Control 2 Set Up Group

Introduction

The functions listed in this group deal with how the controller will control the Loop 2 process including: Number of Tuning Parameter Sets, Setpoint Source, Tracking, Power-up Recall, Setpoint Limits, Output Direction and Limits, Deadband, and Hystersis.

The method whereby 4 PID sets are selected via PV or Setpoint values needs to be determined.

The method whereby Time Duplex, Current Duplex are configured needs to be determined.

Function Prompts

Table 1 CONTROL2 Group Function Prompts

Function Prompt Lower Display	**Selections or Range of Setting** Upper Display	**Parameter Definition**
PV 2 SRC		**PROCESS VARIABLE SOURCE**—Selects the source of the Process Variable for Loop 2.
	INPUT 1 INPUT 2 INPUT 3 INPUT 4 INPUT 5 IN ALG1 IN ALG2	**INPUT 1** **INPUT 2** **INPUT 3** **INPUT 4** **INPUT 5** **INPUT ALGORITHM 1** **INPUT ALGORITHM 2**
LINK LPS		**LINK MODE AND SETPOINT**—Links Auto/Manual modes. If either loop changes mode due to a front panel change, digital input action, or failsafe action, the other loop tracks that mode.
	DISABLE AUTOMAN SP1 AM+SP1	**DISABLE**—Disables FORCE MA. **AUTOMAN**—Links modes on both loops. **SP1**—Links Local Setpoint 1 for both loops. **LINK12**—Links both modes and Setpoints for both loops.
PID SETS		**NUMBER OF TUNING PARAMETER SETS**—This selection lets you choose one or two sets of tuning constants (gain, rate, and reset)
	1 ONLY	**ONE SET ONLY**—Only one set of tuning parameters is available. Configure the values for: Gain (proportional band) Rate Reset Time Cycle Time (if time proportional is used)
	2KEYBD	**TWO SETS KEYBOARD SELECTABLE**—Two sets

Function Prompt Lower Display	**Selections or Range of Setting** Upper Display	**Parameter Definition**
		of tuning parameters can be configured and can be selected at the operator interface or by using the Digital Inputs. Press Lower Display key until you see PID SET3 or PID SET4 then press or ▼ to switch between sets. Configure the values for: Gain #3, Rate #3 , Reset #3, Cycle #3 Time Gain #4, Rate #4, Reset #4, Cycle #4 Time
	2PV SW	**TWO SETS PV AUTOMATIC SWITCHOVER**—When the process variable is *GREATER* than the value set at prompt SW VALUE (Switchover Value), the controller will use Gain #3, Rate #3, Reset #3, and Cycle #3 Time. The active PID SET can be read in the lower display. When the process variable is *LESS* than the value set at prompt SW VALUE, the controller will use Gain #4, Rate #4, Reset #4, and Cycle #4 Time. The active PID SET can be read in the lower display. *Other prompts affected: SW VALUE*
	2SP SW	**TWO SETS SP AUTOMATIC SWITCHOVER**—When the setpoint is *GREATER* than the value set at prompt SW VALUE (Switchover Value), the controller will use Gain #3, Rate #3, Reset #3, and Cycle #3. When the setpoint is *LESS* than the value set at prompt SW VALUE, the controller will use Gain #4, Rate #4, Reset #4, and Cycle #4. *Other prompts affected: SW VALUE*
	4SP SW	**FOUR SETS SP AUTOMATIC SWITCHOVER**—When the setpoint is *GREATER* than the value set at prompt SW VALUE (Switchover Value), the controller will use Gain, Rate, Reset, and Cycle. When the setpoint is *LESS* than the value set at prompt SW VALUE, the controller will use Gain #2, Rate #2, Reset #2, and Cycle #2. Similarly, the controller switches between the other PID sets based upon the values configured for SW VAL 2 and SW VAL 3. **ATTENTION** *Other prompts affected: SW VALUE, SW VAL 2 and SW VAL 3.*

Function Prompt Lower Display	**Selections or Range of Setting** Upper Display	**Parameter Definition**
	4KEYBD	**FOUR SETS KEYBOARD SELECTABLE**—Two sets of tuning parameters can be configured and can be selected at the operator interface or by using the Digital Inputs. **Lower Display** Press this key until you see PID SET1 or PID SET2 or PID SET3 or PID SET4 then press ▲ or ▼ to switch between the sets. Configure the values for: Gain, Rate, Reset, Cycle Time Gain #2, Rate #2, Reset #2, Cycle #2 Time Gain #3, Rate #3, Reset #3, Cycle #3 Time Gain #4, Rate #4, Reset #4, Cycle #4 Time
	4PV SW	**FOUR SETS PV AUTOMATIC SWITCHOVER**—When the process variable is *GREATER* than the value set at prompt SW VALUE (Switchover Value), the controller will use Gain, Rate, Reset, and Cycle Time. The active PID SET can be read in the lower display. When the process variable is *LESS* than the value set at prompt SW VALUE, the controller will use Gain #2, Rate #2, Reset #2, and Cycle #2 Time. The active PID SET can be read in the lower display. Similarly, the controller switches between the other PID sets based upon the values configured for SW VAL 2 and SW VAL 3. **ATTENTION** *Other prompts affected: SW VALUE, SW VAL 2 and SW VAL 3.*
	4SP SW	**FOUR SETS SP AUTOMATIC SWITCHOVER**—When the setpoint is *GREATER* than the value set at prompt SW VALUE (Switchover Value), the controller will use Gain, Rate, Reset, and Cycle. When the setpoint is *LESS* than the value set at prompt SW VALUE, the controller will use Gain #2, Rate #2, Reset #2, and Cycle #2. Similarly, the controller switches between the other PID sets based upon the values configured for SW VAL 2 and SW VAL 3. **ATTENTION** *Other prompts affected: SW VALUE, SW VAL 2 and SW VAL 3.*

