VYSTA

STANDARD PROGRAM FUNCTION BLOCK (E-Series only)

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REVISION HISTORY		
B	19/02/2002	Upgraded Vista to Vysta
A	6/10/2000	Created

Standard Program Function Block

The Standard Program function block defines which of the E-Series functions, as described in the E-Series Technical Manual (4201-180), are controlled by the E-Series System Code, and which of the E-Series functions are controlled by the Vysta program.

This function block **must** be configured in the Vysta program if any of the E-Series functions are to be controlled by the System Code. Each Vysta program may have no more than one Standard Program function block.

The control functions are grouped in four sections, while the fifth section enables the Fibre-optics processor.

Each selection is checked [√] to enable the E-Series System Code to control the selected function. For example, if the Vysta program just requires a Screen List only, with all of the standard drive functionality retained, all selections within the Standard Program function block must be checked as shown below.

1. Main Engine

Enables / Disables the E-Series System Code control over …

- Multi-function Input mode selection

- Stop mode selection
- Start/Reset/Run (but not commands via the fibre mode functions or Serial Comms)
- Motorised Pot, Multi-references and Alt Speed/Torque References

2. Reference Select

Enables / Disables the E-Series System Code control over …

- Speed and Alternative speed reference
- Torque and Alternative torque reference

Note that the Main Engine influences this function also.

3. Accel Rate Set

Enables / Disables the E-Series System Code control over …

- Acceleration and Alternative Acceleration rates
- Deceleration and Alternative Deceleration rates

Note that the Main Engine influences this function also.

4. Control Mode Set

Enables / Disables the E-Series System Code control over …

- Speed / Torque Mode

Note that the Main Engine influences this function also. Therefore checking Control Mode Set will not enable the E-Series System Code control over this function unless Main Engine is also checked.

5. Fibre optics

Enables / Disables the E-Series Fibre optics processor.

Disabling the processor will prevent any Fibre optic functions from occurring, either in the E-Series System Code or in Vysta.

It is normal to always check this option, and if the Fibre optics is to be used then Fibre optics must be checked. However, disabling the Fibre optics will provide more processor speed for complex Vysta programs.

Main Engine

The Main Engine check box enables / disables the E-Series System Code control over …

- **Multi-function Input mode selection**

If the Main Engine is checked, the Multi-function Inputs are read by the E-Series System Code with the functionality as setup in the standard Screen List screens I7a-h and shown in the tables below. Each of the Multi-function Inputs also exists as a function block that reads the respective input terminal. With the Main Engine checked, these function blocks can be used in the Schematic to perform functions additional to the E-Series System Code standard functionality.

If the Main Engine is ***not*** checked then the Multi-function Inputs are ***not*** read by the E-Series System Code and the setup in the standard Screen List screens I7a-h is ignored. The Multi-function Input function blocks that read the respective input terminals will need to be used in the Schematic along with associated function blocks to perform any functions required.

E-Series Input Mode Selection – Screen I7a

INPUT MODES		CONTROL INPUT TERMINAL FUNCTIONS					
NO.	NAME	INPUT 1 T13	INPUT 2 T14	INPUT 3 T15	INPUT 4 T16	INPUT 5 T17	INPUT 6 T18
0	DISABLED	DISABLED	DISABLED	DISABLED	DISABLED	DISABLED	DISABLED
1	3 WIRE	ASTOP-RST	START	STP-RST	INV SP	INV TQ	SP/TQ
2	ALL PROG	MFI 1	MFI 2	MFI 3	MFI 4	MFI 5	MFI 6
3	MULTIREF 2 WIRE	MFI 1	MFI 2	MFI 3	MFI 4	Y	Z
4	MULTIREF 3 WIRE	MFI 1	MFI 2	MFI 3	X	Y	Z
5	MOTORISED POT	MFI 1	MFI 2	MFI 3	SP/TQ	UP	DOWN

