Art. 909993

iControl

Instruction Manual

rev. 2.0 del 12.07.2010

Introduction

This manual, supplied with iControl – misting panel, delivers important informations about misting systems installation, using and maintenance.
Read carefully this manual and perform all operations required: otherwise the product warranty won't be longer valid and your product won't work perfectly.
The people making installation are responsible to inform end users about risks and correct use of this system.
The manufacturer declines every responsibility for damages and problems caused by misuse or use not compliant to this manual.

General Informations

TECHNICAL DATA

Power Supply: 24VDC (delivered by pump or iControl box)

Working Tension: 5VDC

Current Draw: 100mA

Connection Cable Max Length: 50m

TECHNICAL ASSISTANCE

Contact us for every kind of technical assistance needed:

> **telephone:** 0521/818301 (4 lines a.r.)

> **fax:** 0521/818202

> **email:** info@mgftools.com

We'll serve your needs as soon as possible.

Shipment of goods to be repaired must be pre-allowed by a RMA module (otherwise we cannot collect returning goods).
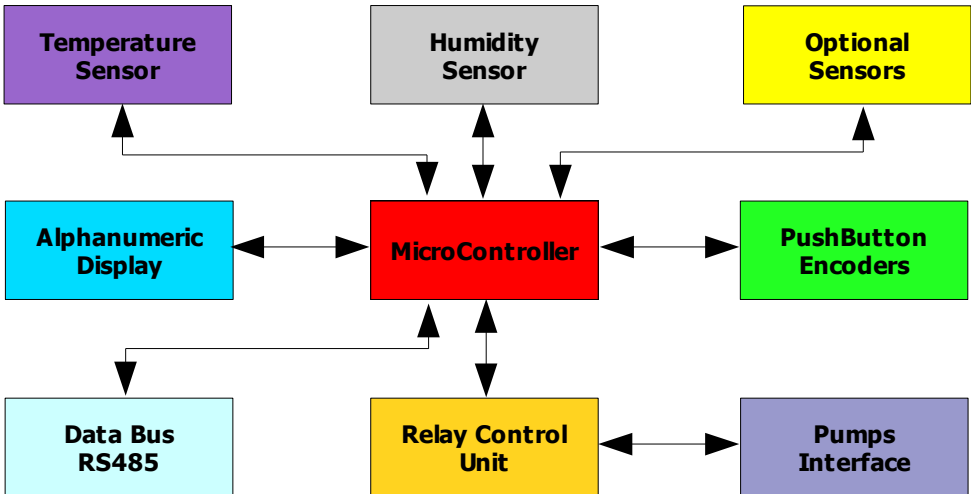
System Description

WORKING

iControl is an electronic device able to manage all misting applications (cooling, humidification, timing...).

Through a HMI interface, made with an alphanumeric display and 2 rotative encoders /w push-button, is possible to select a working mode and set some parameters, display data from environment (humidity, temperature and heat index) and control some compatible devices (PC comfort pumps, Atom pumps...)

MAIN PARTS

This schematics explains the main parts of iControl circuitry:

```
┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│ Temperature  │      │  Humidity    │      │  Optional    │
│   Sensor     │      │   Sensor     │      │  Sensors     │
└──────────────┘      └──────────────┘      └──────────────┘

┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│ Alphanumeric │◄───► │MicroController│◄───► │ PushButton   │
│   Display    │      │              │      │  Encoders    │
└──────────────┘      └──────────────┘      └──────────────┘

┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│  Data Bus    │      │ Relay Control│◄───► │   Pumps      │
│   RS485      │      │    Unit      │      │  Interface   │
└──────────────┘      └──────────────┘      └──────────────┘
```

1. Microcontroller

2. Display

3. Encoder /w push button

4. Humidity sensor

5. Temperature Sensor

6. Optional external Sensors (smell sensor, presence sensors ...)

7. Pump driver control unit

8. Data bus (RS485)

9. Pump Connectors

DIMENSIONS

Size: 80x120x30mm

Weight: 0,3 Kg

ENVIRONMENTAL CONDITIONS

Temperature: from -10 to 60°C

Humidity: from 10% to 99% RH (Not Condensing)

VENTILATION

Ensure to iControl a good ventilation, in particular near the air inlets situated on the lower side of the box, in this way the humidity and temperature will be sensed in a more accurate way.

PUSHBUTTONS

Function of the two buttons and encoders are different according to the mode selected. Read following paragraphs for further informations.

STANDARD DELIVERY

iControl is supplied complete with fixing support, that is correct for installation on 3 places wall electric box, or directly to the wall.

Use the support arm as a reference to install the iControl.

TOOLS

No tools are supplied with iControl.