Function Prompt Lower Display	**Selections or Range of Setting** Upper Display	**Parameter Definition**
SW VAL12	Value in engineering units within PV or SP range limits	**AUTOMATIC SWITCHOVER VALUE**—This is the value of Process Variable or Setpoint at which the controller will switch from Tuning Constant Set #1 to Set #2. **ATTENTION** *Only appears when PID SETS selection is configured for 2 or 4 PID Sets.*
SW VAL23	Value in engineering units within PV or SP range limits	**AUTOMATIC SWITCHOVER VALUE**—This is the value of Process Variable or Setpoint at which the controller will switch from Tuning Constant Set #2 to Set #3. **ATTENTION** *Only appears when PID SETS selection is configured for 4 PID Sets.*
SW VAL34	Value in engineering units within PV or SP range limits	**AUTOMATIC SWITCHOVER VALUE**—This is the value of Process Variable or Setpoint at which the controller will switch from Tuning Constant Set #3 to Set #4. **ATTENTION** *Only appears when PID SETS selection is configured for 4 PID Sets.*
LSP'S	 1 ONLY TWO THREE FOUR	**LOCAL SETPOINT SOURCE**—This selection determines what your local setpoint source will be. **LOCAL SETPOINT**—The setpoint entered from the keyboard. **TWO LOCAL SETPOINTS**—This selection lets you switch between two local setpoints using the SP Select key. **THREE LOCAL SETPOINTS**—This selection lets you switch between three local setpoints using the SP Select key. **FOUR LOCAL SETPOINTS**—This selection lets you switch between three local setpoints using the SP Select key.
RSP SRC	 NONE INPUT 1 INPUT 2	**REMOTE SETPOINT SOURCE**—This selection determines what your remote setpoint source will be when toggled by the SP Select or Digital Input **NONE**—No remote setpoint. **INPUT 1**—Remote Setpoint using Input 1. **INPUT 2**—Remote Setpoint using Input 2.

Function Prompt Lower Display	**Selections or Range of Setting** Upper Display	**Parameter Definition**
	INPUT 3 INPUT 4 INPUT 5 IN AL1 IN AL2	**INPUT 3**—Remote Setpoint using Input 3. **INPUT 4**—Remote Setpoint using Input 4. **INPUT 5**—Remote Setpoint using Input 5. **INPUT ALGORITHM 1**—Remote Setpoint using Input Algorithm 1. **INPUT ALGORITHM 2**—Remote Setpoint using Input Algorithm 2. **ATTENTION** To cycle through the available local setpoints and remote setpoint, press and hold in the SP Select key. When the key is released, the setpoint selection currently displayed will be the new setpoint selection.
AUTOBIAS	ENABLE DISABLE	**AUTO BIAS**—Used for bumpless transfer when transferring from local setpoint to remote setpoint. Auto Bias calculates and adds a bias to the remote setpoint input each time a transfer is made. Available for any analog input RSP source and if no tracking is selected. **ENABLE**—Enables auto bias. **DISABLE**—Disables auto bias.
SPTRACK	NONE PV RSP	**SETPOINT TRACKING**—The local setpoint can be configured to track either PV or RSP as listed below. Not configurable when Auto Bias is set. **ATTENTION** For selections other than NONE, LSP is stored in nonvolatile memory only when there is a mode change; i.e., when switching from RSP to LSP or from Manual to Automatic. If power is lost, then the current LSP value is also lost. **NO TRACKING**—If local setpoint tracking is not configured, the LSP will not be altered when transfer from RSP to LSP is made. **PV**—Local setpoint tracks the PV when in manual mode. **RSP**—Local setpoint tracks remote setpoint. When the controller transfers out of remote setpoint, the last value of the remote setpoint (RSP) is inserted into the local setpoint.
PWR MODE		**POWER UP CONTROLLER MODE RECALL**—This selection determines which mode and setpoint the controller will use for Loop 2 when the controller restarts after a power loss.

