

### **XKL INVERTER INSTRUCTIONS**

The inverter drive should be installed in a clean well-ventilated area; if there is difficulty accessing the keypad from its installed location Power Capacitors Ltd can supply a Remote Control Station (RCS) with large Stop/Start - Forward/Reverse – Speed Potentiometer controls in a durable enclosure that can be safely installed on your machine. The RCS is supplied with a two metre length of cable.

If you have purchased the RCS as well as the inverter, please follow the dedicated RCS instructions in conjunction with this sheet.

The factory default settings for a new XKL inverter are for local keypad operation using the Start/Stop buttons and the potentiometer or up/down buttons for control of frequency.

- Connect the dual-voltage motor configured in "Delta" for operation at 220-240V 3 phase to the terminals marked U – V – W & Earth (Ground "G") using a length of screened cable.
- Connect the input single phase power Live-Neutral & Earth 230 Volts 50Hz to R/L1 – S/L2 & Earth.
- Test the drive operation using the keypad.
- A new inverter is supplied with factory default settings for maximum frequency (50Hz), minimum frequency (0Hz), and acceleration and deceleration times (10 seconds). The factory default settings appear in the IMO instruction manual supplied and can be changed as follows.

**ENSURE NO CONNECTIONS ARE MADE TO THE TERMINALS MARKED "+" and "PB". THESE TERMINALS ARE FOR BRAKING RESISTOR CONNECTION ONLY AND WILL CAUSE MAJOR DAMAGE TO THE DRIVE.**

#### **"Local" Keypad and Potentiometer Operation**

The XKL inverter can be programmed to operate in a number of ways. This section explains how to operate the inverter using the keypad for start and stop functions and the potentiometer to vary the motor speed. The parameters listed below are just a few of those available to change to obtain the best results from the inverter for your particular application. We have included, where appropriate, the factory default setting and a brief description of the parameter's function.

The parameters are gathered together in 13 sub-menus listed between P00 and P17. Each of these menus then has a second set of parameters. The nomenclature used is P\*\*,\*\* so parameter 02 in menu P04 would be listed as P04.02.

The menu list is accessed by pressing the PRG/ESC key, then pressing the up and/or down keys to change the menu, then press the DATA/ENT key to access that menu.

Once in the menu use the up and/or down arrows to choose the parameter that you require to change. Press DATA/ENT to access the parameter then use the up and/or down arrows to change the value (shift key allows specific digit to be selected). Press DATA/ENT to save. The display will jump to the next parameter.

Press PRG/ESC button to get back to the menu display. Press PRG/ESC in the menu display to get back to the standard run display.

## Suggested Parameter Checks and Changes

Parameter P00.01 – Sets the control method of the drive. **Factory Default is 0** which allows for control via the keypad and potentiometer on the drive (see P:00.06 below). If the drive does not respond to start/stop and potentiometer control check that this value is set to 0.

Parameter P00.03 – Sets the maximum output frequency of the drive (acceleration and deceleration times are based on this value). **Factory Default is 50Hz**. Customers can change this parameter to any level between 0Hz and 200Hz. Note (a) most motors are designed to operate at a maximum of 60Hz (b) if this parameter is changed to more than 50Hz parameters P0.04 and P0.05 will need to be changed accordingly.

Parameter P00.04 – Sets maximum running frequency of the drive. **Factory Default is 50Hz**

Parameter P00.05 – Limits the minimum running frequency of the drive. **Factory Default is 0Hz**.  
*Note that minimum Frequency/Speed functions when motor is running. Display will not show minimum level set-point unless motor is running.*

Parameter P00.06 – Allows use of potentiometer on keypad. **Set to 1 if potentiometer required. Factory default is 2.**

### **NOTE : P00.03 >= P00.04 >= P00.05 FOR DRIVE TO OPERATE CORRECTLY**

Parameter P00.11 – Sets acceleration time of the drive from 0Hz to maximum frequency (set in P0.03). **Factory Default is 10 seconds.**

Parameter P00.12 – Sets deceleration time of the drive from maximum frequency (set in P0.03) to 0Hz. **Factory Default is 10 seconds.**

Parameter P00.13 – Sets the default running direction the drive. **Factory Default is 0**. Change to 1 to reverse the motor direction instead of changing motor wiring.

Parameter P01.01 – Ensures Minimum Frequency level functions correctly. **Factory Default is 0.5Hz. This should be set at 0.0Hz** (see P.00.05)

Parameter P02.01 – This is where you input the kW rating of the motor.

Parameter P02.05 – This is where you input the full load current of the motor at 220-240V (usually the higher of the two current ratings on the motor plate).

## Values shown on Keypad display

The display, when running can be set to show the running conditions of the drive. By pressing the SHIFT button the display will cycle through the following list of drive characteristics :-

Hz LED on	–	Running frequency
Hz LED flashing	-	Set frequency
V LED on	–	Bus Voltage
V LED on	–	Output Voltage
A LED on	–	Output current
Hz and A LEDs on	-	Running rotation speed
Hz and A LEDs on	-	Output power
Hz and A LEDs on	-	Output torque
Hz and A LEDs flashing	-	PID reference
Hz and A LEDs on	-	Feedback value

## **REMOTE CONTROL STATION (RCS) INSTALLATION INSTRUCTIONS** **FOR CONNECTION TO IMO iDRIVE2 XKL INVERTER.**

The default settings for a new XKL are arranged for keypad operation i.e. using the Stop/Start buttons plus using the potentiometer for speed up & slow down.

To carryout a basic setup plus installation of the RCS proceed as follows.

