

# APPLICATION EXAMPLES FOR WANDFLUH

## **ELECTRONICS CARDS**





## Inhaltsverzeichnis

1	General information	3
2	Enable device	4
2.1	Enable device	4
2.2	Disable device	4
2.3	Enable device through fieldbus	5
2.4	Enalbe device with two switches	5
3	Controller modes	7
3.1	Prerequisites for controller modes	7
3.2	pQ control	8
3.3	Alternating control	11
4	Closing function	14
4.1	General to closing function	14
4.2	Prerequisites for closing function	16
4.3	Command or Feedback less than a threshold	17
4.4	Command or Feedback more than a threshold	19
4.5	Command or Feedback less and more than a threshold	21
4.6	Command and Feedback less than a threshold	24
4.7	Command and Feedback more than a threshold	27



## **1** General information

This applications examples serve to provide users with possible solution options, It shows for different applications the respective parameter settings.

For a detailed description of the hardware, a product description and a description of all parameters, please refer to corresponding operating instructions of the Wandfluh Electronic cards.

Note: Please read in advance the appropriate operating instruction.



## 2 Enable device

#### 2.1 Enable device

#### Application: Switch for enable device

The device enable is made through a switch. If the switch is open (no connection to VCC), the device is disabled, if it is closed (connection to VCC), the device is enabled. The switch acts as an enable signal.



#### Solution

In the section "Enable channel", set the "Enable" to "external" and with "Dig. input" the input is selected, at which the switch is connected (in the example "DigInp1").

Enable					
Enable)	external	-	Dig. input	DigInp1	-

## 2.2 Disable device

#### Application: Switch for disable device

The device enable is made through a switch. If the switch is open (no connection to VCC), the device is enabled, if it is closed (connection to VCC), the device is disabled. The switch acts as an disable signal.



#### Solution

In the section "Enable channel", set the "Enable" to "external inverted" and with "Dig. input" the input is selected, at which the switch is connected (in the example "DigInp1").

Enable				
Enable	external inverted	Dig. input	DigInp1	•



## 2.3 Enable device through fieldbus

#### Application: Enable through fieldbus

The device enable is made through fieldbus. With the bits "Disable", "Hold" and "Active" from the control word, the device state can be set.



#### Solution

In the section "Enable channel", set the "Operating mode" to "bus". The "Enable" and "Dig. input" are not used in this case.

Enable		
Operating mode bus	Enable	external
	Dig. input	DigInp 1 💌

## 2.4 Enalbe device with two switches

#### Application: Two switches for enable device

The device enable is made through tow switches. If one or both switches are open (no connection to VCC), the device is disabled, only if both switches are closed (connection to VCC), the device is enabled. The switches acts as an enable signal with AND association.



#### Solution

In the menu "Configuration - Binary operations", set the output to the desired internal signal (in the example "IntSig1"), with "Input 1" and "Input 2" the inputs are selected, at which the switches are connected (in the example "DigInp1" and "DigInp2") and set the function to "AND".



Inv	Output			Inv	Input 1		Funktion	1	Inv	Input 2	
ΓΓ	IntSig1	•	=	ΓΓ	DigInp1	•	AND	•	ГΓ	DigInp2	•
n r	not used	•	-	Πſ	not used		not used		Γ	not used	4
r r	not used	•	-	Πſ	not used		not used	4	Εſ	not used	9
Γ	not used	•	=	Ē	not used	*	not used	Ŧ	Ē	not used	4
Γ	not used	•	=	Ē	not used		not used	1	Γ	not used	*
Γ	not used	•	=	۳ſ	not used		not used		Γ	not used	
Πſ	not used	•	=	Πſ	not used	()	not used	1	Πſ	not used	9
m F	not used	•	-	Πſ	not used	1	not used	7	Πſ	not used	*

In the section "Enable channel", set the "Enable" to "external" and with "Dig. input" the internal signal is selected, which is defined as output in the binary operations (in the example "IntSig1").

