MSC Advantage Remote Control User Guide

(for serial number #CXXXXXX, modified from MSC)

www.iVACswitch.com

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Introduction

This User Guide covers the General Description, Features and Programming of the iVAC Pro MSC Advantage RC (MSCA-RC). The MSCA-RC is the module within the iVAC Pro System that is used to control the Dust Collector and turn it on or off by interfacing with dust collector's own remote receiver. It works in conjunction with an iVAC Pro Tool Plus (TP)/Tool Advantage (TA) and/or the iVAC Pro Remote. The MSCA-RC receives digital wireless commands instructing it to turn the Dust Collector on or off via IVACRMDPP remote (or a modified dust collector remote if a specific dust collector remote receiver is not compatible with IVACRMDPP). Please consult with iVAC Technical Support to confirm if your dust collector remote receiver is compatible with the IVACRMDPP.

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1.0 Warnings

Please read the operating instructions before use.
The iVAC Pro System is intended for indoor use in dry locations only.

2.0 Caution

2.1 Minimum Run Time

MSCA-RC is designed to prevent the Dust Collector from being turned On/Off too frequently and possibly damage its motor.
However it is possible that during set up and other times a user can, by using the Mode Switch turn the Dust Collector on and off too often. MSCA-RC cannot protect against this situation.

2.2 Wait until Dust Collector Stops

MSCA-RC can be programmed to wait for the Dust Collector to come to a complete stop before restarting. The Oneida SMART™ dust collection systems have this requirement.
However it is possible that during set up and other times a user can, by using the Mode Switch to turn the Dust Collector on/off too quickly. MSCA-RC cannot protect against this situation.

2.3 Mounting iVAC Pro Modules

When mounting the iVAC Pro units they should NOT be mounted on large metal objects, since this can affect the communication range.

3.0 General Descriptions

3.1 General Description of the iVAC Pro System

The iVAC Pro System consists of several different components:

- The iVAC Pro Tool Plus (TP) / Tool Advantage (TA). This module is used to sense the On/Off status of the power tool, then send a RF signal to turn on/off the dust collector through iVAC Pro Switch and open/close Automated Blast Gate
- The iVAC Pro Remote. This module enables manuual control of the Dust Collector through the MSCA-RC.
- The iVAC Pro MSCA-RC Switch. This module controls the Dust Collector via the IVACRMDPP remote and it receive RF signal from TP/TA/Pro Remote.
- Automated Blast Gates. It receives RF signals from TP/TA/Pro Remote.

The following description will refer only to the TP/TA:
A work shop system may consist of up to eight TP/TA units and at least one MSCA-RC unit.
If a TP/TA unit is in the Auto mode when its related power tool is powered on or off, the TP/TA unit will transmit a command by means of a digital wireless signal to the MSCA-RC, instructing it to turn on or off.
Both the TP/TA and the MSCA-RC have a series of programmable features that are set by means of the Program Switches. The Program Switches are accessible through the small removable cover in the base.

3.2 General Description of the iVAC Pro MSCA-RC

The iVAC Pro MSCA-RC has been designed to communicate with the remote receiver of dust collectors. **An IVACRMDPP Remote or a modified dust collector remote (for remote receiver that is not compatible with IVACRMDPP) is required to work with MSCA-RC.** Please consult with iVAC Technical Support for details.

The MSCA-RC receives RF commands from either iVAC Pro Remotes or TP/TA units and then either turns the Dust Collector on or off via IVACRMDPP (or modified dust collector remote)
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The first power tool to turn on will turn on the Dust Collector. The last power tool to turn off will turn off the Dust Collector.

It essentially operates with connections to the Dust Collectors Start and Stop switches. The Dust Collector will continue to operate normally with the Dust Collectors Start and Stop switches when connected to the MSCA-RC.

Operating Features

3.2.1 Turn On Delay

When a Power Tool is turned on, the TP/TA associated with it, sends an RF On command.

When the MSCA-RC receives this On Command, it delays for 1.5 seconds (set by Switch 3 of the Program switch) and then turns on the Dust Collectors via the remote.

In Auto mode, the MSCA-RC now waits for any more RF Commands from any of the other Tools in its system.

3.2.2 Turn Off Time

The MSCA-RC remembers all the Tools that have been turned on and when all of the Tools have been turned off it starts a Turn Off Time timer which is set by the Program switches S4, S5 and S6 to 0, 5, 15, or 45 seconds.

