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Table of contents

1. Introduction 5
What is a wireless solution 6
The advantages with wireless solutions 6
Where can you use wireless solutions 6
2. Products 7
Multi interface with radio 8
ID Code 8
Input 10
Output 10
Radio Receiver 10
Technical specifications, MI2280 Multi Interface with radio 10
Wireless terminals 11
To change battery 13
Technical specifications, Wireless Terminal 13
3. Placement 17
Placement of the components 18
4. Q-WIN 55.01p and q 21
Settings 22

Table of contents

1. Introduction

Introduction

Topics in this chapter

What is a wireless solution.....6
The advantages with wireless solutions.....6
Where can you use wireless solutions 6

Introduction

What is a wireless solution

What is a wireless solution?

A wireless solution is a system in which some or all wires are replaced by other techniques.

Wires have two purposes: power supply and signal transmission. Usually it is easier to replace the signal transmission than the power supply. Signals can be sent by light, sound or radio but you cannot send power. Usually you give the device an internal power source, a battery. Some devices still need the power wire.

Wireless technologies are nothing new. They are widely used and very reliable.

The advantages with wireless solutions

Wires are reliable and safe but they can cause many problems. Wires are not very aesthetic. It is necessary to spend a great deal of time to hide the wires when you make an installation. The wireless solution devices are installed at the same time they are unpacked.

Wired devices are usually not movable, not even if they are small. You must spend hours with the wires if you want to move the devices to new locations. Wireless solution devices are movable. The user can place them wherever they want.

To add a new wired device can be a painstaking job. Removing panels causes much annoyance for your customer. You can avoid this if you use a wireless solution. Unpack the device and perhaps change some settings. That is all you have to do. Your customers will be impressed of your quick service.

Where can you use wireless solutions

You can use the wireless solutions almost everywhere. They use radio waves for communication, which means that they are very safe and reliable. The signals can pass through most types of obstacles.

You can get problems if there are other devices using the same radio frequency. The wireless solution uses 433.92 MHz or 315.00 MHz, which are frequencies that are free to use in all kinds of remote controlled devices. This usually not causes any problems due to the low output power.

2. Products

Products

Topics in this chapter

Multi interface with radio 8
ID Code 8
Input 10
Output 10
Radio Receiver 10
Technical specifications, MI2280 Multi Interface with radio.. 10
Wireless terminals 11
To change battery 13
Technical specifications, Wireless Terminal 13

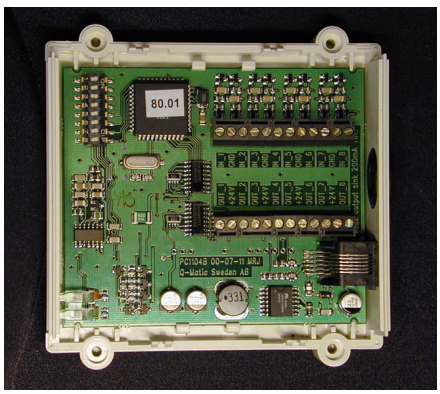
Products

Multi interface with radio

The MI2280 multi interface with radio is the radio receiver in the wireless solution. The combination of a radio receiver and a multi interface makes it a very powerful device.

ID Code

The ID Code and the Sub ID Codes identify the multi interfaces. Use the dip-switches inside the interface to select the ID Code and the Sub ID Code. The ID Code that should be used is specified in the System Settings. All interfaces use the same ID Code. Use the Sub ID Code to identify each multi interface in the system.



The MI2280 Multi Interface and the MI2280 Multi Interface with radio share the same ID code. You must use the SUB ID code to identify different Multi Interfaces used in the same system.

The default ID Code is 121.

