



# IO-Link Parameter Datasheet

Power supply

PS1000-A9-24.40-IO

Support: fa-info@pepperl-fuchs.com  
Internet: www.pepperl-fuchs.com

DOCT-7243A - Version 1.00.001 / 2021-12-15

## General Information

### Device Identification

Vendor ID	1 (0x0001)
Device ID	999425 (0x0F4001)

### Communication Characteristics

IO-Link revision	V1.1 (specification V1.1.2)
IO-Link backward compatibility	n/a
Data transmission rate	COM3 (230.4 kbit/s)
Min. cycle time	2.0 ms
Process data input	6 byte
Process data output	n/a
SIO mode support	no
Compatible master port type	Class A, Class B

### Features

Data Storage	Yes
Block Parameterization	Yes

### Profile

Identification and Diagnosis	16384 (0x4000)

## Supported Product Variants

Product ID	Product Name	Description	Connector
70103526	PS1000-A9-24.40-IO	Power supply, input voltage: 3AC 380-400V wide range with fuses, output: 24V, 40A, full load efficiency > 95%, low inrush current, parallel mode support, remote control for output voltage and shutdown.	Plug, M12, 3-pin

## Connection

Connection Diagram	Description
	<p><b>Plug, M12, 3-pin</b></p> <p>1: L+</p> <p>3: L-</p> <p>4: C/Q</p>

## Process Data

### Process Data Input

Sub	Name	Data type	Length	Bitoffs.	Value	Unit	Description
.1	DC Output Current	UInteger	16 bit	32		A	Shows the current output current measured at the power supply terminals. (Calculation: gradient 0.00390625, offset 0.00)
.2	DC Output Voltage	UInteger	16 bit	16		V	Shows the current output voltage measured at the power supply terminals. (Calculation: gradient 0.00390625, offset 0.00)
.3	AC Input Voltage (RMS)	UInteger	16 bit	0		V	Shows the measured RMS input voltage at the power supply terminals. (Calculation: gradient 0.0625, offset 0.00)

## Parameter Data

### Identification

Index	Parameter	Access	Data type	Length	Default	Description	DS	R
16 (0x10)	Vendor Name	ro	String	13 byte	Pepperl+Fuchs	The vendor name that is assigned to a Vendor ID.		
17 (0x11)	Vendor Text	ro	String	29 byte	www.pepperl-fuchs.com/io-link	Additional information about the vendor.		
18 (0x12)	Product Name	ro	String	max. 30 byte	See table <i>Supported Product Variants</i>	Complete product name.		
19 (0x13)	Product ID	ro	String	8 byte	See table <i>Supported Product Variants</i>	Vendor-specific product or type identification (e.g., item number or model number).		
20 (0x14)	Product Text	ro	String	max. 30 byte	Power supply	Additional product information for the device.		
21 (0x15)	Serial Number	ro	String	14 byte		Unique, vendor-specific identifier of the individual device.		
22 (0x16)	Hardware Revision	ro	String	7 byte	HW**.**	Unique, vendor-specific identifier of the hardware revision of the individual device.		
23 (0x17)	Firmware Revision	ro	String	7 byte	FW**.**	Unique, vendor-specific identifier of the firmware revision of the individual device.		
24 (0x18)	Application Specific Tag	rw	String	max. 32 byte	Your automation, our passion.	Possibility to mark a device with user- or application-specific information.	Y	F
25 (0x19)	Function Tag	rw	String	max. 32 byte	***	Possibility to mark a device with function-specific information.	Y	F
26 (0x1A)	Location Tag	rw	String	max. 32 byte	***	Possibility to mark a device with location-specific information.	Y	F