- Connect a suitable motor configured to operate on 230 Volts 3 phase (delta connected) to terminals U – V – W & PE (Earth).
- Connect the input single phase power 230V 50Hz to terminals R/L1 (Live) –S/L2 (Neutral) & Earth

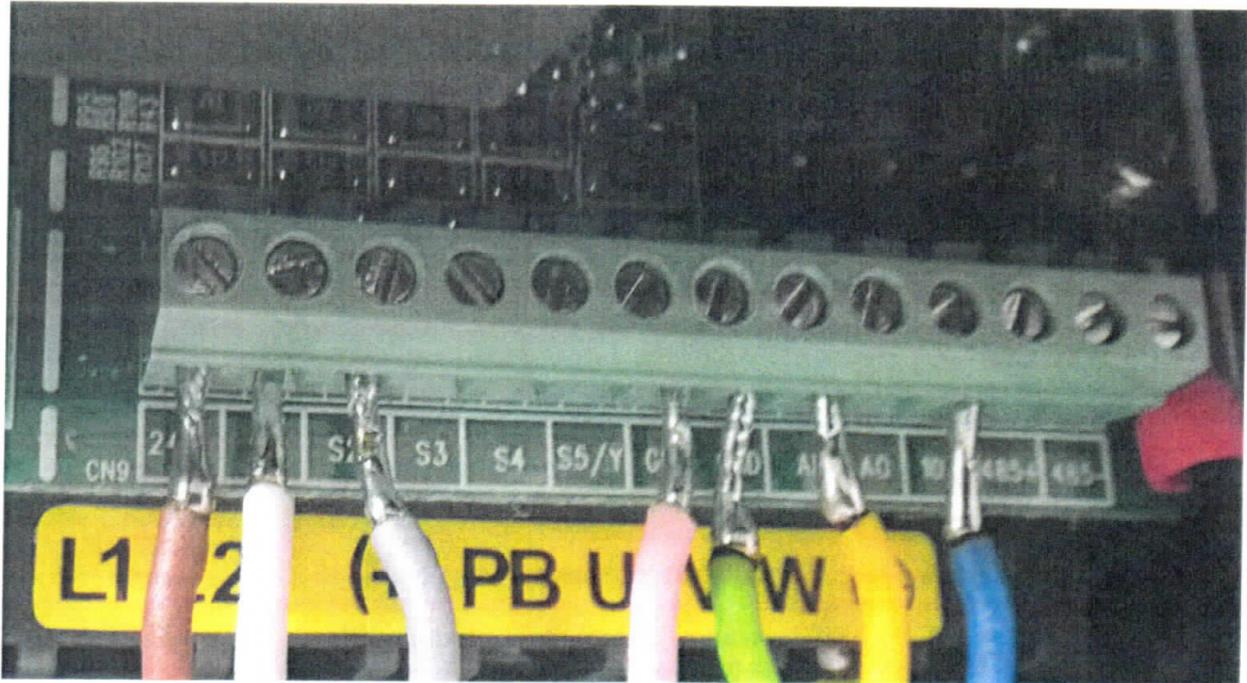
**ENSURE NO CONNECTIONS ARE MADE TO THE TERMINALS MARKED "+" and "PB". THESE TERMINALS ARE FOR BRAKING RESISTOR CONNECTION ONLY AND WILL CAUSE MAJOR DAMAGE TO THE DRIVE.**

- Test the drive operation using the keypad
- Stop the drive
- Turn off the power and wait for the display to go blank
- Connect the seven pendant wires and the earth screen as shown below
- Turn on the Power
- Press PRG/ESC
- P00 will be displayed
- Press DATA/ENT
- Move up/down arrow buttons until P00.01 is displayed
- Press DATA/ENT
- Default setting is 0. Move up/down arrow buttons until 01 is displayed
- Press DATA/ENT - display changes to show P00.03
- Move up/down arrow buttons until P00.06 is displayed
- Press DATA/ENT
- Default setting is 0. Move up/down arrow buttons until 01 is displayed
- Press DATA/ENT – display changes to show P00.07
- Move up/down arrow buttons until P00.09 is displayed
- Press DAT/ENT
- Default setting is 0. Move up/down arrow buttons until 1 is displayed
- Press DATA/ENT – display changes to show P00.10
- Press PRG/ESC – display will show P00
- Move up/down arrow buttons until P05 is displayed
- Press DATA/ENT
- Move up/down arrow buttons until P05.01 is displayed
- Press DATA/ENT
- Move up/down arrow buttons until 01 is displayed
- Press DATA/ENT – display changes to show P05.02
- Press DAT/ENT
- Move up/down arrow buttons until 02 is displayed
- Press DATA/ENT – display changes to show P05.03
- Press PRG/ESC TWICE – the display is now in running mode.
- Press the start button on the pendant
- It will now be possible to start/stop, reverse and speed up & slow down from the pendant, the

keypad functions will now cease to work apart from changing parameters.

Pendant connections to the drive. Behind front cover.

Wire Colour	Terminal Number	Function
BROWN	24+	
WHITE	S1	FORWARD
GREY	S2	REVERSE
PINK	GND	
BLUE	10V	Potentiometer High Side
YELLOW	AI	Potentiometer Centre
GREEN	GND	Potentiometer Low Side
Green/Yellow	PE	Earth screen



If there is a requirement to connect limit switches or additional stop buttons, these should be connected using normally closed contact devices connected in series to interrupt the BROWN 24VDC+ supply wire. When the supply to the pendant is momentarily interrupted the drive will stop.