Products

Use the following tables to get the correct ID Codes. Dip-switches 1 and 2 are not used.

x = does not matter
- = off

Table 1: ID Code

ID Code	Dip 1	Dip 2	Dip 3	Dip 4	Dip 5	Dip 6	Dip 7	Dip 8
121	x	x	x	x	x	x	-	-
122	x	x	x	x	x	x	on	-
123	x	x	x	x	x	x	-	on
124	x	x	x	x	x	x	on	on

Table 2: SUB ID Code

SUB ID Code	Dip 1	Dip 2	Dip 3	Dip 4	Dip 5	Dip 6	Dip 7	Dip 8
0	x	x	-	-	-	-	x	x
1	x	x	on	-	-	-	x	x
2	x	x	-	on	-	-	x	x
3	x	x	on	on	-	-	x	x
4	x	x	-	-	on	-	x	x
5	x	x	on	-	on	-	x	x
6	x	x	-	on	on	-	x	x
7	x	x	on	on	on	-	x	x
8	x	x	-	-	-	on	x	x
9	x	x	on	-	-	on	x	x
10	x	x	-	on	-	on	x	x
11	x	x	on	on	-	on	x	x
12	x	x	-	-	on	on	x	x
13	x	x	on	-	on	on	x	x
14	x	x	-	on	on	on	x	x
15	x	x	on	on	on	on	x	x

Products

Input

The multi interface has eight inputs (IN_1 to IN_8). The input must be a normally open switch that connects the input to ground (GND).

You must use the ground (GND) available on the multi interface.

Output

The multi interface has eight outputs (OUT_1 to OUT_8). Script programs control the outputs. An output signal connects the output to ground. Connect the external device between one of the 24 V voltages on the multi interface and one of the outputs. The maximum total output current for the multi interface is 200 mA. The maximum output current on a single output is also 200 mA.

The outputs are protected from high currents.

Radio Receiver

The multi interface MI2280 Radio has a 433.92 MHz or a 315.00 MHz radio receiver. It is used together with the wireless terminals.

Technical specifications, MI2280 Multi Interface with radio

Article Number
433.92 MHz: 10112044
315.00 MHz: 10112046

Used with
Q-WIN 55.01p or later
BP2882 82.01p or later
Wireless terminal

Connection
Q-MATIC System Cable (Modular connector)
8 screw terminal inputs
8 screw terminal outputs

Products

Table 3: Technical Data

Width	102 mm
Length	141 mm
Height	52 mm
Weight	145 g
Power Supply	24 V
Power Consumption, Stand by	20 mA
Power Consumption, Maximum	220 mA
Maximal total output current	200 mA
Maximal output current at a single output	200 mA
Operating Temperature	10 - 32 °C
Storage Temperature	-10 - 40 °C
Operating Humidity	15 - 85 % Rel. humidity
Storage Humidity	10 - 90 % Rel. humidity

Complies to the following standards
EN61000-6-3:2001; EN61000-6-1:2001

Wireless terminals

The wireless terminals are the wireless parts of the wireless solution. They are battery powered and use radio for communication.

Products

Each wireless terminal has three buttons. The buttons have no default functions; you must write a script program for each button. Two of the buttons are large and easy to press. These buttons should be used for functions that are frequently used, for example to call the next customer. The third button is much smaller and a little bit more difficult to press. This button should be used to special functions that should not be easy to use by mistake, for example alarms, move customers, etc.

The number of terminals that can be used in the same system has no exact limit. The risk of interference increases with the number of terminals. The multi interface can only receive the signals from one terminal at the same time. You should limit the risk that buttons on two or more terminals are pressed at the same time. This risk depends on the number of terminals used at the same time and how frequently the buttons are pressed.

The wireless terminal uses four standard 1.5 V AAA batteries but it is also possible to use four 1.2 V AAA rechargeable batteries. It sends the code as long as any button is pressed. The transmission automatically stops after 60 seconds to prevent drainage of the battery.

