‘iVAC Pro Tool Plus/Tool Advantage’ User Guide

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This User Guide covers the programming, setup and use of the ‘iVAC Pro Tool Plus’ (TP) and “iVAC Pro Tool Advantage” (TA).
It also covers the General Description and Features of the ‘IVAC Pro System’.

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1. Warnings

Please read the operating instructions before use.
TP/TA is intended for indoor use, in dry locations only.
TP/TA is powered from an AC to DC 5V USB adapter.
The USB Adapter should only be connected to AC mains circuits at the rated voltage.

2. General Description of ‘iVAC Pro System’

The ‘iVAC Pro System’ consists of two groups of products.
The first group consists of units that transmit information and a second group of units that receive the transmitted information. At the present time the first group that transmit information are the ‘iVAC Pro Remote’ and two versions of the ‘iVAC Pro Tool’ units - TP and TA.

The units that receive the information are the ‘iVAC Pro Switch’, “iVAC Pro MSC’, “iVAC Pro MSC Advantage” which control the Dust Collectors and the ‘iVAC Pro Blast Gate’.

The ‘Tool’ units monitor the status of their associated power tools. When the power tool turns on it sends a digital wireless signal instructing the ‘iVAC Pro Switch’, “iVAC Pro MSC” or “iVAC Pro MSC Advantage” to turn on the Dust Collector and the ‘iVAC Pro Blast Gate’ to open. The following discussions relate to communications with an ‘iVAC Pro Switch’ although the same actions/response apply to the ‘iVAC Pro Blast Gate’.

This User Guide will focus on TP and TA.

3 Tool Plus (TP) / Tool Advantage (TA)

TP/TA is used to identify the powered on state of it's associated power tool.
TP/TA is physically clamped to the power cord of the power tool.
The method of detecting the status of the power tool is by means of sensing the magnetic field around the power cord when the power tool is turned on or off.
TP/TA is powered by +5VDC. This power is obtained from either a UL FCC approved AC to DC 5volt USB adaptor, or an associated 'iVAC Pro System' unit.
If a TP/TA is in the Auto Mode when the associated power tool is powered on, the TP/TA will transmit an instruction, by means of a digital wireless signal, to the 'iVAC Pro Switch', "iVAC Pro MSC" or "iVAC Pro MSC Advantage" instructing it to turn on and apply power to the Dust Collector.
When the power tool has been turned off, TP/TA will transmit an instruction to the 'iVAC Pro Switch', "iVAC Pro MSC" or "iVAC Pro MSC Advantage" telling it to turn off.
The range for radio communications between the TP/TA and the 'iVAC Pro Switch', "iVAC Pro MSC" or "iVAC Pro MSC Advantage" is forty feet.
When mounting the 'iVAC Pro units' they should not be mounted on large metal objects, since this can affect the communication range.

4. Physical Features

5 Modes of Operation

TP/TA has three modes of operation;
AUTO – OFF – ON, as set by the Mode Switch.
In the AUTO mode TP/TA transmits information to an 'iVAC Pro Switch' each time the connected power tool is turned on or off.
When in AUTO Mode TP/TA senses the current in the power cable of the power tool it is attached to.
If the power tool is on, the LED will be on, and the LED will be off if the power tool is off.
When the power tool turns on or off the LED will flash for about 3 seconds indicating it is transmitting the appropriate ON or OFF command.
As the Mode Switch is switched from AUTO to OFF, a transmission is sent to the 'iVAC Pro Switch', instructing it to turn off. The LED will flash during the RF transmission.
As the Mode Switch is moved from OFF to ON, a transmission is sent to the 'iVAC Pro Switch', instructing it to turn on. The LED will flash during the RF transmission.
As the Mode Switch is switched from ON to OFF, a transmission is sent to the 'iVAC Pro Switch', instructing it to turn off. The LED will flash during the RF transmission.
As the Mode Switch is moved from OFF to AUTO, a transmission is sent to the 'iVAC Pro Switch'. The command sent will be an ON command if the power tool is on or an OFF command if the power tool is off The LED will flash during the RF transmission.

