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PROtop IO-Link Register Description

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1 Introduction

1.1 Purpose

This document describes the use of the PRO COM IO-LINK module with the PROtop communicative Power Supply.

2 Communication via IO-LINK

2.1 Configuration of PRO TOP IO-LINK system

For the configuration of PROtop IO-LINK the following points should be note:

- ➔ The Function “Data Storage” is not supported and must be disabled in the engineering tool!
- ➔ Writing an invalid value into a writeable parameter register does not evoke an error. To assure that a value has been accepted, it is necessary to read back the register and verify the content.

3 Process data and parameter

3.1 Process data in

The byte order is depending on the used environment. Pay attention to the bit-offset.

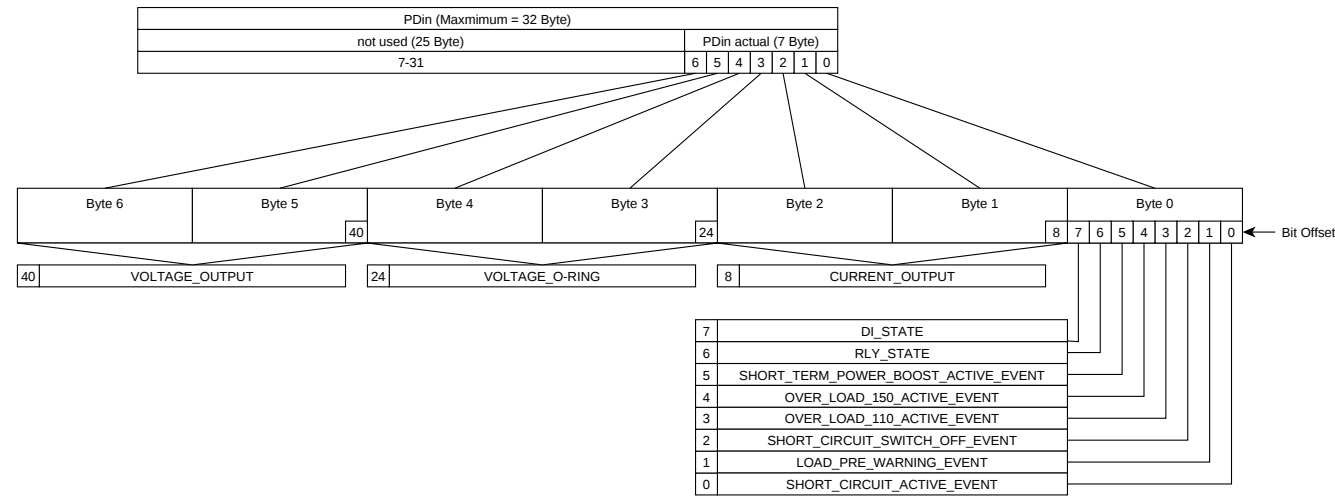


Table 1: Process data in for PROtop IO-LINK					
Parameter	Type	Bit-Offset	Length [Bit]	Comment/ Description	Possible mapping (depending on PLC)
PROtop - Output Voltage	INT 16	40	16	Output voltage value in cV (1000 = 10.00V) on DC- Output after O-ring MOSFET (on terminal).	Byte 6 + Byte 5
PROtop - O-Ring Voltage	INT 16	24	16	Output voltage value in cV (1000 = 10.00V) on DC- Output before O-ring MOSFET.	Byte 4 + Byte 3
PROtop - Output Current	INT 16	8	16	Output current in cA (1000 = 10.00A) on DC- Output	Byte 2 + Byte 1
PROtop - DI State	Bo ol	7	1	Get Status of Digital Input 0 = false ($V_{in} < 5V$) 1 = true ($V_{in} > 15V$)	Byte 0:0
PROtop - Relay State	Bo ol	6	1	Get State of Relay Output 0 = deenergized 1 = energized	Byte 0:1
PROtop - DCL Active State	Bo ol	5	1	0 = DCL event is not active on DC- Output 1 = DCL event is active on DC- Output	Byte 0:2
PROtop - Overload 150 Active State	Bo ol	4	1	0 = load current on DC- Output is lower than 150% of I_{nom} 1 = load current on DC- Output is higher than 150% of I_{nom}	Byte 0:3
PROtop - Overload 110 Active State	Bo ol	3	1	0 = load current on DC- Output is lower than 110% of I_{nom} 1 = load current on DC- Output is higher than 110% of I_{nom}	Byte 0:4
PROtop - Short Circuit Switch Off State	Bo ol	2	1	0 = DC / DC conversion and O-ring MOSFET DC Output is active 1 = DC / DC conversion and O-ring MOSFET DC Output is switched off, because of a short circuit	Byte 0:5

PROtop - Load Pre-warning State	Bo ol	1	1	0 = load current on DC- Output is lower than "PROtop Load Prewarning Value", which is 90% of I_{nom} . 1 = load current on DC- Output is higher than "PROtop Load Prewarning Value", which is 90% of I_{nom} .	Byte 0:6
PROtop - Short Circuit Active State	Bo ol	0	1	0 = Short Circuit on DC Output 1 = No Short Circuit on DC Output	Byte 0:7
Total size PD-IN			56	7 Bytes	