Tools useful for installation / maintenance are:

1. Screw drivers set

2. Hammer drill

3. 2mm Hex key for knob disassembling (only for eeprom update)

Safety Warnings

GENERAL SAFETY WARNINGS

Read carefully this manual and work in compliance with its suggestions: improper use will make invalid warranty and can be dangerous for people and things.

Respect all national / European regulations on safety of work and electric devices.

USAGE

Connect iControl only to **MGF** original parts.

Attention! Data line transmission between pump and iControl isn't standard LAN – TCP-IP. Don't try to connect iControl to Ethernet devices or other devices different to **MGF** devices, this would damage both iControl and the device. iControl cannot work upon WIFI net.

BAD USE

Don't use the system on following situations:

1. electric boxes open: electric shock risk

2. device not allowed by **MGF**

3. device not certified for compatibility with iControl
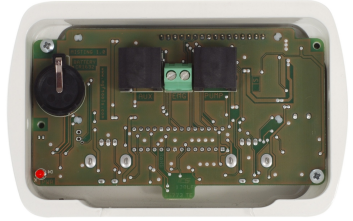
DANGEROUS AREA

iControl doesn't have dangerous areas normally.

SAFETY DEVICES

Emergency stop is the left push button. When machine is working, pressing left button the machine will stop and put the line in a safe situation (water line de-pressurized)

Some risks can be connected to the particular nature of the system installed and must be evaluated case by case. If necessary, an extra emergency stop can be provided connecting the 2 wires in the green connector (**EMG**) on the back side of the iControl. Short circuit on these two pins stops the system suddenly.
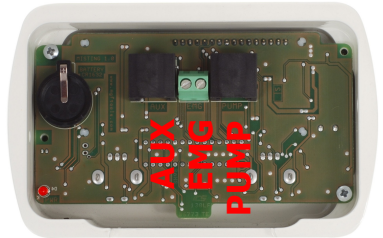
RESIDUAL RISKS

During installation and working, evaluate carefully all the risks concerned with environment: lighting, temperature, other risks. Don't hesitate to contact us for any help.

Installation

TRANSPORT

Use original iControl box to preserve quality of painting.

STOCKING

iControl stocking temperature: -20°C to 60°C.

CONNECTIONS

Wirings: for wirings is enough a RJ45 UTP standard (not twisted, not shielded) shorter than 50m between iControl and other **MGF** device

Wiring can run under wall or into canalization, inside corrugated protection pipe.

INSTALLATION

General rule: fix the iControl near the misting area to get the most accurate possible data about temperature and humidity. Don't put the iControl very near to a nozzle or you'll get false data on the humidity!

WALL INSTALLATION:

1.Sign two holes on the wall corresponding to support part.

2.Drill and assemble the fishers

3.Screw on wall the support arm, horizontal

4.Connect cable to **PUMP** connector

5.Screw iControl with the two side screws

BOX INSTALLATION:

1.Screw support part to box, horizontal

2.Connect cable to **PUMP** connector

3.Screw iControl with the two side screws

System Use

PUSH BUTTONS

General Rule:

SETUP PAGES:

> *Left encoder:* page change
>
> *Right encoder:* parameter change
>
> *Left Button:* confirm change
>
> *Right Button:* exit without saving

WORKING PAGES:

> *Left button:* start/stop

MENU DIAGNOSYS / SETUP / MAINTENANCE

SETUP MENU ENTRANCE

1.   Press LEFT BUTTON, then, keep it pressed and press also the right one, too for 2 seconds

WORKING MODE
This parameter is useful to set the working mode of the system. Once setup this parameter, the end user will see, at every startup the page corresponding to the working mode selected.

Functions available now:

- COOLING
- HUMIDIFICATION
- DUST REDUCTION
- BAD SMELL REDUCTION
- TIMER

1.   Entering SETUP/DIAGNOSTIC page, the first screen will be the following:

2. Turn right encoder to select then working mode

```
WORKING MODE:
COOLING
```

3. Turn LEFT ENCODER to shift to next parameter (OIL CHANGE)
4. Press LEFT BUTTON to exit and save the parameter.
5. Press RIGHT BUTTON to exit without saving the parameter.

OIL CHANGE

With this function the iControl checks the hours of working of the machine and will suggest oil changes and other maintenances. This function is performed only upon a timer system, working on a schedule base. No sensors are used for level checking. ATTENTION! After a firmware upgrade, the timer will be reset.

```
OIL CHANGE
NECESSARY
```

1. If necessary, it will be indicated what maintenance has to be performed

2. To reset alarms, turn RIGHT ENCODER

3. Turn LEFT ENCODER to shift to next parameter, (LINE PURGE)

LINE PURGE

Line purge function is useful to bypass the alarm of broken pipe. During purge, the pump is working at maximum speed without caring of broken pipe. It's suggested to perform a line purge after installation to clean the pipeline. During line purge, to eliminate dirty inside pipeline, assemble nozzle from first one nearer to the pump until the last, so water will bring all dirty outside system.

```
LINE PURGE
PRESS LEFT SW
```

