

Radio Remote Control Systems



Manufactured by **Cavotec Micro-control**



Radio Remote Control Systems

Who we are

Cavotec is a multi-national group of companies serving the following industries: mining and tunnelling, ports and maritime, steel and aluminium, energy and offshore, airports, general industry and automation. In the early 1960's our main focus was the design and production of motorised cable reels primarily for manufacturers of tower cranes, harbour cranes and mining equipment. Today, Cavotec is connecting mobile equipment around the world in many diverse applications.

Where we are

The Cavotec Group consists of 7 manufacturing "Centres of Excellence" located in Canada, France, Germany, Italy, Norway and Sweden and by 5 local manufacturing units located in Australia, China, Germany and the USA. For the distribution of products and providing support to customers Cavotec has 27 sales companies which, together with a network of distributors, serve more than 30 countries in five continents. The ultimate objective is to be perceived as "local everywhere".

How we work

Our aim is to work closely with our customers in order to build long-term partnerships. To achieve this aim we have created a working environment that attracts the best people, encourages them to stay and brings out their best qualities. By producing totally reliable systems and backing them with efficient service, we strive to create true customer satisfaction.



Cavotec Micro-control

Since its founding in 1984, Micro-control has been manufacturing high quality and technologically advanced radio remote control systems. The partnership between Micro-control and the Cavotec Group was started in 2001. Since 2004 Micro-control has become an integrated part of the Cavotec Group and operates under its new name of Cavotec Micro-control. By using the worldwide Cavotec sales and service network, Cavotec Micro-control is now in the position to become the world's leading supplier of advanced radio remote control systems.

The current range provides a solid base of products, covering most requirements for radio remote controls within industry, offshore, mining, maritime and the process industry. All products have a high level of flexibility and are made of standard modules. Our strength and most important competitive edge is our uncompromising stance on safety and the ability to provide "custom-made solutions". Our aim has always been to deliver high quality products, on time, at competitive prices. Fast service and close contact with our customers are other important values we strongly believe in.

Cavotec Group Organisation

As shown here the Cavotec Group is organised to support its customers around the world through its manufacturing units and sales companies.

Each Cavotec manufacturing company, no matter where it is located, aims at being a market leader in its field by providing innovative and reliable products to Group customers.

Each Cavotec sales company, in the 27 countries where they operate, aims at better serving its local market following the Group philosophy "to be local everywhere".



Cavotec Micro-control radio remote controls are internationally certified and conform to the most stringent safety regulations.

Manufacturing network

Centres of Excellence

France

Cavotec RMS

Spring Driven Reels

Germany

Cavotec Alfo

Spring Driven Reels

Slipring Columns

Cavotec Fladung

Aircraft Support Systems

Security Systems

Italy

Cavotec Specimas

Motorized Cable Reels

Panzerbelt Cable Protection

Slipring Columns

Norway

Cavotec Micro-control

Radio Remote Controls

Sweden

Cavotec Connectors

Electrical Plugs & Sockets

New Zealand

Cavotec MoorMaster

Automated Mooring Systems

Local Manufacturing

Australia

Cavotec Australia

Motorized Cable Reels

China

Cavotec China

Product Assembly

Germany

Cavotec Micro-control

Radio Remote Controls

Sweden

Cavotec Sweden

Product Assembly

USA

Cavotec USA

Product Assembly

Group Partners

Belgium

Gantry

Crane Rail Systems

Italy

Brevetti Stendalto

Cable Chains

Prysmian (Pirelli)

Flexible Cables

Tratos Cavi

Flexible Cables

Sales network

Cavotec Sales Companies

Cavotec Australia
Cavotec Belgium*
Cavotec BeNeLux
Cavotec Brazil*
Cavotec Canada
Cavotec Chile
Cavotec China
Cavotec Denmark
Cavotec Finland

Cavotec France
Cavotec Germany
Cavotec Hong Kong
Cavotec India
Cavotec Italy
Cavotec Korea
Cavotec Latin America
Cavotec Mexico
Cavotec Middle East

Cavotec Norway
Cavotec Russia*
Cavotec Singapore
Cavotec South Africa
Cavotec Sweden
Cavotec Turkey
Cavotec UK & Ireland
Cavotec USA

* Branch Office

General Information

Safety in RRC systems

Cavotec Micro-control has always focused on three key elements when making advanced Radio Remote Controls: reliability, safety and innovation. With over 20 years of experience Cavotec Micro-control has always ensured the highest level of safety in its systems.

Our deliveries to high safety industries like the offshore oil industry show that our systems fulfil the most stringent requirements from our customers and the market. This is why Cavotec Micro-control RRC's have been certified by leading institutes such as ATEX and IEC.

Cavotec Micro-control has developed its Radio Remote Control systems in close co-operation with the main operators within the maritime and offshore sector. This ensures that when we design and build our systems, they are built to satisfy our customers needs and all formal requirements related to operational safety.