E-Series Multi-function Input Selectable Functions
Screens I7c – I7h

NO.	INPUT	INACTIVE STATE	ACTION FUNCTION / NOTES
0	Unused	N/A	Input has no effect
1	Start	Open	Commands start, latching
2	Stop	Closed	Commands stop (Screen S2), latching
3	Alternative Stop-Reset	Closed	Commands alternative stop (Screen S4) while active; latches stop (Screen S2); reset on opening edge
4	Stop-Reset	Closed	Commands stop (Screen S2); latching; reset on opening edge
5	Start/Stop	Open	Commands start when closed; stop when open
6	Stop / Start-Reset	Open	As 05, but provides reset on closing edge
7	Reset	Closed	Reset upon opening edge
8	Inch 1	Open	Inches (jumps to speed mode) at setting of MREF1 (Screen M1); Inch is dominant only if "STOP" is closed; Closing Inch 1 and Inch 2 gives Inch 3 (MREF 3)
9	Inch 2	Open	Inches (jumps to speed mode) at setting of MREF2 (Screen M2); Inch is dominant; Closing Inch 1 and Inch 2 gives Inch 3 (MREF3)
10	Invert Speed	Open	Inverts sign of speed reference
11	Invert Torque	Open	Inverts sign of torque reference
12	Invert Torque-Speed	Open	Inverts sign of both torque and speed references
13	Invert Inch	Open	Inverts sign of inch reference
14	Alternative Acceleration	Open	Toggles selected acceleration and deceleration rates in conjunction with Screen R5 (Accel/Decel break speed)
15	Alternative Reference	Open	Selects alternative reference (Screens I4, I5)
16	Speed/Torque Mode	Open	Switches to torque control mode
17	Local / Remote	Open	Disables writes to the E-Series via Serial Comms
18	Start/Stop-Reset	Open	As 05, but provides reset on opening edge
19	Alternative Stop	Closed	As 02, but without reset

- **Motorised Pot**

If the Main Engine is checked, this Multi-function Input function can be selected by the user in the standard Screen List screen I7a. However the Reference Select check box needs to be checked if this Motorised Pot function is required. This allows the Motorised Pot to be selected as the Speed or Torque Reference in screens I2-I5.

The outputs of the Motorised Pot (speed or torque) are also available as System variables and can be read using the Read function block. The speed output is **System.Motorised_Pot_Speed** and the torque output is

System.Motorised_Pot_Torque. Reading these System variables allows the Motorised Pot functionality to still be used in the Schematic even if the Reference Select check box is not checked.

Note: To use the Motorised Pot function, the MREF screens M4-M7 need to be included in the Screen List.

If the Main Engine is ***not*** checked, the Motorised Pot functionality is not available.

- **Multi-Ref 2-wire and Multi-Ref 3-wire (X, Y, Z)**

If the Main Engine is checked, this Multi-function Input function can be selected by the user in the standard Screen List screen I7a. However the Reference Select check box needs to be checked if the Multi-Ref 2-wire or 3-wire functions are required. This allows MREF to be selected as the Speed or Torque Reference in Screens I2-I5

Note: To use the Multi-Ref 2-wire or 3-wire functions, the MREF screens M1-M7 need to be included in the Screen List.

If the Main Engine is ***not*** checked, the Multi-Ref 2-wire or 3-wire functions are not available. However a D/A Converter function block is available to provide this functionality in the Schematic if required.

- **Read Display Unit Buttons**

If the Main Engine is checked, the Display Unit buttons are read by the E-Series System Code with the functionality as setup in the standard Screen List screen I1 and shown in the table below. Each of the Display Unit buttons also exists as a function block that reads the respective Display Unit button. With the Main Engine checked, these function blocks can be used in the Schematic to perform functions additional to the E-Series System Code standard functionality.

If the Main Engine is ***not*** checked then the Display Unit buttons are ***not*** read by the E-Series System Code and the setup in the standard Screen List screen I1 is ignored.
The Display Unit function blocks that read the respective Display Unit buttons will need to be used in the Schematic along with associated function blocks to perform any functions required.

Local Start Stop Control – Screen I1

	Code	Notes
0	NONE	START and STOP/RESET inactive. Allows operation without display.
1	RESET ONLY	START and STOP inactive. STOP/RESET key resets faults only
2	STOP-RESET	START inactive. STOP and RESET functions active.
3	START/STOP-RST	START, STOP and RESET functions active

- **Stop mode selection**

If the Main Engine is checked, the Stop Mode selection is set by the System variables **System.Stop_Mode** and **System.Alt_Stop_Mode**. These are the System variables that appear in the standard Screen List in screens S2 and S4.

If the Main Engine is ***not*** checked, the Stop Mode selection is ***not*** set by the System variables **System.Stop_Mode** and **System.Alt_Stop_Mode** and changing the setup in screens S2 or S4 in the standard Screen List will have no effect on the actual Stop Mode used. This includes the Multi-function Input Astop command.

