



REPLACING THE CONTROL BOARD ON TECHSYS ORCA, MINKE AND SWORDFISH PLUS CONTROLLERS

PLEASE READ THESE INSTRUCTIONS CAREFULLY.

IF YOU DO NOT FULLY UNDERSTAND, **DO NOT** INSTALL THIS CIRCUIT BOARD WITHOUT FIRST CONTACTING TECHSYS.

- In March 2016 a new version of the 3PC control board was released, this is 3PC-V8.1 Additional connections were included and are explained in more detail below.
- 3PC-V7.3 and was released in April 2014. This version had a no removable EPROM- Functionally it is the same as the 3PC-V7.0 and 3PC-V5-R (S/N 4600 onwards)
- The version before this was 3PC-V7.0 and was released in January 2014. IP67 pushbuttons were included- Functionally it is the same as the 3PC-V5-R (S/N 4600 onwards)
- Prior to this was 3PC-V5.0
 - The original version V5.0 was released in 2007. Pre S/N 4600
 - On October 2009 changes were made to make it more flexible for different applications, this was called the 3PC-V5-R which covers control boards from S/N 4600 onwards. Functionally the V5-R version is the same as 3PC-V7.0
 - All 3PC-V5 boards have a removable EPROM, whereas some 3PC-V7 & all 3PC-V8 do not.

If a V7 or V8 control board is being used to replace an older version V5 control board, you will firstly need to determine which version you are replacing and pay special attention to the following.

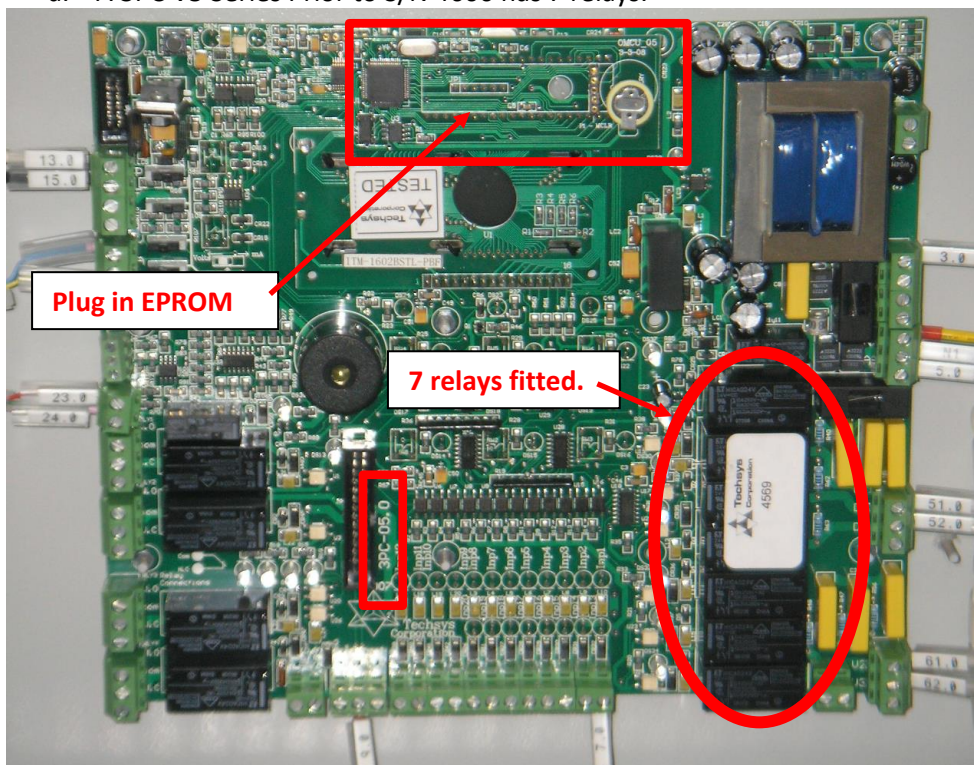
The critical difference between older 3PC-V5 (Pre S/N 4600) and later 3PC-V5 (S/N 4600 onwards) or 3PC-V7 or 3PC-V8 is this.

- 3PC-V5 (Pre S/N 4600) will automatically select and output the same voltage that is used to power the control board. To explain further, this means if it is powered from 240VAC, the outputs V1 to V3 & D1 to D3 will then output 240VAC when in use. If the control board is powered from 24VDC, then these outputs will be 24VDC.
- 3PC-V7 & 3PCV8 & 3PC-V5-R (S/N 4600 onwards) have the facility to connect a separate supply voltage to the output relays, this is done via the 3PEX connector. The control board can be powered from 240VAC and the outputs can then be connected to a 24VDC supply and switch 24VDC on each pump output, this is the case with most all VFD systems. 240VAC can also be used and is typically the case for Lead Lag Auto Rotate systems.

