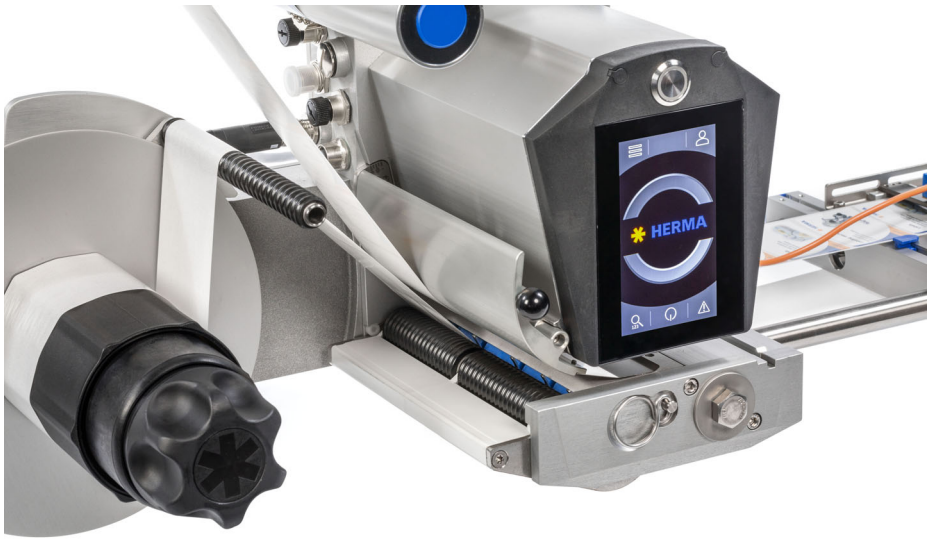
Technical Information

HERMA 500



Color printing recommended

Introduction

This document provides technical information for the HERMA 500 applicator, which supplements the accompanying operating instructions.

Further information is available at all times in our service portal at www.herma.com/machines.

Disconnect the applicator from the power supply before working on the parts of the electrical equipment.

After you disconnect the HERMA 500 applicator from the power supply, wait at least five minutes before opening the housing or touching the connection pins. RESIDUAL VOLTAGES!

Properly mount the applicator before power is applied.

Copyright

Table of contents

.....

Variants of the HERMA 500

HERMA 500 IO

Applicator with inputs and outputs (“**I/O**”) for connection to an external controller such as a PLC. These digital inputs/outputs are provided by X10 plug connections (standard signals) and X19 plug connections (additional signals). A CAN bus with CAN bus controller is also available.

HERMA 500 IE

Applicator providing modern interfaces for **I**ndustrial **E**thernet (Ethernet-based “fieldbus”), including Profinet (Siemens) or EtherNet/IP (Rockwell). A separate board is integrated for this purpose. This board can respond to just one previously specified fieldbus. The X3 (“input”) and X4 (“output”) plug connections are used for the connection. The X3 plug connection is used for the initial connection. Additional clients can be connected using the X4 plug connection, for example additional HERMA 500 basic units.
A CAN bus with CAN bus controller is also available for the IE applicator.

A web server and an OPC UA server are integrated.

1 Connections on the HERMA 500

HERMA 500 IO

Master encoder

Standard I/O interfaces (X10)

Additional I/O interfaces (X19)

Power IN

Ethernet interface

Power OUT

CAN bus

Start signal (X16)

HERMA 500 IE

Master encoder

Industrial Ethernet (X3) →

Industrial Ethernet (X4) ←

Power IN

Ethernet interface

Power OUT

CAN bus

Start signal (X16),
I/O interfaces (X9, optional)

HERMA 500 IO/IE

Dispensing system, e.g. peel plate pivot pneumatic

Printer

Label sensor

.....

1.1 Specification of the connections

HERMA 500 IO and IE

1.1.1 Master encoder (X1)

A master encoder signaling device can be connected to synchronize between product and applicator speed.