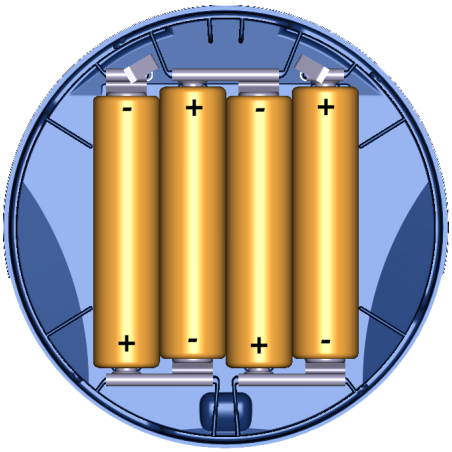
The frequency of the radio signal is 433.920 MHz or 315.00 MHz. The range without any obstacles is up to 80 m (433.920 MHz). These frequencies are reserved for all kinds of remote controlled devices. The limited output power reduces the risk of interference between different remote controlled devices.

There is a clip at the back of the terminal. Use the clip to attach the terminal to the cloths, for example the pockets. Press the clip to make it easier to attach the terminal.

Products

To change battery

Turn the top of the terminal anticlockwise to get access to the batteries. Replace the batteries and close the terminal. Always replace all batteries at the same time.



Incorrect inserted batteries may damage the terminal. Make sure that they are correctly inserted.

Technical specifications, Wireless Terminal

Article Number
433.92 MHz - Europe: 10320201
433.92 MHz - USA: 10320210
315.00 MHz - USA: 10320205

Used with
MI2280 Multi Interface with radio
Q-NOVA
Q-DIRECT

Table 4: General Technical Data

Diameter	70 mm
Thickness	21 mm
Weight	125 g
Battery	4 pcs of AAA 1.5 V or 4 pcs of AAA 1.2 V rechargable
Maximum Power Consumption	12 mA

Products

Table 4: General Technical Data

Operating Temperature	10 - 32 °C
Storage Temperature	-10 - 40 °C
Operating Humidity	15 - 85 % Rel. humidity
Storage Humidity	10 - 90 % Rel. humidity

Table 5: 433.92 MHz Europe

Maximum output power	10 mW
Frequency Minimum Typical Maximum	 433.38 MHz 433.92 MHz 434.46 MHz
Range	30 - 80 m
Complies to the following standard	ETSI/EN300220, EN301489

Table 6: 433.92 MHz USA

Maximum output power	1 mW
Frequency Minimum Typical Maximum	 433.38 MHz 433.92 MHz 434.46 MHz
Range	20 - 60 m
Complies to the following standard FCC ID:RT2-10320201	FCC15.231
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.	

Products

Table 7: 315.00 MHz

Maximum output power	1 mW
Frequency Minimum Typical Maximum	 314.60 MHz 315.00 MHz 315.39 MHz
Range	20 - 60 m
Complies to the following standard FCC ID:RT2-10320205	FCC15.231
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.	

