

LISTEN.
THINK.
SOLVE.SM

SMC™ - FLEX Getting Started

BULLETIN 150



Introduction

This guide provides you with the basic information required to start up your SMC™-Flex controller. Factory default settings and information regarding installing, and programming, the controller are described here.

This guide is intended for qualified service personnel responsible for setting up and servicing these devices. You must have previous experience with and a basic understanding of electrical terminology, configuration procedures, required equipment, and safety precautions.

IMPORTANT

For units rated 625...1250 A, insure that the device is lifted only at the designated lift points. See the SMC-Flex User Manual for additional information.

Installation

The open-style design of the SMC-Flex controller requires that it be installed in an enclosure. **The internal temperature of the enclosure must be kept within -5...50°C (23...122°F).**

The controller is fan cooled. It is important to mount the controller in a position that allows air to flow vertically through the power structure. Allow for a minimum of six inches (15 cm) of free space above and below the controller.

Wiring

Power Wiring

Refer to the product nameplate or User Manual for power lug termination information including:

- Lug wire capacity
- Tightening torque requirements
- Lug kit catalog numbers (108...1250 A)

ATTENTION



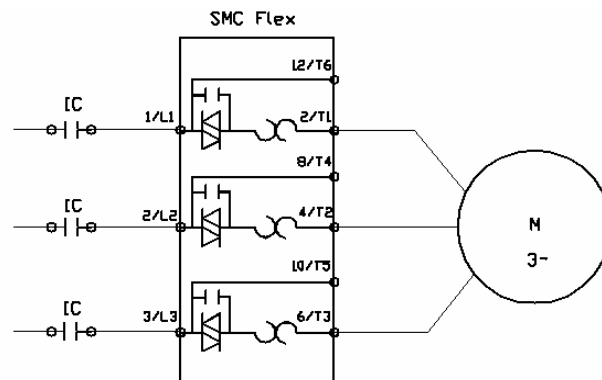
Failure of solid state power switching components can cause overheating due to a single-phase condition in the motor. To prevent injury or equipment damage, the following is recommended:

- Use of an isolation contactor or shunt trip type circuit breaker on the line side of the SMC. This device should be capable of interrupting the motor's lock rotor current.
- Connection of this isolation device to an auxiliary contact on the SMC-Flex. The auxiliary contact should be programmed for the "normal" condition. See the User Manual for additional information on programming.

Line Connected

The SMC-Flex by default is programmed to be connected to a line controlled motor as shown in Figure 1. These motors typically have 3 leads and must be rated between 1...1250 A. An optional isolation contactor can be added to the circuit to provide galvanic isolation of the motor and final electro-mechanical removal of power.

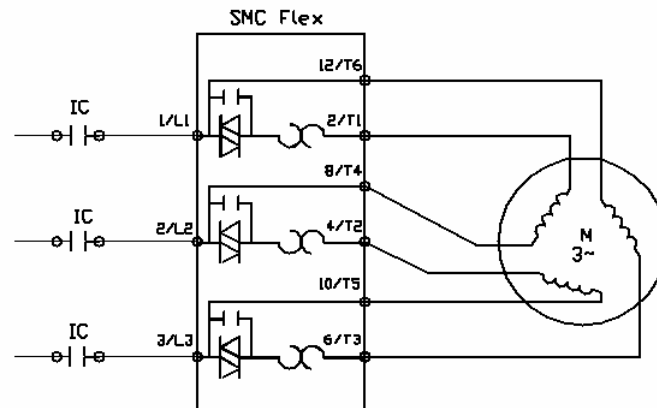
Figure 1:



Delta Connected

The SMC Flex can be programmed and connected to a delta controlled motor as shown in Figure 2. These motors typically have 6 or 12 leads and must be rated between 1.8...1600 A. It is recommended that an isolation contactor be added to the circuit to provide galvanic isolation of the motor and final electro-mechanical removal of power.

