


FUNCTIONAL DESCRIPTION

MAN01

Manual Station (HIC)

Prep. /	10-11-30	Function Description			No. of p.
Appr. PA/R/ Bengt Persson	Approved	MAN01 Functional Description			32
Resp. dept.					
	ABB AB	Doc. no.	Lang.	Rev. ind.	Page
		3AST 001 590D001	en	I	1

Contents

1	General	4
2	Configuration	4
3	Function Block MAN01	5
4	MAN01 Datatypes	7
4.1	MAN01_InPar.....	7
4.2	MAN01_OutPar.....	7
4.3	MAN01_Opr	8
5	Function	9
5.1	Basic Properties	9
5.2	Control Signal Processing	9
5.2.1	Selection of Output Signal References	9
5.2.2	Tracking.....	10
5.2.3	Ramp function.....	10
5.2.4	Limitations	11
5.3	Control Modes.....	11
5.3.1	Control Mode Command Signals and Priority	11
5.3.2	Balance	12
5.3.3	Manual.....	12
5.3.4	E1.....	13
5.4	Interlocks.....	13
5.5	Start-up	13
5.6	Process connections	13
5.7	Forced Control.....	13
5.7.1	Selection of Control Signal.....	14
5.7.2	Ramp Functions.....	15
5.7.3	Output Limitations.....	15
5.8	Output Signal Control	15
5.8.1	Selection of Output Signal	15
5.8.2	Output Limiting.....	15
5.9	Scaling and Units	16
5.10	Alarm and Alarm Limitation Functions	16
5.10.1	Alarm Limits.....	16
5.10.2	Alarm Blocking.....	16
5.10.3	Event handling.....	17
5.11	Interaction Window.....	17
5.11.1	Man01 Interaction Window	17
5.11.2	General Parameters	18
5.11.3	Direction & Interlock settings.....	18
5.11.4	Units and Range	19
5.11.5	Limits & Control	19
5.11.6	Alarm Configuration	19
5.11.7	Blocking of Events	20
5.11.8	Text	20
6	Operator Functions	22
6.1	Presentation	22
6.1.1	Display Elements	22
6.1.2	Time-logged Properties.....	25
6.2	Faceplate(Dialog)	25
6.3	Alarm and Event Handling	27
6.3.1	General.....	27

6.3.2	Alarm and Event Message.....	28
6.4	Faceplate tabs.....	29
6.4.1	Blocking.....	29
6.4.2	Limits.....	29
6.4.3	Info text.....	30
6.4.4	Tracking.....	30
6.4.5	IO status.....	31

1 General

MAN01 is a functional unit for manual control, from Operate^{IT} Operator Station, of a final control element such as an automatic valve in Control^{IT}. A MAN01 normally performs a complete function independently.

MAN01 has the following functions and properties:

- Different control modes, set by operator or by control logic.
- Controllable rate of change of output signal.
- Limiting of output signal.
- Function for bumpless change between different control modes.
- Alarm and event handling of important control signals.

2 Configuration

MAN01 comprises a function block type for control and logic functions in Control^{IT}, a faceplate and an object display in Operate^{IT} for operator functions and control parameters.

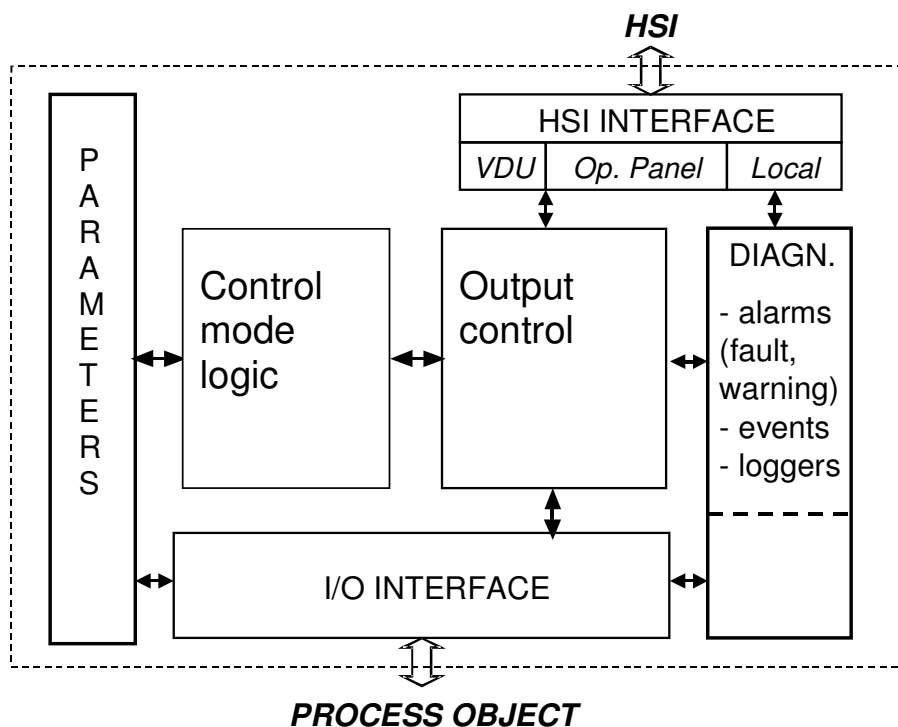


Figure 1. The Structure of the Functional Unit

3 Function Block MAN01

FUNCTION OF INPUT TERMINALS	MAN01		FUNCTION OF OUTPUT TERMINALS
Object name	Name	OutRef	Output Reference
Object description	Description	Out	Output
Enable object	Enable	Out_EQ_HL	Output greater than or equal to High Limit
Selection of Tracking ref. (0= No tracking, 1=MV, 2=Extref)	Track_A	Out_EQ_LL	Output less than or equal to Low Limit
Selection of how to track.	Track_B	Bal	Balance mode
Tracking IB Reference in Man Mode	TrackIB	Man	Man mode
Measured Value	MV	E1	E1 mode
MV status	AIErr	BalOut	Balance Out
Max output change rate (unit/s)	Speed	MV_GT_H2	MV greater than or equal to High High Limit (H2)
Enable Man mode	ManEnbl	MV_GT_H1	MV greater than or equal to High Limit (H1)
Enable E1 mode	E1Enbl	MV_LT_L1	MV less than or equal to Low Limit (L1)
External reference setpoint in E1 mode	ExtRef	MV_LT_L2	MV less than or equal to Low Low Limit (L2)
Max setpoint change rate in E1 mode (unit/s)	Speed2	NoInt	No Interlocks
Order mode to E1	SeqE1	OutPar	Out Parameter
Order mode to Local	Local	Opr	Operator order
Order mode to Balance	BalIn		
Order mode to Man	SeqMan		
Balance Reference	BalRef		
Order mode to Clamp	Clamp		
Clamp Reference	ClampRef		
Enable external output limit	EOLim		
External Output High Limit	EOHL		
External Output Low Limit	EOLL		
Process Interlock 1	IB1		
Process Interlock 2	IB2		
Process Interlock 3	IB3		
Process Interlock 4	IB4		
Reference for Process Interlock 1	IB1Ref		
Reference for Process Interlock 2	IB2Ref		
Reference for Process Interlock 3	IB3Ref		
Reference for Process Interlock 4	IB4Ref		
Actuator position	ActPos		
Block alarm	AlcBik		
Acknowledge alarm	AlarmAck		
MV alarm configuration	MVAlarms		
In Parameter	InPar		
Event name	EventName		

Figure 3-1. Function Block Type, Complete symbol

Table 3-1 below illustrates the default properties of each terminal of the MAN01 function block.