able				
Enable	external 💌	Dig. input	IntSig1	•
			1	



## 3 Controller modes

## 3.1 **Prerequisites for controller modes**

For using the controller mode "pQ-control" resp. "Alternating control", the following prerequisites must be fulfilled:

WANDFLUH Electronics	Software version	PASO
SD7 Basic Controller SD7 Enhanced Controller	from 1.3.1.3 onwards	PASO SD7 from 1.0.1.9 onwards
MD2 Basic Controller MD2 Enhanced Controller	from 1.4.0.4 onwards	PASO MD2 from 2.1.0.5 onwards
DSV Controller	from 1.0.2.0 onwards	PASO DSV from 1.2.0.0 onwards



## 3.2 pQ control

#### Application

With a 4/3-proportional-spool valve, the axis will move in open loop (without feedback signal). Simultaneously the pressure is monitored (measured as differentiel pressure with two pressure sensors).



#### Description



There is a Q and a p command value. With the Q command value, the cylinder can move in open loop in both directions. The p command value defines the maximum allowed pressure. If this pressure is exceeded, the controller reduces the output signal to the valve. In this case the preset pressure is not exceeded. A rear dodge (cylinder moves backward) is possible. The p feedback value can be either an absolute signal (V or mA) from a pressure or force sensor or can be built as a differential signal from two pressure or force sensors (V or mA).

With this controller mode, the choice of the proportional valve has a high influence on the system behavior. More details about it are available from factory.

#### Solution

In the channel 1 (Q path) all settings concerning the open loop movement are made. Mode of operation, command scaling, ramps, etc. are set depending the system.





In the channel 2 (p path) all setting concerning the closed loop (pressure control) are made. Command scaling, feedback scaling, speed, controller parameter, etc. are set depending the system.



The control value from channel 2 (p path) is linked to channel 1 (Q path). With the minimum bildner, the solenoids in channel 1 (Q path) will be controlled.

The following settings are made in the section "Control value" from channel 1 (Q path).



Function	minimum bildner	<b>•</b>
Source	p path	-
Dig. input	not used 💌	



## 3.3 Alternating control

#### Application

With a 4/3-proportional-spool valve, the axis position is held constant to the command position value w. Simultaneously the pressure is monitored (measured with the pressure sensor).



#### Description



There is a pos and a p command value. With the pos command value, the cylinder can move in closed loop in both directions. The p command value defines the maximum allowed pressure. If this pressure is exceeded, the position controller is swichted off and the controller reduces the output signal to the valve. In this case the preset pressure is not exceeded. If the actual pressure is smaller than the p command value, the position controller is switched on. A rear dodge (cylinder moves backward) is possible. The p feedback value can be either an absolute signal (V or mA) from a pressure or force sensor or can be built as a differential signal from two pressure or force sensors (V or mA).

With this controller mode, the choice of the proportional valve has a high influence on the system behavior. More details about it are available from factory.

#### Solution

In the channel 1 (pos path) all settings concerning the closed loop movement are made. Command scaling, feedback scaling, speed, controller parameter, etc. are set depending the system.





In the channel 2 (p path) all setting concerning the closed loop (pressure control) are made. Command scaling, feedback scaling, speed, controller parameter, etc. are set depending the system.



The control value from channel 2 (p path) is linked to channel 1 (pos path). With the minimum bildner, the solenoids in channel 1 (pos path) will be controlled.

The following settings are made in the section "Control value" from channel 1 (pos path).



Function	minimum	ı bildner	-	
Source	p p	ath	-	
Dig. input	not used 👻			



## 4 **Closing function**

#### 4.1 General to closing function

#### Application: Closing function with

In a position control, it is often required that below and / or above an adjustable position the axis will be pressed into the end position with a fixed solenoid current (= closing function). It can be selected, if only the command position, only the feedback position or both positions should be queried. The following options are available:

Closing function with command or feedback less than a threshold 17



The closing function with "command and feedback less and more than a threshold" is not possible.