3.2 Process data out

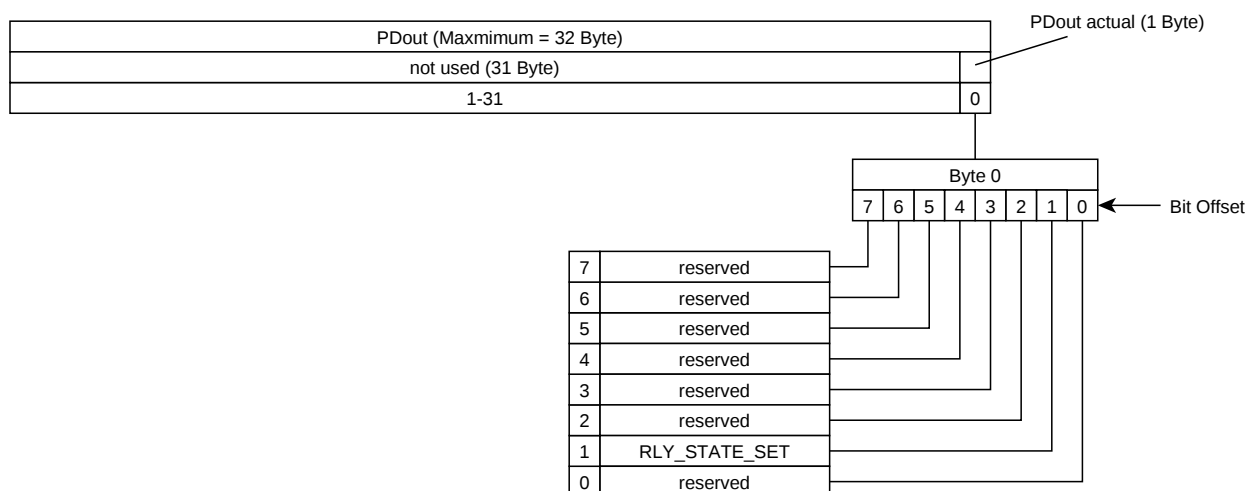


Table 2: Process data in for PROtop IO-LINK

Parameter	Type	Bit-Offset	Length [Bit]	Comment/ Description
Padding	-	0	1	reserved
PROtop - Relay State Set	BOOL	1	1	Set Status of Relay Output (only possible, if "PROtop Configuration Select"= 1 and "PROtop Relay Control Select"=1) Relay state depends on the "PROtop Relay Logic Select" register "PROtop Relay Logic Select" = 0 (positive logic): 0 = Deenergized 1 = Energized "PROtop Relay Logic Select" = 1 (inverted logic): 0 = Energized 1 = Deenergized
Padding	-	2	6	reserved
Total size PD-Out			8	1 Byte

3.3 Non-cyclical I/O data of PROtop IO-LINK

3.3.1 Parameters for PROtop IO-LINK

Table 3: Parameters for PROtop IO-LINK					
Name	Type	Length	Access	Index	Comment/ Description
PROtop Over Voltage Peaks Counter	U16	2 bytes	R	257	Number of "PROtop - Over Voltage Peaks Failed" events since production of the PROtop.
PROtop Device Temperature	record	6 bytes	R	260 [1...3]	These registers show the internal PROtop device temperature. Accuracy: +2K Index 2+3 reserved / to be ignored
PROtop Device Temperature Heat Sink	S16	2 bytes	R	260:1	Internal temperature (heat sink at rectifier of PROtop) in cC° (1000 = 10.00°C). Sensing range: -50°C...+150°C
PROtop Device Temperature Event Count	record	8 bytes	R	261 [1...4]	These registers show the number of temperature events Index 3+4 reserved / to be ignored
PROtop Device Temperature >100°C Counter	U16	2 bytes	R	261:1	Number of "PROtop - Device Temperature >100°C" events since production of the PROtop.
PROtop Device Temperature >110°C Counter	U16	2 bytes	R	261:2	Number of "PROtop - Device Temperature >110°C" events since production of the PROtop.
PROtop Device Type	String [32]	32 bytes	R	268	Product (type) name of PROtop.
PROtop Device Order Nr	String [10]	10 bytes	R	269	Order number of PROtop.
PROtop Device Serial Nr	String [15]	15 bytes	R	270	Serial number of PROtop.
PROtop Device HW Version	String [8]	8 bytes	R	272	Hardware version number of the PROtop (as ASCII)
PROtop Device SW Version	String [8]	8 bytes	R	273	Software version number of the PROtop
PROtop Operation Hours Since Production Counter	U32	4 bytes	R	274	The operating hours since production of the PROtop.
PROtop Device State	U8 bit-map, record	1 byte	R	275	This register shows the internal state of the PROtop device. The bits are defined as the following: bit 0: FAILURE bit 2: OUT OF SPECIFICATION bit 3: MAINTANANCE REQUIRED, bit 4: PREWARNING bit 5: CONFIGURATION DOWN LOAD
PROtop Device Tag	Byte [16]	16 bytes	RW	276	The device tag is settable to define a unique name for the device in the automation plant. Default value = "WeidmuellerInter".

