

SECTION I

GENERAL INFORMATION

INTRODUCTION

This manual contains installation, operation, theory of operation, and maintenance and repair instructions for Fincor Series 3120 Three-Phase, Full-Converter, Adjustable-Speed DC Motor Controllers. A parts list, spare parts list descriptions of options, ratings and specifications, and diagrams are also included.

GENERAL DESCRIPTION

Series 3120 Controllers provide six-pulse conversion of three-phase AC line power to regulated DC for the adjustable-speed armature control of shunt and stabilized shunt-wound DC motors.

Series 3120 Controllers comply with applicable standards established by the National Electrical Code and NEMA for motor and industrial control equipment. Controllers rated through 125 HP, 230 VAC and 200 HP, 460 VAC are UL and cUL Listed.

Note: If the controller is used for a ski-lift application, it must be installed and utilized in accordance with the current ANSI B77.1 Code. The controller cannot be used for downhill loading except as noted in the current ANSI B77.1 Code.

MODEL TYPES

Series 3120 Controllers are supplied in one of three basic model types, as follows:

- **3120M** - Basic power converter and regulator module. These models are supplied as chassis-mount units for those who want to build a custom system by adding operator controls, magnetic control logic, and protective devices. Seven module models are available as listed in Table 1-1, page 1-2.
- **3120S** - Standard enclosed and unenclosed (panel mounted) package controllers which include the 3120M Module, DC magnetic motor contactor, run/stop logic, control transformer, and input line circuit breaker. These models provide unidirectional operation and coast-to-stop as standard. A comprehensive group of pre-engineered options are available for 3120S Controllers. Sixty standard models are available as listed in Table 1-2, page 1-2.
- **3120C** - Custom controller which includes the basic features of the 3120S, but is offered with a more extensive range of options for greater versatility in custom engineered systems.

Table 1-1: 3120M MODULE MODELS

MODEL NUMBER	RATED ARMATURE AMPS ^a	MAXIMUM HORSEPOWER ^b		
		230 VAC	380 VAC	460 VAC
3121M	36	10	15	20
3122M	105	30	50	60
3123M	258	75	125	150
3124M	426	125	200	250
3125M	635	NA	300	400
3126M	1120	NA	600	700
3127M	1600	NA	900	1000

a. Armature current ratings listed are the maximum continuous rating at 100% rated load. A 150% overload capacity allows current limit operation up to one minute.
 b. Horsepower ratings are typical. If motor data plate armature amps exceed those listed, a higher rated 3120 must be selected

Table 1-2: STANDARD 3120S CONTROLLER MODELS^a

HP	VOLTAGE (VAC)	MODEL NUMBER	HP	VOLTAGE (VAC)	MODEL NUMBER	HP	VOLTAGE (VAC)	MODEL NUMBER
5	230	3121S0051A	40	230	3123S0401A	200	380	3124S20022A
	380	3121S00522A		380	3122S04022A		460	3124S2003A
	460	3121S0053A		460	3122S0403A	250	380	3125S25022A
7-1/2	230	3121S0071A	50	230	3123S0501A		460	3124S2503A
	380	3121S00722A		380	3122S05022A	300	380	3125S30022A
	460	3121S0073A		460	3122S0503A		460	3125S3003A
10	230	3121S0101A	60	230	3123S0601A	400	380	3126S40022A
	380	3121S01022A		380	3123S06022A		460	3125S4003A
	460	3121S0103A		460	3122S0603A	500	380	3126S50022A
15	230	3122S0151A	75	230	3123S0751A		460	3126S5003A
	380	3121S01522A		380	3123S07522A	600	380	3126S60022A
	460	3121S0153A		460	3123S0753A		460	3126S6003A
20	230	3122S0201A	100	230	3124S1001A	700	380	3127S70022A
	380	3122S02022A		380	3123S10022A		460	3126S7003A
	460	3121S0203A		460	3123S1003A	800	380	3127S80022A
25	230	3122S0251A	125	230	3124S1251A		460	3127S8003A
	380	3122S02522A		380	3123S12522A	900	380	3127S90022A
	460	3122S0253A		460	3123S1253A		460	3127S9003A

Table 1-2: STANDARD 3120S CONTROLLER MODELS^a

HP	VOLTAGE (VAC)	MODEL NUMBER	HP	VOLTAGE (VAC)	MODEL NUMBER	HP	VOLTAGE (VAC)	MODEL NUMBER
30	230	3122S0301A	150	230	NA	1000	460	3127S10003A
	380	3122S03022A		380	3124S15022A			
	460	3122S0303A		460	3123S1503A			

a. See Table 9-2 (page 9-2) for current ratings.

CONTROLLER IDENTIFICATION

Each 3120 Controller contains an identification label, located on the controller panel (Models 3120S and 3120C), and on the 3120M Module. This label identifies the controller model and provides applicable controller data, as shown in Table 1-3.

For example: Model 3120_S0501A1039-1077

Table 1-3: MODEL IDENTIFICATION CODE

MODEL CODE	312_	S	050	1	A	1039 - 1077
POSITION	1	2	3	4	5	6
POSITION	DESCRIPTION					
1	Module Model Number. See Table 1-1.					
2	Model Type: M = Module, S = Standard Package Controller, C = Custom Controller					
3	Horsepower					
4	Voltage/Frequency Code: 1 = 230V, 60 Hz; 2 = 230V, 50 Hz; 3 = 460V, 60 Hz; 4 = 460V, 50 Hz; 22 = 380V, 50 Hz					
5	Design Group: A = First Design					
6	Options: Identified by four-digit numbers ^a					

a. See Table 8-1 (pages 8-2 and 8-3) for option number identification.

MOTOR SELECTION

Series 3120 Controllers control the operation of general purpose DC motors designed for use with solid-state rectified power supplies. The motor must be either stabilized shunt or straight shunt-wound. It must be suitable for industrial applications including full power start-stop conditions, continuous high speed operation, precision speed regulation, and low speed duty. For maximum efficiency, the motor should be rated for operation from a NEMA Code K power supply.

OPERATOR CONTROLS

The controller requires operator controls, which may be user supplied or supplied by Fincor as a companion to the controller. See Option 1120 (page 8-25) for a listing of Fincor Series SCS160 remote operator control stations for use with Series 3120 Controllers.