Instead, the Stop Mode selection will be set by the System variable **System.Ref_Stop_Mode**. This System variable will need to be incorporated into the Vysta program to allow adjustment of the Stop Mode selection. This is typically done in the Screen List in screen S2 by editing the Variable Reference, replacing **System.Stop_Mode** with **System.Ref_Stop_Mode** and then deleting screen S4 which contains **System.Alt_Stop_Mode**.

Alternatively, if the Stop Mode selection is to be done by logic in the Schematic, then the System variable **System.Ref_Stop_Mode** can be written to from within the Schematic and screens S2 and S4 deleted.

The Stop Mode selection options for all of the Stop Mode System variables are shown in the table below.

Stopping Modes – Screens S2 and S4

Mode	In Speed Control	In Torque Control
NORMAL	Applies a zero speed reference and decelerates to zero speed	Applies a zero torque reference and coasts to zero speed
RAMP	Same as NORMAL	Transitions to speed control and performs a normal speed controlled stop - i.e., decelerates to zero speed
SPIN	Transitions to torque control and performs a normal torque controlled stop - i.e., coasts to zero speed	Same as NORMAL
STOP-RATE	Same as NORMAL except the special stop deceleration rate (Screen R6) is used	Transitions to speed control and performs a speed controlled stop using the special stop deceleration rate (Screen R6)
OFF	Immediately disables the output - i.e., coasts to zero speed	Immediately disables the output - i.e., coasts to zero speed
DC BRAKE	Applies a DC current as set by screen S8 until the end of the OFF delay time	Applies a DC current as set by screen S8 until the end of the OFF delay time.

- **Start / Stop / Reset Commands**

If the Main Engine is checked, the E-Series System Code will command the starting, stopping, and fault resetting of the drive with the functionality as setup in the standard Screen List screens I1 and I7a-h. With the Main Engine checked, the function blocks that command a **Start** / **Stop** / **Reset** (but not **Run**) can be used in the Schematic to perform functions additional to the E-Series System Code standard functionality.

If the Main Engine is ***not*** checked, then the function blocks that command a Start, Stop, Reset or Run must be used to provide these functions. These are typically connected to the Multi-function Inputs or Display Unit function blocks in the fashion required by the user.

NOTE: The **Start / Stop / Reset** Fibre Mode commands and **Start / Stop / Reset** Serial Communications commands are enabled irrespective of the Main Engine.

- **Alternative Reference selection**

If the Main Engine is checked, the Alt Ref function can be assigned to any of the Multi-function Inputs by the user in the standard Screen List screens I7c-h. However the Reference Select check box needs also to be checked if this Alternative Reference function is required.

If the Main Engine is ***not*** checked, the Alternative Reference function is not available.

- **Alternative Acceleration selection**

If the Main Engine is checked this Alt Accel function can be assigned to any of the Multi-function Inputs by the user in the standard Screen List screens I7c-h. However the Accel Rate Set check box needs also to be checked if this Alternative Acceleration function is required.

If the Main Engine is ***not*** checked, the Alternative Acceleration function is not available from the Multi-funtion Inputs. However, the Main Engine does not effect the Break Speed function. The Break Speed function is only dependent on the Accel Rate Set check box.

Reference Select

The Reference Select check box enables / disables the E-Series System Code control over …

- **Speed and Alternative Speed Reference selection**

If the Reference Select is checked, the Speed Reference Source selection is made by the E-Series System Code with the functionality as setup in the standard Screen List screens I2 and I4 and shown in the tables below. However, the Main Engine check box needs to be checked if any of the following Speed Reference functions are required:
-Multi-Ref 2-wire or 3-wire or,
-Motorised Pot or,
- Alternative Reference from the Multi-function Input.
The Speed Reference also exists as a function block that writes to the E-Series Speed Reference. With the Reference Select checked, this function block ***cannot*** be used in the Schematic to perform functions additional to the E-Series System Code standard functionality.

If the Reference Select is ***not*** checked the Speed Reference Source selection is ***not*** made by the E-Series System Code and the setup in the standard Screen List screens I2 and I4 is ignored.
The Speed Reference function block that writes to the E-Series Speed Reference will need to be used in the Schematic along with associated function blocks to perform any functions required.