Table 3: Parameters for PROtop IO-LINK					
Name	Type	Length	Access	Index	Comment/ Description
PROtop Rated Value Voltage Output	S16	2 bytes	RW	282	Set the Voltage in dV on DC- Output (after O-ring MOSFET) to the transferred rated value. Step width: 30mV Range: U_{min} to U_{max} Default value = U_{nom} This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise the "PROtop Rated Value Voltage Output" is configured by the Poti. The parameter is active immediately. Without further action, the value is reset to default value after restart of Power Supply. To store this value after a Power Supply Reset see "PROtop Save Rated Voltage Output Value Command".
PROtop Rated Value Current Output	S16	2 bytes	RW	284	Set the Current in dA on DC- Output to the transferred rated value. Min Value: see Annex Max Value: see Annex Default Value = I_{Nom} This parameter is only valid, if "PROtop Configuration Select" = 0x01 and "PROtop Output Voltage Current Select" = 0x01. The parameter is active immediately. Without further action, the value is reset to default value after restart of Power Supply. To store this value after a Power Supply Reset see "PROtop Save Rated Value Current Limit Output Command".
PROtop Output Voltage Current Select	Bool	1 byte	RW	286	Configures output mode. 0 = Voltage mode 1 = Current mode Default value = 0 The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.
PROtop Reverse Voltage Output Counter	U16	2 bytes	R	289	Number of "PROtop - Reverse Voltage Output" events since production of the PROtop.
PROtop DCL Select	Bool	1 byte	RW	290	Sets "DCL" functionality 0 = DCL on --> DCL and long term functionality together 1 = DCL off --> long term functionality only; Default value = 0 This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.

Table 3: Parameters for PROtop IO-LINK					
Name	Type	Length	Access	Index	Comment/ Description
PROtop DCL Counter	U16	2 bytes	R	291	Number of "PROtop - DCL Active" events since production of the PROtop.
PROtop Overload 150% Active Counter	U16	2 bytes	R	292	Number of "PROtop - Overload 150% Active" events since production of the PROtop.
PROtop Short Circuit Switch Off Time	Bool	1 byte	RW	293	The time for switch off the DC- Output after de-tection of short circuit is variable. Step Width = 0.5s Range: 500ms to 10s It is configured via the following bit patterns: 0000 0000 = 0: -> 0.5ms 0000 0001 = 1: -> 1.0s 0000 0010 = 2: -> 1.5s 0000 0011 = 3: -> 2.0s 0000 0100 = 4: -> 2.5s 0001 0011 = 19: -> 10s 0001 0100 = 20: -> 10s 1111 1111 = 255: -> 10s If the value is lower than 20, the following for-mular can be used: $T_{\text{switch off}} [\text{in s}] = (\text{value} + 1) / 2$ Default value = 9 -> 5s This parameter is only valid, if "PROtop Config-uration Select" = 0x01. Otherwise the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Com-mand.
PROtop Short Circuit Active Coun-ter	U16	2 bytes	R	295	Number of "PROtop - Short Circuit Active" events since production of the PROtop.

Table 3: Parameters for PROtop IO-LINK					
Name	Type	Length	Access	Index	Comment/ Description
PROtop Short Circuit Behavior Select	Bool	1 byte	RW	296	Selects the short circuit behavior; 0 = "continuous mode": short circuit flow continuously 1 = "switch-off mode": switch off during short circuit at DC- Output after "PROtop Short Circuit Switch Off Time" If the DC- Output switched off after short circuit, then it could be switched on via: - Reset of PROtop OR - PROtop "Switch On After Short Circuit Switch Off Command" OR - Positive edge of DI Default value = 0 This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.
PROtop UI Curve Select	U8	1 byte	RW	298	Selects the Output Characteristic Curve: 0x00;0x10;0x11 = Single Operation with IU standard 0x01 = Parallel Operation with soft IU (passive current sharing) Default Value = 0x00 This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.
PROtop AOP Value	U16	2 bytes	RW	299	This parameter configures the Value to trigger the AOP state in cA (1000 = 10.00A) on DC-Output. Min Value: 10% of I_{Nom} Max Value: 110% of I_{Nom} Default Value = 100% of I_{Nom} This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise, the default value is used. The parameter is active after restart or PROtop Reload Command.

Table 3: Parameters for PROtop IO-LINK					
Name	Type	Length	Access	Index	Comment/ Description
PROtop Load Prewarning Value	U16	2 bytes	RW	300	This parameter configures the Prewarning Value in cA (1000 = 10.00A) on DC- Output. Min Value: 50% of I_{Nom} Max Value: 105% of I_{Nom} Default Value = 90% of I_{Nom} This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.
PROtop On / Off	Bool	1 byte	W	301	Switches on/off DC/DC conversion module and DC- Output functionality together 0 = Power Supply on 1 = Power Supply off Default value = 0 The parameter is active immediately. Without further action, the value is reset to default value after restart of Power Supply. To store this value after a Power Supply Reset see "PROtop Save Rated Voltage Output Value Command".
PROtop LED Control Select	Bool	1 byte	RW	304	Selects the control for LEDs ON/FAIL and ATTN on PROtop 0 = LED control by PROtop 1 = LED control by IO-LINK Default value = 0 This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.
PROtop On Fail State Read	ENUM	8 Bit	R	305	This register shows the current state of the LED ON/FAIL on PROtop. The bits are defined as the following: bit 0 or all bits = 0 - Green off and Red off bit 1 - Red on bit 2 - Green on bit 3 - Red slow flashing bit 4 - Green slow flashing bit 5 - Red flashing bit 6 - Green flashing bit 7 - Red - Green slow flashing

