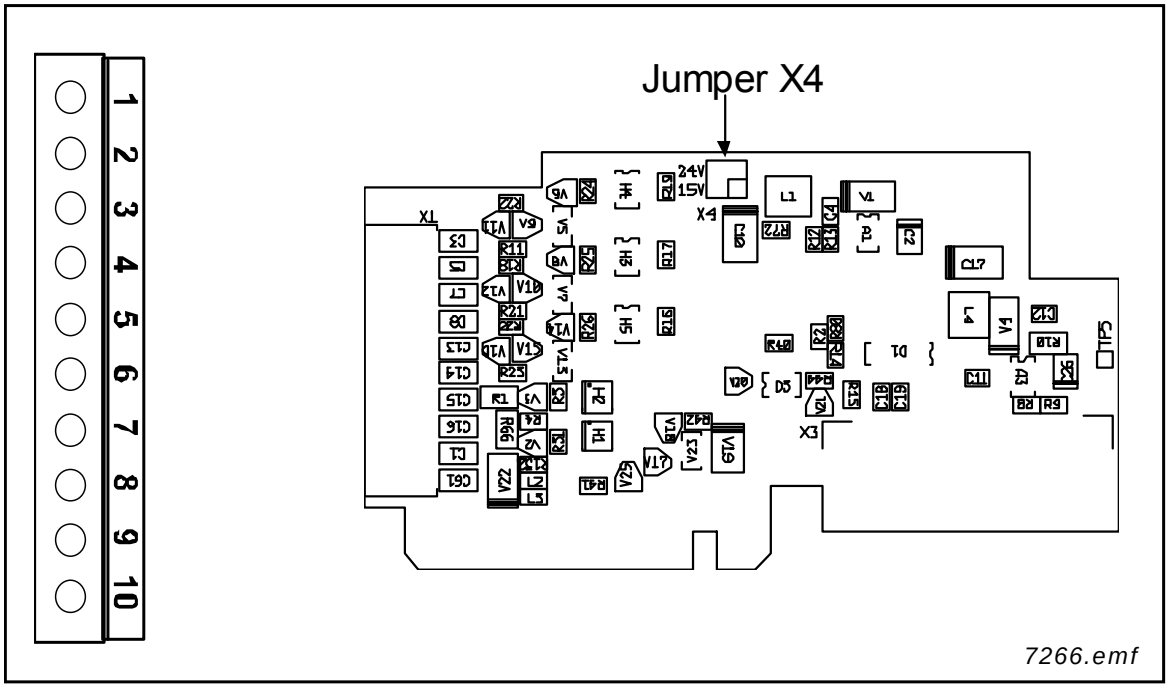
3.1.10 OPTAE



Description:	Encoder board for VACON® NXP. Encoder input board with programmable control voltage for an encoder. The OPTAE board is designed for HTL (High voltage Transistor Logic) type encoders (voltage output type push-pull HTL, open collector output type HTL) which provide input signal levels dependent on the supply voltage of the encoder. The encoder inputs A, B and Z are galvanically isolated. In addition, the board includes an Encoder Direction Signal and an Encoder Pulse Output Signal. The Encoder Direction Signal value '1' indicates a backward motor direction and '0' a forward motor direction. The Encoder Pulse Output signal is produced from The Encoder input signals (channel A) divided by the divider parameter (see page 48).
Allowed slots:	C
Type ID:	16709
Terminals:	One terminal block; Screw terminals (M2.6); Coding in terminal #3.
Jumpers:	1; X4 (see page 46)
Board parameters:	Yes

I/O terminals on OPTAE (coded terminal painted black)

Table 18. OPTAE I/O terminals

Terminal		Parameter reference Keypad/NCDrive	Technical information
1	DIC1A+		Pulse input A (differential); Voltage range 10...24V
2	DIC1A–		
3	DIC2B+		Pulse input B; phase shift of 90 degrees compared to Pulse input A (differential); Voltage range 10...24V
4	DIC2B–		
5	DIC3Z+		Pulse input Z; one pulse per revolution (differential); Voltage range 10...24V
6	DIC3Z–		
7	DO1		Encoder divider output. Encoder input signals are divided by divider paramater (see parameter list on page 48)
8	DO2		Encoder direction output. The signal value '1' means that the motor direction is backward and '0' is forward.
9	GND		Ground for control
10	+15V/+24V		Control voltage (auxiliary voltage) output to encoder; Output voltage selectable with jumper X4.