The functional principle is the same for all possibilities:

• Channel 1 is used for the position control (Controller mode = "Position closed loop (2-sol)")



• Channel 2 is used as an amplifier (Controller mode = Posiiton open loop")



- in channel 1, an internal signal is set by means of the "monitoring" function which becomes active if the corresponding threshold value is reached
- if the internal signal is active, the control value from channel 2 is used instead of the control value from channel 1
- this control value from channel 2 directly controls the corresponding solenoid driver from channel 1
- the following figure shows schematically the functioning of the closing function





• for detailed settings, see the following pages

## 4.2 Prerequisites for closing function

For using the closing function, the following prerequisites must be fulfilled:

WANDFLUH Electronics	Software version	PASO
SD7 Basic Controller SD7 Enhanced Controller	from 1.3.1.3 onwards	PASO SD7 from 1.0.1.9 onwards
MD2 Basic Controller MD2 Enhanced Controller	from 1.4.0.4 onwards	PASO MD2 from 2.1.0.5 onwards
DSV Controller	from 1.0.2.0 onwards	PASO DSV from 1.2.0.0 onwards



## 4.3 Command or Feedback less than a threshold

#### Application: Closing function with command or feedback less than a threshold

fix solenoio	ed d current	position control	
			I
min position	threshold 1	command or feedback	max position

#### Solution

The following settings are made in "channel 1":

In the section "Monitoring", set the "Type" to "on without error", the "Selection" to "Command value" resp. "Feedback value" (in the example "Command vallue"), the "Function" to "< (less than)" and the "Threshold" to the desired value for the threshold (in the example "5.00 mm").

gnals Wind Switching thre	Jow   eshold 1 ───────────────────────────────────						
Selection	Command value	Function	<(less than) 💌	Threshold	5.0 [%]	Delay time	50 [ms]
Switching thre Type	eshold 2						
Selection	Command value	Function	< (less than )	Threshold	0.0 [%]	Delay time 🚆	50 [ms]
						QK Cancel	Help

In the section "Function", set the "Swtiching threshold 1" to a free internal signal (in the example "IntSig1").

03//01		
Magnet 1 aktiv	nicht benutzt 💌	0
Magnet 2 aktiv	nicht benutzt 💌	٢
Ziel-Fenster aktiv	nicht benutzt 💌	0
Bereit Signal	nicht benutzt 💌	0
Schlepp Fenster	nicht benutzt 💌	0
Sollwert 2 aktiv	nicht benutzt 💌	0
Sequenz Ende	nicht benutzt 💌	0
Profil Ende	nicht benutzt 💌	0
Schaltschwelle 1	IntSig1 💌	0
Schaltschwelle 2	nicht benutzt 💌	0
Stellgrösse 2 aktiv	nicht benutzt 💌	٢



In the section "Control value", set the "Function" to "alternatively", the "Source" to "Channel 2" and the "Dig. input" to the in the section "Function" selected internal signal (in the example "IntSig1").

Function	alternatively	<b>-</b>
Source	Channel 2	•
Dig. input	IntSig1 💌	

The following settings are made in "channel 2":

In the section "Valve type", set the "Mode of operation" to "Command bipolar (2-sol)".

Mode of operation	Command bipolar (2-sol)
Solenoid 2	not used
Solenoid type	Proportional solenoid with current measurement
Valve type	Standard 2-solenoid 💌

In the field "Command value fixed", set the "Enable" to "Command values fixed", the "Selection 1" to the in the section "Function" selected signal for the "Switching threshold 1" (in the example "IntSig1" and the "Fixed command value 1" to the desired solenoid current value. In which case:

- a positive value activates the solenoid from solenoid driver 1

- a negative value activates the solenoid from solenoid driver 1
- a value from 0.1% corresponds to the Imin from the corresponding solenoid
- a value from 100.0% corresponds to the Imax from the corresponding solenoid

arameters command values	fixed			TITT	
-Options					
Enable	Command values fixed 💌				
-Digital inputs					
Selection 1	IntSig1	Selection 2	not used 💌	Selection 4	not used
-Command values fixed					
Fixed command value 1	-20.0 [%]	Fixed command value 2	as 0.0 [%]	Fixed command value 4	a 0.0 [%]
		Fixed command value 3	and 0.0 [%]	Fixed command value 5	0.0 [%]
				Fixed command value 6	a 0,0 [%]
				Fixed command value 7	a 0.0 [%]
Profiles					
Selection 1	no profile	Selection 2	no profile 💌	Selection 4	no profile 💌
		Selection 3	no profile 📃	Selection 5	no profile 💌
				Selection 6	no profile
				Selection 7	no profile 🕎
Digital inputs profile control —					
Enable	external 💌	Enable	external 🔄	Enable	external 💌
Profile/Sequence	not used 👻	Stop	not used 🗾	Start	not used 💌
			Profiles Generator	<u>о</u> к	Cancel <u>H</u> elp

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## 4.4 Command or Feedback more than a threshold

#### Application: Closing function with command or feedback more than an threshold



#### Solution

The following settings are made in "channel 1":

In the section "Monitoring", set the "Type" to "on without error", the "Selection" to "Command value" resp. "Feedback value" (in the example "Command value"), the "Function" to "> (more than)" and the "Threshold" to the desired value for the threshold (in the example "95.00 mm").

nals Wind	iow		-				
Type Selection	on without error	Function	>(more than) 💌	Threshold	95.000002 [mm]	Delay time 🍦	50 [ms]
Switching thre Type Selection	off  Command value	Function	> (more than ) *	Threshold	95.000002 [mm]	Delay time 📓	50 [ms]

In the section "Function", set the "Swtiching threshold 1" to a free internal signal (in the example "IntSig1").

Auswahl		
Magnet 1 aktiv	nicht benutzt 💌	0
Magnet 2 aktiv	nicht benutzt 💌	0
Ziel-Fenster aktiv	nicht benutzt 💌	0
Bereit Signal	nicht benutzt 💌	0
Schlepp Fenster	nicht benutzt 💌	0
Sollwert 2 aktiv	nicht benutzt 📃	0
Sequenz Ende	nicht benutzt 💌	0
Profil Ende	nicht benutzt 💌	0
Schaltschwelle 1	IntSig1 💌	0
Schaltschwelle 2	nicht benutzt 💌	0
Stellgrösse 2 aktiv	nicht benutzt 💌	0



In the section "Control value", set the "Function" to "alternatively", the "Source" to "Channel 2" and the "Dig. input" to the in the section "Function" selected internal signal (in the example "IntSig1").

Function			•		
Source [	Channel 2				•
Dig. input	IntSig1	•			

The following settings are made in "channel 2":

In the section "Valve type", set the "Mode of operation" to "Command bipolar (2-sol)".

Mode of operation	Command bipolar (2-sol)
Solenoid 2	not used
Solenoid type	Proportional solenoid with current measurement
Valve type	Standard 2-solenoid

In the field "Command value fixed", set the "Enable" to "Command values fixed", the "Selection 1" to the in the section "Function" selected signal for the "Switching threshold 1" (in the example "IntSig1" and the "Fixed command value 1" to the desired solenoid current value. In which case:

- a positive value activates the solenoid from solenoid driver 1
- a negative value activates the solenoid from solenoid driver 1
- a value from 0.1% corresponds to the Imin from the corresponding solenoid
- a value from 100.0% corresponds to the Imax from the corresponding solenoid

Parameters command values	fixed				TITT	
Options						
Enable	Command values fixed 💌					
Digital inputs						1
Selection 1	IntSig1	Selection 2	not used	<u> </u>	Selection 4	not used
- Command values fixed						
Fixed command value 1	20.0 [%]	Fixed command value 2	4	0.0 [%]	Fixed command value 4	0.0 [%]
		Fixed command value 3	1	0.0	Fixed command value 5	0.0 [%]
					Fixed command value 6	0.0 [%]
					Fixed command value 7	0.0 [%]
Profiles						
Selection 1	no profile	Selection 2	no profile	(Y)	Selection 4	no profile 💌
		Selection 3	no profile	<b>T</b>	Selection 5	no profile 💌
					Selection 6	no profile 💌
					Selection 7	no profile 💌
Digital inputs profile control						
Enable	external 💌	Enable	external	×.	Enable	external 💌
Profile/Sequence	not used 💌	Stop	not used	4	Start	not used 💌
				Profiles Generator		Capacity Hole
			-			Zaunel Üah