The LED indicator on the MSCA-RC is turned on when the Dust Collector is turned on. When all of the Tools have been turned off, the LED indicator will flash at a fast rate (approximately 5 x per second) for the duration of the Off Time period. At the end of this time it turns off the LED indicator, and the Dust Collectors via the modified remote. The LED indicator will now flash at the Standby Rate. (0.5 sec on. 4 seconds off)

3.2.3 Minimum Run Time

If in Minimum Run Time mode MRT (see Sec 5.4.2 for a detailed description), the MSCA-RC keeps track of the time when it was turned on and will not turn off the Dust Collector until the Minimum Run Time has been completed. The LED indicator will flash at a slow rate (approximately 2 x per second) for the duration of the Minimum Time period.

During Minimum Run Time the LED will flash at a rate of 2 times per second.

When all the Tools have been turned off in MRT Mode and the Minimum Run Time has been satisfied; the LED indicator and the Dust Collector will be turned off via the modified remote.

The LED indicator will flash at the Standby Rate.

3.2.4 Power Up Delay sequence

On initial power up of the MSCA-RC there is a power up delay of 5 seconds before responding to the Mode Switch. During this time it turns Off the Dust Collector via the modified remote. The LED is turned on 3 times and after the LED is turned off the 3rd time the MSCA-RC is ready to operate.

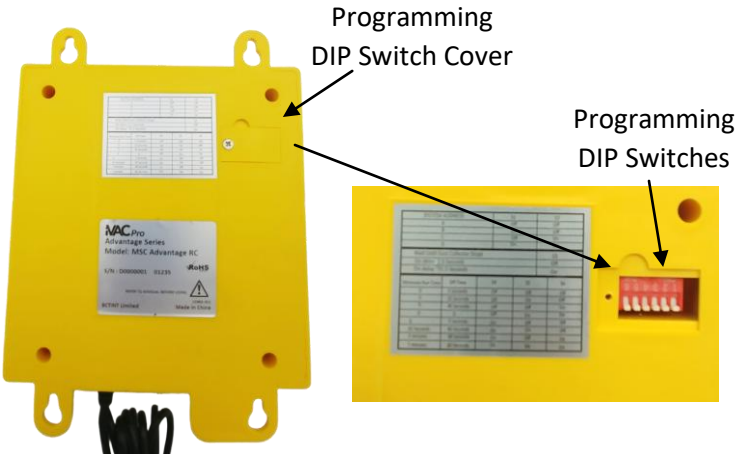
3.2.5 Wait for Dust Collector to Stop (see Sec 5.3)

This is a safety feature required by the Oneida SMART™ dust collection systems.

If S3 is in the On position, the MSCA-RC will wait 30 seconds after it has turned Off the Dust Collector before it will restart the Dust Collector.

Any RF commands from any TP/TA or Remote units will be saved and acted upon when this 30 second delay is complete. During this time the LED will repeat a pattern of pulsing on rapidly 2 times then off for 1/2 second.

3.3 Physical Features



4.0 Mode Switch Features

The MSCA-RC has three modes of operation; Auto – Off – On, as set by the Mode Switch.

Auto Mode:

When the MSCA-RC receives information from a TP/TA, or iVAC Pro Remote it will turn the Dust Collector on or off as instructed.

Off Mode:

The iVAC Pro MSC will maintain the Dust Collector in an off state.

On Mode:

The iVAC Pro MSC will turn the Dust Collector on.

5.0 Programmable Features

5.1 System Address

By means of the Program Switch the MSCA-RC can be assigned to work on one of four System Addresses, A, B, C or D. The System Address is to enable up to four systems to operate independently while within communication range of each other.

All units required to operate together must be set to the same System Address.

System Address	S1	S2
A	Off	Off
B	On	Off
C	Off	On
D	On	On

System Address Programming.
All switches shown in Off position.

Note: All changes to Program Switch settings must be made with the Mode Switch OFF.

5.2 Turn On Delay

The Turn On Delay is to avoid two power surges occurring at the same time on an AC mains circuit that is feeding both the power tool and the dust collection system. This feature is to avoid tripping the main circuit breaker.
The Turn On Delay time can be set to 1.5 seconds by means of the Program Switch.

Note: All changes to Program Switch settings must be made with the Mode Switch OFF.

On delay Time	S3
1.5 Seconds	Off
1.5 Seconds And Wait until dust collector stops (30 sec wait)	On

5.3 Wait until Dust Collector Stops

If S3 is in the On Position the MSCA-RC will wait 30 seconds after it has turned off the Dust Collector before it will it will restart the Dust Collector.