Improved safety through RRC

The use of wireless operator panels improve the integral safety of the complete system as the operator can place

himself in a designated safe area and at a safe distance from the machine or unit being controlled.

In applications such as offshore oil-drilling and mining it is often a necessity to be placed away from heavy equipment that is being hoisted, moved or lifted. At the same time the operator can position himself to have an optimal view of the operation, outside any dangerous area.

The use of wireless technology further enables the operator to move freely and to act quickly in any emergency situations.

In critical situations time is of the essence and having the emergency stop at the terminal enables the operator to act quickly. By pressing the emergency stop button the operator can completely stop any operation within tenths of a second.

Safety built into the system

Our systems feature a number of safety measures that are built in as a standard. In particular the redundant monitoring of the Emergency Stop System and the use of both a main processor and an additional safety processor, are worth mention-

ing. These two processor systems are implemented on totally different platforms using different design and software. This method is normally only used in more complex systems, like for instance in control systems for aircrafts. This means that one processor system failure does not affect the other.

Directives and Standards

The Cavotec Micro-control radio remote control systems have been developed, manufactured, tested and certified in accordance with relevant international directives and standards. The radio controls conforms with EU R&TTE directive EN 300 220 and EMC/ERM standards for Short Range Devices. Systems are manufactured with Emergency Stop according to EN-954-1, Cat 2, 3 and 4.

Cavotec Microcontrol is certified as a manufacturer of equipment and systems for use in potentially explosive atmospheres, (ATEX) Directive 94/9/EC.



Cavotec Micro-control RRC's are among the safest in the world. They are designed to be used in the most harsh working environments without compromise on safety or reliability.

10 steps to making you safer.

Radio terminal

1. Full system check at power-up.



2. Emergency stop ensures immediate stop of all operations.

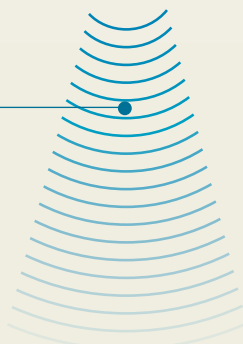
Redundant monitoring of emergency stop.

3. Redundant monitoring of joystick activity.

4. Two way radio link with unique ID-coding, CRC check and hamming distance of 6.

5. High priority emergency stop message ensures immediate stop.

6. Continuous radio link monitoring. Activation of emergency stop if communication is lost.

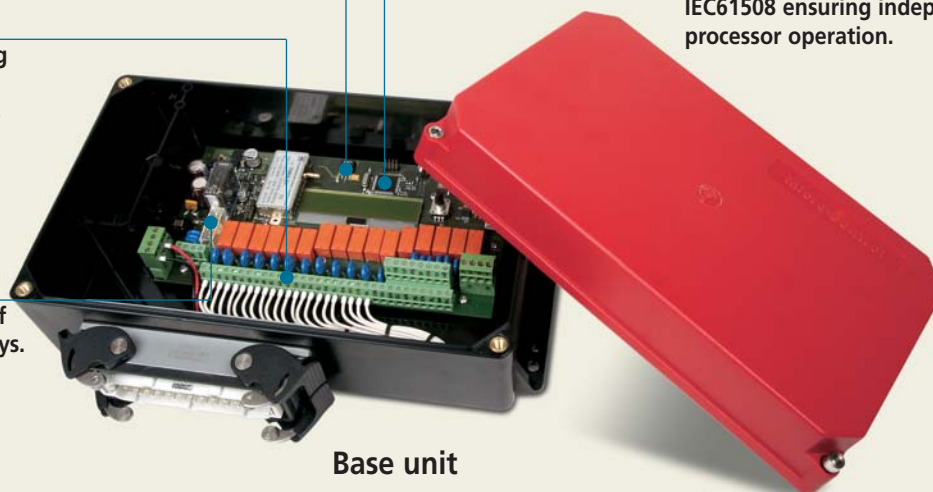


7. Dual processor system with surveillance of all safety functions.

8. Radio signal filtering that blocks out all other radio emitters (W-Lan, Bluetooth, GSM).

9. Double monitoring of emergency stop relays.

10. Dual processor system implemented according to IEC61508 ensuring independent processor operation.



Base unit

Radio Remote Control

MC-1000

The MC-1000 has been designed with the aim to provide an extremely cost efficient solution to many radio remote control needs. Thanks to its robust and easy to use design, the MC-1000 has become the preferred choice for many industry operators.

Programming

The receiver of the MC-1000 comes standard with built-in logic capability. This feature allows several functions, such as interlocking, sequences and timing functions, to be pre-programmed directly in the unit without a PLC or relay connection.

Menu system

The receiver has a built-in menu system with a text display of 2 x 16 characters and simple menu navigation system. During normal operation the display shows the operational state. By using the menu system it is possible to view all the configuration parameters and log file. Operating parameters can be changed by using the menu system.

