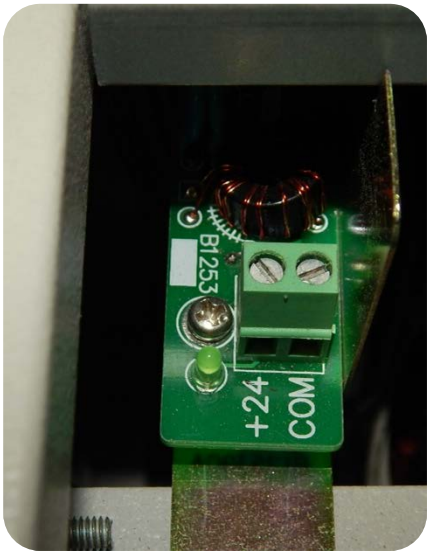
ZENER 8000

Instruction Sheet

Part Number:	AQ08203
	AF08203 (fitted to Drive)
Description:	Option – 24VDC Control Supply
Compatibility:	ZENER 8000
	ECODRIVE 8000
	All sizes & models except for CHA IP30
Document:	IM000148
Installation:	This option must be fitted by ZENER



Summary:
With this option fitted, the ZENER 8000 can be powered by a customer supplied external 24V DC supply independent of the mains power supply. In this mode the ZENER 8000 is capable of controlling an external line contactor to apply mains power to its own power circuits. The ZENER 8000 remains operational if either or both 24V DC or mains power is present. In order to control the external line contactor, one of the ZENER 8000's relays must be configured with the "AUX_PWR" function.

This option is mounted within the ZENER 8000 beside the control board. It does not use an option board slot.

Specification:

Supply Voltage required:	24VDC +/- 20%
Supply Current required:	1 Amp
Terminals:	+24 and COM

There a key features & benefits of this configuration are:

- VSD status and programming without 415V 3 Phase supply.
- An external or portable 24VDC supply can be used to program and test the VSD
- Optional Line Contactor Control
- Unlimited starts per hour
- Unlimited power recycling without damage
- Remote or local control
- VSD will operate with 24VDC Control Supply or 415V 3 phase supply.

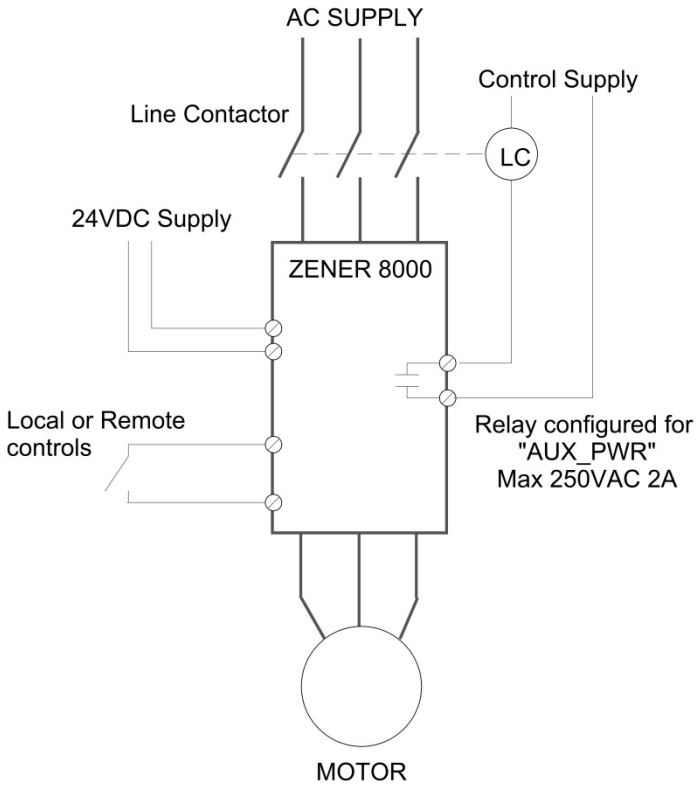
Further Information:
For detailed information on functionality and programming refer to the instruction manual for the ZENER 8000.

Note:

1. The control digital inputs are 5VDC logic using the on board 5V supply (terminal 1).
2. Some functions that rely on other internal voltages may not function until 415V is applied. Eg. Analogue inputs

Typical Wiring:

The diagram below illustrates the basic operation:



IMPORTANT!

i. To avoid ZENER 8000 relay contact damage, please ensure the contactor coil ratings do not exceed 2A @ 250Vac.
ii. The line contactor must not be considered a safety isolation device as its operation may apply mains power without notice.
iii. Run/Stop controls must not use momentary start/stop push buttons.
iv. It is important to ensure the AC supplies remains on during the saving process.