OFF/EXT Mode (For TA only)

TA has an extra External Trigger Port that allows an electrical signal to trigger TA. **The Mode Switch must be in OFF/EXT mode to enable external trigger.**

In OFF/EXT Mode, the TA will accept an external trigger signal from the External Trigger Port. The unit will not respond to any changes in the status of the power tool. When a 5VDC 20mA signal is sent to the TA, it simulates the Mode Switch moving from OFF to ON. When the 5VDC signal is removed, it simulates the Mode Switch moving from ON to OFF.

TA External Trigger allows integration of a non-iVAC signal source such as computers, microcontrollers, CNCs, laser engravers, physical property sensors, etc. to control an iVAC system. Refer to Application Notes on ivacswitch.com for up-to-date information regarding iVAC integration ideas.

The External Trigger Port is compatible with a 3.5mm mono audio plug, where the tip is the 5VDC signal and the sleeve is the Ground.

Attention:

The Mode Switch must be in OFF/EXT mode to enable external trigger.

* There is a 3 to 6 second delay for RF transmission so there shall be an interval of at least 6 seconds between a mode change (OFF to ON, or ON to OFF).

** Connect plug to External Trigger Port before powering up TA.

CAUTION:
It is important to NOT change the Mode Switch while TP/TA is transmitting. You must wait until the LED stops flashing before moving the Mode Switch from Auto to OFF, OFF to ON, ON to OFF or OFF to AUTO.

NOTE
When in OFF or ON Mode the LED indicates how much current is flowing to the power tool. This indication is dependent on the setting of the sensitivity control. Once the sensitivity of the TP/TA has been properly set up, see section 11 below,

LED = Off	Power tool is off
LED = Flashing	The LED has two flash rates, both rates are faster than the Flash rate when TP/TA is transmitting RF commands.
LED = ON	Power tool is on

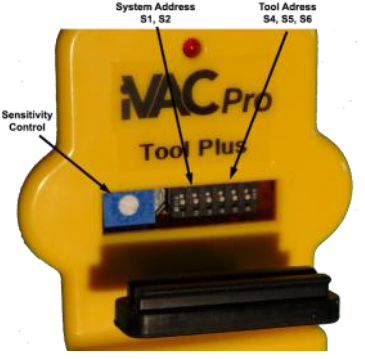
6 Program Switch

The Program Switch is accessed through the Program Switch Cover located in the top surface of the unit.

It enables the programming of the System Address and the Tool Address.

Changes to the Program Switch must be performed with the Mode Switch in the OFF position.

Changes to the Program switch with the Mode switch in AUTO mode will be ignored.



7 System Address

A System consists of up to eight TP/TA units that can control one ‘iVAC Pro Switch’ by means of the Program Switch. TP/TA 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 as a System must be set to the same System Address.

System Address	S1	S2
A *	off	off
B	on	off
C	off	on
D	on	on

* factory setting

8 Multi Tool Operation

The ‘iVAC Pro’ System has been designed so that up to eight TP/TA units can communicate with one ‘iVAC Pro Switch’ on the same System Address.

Several TP/TA units can be in operation at the same time.

The first TP/TA unit to turn on, will turn on the ‘iVAC Pro Switch’. The last TP/TA unit to turn off, will turn off the ‘iVAC Pro Switch’.

9 Tool Address

Each TP/TA unit should be assigned an independent one of eight tool addresses. This is important in a workshop where more than one power tool is being used at the same time.

This information is used by the 'iVAC Pro Switch' to enable it to know the status of each individual power tool in a system.

The Tool Address is set by means of the Program Switches 4, 5 and 6.

Tool Address	S4	S5	S6
1	on	off	off
2	off	on	off
3	on	on	off
4	off	off	on
5	on	off	on
6	off	on	on
7	on	on	on
8 *	off	off	off

* factory setting

10 Active Current sense level

This is the current level to the power tool where TP/TA identifies that the power tool is turned on.
This current level may vary between power tools and therefore the Current Sense Level is set by means of the Sensitivity Control and the Activity LED.