1. Press LEFT BUTTON to start line purge

```
LINE PURGE
PURGE ON
```

2. At the end of 5 minutes cycle, the page return to "press left sw"

3. Turn LEFT ENCODER to access the next page, (PUMP TYPE)

PUMP TYPE

This parameter is useful to set the device that will be connected to the iControl: PC Comfort pump or other devices.

```
PUMP TYPE
ATOM
```

1. Select pump type turning RIGHT ENCODER
2. Press RIGHT BUTTON to exit without saving
3. Press LEFT BUTTON to exit and save

SPEED DAMPING

This parameter is useful to reduce the acceleration during startup, in particular for very small system. If you experience overpressures frequently, it's a good idea to increase the damping.

```
SPEED DAMPING
10
```

1. Select value turning RIGHT ENCODER
2. Press RIGHT BUTTON to exit without saving
3. Press LEFT BUTTON to exit and save

STANDARD PRESSURE

This parameter is useful to set the working pressure in all modes except cooling (where pressure is calculated on heat index)

```
STD PRESSURE
80
```

1. Select value turning RIGHT ENCODER
2. Press RIGHT BUTTON to exit without saving
3. Press LEFT BUTTON to exit and save

SETUP EXIT

Press RIGHT BUTTON from every page to go to working page. The working page on display will be according to the working mode selected.

COOLING MODE PAGE

```
C 80    T25.1   U53
C 75    P102    D 99
```

3. On *first line* you can see data from environment sensors:

    1. **C** = HEAT INDEX: calculated value from 0 to 100 that indicates the HEAT SENSED by a men in summer dressing: 0-20 cold; 20-40: fresh; 40-60: light hot: more that 60 hot

    2. **T** = TEMPERATURE

    3. **H** =HUMIDITY

4. On *second line*:

    1. **C** = SET POINT HEAT INDEX: end user set level of starting pump: pump start/stop will be decide automatically comparing HEAT INDEX and SET POINT HEAT INDEX.

    2. **P** = PRESSURE: when pump is ON, it is the pressure inside the line; when OFF it is the pressure into inlet pipeline. This function is available only with PC COMFORT pumps.

    3. **D** = DOSING RATIO. Amount of chemicals injected inside the line by dosing pump in % of maximum dosing flow rate. This function is available only in PC COMFORT AROMI pumps.

5. Turn LEFT ENCODER to change the SET POINT HEAT INDEX

6. Turn RIGHT ENCODER to change the DOSING RATIO

7. Press RIGHT BUTTON to START/STOP the system (independently from heat index comparison):

    ○ **"C"** -> system ON

    ○ **"c"** -> system OFF

8. Press LEFT BUTTON to control DOSING function

    ○ **"D"** -> dosing ON

    ○ **"d"** -> dosing OFF

    ○ **"T"** -> dosing TURBO

9. Press LEFT BUTTON for more than 2 seconds to switch TURBO mode on dosing pump: turbo mode is useful to fill the dosing pipe while changing aromas

10. System can be also controlled remotely connecting EMG wires (see above paragraphs)

MENU HUMIDIFICATION

With this working mode, the machines is controlled to keep the humidity level between a minimum and a maximum. This function is used in many industrial and civil applications where humidity level matters.

```
C 80    T25.1   U53
MI75    P100    MA77
```

1. The *first line* is exactly the same of COOLING MENU.
2. On *second line*:
    1. **MI** = MINIMUM HUMIDITY LEVEL. Under this level, the system will be started to raise up environment humidity
    2. **P** = PRESSURE: when pump is ON, it is the pressure inside the line; when OFF it is the pressure into inlet pipeline. This function is available only with PC COMFORT pumps.
    3. **MA** = MAXIMUM HUMIDITY. Above this level, the system will be stopped, to avoid exceeding maximum humidity level
3. Turn RIGHT ENCODER to set MAXIMUM HUMIDITY
4. Turn LEFT ENCODER to set MINIMUM HUMIDITY
5. Press LEFT BUTTON to start/stop the system
    1. "**p**" → system OFF
    2. "**P**" → system ON
11. System can be also controlled remotely connecting EMG wires (see above paragraphs)

MENU TIMER

This menu is useful to set a SIMPLE TIMER for fogging and making scenic effects. All times are in seconds.

```
TIMER=   125 P 75
OFF 2000 ON   140
```

1. In the *first line*:
    1. **TIMER**: current timer countdown
    2. **P** = pressure: when pump is ON, it is the pressure inside the line; when OFF it is the pressure into inlet pipeline. This function is available only with PC COMFORT pumps.
2. Turn LEFT ENCODER to change OFF time
3. Turn RIGHT ENCODER to change ON time
4. Press LEFT BUTTON to start/stop the system:
    1. "**p**" → system OFF
    2. "**P**" → system ON

