the basis of precise control strategies, appropriately controls the systems installed in the greenhouse.

Process

Global controller for irrigation, climate, energy and disinfection control

PROCESS is a global controller suitable for all installations where irrigation / nutrition / disinfection / inventory management and energy management must be managed in an efficient and coordinated way.
Suitable for the control of up to 10 environments (PROCESS-C5) or 40 environments (PROCESS-C6) (both max.6 daily periods) it is completely configurable and expandable to adapt to any control requirement.
An intuitive graphic interface with icons makes the controller easy to use and simplifies the programming and visualization of the process parameters.
The MC-Net supervision software connected to C-Fenix becomes a powerful system of control, supervision and analysis on the computer both in the company and outside.

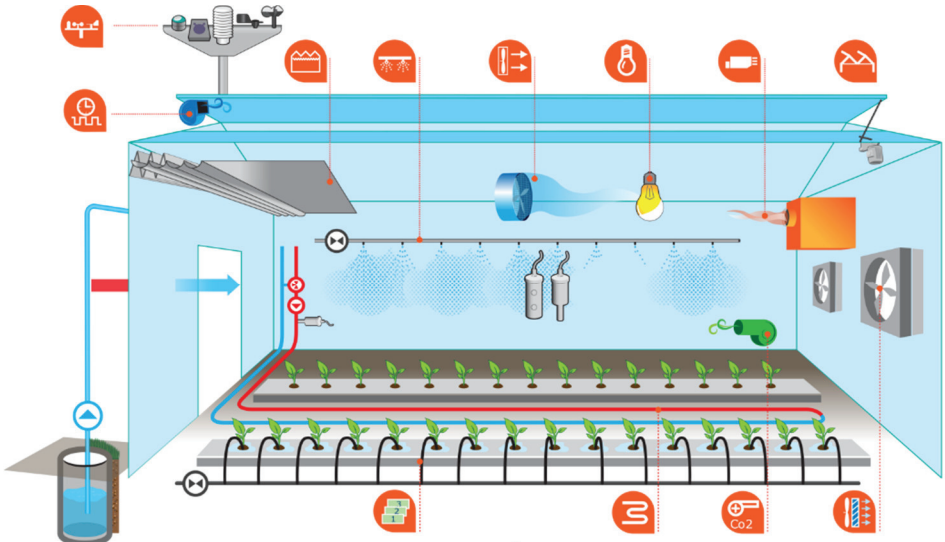
The mobile modem accessory allows you to receive text messages or calls in case of alarms or anomalies. On PROCESS with 230 / 240VAC power supply, this accessory combined with the power backup accessory allows YOU to be informed in case of power failure from the network.

Like all Spagnol controllers, PROCESS can also be supervised with Spagnol MC-Cloud and managed through the Web portal or with the Android and iOS app. The connection can be made via a network cable (with internet connection) or by installing the mobile modem accessory. In any case, it is always possible to supervise PROCESS on-premises (installation on site) using the Spagnol-MCNet supervision software. MIXED CLOUD/ON-PREMISES SOLUTIONS ARE ALSO POSSIBILE.

PROCESS CONTROL CAPACITY:

- Irrigation program
- Irrigation valve
- Irrigation line
- Dosing unit
- Dosing channel
- Irrigation tank
- Field station
- Meteo station
- Irrigation input
- Irrigation filter
- Mixing unit
- UVC disinfection unit
- Disinfection line
- Climate zone
- Vent control
- ON/OFF heating
- Modulating heating
- Fan control
- Fog valve
- Fog pump
- Screen
- Cooling
- CO2 dosing
- Light control
- Air treatment unit (ATU)
- Curtains inflation
- Central
- Heat transport
- CO2 transport
- Hot buffer
- Boiler
- Heat exchanger
- CHP
- Liquid CO2 dosing
- Electric line

Irrigation | Disinfection | Climate | Energy



Greenhouse automation

PROCESS

Nutrient's dosing and distributing

Filtration

Drainage mixing

Drainage disinfection

Water reserve and treatment

Heat distribution

CO2 distribution

CO2 generation

Heat reserve

Heat and electric energy generation

PROCESS BASE:

	Code	Description	
	302012001	PROCESSC5-M-23S, PROCESS base controller, electric power 230-240VAC 50-60Hz. • No I/O board [1]. • 8 free slots for I/O expansion board (expandable up to 16)	PROCESSC5 and PROCESSC6 differs on controls number capacity (see table “CONTROL PROGRAMS”)
	302012002	PROCESSC6-M-23S, PROCESS base controller, electric power 230-240VAC 50-60Hz. • No I/O board [1]. • 8 free slots for I/O expansion board (expandable up to 16)	

[1] Outputs and inputs have predefined factory function (see product manual). Outputs and inputs function can be customized by using the USB console cable or Bluetooth console board (see Accessories). [2] Maximum total load: 190VA.