Function Prompt Lower Display	**Selections or Range of Setting** Upper Display	**Parameter Definition**
	MANUAL	**MANUAL, LSP**—At power-up, the controller will use manual mode with the local setpoint displayed.
	A LSP	**AUTOMATIC MODE, LAST LSP**—At power-up, the controller will use automatic mode with the last Local Setpoint used before power down displayed.
	A RSP	**AUTOMATIC MODE, LAST RSP**—At power-up, the controller will use automatic mode with the last Remote Setpoint used before power down displayed.
	AM SP	**LAST MODE/LAST SETPOINT**—At power-up, the controller will use the last mode and last Setpoint used before power down.
	AM LSP	**LAST MODE/LAST LOCAL SETPOINT**—At power-up, the controller will use the last mode and last Local Setpoint used before power down.
SP HiLIM	NOTE 1	**SETPOINT HIGH LIMIT ***—This selection prevents the local and remote setpoints from going above the value selected here. The setting must be equal or less than the upper range of the inputs.
SP LoLIM	NOTE 1	**SETPOINT LOW LIMIT ***—This selection prevents the local and remote setpoints from going below the value selected here. The setting must be equal or greater than the lower range of the inputs.
* The local setpoint will automatically adjust itself to be within the setpoint limit range. For example, if SP = 1500 and SP HiLIM is changed to 1200, then the SP will be changed to 1200.		
ACTION		**CONTROL OUTPUT DIRECTION**—Select direct or reverse acting control.
	DIRECT	**DIRECT ACTING CONTROL**—The controller's output *increases* as the process variable increases.
	REVRSE	**REVERSE ACTING CONTROL**—The controller's output *decreases* as the process variable increases.
OUT RATE		**OUTPUT CHANGE RATE**—Enables or disables the Output Change Rate. The maximum rate is set at prompt PCT/M UP or PCT/M DN.
	DISABLE ENABLE	**DISABLE**—Disables output rate. **ENABLE**—Allows output rate.
PCT/M UP	0 to 9999 % per minute	**OUTPUT RATE UP VALUE**—This selection limits the rate at which the output can change upward. Enter a value in percent per minute. Appears only if OUT RATE is enabled. "0" means no output rate applied.

Function Prompt Lower Display	**Selections or Range of Setting** Upper Display	**Parameter Definition**
PCT/M DN	0 to 9999 % per minute	**OUTPUT RATE DOWN VALUE**—This selection limits the rate at which the output can change downward. Enter a value in percent per minute. Appears only if OUT RATE is enabled. “0” means no output rate.
OUTHiLIM	0 % to 100 % –5 % to 105 %	**HIGH OUTPUT LIMIT**—This is the highest value of output beyond which you do not want the controller automatic output to exceed. For relay output types. For current output types
OUTLoLIM	0 % to 100 % –5 % to 105 %	**LOW OUTPUT LIMIT**—This is the lowest value of output below which you do not want the controller automatic output to exceed. For relay output types. For current output types
I Hi LIM	Within the range of the output limits	**HIGH RESET LIMIT**—This is the highest value of output beyond which you want no reset to occur.
I Lo LIM	Within the range of the output limits	**LOW RESET LIMIT**—This is the lowest value of output beyond which you want no reset to occur.
DROPOFF	–5 to 105 % of output	**CONTROLLER DROPOFF VALUE**—Output value below which the controller output will drop off to the low output limit value set in prompt OUTLoLIM.
DEADBAND	–5.0 to 25.0 %	**DEADBAND**—An adjustable gap between the operating ranges of output 1 and output 2 in which neither output operates (positive value) or both outputs operate (negative value). Time Duplex
FAILMODE	NoLATCH LATCH	**FAILSAFE MODE**—How the controller operates during a Failsafe condition. **NON LATCHING**—Controller stays in last mode (automatic or manual); output goes to failsafe value. **LATCHING**—Controller goes to manual mode; output goes to failsafe value.
FAILSAFE	0 to 100 %	**FAILSAFE OUTPUT 2 VALUE**—The value used here will also be the output level when you have Communications SHED set to failsafe or when NO BURNOUT is configured and the PV Source fails. **ATTENTION** At power-up, the Loop 2 Output is set to the Failsafe Output 2 value.

Function Prompt Lower Display	**Selections or Range of Setting** Upper Display	**Parameter Definition**
NOTE 1: If PV source is one of the Analog Inputs, then the SP HiLIM and SP LoLIM values must be between the Input High and Input Low values for the input type configured. If the PV source is an Input Algorithm configured for: • Carbon Potential, then the SP HiLIM and SP LoLIM values must be between 0.000 and 2.000 • Dew Point, then the SP HiLIM and SP LoLIM values must be between –50 and +100 • Oxygen, then the SP HiLIM and SP LoLIM values must be between 0 to 40.00 • Weighted Average, Summer, Subtractor, High or Low, then the SP HiLIM and SP LoLIM values must be between the configured CALC HI and CALC LOW values. CALC HI and CALC LOW can be set anywhere between –999 and 9999. • Math A, Math B, Math C or Math D, then the SP HiLIM and SP LoLIM values can be set anywhere between –999 and 9999 and are not limited to the CALC HI and CALC LOW values.		