Products

3. Placement

Placement

Topics in this chapter

Placement of the components 18

Placement

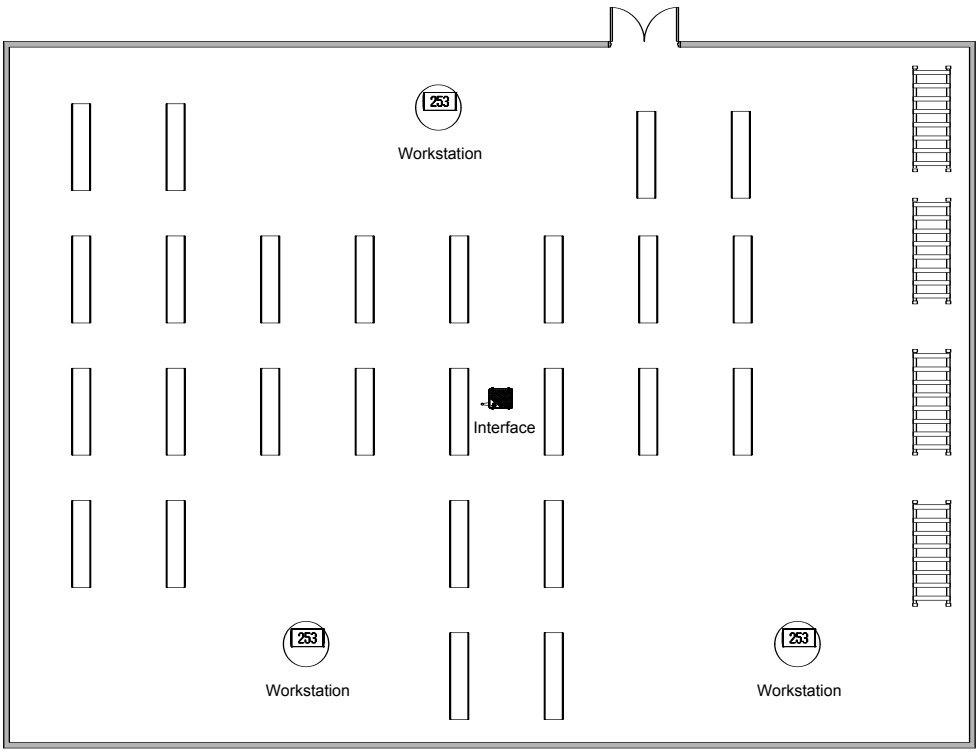
Placement of the components

The Wireless Solution uses radio signals for communication. The wireless terminals uses very low output power (10 mW for 433.92 MHz) and the result is that the range for the terminals is 80 m or less. Obstacles, interference from other radio sources, etc. usually result in a shorter range, perhaps only 30 m.

Usually you should place the multi interface in the centre of the area where the terminals will be used. This is very easy if the terminals will be used in one open room.

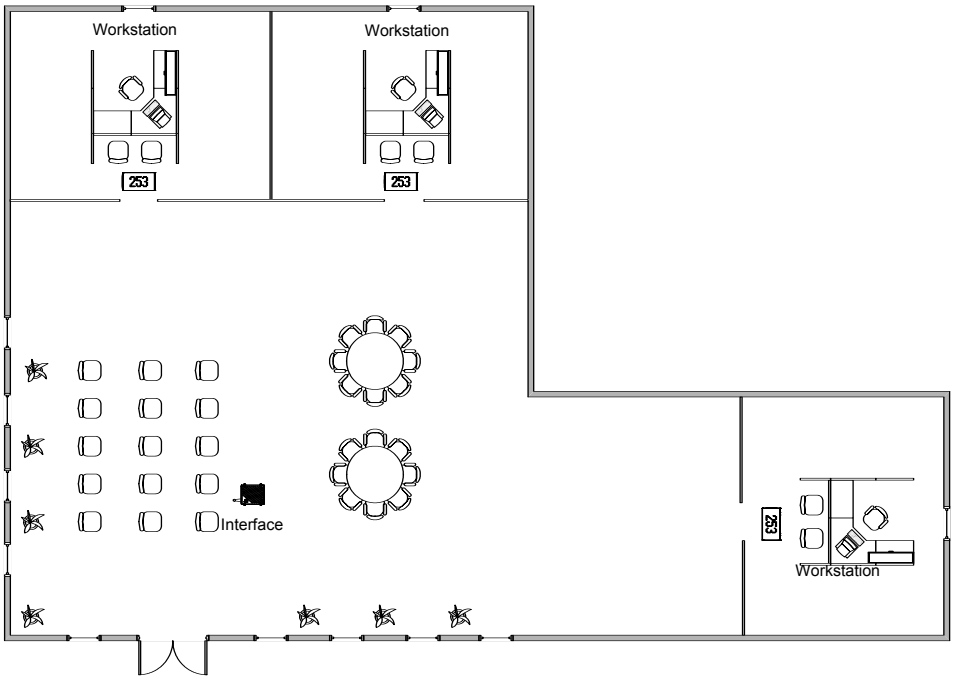
Place the multi interface as high as possible. The range is reduced if the radio waves must pass through humans.

