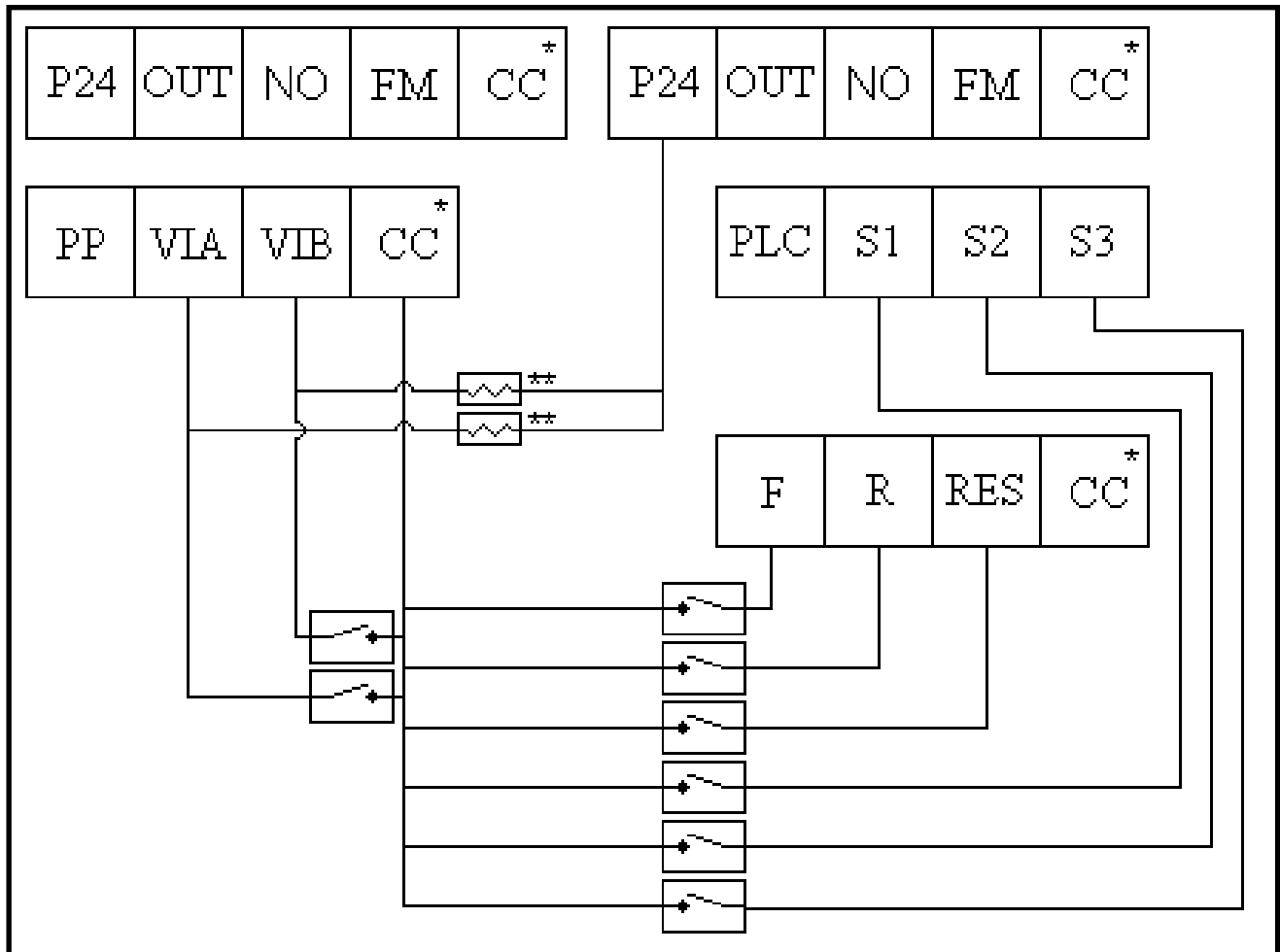


S11 APPLICATION GUIDELINE 4.2 ***Configuring Digital Inputs***

Introduction:

The S11 drive has 6 digital inputs that may be programmed to any of 64 functions. The S11 digital input terminals may be programmed to accept either a sink or source logic input. A new feature in the S11 drive, the VIA and VIB terminals, commonly used for analog input signals, may be configured for use as two additional digital inputs. This application note will describe the S11's digital input terminals as well as describing how to program, wire and test the digital inputs for your application.