Name	Data Type	Attributes	Direction	FD Port	Initial value	Description
Name	string	coldretain	in	yes	'Man01'	Object name
Description	string	coldretain	in	yes	'Descr'	Object description
Enable	bool	coldretain	in	yes	true	Enable object
Track_A	int	coldretain	in	yes	0	Selection of Tracking ref. (0= No tracking, 1=MV, 2=Extref)
Track_B	bool	coldretain	in	yes	false	Selection of how to track.
TrackIB	bool	coldretain	in	yes	true	Tracking IB Reference in Man Mode

Name	Data Type	Attributes	Direction	FD Port	Initial value	Description
MV	real	retain	in	yes		Measured Value
AIErr	dword	retain	in	yes	16#C0	MV status
Speed	real	coldretain	in	yes	20.0	Max output change rate (unit/s)
ManEnbl	bool	coldretain	in	yes	true	Enable Man mode
E1Enbl	bool	coldretain	in	yes	true	Enable E1 mode
ExtRef	real	retain	in	yes		External reference setpoint in E1 mode
Speed2	real	coldretain	in	yes	2.0	Max setpoint change rate in E1 mode (unit/s)
SeqE1	bool	retain	in	yes		Order mode to E1
Local	bool	retain	in	yes		Order mode to Local
BalIn	bool	retain	in	yes		Order mode to Balance
SeqMan	bool	retain	in	yes		Order mode to Man
BalRef	real	coldretain	in	yes	0.0	Balance Reference
Clamp	bool	retain	in	yes		Order mode to Clamp
ClampRef	real	coldretain	in	yes	0.0	Clamp Reference
EOLim	bool	retain	in	yes		Enable external output limit
EOHL	real	coldretain	in	yes	100.0	External Output High Limit
EOLL	real	coldretain	in	yes	0.0	External Output Low Limit
IB1	bool	retain	in	yes	true	Process Interlock 1
IB2	bool	retain	in	yes	true	Process Interlock 2
IB3	bool	retain	in	yes	true	Process Interlock 3
IB4	bool	retain	in	yes	true	Process Interlock 4
IB1Ref	real	coldretain	in	yes	0.0	Reference for Process Interlock 1
IB2Ref	real	coldretain	in	yes	0.0	Reference for Process Interlock 2
IB3Ref	real	coldretain	in	yes	0.0	Reference for Process Interlock 3
IB4Ref	real	coldretain	in	yes	0.0	Reference for Process Interlock 4
ActPos	real	retain	in	yes		Actuator position
AlcBlk	bool	retain	in	yes		Block alarm
AlarmAck	bool	retain	in	yes		Acknowledge alarm
MVAIarms	Alarm4Limit	by_ref	in	yes		MV alarm configuration
InPar	Man01_InPar	by_ref	in	yes		In Parameter
EventName	string	coldretain	in	yes	' Man01_ '	Event name
OutRef	real	retain	out	yes		Output Reference
Out	real	retain	out	yes		Output
Out_EQ_HL	bool	retain	out	yes		Output greater than or equal to High Limit
Out_EQ_LL	bool	retain	out	yes		Output less than or equal to Low Limit
Bal	bool	retain	out	yes		Balance mode
Man	bool	retain	out	yes		Man mode
E1	bool	retain	out	yes		E1 mode
BalOut	bool	retain	out	yes		Balance Out
MV_GT_H2	bool	retain	out	yes		MV greater than or equal to High High Limit (H2)
MV_GT_H1	bool	retain	out	yes		MV greater than or equal to High Limit (H1)
MV_LT_L1	bool	retain	out	yes		MV less than or equal to Low Limit (L1)
MV_LT_L2	bool	retain	out	yes		MV less than or equal to Low Low Limit (L2)
NoInt	bool	retain	out	yes		No Interlocks
OutPar	Man01_OutPar	by_ref	out	yes		Out Parameter
Opr	Man01_Opr	by_ref	out	yes		Operator order

Table 3-1. Terminal properties.

4 MAN01 Datatypes

4.1 MAN01_InPar

Name	Data Type	Attributes	Initial value	ISP value	Description
Class	dint	coldretain	500		AE class
Severity	dint	coldretain	1000		AE severity
Range	RangeReal	coldretain			Range
OUTLimit	RangeLimit	coldretain			OUT limit
InitMode	dint	coldretain	5		Init mode (5 = Man ; 7 = E1)
SeqManEvBlk	bool	coldretain	true		Block event for SeqMan
SeqE1EvBlk	bool	coldretain	true		Block event for SeqE1
AlcBlkEvBlk	bool	coldretain	true		Block event for AlcBlk
EOLimEvBlk	bool	coldretain	true		Block event for EOLim
LocalEvBlk	bool	coldretain	true		Block event for Local
BallnEvBlk	bool	coldretain	true		Block event for Balln
ClampEvBlk	bool	coldretain	true		Block event for Clamp
IB1	IBInParType3	coldretain			Configuration for IB1
IB2	IBInParType3	coldretain			Configuration for IB2
IB3	IBInParType3	coldretain			Configuration for IB3
IB4	IBInParType3	coldretain			Configuration for IB4
ErrCtrl	bool	coldretain	false		No error at overflow
AEConfigAIErr	dint	coldretain	1		AE configuration for AI Error
AlarmDelay	time	coldretain	0s		Alarm Delay
ShowActPos	bool	coldretain	false		Show actuator position
OUTIncDec	real	coldretain	2.0		Increase/Decrease step of output (In percentage of range)

4.2 MAN01_OutPar

Name	Data Type	Attributes	Initial value	ISP value	Description
AlarmBlk	bool	retain			Alarm blocked
IntlkBlk	bool	retain			Interlock blocked
IntlkBlkActive	bool	retain			Interlock blocked active
EnOverrideAll	bool	retain			Override All button enabled
Mode	dint	retain			Active mode
NormalMode	bool	retain			Normal mode (Active mode = Init mode)
AIErr	bool	retain			MV error
Forced	bool	retain			MV forced
IB1Ind	bool	retain			IB1 interlocked
IB2Ind	bool	retain			IB2 interlocked
IB3Ind	bool	retain			IB3 interlocked
IB4Ind	bool	retain			IB4 interlocked
AU_MVH2	bool	retain			UnAcknowledge Alarm for MV > H2
AU_MVH1	bool	retain			UnAcknowledge Alarm for MV > H1
AU_MVL1	bool	retain			UnAcknowledge Alarm for MV < L1
AU_MVL2	bool	retain			UnAcknowledge Alarm for MV < L2
AU_AIErr	bool	retain			UnAcknowledge Alarm for AI Error
ALB_H2	bool	retain			High High MV alarm blocked
ALB_H1	bool	retain			High MV alarm blocked
ALB_L1	bool	retain			Low MV alarm blocked
ALB_L2	bool	retain			Low Low MV alarm blocked
HWStatus	HwStatus	retain			Hardware status
SubStatus	dint	retain			Hardware substatus
IOStatus	dint	retain			Hardware I/O status quality
LastManOutRef	real	retain			Last ManOut before interlock

4.3 MAN01_Opr

Name	Data Type	Attributes	Initial value	ISP value	Description
BlockAlarm	bool	retain			Operator block alarms
ALB_H2	bool	coldretain			Operator block alarm limit H2
ALB_H1	bool	coldretain			Operator block alarm limit H1
ALB_L1	bool	coldretain			Operator block alarm limit L1
ALB_L2	bool	coldretain			Operator block alarm limit L2
Man	bool	retain			Operator order Manual mode
E1	bool	retain			Operator order E1 mode
Incr	real	retain			Operator order Increase SP command
Decr	real	retain			Operator order Decrease SP command
OverrideAll	bool	retain			Operator override all interlocks
IB1Override	bool	retain			Operator override IB1 interlock
IB2Override	bool	retain			Operator override IB2 interlock
IB3Override	bool	retain			Operator override IB3 interlock
IB4Override	bool	retain			Operator override IB4 interlock
ManOUT	real	coldretain			Operator enter Man OUT

5 Function

5.1 Basic Properties

The MAN01 functional unit is designed to manually control operation of a final control element such as an automatic valve.

MAN01 normally performs all control functions independently, however there are situations where MAN01's functionality needs to be supplemented. Such cases can include

- Ratio Control, where a Ratio Station RATIO01 supplements the MAN01.
- Increase/Decrease control, where a three state controller CON-PU1 supplements the MAN01.
- For special control applications additional logic can be used to supplement MAN01.

MAN01 has the following basic functions.

- Output control.
- Control modes: BAL, Man and E1.
- Logic for allocation of priority in the selection of control mode.
- Rate of change limiting of the output signal and External setpoint.
- The possibility to limit output signal.
- Functions for bumpless transfers between the different control modes.
- Possibility to Forced the control of the output signal.
- Alarm and event handling.