The MC-1000 is prepared for configuration on site. It consists of a terminal unit, two rechargeable batteries, a battery charger and a base unit with relay outputs.



Thanks to their robust design Micro-control RRC's are often used in harsh operating conditions, such as construction sites.



The MC-1000 transmitter comes standard with two batteries and a fast charger. This secures constant and safe operation.

TECHNICAL DATA MC-1000

Terminal:

Functions:	8 function buttons 2 step
	4 one step selector buttons
	4 status LED's
	Emergency stop button
Battery:	2 rechargeable batteries
	Battery life before recharge > 8 hours
	Battery charger: 12 - 30 VDC
	115 - 250 VAC
	Recharge time < 2 hours
Physical size(W,H,D):	70x35x245mm
Weight:	400g
Encapsulation:	IP66
Temperature:	-25° +50°C

Base unit:

	16 relay outputs (5A)
	Emergency stop relay output (6A)
	Monitoring display
	85 – 265V AC supply voltage
	0,2 – 0,7 A current consumption
	Fuse 1A slow
	Connection on screw terminals inside housing
Physical size(W,H,D):	254x180x111mm
Weight:	1600g
Encapsulation:	Plastic housing IP66
	Surrounding temperature: -25° +50°C

General Data:

Transmitter frequency:	434.075 – 434.775 MHz programmable
Transmitted power:	10 mW
Modulation:	FM-modulation, 2400 bps
Approvals:	CE
	iDA Singapore
Max operational distance:	200m provided free sight from terminal unit to base unit.

* see pages 17 and 18 for base unit information

Radio Remote Control

MC-2000

The MC-2000 radio remote control can manage up to 20 functions simultaneously and is fitted with an ergonomic keypad.

The innovative and modular design of the unit allows for simple adjustment and service by the customer. Some of the options are:

- Proportional control possibility
- Timing functions
- Log file
- Fully configurable to suit specific requirements

Options

- Signal coordination makes it possible to control one machine from several transmitters and visa versa.
- Selectable radio frequencies prevents interruption
- Serial communication directly between receiver and PLC.

Built-in PLC

The receiver has an integrated PLC module. This allows functions to be pre-programmed directly without an external PLC or relay connection. Additionally the receiver can be equipped with digital inputs and analog outputs.

Menu system

The receiver has a built-in menu system with a text display of 2 x 16 characters and a simple menu navigation system. During normal operation the display shows the operational state. By using the menu system it is possible to view all the configuration parameters and the log file. Authorised personnel can also change the operating parameters by using the menu system.



The MC-2000 is a full featured RRC and is widely used in many different sectors of industry.



The transmitter comes with a practical holster and belt that may be used when the unit is not operated. Two batteries and a fast charger secure constant operation.

TECHNICAL DATA MC-2000

General Data

Functions:	8 function buttons 2 step
	4 selector buttons
	Built in SOFT PLC technology
Frequency Range:	418 MHz – 474 MHz
Max. operating distance:	200 m (under normal operating conditions)
	650 ft
Approvals:	CE
	iDA Singapore
Protection class:	IP 65 Standard
	IP 66/67 Optional
Temperature:	-25°C + 50°C
	-13°F + 122°F

Terminal:

Output power:	< 50 mW
	< 10 mW ISM
Sensitivity:	< 1uV
Transmission format:	FSK, 2400 bps
Transmitter weight:	Approx: 400g
	0.9 lbs
Transmitter size:	70 x 40 x 250 mm
	2.8 x 1.6 x 9.9 inch

Battery:

Battery data:	Default battery package 6V / 700mAh
	Battery charger: 12 - 30 VDC
	115 - 230 VAC
Operating time battery:	8 hours
Recharge time:	1 hour

* see pages 17 and 18 for base unit information

Radio Remote Control *MC-2-3 and MC-2-5*

The MC-2-3 and MC-2-5 standard operator terminals have been designed to provide one of the safest, ergonomic, cost effective, pushbutton remote control for industrial applications with features normally only found on top end systems.

Both terminals are equipped with a display showing operational information. The MC-2-3 has 6 two step pushbuttons, 4 single step pushbuttons and emergency stop pushbutton. The MC-2-5 has an additional 4 two step pushbuttons. The units are powered with 2 AA batteries providing 40 hours continuous safe operation.

Both systems have easily configurable standard settings based upon standard applications. User options for PIN unlock

access only, battery saving timeout, automatic channel search are accessed via the standard display and pushbuttons. Security is maintained with access codes.

The display showing signal and battery status also incorporates feedback from the machine being operated. This can be configured to show the load on a crane or winch for example.

The base unit of the system, MC-IRX-LITE, has preset selectable programs for ease and flexibility. These include interlocking between motions and separate second step relays for the two step pushbuttons. A log of the last 10 operating sessions can give indications about usage and radio signal quality.