Connections:



For additional assistance, please contact Toshiba Adjustable Speed Drive Marketing Dept. at (800)-231-1412.

Notes on connections:

- *: All CC terminals are electrically the same point and any may be used to activate an input terminal.
- ** : Resistor; 4.7kΩ, 1/2W. To be installed ONLY when configuring VIA or VIB for use as a digital input and using sink logic. (Be sure to turn the VIA slide switch to the V position.)

Sink/Source Logic:

In order to make a terminal function active, a connection must be made between the terminal and another point. This point is determined by the user selected logic, either **sink** or **source**. If the user selects **sink logic**, the terminal is made active by connecting it to a common, in this case the CC terminal. If the user has selected **source logic**, the terminal is made active by connecting it to a 24V supply. The S11Drive has a terminal, P24 that supplies 24V and may be used to activate.

Programming

The following table discusses programming for the 6 digital input terminals on the S11 drive. Programming of the VIA and VIB terminals will be covered in another section.

Title	Parameter Name	Default Value	Default Description	New Value
F110	Always Active terminal	1	Standby	*
F111	Input Terminal Selection 1(F)	2	Forward Run	*
F112	Input Terminal Selection 2(R)	3	Reverse Run	*
F113	Input Terminal Selection 3(RES)	10	Fault Reset	*
F114	Input Terminal Selection 4(S1)	6	Preset Speed Command 1	*
F115	Input Terminal Selection 5(S2)	7	Preset Speed Command 2	*
F116	Input Terminal Selection 6(S3)	8	Preset Speed Command 4	*

*: See Page K-16 of the VF-S11 Instruction manual for programming options for the digital input terminals

Always Active Terminal: Sometimes referred to as a virtual terminal, The S11 terminal does not have a physical connection point where a switch or contact may be attached. Any function assigned to the

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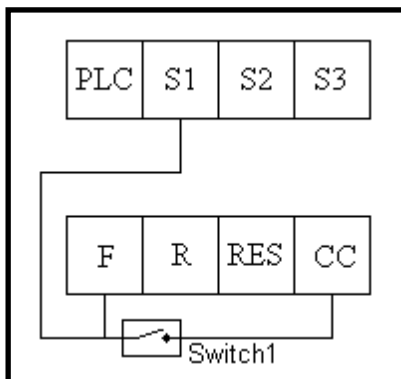
Always Active Terminal will be active whenever the drive has power. If a user wants to program a standby terminal similar to those used in the Toshiba G and H series, The Always Active Terminal will need to be re-assigned.

Programming Example: The following example documents how to program the S11 digital input as a Jog input. When the S1 terminal is connected to the CC terminal, the drive will jog in the forward direction at 3Hz. For the jog to operate, at least two digital inputs on the drive will need to be made active; the jog input and a directional input. For the purpose of this example, the F terminal will be used to jog in the forward direction. In order for the S11 to operate in jog mode from the terminal strip, the unit must be in remote mode. To put the unit in remote mode, the Command mode selection and frequency mode selection parameters must be changed.

Parameter Name	S11 Description	Default Value	New Value
CNOD	Command Mode Selection	1	0
FNOD	Frequency Setting Mode Selection 1	0	1
F114	Input Terminal Selection 4(S1)	6	4
F260	Jog Run Frequency	5.0 Hz	3.0 Hz

Once the drive has been programmed, the following connections need to be made on the terminal strip. The connections for the F and the S1 terminals are made in parallel through a single switch. These connections may also be made individually if the user so desires.

CAUTION: Before opening the front panel of the S11 drive, make sure that the unit is disconnected from power and that the charge lamp on the unit is not illuminated. Be sure to follow any and all safety instructions contained in section A of the S11 Instruction Manual.



