



USER'S MANUAL
NX FREQUENCY CONVERTERS

OPT-D7
VOLTAGE MEASUREMENT OPTION BOARD

OPT-D7 Voltage measurement option board

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1. OPT-D7 LAYOUT

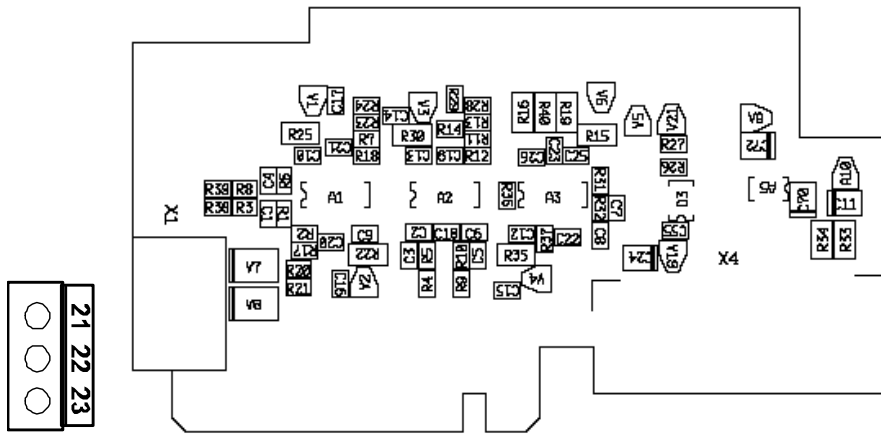


Figure 1



Figure 2.

2. DESCRIPTION:

OPTD7 is an AC sinusoidal voltage measurement board used with Vacon NXP drives. Using this board, VACON NXP drive measures the line voltage, frequency and voltage angle information. Vacon NXP can compare this information with its output voltage angle when it is running. This feature can be used to develop applications for different purposes using NC61131-3 application programming tool.

The OPTD7 board is delivered with the transformer which is suitable for voltage range 380V ...690V. Please note that the transformer can not be used with the pulse width modulated (PWM) voltage input.

It is possible to use custom built transformer when the input voltage to be measured is not within the above voltage range. The transformation ratio parameter then can be adjusted as per the transformer primary to secondary ratio. Please refer to specification section for further engineering.

In any case, the measurement signal connected into the OPT-D7 option board can not exceed 14.26 Vrms.

The board can only be used in slot C of NXP drive.

Type ID: VB00379

3. SPECIFICATION:

3.1 OPTD7 board (VB00379 based on revision X)

| | | |
|--------------------------------------------|---------------------------------------------------|----------------------------------|
| Transformer primary/input Voltage Range | Min 380VAC -15% Max 690VAC +15% | |
| Transformer ratio Primary : secondary | 60:1 | |
| Transformer secondary/output voltage range | 14V rms | Between the terminals L1/L2/L3. |
| Input impedance | L1/L2 =50kOhm L1/L3 = 25kOhm L2/L3 = 25kOhm | L3 is internal virtual common |
| Cable recommendation | Max 1.5 sq. mm , shielded | From transformer output to OPTD7 |
| Measurement resolution | 10 bit | |
| Voltage measurement Accuracy | 0.2% | |

4. EXPANDER BOARD MENU

4.1 Parameters:

Transformer Ratio: Transfer ratio of the measurement transformer.

Default value is 60.00(690V/11,5V). In case using other measurement transformers than the one supplied with the board, the voltage measurement shows correct numbers by setting the transformer ratio right.

4.2 Monitoring:

Line Voltage: Main voltage

Line Frequency: Main frequency (including sign)

5. APPLICATION EXAMPLES :

5.1 Line synchronization

Features :

- Frequency and phase angle synchronisation between VACON NXP drive and mains supply. This way smooth Direct On Line (DOL) transfer of motor to the mains is possible with minimal peak current from the mains supply.
- No need of any external synchronizer.
- Smooth transfer back to inverter with fast catch on fly feature.
- Changeover activation possible through either I/O, fieldbus or keypad.
- Compensation parameters for the changeover circuit delay and offset angle to the synchronization.
- Indication for "Line Synch OK" programmable to digital outputs.
- Mains voltage and frequency monitoring on keypad and PC tool.
- Applicable to any size of Low Voltage) motor and MV (medium voltage) motor through step up transformer.
- OPTD7 is used for mains supply voltage measurement as shown in fig. 3.