X1	Designation	I/O	Description	Color	70039292
PIN (M8/A-coded)					X21
1	+24 V	OUT	Voltage supply (sensor)	Brown	X21.1
2	M_ENC_A	IN	Master encoder line A	White	X21.2
3	GND	OUT	Ground (sensor)	Blue	X21.3
4	M_ENC_B	IN	Master encoder line B	Black	X21.4

1.1.1.1 Technical information about the master encoder

Lines	A + B
Output	24 V (HTL level) Push-pull, 90° phase shift
Capacity	Max. 40 mA
Increments per revolution	≥ 1000 and ≤ 8000, as well as ≤ -1000 and ≥ -8000 Standard: 2000
Motion per revolution	≥ 20 mm and ≤ 400 mm Standard: 200 mm
Resolution	≥ 2.5 increments per mm and ≤ 400 increments per mm Standard: 10 increments per mm
Operating voltage	24 V DC
Power consumption	< 70 mA

1.1.2 Power IN (X2)

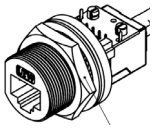
This connector is used to power the basic unit of the HERMA 500.

Specifications

Mains voltage	Wide range input 100 V – 240 V AC ±10%, 50/60 Hz
Max. power consumption	Approx. 400 VA +n * 100 W (n = number of motorized winder units)
Leakage current according to EN 60335-1	110 V AC: <0.35 mA 150 V AC: <0.5 mA 230 V AC: <0.7 mA
Fuses in the device	2x T 3.15 A type TR5

X2	Designation	I/O	Description	Color	
PIN (M12/s-coded)					
1	PE	IN	Protective earth	Green/ yellow	
2	L1	IN	Mains voltage (phase)	Black	
3	N	IN	Mains voltage (neutral)	Black	

1.1.3 Ethernet TCP/IP (X5)



Web interfaces are available via this connection. A web server and an OPC UA server are integrated in the applicator.

NOTICE

Settings for the Ethernet connection.
Standard setting: The applicator's IP address is 192.168.3.11 and the standard port is 5555.

The connection to a web front end will work with all standard web browsers.
The connection is optimized for Chrome browsers.
To establish a connection, enter the address http://192.168.3.11:5555 into your browser's address bar.

Note: If you cannot establish a connection, delete your browser's cache.

If necessary, you can assign your own unique IP address and a unique port.

As a rule, in order to open a web front end, the display device (PC, laptop, industrial controller, etc.) only needs to be in the same IP address range. With the standard IP address, for example, that would be 192.168.3.XXX (where XXX is a number between 0 and 255).

The Ethernet cable to be used must have an RJ45 plug on the applicator side.

NOTICE

Network security must be at a correspondingly high level. The HERMA 500 applicator must be part of a secure network with limited access.
If the applicator is connected to the Internet, we recommend strict use of a VPN or HTTPS channel.

The security methods required are determined by the efficiency of the other network elements (firewall, anti-virus protection and protection against the threat of malware).

We recommend changing the preset passwords and repeatedly changing these passwords at regular intervals (e.g. every 90 days).

New passwords must be clearly distinct from the old passwords.

Web server

Connection of an external screen (HMI) to visualize the internal display, for example the screen of a laptop computer or a tablet. If suitable interfaces are not available on the external HMI, a router can be connected and the connection established via a WLAN. Some of the available service functions are listed below:

> External parameterization of the applicator
> Backup of the applicator software
> Installation of a firmware update

OPC UA server

In order to use a OPC UA connection, modules are provided by HERMA with information about the application.

Note: The OPC connection is *not* real-time capable.

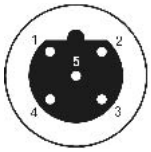
1.1.4 Power OUT (X8)

This connection is used to supply power to connected winder components (motorized unwinder, motorized rewinder, looping unit).

X8	Designation	I/O	Description	Color	
PIN (M12/s-coded)					
1	PE	IN	Protective earth	Green/ yellow	
2	L1	IN	Mains voltage (phase)	Black	
3	N	IN	Mains voltage (neutral)	Black	

1.1.5 CAN (X18)

For communication with the CAN bus controller.