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## 4.5 Command or Feedback less and more than a threshold

#### Application: Closing function with command or feedback less and more than a threshold



min position threshold 1 command or feedback threshold 2 max position

#### Solution

The following settings are made in "channel 1":

In the section "Monitoring",

- in the section "Switching threshold 1" set the "Type" to "on without error", the "Selection" to "Command value" resp. "Feedback value" (in the example "Command value"), the "Function" to "< (less than)" and the "Threshold" to the desired value for the threshold (in the example "5.00 mm").

- in the section "Switching threshold 1" set the "Type" to "on without error", the "Selection" to "Command value" resp. "Feedback value" (in the example "Command value"), the "Function" to "> (more than)" and the "Threshold" to the desired value for the threshold (in the example "95.00 mm").

meters moni gnals   Win	toring dow		1.00			- Martin	
Switching the Type Selection	eshold 1 on without error 💌 Command value 💌	Function	<(less than ) 🗾	Threshold	5.000002 [mm]	Delay time 👙	50 [ms]
Switching the Type Selection	eshold 2 on without error Command value	Function	>(more than) 👤	Threshold Ĵ	95.000002 [mm]	Delay time 👮	50 [ms]
						QK Cance	l <u>H</u> elp

In the section "Function", set the "Swtiching threshold 1" to a free internal signal (in the example "IntSig1") and the "Swtiching threshold 2" to another free internal signal (in the example "IntSig2").

election			
Solenoid 1 active	not used	-	١
Solenoid 2 active	not used	•	٢
Target window active	not used	•	0
Ready signal	not used	•	$\bigcirc$
Trailing window	not used	•	0
Command value 2 active	not used	4	0
Sequence End	not used	•	0
Profile End	not used	•	$\bigcirc$
Switching threshold 1	IntSig1	•	0
Switching threshold 2	IntSig2	•	9
Control value 2 active	not used	•	0



In the menu "Configuration - Binary operatons", the two internal signals selected in the section "Function" will be linked together with "OR" and connected to another free interal signal (in the example "IntSig3").

Inv	Ausgang			Inv	Eingang 1		Funktion		Inv	Eingang 2	
	IntSig3	•	=		Int Sig 1	•	OR	•	ГΙ	IntSig2	•
<b>[</b> ]	nicht benutzt	•	-		nicht benutzt		nicht benutzt	1	E	nicht benutzt	4
	nicht benutzt	•	-		nicht benutzt		nicht benutzt	4	E	nicht benutzt	4
<b>[</b> ]	nicht benutzt	•	=		nicht benutzt		nicht benutzt	4	E	nicht benutzt	4
<b>F</b>	nicht benutzt	-	=		nicht benutzt	1	nicht benutzt	1	E	nicht benutzt	4
<b>[</b> ]	nicht benutzt	•	=		nicht benutzt		nicht benutzt	1	E	nicht benutzt	4
<b></b> [	nicht benutzt	•	-		nicht benutzt	()	nicht benutzt	()		nicht benutzt	1
<b>[</b> ]	nicht benutzt	•	÷		nicht benutzt		nicht benutzt	4	E	nicht benutzt	4
<b>[</b> ]	nicht benutzt	-	-	Π)	nicht benutzt	(*)	nicht benutzt	1		nicht benutzt	4

In the section "Control value", set the "Function" to "alternatively", the "Source" to "Channel 2" and the "Dig. input" to the in the menu "Configuration - Binary Operation" selected internal signal (in the example "IntSig3").

uncuori I		alternati	vely	_	
Source [		Channe	el 2	<u> </u>	
Dig. input	IntSig3	-			

The following settings are made in "channel 1":

In the section "Valve type", set the "Mode of operation" to "Command bipolar (2-sol)".

