Mastering the Diesel Air Heater LCD Digital Control Unit

There are various types of Controllers supplied with Chinese Diesel Heaters. The majority, however, are the Digital variety like the one shown here. They can be quite confusing for the new owner, especially when very little in the way of instructions are provided.

To help in that regard, I've reproduced some basic instructions below, that should get you up to speed quickly.

WARNING: Emergency Shutdown Procedure

Never disconnect power to the unit while it is running. To turn it off, press and hold the Power Button for a couple of seconds. Once that's done, it's imperative that you let the unit run it's pre-programmed cool-down cycle and turn itself off completely. Failure to do so, could result in ECU (Electronic Control Unit) destruction. If power is suddenly lost to the unit, open the top of the heater and use a fan of some kind, to displace heat. Do this as quickly as possible,

Manual Fuel Pump Operation - Priming the Pump
The facility is provided to run the pump alone (without the heater or fan) This is to allow priming of the pump after draining. Note that the fuel will pass into the combustion chamber and exhaust system, where it may accumulate and cause much smoke when the heater is next used. Avoid excessive use of the manual pump!

From Default Screen, (non setting mode, showing time), press and hold DOWN/OK simultaneously, until the screen shows H-OF.
Then press UP to start the pump. When you want to exit Fuel Priming, press DOWN.

Press OK to move on to the next setting

TO TOGGLE BETWEEN HZ AND TEMPERATURE MODES
In the non setting mode, press SET/UP simultaneously which will change display from Hz to Centigrade.
Pressing SET/UP again will reverse the setting.

REMOTE CONTROL PAIRING
Firstly, make sure a battery is installed in the Remote Control. Most are supplied without a battery fitted.
The battery is a 12v A27 available from Bunnings and many other outlets.
With the Controller connected, but in the OFF state, press the UP ARROW and OK simultaneously and hold, until the display shows HFA - Now press the ON button on the remote. When the controller acknowledges the Remote, press ON on the Remote and the heater will start. If you don't need the heater on at that time, press and hold OFF until Controller acknowledges. The fan will run for a minute or so, then shut down.

You can now start the heater using the remote.
Be aware, if you disconnect power to the Heater/ Controller, you will need to pair the Remote again.

SETTING THE DESIRED TEMPERATURE
From Default Screen, press OK and the current temperature in the van will display. Press OK again and the Target Temperature shows... note it's in BOLD face.

To adjust Target Temperature, press UP or DOWN buttons to display desired Temperature. Can be adjusted while machine is running.
OR...
Set Temp by adjusting Hertz Settings... 1.6 to 5.5

SETTING THE TIME

In the non setting mode, press SET once to enter the Time Setting Mode which is 24 hour format.
Press UP and/or DOWN to set the first desired number and press OK to set that number. Do the next number and press OK. Work through all settings, pressing OK after each desired number is chosen. After the correct time is set, press SET several times to return to the Default Screen.

SETTING THE TIMERS - START / STOP
After the Time Setting is completed, press OK to enter Timing Start or Stop Mode. The default is OFF, press UP to open the timer.
There are 2 sets of Timers here, set the Start time, then the Stop time.
The setting method is the same process as the Time Setting.

ADVANCED SETTINGS
Gaining Access to the Password Protected Area
WARNING: This area is Protected for a reason. If you don't know what you're doing, don't mess with the settings.

The advanced settings control the operating parameters of the heater (as opposed to the user requirements).
Access to the advanced settings are protected by a 4-digit PIN code.
The PIN code is entered digit-by digit in a similar way to the time entry. The four dashes representing the code, will flash until set. The digits of the PIN number are only displayed during setting, each digit being hidden (shown as a steady dash) once set. When all four digits are correctly set, the controller will move on to the first of the advanced settings. Common default PIN codes are: 1688 and 9009.

Fan Speed Limits
During normal operation, the fan speed adjusts automatically. These settings allow the minimum and maximum fan speed to be selected, which limits the range of the automatic function. This could be used for example, to force quieter operation, or to optimise burn (with an emission analyser). There are limits on the available maximum and minimum speed settings, which cannot be overridden.

The min and max speeds are set in that order in the same way as the time settings, one digit at a time using arrow keys and OK. After the speeds are set, the controller moves on to the next setting.

System Voltage Setting
Although the *controller* is designed to operate at both 12V or 24V DC, according to this setting, the *heaters* themselves are EITHER 12V OR 24V. The controller will not operate the heater if the battery voltage is too high or too low, so if the voltage setting is incorrect, the heater will not operate until the setting matches the supplied voltage. To reiterate, changing the controller setting will not alter the operating voltage of the heater. Power must be supplied at the correct voltage for the heater and the controller must be set to match. If the correct voltage is being supplied and the battery icon is flashing, with either E-01 or E-02 displayed then it is possible that the controller is incorrectly set. IMPORTANT - Check the actual heater voltage (sticker on the heater body) before adjusting the control setting.

On entering this setting, the screen shows either U-12 or U-24 and can be changed using the arrow keys. The setting will be applied immediately the OK key is pressed, and the controller will move on to the next setting.

Speed Sensor Type
There are two configurations of fan speed sensor on the heaters which can be controlled by these displays. Select one or the other according
to the sensor type fitted. The original instructions say that if this is set incorrectly then the fan speed is doubled. As ever, select using arrow keys and press OK. It seems that different sensors are used, some with 1 and some with 2 magnets – speed could also be halved I guess!

SN=1: If fan has 1 magnet attached to it, to give the RPM signal
SN=2: If fan has 2 magnets attached to it, to give the RPM signal

PIN Code Change
It is not necessary to change the PIN code, but if desired a new number can be entered, once again using arrow keys and pressing OK. *Take*
care to remember any new code!

NOTE – the settings menu at both levels will time out and the controller return to basic operation mode. The settings already confirmed will have been saved, but the currently active setting will NOT be actioned or memorised. Thus, the parameter setting may simply be abandoned
without the remaining settings or any previous settings being affected.

Hz Setting
This setting regulates the upper and lower bounds of the amount of fuel injected. It can be adjusted from a low of 0.8Hz to a high of 8.0Hz. Do not jack around with the settings when you do not know what you are doing. You will end up with a heater that quits working or becomes a fire hazard. Fuel baseline should be 1.8Hz low side and 5.2 Hz High .

RPM Setting (Revolutions per Minute)
Rpm regulates the fan speed and combustion air. Settings range from 1450 low to 5000 high. Desirable settings are 1680 Low and 4410 High.

ERROR CODES
E-01 Voltage is too High
E-02 Voltage is too Low
E-03 Glow Plug failure
E-04 Pump failure
E-05 Too hot
E-06 Motor failure
E-07 Controller not connected properly

E-08 The Burner flame has extinguished

FURTHER HELP AND INSTRUCTIONS
If you want to learn more about Diesel Heaters than most people will ever learn, then do yourself a big favour and go to YouTube Channel John McK 47 and watch his excellent series of 15 videos. They cover ALL aspects of Chinese Diesel Air Heaters. **HIGHLY RECOMMENDED.**

Also, check out and join the Facebook Group Chinese Diesel Vehicle Air Heaters - Troubleshooting and Parts Sales.

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