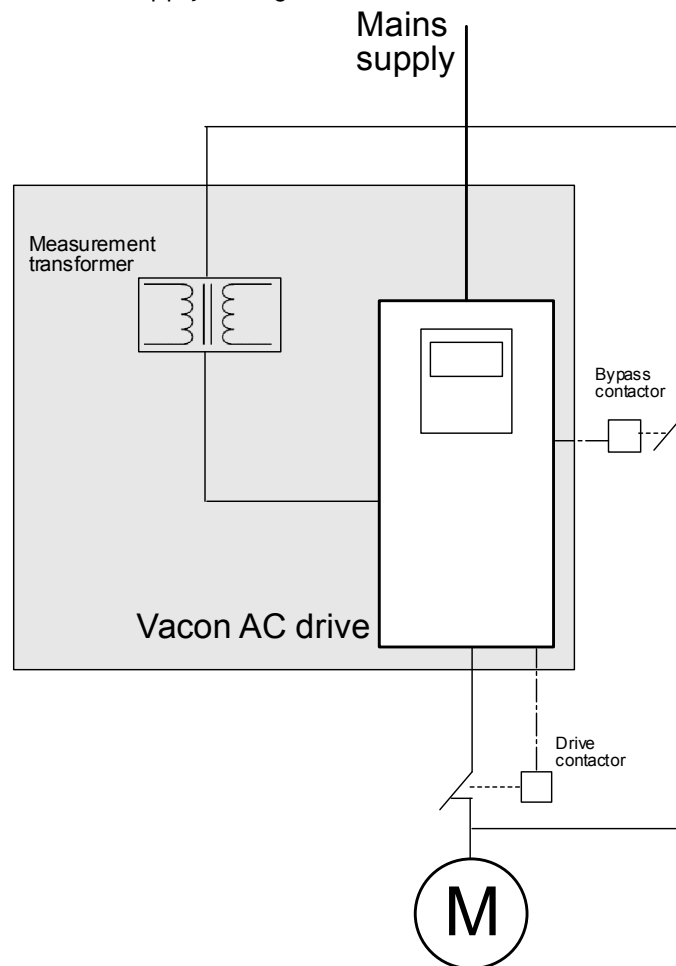


Figure 3. Block diagram for Direct ON Line transfer of motor from drive to mains and back.

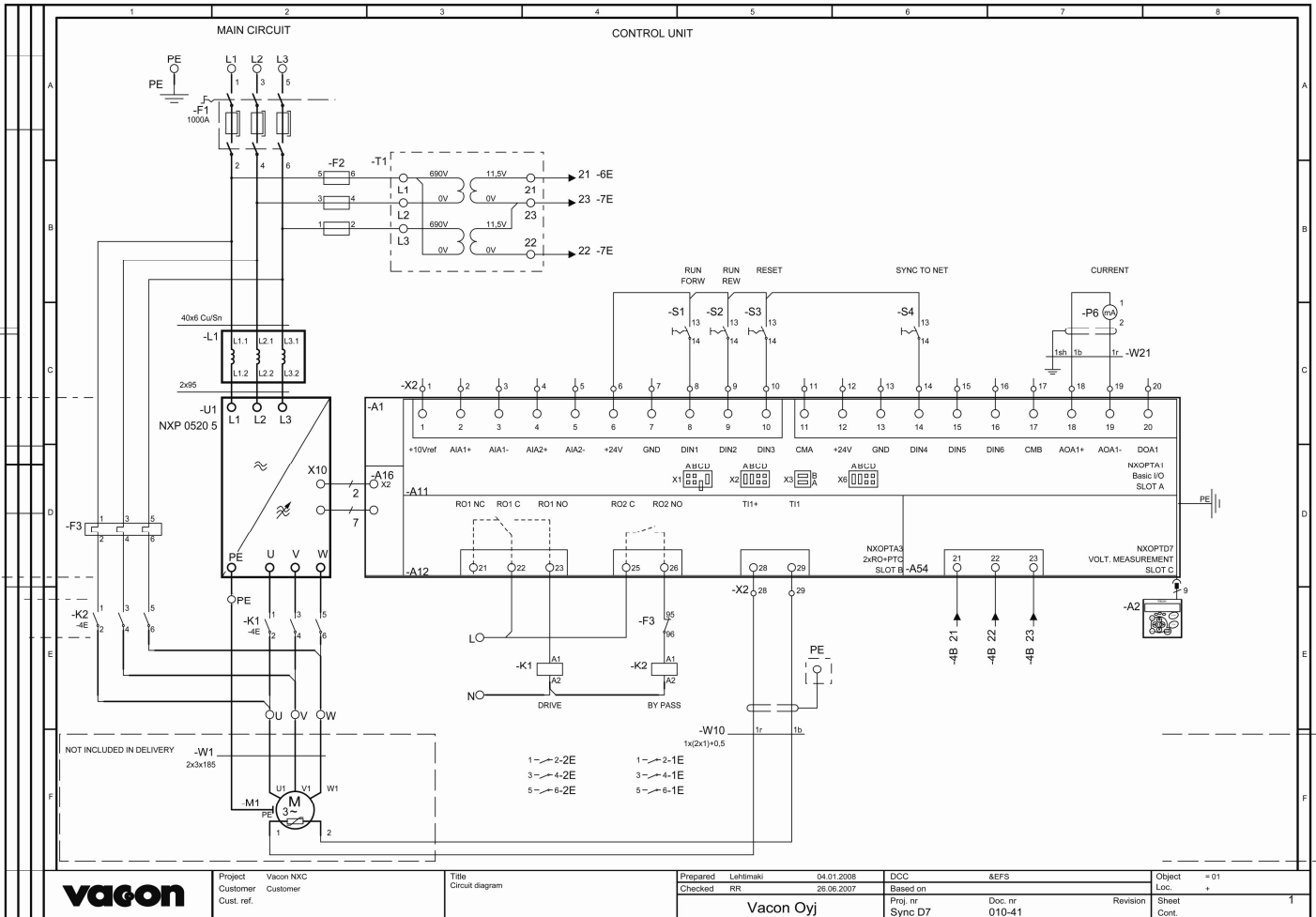


Figure 4. The electrical connection diagram example for OPD7 with transformer used in "Line Sync" applications.