The MC-2-3 provides a simple and totally safe solution to many radio remote needs.



The MC-2-3 and MC-2-5 provide secure access through Pincode and access codes which restrict operation to a limited number of people.

TECHNICAL DATA MC-2-3 and MC-2-5

Terminal

Functions:	6 (10 on the MC-2-5) function buttons 2 step momentary
	4 selector buttons 1 step latching
	4 status led
	1 emergency stop pushbutton
	1 display signal and battery status
	1 feedback function
Battery, power:	2 rechargeable AA batteries
	Approx 40 hours continuous operation
	Battery charger input 100-240VAC 50/60Hz or 12-14VDC 1.0A
	Battery charger display indicates battery status

	MC-2-3	MC-2-5
Dimensions:	230x74x70mm	280x74x70mm
Weight:	350g	450g
IP:	IP66 excluding battery compartment	
Temperature:	-25 to +70 Celsius, -13 to +158 Fahrenheit	
Operating distance:	Approx. 200m	
Frequency:	434 MHz (Europe, Australia), 915-928MHz (USA & Canada)	
Output power:	According to country regulations	

Base Unit MC-IRX-LITE

Functions:	Dual monitored emergency stop relay 6A 250VAC/24VDC
	16 function relay outputs 5A 250VAC/24VDC Including 4 changeover relays
	Display for setup and monitoring
	0-10V input for operator feedback
Dimensions:	330x180x115mm
Weight:	1600g
IP	IP66
Temperature:	-25 to +70 Celsius, -13 to +158 Fahrenheit
Power:	12-24 VDC (Automotive) / 110-240 VAC 50/60 Hz

Approvals

	Conforms with EU R&TTE directive EN 300 220 Radio Type Test
	EN 301 489 EMC and ERM for Short Range Devices
	EN 60950 Safety of IT and Electrical Business Equipment
	Conforms with FCC CFR 47 part 15
	Emergency Stop according to EN 954-1 Cat 2, 3 and 4

Radio Remote Control

MC-3-5

The MC-3-5 digital and analog radio remote control has a special ergonomic design that allows easy use both in the carrier belt or when carried by hand. Everything, from simple control tasking to complete process supervision, can be done in one system. Due to the efficient in-house production process the MC-3-5 can be delivered at the most competitive price.

Options

- Thanks to advanced coordination possibilities one machine can be controlled from several transmitters and visa versa.
- The built-in radio frequency selector makes it possible to change frequency.
- Direct serial communication between receiver and PLC.
- Soft start/stop of the analog functions.
- Cable communication

Built-in PLC

The receiver has a built-in PLC functionality. This allows functions, such as interlocking, sequences and timing functions, to be pre-programmed directly without an external PLC or relay connection. Additionally the receiver can be equipped with digital inputs and analog outputs.

Menu system

The receiver has a built-in menu system with a text display of 2 x 16 characters and a simple menu navigation system. During normal operation the display shows the operational state. By using the menu system it is possible to view all the configuration parameters and the log file. Authorised personnel can also change the operating parameters by using the menu system.



An MC-3-5 radio remote control being used to operate a cement mixing truck fitted with a conveyor belt.



Today, most maritime cranes are operated by remote controls. This ship fitted with Mac Gregor cranes can be tandem operated increasing the maximum load that can be carried.

TECHNICAL DATA MC-3-5

General Data:

Digital functions:	32 / 64
Analogue functions:	13
Frequency Range:	418 MHz – 474 MHz
Max. operating distance:	200 m (under normal operating conditions)
	650 ft
Protection class:	IP 65 Standard
	IP 66/67 Optional
Approvals:	CE
	Chinese Telecom Authorities
	FCC
Temperature:	-25°C + 50°C
	-13°F + 122°F

Terminal:

Output Power:	< 100 mW
	< 50 mW
	< 10 mW ISM
Sensitivity:	< 1uV
Transmission format:	FSK, 2400 bps / 9600 BPS
Transmitter weight:	Approx. 2.2kg; 4.8 lbs
Transmitter size:	230 x 175 x 160 mm
	9.0 x 6.9 x 6.3 inch
Feedback to LED or LCD display:	Optional
Cable communication:	Optional

Battery:

Battery data:	Default battery package
	Battery charger: 12 - 30 VDC
	115 - 250 VAC
Operating time battery:	> 10 hours
Recharge time:	< 3 hours

* see pages 17 and 18 for base unit information

Radio Remote Control

MC-3-6

The MC-3-6 is the system to use when absolute reliability is of the utmost importance. An area to which the system is very well suited is material handling, where long start-up procedures are the unavoidable consequence of a stop.