5.2 Control Signal Processing

Control signal processing contains the following functions:

- Selection of output signal reference
- Tracking
- Ramp function
- Limitations

5.2.1 Selection of Output Signal References

The output signal can be selected from one of the following two references:

- Manual reference, selected when the control mode is MAN
- External reference, selected when the control mode is E1

5.2.2 Tracking

Two tracking functions are built in for the manual output signal reference (OUTREF). The tracking function can be activated in control mode E1 and gives either bumpless connection of OutRef or connection of OutRef with constant signal value.

With bumpless switch-over, E1 to MAN, the output signal (OUT) will go to the operator-entered reference (OUTREF) in accordance with the ramp parameter SPEED. With switch-over with constant signal value, the output signal (OUT) is not changed because the manual output signal reference (OUTREF) has been updated from the external output signal reference (EXTREF).

The tracking function is selected with the function parameters Track_A, Track_B.

TrackA	TrackB	Description
0	0	No tracking.
0	X	No tracking.
1	0	The Manual out, is tracking the measured value, MV, when not in Manual mode. The output is ramped to equal ManOut Reference with a speed that is determined by Speed on return to manual mode.
1	1	The Manual out and ManOut Reference, is tracking the measured value, MV, when not in Manual mode. The output stays at the current value on return to manual mode.
2	0	The Manual out, is tracking the external reference, ExtRef, when not in Manual mode. The output is ramped to equal ManOut Reference with a speed that is determined by Speed on return to manual mode.
2	1	The Manual out and ManOut Reference, is tracking the external reference, ExtRef, when not in Manual mode. The output stays at the current value on return to manual mode.

Table 4-2. Selection for tracking function of Manual Output.

5.2.2.1 TrackIB

Parameter TrackIB is controlling the behavior of the Out parameter in Manual mode after a release of an IB interlock.

If the parameter is set to True, which is the default value, the Out parameter will stay at the IB ref value. If the IB ref values is outside the actual limits for the Out signal the Out signal will go the the limit value.

If the parameter is set to False the Out parameter will be set to the last manual entered output value, when the interlock signal goes to True. This value is showed in the faceplate tab Control 2, see chapter 6.2

5.2.3 Ramp function

A ramp function is provided to determine the highest permitted rate of change of the output signal with changes of the manual signal level and on return to the control mode MAN.

The operational parameter for the ramp function is SPEED.

A ramp function is also provided to limit the change rate of external reference ExtRef, the parameter for this is SPEED2.

5.2.4 Limitations

An upper and a lower limit can be applied to the output signal from the operator's keyboard (OHL and OLL respectively). The limiting values can be set equal but cannot be crossed. The application of a limitation is indicated.

5.3 Control Modes

5.3.1 Control Mode Command Signals and Priority

The signals for control mode change are placed in order of priority. LOCAL has the highest priority and SEQE1 has the lowest priority. The current control mode is determined by the active inputs with the highest priority by a pulse. The inputs are of three different types; static, set-reset and dynamic.

- The static input must be activated for the corresponding control mode to be applied. If the signal at the input disappears, the control mode changes over to MAN, provided no static input with a lower priority takes over the selection of the control mode.
- Set-Reset means that the control mode is selected when the input is activated. If the input is reset to zero, the control mode remains in effect until some other input is activated. If the SR-input is kept active, only inputs with a higher priority can assume the selection of control mode.
- The dynamic input is only initiating. The control mode is selected when a change from 0 to 1 occurs at the input.

The control mode can be enabled individually. Input terminals ManEnbl and E1Enbl can be set in the function block with constants or by application logic. By enabling a single control mode under certain conditions it is possible to lock the control mode to prevent switching to another control mode.

Table 4-1 overleaf illustrates control mode activation and priority when selected from either an application program or from the operator station.

Commands		Mode selected			
Signal	Source	Balance	Manual	Auto	E1
Local ⁽¹⁾	Program				
Balln ⁽¹⁾	Program				
Clamp ⁽¹⁾	Program				
Interlocks	Program	Remains unchanged			
Man	Operator				
SeqMan ^{↑(3)}	Program				
E1	Operator				
SeqE1 ^{↑(3)}	Program				

Table 4-1. Control modes selection and priority.

- (1) On leaving mode Balance or Manual Clamped (i. e. when the command signal returns to zero), mode Manual is always obtained, unless any signal commands another mode.
- (2) The arrow ↑ indicates that only the positive transition of the signal is relevant for commanding a mode change.

The purpose and function of each control mode is described below.

5.3.2 Balance

Balance control mode is used to force the control output to a value present at the input terminal BalRef. The operator cannot override this mode.

When the controller is operating in Balance mode the output signal follows the balance reference signal. This mode is used when the control signal is disconnected and the controller is balanced for a bumpless return to control.

Control mode BAL is activated by:

- The activation of input terminal LOCAL. An indication of BAL LOCAL is presented on the object display and Bal on the Faceplate mode indicator.
- The activation of input terminal BALIN. An indication of BAL is presented on the object display and Bal on the Faceplate mode indicator.

Examples of use can be as follows:

- Manual emergency control, which has the highest priority. An operator, working centrally at the display screen cannot take over control from a local backup station located adjacent to the process function.
- When another function block or other logic other than the manual controller is to take over the control.

5.3.3 Manual

Manual is the initial control mode of the manual station. In this mode the operator directly sets the output value from the operator station. The rate of output value is limited by the value at terminal Speed. Manual mode is enabled by input terminal ManEnabl.

The control mode MAN is activated by:

- Input terminal CLAMP gives the indication MAN CLAMP in the object display.
- By clicking on the Man button on the operator's faceplate. Man is indicated on the object display and Faceplate.

Examples of use:

- Manual control of an actuator under abnormal operation conditions e.g. in connection with a malfunction.
- Manual control at start and stop.

5.3.4 E1

E1 is an automatic control mode, where the setpoint is derived from program logic and directly applied to the output. It has the same functionality as Manual mode excepting that the setpoint to the output comes from program logic and not the operator. The output signal is forced to follow an external reference. E1 mode is enabled by input terminal E1Enabl.

The control mode E1 is activated by:

- By clicking on the E1 button on the operator's faceplate. Ext1 is indicated on the object display and Faceplate.
- Input terminal SEQE1 when activated by a pulse.

Examples of use:

- When it is desirable to control the output signal with low priority e.g. from a local operator's station or from a PC. The responsibility for the control can then always be taken over at a central operator's station.
- In connection with traditionally named DDC (Direct Digital Control).

5.4 Interlocks

The controller can be interlocked by using IB1 and IB2 input terminals. Deactivation of these terminals set the output value to a fixed value, which is present at the IB1Ref and IB2Ref input terminals. These interlocks do not change the current control mode. If the control mode is "Manual" when the interlock is released, the output value will be depending on the setting of the parameter TrackIB, see chapter 5.2.2.1

5.5 Start-up

An initialisation phase begins at start of the AC800M system. Manual is the default control mode at system initialisation or after a download. It is possible to force the control mode to other modes at system initialisation.

5.6 Process connections

The MAN01 is connected to the process via the following two input terminals.

- MV Connection for measured value e.g. a level transmitter.
- OUTP Control output to e.g. a control valve.

5.7 Forced Control

Forced control may also be initiated to a reference value i.e. on receiving an incorrect signal from an analog input (AI), the output signal for example ramps down to zero.

The function block contains the following functions:

- Selection of control signal
- Ramp functions

- Limitations

5.7.1 Selection of Control Signal

There are three forms to force the control of the output signal:

- Manual is selected with the control mode MAN
- External references are selected with the control mode E1
- Clamping is selected with the clamping function (control mode MAN)

The following inputs are be used for forced control.

Speed	Highest permitted rate of change of the output signal.
Clamp	Command signal for clamping. The mode changes to MAN. When the Clamp signal is released the mode will still be MAN.
ClampRef	Clamping reference value when terminal Clamp is activated.
ExtRef	External reference value for the output signal in mode E1

5.7.2 Ramp Functions

The input terminals described below determine the maximum permitted rate of change as follows:

- Speed Output ramp speed. Specified in percent units/second.

5.7.3 Output Limitations

The limiting values Out H and Out L limit the value of the output signal. The output limits are set in the Extended Faceplate on the faceplate element "Limits1".

