![INFICON logo]

Interface Description

Sensistor ILS500 F/FHP

Test gas filler unit

Catalog No.
590-580, 590-581

From software version
4.00.01

INFICON

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1 Power Input

Specification	ILS500-F_FHP-SB-Interface-Description
AC mains voltage	110-240 V 50/60Hz.
AC mains current	Typically 1 A (2 A pulse at power on).

2 Interface and Connectors

2.1 Ethernet (Modbus)

2.1.1 Cable Type

Use Ethernet kabel with conection type RJ-45 category Cat. 5 or higher.

2.1.2 ILS500 Modbus TCP setup

The Modbus protocol for ILS500F is Modbus Slave TCP. It uses the Ethernet port to communicate to a Modbus Master Client.

1 Connect the Ethernet port of the test gas filling unit to your Ethernet network.

2 To setup the required IP-address for the Modbus to work go to "Setup > Advanced Settings > IP-Settings".

3 If the ILS500F is connected directly and there is no DHCP server, setup a static address. Otherwise choose the automatic IP-address.
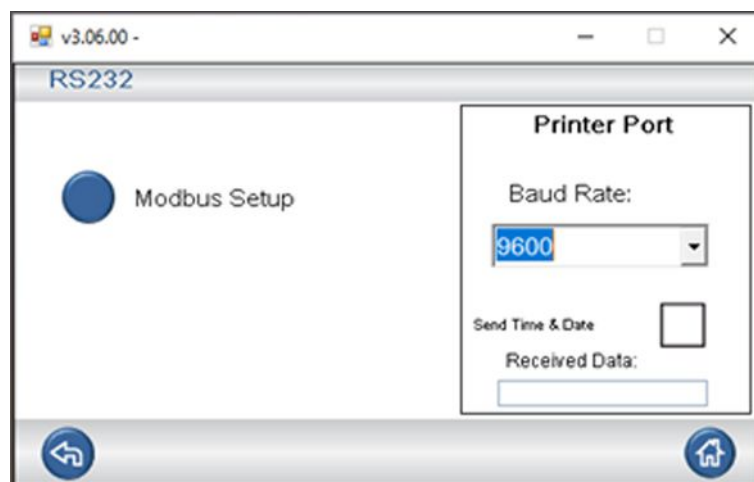
⇨ Standard setting for Modbus Slave (ILS500F) is:
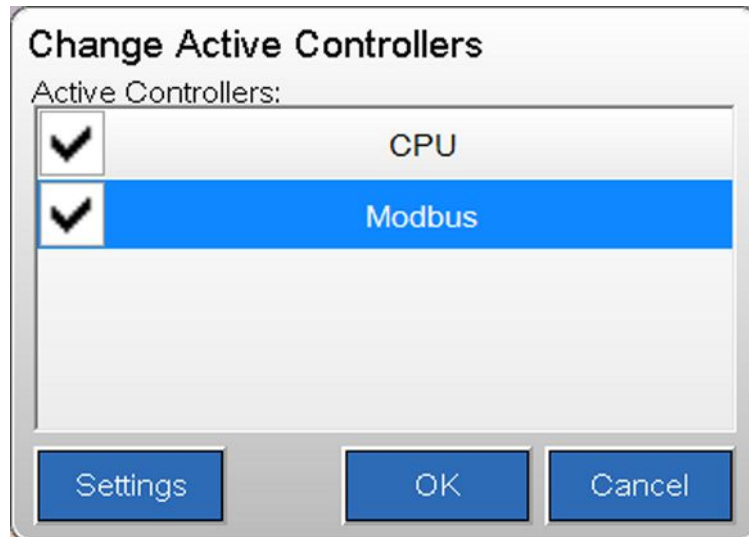Slave station number 2
Local port is 502.
Addressing is 1-Based.

