

# Switch Binary Value (SBV)

Dokumentasjon av funksjonsblokk

Brukt i PLS program for Sande reinseanlegg

Standardized\_Binary\_Value

SBV	
-XGH	Y
-XGL	YH
-XH	YL
-XL	YF
-XOH	BCH
-XOL	BCL
-XF	BS
-LSH	BB
-LSL	BU
-FSH	BA
-FSL	BO
-FDH	YFI
-FDL	
-FB	
-FU	
-LA	
-LM	
-LO	
-PFFD	
-PTDH	
-PTDL	
-PSTO	
-PTTO	
-PTTC	
-PAOF	
-PFT	
-PSUS	
-PSUM	
-PSLO	

## ENDRINGSHISTORIKK

Versjon	Endringsgrunnlag	Utarbeida av	Dato
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## REFERANSAR

IEC PAS 63131:2017

## OMGREP OG FORKORTINGAR

Latching	Utgangssignal holdt/låst
Supression	Deaktiver
Blocking	Blokkere
Paramteter	Inngangs argument
OS	Operator station

## SIGNATUR

X

B024EF-03

## 1 BRUK

SBV-funksjonsblokka skal brukast for binær (på/av) kontroll av eit flyt element ved å endra straumen av medium (varme eller væske). Typisk kontrollerte element er ventilar, spjeld, osv.

SBV funksjonsblokka er brukt i programmet for styre t.d. ein ventil

## 2 STANDARD

Blokka er skriven av bachelorgruppe B024EF-03 og er utarbeida etter IEC PAS 63131:2017 funksjonstemplatet.

## 3 INPUTS

Terminal Code	Signal type	Terminal name	Supplentary description
XGH	Binary input	Position high feedback	Signal from limit switch high (XGH = 1 is open flow device).
XGL	Binary input	Position low feedback	Signal from limit switch low (XGL = 1 is closed flow device).
XH	Binary input	External set high	From process or logic to function template which set high signal (Y = 1) to flow device in auto mode.
XL	Binary input	External set low	From process or logic to function template which set high signal (Y = 0) to flow device in auto mode.
XOH	Binary input	External outside set high	Set high signal (positive edge) to open flow device in outside mode.
XOL	Binary input	External outside set low	Set low signal (positive edge) to close flow device in outside mode.
XF	Binary input	External Fault	Loop failure, e.g. I/O card broken.
LSH	Binary input	Lock safeguarding high	Safeguarding – LSH = 1 overrules operator inputs. Locks the template in manual mode with Y = 1. Input is subject to blocking. When signal is reset, the template remains in manual mode and Y = 1.

LSL	Binary input	Lock safeguarding low	Safeguarding – LSL = 1 overrides operator inputs. Locks the template in manual mode with Y = 0. Input is subject to blocking. When signal is reset, the template remains in manual mode and Y = 0.
FSH	Binary input	Force safeguarding high	Safeguarding – Signal overrides operator inputs forces the Y to 1. When signal goes low, the template will react to actual terminal status again if in auto mode. Signal is subject to blocking.  If in manual mode, the output (Y) remains high after signal returns to normal.
FSL	Binary input	Force safeguarding low	Safeguarding – Signal overrides operator inputs Forcethe template Y to 0). When signal goes low, the template will react to actual terminal status again if in auto mode. Signal is subject to blocking.  If in manual mode, the output (Y) remains low after signal returns to normal.
FDH	Binary input	Force disable transition high.	Permissive to open when FDH = 0 and prevents element from being opened when FDH = 1.  Signal is subject to blocking.
FDL	Binary input	Force disable transition low.	Permissive to close when FDL = 0 and prevents element from being closed when FDL = 1.  Signal is subject to blocking.
FB	Binary input	Force blocking	FB = 1. Safeguarding action LSH, LSL, FSH, FSL and disable transition function FDH, FDL will be blocked.
FU	Binary input	Force suppression	Alarm annunciation is suppressed, YF = 0 and status XGL, XGH and XF are neglected as long as FU = 1.
LA	Binary input	Lock auto	Locks the template in auto mode. When LA goes low, the template remains in auto mode.
LM	Binary input	Lock manual	Locks the template in manual mode. When LM goes low, the template remains in manual mode.
LO	Binary input	Lock outside	Locks the template to outside mode, and sets the template to manual mode. When LO goes low, the template remains in manual mode.