To guarantee this the terminal has a two battery option which allows constant operation, and "hot swapping" of batteries. The MC-3-6 is specially suited for two way communication, and has the option to house the well proven semi-duplex radio from Cavotec Micro-control. The terminal is fitted with a display which has been designed to provide maximum visibility to the operator. Depending on individual user

preferences, alarm messages can be followed by audible alarm, and the display lighting up.

With the optional double set of batteries MC-3-6 system uninterrupted operation can be achieved.

Options

- Duplex operation.
- Feedback on display.
- Audio alarm.
- Alarm signals may trigger the display back light for a pre-set time.
- Frequency selector.
- Variety of joysticks - also push-and-stay versions.



This 18000 tonnes heavy machine is operated by a Cavotec Micro-control RRC. The most reliable and modern technology is used to ensure smooth operation, as an operational stop is to be avoided at all costs.



The MC-3-6 charger accepts every voltage from 10 VDC to 250VAC and recharges the battery in less than 3 hours.

TECHNICAL DATA MC-3-6

General Data:

Digital functions:	32	
Analogue functions:	13	
Frequency Range:	418 MHz – 474 MHz	
Max. operating distance:	200 m (under normal operating conditions)	
	650 ft	
Protection class:	IP 65	Standard
Temperature:	-25°C	+ 50°C
	-13°F	+ 122°F

Terminal:

Output Power:	< 100 mW
	< 50 mW
	< 10 mW ISM
Sensitivity:	< 1uV
Transmission format:	FSK, 2400 bps / 9600 bps
Transmitter weight:	Approx: 3.1kg
	6.8 lbs
Transmitter size:	320 x 230 x 205 mm
	12.6 x 9 x 8 inch
Approvals:	CE
	FCC
	iDA Singapore
Feedback to LED or LCD display:	Optional
Cable communication:	Optional

Battery:

Battery data:	Default battery package
	Battery charger: 12 - 30 VDC
	115 - 250 VAC
Operating time battery:	> 10 hours
Recharge time:	< 3 hours

* see pages 17 and 18 for base unit information

Radio Remote Control

MC-3000

The MC-3000 is one of the most flexible radio remote control systems in the market. Everything, from simple control functions to complete process supervision, can be done from the same system. This radio remote control can solve any direct hydraulic and electric control function and provide serial communication with most known PLC and frequency converters.

An important additional feature is communication through the TCP/IP protocol. Included in this product family are the MC-3000 Ex, for use in Ex zones and the MC-3000 Extreme, which has been developed to resist most extreme operating environments.

The MC-3000 Extreme version has been specially developed for a tough maritime environment. It meets ingress protection norm IP66/67 with regards to encapsulation of the electronic parts and operator control. The plug-in battery, battery

charger and extra battery ensure a continuous operation without any disruption.

Both the MC-3000 and MC-3000 Extreme are constructed from special impact resisting and acid-proof plastic.

Options

- Full duplex communication with feedback to lamps or LCD display.
- Advanced coordination allows for the control of one machine from several transmitters and visa versa.
- Direct serial communication between the receiver and PLC.
- Soft start/stop of the analog functions
- Programmable output characteristics for analog functions.
- Availability of a wide range of control components and functions.
- Selectable radio frequency prevents interruption if several machines use the same radio frequency.



MC-3000 used together with a Cavotec MoorMaster unit to control the mooring operation, and also to monitor from the ship's bridge all alarms or incidents that take place.



Starting from the early ninties Micro-control has supplied many RRC's for ship unloaders in ports around the world.

TECHNICAL DATA MC-3000

General Data:

Digital functions:	64
Analogue functions:	13
Frequency Range:	418 MHz – 474 MHz
Max. operating distance:	200 m (under normal operating conditions)
	650 ft
Safety functions:	Unique ID code for each system
Protection class:	IP 65 Standard
	IP 66 Optional
Approvals:	CE
	FCC
	iDA Singapore
Temperature:	-25°C + 50°C
	-13°F + 122°F

Terminals:

Output Power:	< 100 mW
	< 50 mW
	< 10 mW ISM
Sensitivity:	< 1uV
Transmission format:	FSK, 2400 bps / 9600 bps
Transmitter weight:	Approx: 2.2kg
	4.8 lbs
Transmitter size:	
MC3000	250 x 158 x 180 mm
	9.85x 6.22x 7.09 inch
MC3000+	305 x 200 x 190 mm
	12.0x 7.87x 7.48 inch
Feedback to LED or LCD display:	Optional
Cable communication:	Optional

Battery:

Battery data:	Default battery package 7.2V / 1300mAh
	Battery charger: 12 - 30 VDC
	115 - 250 VAC
Operating time battery:	8 hours
Recharge time:	1 hour

