



Phoenix® Software Version 10
IHT APC M4000 System with EDGE
Connect and Phoenix



10088915 - Revision 0.1

English

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Contact us



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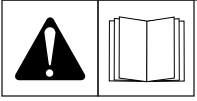
Application Note

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Original Instructions

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Safety information

WARNING! Before operating any Hypertherm equipment, read the safety instructions in your product's manual, the Safety and Compliance Manual (80669C), Waterjet Safety and Compliance Manual (80943C), and Radio Frequency Warning Manual (80945C). Failure to follow safety instructions can result in personal injury or in damage to equipment.

Copies of the manuals can come with the product in electronic and printed formats. Electronic copies are also on our website. Many manuals are available in multiple languages at www.hypertherm.com/docs.

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IHT APC M4000 System with EDGE Connect and Phoenix



How Phoenix works with an IHT APC M4000 System

This document explains how to set up Phoenix® for use with an IHT® APC M4000 System.

The IHT APC M4000 system consists of the the APC station and of the ECO user interface which controls the settings and the operation of the cutting process. One cutting system with EDGE® Connect CNC can integrate from one to eight APC stations.

The main parts of the APC station are:

- APC Gas Controller
- M4000 Lifter
- FIT+ three Torch

When you use an EDGE Connect CNC with the IHT APC M4000 System, Phoenix controls the motion. The APC system controls the cutting process.

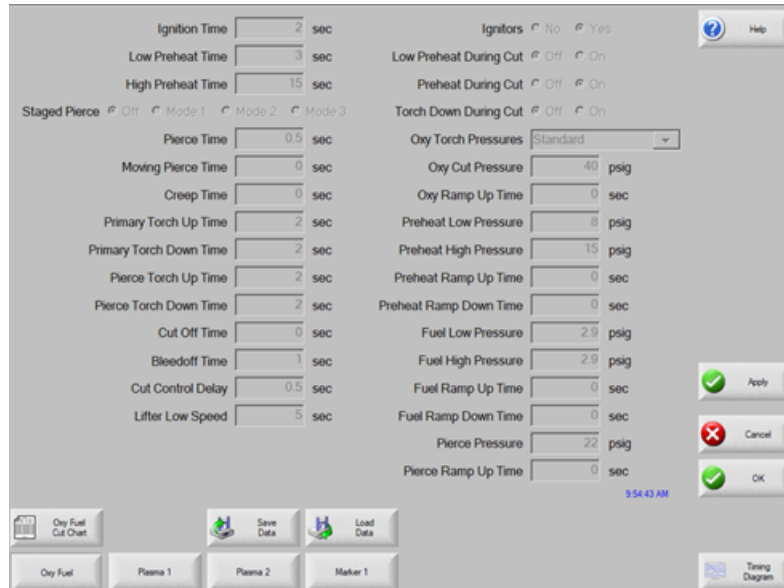
With this setup, Phoenix does only these tasks:

- Moves the torch to the starting XY position.
- Tells the APC M4000 System to enable Cut Control.
- Waits for the APC M4000 System to tell Phoenix it is ready to move (Cut Sense On).

As a result:

- You cannot change values on the **Process** screen. There is no process data exchange between the IHT or APC and Phoenix. Make sure that the process selection in Phoenix matches the lifter.
- The only values that you can edit on the **Cut Chart** screen are the **Process Selection**, **Cut Speed**, and **Kerf** fields. Refer to [Select cut charts on page 11](#).

Figure 1 - The process screen is read-only.



IHT supports use of the Software Operator Console (Soft Op Con) in both Manual and Automatic modes. Station Selection is also supported using M37 T# codes in part programs. The M36 T# codes are not required because IHT does not use Process Selection.

Necessary equipment

This document is for a cutting system with the following equipment:

- EDGE Connect Computer Numerical Control (CNC) with Phoenix 10.28.0 or later
 - At a minimum, the Intermediate Plasma/Oxy module (081277) is required.
 - To install CNC software updates, refer to the *Phoenix Release Notes (10088333)* available at hypertherm.com/docs.
- APC M4000 system with one or more APC stations installed on your cutting system

The CNC can support more than one cutting station on one cutting system. Note these conditions:

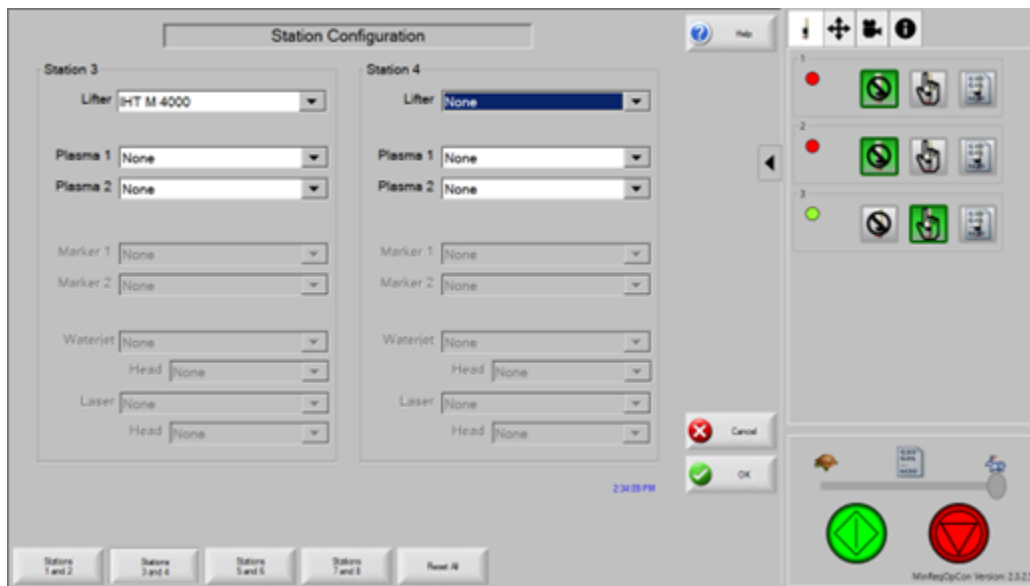
- You can enable more than one IHT APC station at the same time.
- Do not enable IHT APC stations together with standard oxyfuel stations.
- To operate each cutting station independently, each station must have numbered Input/Output (I/O).

Set up stations in Phoenix

If you have the [Necessary equipment on page 8](#), you can set up stations after you tell Phoenix what tools are installed.

1. On the **Setups > Password > Special Setups** screen, locate the **Tools Installed** list and select **OxyFuel**.
2. On the Phoenix Main screen, select the **OxyFuel** Cut mode.
3. Go to the **Setups > Password > Station Configuration** screen.
4. In the **Lifter** dropdown, select **IHT M4000** for each station with this lifter.

Figure 2 - Example of IHT Lifter being configured on Station 3.



5. Select **OK** to save your changes.

What to do next: [Assign inputs and outputs on page 9](#)

Assign inputs and outputs

Assign four outputs and two inputs before you control an IHT lifter with I/O.

1. Go to **Setups > Password > Machine Setups > Digital I/O**.
2. Make sure that the four Phoenix outputs and two Phoenix inputs listed below are selected.

Phoenix Output	IHT Input
Station Enabled Led – Enables the IHT lifter when the station is enabled in Phoenix.	Torch Disable
Torch Up – Raises the IHT lifter.	Manual Up
Torch Down – Lowers the IHT lifter.	Manual Down
Cut Control – Starts the cutting cycle on the IHT lifter.	Start Process

Phoenix Input	IHT Output
Oxy Lifter Error – Tells Phoenix there is an error. Phoenix then stops motion and shows blue status text on the main screen. A popup appears if the Start button is selected.	ERROR
Cut Sense – Tells Phoenix to begin motion for cutting.	OK to Move



Use numbered I/O to identify stations when the cutting system has more than 1 station or uses an operator console (with either a single torch or multiple torches). We recommend that you match the I/O number to the station number.

For example, if the IHT lifter is assigned on Station 1, then enable the **Cut Sense 1** input and the **Cut Control 1** output. Refer to the example that follows and refer to *Station Setup* in the *EDGE Connect Installation and Setup Manual (809340)* for more information.

Figure 3 - Example of input and output assignments for Station 1

Inputs 1-32 Logic 0 Joystick Installed No Yes ? Help

Normally	Input
Open	Oxy Lifter Error 1
Open	Cut Sense 1
Open	X -Overtravel Switch
Open	X +Overtravel Switch
Open	Y -Overtravel Switch


Input 2 - Cut Sense 1 - PLC Op Con Read-Only
Torch Collision Uses Fast Decel Fault Ramp

Outputs 1-32 Logic 0

Normally	Output
Open	Cut Control 1
Open	Station Enable Led 1
Open	Torch Up 1
Open	Torch Down 1
Open	Output5

Output 4 - Torch Down 1 - PLC
Drive Enables Independent Series
Initial Feedback Delay 0 sec

3:09:15 PM

Machine  Speeds

3. Select **OK** to save your changes.

Select cut charts

On the **Cut Chart** screen (**Main > Cut Chart**), make your Process Selections. The fields that are gray are read-only.