If there are obstacles then they must be taken into consideration when you place the multi interface. The following figures give you some examples.

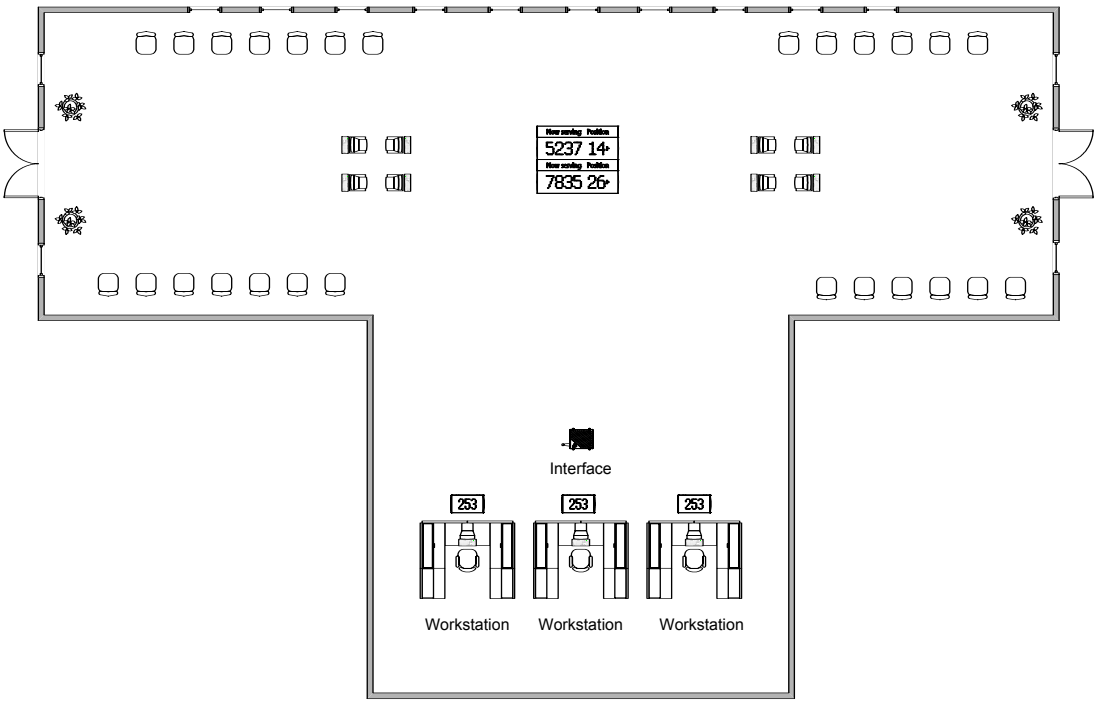


The terminals can be used in the whole room. The interface is placed in the middle of the room and usually above the acoustic ceiling. The interface must be placed under acoustic ceilings made of metal.