Operation:

Key configuration parameters are:

- **E06 LC CONTROL** (function activation): ENABLE or DISABLE
- Set **LC CONTROL** as a relay function to control the external line contactor

With 24Vdc applied the ZENER 8000 remains idle until it receives a forward or reverse command. The AUX_PWR relay function will then operate the input line contactor charging the ZENER 8000. When charging is complete the motor is run as required. The AUX_PWR relay will open if:

- The drive experiences a trip,
- The wiring from “+5V” to “EN” of the main terminal strip is opened.
- The motor is run with zero speed for 10 seconds

In Remote Mode:

1. **'Off Line' or Standby Mode >>** ***24VDC Control Supply Present with no start/run command***

   With 24Vdc applied, the ZENER 8000 remains in a standby mode until a forward or reverse command is received. 'Off Line' is displayed.

2. **To Operate the Line Contactor >>** ***A Forward (or Reverse) command will operate the Line Contactor***

   When a Forward or Reverse command is initiated, the 'AUX_PWR' (Line contactor control) relay will then operate the input line contactor charging the ZENER 8000. When charging is complete the motor will run to the set speed reference. When a start command is initiated the ZENER 8000 displays 'NO AC' until 3 phase is detected.

3. **To De-activate the Line Contactor >>** ***De-activates 10 seconds after a stop command or zero speed with a Decel, unless a trip condition or 'Not Enabled'.***

   The 'AUX_PWR' relay will open 10 seconds after the stop command or when the motor has returned to zero speed if a controlled decel is initiated. The line contactor is de-energised if the inverter output is at zero frequency (AT_ZERO_SPD) for 10 seconds. This accomodates both "coast to stop" and "ramp to stop" modes.

   When the line contactor de-energises the ZENER 8000 returns to standby.

   The 'ENABLED/Line contactor control' relay will open without delay if:
   - The drive experiences a trip,
   - The wiring from "+5V" to "EN" of the main terminal strip is opened.

   A 10 second delay is provided to prevent delay between a restart if called to start immediately.

In Local Mode:

4. **Local Mode Operation >>** ***When local mode is selected the Line Contactor will be energised.***

   The line contactor is energised whenever in LOCAL mode. LOCAL/REMOTE mode is normally selected via a digital input. On switching to REMOTE if no other conditions are present for 'ENABLED' status, the line contactor will be opened after the 10 second interval. This will allow immediate operation in Auto if required.

In Local & Remote Mode:

5. **ENABLE Input >>** ***Instant stop and Line Contactor de-energised***

   The line contactor is de-energised immediately if a drive trip occures or the enable input (EN, terminal 6) is opened.

6. **Trip Relay Operation >>** ***Trips resulting from Loss of input supply are active only when Line Contactor is energised.***

   When a start is initiated the 'ENABLED' Relay energises and the ZENER 8000 displays 'NO AC' until 3 phase is detected. During this stage no Power fail trip is registered.

   The "Power Fail" & "DC low" Trips are registered only after the 'ENABLED/Line Contactor' Relay has energised and 3 Phase supply has been detected. If there is a loss of supply after this than a Power Fail (or DC low trip) will occur. When a stop is initiated the 'ENABLED' Relay de-energises and the ZENER 8000 displays 'Off Line'. No "Power Fail" & "DC low" trip is registered.

7. **POWER STANDBY >>** ***Operates from 24VDC control and/or 415V 3phase.***

   The ZENER 8000 remains operational if either or both 24Vdc or mains power is present. May also allow operation in emergency should the 24VDC fail or control/supply problem. The control/power wiring can allow or inhibit this feature.

Wiring Considerations:

Line Contactor Control >>

Isolates the VSD whilst not required, providing a more reliable standby system.
There is a delay after a run before the line contactor de-energises. This eliminates any possible relay chatter and allows a faster response time with a quick restart – ie. No charge up time required.

Commissioning & Setup can be performed in the 'Off' position.

The ZENER 8000 is designed to provide unlimited starts per hour and power recycling without damage.

Emergency Stop >>

The installation/location of an emergency stop switch depends on the required function. This will depend on various factors such as whether the VSD needs to trip, incorporate a soft stop (for water hammer) and how to restart/reset the emergency stop.

Possible locations: LC circuit; Enable; remote trip input; Run cct
Positioned in the 24VDC supply will not trip the drive if emergency stop is operated.

Reset >>

Use remote reset to reset a VSD trip / or use 'Test/Man' to reset.
Interrupting the 24VDC will not reset, unless 3 Phase is also removed.
Also, a Reset in the supply will stop the VSD/Motor if running and no fault actually present.

Manual/Test operation >>

Depends on what operation is desired:

1. Use the VSD's console to operate the motor
2. Use a separate control on switchboard or remote panel to control Motor.
    a. Use a preset speed
    b. Use a Potentiometer / PLC speed
    c. Use separate Run controls locate on switchboard or remote panel.

Local Console in Manual >>

Utilise the ZENER 8000 Console via 'Local' Selection. This will force the line contactor in and hold in whilst ever in 'Local' Mode.

This will prevent the VSD shutting down supply during test & commissioning without a run signal being present.

Refer to the ZENER 8000 Reference manual (Document IM00140) for details regarding the programming and options for controlling the ZENER 8000.