Table 3: Parameters for PROtop IO-LINK					
Name	Type	Length	Access	Index	Comment/ Description
PROtop On Fail Behavior Set	ENUM	8 Bit	RW	306	With this register the state of the LED ON/FAIL on PROtop can be controlled. The bits are defined as the following: bit 0 or all bits = 0 - Green off and Red off bit 1 - Red on bit 2 - Green on bit 3 - Red slow flashing bit 4 - Green slow flashing bit 5 - Red flashing bit 6 - Green flashing bit 7 - Red - Green slow flashing This parameter is only valid, if "PROtop LED Control Select" = 0x01.
PROtop LED Attn State Read	ENUM	8 Bit	R	307	This register shows the current state of the LED ATTN on PROtop. The bits are defined as the following: bit 0 or all bits = 0 - Yellow off bit 1 - Yellow on bit 2 - Yellow slow flashing bit 3 - Yellow flashing
PROtop LED Attn Behavior Set	ENUM	8 Bit	RW	308	With this register the state of the LED ATTN on PROtop can be controlled. The bits are defined as the following: bit 0 or all bits = 0 - Yellow off bit 1 - Yellow on bit 2 - Yellow slow flashing bit 3 - Yellow flashing This parameter is only valid, if "PROtop LED Control Select" = 0x01.
PROtop DI Control Select	Bool	1 byte	RW	309	Selects the control for Digital Input/ Output on PROtop 0 = DI control by PROtop 1 = DI control by IO-LINK Default value = 0 This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.

Table 3: Parameters for PROtop IO-LINK					
Name	Type	Length	Access	Index	Comment/ Description
PROtop Relay Control Select	Bool	1 byte	RW	311	Selects the Control for Relay Output on PROtop; 0 = Relay control by PROtop 1 = Relay control by IO-LINK; Default value = 0 This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.
PROtop Relay Logic Select	Bool	1 byte	RW	312	This parameter define the logic (energized/deenergized) of the relay for each state (only possible, if "PROtop Relay Control Select" = 1) 0 -> Energized for "PROtop - Relay State" = 1 (positive logic) 1 -> Deenergized for "PROtop - Relay State" = 1 (inverted logic) Default value = 0 This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.
PROtop Configuration Select	ENUM	2 Bit	RW	317	Selects the of configuration for the PROtop: 0x00 = standard configuration --> PS will be configured via Poti and DIP switches and parameters stored in "Constant Area". 0x01 = IO-Link configuration --> PS will be configured via parameters stored in "Parameter Area" 0x10 = reserve 0x11 = reserve After Reset the PROtop checks the "PROtop Configuration Select" Bits and then loads the parameters from "Constant Area" ("PROtop Configuration Select" = 0x00) or "Parameter Area" ("PROtop Configuration Select" = 0x01). The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.

Table 3: Parameters for PROtop IO-LINK					
Name	Type	Length	Access	Index	Comment/ Description
PROtop O-Ring Function Select	Bool	1 byte	RW	318	Configures the O-Ring function check on PROtop; 0 = "O-Ring function check" will be enabled and will be executed according to the configured "PROtop Check O-Ring Periodic Time" 1 = "O-Ring function check" will be disabled Default value: 0; This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.
PROtop Check Uo > Uo max Failed Counter	U16	2 bytes	R	319	Number of "PROtop - Check Uo > Uo max Failed" events since production of the PROtop.
PROtop Power Down Cycles Counter	U16	2 bytes	R	320	Number of Power Down Cycles since production of the PROtop.
PROtop DC Not OK Counter	U16	2 bytes	R	321	Number of "PROtop - DC not OK" events since production of the PROtop.
PROtop DC Lower Threshold	I16	2 bytes	RW	322	This register defines the Lower Threshold for the "DC not OK" detection. It is given in percent of configured output. The configured threshold is calculated as (1-p) of U_{Nom}. * nur ab SWxx Max Value: 25 % Default Value: Value: 15 % This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.
PROtop DC Upper Threshold	I16	2 bytes	RW	323	This register defines the Upper Threshold for the "DC not OK" detection. It is given in percent of configured output. The configured threshold is calculated as (1-p) of U_{Nom}. Max Value: 25 % Default Value: Value: 10 % This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.