5.8 Output Signal Control

Output signal control includes the following functions.

- Selection of output signal
- Output signal limitation

5.8.1 Selection of Output Signal

The output signal is selected in accordance with the control mode as follows:

- E1 output control signal
- MAN, Clamp (MAN) output control signal
- BAL control signal, the value of balance reference is transferred to the output.

The following input terminals are be used for output control.

BALREF	Balance reference
EOHL	Upper external limiting value
EOLL	Lower external limiting value
EOLIM	Signal for selection of external limitation
OUTP	Output signal

5.8.2 Output Limiting

The controller output signal is normally limited to Max and Min values of the output signal.

The limiting upper and lower values Out H and Out L limit the value of the output signal. The output limits are set in the Extended Faceplate on the faceplate element "Limits1".

The activation of input terminal EOLIM determines whether the external limits EOLL and EOHL or internal limits Out H and Out L are applied to the output limitation. The operator-entered limiting values are not affected when external limits are used. The limiting values currently active are presented on the faceplate and object display.

The limiting values from the operator Out H and Out L can be set equal but Out L cannot be set greater than Out H. If the external limiting value EOLL is greater than EOHL then only the upper value EOHL applies. The output signal can thereby be force controlled to the value for EOHL.

5.9 Scaling and Units

The manual station works internally with process-related units. This means that measured value, both internal and external are specified in process-related units and other signals in percentage units.

The output signal have a default range of 0% to +100%. Scaling is possible. The output signal (OUT) scaling is possible except in the Operator Station bargraph which shows 0 - 100%.

5.10 Alarm and Alarm Limitation Functions

The following alarms are monitored in the function block:

- Measured value MV with two upper and two lower alarm limits

When an alarm limit is exceeded, an alarm, which must be acknowledged, is transmitted to the operator station (and printer, if provided). Alarms are also available as outputs on the Function Block.

The time stamping of the alarm is done when the function block is executed.

5.10.1 Alarm Limits

When determining the MV alarm limits, the following equation applies:

$$H\ 2 \geq H\ 1 \geq L\ 1 \geq L\ 2$$

If an attempt is made to cross the alarm limits with each other, the input is not accepted. There is no change of the limit.

5.10.2 Alarm Blocking

Supervision of the measured value (MV) is blocked by activating the input connection ALCBLK.

Automatic alarm blocking can be suitable in connection with start and stop and with anticipated events, the so-called sequential fault blocking. The signal outputs are also affected by this blocking (as to differentiate from operator's blockings which are only blocked on the operator's station and printer).

The event handling function makes it possible to block all or individual alarms from the operator's station or all from the function block.

The following errors can be blocked:

$$MV \geq H\ 2$$

$$MV \geq H\ 1$$

$$MV \leq L\ 1$$

$$MV \leq L\ 2$$

Using Event handling to block alarms means that the printer and operator's station and updating of the error list are blocked. The FB outputs are not affected.

The following terminals are used for alarm handling.

ALCBLK Blocking of alarm on MV and DEV

MV_GT_H2 Measured value exceeds H2

MV_GT_H1	Measured value exceeds H1
MV_LT_L1	Measured value less than L1
MV_LT_L2	Measured value less than L2
OUT=HL	Output signal limit, high
OUT=LL	Output signal limit low

5.10.3 Event handling

Event are generated for status change on the signals defined in interaction window in chapter 4.12.6.

The layout of the event is described in chapter 5.3.2

All Operator Events are reported by Audit Trail Functionality and not included in the FunctionBlock.

The individual text string for each event is stored in the Alarm and Event Translator aspect. This text can be NLS handled.

5.11 Interaction Window

The interaction window is available in the Control^{IT} Control Builder. The interaction window is an engineering aid used to simplify configuration and blocking of signals not available on the faceplates. Changes to values in the Interaction window are only available in 'Online' mode in Control^{IT}.

5.11.1 Man01 Interaction Window

Interaction window overview. Name and description are shown. The buttons are links to sub-windows.

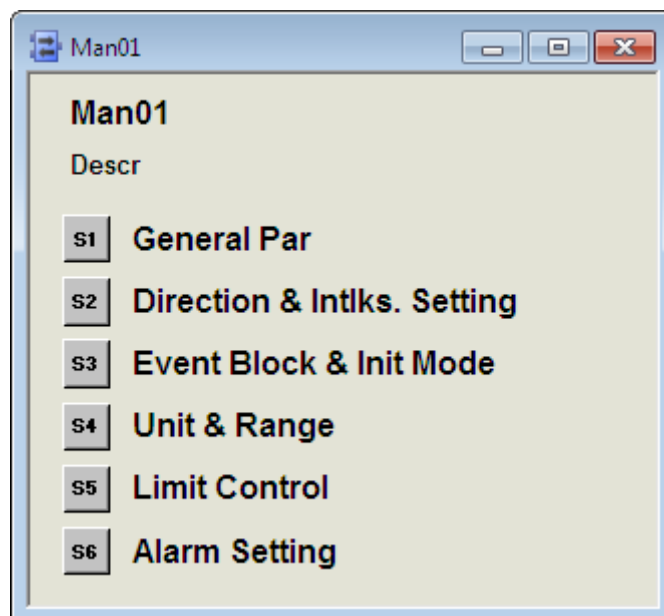


Figure 4-1 Main Interaction Window.

5.11.2 General Parameters

“Class” defines the process section or area in which alarms are grouped. By utilizing class the alarms can be filtered. Valid values are user defined. A suggestion would be to use mill area numbers as class values.

“Severity” defines the alarm priority for general alarms. The severity for MV-alarms is entered in window “Alarm & Event”. Valid values are 1 –1000 where 1000 is the highest priority.

The screenshot shows a window titled 'Man01' with a close button (X) in the top right corner. The window contains four input fields:

- Name :
- Description :
- Class :
- Severity :

Figure 4-2 General Parameters.

5.11.3 Direction & Interlock settings

Indication of actuator feedback is showed in Faceplate and Object Display when the value is set to 1.

The screenshot shows a window titled 'Man01' with a close button (X) in the top right corner. The window contains the following settings:

Direction

Show Actuator Position

Interlocks Setting

	Block Event	Opr Block
IB1	<input type="text" value="1"/>	<input type="text" value="0"/>
IB2	<input type="text" value="1"/>	<input type="text" value="0"/>
IB3	<input type="text" value="1"/>	<input type="text" value="0"/>
IB4	<input type="text" value="1"/>	<input type="text" value="0"/>

Figure 4-3 Direction & Intl. Blockings.

5.11.4 Units and Range

Measured Value and output (PO), minimum, maximum, units and decimals are entered in this interaction window.

The screenshot shows a window titled 'Man01' with a close button. The main content area is titled 'Units & Range'. It contains the following fields:

- Max :
- Min :
- Unit :
- Decimal :
- PO Inc/Dec : %

Figure 4-4 Units & Range.

5.11.5 Limits & Control

Limits for output signal and possibility to set output (Only in Manual mode).

The screenshot shows a window titled 'Man01' with a close button. The main content area is titled 'Limits & Control'. It contains the following fields:

- HSI Out HL :
- HSI Out LL :

Figure 4-5 Limits & Control.

5.11.6 Alarm Configuration

Alarm limits, Severity and Enabling of the alarms for measured value as well as hysteresis and alarm delay time is entered in this window.