Figure 2:



Control Wiring

Refer to the product nameplate for control terminal wire capacity and tightening torque requirements. Each control terminal will accept a maximum of two wires. Refer to the product nameplate prior to applying control power. Depending on the specific application, additional control circuit transformer VA capacity may be required.

Controllers rated 5...480 A

The SMC-Flex controllers rated 5...480 A accept control power input of 100...240V AC or 24V AC/DC, (+10/-15%) single-phase, 50/60 Hz. A control power source of 125 VA is required. The control power requirement for the control module is 75 VA. The control power requirement for the fans is 20 or 50 VA. The control module and fans are separately wired.

Controllers rated 625...1250 A

For controllers rated 625...1250 A, common control is required for proper operation. Control power is connected to the product through terminal block CPI, at terminals 1 and 4. This single connection point feeds the control module, contactors, and fans. Control power must be supplied as 110/120 VAC or 230/240 VAC, 50/60 Hz only. A control power source of at least 800 VA is required. The control power requirements include the control module (75 VA), bypass contactors (526 VA max), and fan power (150 VA).

Control Terminals

Figure 3: SMC-Flex Controller Control Terminals

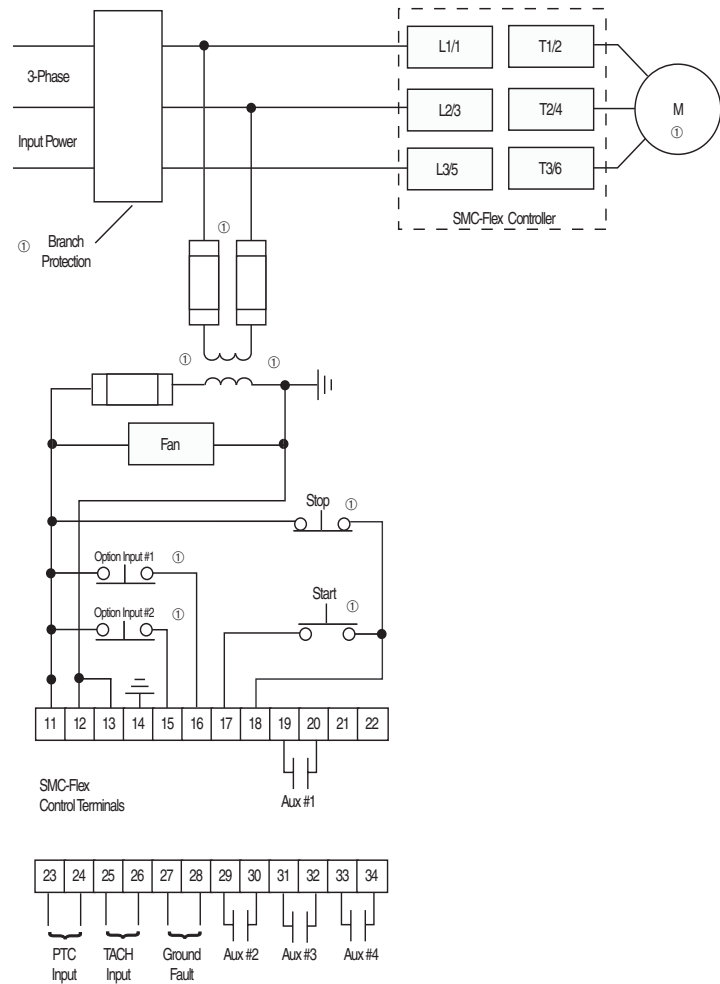


Control Terminal Designation

Terminal Number	Description
11	Control Power Input ③④
12	Control Power Common ③④
13	Controller Enable Input ①
14	Ground
15	Option Input #2 ①③
16	Option Input #1 ①③
17	Start Input ①③
18	Stop Input ①③
19	Aux. Contact #1 ②③
20	Aux. Contact #1 ②③
21	Not Used
22	Not Used
23	PTC Input ①
24	PTC Input ①
25	TACH Input
26	TACH Input
27	Ground Fault Transformer Input ①
28	Ground Fault Transformer Input ①
29	Aux. Contact #2 ②③
30	Aux. Contact #2 ②③
31	Aux. Contact #3 ②③
32	Aux. Contact #3 ②③
33	Aux. Contact #4 ②③
34	Aux. Contact #4 ②③

