

Octet 2								
Bit offset	55	54	53	52	51	50	49	48
Subindex	11			10				
Value	0	1	0	0	0	0	0	0
Example	Color 1 Intensity: Low				Color 1: Green			

Octet 3								
Bit offset	47	46	45	44	43	42	41	40
Subindex	-	-	-	-	-	9		
Value	-	-	-	-	-	0	0	0
Example	-	-	-	-	-	Sequence Start Location: LED 1		

Octet 4								
Bit offset	39	38	37	36	35	34	33	32
Subindex	8							
Value	0	0	0	0	0	0	0	0
Example	Static Sequence Value: 0							

Octet 5								
Bit offset	31	30	29	28	27	26	25	24
Subindex	7							
Value	0	0	0	0	0	0	0	0
Example	-							

Octet 6								
Bit offset	23	22	21	20	19	18	17	16
Subindex	7							
Value	0	0	0	0	0	0	0	0
Example	Off Delay: 0 ms							

Octet 7								
Bit offset	15	14	13	12	11	10	9	8
Subindex	-	-	-	6	5		4	
Value	-	-	-	0	1	1	1	0
Example	-	-	-	Off Delay Type: Leading Edge	Audible Feedback: On		Animation Speed: Fast	

Octet 8								
Bit offset	7	6	5	4	3	2	1	0
Subindex	3			2	1			
Value	0	1	0	0	0	0	1	0
Example	Animation Pattern: Three Pulse			Animation Direction: CW	Animation Type: Flash			

LED Control Mode

LED Control Mode			
Subindex	Name	Number of Bits	Data Values
1	LED 1 Color	4	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom1 15 = Custom2
2	LED 1 Intensity (0-10)	4	0-10 = 0-100%
3	LED 2 Color	4	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom1 15 = Custom2
4	LED 2 Intensity (0-10)	4	0-10 = 0-100%

LED Control Mode			
Subindex	Name	Number of Bits	Data Values
5	LED 3 Color	4	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom1 15 = Custom2
6	LED 3 Intensity (0-10)	4	0-10 = 0-100%
7	LED 4 Color	4	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom1 15 = Custom2
8	LED 4 Intensity (0-10)	4	0-10 = 0-100%
9	LED 5 Color	4	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom1 15 = Custom2
10	LED 5 Intensity (0-10)	4	0-10 = 0-100%
11	LED 6 Color	4	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom1 15 = Custom2
12	LED 6 Intensity (0-10)	4	0-10 = 0-100%
13	LED 7 Color	4	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom1 15 = Custom2
14	LED 7 Intensity (0-10)	4	0-10 = 0-100%
15	LED 8 Color	4	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom1 15 = Custom2
16	LED 8 Intensity (0-10)	4	0-10 = 0-100%
17	Audible Feedback	2	0 = Off, 2 = Animation Pattern ² , 3 = On
18	Audible Volume	2	0 = Off, 1 = Low, 2 = Medium, 3 = High
19	Audible Type	4	0 = Pulse 1 = Wobble 2 = Strobe 3 = Whoop 4 = Staccato 5 = Siren 6 = Continuous 1 7 = Continuous 2 9 = Jingle 10 = Melody 1 11 = Melody 2 12 = Melody 3 13 = Custom

LED Control Mode Example Process Data Out

Octet 0								
Bit offset	71	70	69	68	67	66	65	64
Subindex	19			18			17	
Value	0	1	1	0	1	0	1	1
Example	Audible Type: Continuous 1				Audible Volume: Medium		Audible Feedback: On	

Octet 1								
Bit offset	63	62	61	60	59	58	57	56
Subindex	16				15			
Value	0	1	0	1	1	0	1	1
Example	LED 8 Intensity: 5				LED 8 Color: Magenta			

² Not applicable in LED Control Mode.

