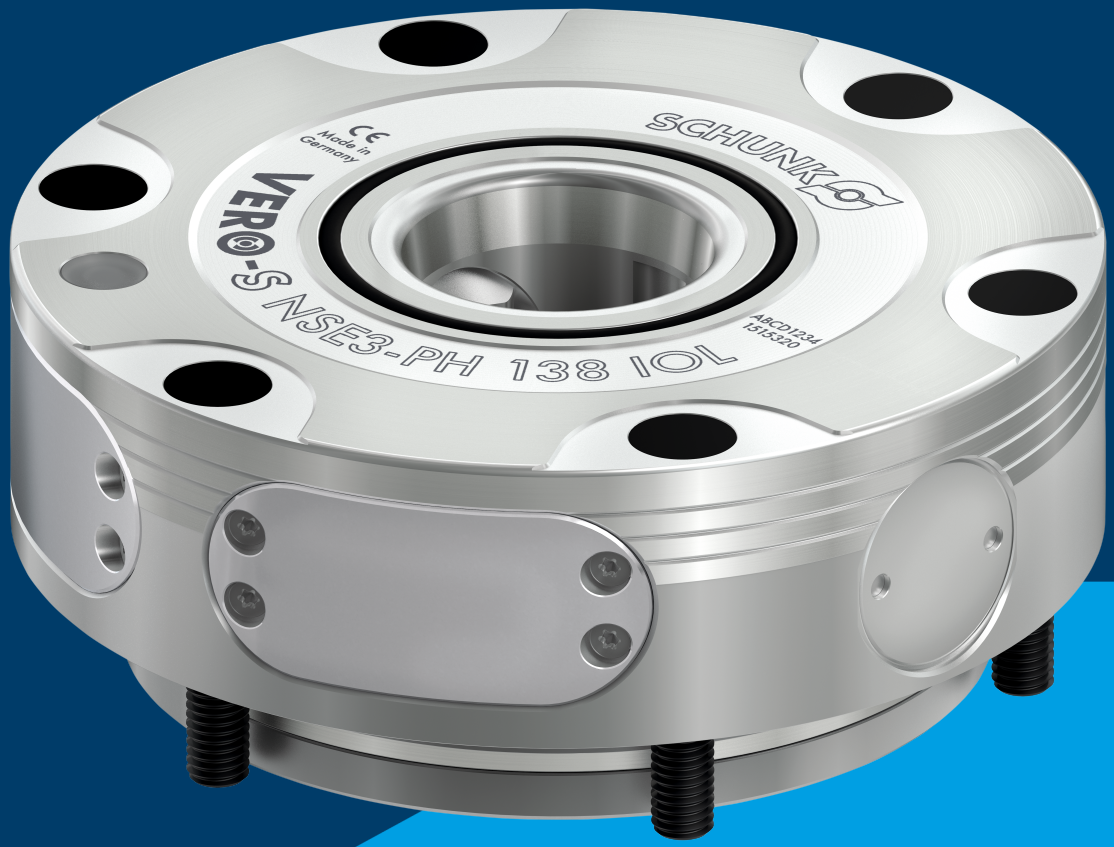

VERO-S quick-change pallet system NSE3-PH 138 IOL

Software manual

Hand in hand for tomorrow

Imprint

Technical changes:
We reserve the right to make alterations for the purpose of technical improvement.

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Dear Customer,

Thank you for trusting our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. Ask us questions and challenge us. We will find a solution!

Best regards,

Your SCHUNK team

Customer Management

Tel. +49-7572-7614-1300
Fax +49-7572-7614-1039

cmm@de.schunk.com

Please read the software manual in full and keep it close to the product.

Table of Contents

1 General

1.1 Validity

This version of the software manual describes the functions of the VERO-S NSE3-PH 138 IOL.

1.2 Applicable documents

- General Terms and Conditions *
- Operating manual of the products used *
- IO-Link Device Description (IODD) *

The documents labeled with an asterisk (*) can be downloaded from **www.schunk.com**.

1.3 IO-Link Basics

Fieldbus-independent interface

IO-Link is a point-to-point interface for connecting a SCHUNK product (IO-Link device) to a control system (IO-Link master). Via this interface it is possible to transfer parameters, process data and diagnostic data. Parameter data are transfered to the IO-Link device from the master (actuator or sensors). In the opposite direction, the master receives cyclical process data and, if required, service and diagnostic data.

Further information on IO-Link can be found at **www.io-link.com**.

1.4 Data exchange

Cyclical data exchange

To exchange cyclic process data between an IO-Link device and a controller, the IO-Link data is transferred from the IO-Link master to the previously set address ranges. The user program of the controller accesses the process values via these addresses and processes them. Conversely, the cyclic data exchange is performed from the controller to the IO-Link device.

Acyclical data exchange

The exchange of acyclic data, such as parameters or events, takes place over a specified index and sub-index range. Using the index and sub-index range, targeted access of the device data is possible (e.g. for reparameterization of the device or master during ongoing operation).