Table 3: Parameters for PROtop IO-LINK					
Name	Type	Length	Access	Index	Comment/ Description
PROtop DI Pull Up Select	Bool	1 byte	RW	324	Switches on/off Pull Up Resistor at Digital Input of PROtop 0 = pull up resistor is active 1 = pull up resistor is not active. Default value = 0 This parameter is only valid, if CONFIGURATION_SEL = 0x01. Otherwise, the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.
PROtop Switch Off Settings	U8 bit-map	1 byte	RW	325 [1...8]	Selects the switch-off behavior of several events; Bit0: PROtop AOP Switch Off Select Bit1: PROtop DC Not OK Switch Off Select Bit2: PROtop Uout_max Switch Off Select Bit3: PROtop O-Ring Not OK Switch Off Select 0 = no switch-off 1 = switch-off This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise, the default value is used. The parameter is active after restart (Attention: Output voltage drop) or PROtop Reload Command.
PROtop AOP Switch Off Select	Bool	1 bit	RW	325:0	This register configures the behavior in case of an AOP event. If the DC- Output switched off after the event occurred, then it could be switched on via: - Reset of PROtop OR - PROtop Switch On After AOP Switch Off Command Default value = 0
PROtop DC Not OK Switch Off Select	Bool	1 bit	RW	325:1	This register configures the behavior in case of an AOP event. If the DC- Output switched off after the event occurred, then it could be switched on via: - Reset of PROtop OR - PROtop Switch On After Check DC Not OK Switch Off Command Default value = 0

Table 3: Parameters for PROtop IO-LINK					
Name	Type	Length	Access	Index	Comment/ Description
PROtop Uout_max Switch Off Select	Bool	1 bit	RW	325:2	This register configures the behavior in case of an AOP event. If the DC- Output switched off after the event occurred, then it could be switched on via: - Reset of PROtop OR - PROtop Switch On After Uo > Uo Max Switch Off Command Default value = 1
PROtop O-Ring Not OK Switch Off Select	Bool	1 bit	RW	325:3	This register configures the behavior in case of an AOP event. If the DC- Output switched off after the event occurred, then it could be switched on via: - Reset of PROtop OR - PROtop Switch On After Check O-Ring Not Ok Switch Off Command Default value = 0
PROtop Switch Off Times	record	3 byte	RW	326 [1...3]	These registers configure the switch-off settings of PROtop events according to the following format. Step Width = 0.5s Range: 500ms to 10s It is configured via the following bit patterns: 0000 0000 = 0: -> 0.5ms 0000 0001 = 1: -> 1.0s 0000 0010 = 2: -> 1.5s 0000 0011 = 3: -> 2.0s 0000 0100 = 4: -> 2.5s 0001 0011 = 19: -> 10s 0001 0100 = 20: -> 10s 1111 1111 = 255: -> 10s If the value is lower than 20, the following formula can be used: $T_{\text{switch off}} [\text{in s}] = (\text{value} + 1) / 2$ Default value = 9 -> 5s This parameter is only valid, if "PROtop Configuration Select" = 0x01. Otherwise, the default value is used. The parameter is active after restart.
PROtop Line Protection Switch Off Time	U8	1 byte	RW	326:1	Configures the switch-off time between AOP event and AOP switch-off.
PROtop DC Not Ok Switch Off Time	U8	1 byte	RW	326:2	Configures the switch-off time between DC Not Ok event and DC Not Ok switch-off.
PROtop Uo > Uo_max Switch Off Time	U8	1 byte	RW	326:3	Configures the switch-off time between Uo > Uo_max event and Uo > Uo_max switch-off.
CIOL Device Type	String [32]	32 bytes	R	327	Product (type) name of Communication IO-LINK device

Table 3: Parameters for PROtop IO-LINK					
Name	Type	Length	Access	Index	Comment/ Description
CIOL Device Order Nr	String [10]	10 bytes	R	328	Order number of Communication IO-LINK device.
CIOL Device Serial Nr	String [15]	15 bytes	R	329	Serial number of Communication IO-LINK device.
CIOL Device HW Version	String [8]	8 bytes	R	331	Hardware version number of Communication IO-LINK device
CIOL Device SW Version	String [8]	8 bytes	R	332	Software version number of Communication IO-LINK device
CIOL Device DVN Version	String [8]	8 bytes	R	333	DVN of Communication IO-LINK device
CIOL Operation Hours Since Production Counter	U32	4 bytes	R	334	The operating hours since production of Communication IO-LINK device
CIOL Device Temperature	S16	2 bytes	R	340	External temperature of Communication IO-LINK device in °C (1000 = 10.00°C).
CIOL Device Temperature >60°C Counter	U16	2 bytes	R	341	Number of external temperature > 60°C since production is counted at Communication IO-LINK device
CIOL Device Temperature >70°C Counter	U16	2 bytes	R	342	Number of external temperature > 70°C since production is counted at Communication IO-LINK device
CIOL Device Temperature <-25°C Counter	U16	2 bytes	R	343	Number of external temperature <-25°C since production is counted at Communication IO-LINK device
CIOL Device Temperature <-40°C Counter	U16	2 bytes	R	344	Number of external temperature <-40°C since production is counted at Communication IO-LINK device
CIOL Power Down Cycles Counter	U16	2 bytes	R	346	Number of Power Down Cycles since production of Communication IO-LINK device.
Combi Device Failure State	Bool	1 byte	R	351	Shows a combined failure state for CIOL and PROtop. 0 = OK 1 = Failure at PROtop or Communication IO-LINK device.
Combi Device ID Switch Changed State	Bool	1 byte	R	352	Signals a change of the ID Switch within operation. 0 = No change 1 = Change