Any RF commands from any TP/TA or Remote units will be saved and acted upon when this 30 second delay is complete.

During this time the LED will repeat a pattern of pulsing on rapidly 2 times then off for 1/2 second.

5.4 Turn Off Time and Minimum Run Time

5.4.1 Turn Off Time

The Turn Off time is to allow the Dust Collector to continue to run after a power tool has been turned off. This feature is to clear up any remaining debris at the power tool and in the ducting. It may also be used to avoid quick cycling of the dust collection system.

This is the delay time from when the MSCA-RC receives a valid RF Off command from an iVAC Pro Remote or TP/TA telling it to turn off. The times are: 0, 5, 15, and 45 Seconds

5.4.2 Minimum Run Time

Larger Dust Collectors can be damaged if they are turned On/Off too frequently. MSCA-RC has the ability to make sure that the Dust Collector runs for a Minimum Run Time. The MSCA-RC calculates the time since the Dust Collector was turned on and ensures that the Dust Collector has run for at least the Minimum Run Time as programmed. The Minimum Run Time is either 2, 4, or 8 minutes. For example, if the Minimum Run Time setting is for 8 Minutes, and the MSCA-RC receives an RF Off Command after only 3 minutes, it will wait for another 5 minutes before turning off the Dust Collector. If the MSCA-RC receives an RF Off Command after the Minimum Run Time is met, then the MSCA-RC will delay by the Turn Off Time before turning off the Dust Collector.

Note: All changes to Program Switch settings must be made with the Mode Switch OFF.

S4	S5	S6	Off Time	Min Run Time
Off	Off	Off	5 sec	0
Off	On	Off	15 sec	0
Off	Off	On	45 sec	0
Off	On	On	0	0
On	Off	Off	5 sec	0
On	On	Off	1 MINUTE	1 MINUTE
On	Off	On	1 MINUTE	3 MINUTES
On	On	On	1 MINUTE	7 MINUTES

5.5 Mode Switch

The Mode Switch can be set to Auto, OFF or ON.

When no USB Power is supplied to the MSCA-RC, regardless of the Mode Switch position (Auto or OFF or ON) The MSCA-RC will have no impact on the Dust Collector.

NOTE: This will allow the ON/OFF switches on the modified remote to operate as they normally would without the MSCA-RC attached.

After Power is supplied to the MSCA-RC the Initial Power Up Delay sequence is performed (Sec 3.2.4)

NOTE: When operating normally after the initial Power Up Delay the MSCA-RC only saves the Program Switch information while it is in OFF Mode.

5.5.1 AUTO Mode

After the initial Power Up Delay, if the Mode Switch is in AUTO Mode, the MSCA-RC starts to respond to commands from Tool Plus and iVAC Pro Remote units

5.5.2 ON Mode

If the Mode Switch is in the ON mode when it is powered up, it WILL NOT turn on the Dust Collector, but when moved to OFF mode, it will turn Off the Dust Collector and the settings of the Program Switch will be saved.

If the Mode Switch is now set to On, the Dust Collector will be turned On.

5.5.3 OFF Mode

If the Mode Switch was in OFF mode at the time of the Power Up Delay sequence it will maintain the Dust Collector in an Off state.

The Program Switch setting will be stored.

NOTE: The Turn On Delay setting by the Program Switch #3 is ignored when the Mode Switch is moved from Off to On.

When the Mode Switch is moved back to the Off position the Dust Collector will be turned off immediately.

When the Mode Switch is moved to the Auto position, the MSCA-RC will delay for approximately 2 seconds and then begin responding to Tool Plus Commands.

NOTE: there will be no significant delays so it is important the operator does not move the Mode switch too quickly, AND the operator is responsible for not violating the Dust Collectors Minimum Run Time conditions

6.0 Master Reset

In today's environment there are many house hold items that use radio frequency communications. In the event that the MSCA-RC stays on due to a collision of radio frequency transmissions, the iVAC Pro MSC can be reset by removing its power by disconnecting its USB Power Supply for approximately 5 seconds.

7.0 LED Indicator

The LED indicator has several different states:

Power Up Sequence

LED flashes, 1 second On, 1 second Off, repeats 3 times during Power Up Sequence.

Standby Rate

LED flashes 0.5 second On, 4 seconds Off.
The MSCA-RC has turned the Dust Collector Off and maybe in Auto or Off Mode.