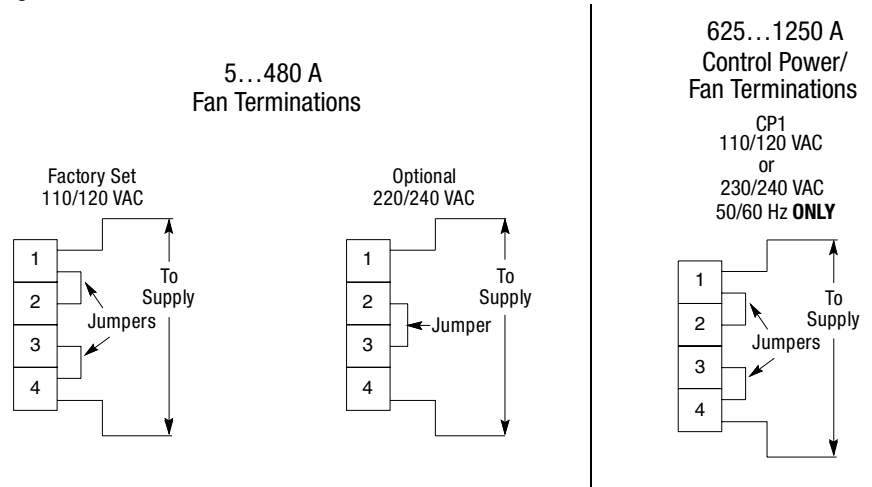
- ① Do not connect any additional loads to these terminals. These "parasitic" loads may cause problems with operation, which may result in false starting and stopping.
- ② External Bypass operates an external contactor and overload once the motor reaches full speed. The SMC-Flex overload functionality is disabled when the external bypass is activated. Proper sizing of the contactor and overload is required.
- ③ RC Snubbers are required on loads connected to auxiliary.
- ④ Control power on units rated 625...1250 A is pre-wired internally, from terminal block CP1.

Figure 4: Typical Wiring Diagram



① As Required

Figure 5: Power Terminations



Programming

The SMC-Flex controller can be programmed with the built-in keypad and LCD display or with the optional Bulletin 20-HIM-xx LCD human interface modules. Parameters are organized in a three-level menu structure and divided into programming groups.

Keypad Description

The functions of each programming key are described below.