Diagnosis											
Index .sub	Parameter	Access	Data type	Length	Bitoffs.	Default	Value	Unit	Description	DS	R
36 (0x24)	Device Status	ro	UInteger	8 bit		0	0 1 2 3 4		Indicator for the current device condition and diagnosis state. <i>Device is OK</i> <i>Maintenance required</i> <i>Out of specification</i> <i>Functional check</i> <i>Failure</i>		F
37 (0x25)	Detailed Device Status	ro	Array <sup>50</sup>	15 byte 5 items					List of all currently pending events in the device. <i>See Event Codes</i>		F
	.1 Element 1		Octetstr	3 byte	96	0					
	.. ..		..	..	..	0					
	.5 Element 5		Octetstr	3 byte	0	0					
64 (0x40)	Parameter Memory	ro	UInteger	8 bit			0 1 2		Indicates the status of the persistent memory. An error indicates an occurred problem, which could be recovered, a failure is a non-recoverable error. The unit has to be replaced. <i>Ok</i> <i>Error (recovered)</i> <i>Failure</i>		
67 (0x43)	Remaining Lifetime Indicator	ro	UInteger	8 bit			0 1 2 3 4		Indicates the estimated remaining lifetime based on the power supply's capacitor temperature. An expired lifetime does not indicate a failure, but the originally specified values might be impacted. Preventive power supply exchange is recommended. <i>Below 10%</i> <i>10% to 25%</i> <i>25% to 50%</i> <i>50% to 75 %</i> <i>Above 75</i>		
68 (0x44)	Relative Remaining Lifetime	ro	UInteger	8 bit			0 .. 100	%	Shows the estimated remaining lifetime based on the power supply's capacitor temperature. An expired lifetime does not indicate a failure, but the originally specified values might be impacted. Preventive power supply exchange is recommended.		
73 (0x49)	Operating Time	ro	Record <sup>50</sup>	6 byte					Shows the overall operating time since initial commissioning in hours and minutes.		
	.1 Hours	ro	UInteger	32 bit	8			h	Shows the time of operation in hours.		
	.2 Minutes	ro	UInteger	8 bit	0			min	Shows the fraction of hours in minutes.		
74 (0x4A)	Transient Count	ro	UInteger	32 bit			0 .. 7200000		Shows the overall count of significant transients on the power supply input since initial commissioning.		
80 (0x50)	Power Cycle Count	ro	UInteger	32 bit			0 .. 7200000		Shows the number of power cycles since initial commissioning.		

Parameterization & Configuration											
Index .sub	Parameter	Access	Data type	Length	Bitoffs.	Default	Value	Unit	Description	DS	R
100 (0x64)	Output Voltage	rw	UInteger	16 bit		15.0	15.0 .. 30.0  (3840 .. 7680)	V	Defines the setpoint for the output voltage.  (Calculation: gradient 0.00390625, offset 0.00)	Y	F
101 (0x65)	Supply Shutdown	rw	UInteger	8 bit		0	        0 1		Sets the unit into a power shutdown mode if active. The unit turns off the DC voltage output and is set into a low power mode. The unit is set to normal operating mode on a power cycle and the value automatically reset to the default value.  <i>Inactive</i> <i>Active</i>		F
102 (0x66)	Parallel Mode	rw	UInteger	8 bit		0	        0 1		Defines if the unit can be operated in parallel mode. If enabled, the unit can be cascaded or connected in parallel to another power supply for power sharing or redundancy.  <i>Disabled</i> <i>Enabled</i>	Y	F
12 (0x0C)	Device Access Locks	rw	Record <sup>50</sup>	2 byte					The access to the device parameters can be restricted by setting appropriate flags within this parameter.	Y	F A
.2	Data Storage	rw	Boolean	1 bit	1	0	        0 1		This lock prevents the write access to the device parameters via the data storage mechanism. <b>Note: This feature is implemented only for compatibility reasons. Do not set this flag to 'Locked', as this will inhibit the function Data Storage between master and device and lead to an unintended system behavior.</b>  <i>Unlocked</i> <i>Locked</i>	Y	F A

Observation											
Index .sub	Parameter	Access	Data type	Length	Bitoffs.	Default	Value	Unit	Description	DS	R
36 (0x24)	Device Status	ro	UInteger	8 bit		0			Indicator for the current device condition and diagnosis state. <i>See Diagnosis – Device Status</i>		F
65 (0x41)	Operating Status	ro	Record <sup>50</sup>	2 byte					Indicates the status information for the operating conditions of the device.		
.1	DC Output Voltage OK	ro	Boolean	1 bit	0		        0 1		Indicates that the output voltage is operating at above 90 percent of the adjusted output voltage.  <i>Inactive</i> <i>Active</i>		
.2	DC Output Undervoltage	ro	Boolean	1 bit	1		        0 1		Indicates that the output voltage is more than 10% below the adjusted output voltage. Check supply and load conditions.  <i>Inactive</i> <i>Active</i>		

