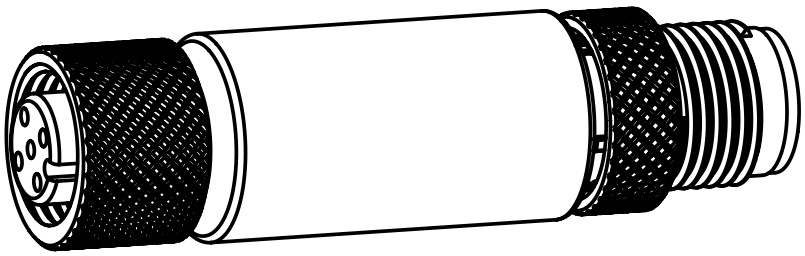
OMEGA™
a DwyerOmega brand

USER'S GUIDE

IF-IOL Series

IO-Link Converter



dwyeromega.com | info@dwyeromega.com

For latest product manuals:
dwyeromega.com/en-us/pdf-manuals

1 YEAR WARRANTY

Table of Contents

1. IO-Link Data Map 3
2. Communication Parameters 3
3. IO-Link Process Data In (Device to Master) 3
4. Parameters Set Using IO-Link 5
5. IO-Link Events 7

1. IO-Link Data Map

This document refers to the following IODD file: **Omega-IF-IOL-20250330-IODD1.1-en**
The IODD file and support files can be found on dwyeromega.com under the download section of the product family page.

2. Communication Parameters

The following communication parameters are used.

Parameter	Value
IO-Link revision	V1.1
Process Data In length	32 bits
Process Data Out length	N/A
Bit Rate	38400 bps
Minimum cycle time	3.6 ms

Parameter	Value
Port class	A
SIO mode	Yes
Smart Sensor Profile	Yes
Block parameterization	Yes
Data Storage	Yes

3. IO-Link Process Data In (Device to Master)

Process Data In is transmitted cyclically to the IO-Link master from the IO-Link device.
Two analog files are supported by the IODD file. The voltage model is presented in mV and the current mode is presented in µA.
If the model is the voltage version, then Process Data Input = value × 0.001 V.
If the model is the current version, then Process Data Input = value × 0.000001 A.

Process Data Input Configuration - Analog Data			
Subindex	**Name**	**Number of Bits**	**Data Values**
1	Measurement Value	32	The measurement device value

Example Process Data Input Configuration - Analog Data (Voltage Model)								
Octet 0								
Subindex	1	1	1	1	1	1	1	1
Bit offset	31	30	29	28	27	26	25	24
Value	0	0	0	0	0	0	0	0
Octet 1								
Subindex	1	1	1	1	1	1	1	1
Bit offset	23	22	21	20	19	18	17	16
Value	0	0	0	0	0	0	0	0
Octet 2								
Subindex	1	1	1	1	1	1	1	1
Bit offset	15	14	13	12	11	10	9	8
Value	0	0	0	0	0	0	0	1
Octet 3								
Subindex	1	1	1	1	1	1	1	1
Bit offset	7	6	5	4	3	2	1	0
Value	1	1	1	1	1	1	0	1

Examples based upon the values above
Measurement Value = 509
Scaled Measurement Value = 0.509 V

Process Data Input Configuration - Digital Measuring Sensor			
Subindex	**Name**	**Number of Bits**	**Data Values**
1	Measurement Value	16	The measurement device value.
2	Measurement Scale	8	

Example Process Data Input Configuration - Digital Measuring Sensor (Voltage Model)								
Octet 0								
Subindex	1	1	1	1	1	1	1	1
Bit offset	31	30	29	28	27	26	25	24
Value	0	0	0	0	0	0	0	1
Octet 1								
Subindex	1	1	1	1	1	1	1	1
Bit offset	23	22	21	20	19	18	17	16
Value	1	1	1	1	1	1	0	1
Octet 2								
Subindex	2	2	2	2	2	2	2	2
Bit offset	15	14	13	12	11	10	9	8
Value	0	0	0	0	0	0	1	1
Octet 3								
Subindex	///	///	///	///	///	///	///	///
Bit offset	7	6	5	4	3	2	1	0
Value								

Examples based upon the values above
Measurement Value = 509
Measurement Scale = -3
Scaled Measurement Value = 0.509 V

4. Parameters Set Using IO-Link

These parameters can be read from and/or written to an IF-IOL-001 or IF-IOL-002 converter. Also included is information about whether the variable in question is saved during Data Storage and whether the variable came from the IO-Link Smart Sensor Profile.