Dust Collector On

LED is On.

Minimum Run Time. (Sec 3.2.3)

LED is flashing at a slow rate of approx. 2 times per second.

Turn Off Time (Sec 3.2.2)

LED is flashing at a fast rate of approx. 5 times per second.

Wait for Dust Collector to Stop. (Sec 3.2.5)

LED flashes a repeating pattern of pulsing on rapidly 2 times then off for 1/2 second.

8.0 MSCA-RC Specifications

8.1 Physical/ Electrical

- Housing is approximately 5” x 5” x 2” ABS 94V0 plastics.
- Range, forty feet, line of sight
- Ambient operating temperature range, 0 to 30°C

8.2 Programmable features

- One of four System Addresses. A, B, C or D
- One Turn On Delay (1.5 Sec) or
  Wait for Dust Collector to Stop (30Sec)
- One of four Turn Off Times. 0, 5, 15 or 45 Sec
- One of four Minimum Run Time settings of
  5 sec, 2 min, 8min or 15 min.

9.0 System Set Up

9.1 Location

When mounting the TP/TA and iVAC Pro MSC units they should NOT be mounted onto large metal objects, since this can impact the operational range between the units. The range of forty feet is based on line of sight communications. Communications through walls may impact the forty foot range.

9.2 Setting System Address

It should be noted that for TP/TA and MSCA-RC units to work together they must be set to the same System Address. Both the TP/TA and MSCA-RC are shipped with the system address set at Address A. This can be changed if there is a clash with an adjacent system or if two systems are used in the same workshop.
The System Address is set by means of positions 1 and 2 on the Program Switch.

9.3 Setting Turn Off Time

After the MSCA-RC has been instructed to turn off by TP/TA or iVAC Pro Remote there is a programmable delay to enable all dust to be cleared from the system. The MSCA-RC is shipped with the Turn Off time set at 5 seconds. The time can be set to 0, 5, 15 or 45 seconds. The Turn Off time is set by means of Program Switches 5 and 6.

9.4 Connecting IVACRMDPP to MSCA-RC

An IVACRMDPP Remote (or a modified dust collector remote) is required to work with MSCA-RC.

**** Skip 9.4.1 if you have an Oneida dust collector or a modified dust collector remote (modified by iVAC)***
***** IVACRMDPP is pre-programmed to work with Oneida remote receiver. Please contact iVAC Technical Support if you have more than one Oneida dust collector running in your workshop.***
****** IVACRMDPP uses 2 x CR2016 batteries to operate. These batteries must be replaced whenever they go weak. We recommend to replace the batteries at least annually.***

9.4.1 Programming IVACRMDPP

1. Clear Code
   Before you can program the code from your existing remote, you need the clear the existing code.
   a. Press and hold both buttons “A” and “B” until the indicator light flashes
   b. then keep holding the button “A” and press button “B” 3 times. Indicator light will turn off during this time and will flashes again after you press button “B” 3 times.
   c. Code is clear. When you press any button the indicator will not turn on. Unit is ready for programming.

2. Program Code

   Once the code is clear you are ready to program code from your existing remote

   a. Put your remote and the IVACRMDPP close to each other.
   b. <u>Press and hold</u> the ON button of your remote.
   c. <u>Press and hold</u> the button “C” of IVACRMDPP. Indicator will flashes 2 times, stop, then flashes 3 times again. **Make sure you hold both the ON button of your remote and button ”C” of IVACRMDPP until programming is done.*
   d. If the programming is successful, the Indicator be on (while you are still holding both the ON button of your remote and button ”C” of IVACRMDPP)
   e. Release both buttons. The ON button is programmed.
   f. Press and hold the OFF button of your remote
   g. Press and hold the button “D” of IVACRMDPP. Indicator will flashes 2 times, stop, then flashes 3 times again. *Make sure you hold both the OFF button of your remote and button ”D” of IVACRMDPP until programming is done.
   h. If the programming is successful, the Indicator be on (while you are still holding both the OFF button of your remote and button ”D” of IVACRMDPP)
   i. Release both buttons. The OFF button is programmed.

j. Press button “C” on IVACRMDPP, your dust collector shall turn on.
k. Press button “D” on IVACRMDPP, your dust collector shall turn off.
l. If there may be any problem please repeat step 1 and 2 until both buttons will work properly with your dust collector.
m. Now your IVACRMDPP is ready to work with iVAC MSCA-RC switch.