For AE config the following values are valid

- 0 No Alarm or Event are generated
- 1 Alarm and Event are generated
- 2 Event is generated

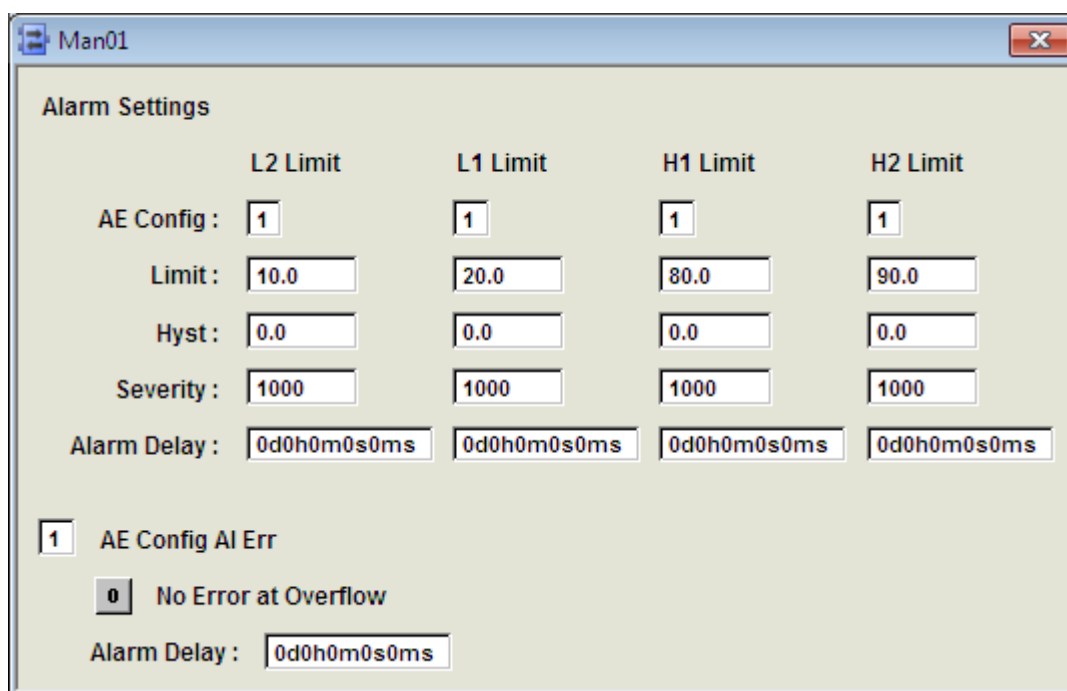


Figure 4-6 Alarm Handling.

5.11.7 Blocking of Events

Init mode define the mode of the object when is cold started.

Event Blocking: The sending of an event is blocked when the value is set to 1.

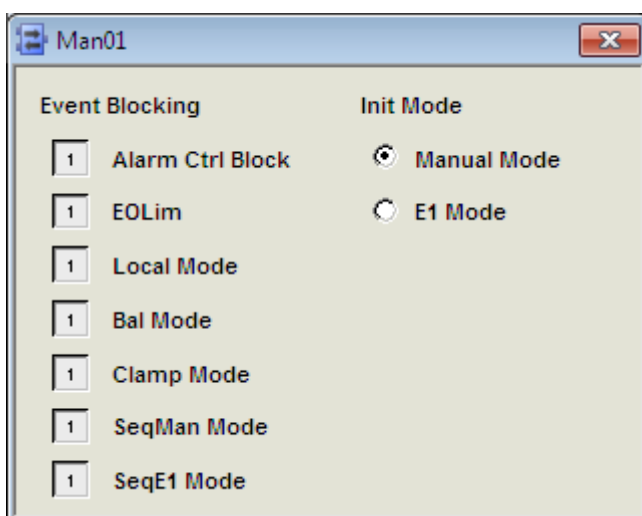


Figure 4-7 Event Handling.

5.11.8 Text

The different interlock and information texts are entered in the aspect Text Properties. The length of the text is limited to about 60 characters, by the size of presentation element in the Interlock Display.

The screenshot shows a software window titled "Man01 : Text Configuration". It contains a table with the following columns: Name, Value, Type, Description, Readable?, R/Permission, Writable?, W/Permission, and Deploy Scheme. The table lists 12 configuration items, all of which are of type "String" and have a "Deploy Scheme" of "Always Repla".

Name	Value	Type	Description	Readable?	R/Permission	Writable?	W/Permission	Deploy Scheme
IB1Text		String	IB1 Interlock Text	Yes		Yes	Configure	Always Repla
IB2Text		String	IB2 Interlock Text	Yes		Yes	Configure	Always Repla
IB3Text		String	IB3 Interlock Text	Yes		Yes	Configure	Always Repla
IB4Text		String	IB4 Interlock Text	Yes		Yes	Configure	Always Repla
BalName		String	Bal Name	Yes		Yes	Configure	Always Repla
ClampName		String	Clamp Name	Yes		Yes	Configure	Always Repla
E1Name		String	E1 Name	Yes		Yes	Configure	Always Repla
EOLimName		String	EOLim Name	Yes		Yes	Configure	Always Repla
Info1Text		String	Info 1 Text	Yes		Yes	Configure	Always Repla
Info2Text		String	Info 2 Text	Yes		Yes	Configure	Always Repla

At the bottom of the window, there are three buttons: "Cancel", "Apply", and "Help".

Figure 4-8 Texts.

6 Operator Functions

The Operator functions are divided in principle into 4 parts:

- Presentation (Display elements, Time logged properties)
- Faceplate (Dialog)
- Alarm and Event handling
- Text handling

6.1 Presentation

6.1.1 Display Elements

Display elements, which can be used for different display types, are available for use in the functional unit MAN01.

The display elements show the status and the controls of the process with different degrees of detail and are intended for the following displays:

- Object display
- Process display
- Interlock display

Examples of different display elements which could be used are given in the following sections.

6.1.1.1 Object Display

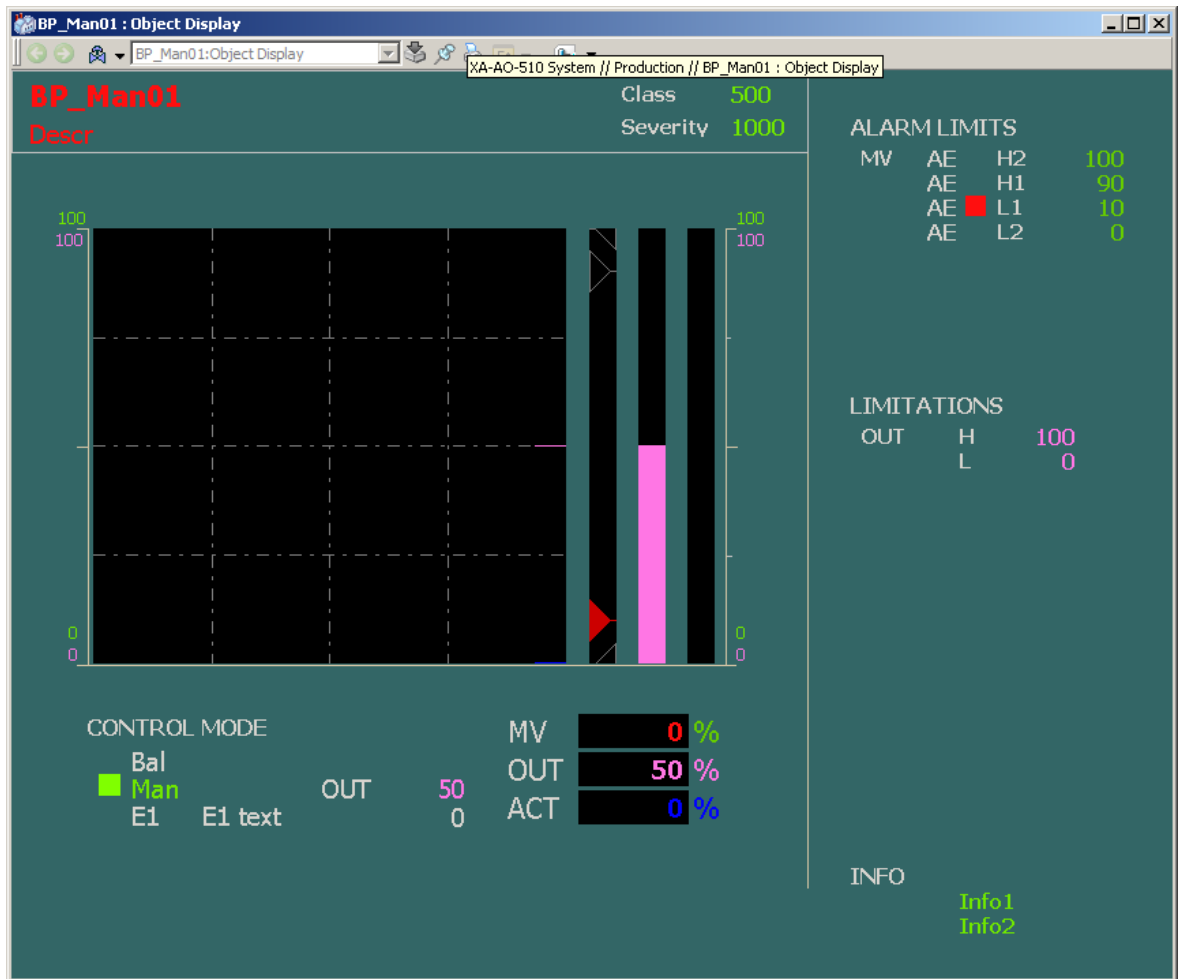


Figure 5-1 Object Display.