Unlike Process Data In, which is transmitted from the IO-Link device to the IO-Link master cyclically, these parameters are read or written acyclically as needed.

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	Smart Sensor Profile
0	1-16	Direct Parameter Page 1 (incl. Vendor ID & Device ID)			ro			
1	1-16	Direct Parameters Page 2				rw		
2		Standard Command		130 = Restore Factory Settings 162 = Start Discovery 163 = Stop Discovery		wo		y
3		Data Storage Index (devicespecific list of parameters to be stored)				rw		
4-11		Reserved by IO-Link Specification						
12		Device Access Locks						
12	1	Parameter Write Access Lock		0 = off, 1 = on	0	rw	y	
12	2	Data Storage Lock		0 = off, 1 = on	0	rw	y	
12	3	Local Parameterization Lock		0 = off, 1 = on	0	rw	y	
12	4	Local User Interface Lock		0 = off, 1 = on	0	rw	y	
13		Profile Characteristic				ro		
14		PDInput Descriptor				ro		
15		PDOutput Sescriptor				ro		
16		Vendor Name string		Omega		ro		
17		Vendor Text String		Omega Engineering, Inc.		ro		
18		Product Name string				ro		
19		Product ID string				ro		
20		Product Text String				ro		y
21		Serial Number				ro		
22		Hardware Version				ro		
23		Firmware Version				ro		y
24		App Specific Tag (user defined)				rw	y	y
25		Function Tag				rw	y	y
26		Location Tag				rw	y	y
36		Device Status	8-bit integer	0 = Device is okay 1 = Maintenance required 2 = Out of specification 3 = Functional check 4 = Failure 5..255 Reserved		ro		
37		Detailed Device Status	Array[6] of 3-octet			ro		
38-39		reserved						
40		Process Data Input		see Process Data In		ro		
41-57		unused/reserved						
60		BDC1 Setpoints						

60	1	Setpoint SP1	32-bit integer		0.004 A 0.2 V	rw		
60	2	Setpoint SP2	32-bit integer		0.02 A 10 V	rw		
61		BDC1 Configuration						
61	1	reserved	8-bit Uinteger					
61	2	reserved						
61	3	Hysteresis	16-bit Uinteger		0.0001 A 0.05 V	rw		
69		All-Time Run Time						
69	1	Run counter	32-bit Uinteger	0..2147483647		ro	y	
70		Resettable Run Time						
70	1	Run counter	32-bit Uinteger	0..2147483647	0	rw		
76		Vendor Specific Configuration						
76	1	Process Data Input Configuration	8-bit Uniteger	0 = Analog Value 1 = Digital Measurement Value	0	rw		
76	2	IOL Filter Time	16-bit Uinteger		200	rw		
78		All-Time Run Time Event Time						
78	1	Event Time	32-bit Uinteger	0..2147483647	0	rw	y	
79		Resettable Run Time Event Time						
79	1	Event Time	32-bit Uinteger	0..2147483647	0	rw	y	
86		Model Type	8-bit Uinteger	0 = Voltage, 1 = Current	0	ro		
16512		MDC Descriptor		Measuring Data Channel Descriptor - Smart Sensor Profile 2nd Edition				y
16512	1	Lower Limit	32-bit integer			ro		y
16512	2	Upper Limit	32-bit integer			ro		y
16512	3	Unit	16-bit integer	1209 = A, 1240 = V		ro		y
16512	4	Scale	8-bit integer	-6(µA), -3(mV)		ro		y

5. IO-Link Events

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

Code	Type	Name	Description
25376 (0x6320)	Error	Parameter error	Check data sheet and values
36000 (0x8CA0)	Warning	All-time Run Time Event	Event indicating the corresponding configured running time has elapsed.
36001 (0x8CA1)	Warning	Resettable Run Time Event	Event indicating the corresponding configured running time has elapsed.

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

OMEGA is a trademark of OMEGA ENGINEERING, INC. © Copyright OMEGA ENGINEERING, INC. All rights reserved. This document may not be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form, in whole or in part, without the prior written consent of OMEGA ENGINEERING, INC.

OMEGA™

a DwyerOmega brand

dwyeromega.com

M5806/0325

DWYEROMEGA™

Improving the world, one measurement at a time.™

Dwyer OMEGA™ ACT MILJOCO WEISS INSTRUMENTS UFM UNIVERSAL FLOW MONITORS