3.3.2 System Commands for PROtop IO-LINK

Table 4: System Commands for PROtop IO-LINK		
Command Name	Command Number	Comment/ Description
Combi Restart Command	160 (0xA0)	After the Communication IO-LINK device gets the command it fulfills a soft restart where the following steps are executed. (1) Soft restart of PROtop (2) Soft restart of the CIOL
PROtop Restart Command	161 (0xA1)	After the PROtop gets the command it fulfills a soft restart.
PROtop Reload Command	162 (0xA2)	After the PROtop gets the command it fulfills a reload.
PROtop Set Factory Default Command	164 (0xA4)	After the PROtop gets the command it configures its parameters to the defined default values.
CIOL Restart Command	167 (0xA7)	After the Communication IO-LINK device gets the command it fulfills a soft restart.
CIOL Set Factory Default Command	168 (0xA8)	CIOL Set Factory Default Command
PROtop Switch On After Short Circuit Switch Off Command	169 (0xA9)	After the PROtop gets the command, it switches the DC output on after it was switched off after a short circuit.
PROtop Check O-Ring Command	170 (0xAA)	After the PROtop gets the command it Initiates O-ring check. 1 = start O-ring check on PS 0 = no O-ring check should be done
PROtop Save Rated Value Voltage Output Command	171 (0xAB)	After the PROtop gets the command, it saves the actual value of " PROtop Rated Value Voltage Output" into EEPROM of PROtop to store the value after restart of Power Supply. This command is only valid, if "PROtop Configuration Select" = 0x01.
PROtop Save Rated Value Current Limit Output Command	172 (0xAC)	After the PROtop gets the command it saves the actual value of PROtop Save Rated Value Current Limit Output Command into EEPROM of PROtop.
PROtop Save On / Off State Command	173 (0xAD)	After the PROtop gets the command, it saves the actual value of " PROtop On / Off" into EEPROM of PROtop to store the state after restart of Power Supply. This command is only valid, if "PROtop Configuration Select" = 0x01.
PROtop Switch On After Check DC Not OK Switch Off Command	174 (0xAE)	After the PROtop gets the command it switches on after check the DC Not OK switch. Only valid for "Switch-off mode" selected and after "DC not OK switch off": 0 = no effect 1 = Switch-on the the DC / DC conversion - and Output Module (O-ring) on DC- Output;
PROtop Switch On After Uo > Uo Max Switch Off Command	175 (0xAF)	After the PROtop gets the command it switches on after Uo > Uo Max Switch Off.
PROtop Switch On After Check O-Ring Not Ok Switch Off Command	176 (0xB0)	After the PROtop gets the command it switches on after Check O-Ring Not Ok Switch Off.

PROtop Switch On After AOP Switch Off Command	177 (0xB1)	After the PROtop gets the command it switches on after AOP Switch Off.
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3.3.3 Event Codes for PROtop IO-LINK

In some engineering tools the event codes are prefixed with 0xFFFF.

Table 1 Events Codes for PROtop IO-LINK				
Event Name	Event Code	Event Type	Event Mode	Comment/ Description
PROtop - Over Voltage Peaks Failed	0x8CAC	Information	Single shot	Signals an Over Voltage Peak at the AC input of the PROtop.
PROtop - Device Temperature >100°C	0x8CA1	Information	Singleshot	Signals, that PROtop temperature increases a limit of 100°C Condition: $T > 100^{\circ}\text{C}$
PROtop - Device Temperature >110°C	0x8CA0	Warning	Appears/ Disappears	Signals, that PROtop temperature increases a limit of 110°C Condition: $T > 110^{\circ}\text{C}$
PROtop - Switch On	0x8CA5	Information	Singleshot	Signals, that the DC output of the PROtop was switched on.
PROtop - Device Failure	0x8CAB	Error	Appears/ Disappears	Signals a failure in the Self Test of a PROtop. Condition: See Self Test Functions
PROtop - Check Output Voltage Failed	0x8CAF	Information	Singleshot	Signals an output voltage failure at the DC output of the PROtop. Condition: $U_{\text{Out}} > 102\% U$ for $t > 500\text{ms}$ or $U_{\text{Out}} < 98\% U$ for $t > 500\text{ms}$
PROtop - Reverse Voltage Output	0x8CB0	Information	Singleshot	Signals an output voltage failure at the DC output of the PROtop. Condition: $U_{\text{Out}} > 140\%$ of U_{Nom}
PROtop - Check $U_o > U_o \text{ max}$ Failed	0x8CB1	Error	Appears/ Disappears	Signals, that $U_o > U_o \text{ max}$ voltage check failed Condition: $U_o \geq \text{defined } U_o \text{ max value}$ -> regulator is defect
PROtop - DC not OK	0x8CB2	Warning	Appears/Disappears	Signals, that the thresholds defined at "PROtop DC Lower Threshold" and "PROtop DC Upper Threshold" are crossed at the DC output of the PROtop. Condition: $U_{\text{Out}} < U * 1 - \text{"PROtop DC Lower Threshold"}$ or $U_{\text{Out}} > U * 1 + \text{"PROtop DC Upper Threshold"}$
PROtop - Switch Off Via DI	0x8CB5	Information	Singleshot	The PROtop has been switched off via the digital input.
PROtop - AOP Active	0x8CB6	Warning	Appears/Disappears	Signals, that AOP value has been exceeded.
PROtop - DC Not OK Switch Off	0x8CB7	Warning	Appears/Disappears	Signals, that PROtop has been switched off via DC Not OK.
PROtop - $U_o > U_o \text{ Max}$ Switch Off	0x8CB8	Warning	Appears/Disappears	Signals, that PROtop has been switched off via $U_o > U_o \text{ Max}$.