Octet 2								
Bit offset	55	54	53	52	51	50	49	48
Subindex	14			13				
Value	0	1	0	1	1	0	1	0
Example	LED 7 Intensity: 5				LED 7 Color: Violet			

Octet 3								
Bit offset	47	46	45	44	43	42	41	40
Subindex	12			11				
Value	0	1	0	1	1	0	1	1
Example	LED 6 Intensity: 5				LED 6 Color: Magenta			

Octet 4								
Bit offset	39	38	37	36	35	34	33	32
Subindex	10			9				
Value	0	1	0	1	1	0	1	0
Example	LED 5 Intensity: 5				LED 5 Color: Violet			

Octet 5								
Bit offset	31	30	29	28	27	26	25	24
Subindex	8			7				
Value	1	0	1	0	0	0	1	1
Example	LED 4 Intensity: 10				LED 4 Color: Amber			

Octet 6								
Bit offset	23	22	21	20	19	18	17	16
Subindex	6			5				
Value	1	0	1	0	0	1	1	0
Example	LED 3 Intensity: 10				LED 3 Color: Spring Green			

Octet 7								
Bit offset	15	14	13	12	11	10	9	8
Subindex	4			3				
Value	1	0	1	0	0	0	1	1
Example	LED 2 Intensity: 10				LED 2 Color: Amber			

Octet 8								
Bit offset	7	6	5	4	3	2	1	0
Subindex	2			1				
Value	1	0	1	0	0	1	1	0
Example	LED 1 Intensity: 10				LED 1 Color: Spring Green			

Audible-Only Models

Multifunction Mode

Multifunction Mode			
Subindex	Name	Number of Bits	Data Values
1	State	2	0 = State 1 1 = State 2 2 = State 3 3 = State 4

Multifunction Mode Example Process Data Out

Octet 0								
Bit offset	7	6	5	4	3	2	1	0
Subindex	-	-	-	-	-	-	1	
Value	-	-	-	-	-	-	1	0
Example	-	-	-	-	-	-	Multifunction Mode State: State 3	

Advanced Mode

Advanced Mode			
Subindex	Name	Number of Bits	Data Values
1	Audible Feedback	2	0 = Off, 3 = On
2	Audible Volume	2	0 = Off, 1 = Low, 2 = Medium, 3 = High
3	Audible Type	4	0 = Pulse 1 = Wobble 2 = Strobe 3 = Whoop 4 = Staccato 5 = Siren 6 = Continuous 1 7 = Continuous 2 9 = Jingle 10 = Melody 1 11 = Melody 2 12 = Melody 3 13 = Custom

Advanced Mode Example Process Data Out

Octet 0								
Bit offset	7	6	5	4	3	2	1	0
Subindex	3			2			1	
Value	0	1	1	0	1	1	1	1
Example	Audible Type: Continuous 1				Audible Volume: High		Audible Feedback: On	

Parameters Set Using IO-Link

RGB7 Models

These parameters can be read from and/or written to an IO-Link model of the K50 Pro Compact with Audible (RGB7 models only).

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
0	1-16	Direct Parameter Page 1 (incl. Vendor ID & Device ID)				rw		
1	1-16	Direct Parameters Page 2				rw		
2		Standard Command		130 = Restore Factory Settings		wo		
3-11								
		Device Access Locks						
12	1	Parameter (write) Access Lock	1	0 = off, 1 = on	0	rw	y	
	2	Data Storage Lock	1	0 = off, 1 = on	0	rw	y	
	3	Local Parameterization Lock	1	0 = off, 1 = on		rw	y	
	4	Local User Interface Lock	1	0 = off, 1 = on		rw	y	
13-15								
16		Vendor Name string		Banner Engineering Corporation		ro		
17		Vendor Text string		More Sensors. More Solutions.		ro		
18		Product Name string				ro		
19		Product ID string		K50PCLRGB7KAQ K50PCLRGB7KAQP		ro		
20		Product Text string		K50 Pro Compact Audible with IOL		ro		
21		Serial Number				ro		
22		Hardware Revision				ro		
23		Firmware Version				ro		
24		App Specific Tag (user defined)				rw	y	
25-35								
36		Device Status	8	0 = Device is OK 1 = Maintenance required 2 = Out of specification 3 = Functional check 4 = Failure 5-255 = Reserved		ro		
37	1-6	Detailed Device Status	Array[6] of 3-octet			ro		
38-79								
80		Operating Mode	3	0 = Multicolor 2 = Advanced 3 = LED Control 4 = Demo	2	rw	y	
		Custom Animation Settings						
81	1	Custom Intensity (0 - 100%)	8	0-100	100	rw	y	
	2	Custom Flash Rate (0.5 - 25.5 Hz)	8	5-255	15	rw	y	
	3	Restrict To Gamut	8	0 = Off, 1 = On	0	rw	y	
82		State 1 Parameters						