NOTE: Encoder inputs are wide range inputs that can be used with encoders using +15V or +24V.

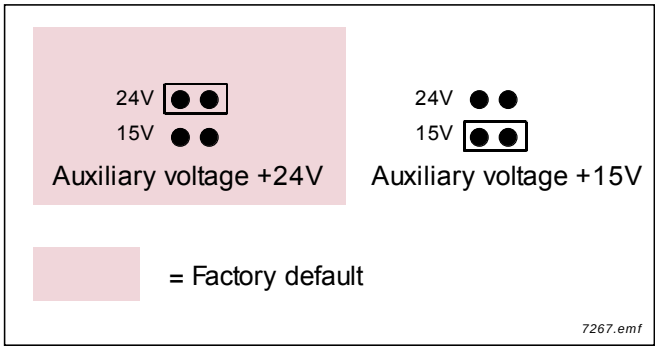
Technical data:

Encoder control voltage, +15V/+24V	Control voltage selectable with jumper X4.
Encoder input connections, inputs A+, A–, B+, B–, Z+, Z–	Max. input frequency ≤150kHz Inputs A, B and Z are differential
Encoder divider output DO1, Encoder direction output DO2	Max.load voltage 60Vdc Max. load current 50mA Max. output frequency ≤300kHz

Jumper selections

On the OPTAE board, there is one jumper block used to program the control voltage (auxiliary voltage). The factory default and other available jumper selections are presented below.

Jumper block X4:
Auxilia ry voltage level



Usage: Closed Loop Vector Control. The OPTAE board is mainly used in conventional industrial applications where encoder cable lengths are relatively long.

Encoder connection - single-ended

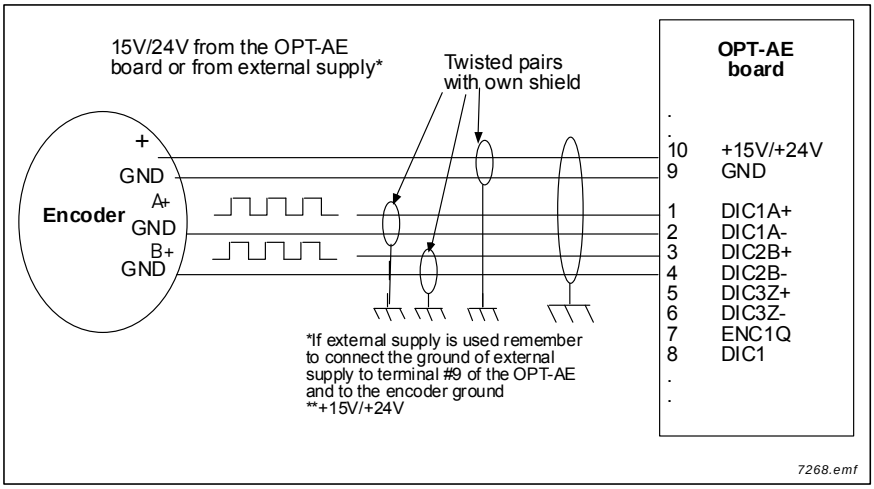


Figure 20. HTL type encoder connection (open source) using single-ended inputs

NOTE! Grounding is to be connected only at the AC drive to avoid circulating current in the shield. Isolate shield at the encoder.

It is recommended to use double shielded cable for encoder connection.

