The 3 PHASE FIELD ENABLED mode was developed initially to make the PLX range suitable for use when driving large motor fields (hence the name) from the drive armature terminals. However, it is also useful when using the drives on non-motor loads, such as electrochorinators, desalinators, clutches, brakes, magnets etc.

This mode allows several functions:

1) It defeats the 0005 internal error code alarm.

2) Multiplies current loop proportional term by 10 (so a gain of 5 is represented by .5 in parameter 93)CUR PROP GAIN)

3) It allows the blanking interval to be extended so as to avoid fuse blowing when trying to reduce current/switch bridges around zero on a highly inductive load.

To set the PLX in this mode you need to access the drive RESERVED MENU. In order to do this from the drive MMI go to DISPLAY FUNCTIONS, PASSWORD CONTROL, ENTER PASSWORD and set it to FEFA. You will notice that the CONFIGURATION menu now contains additional menus, one of which is the DRIVE RESERVED MENU. Enter this menu by pressing the right key several times until you see Iarm COMMISSION. MODE on the bottom line. Then use the up or down key until you arrive at 3-PHASE FIELD ENABLE on the bottom line. Set this parameter to ENABLED by use of the right then the up key. Then exit the menu by pressing the left key several times.

You should also go to CHANGE PARAMETERS, CURRENT CONTROL and set 93)CUR PROP GAIN to a small value, say 1, and you may need to set 175)MISSING PULSE EN to DISABLED (in MOTOR DRIVE ALARMS) if you get nuisance trips. You will not be using the field, so you also need to set 99)FIELD ENABLE to DISABLED in the FIELD CONTROL menu. Depending on the inductance of the load, care may need to be taken of BLANKING INTERVAL which is also in the DRIVE RESERVED MENU. The BLANKING INTERVAL is normally expressed in multiples of about 3.3mS for numbers 1 to 6, then approximately in uS (actually uS times 0.868) from number 7 upwards. So if you need to increase the “dwell time” around the bridge switch area you can set BLANKING INTERVAL to say 6 giving you about 20mS dwell time. If you need a longer BLANKING INTERVAL note that this parameter is linked to the 678)MAX CUR RESPONSE parameter (in CONFIGURATION, DRIVE PERSONALITY). If this is set to ENABLED then you are able to set the blanking interval up to 300 in multiples of 3.3 mS. Above that it reverts to multiples of uS times 0.868. Do not set a number greater than about 1000 – this may cause fuse blowing and in any case if a BLANKING INTERVAL in that range is required it can be obtained by using smaller numbers.

Also note that if the max current response pin is DISABLED the blanking interval is effectively clamped so that the minimum is about 3.3mS (as if the number set was 1). We set blanking interval by default to 770 and max current response to DISABLED so you get 3.3mS by default on a standard drive.

Don’t forget to PARAMETER SAVE once finished – the password is not saved, so the DRIVE RESERVED MENU will not appear again in CONFIGURATION once power is turned off.

If the drive is being used with an inductive load it is important to install a high energy MOV (or flywheel diode, if the current is not reversible) across the load. This will guard against the possibility of the drive thyristors being damaged by peak inverse volts should the supply be lost when making current.