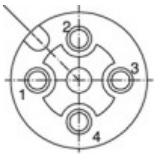


X18	Designation	I/O	Description	Color	70039292
PIN (M12/A-coded)					X38
1	PE/DRAIN		Protective earth	Gray	X38.1
2	+24 V	OUT	Power supply for I/Os and CAN bus controller	Red	X38.2
3	GND		Ground	Black	X38.3
4	CAN_H	I/O	CAN_H	White	X38.4
5	CAN_L	I/O	CAN_L	Blue	X38.5

.....

1.1.6 Start of labeling (X16)

The sensor for the start of labeling is connected here, e.g. a product light barrier.



X16	Designation	I/O	Description	Color	70039292
PIN	(M12/a-coded)				**X21**
1	+24 V	OUT	Voltage supply (sensor)	Brown	X21.1
2	GNDEXT		Ground (sensor)	White	X21.2
3					X21.3
4	START	IN	Applicator start	Black	X21.4

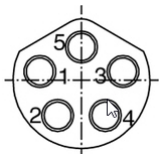
1.1.7 Transfer system (X6)

An optional dispensing system is connected here, e.g. a pneumatic pivoting dispensing plate.

X6	Designation	I/O	Description	Color	70039292
PIN	(M8/a-coded)				**X26**
1	+24 V		Voltage supply (sensor)	Brown	X26.1
2	TRANS	OUT	Dispensing system	White	X26.2
3	GND		Ground (sensor)	Blue	X26.3
4	GPOS	IN	Sensor	Black	X26.4

1.1.8 Printer (X7)

An optional printer is connected here.



X7	Designation	I/O	Description	Color	70039292
PIN	(M8/b-coded)				**X27**
1	+24 V		Voltage supply	Brown	X27.1
2	PRT	OUT	Printer output	White	X27.2
3	GND		Ground (sensor)	Blue	X27.3
4	ERRD	IN	Malfunction	Black	X27.4
5	BUSY	IN	Busy input / malfunction	Gray	X27.5

1.1.9 Label sensor (X15)

The label sensor is connected here (e.g., FS03, forked light barrier).

X15	Designation	I/O	Description	Color	70039292
PIN	(M12/a-coded)				**X35**
1	+24 V	OUT	Voltage supply (sensor)	Brown	X35.1
2	NC			White	
3	GND	OUT	Ground (sensor)	Blue	X35.3
4	STOP	IN	Label transfer stop	Black	X35.4
5	TEACH	IN	Teach-in sensor	Gray	X35.2

1.1.10 End of reel (X52)

X52	Designation	I/O	Description	Color	70039292
PIN	(M8/a-coded)				**X32**
1	+24 V	OUT	Voltage supply (sensor)	Brown	X32.1
2	END	IN	End of reel sensor	Black	X32.2
3	GND	OUT	Ground (sensor)	Blue	X32.3

1.1.11 Low label (X53)

X53	Designation	I/O	Description	Color	70039292
PIN	(M8/a-coded)				**X33**
1	+24 V	OUT	Voltage supply (sensor)	Brown	X33.1
2	DIM	IN	Low label sensor	Black	X33.2
3	GND	OUT	Ground (sensor)	Blue	X33.3

1.1.12 Rewinder full (X55)

X55	Designation	I/O	Description	Color	70039292
PIN	(M8/a-coded)				**X56**
1	+24 V	OUT	Voltage supply (sensor)	Brown	X56.1
2	FULL	IN	Rewinder full sensor	Black	X56.2
3	GND	OUT	Ground (sensor)	Blue	X56.3

HERMA 500 IO

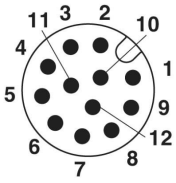
1.1.13 Standard I/O interfaces (X10)

This optional connection provides inputs/outputs for external controllers (e.g. PLC).

