V2

DRIVE STARTUP MANUAL
M1000-PM

VERSION 2.0

SMARTRISE

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Document History

Date	Version	Summary of Changes
October 23,2018	1.0	Initial Submittal
December 17, 2019	2.0	Changed cover page Updated title name to reflect the type of drive New document format Updated Construction section with more detailed information

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M1000 Drive

The M1000 drive is a permanent magnet AC drive.

Figure 1: M1000 PM Drive

Equipment/Settings Verification

Set and verify the equipment matches the job specific parameters. See *V2 Controller* sheet *01 Getting Started* Parameter Table for more information.

Car	Group #	Group Car ID	Contract Speed	Floors	Capacity	Main Line Voltage	Motor Volts	Motor HP	Motor FLA	Motor Poles	Motor RPM	Motor Freq	Minimum Drive AWG	Minimum Motor AWG	Disc. Size	Drive
1	N/A	N/A	100	4	3000	240	230	15	42	8	873	60	6	6	60	M1000-LU2M0060DAC-D01

Car	Doors	DB Breaker Voltage	Brake Pick	Brake Hold	Brake Ohm	Brake Amp	M. Cont. P/N	B.1 Cont. P/N	Encoder PPR	Brake	DBR Ohm Range	DBR Min. Wattage
1	1	220	115	115	100	1	CA7-43	CA7-12	1024	HW GRIPPER	4-14 Ohms	2400

Figure 2: Example of Parameter Table

Scroll through the motor parameters and verify that they are set to the motor nameplate values prior to performing the Motor Learn procedure.

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Grounding Requirements

NOTE: A proper and effective building ground connection is required for the safe and successful operation of the controller.

Examples of a proper building-to-controller ground is as follows:

1. Attach the ground wire to the street side of a water main.
2. Attach the ground wire to a grounding rod in the pit.

The controller has a common ground bus terminal connection.

Figure 3: Ground Bus Terminal

- The building, motor, transformer, and filter(s) must all share a common ground. This removes ground loops., limits impedance, and routes noise into the ground.

Wiring

A checklist must be completed during the drive wiring process.

Power

Perform the following to connect power. See *V2 Controller* sheet *03 Machine Room* for job specific information.

1. Connect Main line power to terminal blocks L1/L2/L3.
2. Connect the ground wire to the yellow/green terminal block next to L1-L3.

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Brake

Perform the following to connect the brakes. See *V2 Controller* sheet *05 Brakes* for job specific information.

1. Connect the main brake wiring to terminal K1/K2 and the secondary brake wiring (if equipped) to terminals J1/J2 located on the terminal block next to the M Contactor.
2. Jump EB to the terminal on Construction Box and connect either the rope gripper or sheave brake to EBR (if installed). See *V2 Controller* sheet *01 Getting Started* for more information.

Motor/Encoder

Perform the following to connect the drive to the motor and encoder cable. See *V2 Controller* sheet *04 Drive and Motor* for job specific information.

- Connect motor leads to the M contactor at T1/T2/T3.
- Connect the encoder cable, if applicable, to the PG card located under the top cover.

The table below lists the Wiring References for Common Encoders.

Table 1: Wiring References for Common Encoders

Encoder	Drive	Hollister Whitney	Heidenhain	Torin ECN413	Ziehl
PWR	IP	Brown	Green/Blue and Brown	Red/Pink	Gray/Green
COM	IG	White	Green/White and White	Black and Red/White	Pink/Yellow
A	A+	Green	Green/Black	Green and Black	Gray/Pink
/A	A-	Yellow	Yellow/Black	Yellow and Black	Red/ Blue
B	B+	Blue	Blue/Black	Blue and Black	Blue
/B	B-	Red	Red/Black	Red and Black	Red
Z					
/Z					
CLK+	CK	Black	Gray	Gray	White
CLK-	$\overline{CK}$	Violet	Pink	Clear or Silver	Brown
DAT+	DT	Gray	Violet	Purple	Violet
DAT-	$\overline{DT}$	Pink	Yellow	White	Black
SHIELD	FE	Shield	Shield	Large Red	Shield

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Construction

Perform the following to wire the construction box. See *V2 Controller* sheet *01 Getting Started* for job specific information.