Mode of operation	Command bipolar (2-sol)
Solenoid 2	not used 💌
Solenoid type	Proportional solenoid with current measurement
Valve type	Standard 2-solenoid



In the field "Command value fixed", set the "Enable" to "Command values fixed", the "Selection 1" to the in the section "Function" selected signal for the "Switching threshold 1" (in the example "IntSig1", the "Selection 2" to the in the section "Function" selected signal for the "Switching threshold 2" (in the example "IntSig2") and the "Fixed command value 1" resp. "Fixed command value 2" to the desired solenoid current value. In which case:

- a positive value activates the solenoid from solenoid driver 1
- a negative value activates the solenoid from solenoid driver 1
- a value from 0.1% corresponds to the Imin from the corresponding solenoid
- a value from 100.0% corresponds to the Imax from the corresponding solenoid

rameters command values	fixed			TITT	
Options					
Enable	Command values fixed 👤				
Digital inputs					
Selection 1	IntSig1	Selection 2	IntSig2	Selection 4	not used 💌
Command values fixed					
Fixed command value 1	-20.0 [%]	Fixed command value 2	20.0 [%]	Fixed command value 4	0.0 [%]
		Fixed command value 3	0.0 [%]	Fixed command value 5	0.0 [%]
				Fixed command value 6	0.0 [%]
				Fixed command value 7	0.0 [%]
Profiles					
Selection 1	no profile	Selection 2	no profile 🔄	Selection 4	no profile
		Selection 3	no profile 🛫	Selection 5	no profile 💌
				Selection 6	no profile
				Selection 7	no profile
Digital inputs profile control —					
Enable	external 💌	Enable	external 💌	Enable	external 👻
Profile/Sequence	not used 💌	Stop	not used	Start	not used
				1	
			Profiles Genera	tor <u>QK</u>	<u>Cancel</u> <u>Help</u>



## 4.6 Command and Feedback less than a threshold

#### Application: Cosing function with comamnd and feedback less than a threshold

fix solenoid	ed d current	position control	
I			
min position	threshold 1	command und feedback	max position

#### Solution

The following settings are made in "channel 1":

In the section "Monitoring",

- in the section "Switching threshold 1" set the "Type" to "on without error", the "Selection" to "Command value", the "Function" to "< (less than)" and the "Threshold" to the desired value for the threshold (in the example "5.00 mm").

- in the section "Switching threshold 1" set the "Type" to "on without error", the "Selection" to "Feedback value", the "Function" to "< (less than)" and the "Threshold" to the desired value for the threshold (in the example "5.00 mm").

neters monit gnals Wind Switching thre	toring dow   eshold 1	_					_		
Type Selection	on without error	Function [	< (less than ) 💌	Threshold	\$	5.000002 [mm]	Delay time	\$ 5	) [ms]
Switching thre Type Selection	on without error 🔽 Feedback value 🝸	Function [	< (less than ) 💌	Threshold	Ĵ	5.000002 [mm]	Delay time	\$ 5	) [ms]
							<u>o</u> ĸ	Cancel	Help

In the section "Function", set the "Swtiching threshold 1" to a free internal signal (in the example "IntSig1") and the "Swtiching threshold 2" to another free internal signal (in the example "IntSig2").

Solenoid 1 active	not used	-	9
Solenoid 2 active	not used	•	٢
Target window active	not used	•	٢
Ready signal	not used	•	9
Trailing window	not used	•	٢
Command value 2 active	not used	Ŧ	0
Sequence End	not used	•	٢
Profile End	not used	•	0
Switching threshold 1	IntSig1	•	$\bigcirc$
Switching threshold 2	IntSig2	•	0
Control value 2 active	not used	•	0



In the menu "Configuration - Binary operatons", the two internal signals selected in the section "Function" will be linked together with "AND" and connected to another free interal signal (in the example "IntSig3").

