

## APG-Neuros KEB Troubleshooting Guide

## Customer Site Information

<b>Date:</b>		<b>Phone:</b>	
<b>Company:</b>		<b>Fax:</b>	
<b>Contact:</b>		<b>Email:</b>	
<b>Address:</b>			

## Machine Information

Machine Model#			Machine Serial#			
Manufacture Date			Commissioning Date			
Cooling System Type		Water Cooling		Air Cooling		Air Conditioning

## Inverter Information

<b>Material#</b>		<b>Serial#</b>	
<b>Problem Description</b>			
<b>Inverter Parameter Upload</b>		<b>*Needed for technical support</b>	

### Supply Mains at Inverter

L1 – Ground		L1 - L2		
L2 – Ground		L2 - L3		
L3 – Ground		L3 – L1		
DC Bus Voltage		Harmonic Filter Installed		Yes
				No
Ru.38 Value		Line Frequency		

## External Environment

Temperature inside enclosure			Humidity inside enclosure		
Contamination inside enclosure		None	Vibration inside enclosure		None
		Light			Light
		Moderate			Moderate
		Heavy			Heavy



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### Common Inverter Errors

**E.UP** – Error Under Potential, 400V Combivert occurs when the DC bus voltage < 280VDC

Possible causes are:

Low input voltage, weak mains, missing input phase, defective pre-charge circuit, or defective voltage measurement circuit of the inverter.

Items to check:

Input voltage, DC bus voltage, parameter RU38, all electrical connections.

**E.OP** – Error Over Voltage, 400V Combivert occurs when the DC bus voltage > 800VDC

Possible causes are:

High input voltage, faulty ground, harmonic distortion on mains, short deceleration ramp, incorrect parameter settings, or defective voltage measurement circuit of the inverter.

Items to check:

Input voltage, Input line frequency, DC bus voltage, parameter RU38

**E.OH** – Error Over Heat, occurs when heatsink temperature is greater than the permissible value. (See manual)

Possible causes are:

Ambient temperature is too high, defective temperature sensor in inverter

(Liquid cooled) cooling water too warm, insufficient flow/pressure

(Air cooled) insufficient airflow across heatsink, cooling fan is blocked or defective.

**E.doh** – Error Drive Overheat occurs when the T1/T2 terminals are programmed at parameter PN12. Resistance at the terminals T1/T2 is > 1650...4000  $\Omega$ . Error can only be reset at E.ndOH, if resistance is < 750...1650  $\Omega$

Possible causes are:

Motor is too hot, defective sensor, incorrect parameter setting at PN12.

**No\_Pu** – No Power Unit, occurs when the control board is powered with an external 24VDC but there is no high voltage present at the power part.

**E.PuCH** – Power Unit Code Change. This occurs when the control boards is replaced, initialize SY.03

**E.OC** – Occurs when output current exceeds maximum short time current of VFD. (See manual)

Possible causes are:

Incorrect parameter settings, faulty grounding, motor/bearing failure, loose connection, shorted inverter output, or defective sine filter capacitor.

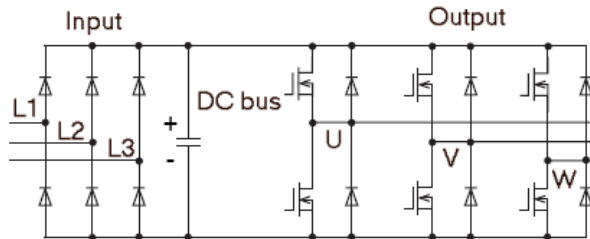
Items to check:

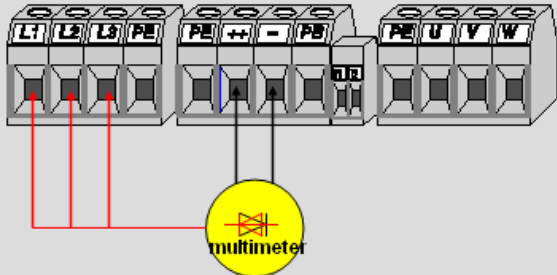
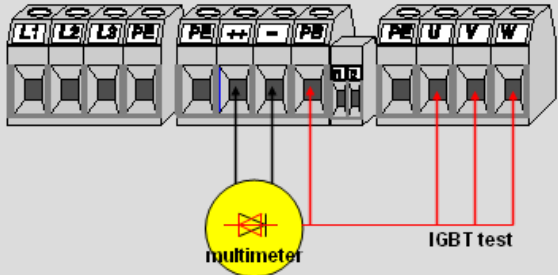
To determine if the over current is caused by the inverter, motor, or sinefilter, systematically remove these items from the system. The inverter can be operated in open loop without being connected to the motor (up to about 4000rpm). \*Caution – only make electrical connections with the system de-energized **\*Power Off!**.

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### Checking the Input and Output for short circuits

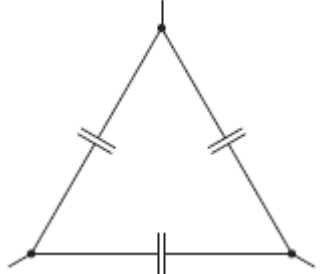
The input and output circuits of the inverter can be checked externally with the inverter **power off** and the motor leads disconnected by use of a multimeter set to diode check.



How to test the input rectifier	How to test the output IGBTs
Disconnected the mains wiring from the inverter and take the following measurements:	Disconnected the motor wiring from the inverter and take the following measurements:
	
<b>Positive side</b> Negative lead of meter to positive DC terminal Positive lead of meter to L1/L2/L3 terminals	<b>Positive side</b> Negative lead of meter to positive DC terminal Positive lead of meter to U/V/W terminals
<b>Negative side</b> Positive lead of meter to negative DC terminal Negative lead of meter to L1/L2/L3 terminals	<b>Negative side</b> Positive lead of meter to negative DC terminal Negative lead of meter to U/V/W terminals

### Checking the Sine wave Filter

Measurements at the capacitor

	<p>The capacitance is measured between two phases of the delta-connected capacitors.</p> <p><math>C_{\text{measured}} = 1,5 \cdot C_{\text{rated}} \pm 7,5\% \text{ Tolerance}</math></p> <p>A failure may occur if one of the three measured values differs greater than C Tolerance</p>
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