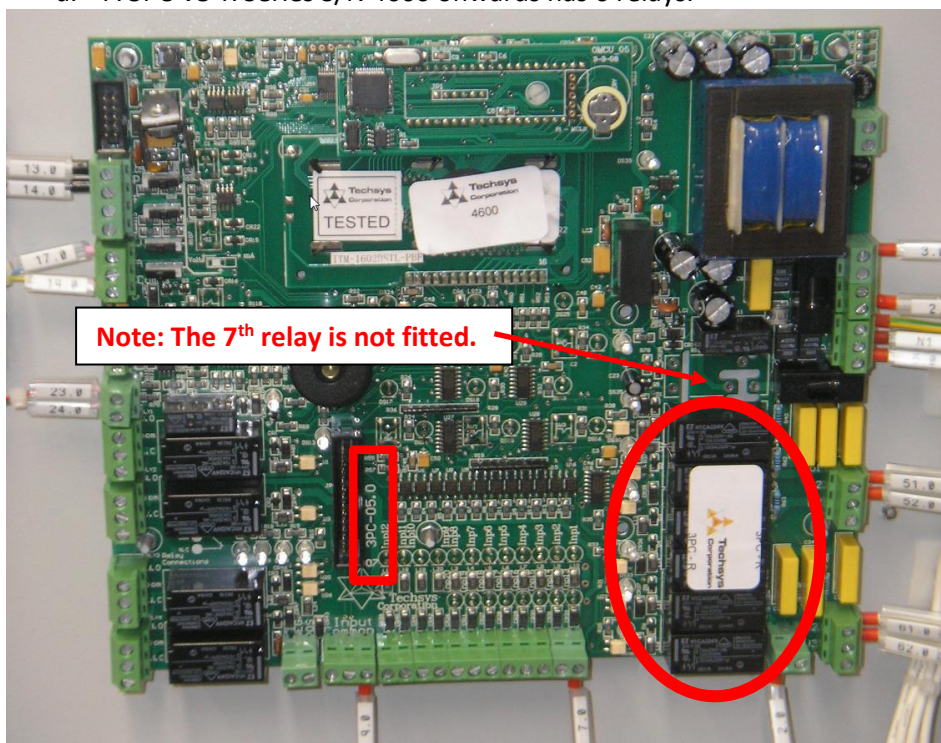
If a 3PC-V5 (Pre S/N 4600) is fitted to a 3PC-V5-R (S/N 4600 onwards) or V7 or V8 installation, the results can be disastrous, as 240VAC may be connected to 24VDC or extra low voltage equipment.

Snapshots of the different versions.

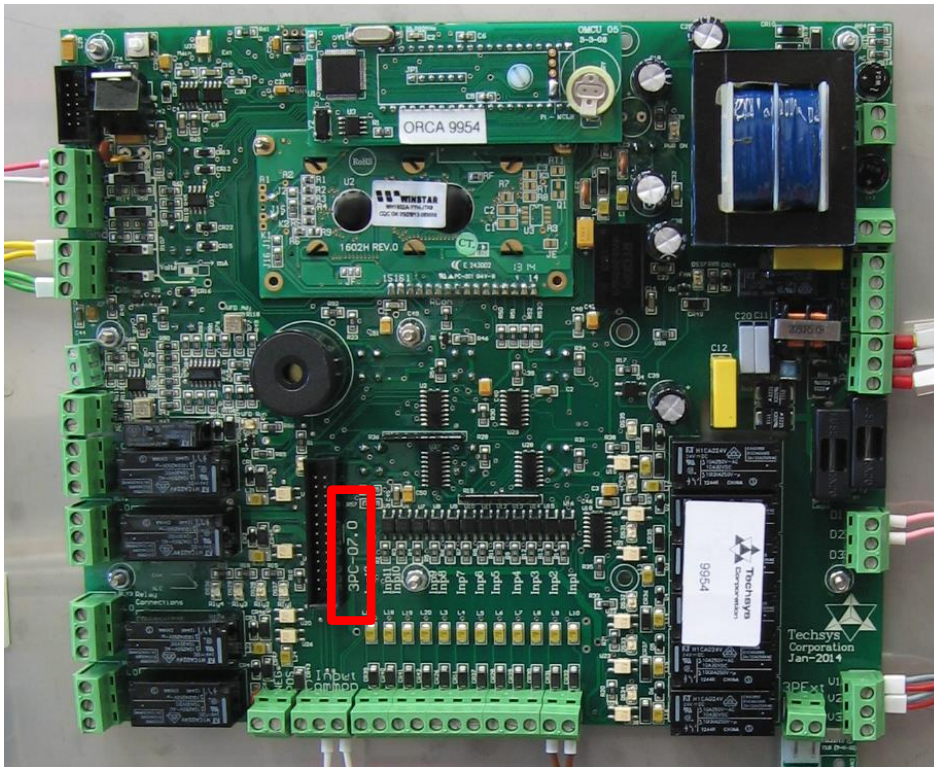
1. 3PC V5 Series Prior to S/N 4600. Apart from the serial number, the next best way of determining which version it is will be to count the relays on the output side.
 - a. A 3PC V5 Series Prior to S/N 4600 has 7 relays.



