

Nidec AnswerDrive1000 Startup notes:

Note: This highlights key startup items only. Refer to the printed quick start guide or the users manual and programming guide on the flash drive shipped with the drive.

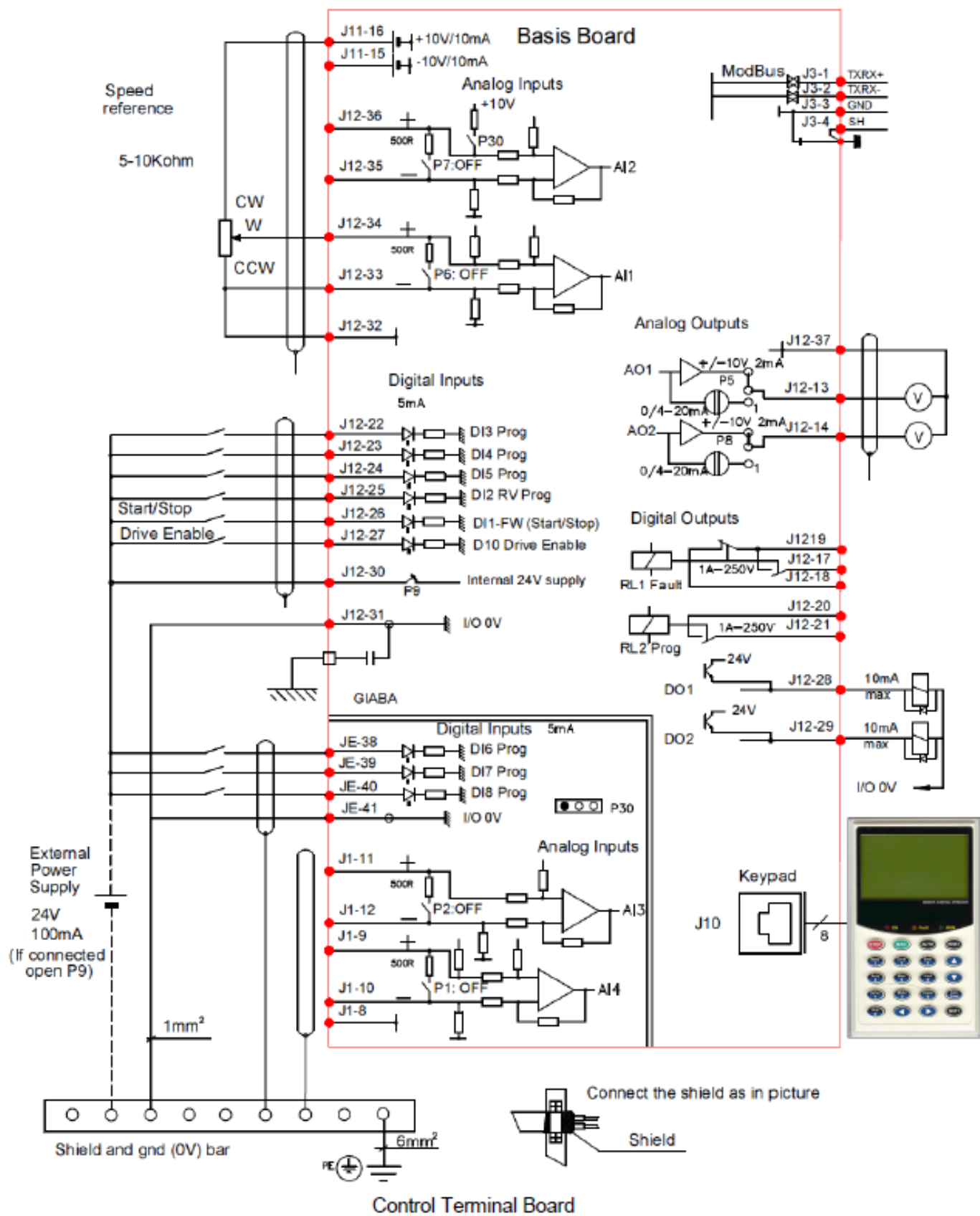
- 1) **DRIVE SIZE PARAMETER:** This must be set correctly or a DSPInitError fault will be seen. To program press shift and the right arrow. Then type 0601. Press enter and use the up and down arrow to select the correct drive size. Press Enter twice to program.
- 2) **J1 jumper:** The drive ships with a jumper on J1 between pins 1 and 3. If this is missing or is removed a CtrlSupply fault will be seen.
- 3) **DRIVE ENABLE: TO ENABLE THE DRIVE** a jumper must be placed from the Drive Enable terminal to +24V. Jumper J12-27 to J12-30 to enable the drive using the internal 24V supply. This is called XME27 in the quick start guide. To use the internal 24V supply with the digital inputs (including drive enable) put the included 2 pin shunt **across P9. THE DRIVE WILL NOT RUN WITHOUT THIS.**
- 4) **LANGUAGE:** English starts on page 29 of the quick start guide
- 5) **FULL MANUAL:** The full users guide and parameter guide are on the included flash drive or on Dealers web site.
- 6) **DIGITAL INPUTS:** The digital inputs are PNP style (+24V common).
- 7) **ANALOG INPUTS:** To use an external pot on AI1 for speed control wire as follows:
 - + to J11-16, wiper to J12-34, - to J12-33 **and** J12-32. (Note: the - side of the pot goes to 2 drive connections)Program 32.01 to "AI1" to use the external pot as the speed reference.
Note that this will be used in Automatic mode and not manual mode.
- 8) **UNITS:** The drives default to IEC units (kW, m, C) to change to NEMA units (HP, ft, F) set parameter 13.99 to 1
- 9) **INPUT VOLTAGE:** Set 06.24 to 460 for 460 volt operation. (Default is 400V)
- 10) **MOTOR PARAMETERS:** **Note that these must be programmed for proper operation as the default values define a 15 HP, 50 Hz motor regardless of drive capacity.**
 - a. Set 02.91 to the motor rated HP (for NEMA units)
 - b. Set 02.03 to 460 for 460 volt motor (Default is 400V)
 - c. Set 02.06 to 60 for 60 cycle operation (Default is 50)
 - d. Set remainder of 02.01 – 02.07 with data from motor nameplate.
 - e. Set 02.08 to current limit to the maximum motor current – typically either 110% of 2.04 for variable torque or 150% of 02.04 for constant torque loads.
(If 02.08 is set too low the motor will not run but no fault will be reported.)
 - f. Set 02.09 to the max motor speed in RPM (usually the synchronous speed)
Note that the drive uses 02.09 to scale other speed related display parameters and that 02.05 must be less than 02.09 or a parameter fault will occur.
- 11) **CONSTANT TORQUE LOADS:** The drive defaults to variable torque overload (110%). For constant torque loads (150% overload) set 06-08 to 150
- 12) **MOTOR AUTO-IDENTIFICATION:** Perform motor parameter auto-identification per 6.1.1 or the programming manual. A "NO FLUX" error may be seen if this is not performed.
 - a. Enabling the test by setting the parameter Static Test ID 1 [07.01] (Locked-Rotor ID) to Test On
 - b. Confirm with Canc/Enter key
 - c. follow the dialog box instructions
 - d. Finally set the parameter Static Test ID 1 [07.01] to Test Done.
- 13) **LOCAL (MANUAL) vs AUTOMATIC mode:**
 - a. Manual mode uses the keypad up/down arrows to select speed and run/stop buttons to control the drive. The green "ON" led blinks in manual mode. To enter manual mode press MAN/START and then Enter to confirm.
 - b. Automatic mode uses an external run/stop input (switch between J12-26 and J12-30) and the speed pot (when enabled) for control. The "ON" LED stays on in automatic mode. To enter automatic mode press AUTO and then Enter to confirm.