CAUTION
TP/TA senses the magnetic field resulting from current flow in the power cable to which it is attached.
TP/TA can be affected if it is mounted too close to motors, transformers or other devices which produce magnetic fields.
Normally a 12” to 18” distance is sufficient to avoid problems.
It is easy to see if there is magnetic interference. With the TP/TA in OFF mode and the power tool OFF the LED will flash if there is interference.

11 Sensitivity Adjustment.

TP/TA detects current flowing to a power tool by detecting the magnetic field around the power cord to the power tool. The power cord should not have a metal shield.

The power cord is loosely clamped to the back of the TP/TA as shown in the following two pictures.

The rear Clamp Cover has three positions for mounting, to accommodate various sizes of power cord diameter. Loosely attach the TP/TA to the cable.

1. Move the Mode Switch to the OFF position. Adjust the Sensitivity Control to the midpoint.
2. Turn the power to your tool ON. If the TP/TA is detecting the current flow then the Activity LED will turn on.
3. If the Activity LED does not turn on, then the Sensitivity Control should be adjusted counter clockwise until the Activity LED turns on.
4. If the Activity LED still does not come on, then the TP/TA should be rotated slowly around the cable or moved along the cable until the Activity LED comes on. At this point tighten the clamp to the cable.
5. Adjust the Sensitivity Control to a fully clockwise position. It should then be rotated slowly counter-clockwise until the Activity LED will start to flash at a slow rate and then increase until the Activity LED is on solid. This is the correct setting for this power tool.

NOTE: For medium and higher Power Tools (Power Tools of more than 200 watts) the Sensitivity Control set to mid point should be fine. For lower Power Tools the Sensitivity Control can be adjusted.

12 System Test

Turn off the power tool. Set the Mode Switch to AUTO.
Turn the power tool on.
The Activity LED should flash for approx. 3 seconds and then go to an ON state.
Turn the power tool off.
The Activity LED should flash for approx. 3 seconds and then go to an OFF state.
At this point TP/TA should be communicating with the 'iVAC Pro Switch' that in turn controls the dust collector.

13 'Tool Plus/Tool Advantage' Features

Plastic housing is 3.75" x 2.5" x 1.75" (95 x 63.5 x 44.5 mm) ABS 94V0 plastics.
Input power cord is 10 ft (3 m) long with a USB power plug.
Three Modes of operation. AUTO – OFF - ON.
Programmable System Address.
Programmable Tool Address.
Preset able Sensitivity.
Activity LED.
External Trigger Mode (Tool Advantage Only).

14 Specification

Active current sense level is adjustable from approximately 0.3Amps or greater.
Range - forty feet.
Ambient operating temperature range, 0 – 30°C.
Powered from a UL FCC approved AC to 5VDC Adaptor.

15 Regulatory Compliance

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.
(2) This device must accept any interference received, including interference that may cause undesired operation.
NOTE: 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.

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

RF Exposure

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device complies with CAN ICES-003 (B)/NMB-003(B).

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).

Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

RF Exposure

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Model: 10773-1000 FCC ID: Refer to product label IC: Refer to product label

5Volt 1Amp AC to DC Adaptor. UL and FCC approved

Conformité réglementaire

Cet appareil est conforme àla norme CAN ICES-003 (B)/NMB-003 (B).

Cet appareil contient des émetteurs / récepteurs exempt (s) de licence qui sont conformes aux RSS exemptes de licence d'Innovation, Sciences et Développement économique Canada. Son fonctionnement est soumis aux deux conditions suivantes:

(1) Cet appareil ne doit pas provoquer d'interférences.

(2) Cet appareil doit accepter toute interférence, y compris les interférences sus ceptibles de provoquer un fonctionnement indésirable de l'appareil.

Exposition RF

Cet équipement est conforme aux limites d'exposition aux rayonnements de la IC établies pour unenvironnement non contrôé. Cet équipement doit être installé et fonctionner à au moins 20cm de distance d'un radiateur ou de votre corps.

Modèle : 10773-1000

ID FCC : reportez-vous à l'étiquette du produit IC : reportez-vous à l'étiquette du produit

Adaptateur CA à CC 5 volts 1 ampère. UL et FCC approuvé

16 Warranty

TP/TA 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 TP/TA.

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

17 Contact

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