6.1.1.2 Process Display

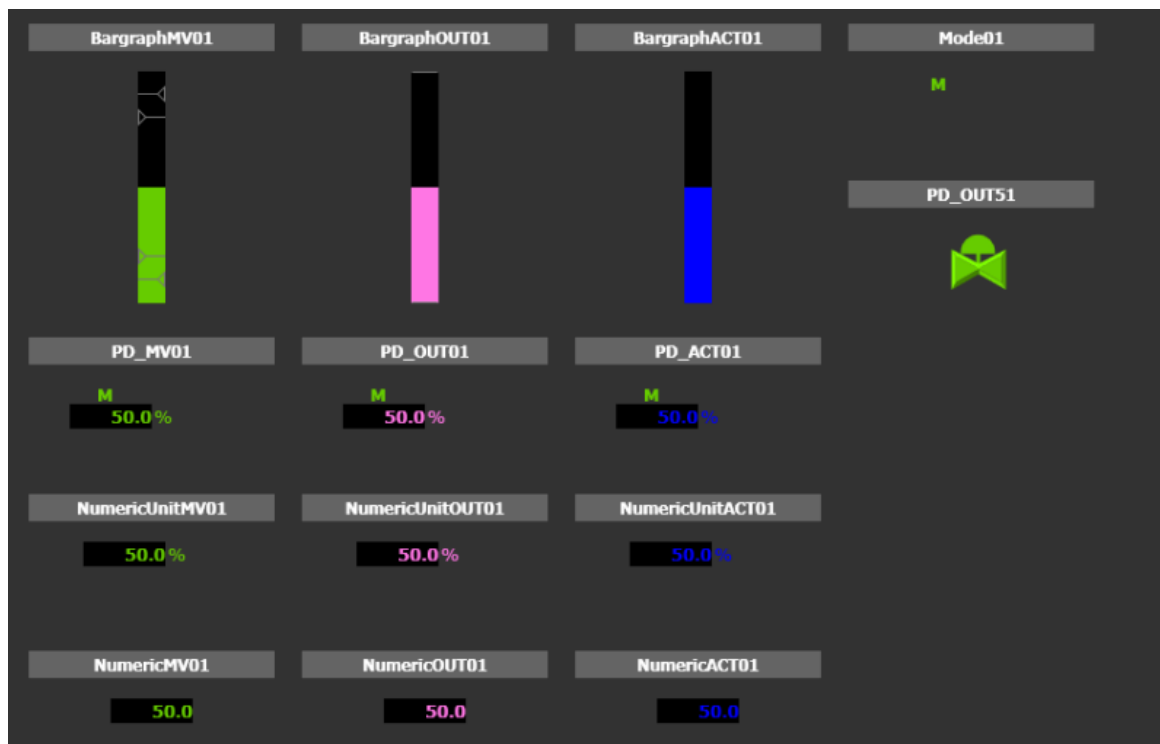


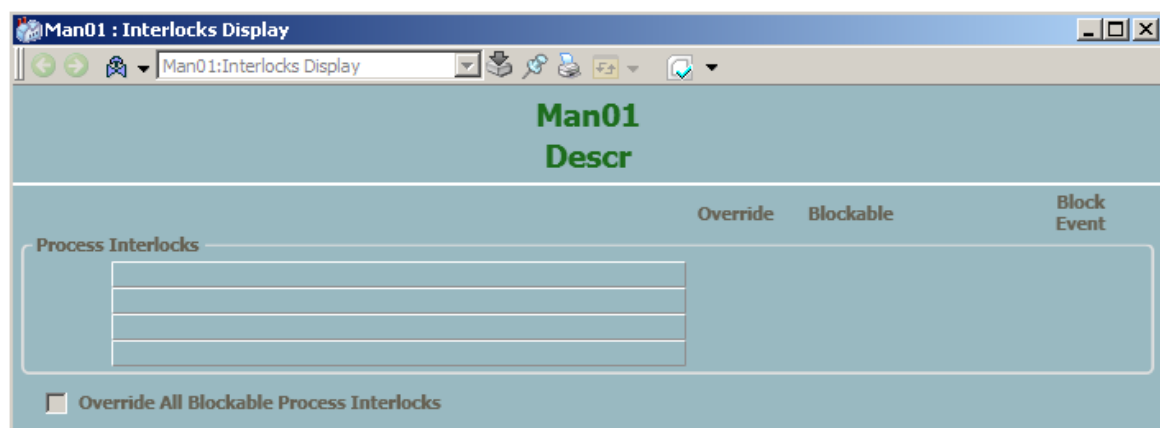
Figure 5-2 Process Display Element.

6.1.1.3 Interlock display

This display shows the actual status of all Interlock. The operator can override individual interlocks or all interlock.

Interlocks that can be overridden must be set to Blockable. This can be done from this display if the user has permission Configure or from the Interaction Window see chapter 5.11.3.

Start Interlock, Block Event and IA Blocked when no in E1 or E2 mode are parameters that can be set from this display if the user has Permission Configure or from Interaction Window.



6.1.2 Time-logged Properties

Measured values stored can be presented graphically in the form of curves on the display screen. Such a display, a **Trend display**, can consist of 1- 4 curves. All properties for the object MAN01 are available to be logged on the trend curves.

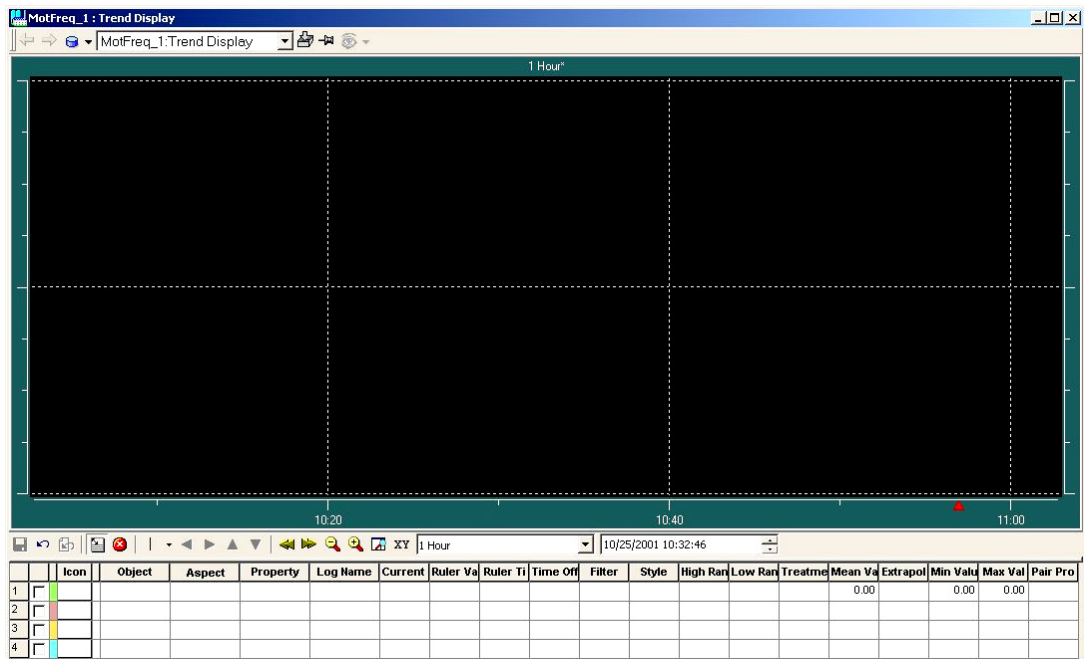


Figure 5-3 Trend Curve

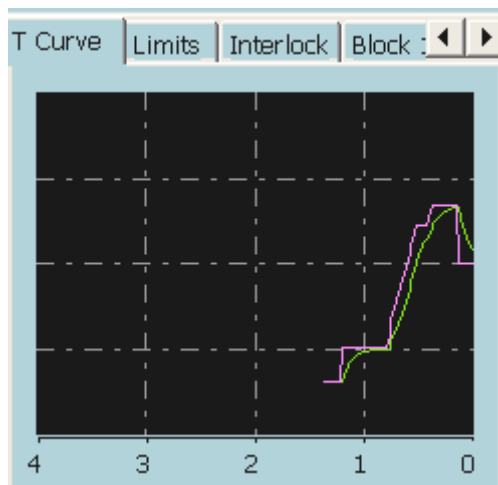


Figure 5-4 Extended Faceplate (T Curve)

6.2 Faceplate(Dialog)

The display screen is supplemented with a mouse and keyboard for operator communication with the functional unit/object.