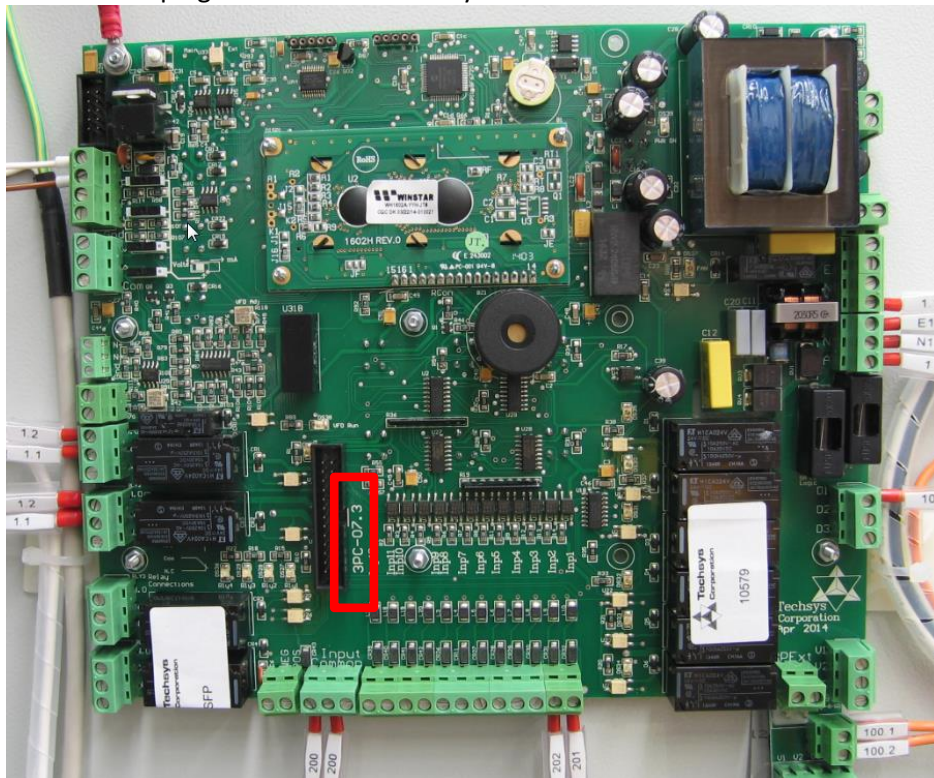
2. 3PC V5-R Series S/N 4600 onwards. Again, apart from the serial number, the next best way of determining which version it is will be to count the relays on the output side.
 - a. A 3PC V5-R Series S/N 4600 onwards has 6 relays.