Keypad Descriptions







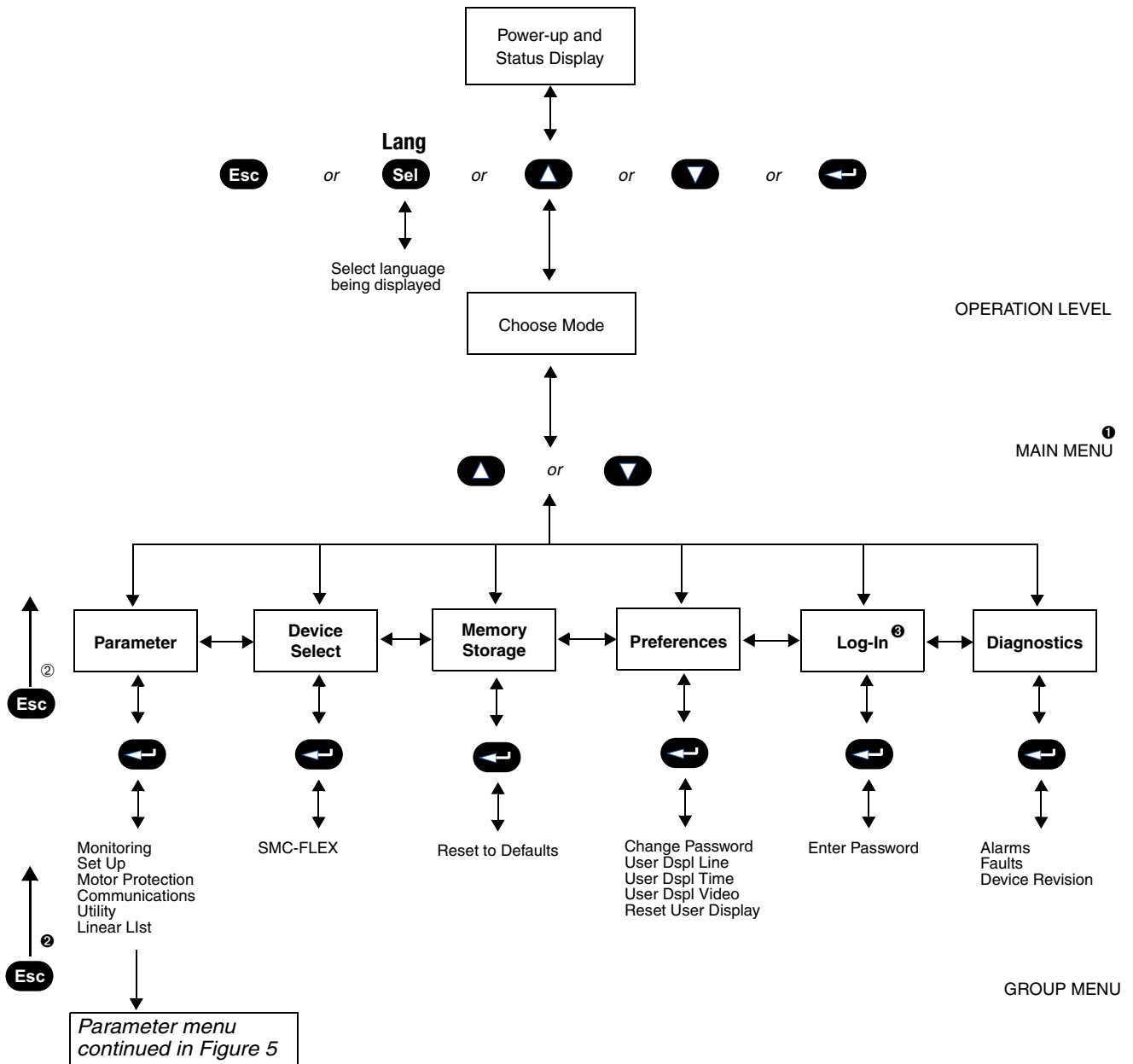
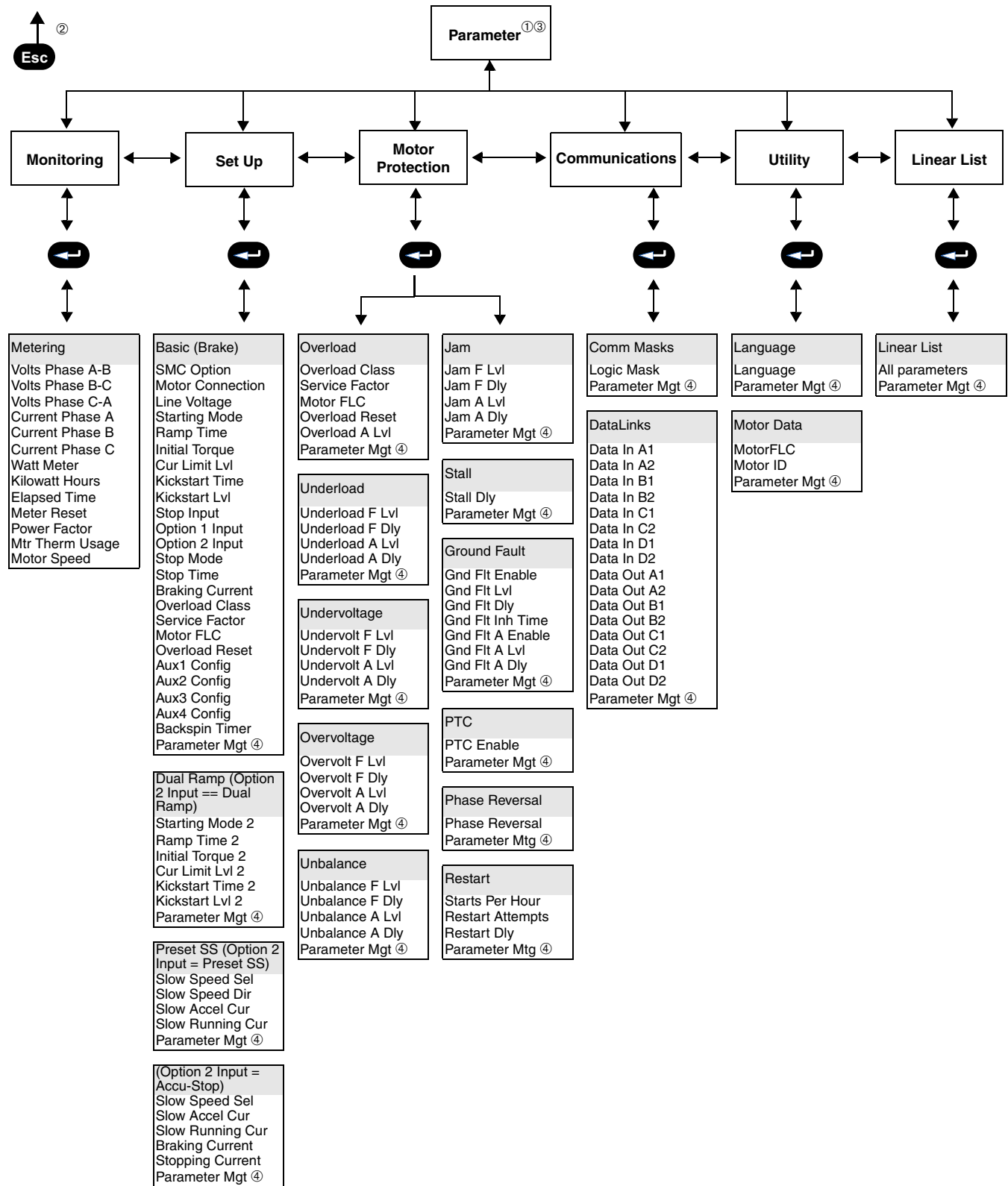
	Escape	Exit a menu, cancel a change to a parameter value, or acknowledge a fault/alarm.
 	Select	Select a digit, select a bit, or enter edit mode in a parameter screen. Will get to menu to change the language being displayed.
 	Up/Down Arrows	Scroll through options increase/decrease a value, or toggle a bit.
	Enter	Enter a menu, enter edit mode in a parameter screen, or save a change to a parameter value.