By using Operate^{IT} Operator Station the operator can view and control the process through faceplates. The dialogue consists of buttons, indicators and graphic presentations within a Faceplate. A faceplate has three levels of dialogue, which are presented by the following three runtime views:

- Reduced Faceplate, where the size and contents typically have been optimized to cover most of the normal process operator actions. Minimum dialogue. This is the default view.
- Faceplate, which typically covers all normal process operator actions. This view is disabled as default. Extended Faceplate, with functions and information intended for the process engineer or the advanced operator. Maximum dialogue.

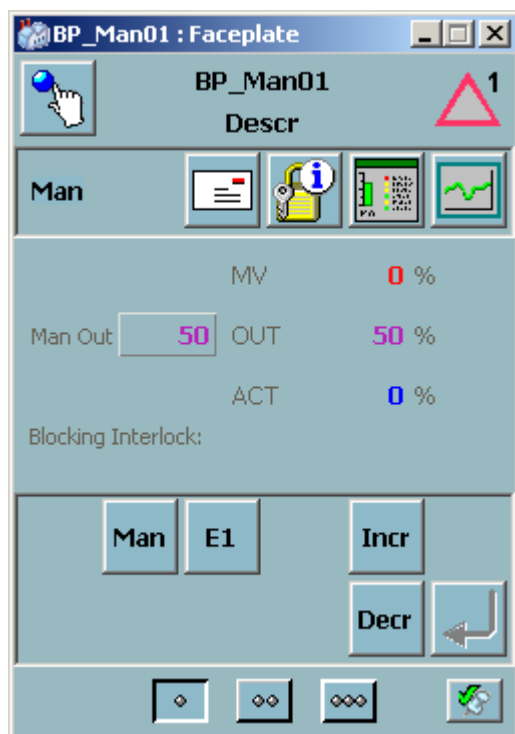


Figure 5-5 Reduced Faceplate.

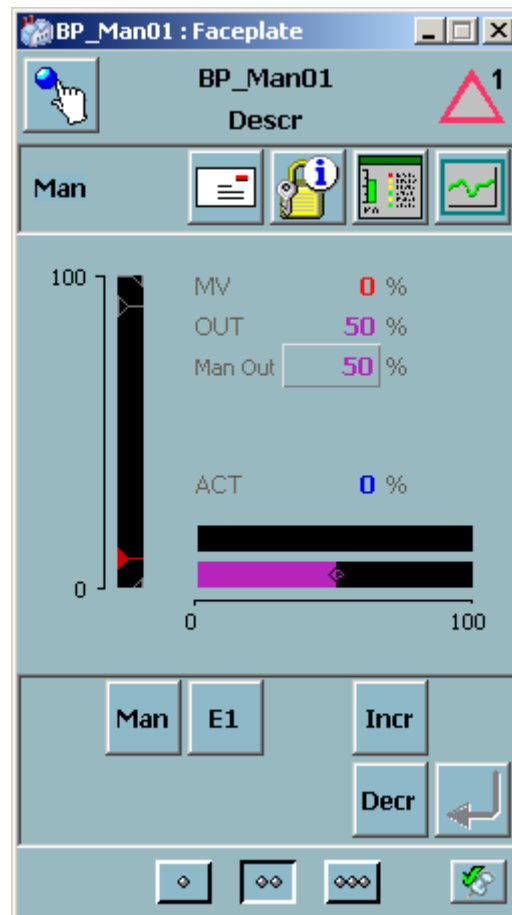


Figure 5-6 Faceplate.

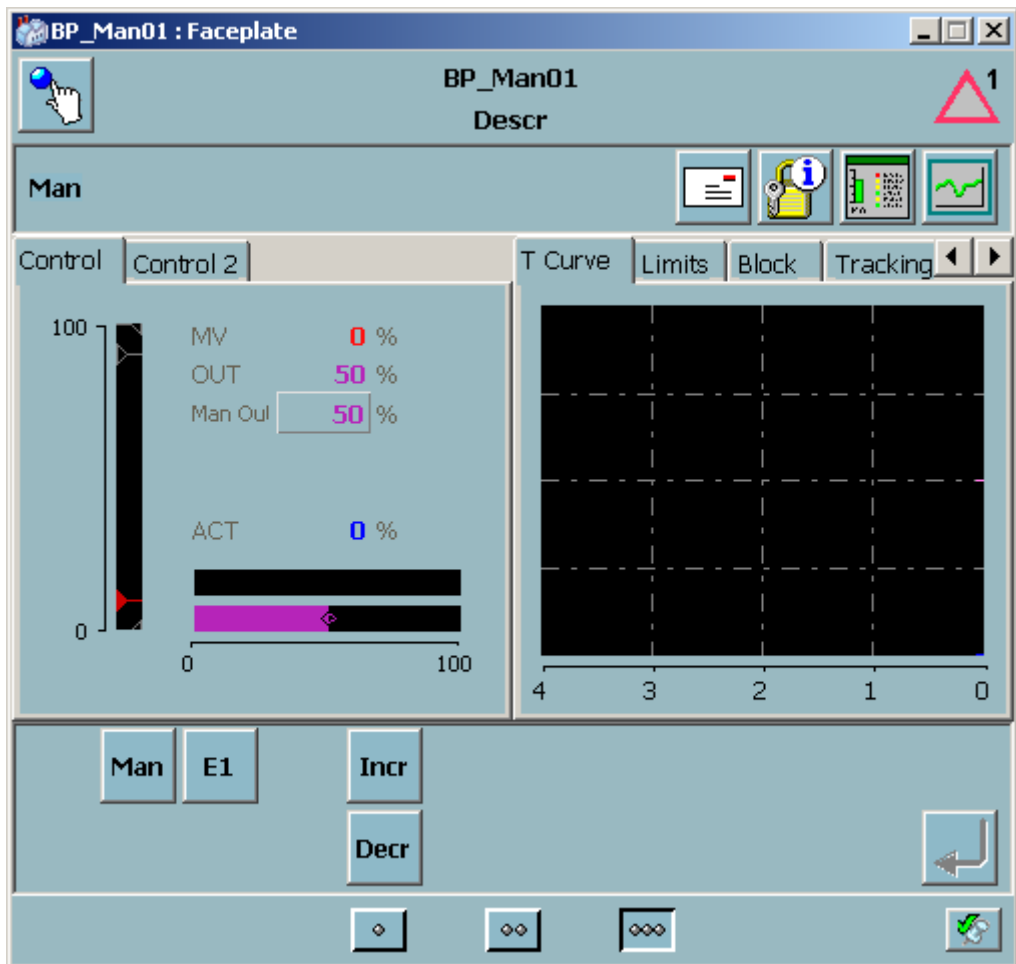


Figure 5-7 Extended Faceplate

6.3 Alarm and Event Handling

6.3.1 General

This section contains a description of all alarms and events in the functional unit MAN01.

When a measured value deviates from the controllers limits or fails an alarm and an event is generated and can be viewed on the Operate^{IT} Operator Station. The alarms are indicated in the faceplate, object display and in the alarm and event list.

The possibilities of the operator to block alarms are shown under the heading 'Event and alarm blocking' below.

The alarm limits for MAN01 can be controlled individually.