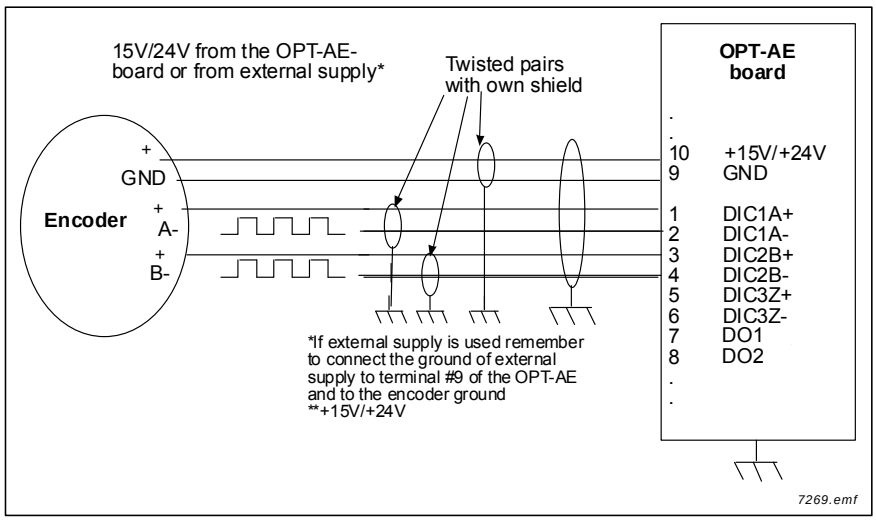


Figure 21. HTL type encoder connection (open collector) using single-ended inputs

NOTE! Grounding is to be connected only at the AC drive to avoid circulating current in the shield. Isolate shield at the encoder.

It is recommended to use double shielded cable for encoder connection.

Encoder connection – differential

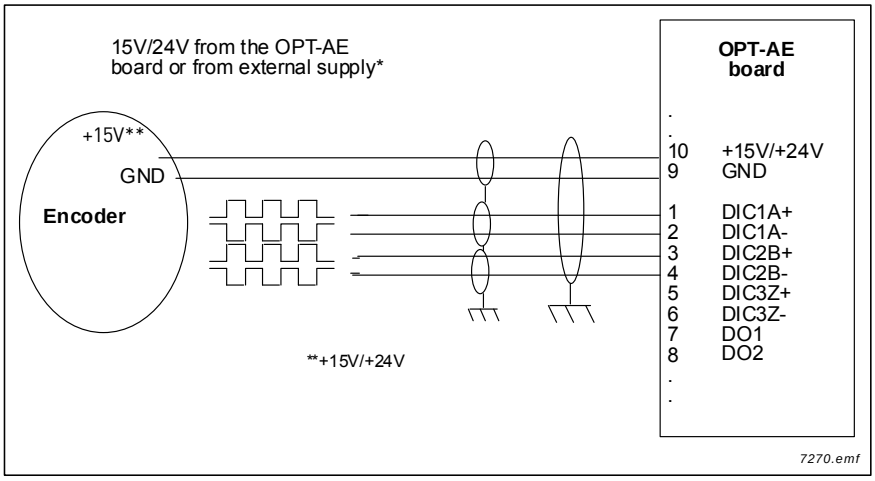


Figure 22. HTL type encoder connection using differential inputs

OPTAE parameters

Table 19. OPTAE board-related parameters

Number	Parameter	Min	Max	Default	Note
7.3.1.1	Pulse/revolution	1	65535	1024	
7.3.1.2	Invert direction	0	1	0	0 = No 1 = Yes
7.3.1.3	Reading rate	0	4	1	Time used to calculate speed actual value. NOTE: Use value 1 in Closed Loop mode. 0 = No calculation 1 = 1 ms 2 = 5 ms 3 = 10 ms 4 = 50 ms
7.3.1.4	Divider Value	1	2048	64	Input pulses / Divider = Divider Output
7.3.1.5	Hysteresis for Direction Out	0	511	8	Number of pulses before direction signal change state