5.2 Fundamental front end (NXF)

OPTD7 board is used to feedback the main supply voltage and frequency with Vacon NXF , fundamental front end. Fundamental front is IGBT based regenerative supply unit. It is used to supply one or multiple inverters in a common DC bus system.

For more info please refer to www.vacon.com or contact Vacon Sales Support.

The connection of OPT-D7 option board and voltage transformer in FFE applications

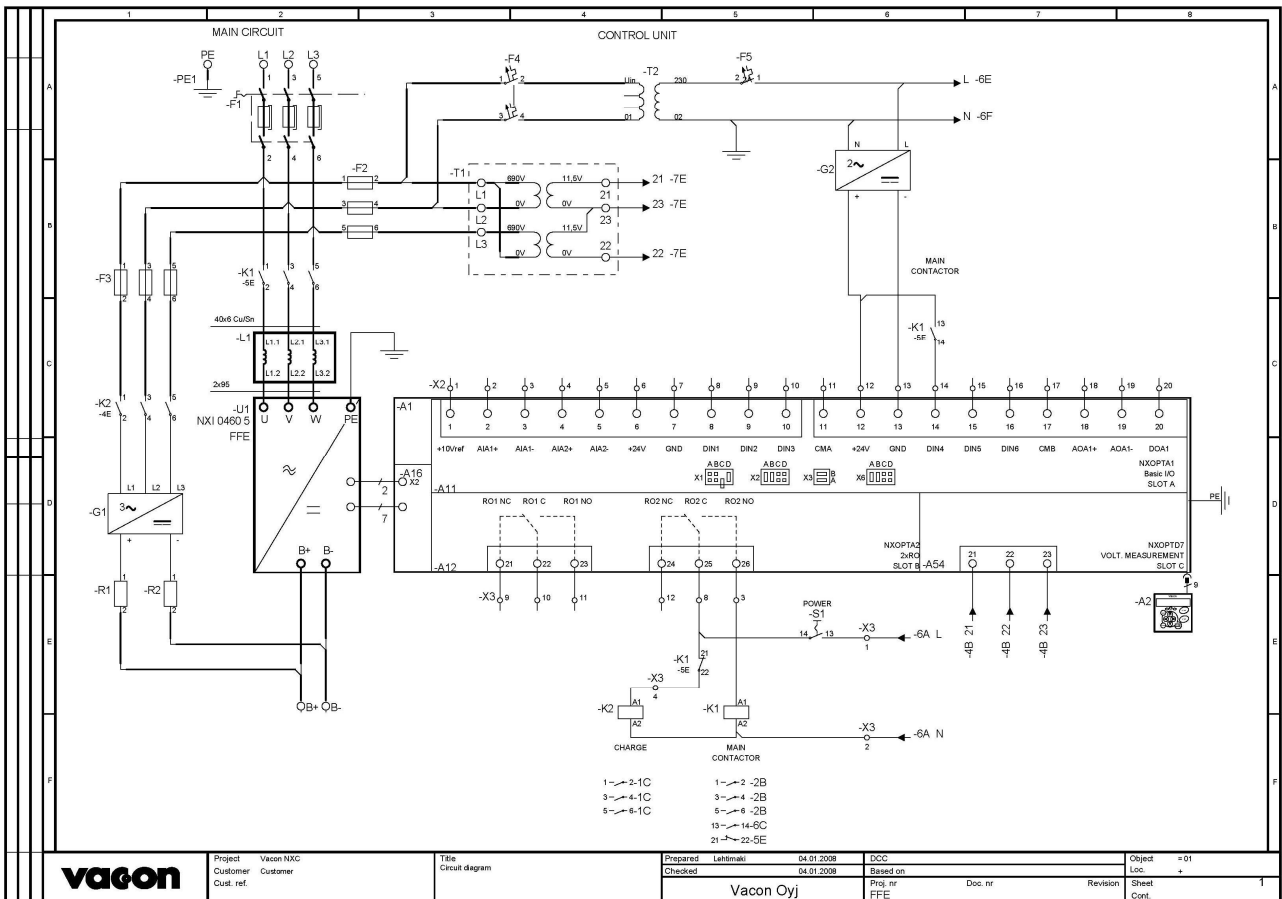


Figure 2. The connection of FFE voltage transformers