* see pages 17 and 18 for base unit information

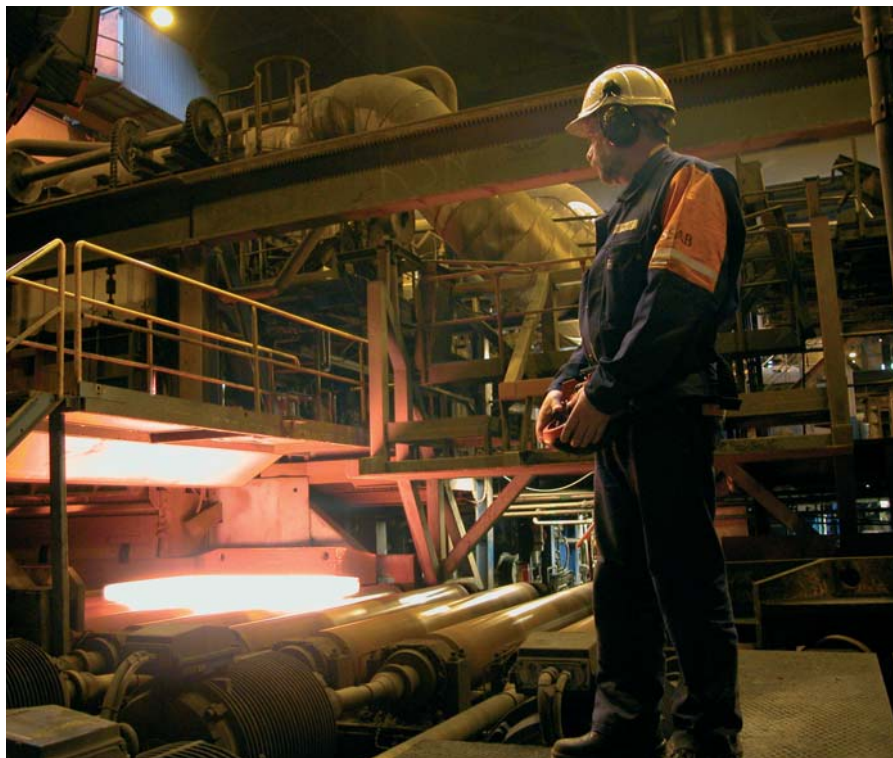
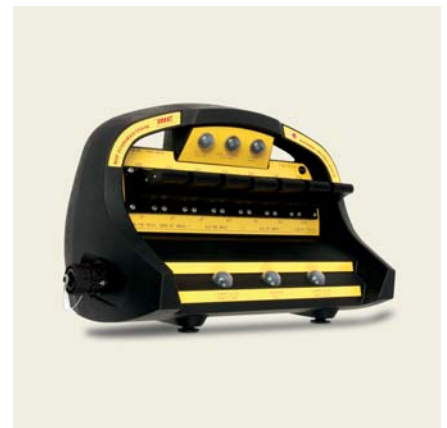
Radio Remote Controls for use in explosive areas *MC-3000 Ex and MC-3-6 Ex*

The MC-3000 Ex and MC-3-6 Ex radio remote controls provide a secure and flexible control of many different types of machinery. To a wide extent they feature the same functionality as the "ordinary" RRC's. One addition however is the possibility to use a cable control. This provides an extra failsafe against shutdown if a fault occurs in one of the other types of communication.

Both systems can be delivered with simplex or duplex communication. The duplex communication option allows the operator to receive messages (alarm messages, status indications etc.) through led's, control display, indicator instruments, etc.

Additionally the base units can be delivered with a serial interface for the most common bus standards on market today. On request, they can be delivered without explosion proof and increased safety encapsulation if this is deemed not necessary. The battery used in the terminal is intrinsically safe. As a consequence the exchanging of the battery can be done in an explosive area.

Typical applications for these radio remote controls are offshore oil and gas equipment, mining applications and maritime cranes and winches.



The MC-3000 and MC-3-6 are two of the most versatile Ex radio remote control systems on the market today. Full flexibility, full freedom and full security in the most extreme working conditions.



The MC-3000 Ex is the first ever Ex radio remote control to obtain an ATEX approval.

TECHNICAL DATA MC-3000 Ex and MC-3-6

General Data:

Digital functions:	64
Analogue functions:	13
Frequency Range:	418 MHz – 474 MHz
Max. operating distance:	200 m (under normal operating conditions) 650 ft
Protection class:	IP 65 Standard; IP 66 Optional
Temperature:	-20°C + 50°C -4°F + 122°F

Transmitter:

Output Power:	< 100 mW; < 50 mW; < 10 mW ISM
Sensitivity:	< 1uV
Transmission format:	FSK, 2400 bps / 9600 bps
Transmitter weight:	Approx: 2.2kg 4.8 lbs
Transmitter size:	
MC3000:	250 x 158 x 180 mm 9.85x 6.22x 7.09 inch
MC3000+:	305 x 200 x 190 mm 12.0 x 7.87 x 7.48 inch
MC-3-6 EX:	320 x 230 x 205 mm 12,6 x 9 x 8 inch
Feedback to LED or LCD display:	Optional