Placement



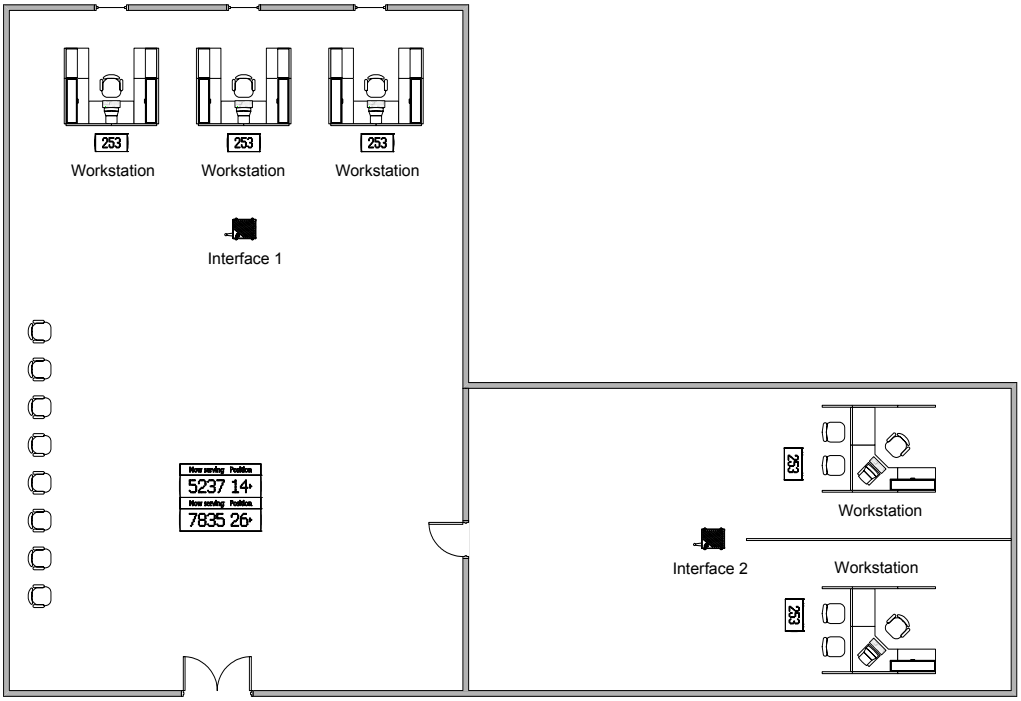
All workstation must be able to call customers. There are no walls or other obstacles between any workstation and the interface.



All workstations are placed close together. The interface is placed close to the workstations.

Placement

It is possible to have more than one multi interface with radio in the same system. This can be necessary when you want to cover a large area or more than one room. Two multi interfaces must never be placed closer than two meters from each other. It is no problem that more than one multi interface receives the signal from the same wireless terminal.



It is not possible to use one multi interface with radio to cover all workstations. Two multi interfaces with radio solve the problem.

Q-WIN cannot identify which interface that received the signal. Q-WIN only identifies the wireless terminal.

The wireless terminals are usually movable but they can be fixed to a surface. Use double sided adhesive tape to attach them to the surface. You can still replace the batteries without any problems.

4. Q-WIN 55.01p and q

Q-WIN 55.01p and q

Topics in this chapter

Settings.....22

Q-WIN 55.01p and q

Settings

It is possible to use the multi interface with radio and the wireless terminal together with Q-WIN version 55.01p and 55.01q. Both Q-WIN versions have settings for the multi interface with radio.

In Q-WIN 55.01p you select "Multi Interface" from the Settings menu. Then you click on the Optional Settings tab.

In Q-WIN 55.01q you select "Interface --> Multi Interface" from the Settings menu. Then you select MI2180.

There are three settings for the wireless terminals.

Number of active radio (55.01p), Number of radio units (55.01q)

This setting specifies the number of script entries. You get two script entries for each radio unit (active radio).

Script Program

These are the script programs that will be executed when the terminal buttons are used. Enter one script program for each terminal button.

Radio signatures

These are the radio signatures from the terminals. Each terminal button has its own signature.

There must be one script entry for each terminal button. There are three buttons on the terminals. The result is that you need 1.5 radio units for each terminal (both script entries from one setting and one of the entries from the next setting).

Example

Number of terminals	Number of radio units (active radio)
1	2
2	3
3	5
4	6
5	8

Q-WIN must learn the signature for every button on all terminals. Please read the Q-WIN Reference Manual VOL. I, page 121 (55.01p) or Addendum, page 60 (55.01q) for information about learn radio signatures. You can ignore the information about the character that indicates a long or short press of the terminal button.

Index

A
Article Number 10, 13

D
Dip-switches 9

I
ID Code 8
inputs 10

M
MI2280 8
multi interface with radio 8

O
outputs 10

P
placement 18

Q
Q-WIN 55.01p 22
Q-WIN 55.01q 22

R
radio signatures 22

S
settings 22
Sub ID Code 8

T
Technical Data 11

W
wireless solution 6
wireless terminal 11