Process base does not include any card, sensor or control program. Sensors (both weather and environment), control program, expansion boards and expansion box must be added according to control needs

METEO STATION:

		Code
	Meteo station with: • Rain presence sensor • Wind speed sensor • Wind direction sensor • Solar radiation sensor • Temperature and humidity sensor	303002008

CLIMATIC ZONE SENSORS:

	Description	Code
	Electronic temperature and humidity sensor with environmental protection	303001001
	Electronic temperature and humidity sensor in ventilated box	303001002

	Description	Code
	Dry bulb/wet bulb temperature and humidity sensor in ventilated box	303001003
	CO2 sensor in ventilated box	303001004

Every climate sensor uses 1 input sensor S-BUS on Process.

PROCESS SENSOR:

		Code	Requested sensor input type	
			S-BUS	Contact
	Heating pipes temperature sensor.	303003001	✓	
	Hot buffer segment temperature sensor.	303003009	✓	
	Vent position sensor.	303003005	✓	
	Irrigation line pressure sensor (-1 a 15 bar)	303003003	✓	
	Tank water level sensor.	303003006	✓	
	EC/pH sensor completed with probe and electronic interface board.	303003004	✓	
	Irrigation line flow sensor.	Page 124		✓

EXPANSION BOARDS:

	Description	Code		Description	Code
	8 relay outputs board	ESH0141		8 S-BUS sensor inputs board	ESH0144
	20 contact inputs sensor board	ESH0525		4 S-BUS sensor inputs + 6 contact sensor inputs + 2 0-10V analogic output board	ESH0143

Process C5 / C6 has 16 free slots for slot I/O expansion boards. More boards can be added with more expansion boxes. (see 'Accessories')

ACCESSORIES:

	Description	Code		Description	Code
	Cellular modem for alarm reporting and cloud service* (*subscription required)	304003001		Expansion boxes	Page 131
	Backup power (only for FENIX-M-23S-I)	Page 133		Console USB cable	EAP0816
	Cloud service	Page 146		Console Bluetooth board	304003006
	MC-Net supervision software	Page 144			

CONTROL PROGRAMS:

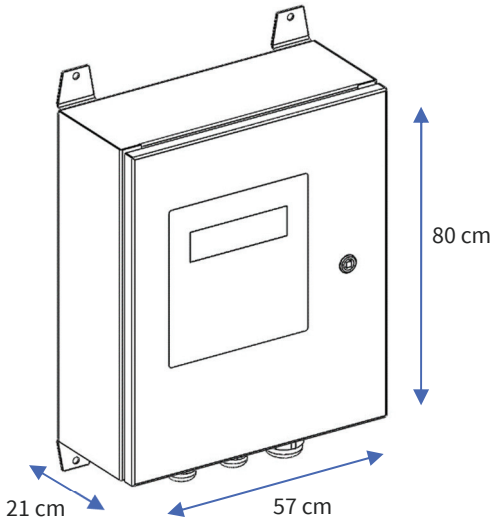
	Control	PROCESS C5 controls number	PROCESS C6 controls number	Code
	Dosing channel	10	40	ATT0021
	UVC disinfection unit	1	4	ATT0083
	Climate zone	10	40	ATT0101
	Vent control	20	80	ATT0102
	ON/OFF heating	10	40	ATT0103
	Modulating heating	20	80	ATT0104
	Fan control	10	40	ATT0105
	Fog valve	10	40	ATT0106
	Fog pump	2	8	ATT0107
	Screen	20	80	ATT0108
	Cooling	10	40	ATT0109
	CO2 dosing	10	40	ATT0112
	Light control	10	40	ATT0111
	Air treatment unit (ATU)	10	40	ATT0123
	Curtains inflation	10	40	ATT0110
	Central	1	4	ATT0115
	Heat transport	4	16	ATT0113
	CO2 transport	4	16	ATT0119
	Hot buffer	2	8	ATT0116
	Boiler	2	8	ATT0114
	Heat exchanger	4	16	ATT0118
	CHP	4	8	ATT0121
	Liquid CO2 dosing	4	8	ATT0120
	Electric line	4	8	ATT0122

PROCESS – Specifications

PROCESS SERIES – CONTROLLER CAPACITY:

See page 154 for software controls number and capacity.
See page 155 for software functionality description.

PROCESS SERIES – DIMENSIONS:



SPECIFICATIONS:

Supply voltage and power

FENIX version	NOMINAL	MIN voltage	MAX voltage
PROCESS*-*-23S	230÷240 VAC 200Watt	210 VAC	275 VAC

CAUTION

Damages can occur in the case wrong voltage applied to FENIX. Refer to "MAX voltage" column.

Air temperature/humidity

Air temperature, max: 40 °C (104 °F)
Air humidity max: 85 %

WARNING

Temperature values refer to a situation where the controller is not exposed to direct sun radiation or other heat sources (of any type).

Electrical cables entry	2 x PG 21 + 12 x PG29
Protection degree	IP55 (NEMA-12)
Weight	19 Kg
User interface	Touchscreen graphic LCD display 320x240 pixels with backlight + membrane keyboard 28 keys