9.4.2 Install IVACRMDPP to MSCA-RC

Once the communication between the IVACRMDPP (or modified dust collector remote) and your dust collector is confirmed, follow these steps to install IVACRMDPP Remote to the MSCA-RC:

1. Make sure the MSCA-RC is powered off (power adapter disconnected) and Mode Switch is set to OFF position.
2. Attach the IVACRMDPP remote to the MSCA-RC front cover using the Velcro supplied (See illustration below).
3. Connect the plug on the IVACRMDPP remote to the socket at the bottom side of MSCA-RC (See illustration below).

4. Power on the MSCA-RC and wait until it finishes initialization. It takes around 5 seconds.
5. Set Mode Switch to ON position. The MSCA-RC will turn on the dust collector. LED on the IVACRMDPP remote will flash once indicating a command being sent.

6. Set Mode Switch to OFF position. The MSCA-RC will turn off the dust collector. LED on the IVACRMDPP remote will flash once indicating a command being sent.
7. Set Mode Switch to AUTO position. The MSCA-RC is now ready to work with other iVAC Pro products.

10. IVACRMDPP Specifications

FCC ID: IVACRMDP

Areas of application:

Remote control switches, alarm systems, remote control door locks, remote control electric shutter doors and Windows, water pump control, industrial control products, etc.;

Technical parameters:

Working voltage: DC12V

Working frequency: 433.85 MHz

Standby current: 0MA

Working current: > 80MA

Encoding Type: fixed code (2260) and learning code (EV1527)

Transmission distance: > 30 m (open area sensitivity more than 103 dBm)

Output power: 30 m (0DBM);

Transfer rate: < 10 KBPS

Modulation mode: ASK (amplitude modulation)

Working temperature: - 10 ℃ ~ + 70 ℃

Size:38* 50 * 16 mm *

Tips:

1. This series of remote wireless remote control with 1/2/3/4 key optional;

2.With the power switch, remote control can turn off the power save electricity when not in use.

FCC Warning:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

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.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 0cm between the radiator and your body.

11. Warranty

This product is warranted to the original consumer purchaser for a period of one year from the date of purchase, against defects in materials or workmanship. Proof of purchase is required.

The Company, BCTINT Limited, obligations under this warranty shall consist of repair, replacement or credit, at its option, provided that the product has not been misused, abused, altered or damaged, as determined by the company.

This warranty does not cover, and is intended to exclude, any liability on the part of BCTINT Limited for incidental damages, consequential damages, labor charges or any other costs incurred in connection with the purchase or use of this product.

This warranty only applies to units purchased in Canada or the United States of America.

12. Contact

BCTINT Ltd
Unit 108, 120 Iber Road
Stittsville, ON
K2S 1E9
Canada

WWW.iVACswitch.com
email: info@ivacswitch.com
Tel: 1-613-599-8988
Customer Service Toll Free :
1-800-775-5579

IMPORTANT SAFETY INSTRUCTIONS

⚠ WARNING

- **INGESTION HAZARD:** This product contains a button cell or coin battery.
- **DEATH** or serious injury can occur if ingested.
- A swallowed button cell or coin battery can cause **Internal Chemical Burns** in as little as **2 hours.**
- **KEEP** new and used batteries **OUT OF REACH or CHILDREN.**
- **Seek immediate medical attention** if a battery is suspected to be swallowed or inserted inside any part of the body.

⚠ WARNING – Used batteries may cause severe injury or death.

⚠ WARNING – Call a local poison control center for treatment information.

⚠ WARNING – Rechargeable batteries are not to be recharged.

⚠ WARNING – Non-rechargeable batteries are not to be recharged.

⚠ WARNING – Do not force discharge, recharge, disassemble, heat above (manufacturer's specified temperature rating) or incinerate. Doing so may result in injury due to venting, leakage or explosion resulting in chemical burns.

⚠ WARNING – Ensure the batteries are installed correctly according to polarity (+ and -)

⚠ WARNING – Do not mix old and new batteries, different brands or types of batteries, such as alkaline, carbon-zinc, or rechargeable batteries.

⚠ WARNING – Remove and immediately recycle or dispose of batteries from equipment not used for an extended period of time according to local regulations.

⚠ WARNING – Always completely secure the battery compartment. If the battery compartment does not close securely, stop using the product, remove the batteries, and keep them away from children.

NOTICE – This product contains two CR2016 coin-type lithium batteries.

NOTICE – The nominal voltage of the battery contained within this product is 3V.