MENU DUST REDUCTION

This menu is useful to set a delay on start and stop signal. This function is useful for DUST REDUCTION in industries, whereas an external switch is indicating a dust start (i.e. Truck is passing), the fog is started with a certain delay and is stopped with a certain delay after signal in gone down. All times are in seconds.
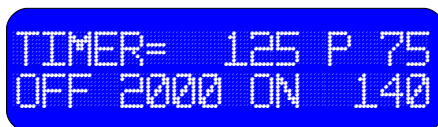
```
TIMER=   125 P 75
OFF 2000 ON   140
```

1. In the *first line*:

    1. **TIMER**: current timer countdown

    2. **P** = pressure: when pump is ON, it is the pressure inside the line; when OFF it is the pressure into inlet pipeline. This function is available only with PC COMFORT pumps.

2. Turn LEFT ENCODER to change OFF delay from EMG closing contact.

3. Turn RIGHT ENCODER to change ON delay from EMG opening contact.

4. Press LEFT BUTTON to start/stop the system:

    1. "**p**" → system OFF

    2. "**P**" → system ON

MENU BAD SMELL REDUCTION

This menu is useful to set a delay on start and stop signal. This function is useful for BAD SMELL REDUCTION in industries, whereas an external switch is indicating a dust start (i.e. Truck is passing), the fog is started with a certain delay and is stopped with a certain delay after signal in gone down. All times are in seconds.

This menu allows also interfacing with BAD SMELL sensors (contact us for further informations)


```
TIMER=   125 P 75
OFF 2000 ON   140
```

1. In the *first line*:

    1. **TIMER**: current timer countdown

    2. **P** = pressure: when pump is ON, it is the pressure inside the line; when OFF it is the pressure into inlet pipeline. This function is available only with PC COMFORT pumps.

2. Turn LEFT ENCODER to change OFF delay from EMG closing contact.

3. Turn RIGHT ENCODER to change ON delay from EMG opening contact.

4. Press LEFT BUTTON to start/stop the system:

    1. "**p**" → system OFF

    2. "**P**" → system ON

MESSA IN FUNZIONE

Once connected to a powered pump/device iControl will work automatically. If it's powered the red led behind is ON

NORMAL STOP

Use LEFT BUTTON to stop the system.

EMERGENCY STOP

Emergency stop is the left push button. When machine is working, pressing left button the machine will stop and put the line in a safe situation (water line de-pressurized)

Some risks can be connected to the particular nature of the system installed and must be evaluated case by case. If necessary, an extra emergency stop can be provided connecting the 2 wires in the green connector (**EMG**) on the back

side of the iControl. Short circuit on these two pins stops the system suddenly.

CHEMICAL CHANGE

Changing chemical, use the dosing system with clean water, TURBO MODE for 10 minutes, to clean the circuits.

Maintenance

MAINTENANCE STATUS

Before every maintenance, disconnect iControl from power supply

WARNINGS

Maintenance can be performed only by professional authorized people. Don't try to operate on PCB if you aren't skilled on electronic works.

CLEANING

For cleaning, use a soft, wet cloth.

FIRMWARE UPDATE

1. Get a new EEPROM
2. Disassemble iControl from support.
3. Disassemble knobs using 2mm hex key
4. Disassemble PCB from housing
5. Disassemble EEPROM from socket, take care to the pins
6. Insert new EEPROM into the socket, take care to the pins and reference sign on the left, like for the socket
7. Reassemble

DRYING

If humidity is condensing inside box, use compressed air to clean it.

ORDINARY MAINTENANCE

No maintenance required.

EXTRAORDINARY MAINTENANCE

Extra ordinary maintenance must be performed only by **MGF** technicians

TROUBLESHOOTING

PROBLEM	CAUSE/SOLUTION
Display off	➡ NO SUPPLY, check power led on back side ➡ check if device is powered ➡ check if cable is good ➡ iControl power section damaged

PROBLEM	CAUSE/SOLUTION
Display ON, nothing shown	➡ Check position/oxide on EEPROM
Bad reading of T and H	➡ Sensor damaged ➡ Sensor not properly placed
Bad system control	➡ Cable connected to AUX port ➡ Wrong Cable

Spare Parts

SPARE PARTS

Use only original spare parts.

Additional Informations

WASTE DISPOSAL

Since electronic devices, iControl must be disposed accordingly to national regulation.

WEEE fee as been paid where due.

Conformity Declaration

MGF srl - Via Mendes, 8 - 43055 Mezzani (PR) - Italia declares that iControl is compliant to 2006/42/CEE; 89/336 CEE, EN55014, EN 60555/2, EN 60555/3; 2006/95/CEE and CENELEC HD 400.1.2.3

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