Battery:

Battery data:	Default battery package 7.2V / 1500mAh, Intrinsically safe
Operating time battery:	8 hours operation time
Recharge time:	1 hour

Approvals:

Radio:	Approved by national authorities (i.e. PT, BAPT, ART, FCC) in most countries. For a complete list please contact your local Cavotec company
ATEX and IEC EX	Zone 0 & 1, Transmitter IIB, T4 Receiver IIB/IIC, T6 Approved by DNV, sNemko and Simtars

* see pages 17 and 18 for base unit information



Radio Remote Control

Receiver units

MC-IRX

This receiver unit can be used with all types of system. It comes standard with a monitoring display and, on request, it can also be fitted with a simple PLC module.

Supply voltage receiver:

12 / 24 VDC

110-240 / 380 VAC 50/60Hz

Receiver size:

IRX: 255 x 180 x 115 mm

10 x 7.1 x 4.5 inch

Features:

- 16 relay outputs
- 15 Amps
- Duplicated monitored emergency stop relay
- IP 65/66
- Optional 6 proportional outlets
- Optional cable control



MRX

The MRX receiver is a completely modular unit and is extremely useful for systems with a lot of I/O. It can handle up to 64 relay outputs and 16 proportional outputs.

Supply voltage receiver:

12 / 24 VDC

110-240 / 380 VAC 50/60Hz

Receiver size:

According to requirements

Features:

- Cable control
- Up to 64 Relays.
- Up to 13 proportional outputs, voltage or current.
- Duplicated monitored emergency stop relay.
- RS-485 connection.



Radio Remote Control

Receiver units

Ex receivers

Upon request, the range of receivers provided by Cavotec Micro-control can all be built into an Ex d/e housing. These housings have been specially designed to fulfill all Ex requirements according to ATEX and IEC certification guidelines.

Supply voltage receiver:

12 / 24 VDC

110-240 / 380 VAC 50/60Hz

Receiver size:

Ask our sales office for sizes. Functionality as for IRX / MRX and Fieldbus receiver.

Security:

- **Zone:** I
- **Gas group:** IIB/IIC
- **Temperature class:** T6
- **Protection method:**

Explosion proof encapsulation EEx d

Increased safety encapsulation EEx e

Intrinsically safe EEx ib



Fieldbus receivers

Cavotec Micro-control fieldbus units are designed to be used with a variety of bus formats as indicated in the list below. This means shorter startup time and easy use of the system.

Supply voltage receiver:

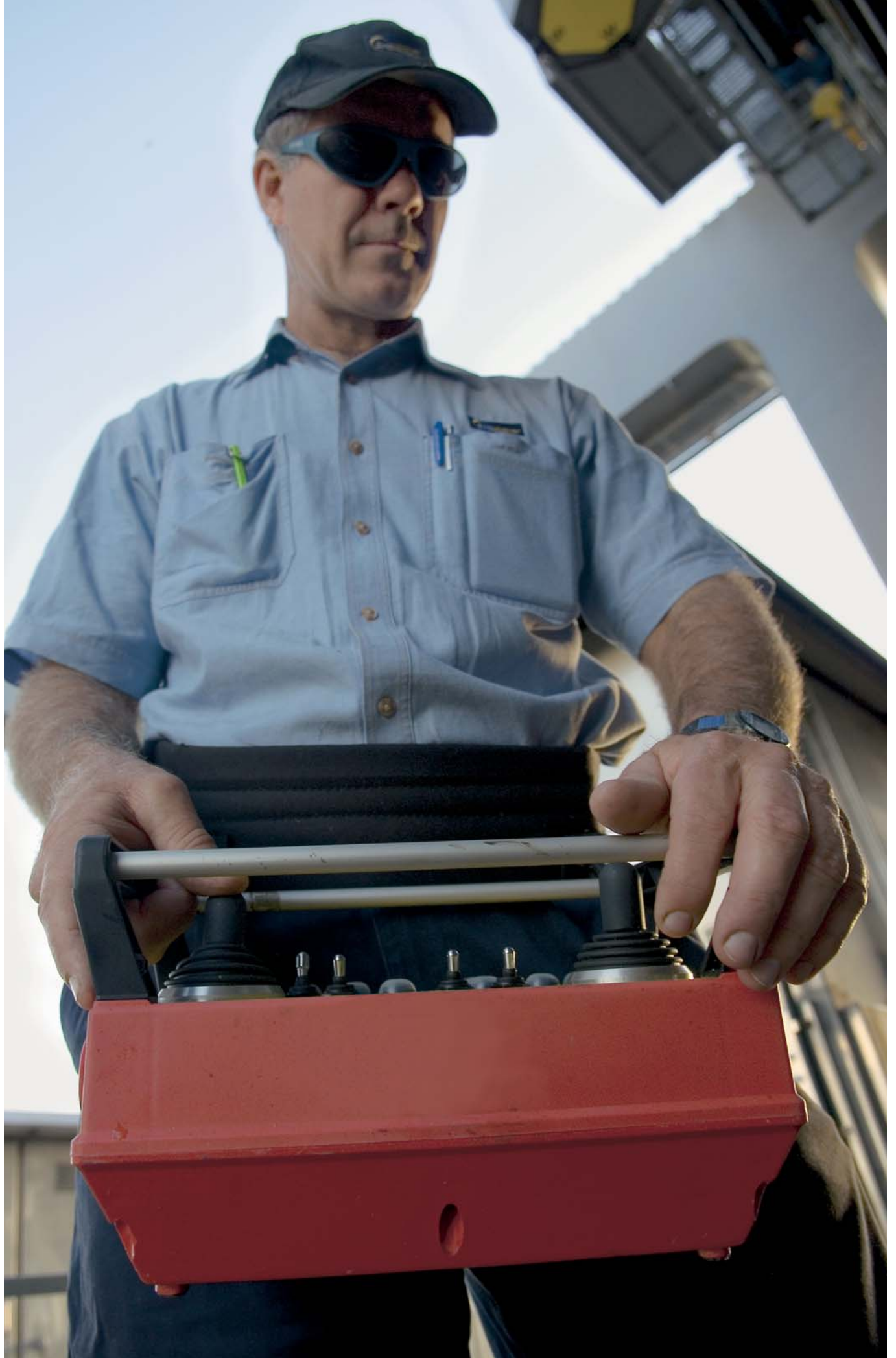
12 / 24 VDC

110-240 / 380 VAC 50/60Hz

Available fieldbus formats are:

Profibus, Modbus RTU, Siemens 3964R, CANOpen, Device Net, Interbus, LonWorks, Modbus Plus, Bradley Remote I/O, Sattbus, ControlNet, P-Net, EtherNet 1939, HostLink.





Head Office

Cavotec MSL Holdings Ltd.

Cavotec MSL is listed on the **NZX**

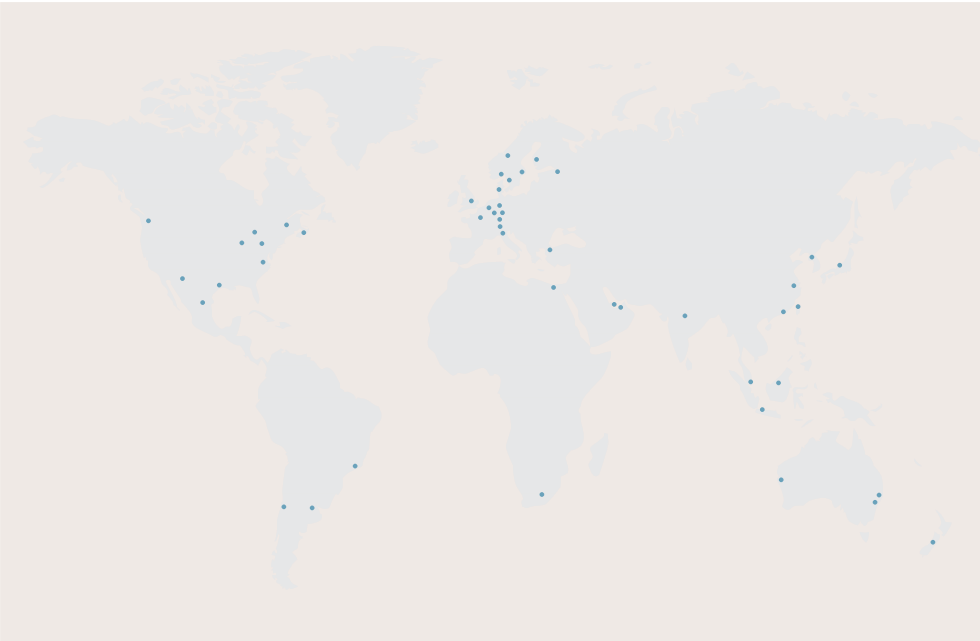
Corporate Office

Cavotec (Swiss) SA

Via Serafino Balestra 27
CH-6900 Lugano, Switzerland

We are present in

Argentina	Luxemburg
Australia	Malaysia
Belgium	Mexico
Brazil	The Netherlands
Canada	New Zealand
Chile	Norway
China	Russia
Denmark	Saudi Arabia
Egypt	Singapore
Finland	South Africa
France	Sweden
Germany	Switzerland
Hong Kong	Taiwan
India	Turkey
Indonesia	Qatar
Ireland	U.A.E.
Italy	U.K.
Japan	U.S.A.
Korea	



For more information please visit our website www.cavotec.com
or contact us directly at info@cavotec.com