Observation										
.3	Output Power Exceeded	ro	Boolean	1 bit	2				0 1	Indicates that the output current exceeds the maximum current by more than 5% for more than 3s. Check load conditions.  <i>Inactive</i> <i>Active</i>
.4	Internal Overtemperature	ro	Boolean	1 bit	3				0 1	Indicates that the device internal temperature is higher than 95 °C. Check load conditions and for sufficient airflow.  <i>Inactive</i> <i>Active</i>
.5	Airflow Overtemperature	ro	Boolean	1 bit	4				0 1	Indicates that the airflow temperature is higher than 65 °C. Check for external heat sources.  <i>Inactive</i> <i>Active</i>
.6	Output Current Overload	ro	Boolean	1 bit	5				0 1	Indicates that the output current has exceeded the maximum permissible current limit. Check load conditions.  <i>Inactive</i> <i>Active</i>
.7	AC Input Overvoltage	ro	Boolean	1 bit	6				0 1	Indicates that the input voltage is higher as the permissible voltage limit. Check power supply and connections.  <i>Inactive</i> <i>Active</i>
.8	AC Input Undervoltage	ro	Boolean	1 bit	7				0 1	Indicates that the input voltage is lower as the required voltage limit for operation. Check power supply and connections  <i>Inactive</i> <i>Active</i>
.9	No Power Supply	ro	Boolean	1 bit	8				0 1	Indicates that no data are available from the power supply section. The power supply output is deactivated. Check power supply and connections.  <i>Inactive</i> <i>Active</i>
.10	Estimated Lifetime Exceeded	ro	Boolean	1 bit	9				0 1	Indicates that the operating time exceeds the calculated lifetime. This does not indicate a failure of the unit, but wear-out and aging might impact the originally specified values. A preventive exchange of the power supply is recommended.  <i>Inactive</i> <i>Active</i>
.11	AC Input 2-Phase Supply	ro	Boolean	1 bit	10				0 1	Indicates that only 2 phases of the 3-phase system are detected at the AC input. Check power supply and connections.  <i>Inactive</i> <i>Active</i>
.12	Humidity Exceeded	ro	Boolean	1 bit	11				0 1	Indicates that the humidity inside the unit is too high. Check environment and ventilation.  <i>Inactive</i> <i>Active</i>
66 (0x42)	Load Indicator	ro	UInteger	8 bit					0 1 2 3 4	Indicates the relation between the average output current over the last two minutes and the maximum specified load current.  <i>Below 5%</i> <i>5% to 25%</i> <i>25% to 50%</i> <i>50% to 75 %</i> <i>Above 75</i>

Observation											
69 (0x45)	Airflow Temperature	ro	Integer	16 bit			-40 .. 150	°C	Shows the current observed temperature on the bottom side of the power supply. Since the device is convection cooled, this value gives an indication on the ambient temperature. This feature requires an upright mounting position. (Calculation: gradient 0.0078125, offset 0.00)		
							(-5120 .. 19200)				
70 (0x46)	Max. Airflow Temperature	ro	Integer	16 bit			-40 .. 150	°C	Shows the maximum observed temperature on the bottom side of the power supply since the last power cycle. Since the device is convection cooled, this value gives an indication on the ambient temperature. This feature requires an upright mounting position. (Calculation: gradient 0.0078125, offset 0.00)		
							(-5120 .. 19200)				
71 (0x47)	Internal Temperature	ro	Integer	16 bit			-40 .. 150	°C	Shows the current observed internal temperature of the power supply. (Calculation: gradient 0.0078125, offset 0.00)		
							(-5120 .. 19200)				
72 (0x48)	Max. Internal Temperature	ro	Integer	16 bit			-40 .. 150	°C	Shows the maximum observed internal temperature of the power supply since the last power cycle. (Calculation: gradient 0.0078125, offset 0.00)		
							(-5120 .. 19200)				
73 (0x49)	Uptime	ro	Record <sup>SO</sup>	6 byte					Shows the overall operating time since the last power cycle in hours and minutes.		
	.1	Hours	ro	UInteger	32 bit	8		h	Shows the time of operation in hours.		
	.2	Minutes	ro	UInteger	8 bit	0		min	Shows the fraction of hours in minutes.		
75 (0x4B)	Current Transient Count	ro	UInteger	32 bit			0 .. 720000		Shows the current count of significant transients on the power supply input within the last two minutes.		
76 (0x4C)	AC Input Voltage (RMS)	ro	UInteger	16 bit				V	Shows the measured RMS input voltage at the power supply terminals. (Calculation: gradient 0.0625, offset 0.00)		
77 (0x4D)	DC Output Voltage	ro	UInteger	16 bit				V	Shows the current output voltage measured at the power supply terminals. (Calculation: gradient 0.00390625, offset 0.00)		
78 (0x4E)	DC Output Voltage Setpoint	ro	UInteger	16 bit				V	Shows the current output current measured at the power supply terminals. (Calculation: gradient 0.00390625, offset 0.00)		
79 (0x4F)	DC Output Current	ro	UInteger	16 bit				A	Shows the current output current measured at the power supply terminals. (Calculation: gradient 0.00390625, offset 0.00)		

NOTE 1: The parameter data provide the attributes DS (Data Storage) and R (Reset behavior). The following rules apply:

DS: Parameter marked with 'Y' (yes) are exchanged with the master via the data storage mechanism.