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
	1	Animation Type	4	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Rotate 6 = Chase 7 = Intensity Sweep 8 = Color Sweep 9 = Sequence 10 = Wave 11 = Double Wave	1	rw	y	
	2	Animation Direction	1	0 = CW, 1 = CCW	false	rw	y	
	3	Animation Pattern	3	0 = Flash, 1 = Strobe, 2 = Three Pulse, 3 = SOS, 4 = Random	0	rw	y	
	4	Animation Speed	2	0 = Slow, 1 = Medium, 2 = Fast, 3 = Custom	1	rw	y	
	5	Audible Feedback	2	0 = Off, 2 = Animation Pattern ⁸ , 3 = On	0	rw	y	
	6	Off Delay Type	1	0 = Leading Edge, 1 = Trailing Edge	false	rw	y	
	7	Off Delay (ms)	16	0-65535	0	rw	y	
	8	Static Sequence Value (0-225)	8	0-225	0	rw	y	
	9	Sequence Start Location	3	0 = LED1, 1 = LED2, 2 = LED3, 3 = LED4, 4 = LED5, 5 = LED6, 6 = LED7, 7 = LED8	0	rw	y	
	10	Color 1	5	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom1 15 = Custom2	0	rw	y	
	11	Color 1 Intensity	3	0 = High, 1 = Medium, 2 = Low, 3 = Off, 4 = Custom	0	rw	y	
	12	Color 2	5	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom1 15 = Custom2	0	rw	y	
	13	Color 2 Intensity	3	0 = High, 1 = Medium, 2 = Low, 3 = Off, 4 = Custom	0	rw	y	
	14	Audible Volume	2	0 = Off, 1 = Low, 2 = Medium, 3 = High	1	rw	y	
	15	Audible Type	6	0 = Pulse 1 = Wobble 2 = Strobe 3 = Whoop 4 = Staccato 5 = Siren 6 = Continuous 1 7 = Continuous 2 9 = Jingle 10 = Melody 1 11 = Melody 2 12 = Melody 3 13 = Custom	6	rw	y	
83		State 2 Parameters (same structure as Index 82)						
84		State 3 Parameters (same structure as Index 82)						
85		State 4 Parameters (same structure as Index 82)						
86	Custom Color 1 (subindex access not supported)							
	1	Red	8	0-255	255	rw	y	
	2	Green	8	0-255	255	rw	y	
87	Custom Color 2 (subindex access not supported)							
	1	Red	8	0-255	255	rw	y	
	2	Green	8	0-255	255	rw	y	
88	Custom Audible Tone (subindex access not supported)							
	1	Audible Type	4	0 = Beep, 1 = Sweep, 2 = Tone	0	rw		
	2	Sweep Type	4	0 = Up, 1 = Down, 2 = Up Down, 3 = Down Up	0	rw		
	3	Frequency 1	4	0 = Off, 1 = Low, 2 = Standard, 3 = High	0	rw		
	4	Frequency 2	4	0 = Off, 1 = Low, 2 = Standard, 3 = High	0	rw		

⁸ Flash and Two Color Flash animations only.

Audible-Only Models

These parameters can be read from and/or written to an IO-Link model of the K50 Pro Compact with Audible (Audible-Only models).