Jumper and Dip-switch

P1	● ● ■	1-2	Iu current from power board	
	3 2 1	2-3	Iu current reconstructed on control board (for drive <166 only)	
P2		OFF	Reserved (D.O.C. filtering)	
P3		ON	P3=ON, P4=ON: insertion of load resistor (220Ω) between TXRX+ and TXRX- P3=OFF, P4=OFF: load resistor between TXRX+ and TXRX-not inserted	Modbus TXRX+
P4		ON		
P5	● ● ■	1-2	Analog Output with current signal 0(4)-20mA	Analog Output 2 AO 2
	3 2 1	2-3	Analog Output with voltage signal ±10V (Default)	
P6	● ● ■	1-2	Load resistor 500Ω, analog input 1, connected	Analog Input 1 AI 1
	3 2 1	2-3	Load resistor 500Ω analog input 1, not connected (Default)	
P7	● ● ■	1-2	Load resistor 500Ω analog input 2, connected	Analog Input 2 AI 2
	3 2 1	2-3	Load resistor 500Ω analog input 2, not connected (Default)	
P8	● ● ■	1-2	Analog Output with current signal 0(4)-20mA (Default)	Analog Output 1 AO 1
	3 2 1	2-3	Analog Output with voltage signal ±10V	
P9		ON	P9=ON: I/O 24Vdc supply is available on J12-30 and J12-31. Do not connect any external power supply. P9=OFF: An external I/O 24Vdc supply must be wired on J12-30 and J12-31.	
P29	● ● ■	1-2	Not used	
	3 2 1	2-3	Not used	
P30	● ● ■	1-2	Pull-up not connected (Default)	Analog Input 2 AI 2
	3 2 1	2-3	Pull-up (2K2) AI2 (+) input to +10V (for PTC)	
P33		OFF	Opened (Reserved)	
P34		OFF	Opened (Reserved for firmware installation)	
SW1			Reset key	