Binary op	erations	No.		-	betroad.	-					
Inv	Output			Inv	Input 1		Funktion		Inv	Input 2	
гΓ	IntSig3	•	=	ΓΓ	IntSig1	•	AND	•	ΓΓ	IntSig2	•
ΠΓ	not used	•	-	Γ	not used	(Y)	not used	1	Π	not used	4
ΠΓ	not used	•	=	Γ	not used	¥	not used	Y	Γ	not used	4
	not used	•	=		not used	Ψ.	not used	Y	Πſ	not used	Ý
Γ	not used	•	-	⊑ [	not used	Ψ.	not used	Y	Γ	not used	Ψ.
ΠΓ	not used	•	=	Π	not used	*	not used	Y	Γ	not used	(
Πſ	not used	•	-	Π	not used	*	not used	(P)	Π	not used	()
ΠΓ	not used	•	-	Π	not used	*	not used		Π	not used	
							ок		Cancel	1	Help

In the section "Control value", set the "Function" to "alternatively", the "Source" to "Channel 2" and the "Dig. input" to the in the menu "Configuration - Binary Operation" selected internal signal (in the example "IntSig3").

diriotion,	1	alter	natively	<u> </u>	
iource	Г	Cha	annel 2	 •	
)ig. input	IntSig3	-			

The following settings are made in "channel 2":

In the section "Valve type", set the "Mode of operation" to "Command bipolar (2-sol)".

Mode of operation	Command bipolar (2-sol)
Solenoid 2	not used
Solenoid type	Proportional solenoid with current measurement
Valve type	Standard 2-solenoid



In the field "Command value fixed", set the "Enable" to "Command values fixed", the "Selection 1" to the in the menu "Configuration - Binary Operation" selected "Output" (in the example "IntSig3" and the "Fixed command value 1" to the desired solenoid current value.

In which case:

- a positive value activates the solenoid from solenoid driver 1

- a negative value activates the solenoid from solenoid driver 1
- a value from 0.1% corresponds to the Imin from the corresponding solenoid
- a value from 100.0% corresponds to the Imax from the corresponding solenoid

rameters command values	fixed			TITT	
Options					
Enable	Command values fixed 💌				
Digital inputs					
Selection 1	IntSig3 💌	Selection 2	not used 💌	Selection 4	not used
Command values fixed					
Fixed command value 1	-20.0 [%]	Fixed command value 2	* <u>*</u> 0.0 [%]	Fixed command value 4	a 0,0 [%]
		Fixed command value 3	a 0.0 [%]	Fixed command value 5	0.0 [%]
				Fixed command value 6	0.0 [%]
				Fixed command value 7	a 0.0 [%]
Profiles					
Selection 1	no profile	Selection 2	no profile 🔄	Selection 4	no profile
		Selection 3	no profile	Selection 5	no profile
				Selection 6	no profile
				Selection 7	no profile 💌
igital inputs profile control —					
Enable	external 💌	Enable	external 🔄	Enable	external 🔄
Profile/Sequence	not used	Stop	not used	Start	not used 💌
			Profiles Gene	rator <u>O</u> K	Cancel <u>H</u> elp



## 4.7 Command and Feedback more than a threshold

#### Application: Closing function with command and feedback more than a threshold



#### Solution

The following settings are made in "channel 1":

In the section "Monitoring",

- in the section "Switching threshold 1" set the "Type" to "on without error", the "Selection" to "Command value", the "Function" to "> (more than)" and the "Threshold" to the desired value for the threshold (in the example "5.00 mm").

- in the section "Switching threshold 1" set the "Type" to "on without error", the "Selection" to "Feedback value", the "Function" to "> (more than)" and the "Threshold" to the desired value for the threshold (in the example "5.00 mm").

ameters monit	toring	Sec.	1.00			inere a		
Signals   Wind	dow							
Switching three	eshold 1							ï
Туре	on without error	J						
Selection	Command value	Function	>(more than) 💌	Threshold	\$ 95.000002 (m	m] Delay time	\$ 50	[ms]
Type Selection	on without error Feedback value	▼ Function	>(more than) 💌	Threshold	\$ <u>95.000002</u> [m	m] Delay time	\$ 50	[ms]
						Ōĸ	Cancel	Help