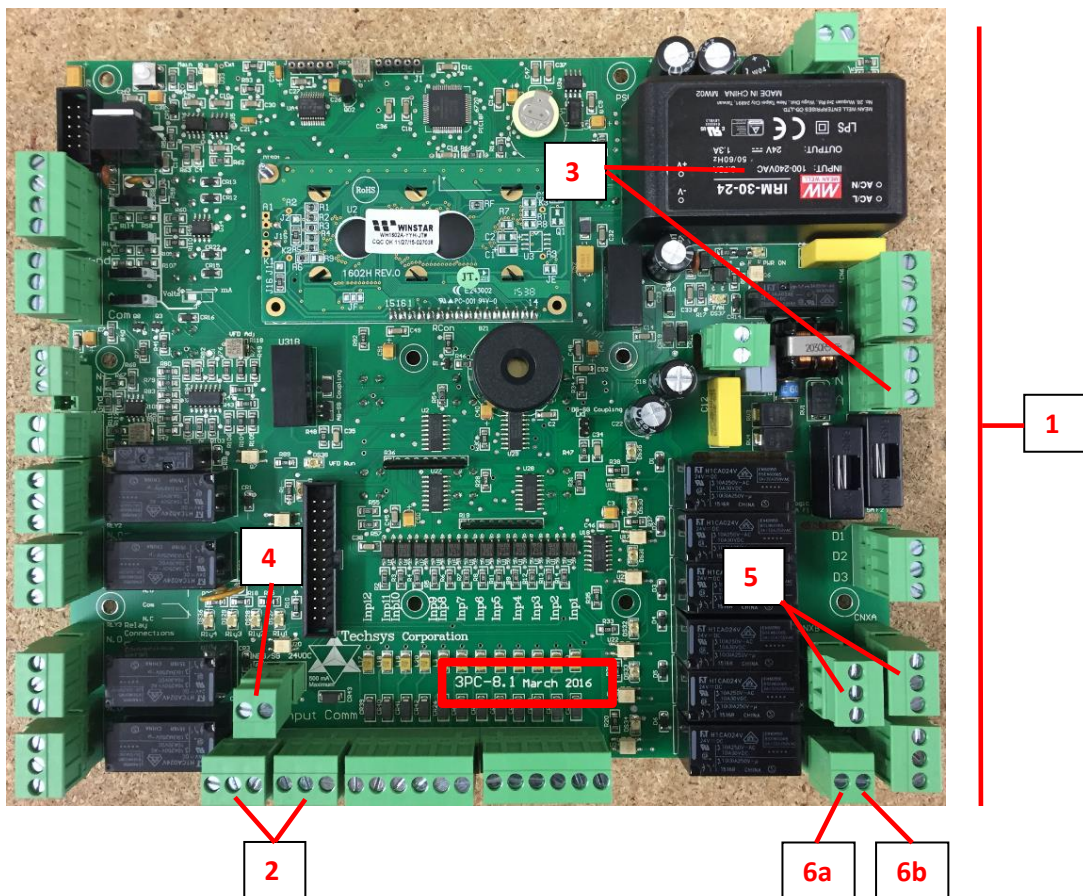
3. 3PC V7.0 Plug in EPROM and 6 relays.



4. 3PC V7.3 No plug in EPROM and 6 relays.



5. 3PC V8.1 No plug in EPROM and 6 relays.



There are a number of new inclusions on the V8.1 control board.

1. All connectors are plug-in style.
Every connection can now be unplugged/disconnected without tools.
2. Six input common terminals.
This was increased from three to allow for a maximum of two wires in each terminal if all inputs are used.
3. Wide range multi voltage supply.
The board will accommodate 100VAC to 240VAC 50Hz/60Hz.
4. Larger 24VDC output for powering other devices.
Previously it was only 50mA and suitable for small sensors, it has been increased to 500mA.
The connector has also been moved from its original location.
5. Inbuilt VFD control power connections for six (6) VFDs.
This function was previously accommodated by adding an external adaptor. Two connector with three terminal each for connection of the 24VDC supply from each VFD.
6. Changed functionality for the 3PEX connector. Previously both terminals on the 3PEX connector were connected to the common connection for the six output relays. D1, D2, D3, V1, V2, V3. They are now arranged accordingly.
 - a. Common connection to the output relays.
 - b. Common supply from the individual VFD 24VDC supplies.

For normal ALL VFD operation a link has to be fitted between 6a & 6b.

On a Lead Lag Auto Rotate systems, 240VAC is typically connected to 6a.

On a Std Lead Lag system, 240VAC is used if the starter (DOL/Soft) has a 240V control input, terminal 6a is also used in this instance.

3PC Control board compatibility chart

From:					
3PC-V5.0	<i>Direct change over</i>	<i>Link wire to 3PEX terminal required</i>	<i>Link wire to 3PEX terminal required</i>	<i>Link wire to 3PEX terminal required Also requires shorter mounting spacers</i>	<i>Link wire to 3PEX terminal required Also requires shorter mounting spacers</i>
3PC-V5.0-R	<i>Definitely not recommended and caution is required. It may result in equipment damage on some installations.</i>	<i>Direct change over</i>	<i>Direct change over</i>	<i>Requires shorter mounting spacers</i>	<i>Requires shorter mounting spacers</i>
3PC-V7.0		<i>Direct change over</i>	<i>Direct change over</i>	<i>Requires shorter mounting spacers</i>	<i>Requires shorter mounting spacers</i>
3PC-V7.3		<i>Requires longer mounting spacers</i>	<i>Requires longer mounting spacers</i>	<i>Direct change over</i>	<i>Direct change over</i>
3PC-V8.1		<i>Requires longer mounting spacers</i>	<i>Requires longer mounting spacers</i>	<i>Direct change over</i>	<i>Direct change over</i>
To:	3PC-V5.0	3PC-V5.0-R	3PC-V7.1	3PC-V7.3	3PC-V8.1