1. Install jumpers between M24 and the Inputs/Outputs (IOs).
2. Is an external run box being used?
   a. If an external run box is being used, go to step 3.
   b. If an external run box is not being used, go to step 5.
3. Remove factory wires on inputs 521 and 522.
4. Install the Run Bug UP/DOWN switch to IOs 521 and 522.
5. Install the Run Bug UP/DOWN SAFE switch to M24.
6. Install the Temporary Run switch between 120 and SFIN on the CXN Board and 120 to THL, MHL, and BHL on the CXN Board.
7. Are there two sheave brakes and no rope gripper?
   a. If there are two sheave brakes and no rope gripper, go to step 8.
   b. If there is a rope gripper or single sheave brake, the process ends.
8. Install a jumper between EB and SOUT.

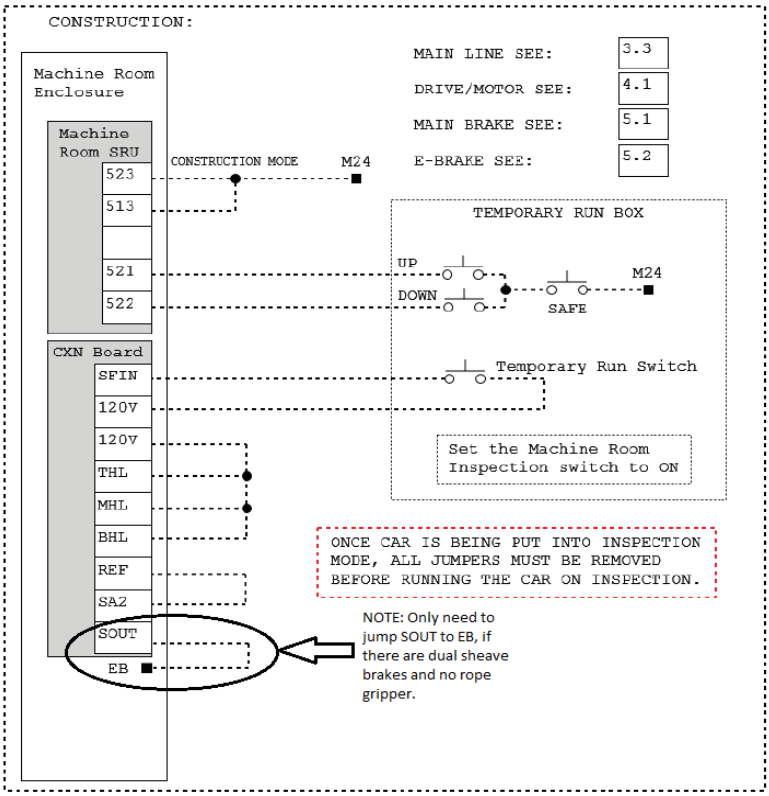

Figure 4: Example of Construction Wiring

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Powering Up

A checklist must be completed when powering up the drive.

Perform the following to power up the drive.

1. Apply external power by closing the main line disconnect.
2. Close the two-pole breaker and all the pushbutton breakers.
3. Verify the LCD on the Smartrise board and the Magnetek M1000 Drive powers up.