PROtop - O-Ring Not OK Switch Off	0x8CB9	Warning	Appears/Disappears	Signals, that PROtop has been switched off via O-Ring Not OK.
PROtop - AOP Switch Off	0x8CBA	Warning	Appears/Disappears	Signals, that PROtop has been switched off via AOP.
CIOL - Device Temperature >60°C	0x8CA7	Information		Signals, that temperature in at Communication IO-LINK device increases a limit of 60°C Condition: T > 60°C
CIOL - Device Temperature >70°C	0x8CA8	Warning	Appears/ Disappears	Signals, that temperature in at Communication IO-LINK device increases a limit of 60°C Condition: T > 70°C
CIOL - Device Temperature <-25°C	0x8CA9	Information		Signals, that temperature in at Communication IO-LINK device decreased a limit of -25°C Condition: T < -25°C
CIOL - Device Temperature <-40°C	0x8CAA	Warning	Appears/ Disappears	Signals, that temperature in at Communication IO-LINK device increases a limit of -40°C Condition: T < -40°C
CIOL - Device Failure	0x8CB3	Error	Appears/ Disappears	Signals a failure in the Self Test of a CIOL device. Condition: See Self Test Functions

4 Special Functions

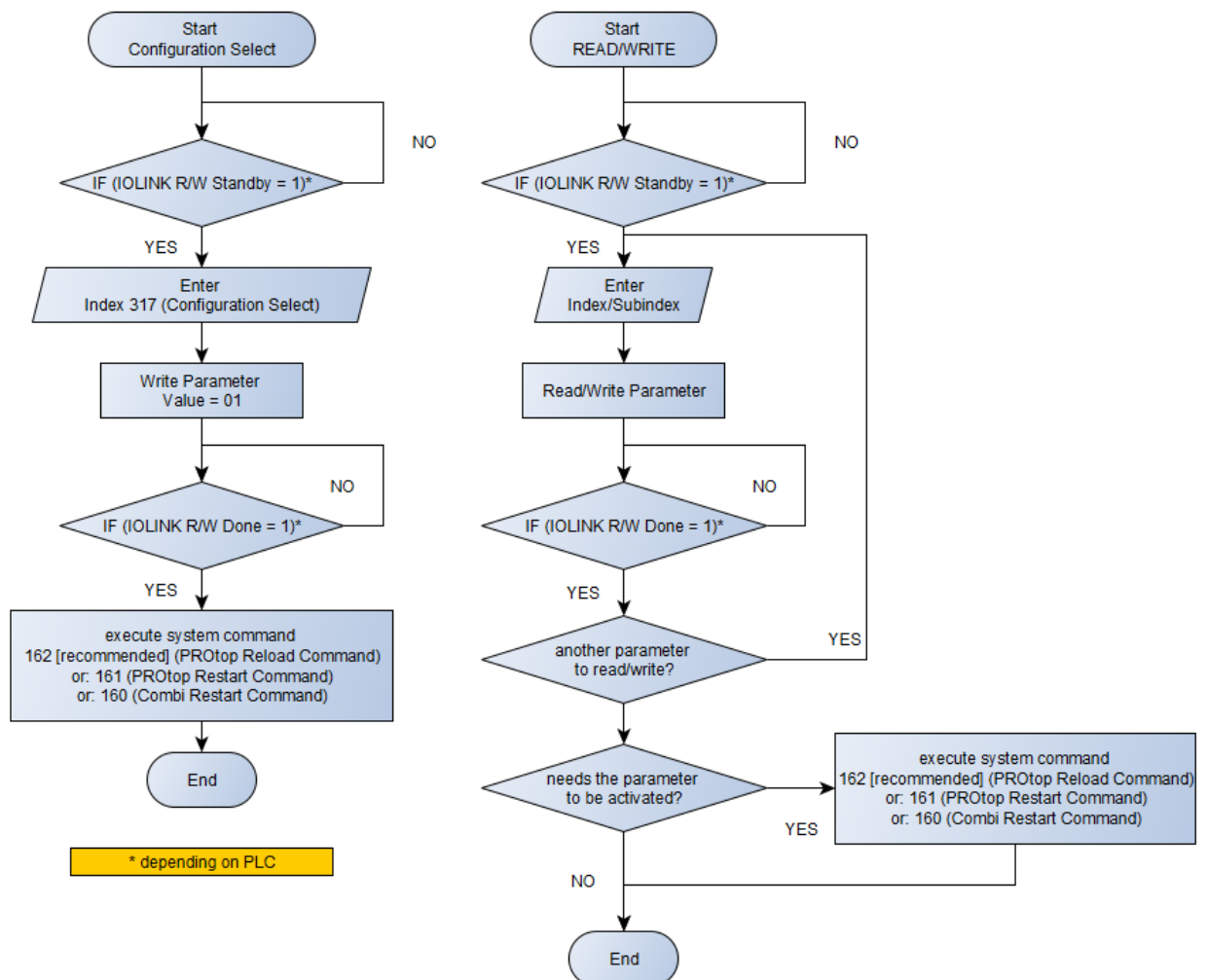
4.1 Setting Control of PROtop via IO-Link