X10	Designation	I/O	Description	Color	70039292
PIN	(M12/a-coded)				X30/ X34
1	STATUS	OUT	Printer status	Brown	X30.8
2	GND	I/O	Ground (all voltages DC)	Blue	X30.2
3	READY	OUT	Applicator ready	White	X30.3
4	END	OUT	End of reel	Green	X30.4
5	DIM	OUT	Low label reel	Pink	X30.5
6	ON	IN	Applicator ON (1 – active)	Yellow	X30.6
7	FAULT	OUT	Error applicator (incl. web break)	Black	X30.7
8	STOPDELAY	IN	0 – 10 V stop delay	Gray	X34.3
9	ADC+10 V	OUT	+10 V DC for analog inputs	Red	X34.6
10	SPEED	IN	0 – 10 V speed	Violet	X34.4
11	START DELAY	IN	0 – 10 V start delay	Gray pink	X34.2
12	ACK	IN	Reset malfunction	Red blue	X30.1

1.1.14 Additional I/O interfaces (X19)

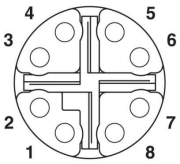
This optional connection provides inputs/outputs for external controllers (e.g. PLC).



X19	Designation	I/O	Description	Color	70039292
PIN	(M12/a-coded)				X39
1	+24 V	OUT	Voltage supply (< 150 mA)	Brown	X39.1
2	GND	I/O	Ground (all voltages DC)	Blue	X39.2
3	ENCA	OUT	Metering pulses	White	X39.3
4	FEED	IN	Manual dispensing	Green	X39.4
5	STOP	I/O	Label sensor (end of transfer)	Pink	X39.5
6	START	IN	Applicator start	Yellow	X39.6
7	SYN1	IN	User-defined	Black	X39.7
8	S3/ACK	OUT	Error acknowledgment (touch)	Gray	X39.8
9	LOCK	IN	Lock labeling start (1-active)	Red	X39.9
10	NO_LABEL	OUT	Label missing on backing paper	Violet	X39.10
11	FEEDING	OUT	Label transfer in progress	Gray pink	X39.11
12	S2	OUT	S2 "Dispensing" button	Red blue	X39.12

HERMA 500 IE

1.1.15 Industrial Ethernet connection (IN) (X3)

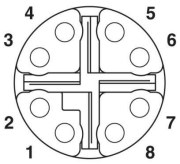


M12/x-coded

This optional port is used to connect to a higher-level system via an Industrial Ethernet connection (fieldbus).

Connection to customer controller via RJ45,
Connection cable from M12 plug to RJ45 plug.

1.1.16 Industrial Ethernet connection (OUT) (X4)



M12/x-coded

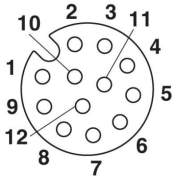
This optional port is used to connect additional Ethernet clients, i.e. an additional HERMA 500, after connecting to a higher-level system via an X3 Industrial Ethernet connection (fieldbus).

Connection of an additional HERMA 500 to X3 via M12 connector, 8-pin, x-coded.
Connection cable from M12 plug to M12 plug.

Customer controller	**HERMA 500 1**	**HERMA 500 2**
RJ45 plug -->	M12 plug to **X3**	
	Optional: M12 plug to **X4** -->	M12 plug to **X3**

1.1.17 I/O interfaces for industrial Ethernet (X9)

This optional connection provides inputs/outputs for industrial Ethernet applicators.



X9	**Designation**	**I/O**	**Description**	**Color**	
PIN	(M12/a-coded)				
1	+24 V	OUT	Voltage supply (< 150 mA)	Brown	X39.1
2	GND	I/O	Ground (all voltages DC)	Blue	X39.2
3	ENCA	OUT	Metering pulses	White	X39.3
4	ACK	IN	Acknowledgment	Green	X30.1
5	STOP	I/O	Label sensor (end of transfer)	Pink	X39.5
6	START	IN	Applicator start	Yellow	X39.6
7	SYN1	IN	User-defined	Black	X39.7
8	S3/ACK	OUT	Error acknowledgment (touch)	Gray	X39.8
9	LOCK	IN	Lock labeling start (1-active)	Red	X39.9
10	NO_LABEL	OUT	Label missing on backing paper	Violet	X39.10
11	FEEDING	OUT	Label transfer in progress	Gray pink	X39.11
12	READY	OUT	Applicator ready	Red blue	X39.12