Event Time	Object Name	Object Description	Condition	Message Description
02-05-24 03:46:16:763	264M500.RUN	Pulp Mixer Running	Status	Alarm
02-05-24 01:13:04:785	192.168.0.51-0.11.5		HWError	For info see 'Errors and
02-05-24 00:22:18:784	192.168.0.51-0.11.4		HWError	For info see 'Errors and
02-05-23 23:32:31:458	500F1920	Washing Pulp Flow	AI_Err	Alarm
02-05-23 23:32:31:458	500F1920	Washing Pulp Flow	MV_L1	Alarm
02-05-23 23:32:31:458	500F1920	Washing Pulp Flow	MV_L2	Alarm
02-05-23 23:23:01:784	192.168.0.51-0.11.3		HWError	For info see 'Errors and
02-05-23 20:00:07:762	500F1920	Washing Pulp Flow	MV_L2	Alarm
02-05-23 01:38:52:762	500F1920	Washing Pulp Flow	MV_L1	Alarm
02-05-23 00:18:26:995	500F1920	Washing Pulp Flow	AI_Err	Alarm
02-05-22 00:10:00:709	Mot01	Test Mot01	ControlV	Alarm
02-05-20 17:32:45:784	192.168.0.51-0.11.2		HWError	For info see 'Errors and

Figure 5-9 Alarm List

6.3.2 Alarm and Event Message

The following alarm texts are generated by the functional unit MAN01. “Message Description” is “hard coded” in the function block and can not be modified.

The “Condition” text are stored in the Alarm and Event Translator aspect and can be NLS handled.

Object Name	Object Description	Condition	Message Description
<Name>	<Description>	MV>H1	Alarm
<Name>	<Description>	MV>H2	Alarm
<Name>	<Description>	MV<L1	Alarm
<Name>	<Description>	MV<L2	Alarm

The following Event texts are generated by the functional unit MAN01.

The “Message Description” text are stored in the Alarm and Event Translator aspect and can be NLS handled.

SourceName	ObjectDescription	Condition	Message Description
<Name>	<Description>		SeqE1 Mode
<Name>	<Description>		SeqMan Mode
<Name>	<Description>		Bal Mode On
<Name>	<Description>		Bal Mode Off
<Name>	<Description>		Clamp Mode Off
<Name>	<Description>		Clamp Mode On
<Name>	<Description>		Local Mode Off
<Name>	<Description>		Local Mode On
<Name>	<Description>		EoLim On
<Name>	<Description>		EoLim Off
<Name>	<Description>		IB1 On
<Name>	<Description>		IB1 Off

<Name>	<Description>		IB2 On
<Name>	<Description>		IB2 Off
<Name>	<Description>		Alarm P Blk
<Name>	<Description>		Acknowledge Alarm

6.4 Faceplate tabs

6.4.1 Blocking

By using the extended faceplate it is possible for the process engineer to block alarms and to override Interlocks

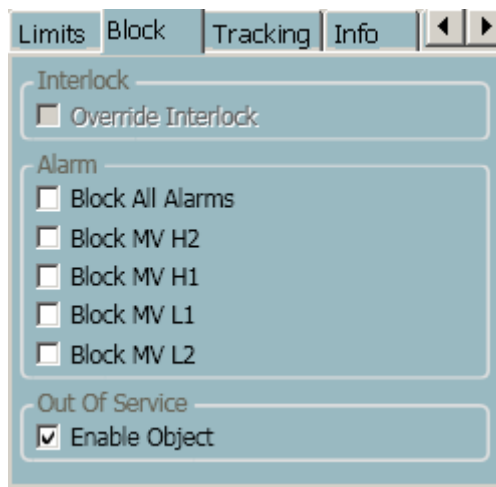


Figure 5-10 Extended Faceplate (Block1)

6.4.2 Limits

By using the extended faceplate it is possible to adjust the limits for the measured value, the setpoint, the deviation and the output. The faceplate elements in the extended faceplate below illustrate this.

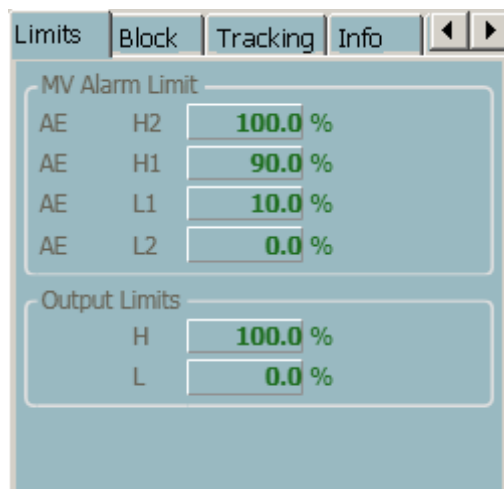
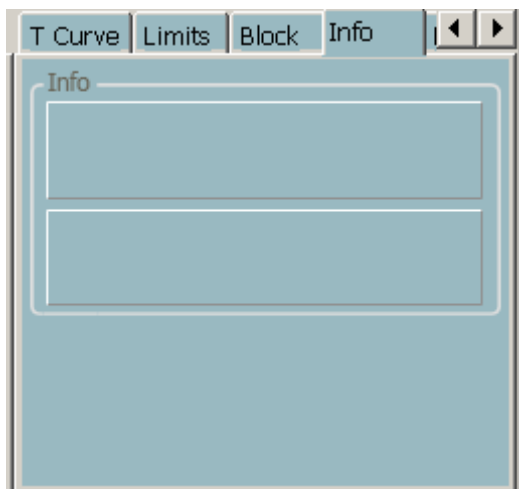


Figure 5-12 Extended Faceplate (Limits)

6.4.3 Info text



6.4.4 Tracking

The tracking functions of MAN01 is indicated on this faceplate.

The tracking function is selected with the function parameters Track_A, Track_B in the Control Builder.

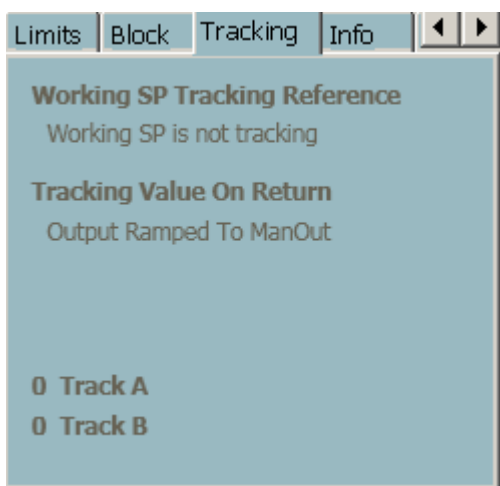
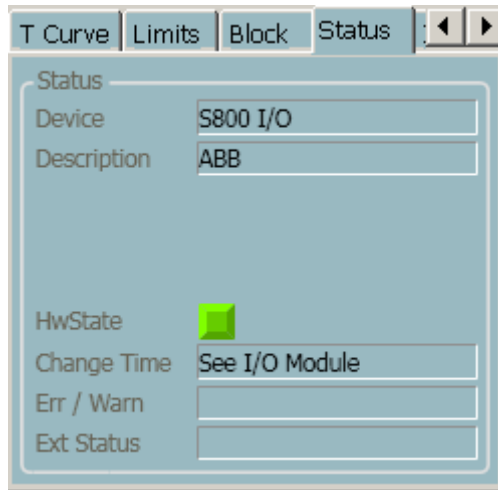


Figure 5-14 Extended Faceplate Element (Tracking).

6.4.5 IO status

The “Status” tab is showing the type of device and it’s status for the measured value.
If the signal is connected via a Profibus PA link the extended status from the device is showed in this tab. For more information see document *Integration of PA instruments 3AST001 792 D0090*.



REVISION

Rev.	Page (P) Chapt. (C)	Description	Date Dept./Init.
A		Release 2.0	030212/MP
B	5, 7	Initialization	04-04-15/FM
C		Rev 3.1/2	050303/MP
D	4,5	Event Handling	050329/BP
F	4, 5	Faceplate, Rev 4.0/1	050902/MP
G	3	Rev 4.0/5	070510/BP
H		Rev 5.0-1. Interlock functionality updated	0812012/BP
I		Update rev 5.1/0	101102/BP