- **Torque and Alternative Torque Reference selection**

If the Reference Select is checked, the Torque Reference Source selection is made by the E-Series System Code with the functionality as setup in the

standard Screen List screens I3 and I5 and shown in the tables below. However, the Main Engine check box needs to be checked if any of the following Torque Reference functions are required:
-Multi-Ref 2-wire or 3-wire or,
-Motorised Pot or,
- Alternative Reference from the Multi-function Input.
The Torque Reference also exists as a function block that writes to the E-Series Torque Reference. With the Reference Select checked, this function block ***cannot*** be used in the Schematic to perform functions additional to the E-Series System Code standard functionality.

If the Reference Select is ***not*** checked the Torque Reference Source selection is ***not*** made by the E-Series System Code and the setup in the standard Screen List screens I3 and I5 is ignored.
The Torque Reference function block that writes to the E-Series Torque Reference will need to be used in the Schematic along with associated function blocks to perform any functions required.

Speed / Torque Reference Source Selection

CODE	SPEED/TORQUE REFERENCE SOURCE
NULL	NO SOURCE SELECTED
AIN1	ANALOGUE INPUT 1
AIN2	ANALOGUE INPUT 2
AIN1+2	ADDITION OF SCALED ANALOGUE INPUTS 1 + 2
FIBRE	FIBRE OPTIC INPUT
LOCAL	LOCAL SPEED / TORQE CONTROL (SCREEN A3/A2)
MREF	MULTI-REFERENCE (SCREENS I7a, M1 TO M7)
MTRPOT	MOTORISED POTENTIOMETER (SCREEN I7a)
PROCESS	PROCESS CONTROL OUTPUT

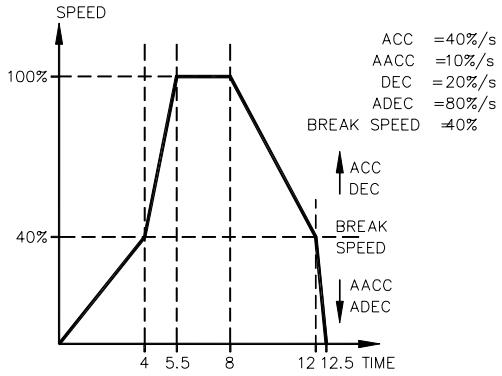
Accel Rate Set

The Accel Rate Set check box enables / disables the E-Series System Code control over …

- **Acceleration and Alternative Acceleration Rates**

If the Accel Rate Set is checked, the Acceleration Rate selection is made by the E-Series System Code with the functionality as setup in the standard Screen List screens R1 to R5 and shown in the drawing below. The E-Series standard program reads either of the System variables ***System.Accel_Rate*** and ***System.Alt_Accel_Rate***, or ***System.Decel_Rate*** and ***System.Alt_Decel_Rate*** however the Main Engine check box needs to be checked if the Alternative Acceleration function is required from Multi-function Input.
The Accel and Decel Rates also exist as function blocks. With the Accel Rate Set checked these function blocks ***cannot*** be used in the Schematic to perform functions additional to the E-Series System Code standard functionality.

If the Accel Rate Set is ***not*** checked, the Acceleration Rate selection is ***not*** made by the E-Series System Code and the setup in the standard Screen List screens R1 to R5 is ignored.
The Accel and Decel Rate function blocks can be used in the Schematic along with associated function blocks to perform any functions required.



Dual Acceleration / Deceleration Rates

Control Mode Set

The Control Mode Set check box enables / disables the E-Series System Code control over …

- **Speed / Torque Mode**

If the Control Mode Set is checked, the Speed / Torque selection is made by the E-Series System Code as setup in the standard Screen List screen A1 in conjunction with the Multi-function Input Speed / Torque Mode function. However, the Main Engine check box needs to also be checked.
The Speed / Torque Mode also exists as function block. With the Control Mode Set checked, this function block ***cannot*** be used in the Schematic to perform functions additional to the E-Series System Code standard functionality.

If the Control Mode Set or Main Engine is ***not*** checked, the Speed / Torque selection is ***not*** made by the E-Series System Code as described above. The Speed / Torque Mode function block can be used in the Schematic along with associated function blocks to perform any functions required.

Fibre Optics

The Fibre optics check box enables / disables the E-Series Fibre optics processor.

This check box is a special case.

If the Fibre optics check box is not checked, then all of the fibre optic functions will be disabled. These are functions either within the E-Series System Code or within the Vysta schematic.

It is normal to always check this option, and if the Fibre optics is to be used either by the E-Series System Code or in the Vysta Schematic, this check box must be checked. However, disabling the Fibre optics will provide more processor speed for complex Vysta programs. However, if not required, disabling the Fibre optics will provide more processing speed for complex Vysta programs.