R: Parameter marked with 'F' are reset to the default value upon reception of the command 'Restore Factory Settings'.

NOTE 2: Parameter with datatype Record or Array, which are marked with 'SO' can only be accessed over subindex 0 (whole parameter object). Subindex access to single items is not possible.

## Command Interface

Index	Parameter	Access	Data type	Length	Value	Description
2 (0x02)	System Command	wo	UInteger	8 bit	See command value	Command interface for applications. A positive acknowledge indicates the complete and correct finalization of the requested function.

Command Value	Command	Description
130 (0x82)	Restore Factory Settings	The parameter of the device are reset to factory settings. Note: A download of the data storage may be executed on the next power cycle and overwrite the factory default settings!

## Error Codes

Code	Additional code	Name	Description
128 (0x80)	17 (0x11)	Index not available	Read or write access attempt to a non-existing index.
128 (0x80)	18 (0x12)	Subindex not available	Read or write access attempt to a non-existing subindex of an existing index.
128 (0x80)	32 (0x20)	Service temporarily not available	Parameter not accessible due to the current state of the technology-specific application.
128 (0x80)	33 (0x21)	Service temporarily not available - local control	Parameter not accessible. The device is currently in an ongoing, locally controlled operation.
128 (0x80)	34 (0x22)	Service temporarily not available - device control	Parameter not accessible. The technology-specific application is currently in a remotely triggered operation.
128 (0x80)	35 (0x23)	Access denied	Write access to a read-only parameter or read access to write-only parameter.
128 (0x80)	48 (0x30)	Parameter value out of range	Written parameter value is outside of the permitted value range.
128 (0x80)	49 (0x31)	Parameter value above limit	Written parameter value is above its specified value range.
128 (0x80)	50 (0x32)	Parameter value below limit	Written parameter value is below its specified value range.
128 (0x80)	51 (0x33)	Parameter length overrun	Written parameter is longer than specified.
128 (0x80)	52 (0x34)	Parameter length underrun	Written parameter is shorter than specified.
128 (0x80)	53 (0x35)	Function not available	Written command is not supported by the technology-specific application.
128 (0x80)	54 (0x36)	Function temporarily unavailable	Written command is unavailable due to the current state of the technology-specific application.
128 (0x80)	64 (0x40)	Invalid parameter set	Written single parameter value collides with other existing parameter settings.
128 (0x80)	65 (0x41)	Inconsistent parameter set	Parameter set inconsistencies at the end of block parameter transfer. Device plausibility check failed.

## Event Codes

Code	Type	Name	Description
16912 (0x4210)	Warning	Device temperature overrun	Clear source of heat
25376 (0x6320)	Warning	Parameter error	Check datasheet and values
6144 (0x1800)	Warning	DC output undervoltage	The output voltage is more than 10% below adjusted output voltage. Check supply and load conditions.
6145 (0x1801)	Notification	Output power exceeded	The output current exceeds the maximum current by more than 5% for more than 3s. Check load conditions.
6146 (0x1802)	Warning	Output current overload	The output current has exceeded the maximum permissible current limit. Check load conditions.
6147 (0x1803)	Warning	AC input overvoltage	The input voltage is higher as the permissible voltage limit. Check power supply and connections
6148 (0x1804)	Warning	AC input undervoltage	The input voltage is lower as the required voltage limit for operation. Check power supply and connections.
6149 (0x1805)	Warning	No power supply	There are no data available from the power supply section. Check power supply and connections.
6150 (0x1806)	Warning	Estimated lifetime exceeded	Operating time exceeds the calculated lifetime. This does not indicate a failure of the unit, but wear-out and aging might impact the originally specified values. A preventive exchange of the power supply is recommended.
6151 (0x1807)	Warning	AC input 2-phase supply	Only 2 phases of the 3-phase system are detected at the AC input. Check power supply and connections
6152 (0x1808)	Warning	Humidity exceeded	The humidity inside the unit is too high. Check environment and ventilation.