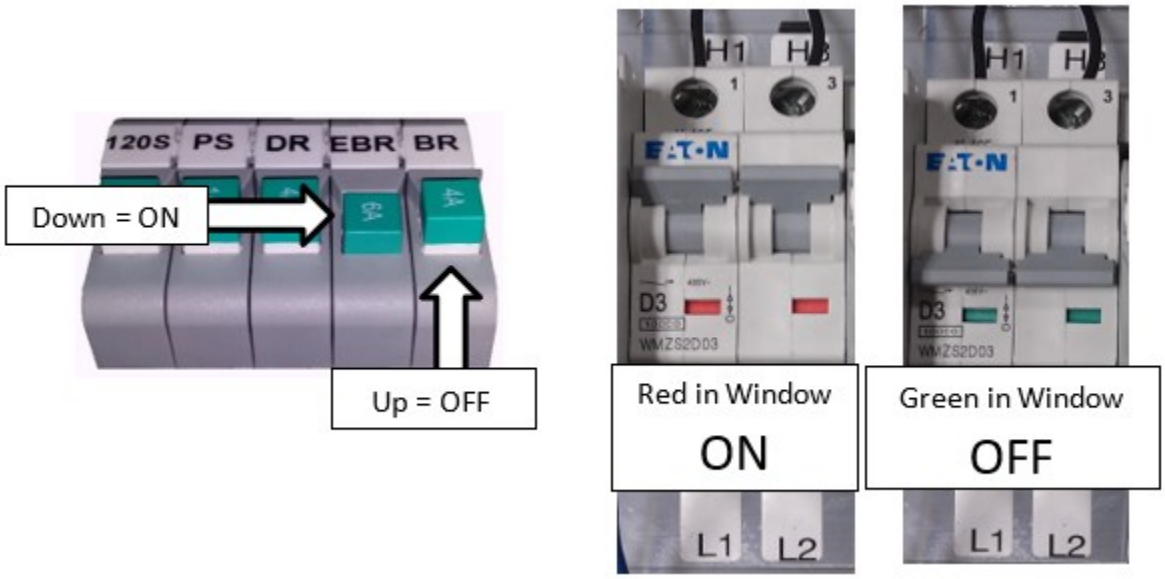

Figure 5: Breakers

Final Setup

A checklist must be completed during final setup.

Perform the following to set the Bypass Term Limit.

NOTE: The selected menu within the menu options is shown with a *.

1. Toggle the Inspection/Normal switch to Inspection.
2. On the Smartrise Machine Room board, press the left arrow (ESC) button several times to get to the MAIN SCREEN.
3. Press the right button to access the Main Menu.

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4. From the MAIN MENU, scroll and select Setup.

Figure 6: MAIN MENU – Setup

5. From the SETUP menu, scroll and select Misc.

Figure 7: SETUP Menu – Misc

6. From the MISC menu, scroll and select Bypass Term Limits.

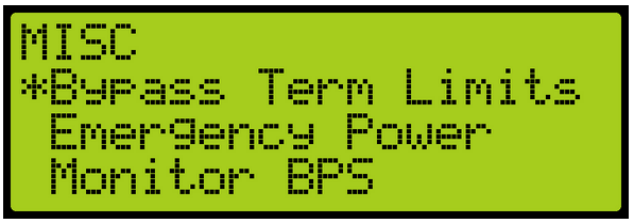

Figure 8: MISC Menu – Bypass Term Limits

7. From the BYPASS TERM LIMITS menu, set the bypass term limits from NO to YES.

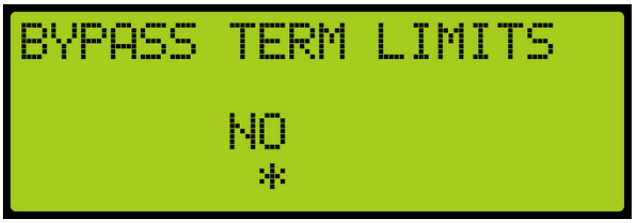

Figure 9: Bypass Term Limits Menu – NO

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8. Scroll and change NO to YES.