### 3.1 INPUT PARAMETERS

Terminal Clode	Signal type	Terminal name	Supplentermary description	Default
PTDH	Analouge	Travel time open	Maximum allowed time from open command is given to process element (Y set to 1) to opened feedback (XGH) is set.	30s
PTDL	Analouge	Travel time close	Maximum allowed time from close command is given to process element (Y set to 0) to closed feedback (XGL) is set.	30s
PTTO	Analouge	Pulse time high	Pulse length for YH	2 s
PTTC	Analouge	Pulse time low	Pulse length for YL	2 s
PSUS	Enumeration	Template start up state	Closed Open Based on feedback (XGH/XGL)	Closed
PSUM	Enumeration	Template start up mode	Manual Auto As previous state 10)	Manual
	Enumeration	Operation mode options	Possible to switch between outside, manual and automatic mode. Possible to switch between manual and automatic mode. Possible to switch between manual and outside mode. Locked in manual mode. Locked in outside mode.	-
PSLO	Enumeration	Outside mode type	Outside: Output controlled by SAS Local: Output controlled locally	Local
PFT	Enumeration	Feedback type	No limit-switch feedback. Position high limit-switch feedback only. Position low limit-switch feedback only. Position high and low limit switches feedback.	Position high and low limit switches feedback
PAOF	Enumeration	Action on fault	No action Close Open	0

## 4 OUTPUTS

Terminal Clode	Signal type	Terminal name	Supplentary description
Y	Binary output	Normal function output	Command to flow device, Open Y = 1 and close Y = 0.
YH	Binary output	Pulsed normal function output high	Pulse open command YH = 1 (one pulse).
YL	Binary output	Pulsed normal function output low	Pulse close command YL = 1 (one pulse).
YF	Binary output	Function failed	YF = 1 if XF = 1 ref. error handling definition.
BCH	Binary output	Output position high confirmed	Output Y compared to feedback position high limit switch and validated as true (BCH = 1 if Y = 1 and XGH = 1).
BCL	Binary output	Output position low confirmed	Output Y compared to feedback position low limit switch and validated as true (BCL = 1 if Y = 0 and BCL = 1).
BS	Binary output	Status safeguarding	BS = 1 if any safeguarding input is active.
BB	Binary output	Status blocked	BB = 1 if blocking from operator station is true or FB = 1.
BU	Binary output	Status suppressed	BA = 1 when in auto mode.
BA	Binary output	Status auto/man	BX = X
BO	Binary output	Status outside	BO = 1 when set outside from operator station or LO = 1.

## 5 LOGIKK

SBV-funksjonsblokka skildrar kontrollen av ventilar med dei binære inngangane XH og XL. Det er ein utgang, Y, som formidlar eit opne/lukke (høg/låg) kommando til ventilaktivatoren, eller dei pulserte utgangane YH og YL kan brukast. Funksjonsblokka har også utgonger XGH og XGL som bekreftar at ventil har fått høg eller låg tilbake melding frå ventilen.

Forklaringa på kontrollfunksjonane (rektangla) er som følgjer:

**"Kontrollfunksjon"**: Denne funksjonen utfører fleire oppgåver.

- Den genererer feilstatus YF dersom ein ekstern eller intern feil blir rapportert;
- Den set utgangen Y i samsvar med parameter når feil blir oppdaga;

- Den set utgangen Y basert på tilbakemelding i ytremodus når ingen eksterne innganger blir brukte (XOH/XOL).

Der er det mogleg og bruke inngongar som kan handtere Lock safeguarding Force safeguarding, force disable transition, Force blocking, Force suppression. Videre er det også innganger for lock Auto, manuell og outside. Samt utgonger for som bekreftar status blocked, suppressed, auto/man og outside.

## 6 TESTING OG RESULTAT

Funksjonsblokka er testa i eit simuleringsmiljø i forbindelse med bacheloroppgåve skreven av gruppe B024EF-03.

## 7 VEDLIKEHALD OG HJELP

Ingen vedlikehald er nødvendig dersom programvaren forblir uendra og feil ikkje blir oppdaga.

Du kan nå oss ved eventuelle spørsmål om blokkas funksjonalitet

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