Figure 4 - Example of the Cut Chart screen with an IHT Lifter



 The Torch Type must be set to **IHT FIT+**. The Process screen is read-only.

Status messages and errors

This section describes common blue status messages shown below the Part Preview area when using an IHT Lifter.

Table 1 - Common status messages

Status message	Meaning	Action	Example
Waiting for IHT Lifter	Shows when Phoenix is waiting for the “Cut Sense” input.	No action is necessary.	Refer to Figure 5 on page 13 .
Cut Sense Lost	Shows when the IHT Lifter stops sending the Cut Sense signal during a cut. The system pauses the cut.	Correct the problem on the APC system before you continue.	Refer to Figure 6 on page 14 .
Conflicting Process on Active Stations	Shows if IHT lifter stations and non-IHT (standard Phoenix) oxyfuel stations are enabled at the same time.	Disable any station that is not set up with an IHT lifter to continue cutting with the IHT lifter.	Refer to Figure 7 on page 15

Figure 5 - Example of the Waiting for IHT lifter status message

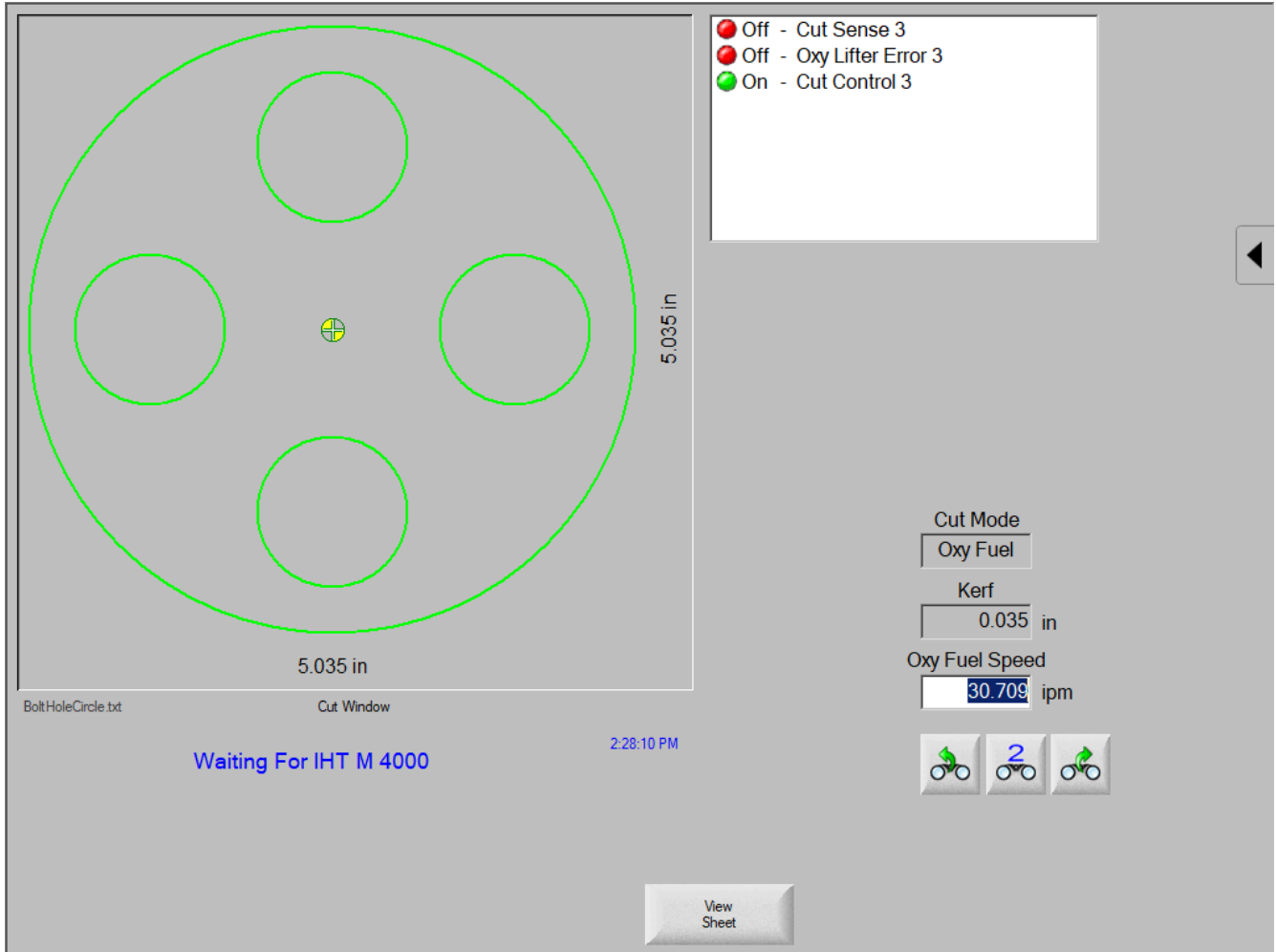


Figure 6 - Example of the Cut Sense Lost status message

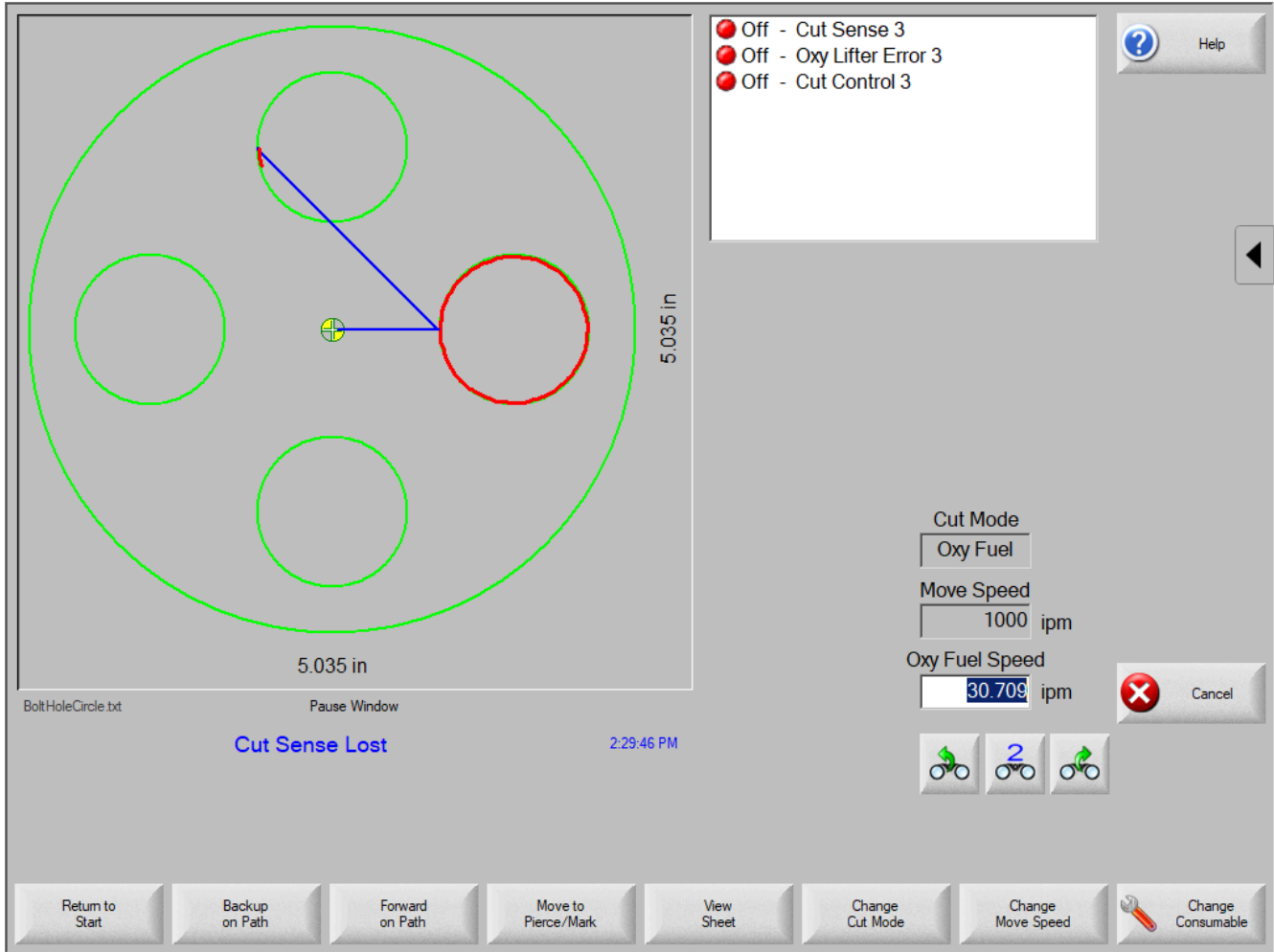


Figure 7 - Example of the Conflicting Process status message