In the section "Function", set the "Swtiching threshold 1" to a free internal signal (in the example "IntSig1") and the "Swtiching threshold 2" to another free internal signal (in the example "IntSig2").

election			
Solenoid 1 active	not used	•	٢
Solenoid 2 active	not used	•	٢
Target window active	not used	•	٢
Ready signal	not used	•	0
Trailing window	not used	•	0
Command value 2 active	not used	Ŧ	٢
Sequence End	not used	•	٢
Profile End	not used	•	0
Switching threshold 1	IntSig1	•	٢
Switching threshold 2	IntSig2	•	0
Control value 2 active	not used	•	٢



In the menu "Configuration - Binary operatons", the two internal signals selected in the section "Function" will be linked together with "AND" and connected to another free interal signal (in the example "IntSig3").

Binary op	perations	-		-	Serioal.	-	-		-		
Inv	Output			Inv	Input 1		Funktion		Inv	Input 2	
ГΓ	IntSig3	•	-	ΓΓ	IntSig1	•	AND	•	ΓΓ	IntSig2	•
	not used	•	-	Π	not used	(Y)	not used	4	Π	not used	4
	not used	•	=	Π	not used	¥	not used	*	Γ	not used	4
	not used	•	=		not used	(V)	not used	Ψ.	Γ	not used	Ý
Γ	not used	•	=	Γ	not used	Ψ.	not used	¥	Γ	not used	Ψ.
ΠΓ	not used	•	=	Π	not used	*	not used	T.	Πſ	not used	(
ΠΓ	not used	•	-	Π	not used	*	not used	1	Γ	not used	(V
ΠΓ	not used	•	-	Πſ	not used	*	not used	1	ΠŢ	not used	
							<u>o</u> k		<u>Cancel</u>	1	Help

In the section "Control value", set the "Function" to "alternatively", the "Source" to "Channel 2" and the "Dig. input" to the in the menu "Configuration - Binary Operation" selected internal signal (in the example "IntSig3").

unction		alternatively			-	
Source	[	Channel 2			-	
Dig. input	IntSig3	Ī				

The following settings are made in "channel 2":

In the section "Valve type", set the "Mode of operation" to "Command bipolar (2-sol)".

Mode of operation	Command bipolar (2-sol)
Solenoid 2	not used
Solenoid type	Proportional solenoid with current measurement
Valve type	Standard 2-solenoid



In the field "Command value fixed", set the "Enable" to "Command values fixed", the "Selection 1" to the in the menu "Configuration - Binary Operation" selected "Output" (in the example "IntSig3" and the "Fixed command value 1" to the desired solenoid current value.

In which case:

- a positive value activates the solenoid from solenoid driver 1

- a negative value activates the solenoid from solenoid driver 1
- a value from 0.1% corresponds to the Imin from the corresponding solenoid
- a value from 100.0% corresponds to the Imax from the corresponding solenoid

rameters command values	fixed		TITI						
Options									
Enable	Command values fixed 💌								
Digital inputs									
Selection 1	IntSig3	Selection 2	not used 💌	Selection 4	not used 💌				
command values fixed									
Fixed command value 1	20.0 [%]	Fixed command value 2	a 0.0 [%]	Fixed command value 4	0.0 [%]				
		Fixed command value 3	······································	Fixed command value 5	0.0 [%]				
				Fixed command value 6	0.0 [%]				
				Fixed command value 7	0.0 [%]				
Profiles									
Selection 1	no profile	Selection 2	no profile 💌	Selection 4	no profile 💌				
		Selection 3	no profile 📰	Selection 5	no profile 💌				
				Selection 6	no profile 👘				
				Selection 7	no profile 💌				
Digital inputs profile control —									
Enable	external 💌	Enable	external 🔄	Enable	external 🔄				
Profile/Sequence	not used 💌	Stop	not used	Start	not used 💌				
			Profiles Gener	rator <u>O</u> K	Cancel <u>H</u> elp				