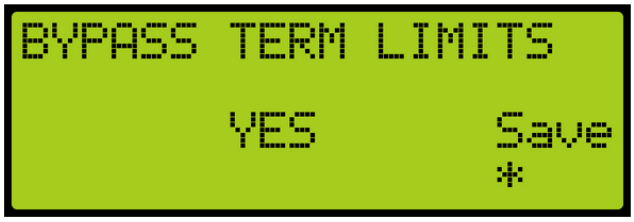

Figure 10: Bypass Term Limits Menu – YES

9. Scroll right and press Enter to save.
10. Press the left button several times to get to the MAIN SCREEN.
11. Verify the LCD displays Construction Mode on the MAIN SCREEN.

Auto Tuning

NOTE: There are two modes to auto tuning a permanent magnet.

A checklist must be completed during the tuning process.

Motor Alignment

Perform the following to align the motor.

The following procedure describes how to perform a motor alignment.

1. Write down the motor data on the motor name plate.
2. Navigate to U9 AUTOTUNE, then press ENTER.

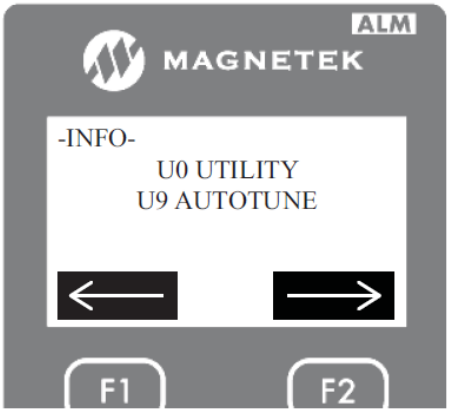

Figure 11: U9 Autotune

3. Select Tune No Rotation 1 as the motor alignment method.

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4. Press the DOWN button to enter the following motor data that was written down into the drive.
    a. Enter the motor nameplate horsepower, then press the down button.
    b. Enter the motor nameplate voltage, then press the down button.
    c. Enter the motor nameplate current, then press the down button.
    d. Enter the motor nameplate poles, then press the down button.
    e. Enter the motor nameplate speed, then press the down button.
    f. Enter the encoder pulses per revolution (PPR), then press the down button.
5. The drive indicates that the ENTER button be pressed to begin the auto-tune, but DON'T PRESS THE ENTER BUTTON YET!
6. Press and hold the M contactor button in.
7. Press the ENTER button on the drive to start the alignment.

Encoder Alignment

Perform the following to align the encoder.

1. Select Pole Position No Rotation as the encoder alignment method.
2. Press the DOWN button to begin auto-tune.
3. The drive indicates that the ENTER button be pressed to begin the auto-tune, but DON'T PRESS THE ENTER BUTTON YET!
4. Press and hold the M contactor button.
5. Press the ENTER button on the drive to start the alignment.

Operation

Run the car and complete the checklist during the verification process.

1. Make sure the car is moving without triggering a fault either on the Smartrise SRU Board or the drive. If the SRU Board is faulted, see the *Smartrise Equipment Installation Manual*. If the drive is faulted, see the *Magnetek M1000 Manual*.
2. Proper Direction – Make sure the car is moving in the same direction as the control switch on the Run Bug.
    a. If the car is moving only in one direction, swap the ENC 1 ROT DIRECT (C1) in the M1000 Drive to forward or reverse.
    b. If the car is moving in the opposite direction, swap the direction of both the ENC 1 ROT DIRECT (C1) and MOTOR ROTATION (C1).
3. Are the brakes picking?
    a. If the brake is not picking, make sure that the brake is wired correctly (see *V2 Controller* sheet *05 Brakes*) and if there is a second brake installed, verify that the EB terminal is jumpered to the terminal. See *V2 Controller* sheet *01 Getting Started* for more information.

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b. If the brakes are picking, go to step 4.

4. Verify the proper voltages on the brake coils by checking the following:
   - During a run command, check for DC voltage between points K1/K2 and J1/J2 if a second brake is installed. Verify the voltages are also at the brake coil(s) when commanded to pick.
   - Verify that the voltages match brake coil voltages according to the *V2 Controller* sheet *01 Getting Started* for the job.

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