Figure 6: Menu Structure Hierarchy



- ❶ The SMC-Flex controller does not support EEPROM, Link, Process, or Start-up modes.
- ❷ Steps back one level.
- ❸ Only displayed if a password other than "0" is entered.

Figure 7: Parameter Menu Structure



- ① Depending upon SMC option selected, some parameters may not appear in product display.
- ② Steps back one level
- ③ For further information on parameters, see Appendix B of the SMC-Flex User Manual.
- ④ For further information on parameter management, see Chapter 4 of the SMC-Flex User Manual.

Factory Default Settings

The SMC-Flex controller is pre-programmed with the settings listed in the table below.

Factor Default Settings

Parameter	Setting
Starting Mode	Soft Start
Ramp Time	10 seconds
Initial Torque	70% of locked rotor torque
Kickstart	Off
Stall	Off
Aux #1 Contact	Normal, N.O.
Aux #2 Contact	Fault, N.O.
Aux #3 Contact	Alarm, N.O.
Aux # 4 Contact	Normal, N.O.
Service Factor	1.15
Overload Class	10
Line Voltage	480 V
Motor FLC	1.0 A

Basic Setup

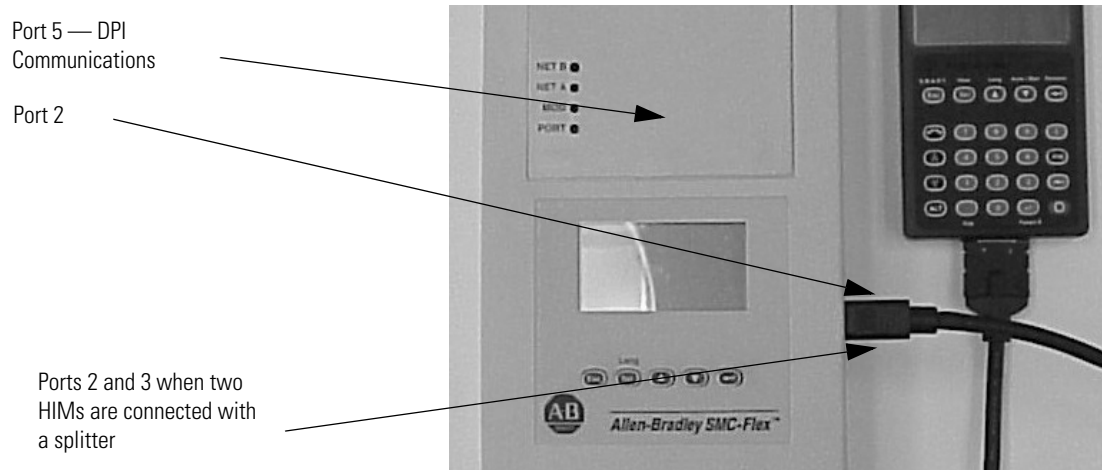
To properly setup the SMC-Flex, go to the Basic Setup list and set parameters to meet the application needs. Motor FLA and Service Factor must also be setup for proper operation. No additional calibration procedures are necessary for proper operation of the SMC-Flex.

Communication

A serial interface port for DPI (Drives Peripheral Interface) communication modules is provided as standard. DeviceNet, ControlNet, EtherNet, RS-485, RIO, ProfiBUS, and InterBUS communication modules are also available (Bulletin 20-COMM).

A serial interface port called DPI is provided as standard, and allows connection to a Bulletin 20-HIM-LCD human interface module.

Figure 8: SMC-Flex DPI Location



ATTENTION



Two peripheral HIM devices can be connected to the SMC-Flex. The maximum output current through the SMC-Flex is 280 mA.

The SMC-Flex allows HIM interface and DPI communication.

Human Interface Modules

The Bulletin 20-HIM-LCD human interface modules with control panels can start and stop the SMC-Flex controller. However, the factory default settings disable control commands other than Stop through the serial communication port.

To enable motor control from a connected human interface module or communication module, you must take the following programming steps:

1. Disconnect the HIM and allow to power down.
2. Reconnect the HIM. On Initializing screen, the bottom right corner of LCD shows Port X. Note this port number.



3. Go to Logic Mask, found as follows:
Main Menu: Parameter/Communications/Comm Mask/Logic Mask



4. Set b0X equal to 1 (where X is the port number noted in step 2).
5. Press Enter key.

IMPORTANT

The Logic Mask must be set to 0 prior to disconnecting a human interface module from the SMC-Flex controller. If not, the unit will fault on a “Coms Loss”.

Trademark List

Accu-Stop, Allen-Bradley Remote I/O, RSNetwork, PLC, PowerFlex, SLC, SMC, SMC-2, SMC-Flex, SMC PLUS, SMC Dialog Plus, SMB, and STC are trademarks of Rockwell Automation. ControlNet is a trademark of ControlNet International, Ltd. DeviceNet and the DeviceNet logo are trademarks of the Open Device Vendors Association (ODVA). Ethernet is a registered trademark of Digital Equipment Corporation, Intel, and Xerox Corporation. Modbus is a trademark or registered trademark of Schneider Automation Inc. Profibus is a registered trademark of Profibus International.

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846