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
0	1-16	Direct Parameter Page 1 (incl. Vendor ID & Device ID)				rw		
1	1-16	Direct Parameters Page 2				rw		
2		Standard Command		130 = Restore Factory Settings		wo		
3-11								
Device Access Locks								
12	1	Parameter (write) Access Lock	1	0 = off, 1 = on	0	rw	y	
	2	Data Storage Lock	1	0 = off, 1 = on	0	rw	y	
	3	Local Parameterization Lock	1	0 = off, 1 = on		rw	y	
	4	Local User Interface Lock	1	0 = off, 1 = on		rw	y	
13-15								
16		Vendor Name string		Banner Engineering Corporation		ro		
17		Vendor Text string		More Sensors. More Solutions.		ro		
18		Product Name string				ro		
19		Product ID string		K50PCLKAQ K50PCLKAQP		ro		
20		Product Text string		K50 Compact Audible with IOL		ro		
21		Serial Number				ro		
22		Hardware Revision				ro		
23		Firmware Version				ro		
24		App Specific Tag (user defined)				rw	y	
25-35								
36		Device Status	8	0 = Device is OK 1 = Maintenance required 2 = Out of specification 3 = Functional check 4 = Failure 5-255 = Reserved		ro		
37	1-6	Detailed Device Status	Array[6] of 3-octet			ro		
38-79								
80		Operating Mode	3	0 = Multifunction 2 = Advanced	2	rw	y	
State 1 Parameters								
81	1	Audible Feedback	2	0 = Off, 3 = On	0	rw	y	
	2	Audible Volume	2	0 = Off, 1 = Low, 2 = Medium, 3 = High	1	rw	y	
	3	Audible Type	4	0 = Pulse 1 = Wobble 2 = Strobe 3 = Whoop 4 = Staccato 5 = Siren 6 = Continuous 1 7 = Continuous 2 9 = Jingle 10 = Melody 1 11 = Melody 2 12 = Melody 3 13 = Custom	6	rw	y	
82		State 2 Parameters (same structure as Index 81)						
83		State 3 Parameters (same structure as Index 81)						
84		State 4 Parameters (same structure as Index 81)						
Custom Audible Tone (subindex access not supported)								
85	1	Audible Type	4	0 = Beep, 1 = Sweep, 2 = Tone	0	rw		
	2	Sweep Type	4	0 = Up, 1 = Down, 2 = Up Down, 3 = Down Up	0	rw		
	3	Frequency 1	4	0 = Off, 1 = Low, 2 = Standard, 3 = High	0	rw		
	4	Frequency 2	4	0 = Off, 1 = Low, 2 = Standard, 3 = High	0	rw		

IO-Link Events

Events and Error Types are acyclic transmissions from the IO-Link device to the IO-Link master. Events can be error messages and/or warning or maintenance data.

Event Types		
Code	Type	Description
0 (0x0000)	Notification	No malfunction
20480 (0x5000)	Error	Device hardware fault/Device exchange

Error Types			
Code	Additional Code	Name	Description
128 (0x80)	0 (0x00)	Device application error - no details	Service has been refused by the device application and no detailed information of the incident is available
	17 (0x11)	Index not available	Access occurs to a not existing device
	18 (0x12)	Subindex not available	Access occurs to a not existing subindex
	32 (0x20)	Service temporarily not available	Parameter is not accessible because of the current state of the device application
	35 (0x23)	Access denied	Write access on a read-only parameter
	48 (0x30)	Parameter value out of range	Written parameter value is outside its permitted value range
	49 (0x31)	Parameter value above limit	Written parameter value is above its specific value limit
	51 (0x33)	Parameter length overrun	Written parameter length is above its predefined length
	52 (0x34)	Parameter length underrun	Written parameter length is below its predefined length
	53 (0x35)	Function not available	Written command is not supported by the device application
	54 (0x36)	Function temporarily unavailable	Written command is not available because of the current state of the device application
	65 (0x41)	Inconsistent parameter set	Parameter inconsistencies were found at the end of the block parameter transfer, device plausibility check failed