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Parameter Name	S11 Description	Default Value	Settings
F109	Analog/contact input function selection	0	0 – VIA/VIB analog inputs 1 – VIA: analog input VIB: contact input(sink logic) 2 – VIA: analog input VIB: digital input (source logic) 3 – VIA: digital Input (sink logic) VIB: digital Input (sink logic) 4 – VIA: digital Input (source logic) VIB: digital Input (source logic)
F117	Input Terminal Selection 7(VIB)	9	*
F118	Input Terminal Selection 8(VIA)	5	*

*: See Page K-15 of the VFS11 Instruction manual for programming options for the digital input terminals

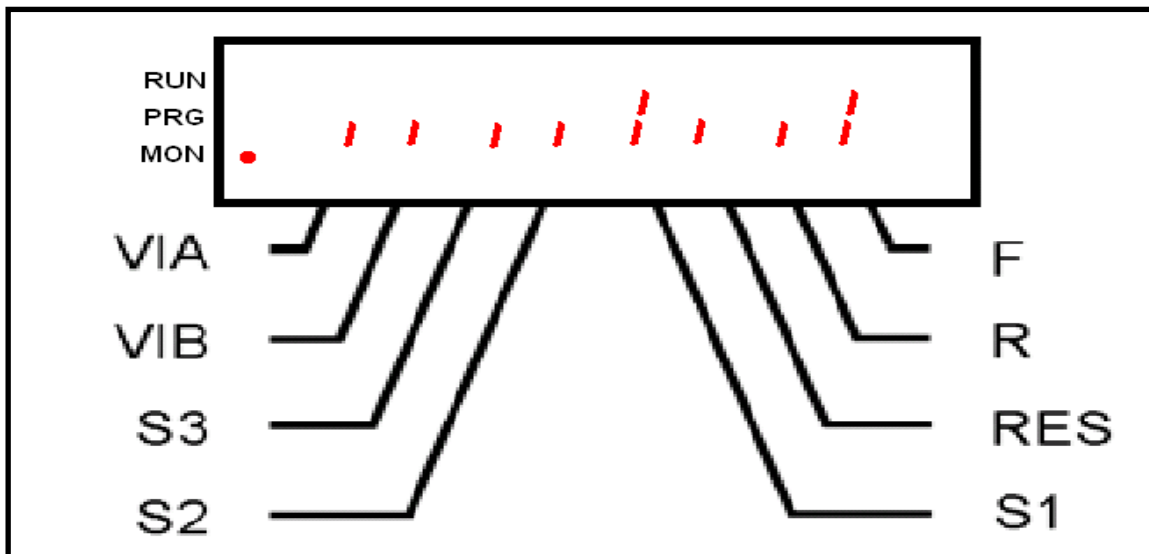
Once the unit has been programmed and the connections to the input terminals made, make sure that the front cover of the unit is closed securely, power the unit, and close Switch 1. If all programming steps have been performed correctly, the unit should run in the forward direction at 3Hz. If the unit fails to do so, check the terminal status (see the section below labeled “Monitoring Digital Inputs” in the monitor mode to verify that S1 and F are both closed. Verify all programming and wiring and try again.

Using VIA & VIB as Digital Inputs

The Two analog input terminals on the S11, VIA and VIB may both be configured for use as digital input terminals. In order to use these terminals as digital input terminals, both programming and physical modification are required. Specifically, the user must program the terminals for use as a digital input, set the function to be used and connect a 4.7kΩ resistor from the terminal to P24 as shown in the drawing on page 1. The programming steps are outlined in the table below. To use one or both of the analog input terminals as a Digital input a value other than 0 must be entered in F109. Once programming has been completed and the appropriate resistor has been installed the VIA and VIB Terminals behave exactly as the other digital inputs and may be programmed in the same manner.

Monitoring Digital Inputs

The S11 allows for monitoring of contact closures on the S11's terminal strip using the standard drive monitor section. The monitor mode displays the drive input status as a series of hash marks of either full or half height. A full height mark indicates that the terminal is either shorted to CC (If sink logic is selected) or connected to 24V (If source logic is selected) the standard terminal monitor display is shown in the drawing below. The drawings shows the monitor display if the VIA and VIB terminals are set up as digital inputs and the programming example above is performed correctly and Switch1 is closed. If none of the hash marks are full height then the drive is not receiving any input from the terminal strip. The drawing below also shows the terminal assignments for each hash mark.



Note on Monitoring of VIA and VIB: The marks for VIA and VIB will only appear on this monitoring screen if F109 is set to a value other than 0. Also, the marks for VIA and VIB will always show active unless the 4.7kΩ Resistor is installed from P24 to the VIA and VIB terminals

Revision History:

Rev.	Date	Written/Revised By	Approved By	Description
4.2	6/22/2011	Joshua Austin	Eric Houg	Formatting changes. Revised to incorporate document control requirements.