The PROtop can be configured to operate at different modes. This can be changed with setting the “Configuration Select” parameter. Every time the parameter is written its necessary to perform a power cycle or execute the restart command for validation.

The two modes are following:

- 1) Standard mode: The PROtop will be configured via the potentiometer and the DIP switches. Its not possible to write parameters except the “Configuration Select” parameter.
- 2) IO-Link mode: The PROtop will be configured via the IO-Link protocol. The potentiometer and the DIP switches are disabled.

4.2 Flow chart PROtop via IO-Link



5 Annex

5.1 PROtop Rated Value Current Output

Article Nr.	PROtop 1ph	
2466850000	PRO TOP1 72W 24V 3A	0.1A – 3A
2568970000	PRO TOP1 72W 24V 3A F	0.1A – 3A
2466970000	PRO TOP1 72W 24V 3A CO	0.1A – 3A
2466870000	PRO TOP1 120W 24V 5A	0.1A – 5A
2568980000	PRO TOP1 120W 24V 5A F	0.1A – 5A
2466980000	PRO TOP1 120W 24V 5A EX	0.1A – 5A
2466910000	PRO TOP1 120W 12V 10A	0.1A – 10A
2569000000	PRO TOP1 120W 12V 10A F	0.1A – 10A
2467020000	PRO TOP1 120W 12V 10A EX	0.1A – 10A
2466880000	PRO TOP1 240W 24V 10A	0.1A – 10A
2568990000	PRO TOP1 240W 24V 10A F	0.1A – 10A
2466990000	PRO TOP1 240W 24V 10A EX	0.1A – 10A
2466890000	PRO TOP1 480W 24V 20A	0.1A – 20A
2467000000	PRO TOP1 480W 24V 20A EX	0.1A – 20A
2467030000	PRO TOP1 480W 48V 10A	0.1A – 10A
2467040000	PRO TOP1 480W 48V 10A EX	0.1A – 10A
2466900000	PRO TOP1 960W 24V 40A	7A – 40A
2467010000	PRO TOP1 960W 24V 40A EX	7A – 40A
2466920000	PRO TOP1 960W 48V 20A	2.41A – 20A
2467050000	PRO TOP1 960W 48V 20A CO	2.41A – 20A

PROtop 2ph

2467230000	PRO TOP2 24V 5A UW	0.1A – 5A
2467240000	PRO TOP2 24V 5A UW EX	0.1A – 5A
2467250000	PRO TOP2 24V 10A UW	0.1A – 10A
2467260000	PRO TOP2 24V 10A UW EX	0.1A – 10A
2467270000	PRO TOP2 48V 5A UW	0.1A – 5A

PROtop 3ph

2467060000	PRO TOP3 120W 24V 5A	0.3A – 5A
2467070000	PRO TOP3 120W 24V 5A CO	0.3A – 5A
2467080000	PRO TOP3 240W 24V 10A	0.5A – 10A
2467090000	PRO TOP3 240W 24V 10A CO	0.5A – 10A
2467100000	PRO TOP3 480W 24V 20A	0.5A – 20A
2467110000	PRO TOP3 480W 24V 20A CO	0.5A – 20A
2467150000	PRO TOP3 480W 48V 10A	0.1A – 10A
2467160000	PRO TOP3 480W 48V 10A CO	0.1A – 10A
2467120000	PRO TOP3 960W 24V 40A	5A – 40A
2467130000	PRO TOP3 960W 24V 40A CO	5A – 40A
2467170000	PRO TOP3 960W 48V 20A	1.5A – 20A
2467180000	PRO TOP3 960W 48V 20A CO	1.5A – 20A

PROtop DC

2627650000	PRO TOPDC 120W 24V/24V 5A	0.1A – 5A
2467290000	PRO TOPDC 120W 24V/24V 5A EX	0.1A – 5A
2627640000	PRO TOPDC 240W 24V/24V 10A	0.1A – 10A
2467300000	PRO TOPDC 240W 24V/24V 10A EX	0.1A – 10A
2627630000	PRO TOPDC 480W 24V/24V 20A	0.1A – 20A
2467310000	PRO TOPDC 480W 24V/24V 20A EX	0.1A – 20A
2627660000	PRO TOPDC 480W 24V/48V 10A	0.1A – 10A