Control terminal board

Function	Terminal	Label	Description	
Modbus	J3-1	TXRX+	MODBUS TXRX+	
	J3-2	TXRX-	MODBUS TXRX-	
	J3-3	GND	GND insulated power supply	
	J3-4	SH	Connection to GND of the shield of the communication cable MODBUS	
Programmable analog outputs	J12-13	AO 1	Programmable and optoisolated analog outputs: voltage ±10V - (2mA), or current 4-20mA (max 8V)) see jumper P5-P8	
	J12-14	AO 2		
Potentiometer power supply	J12-15	POT-10V	Potentiometer power supply -10VDC - 10mA	
	J12-16	POT+10V	Potentiometer power supply +10VDC - 10mA	
Programmable relays	J12-17	RL1 Fault NO	NO	Fault relays normally excited with drive ready or operating 1A - 250Vac
	J12-18	RL1Fault C	C	
	J12-19	RL1 Fault NC	NC	
	J12-20	RL2 DO3 PROG	NO	Programmable relay 1A - 250Vac
	J12-21	RL2 DO3 PROG	C	
Programmable and optoisolated digital inputs	J12-22	DI 3 Prog	Programmable and optoisolated digital inputs Voltage range 0÷36Vdc Rated voltage 24Vdc Input rated current 5mA Minimum voltage threshold 20V Input voltage low < 16Vdc	
	J12-23	DI 4 Prog		
	J12-24	DI 5 Prog		
	J12-25	DI 2 Prog (RV)		
	J12-26	DI 1 Prog FW Start/Stop		
	J12-27	DI 0 Drive Enable		
	J12-28	DO1 Progr ¹ (see Note)	Logic output 1 24Vdc 10mA	
	J12-29	DO2 Progr (see Note)	Logic output 2 24Vdc 10mA	



Parameters

This is provided as a quick reference for basic parameter groups. See the programming guide on the flash drive for the full parameter list and for more information.

2 - INDUCTION MOTOR								
Id	Name	Description	Unit	Range	Access Type	Control Type	Visibility Level	Download
2.01	Rated Power	Motor rated power Only used if 13.99=IEC	kW	Min: 0.1 Def: 15 Max: 8000	Read and Write	Scalar; Vector; Sls	1	Yes
2.91	Rated Power	Motor rated power Only used if 13.99=NEMA	HP	Min: 0.134 Def: 20.115 Max: 10728.176	Read and Write	Scalar; Vector; Sls	1	Yes
2.02	Poles	Motor number of poles	#	Min: 2 Def: 4 Max: 16	Write at Stop Only	Scalar; Vector; Sls	1	Yes
2.03	Rated Voltage	Motor RMS rated voltage	V	Min: 0.1 Def: 400 Max: 700	Write at Stop Only	Scalar; Vector; Sls	1	Yes
2.04	Rated Current	Motor RMS rated current	A	Min: 0.1 Def: 30 Max: 8000	Write at Stop Only	Scalar; Vector; Sls	1	Yes
2.05	Rated Speed (with slip)	Motor rated speed	rpm	Min: 1 Def: 1465 Max: 12000	Write at Stop Only	Scalar; Vector; Sls	1	Yes
2.06	Rated Freq	Motor rated frequency	Hz	Min: 10 Def: 50 Max: 400	Write at Stop Only	Scalar; Vector; Sls	1	Yes
2.07	Power Factor	Motor rated power factor	#	Min: 0.1 Def: 0.8 Max: 0.99	Read and Write	Scalar; Vector; Sls	1	Yes
2.08	Max Current Limit	Motor maximum RMS current THIS MUST BE SET CORRECTLY OR MOTOR MAY NOT RUN	A	Min: 0 Def: 60 Max: 16000	Read and Write	Scalar; Vector; Sls	1	Yes
2.09	Max Speed (1 pu)	Motor absolute maximum operative speed	rpm	Min: 1 Def: 2000 Max: 12000	Write at Stop Only	Scalar; Vector; Sls	1	Yes
2.11	L in series	Any inductance connected in series with the motor	mH	Min: 0 Def: 0 Max: 1000	Read and Write	Scalar; Vector; Sls	2	Yes
2.12	T-Model Rs	Stator phase resistance in T-equivalent circuit model (cold)	mOhm	Min: 0 Def: 0 Max: 10000	Read and Write	Scalar; Vector; Sls	3	Yes
2.13	T-Model Rr	Rotor phase resistance in T-equivalent circuit model (cold)	mOhm	Min: 0 Def: 0 Max: 10000	Read and Write	Scalar; Vector; Sls	3	Yes
2.14	T-Model Lm	Phase magnetizing inductance in T-equivalent circuit model	mH	Min: 0 Def: 0 Max: 1000	Read and Write	Scalar; Vector; Sls	3	Yes
2.15	T-Model Lls	Stator phase leakage inductance in T-equivalent circuit model	mH	Min: 0 Def: 0 Max: 1000	Read and Write	Scalar; Vector; Sls	3	Yes
2.16	T-Model Llr	Motor phase leakage inductance in T-equivalent circuit model	mH	Min: 0 Def: 0 Max: 1000	Read and Write	Scalar; Vector; Sls	3	Yes
2.17	Synchro Speed	Motor base/synchronous speed at rated frequency	rpm	Min: 1 Def: 1500 Max: 6000	Read Only	Scalar; Vector; Sls	2	No
2.18	Max Freq (1 pu)	Motor frequency at maximum speed	Hz	Min: 0 Def: 66 Max: 400	Read Only	Scalar; Vector; Sls	1	No
2.19	Rated Slip Freq	Motor rated slip frequency	Hz	Min: 0 Def: 1.2 Max: 40	Read Only	Scalar; Vector; Sls	2	No
2.20	Rated Torque	Motor rated torque Only used if 13.99=IEC	Nm	Min: 0 Def: 200 Max: 1000000	Read Only	Scalar; Vector; Sls	2	No
2.92	Rated Torque	Motor rated torque Only used if 13.99=NEMA	lb*ft	Min: 0 Def: 147.512 Max: 737562.149	Read Only	Scalar; Vector; Sls	2	No