1.5 Data types

The data types mentioned in this version of the software manual are designated according to the "IO-Link Interface and System Specification", Annex F, Version 1.1.9, which is available at www.io-link.com. The corresponding designation according to IEC 61131-3 (PLC standard) can be found in the following table:

Description	IO-Link standard	PLC standard IEC 61131-3	Bit length
Logical value	BooleanT	BOOL	1 bit
Integer	IntegerT (8)	SINT	8 bit
	IntegerT (16)	INT	16 bit
	IntegerT (32)	DINT	32 bit
	IntegerT (64)	LINT	64 bit
Natural number	UIntegerT (8)	USINT	8 bit
	UIntegerT (16)	UINT	16 bit
	UIntegerT (32)	UDINT	32 bit
	UIntegerT (64)	ULINT	64 bit
Floating-point numbers	Float32T	REAL	32 bit
	Float64T	LREAL	64 bit
Characters	StringT (x)	STRING	x bit

⚠ WARNING

Changing/manipulating protected parameters can cause damage to the module or misinterpretation of states.

2 Incoming process data (status word)

To determine the current device status and clamping status, as well as the current device temperature and raw values, the following cyclic data is made available:

Byte	Bit	Bit offset	Data type	[Values] Description
0	1	159	BooleanT	[true]: Ready for operation; [false]: otherwise
	2	158	BooleanT	[true]: Drive enabled; [false]: otherwise
	3	157	BooleanT	[true]: Temperature protection active; [false]: otherwise
	4	156	BooleanT	[true]: Drive closes; [false]: otherwise
	5	155	BooleanT	[true]: Drive opens; [false]: otherwise
	6	154	BooleanT	[true]: Module closed; [false]: otherwise
	7	153	BooleanT	[true]: Module opened; [false]: otherwise
	8	152	BooleanT	[true]: Pallet present; [false]: otherwise
1	1	151		
	2	150		
	3	149	BooleanT	Timeout
	4	148	BooleanT	Incorrect setting
	5	147	BooleanT	Maximum cycles reached
	6	146	BooleanT	Minimum cycles not reached
	7	145	BooleanT	Cleaning required
	8	144	BooleanT	Service required
2–3	–	128	Integer T16	Pump cycles
4–5	–	112	Integer T16	Clamping slide sensor
6–7	–	96	Integer T16	Clamping slide sensor uncompensated
8–11	–	64	Float T32	Presence sensor
12–15	–	32	Float T32	Module temperature
16–17	–	16	Integer T16	Drive temperature
18–19	–	0	Integer T16	Power supply unit temperature

Further information is provided via the acyclic device data ▶ 4 [🗋 8].

3 Outgoing process data (control word)

To execute movement commands, the following cyclical process data from the master is received by the VERO-S NSE3-PH 138 IOL (device) and processed accordingly:
Basically, two operating modes are possible:

- Manual mode with specification of a number of pump cycles.
- Automatic mode without further specification by internal control.

Move commands are executed by setting the corresponding bit to the value 1: [true]. If more than one command is set at the same time, none of the set commands are executed, a currently executed command is interrupted and the drive is stopped.

Byte	Bit	Bit offset	Data type	[Values] Description
0	1	79	-	-
	2	78	-	-
	3	77	-	-
	4	76	BooleanT	[true]: Automatic mode Close; [false]: otherwise
	5	75	BooleanT	[true]: Automatic mode Open; [false]: otherwise
	6	74	BooleanT	[true]: Manual mode Close; [false]: otherwise
	7	73	BooleanT	[true]: Manual mode Open; [false]: otherwise
	8	72	BooleanT	[true]: Manual mode Stop; [false]: otherwise
2-3	-	48	Integer T16	Pump cycles

4 Acyclical data

Identification data, monitoring values, parameters and diagnostic information including events and error messages are transmitted acyclically from the IO-Link master on request and can be changed depending on the applicable access rights.

4.1 Identification data

The following acyclic data is provided for identification:

Index	Name	Data type	Access rights *	[Values] description
16	Manufacturer name	StringT (64)	ro	[SCHUNK GmbH & Co. KG]
17	Manufacturer text	StringT (64)	ro	[schunk.com]
18	Product name	StringT (64)	ro	{Produkt name e.g.: VERO-S NSE3-PH 138 IOL}
19	Product ID	StringT (64)	ro	{material number}
20	Product text	StringT (64)	ro	[VERO-S Monitoring System]
21	Serial number	StringT (16)	ro	{Alphanumeric serial number}
22	Hardware version	StringT (64)	ro	[HW-V{Version}] (Electronics)
23	Firmware version	StringT (64)	ro	[HW-V{Version}]
24	Application-specific marking	StringT (32)	rw	{empty textfield for usage specific identification}
25	Function tag	StringT (32)	rw	
26	Location tag	StringT (32)	rw	

* ro (read only), rw (read and write), wo (write only)

4.2 Parameter

The following acyclic data is provided for setting generally accessible parameters:

Index	Name	Data type	Access rights *	[Values] description
presence sensor				
100	Presence sensor value compensated	Float32T	ro	Temperature-compensated raw value of the presence sensor in MHz
101	Threshold → Present	Float32T	rw	Threshold value for process data clamping state bit 7 – "Presence detected" in MHz
102	Threshold factory settings	Float32T	ro	Factory setting for index 101 in MHz
103	Teach command	UInteger(T) 8	wo	[0] no command [1] start teach process position absent [2] start teach process position present [255] load factory settings
104	Presence sensor teach response	UInteger(T) 8	ro	[0] No message [1] Teaching active [3] Teaching successful [4] Error
153	Device temperature presence teaching	Float32T	ro	Device temperature in °C at the last execution of the presence teaching process

* ro (read only), rw (read and write), wo (write only)

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