Id	Name	Description	Unit	Range	Access Type	Control Type	Visibility Level	Download
6.01	Drive Size	Selection of the Drive size	#	Def: Undefined	Write at Stop Only	Scalar; Vector; Sls	1	Yes
6.08	Overload Class	Overload Class – VT = 110 [110] CT = 150 [150]	%	Def: 110	Write at Stop Only	Scalar; Vector; Sls	1	Yes
6.20	Rated Output Current	Drive rated RMS output current	A	Min: 1 Def: 10 Max: 10000	Read Only	Scalar; Vector; Sls	1	No
6.24	AC Supply Voltage	Rated RMS AC supply voltage of Drive used to define the per-unit DC-bus voltage	V	Min: 180 Def: 400 Max: 792	Write at Stop Only	Scalar; Vector; Sls	1	Yes
6.25	Switching Freq	Output switching frequency - 1500 [1500] - 2000 [2000] - 3000 [3000] - 4000 [4000] - 6000 [6000] - 8000 [8000]	Hz	Def: 2000	Write at Stop Only	Scalar; Vector; Sls	1	Yes
6.28	Phase Reverse	Reverse the output polarity internally switching the UVW phasing to UWV - U V W [0] - U W V [1] (set if motor runs backwards)	#	Def: U V W	Write at Stop Only	Scalar; Vector; Sls	2	Yes
6.31	Per-Unit Vdc	DC-bus per-unit voltage (sqrt(2)• AC Supply Voltage)	V	Min: 300 Def: 566 Max: 6000	Read and Write	Scalar; Vector; Sls	2	No
6.70	Expansion boards	Selection of expansion board None [0]	#	Def: None	Write at Stop Only	All	1	Yes

7 - MOTOR ID 1

Id	Name	Description	Unit	Range	Access Type	Control Type	Visibility Level	Download
7.01	Static Test ID 1	Selects the type of motor identification - Test Done [0] - Test On [1] - Use eq. Circuit data [2]	#	Def: Use eq. Circuit data	Write at Stop Only	Scalar; Vector; Sls	2	Yes
7.02	Voltage Drop Over Ls	Voltage drop across equivalent leakage inductance (IM motor) at rated motor current	pu	Min: 0.05 Def: 0.15 Max: 2	Read and Write	Scalar; Vector; Sls	2	Yes
7.03	Voltage Drop Over Rs	Voltage drop across the stator resistance at rated motor current	pu	Min: 0.001 Def: 0.01 Max: 0.9	Read and Write	Scalar; Vector; Sls	2	Yes
7.04	Dead Time Comp	Drive dead time compensation	us	Min: 0 Def: 0 Max: 20	Read and Write	Scalar; Vector; Sls	2	Yes
7.05	Stator Time Constant	Stator time constant	s	Min: 0.001 Def: 0.006 Max: 2	Read Only	Vector; Sls	2	No

13 - PER-UNIT BASE DATA

Id	Name	Description	Unit	Range	Access Type	Control Type	Visibility Level	Download
13.99	IEC/NEMA	IEC/NEMA SELECTION Set to NEMA for HP, lb*ft, F	n/a	IEC NEMA	Read and Write	All	1	Yes