4 To activate the Modbus go to "Menu > Advanced Settings > Service Menu > RS232".

5 Press "Modbus Setup" and activate Modbus. Do not touch CPU settings.

6 If settings for Modbus needs to be changed, then make sure that Modbus is highlighted, and then press Settings.

2.2 RS232

2.2.1 Cable Type

Null Modem Serial Cable D-SUB 9-Pin Female

2.2.2 RS232
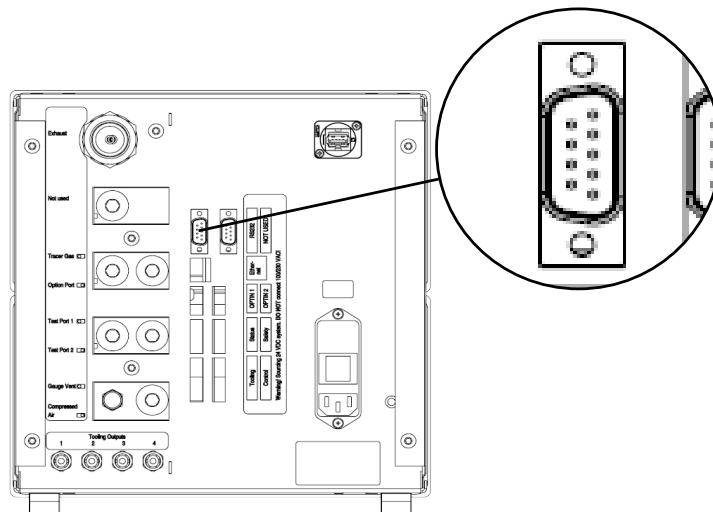
Connector:	9 pin male D-sub
Purpose:	Connection of serial printer or logging device (e.g. PC or PLC)
Cable:	Standard female to female file transfer cable (null modem)
Baud Rate:	9600 default (1200 - 115200 selectable)

Pin	Signal	Specification	
1	Not used	Standard	RS232C
2	RD	Data rate	9600 baud

Pin	Signal	Specification	
3	TD	Data bits	8
4	Not used	Stop bits	1
5	SG	Parity	none
6	Not used	Flow ctrl	none
7	Not used		
8	Not used		
9	Not used		

2.3 I/O:s

2.3.1 Input 1 (Optional)

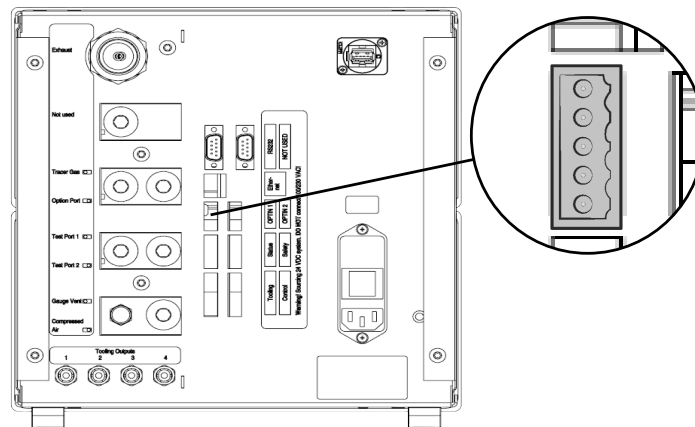| Connector:	5 pin male Weidmüller, Omnimate BL3.5. Mating screw terminal included.
Purpose:	Options port 1. Optional analogue or digital input (not supported by std software).

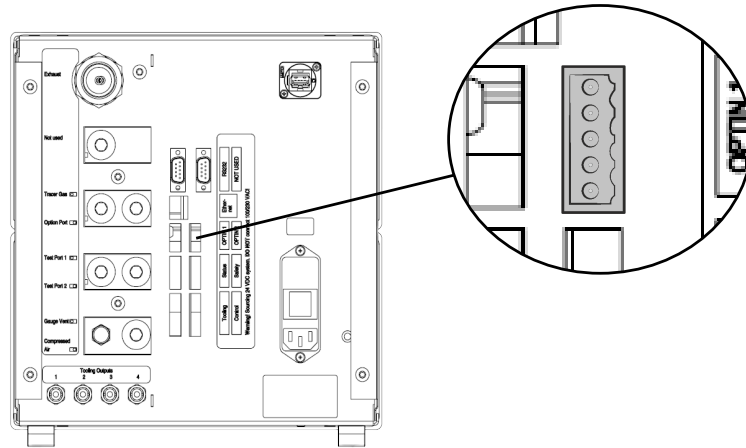| Pin	Signal	Type	Load	Comment
1	+24 VDC	SUPPLY	250 mA	Option supply.
2	VIN1	IN	-60 mA	Voltage input: Digital 24 VDC or analogue 0-10 VDC.
3	IIN1	IN	+/-30 mA	Current input: 0-20 mA.
4	COM1	IN	-250 mA	Signal common (GND).
5	COM/SHLD	GND	+/-30 mA	Shield.

2.3.2 Input 2 (Optional)

Connector:	5 pin male Weidmüller, Omnimate BL3.5. Mating screw terminal included.
Purpose:	Options port 2. Used for "Active Holder for Hand Probe" (90630).

Pin	Signal	Type	Load	Comment
1	+24 VDC	SUPPLY	250 mA	Option supply.
2	VIN2	IN	-60 mA	Voltage input: Digital 24 VDC or analogue 0-10 VDC.
3	IIN2	IN	+/-30 mA	Current input: 0-20 mA.
4	COM2	IN	-250 mA	Signal common (GND).
5	COM/SHLD	GND	+/-30 mA	Shield.

2.3.3 Status Output
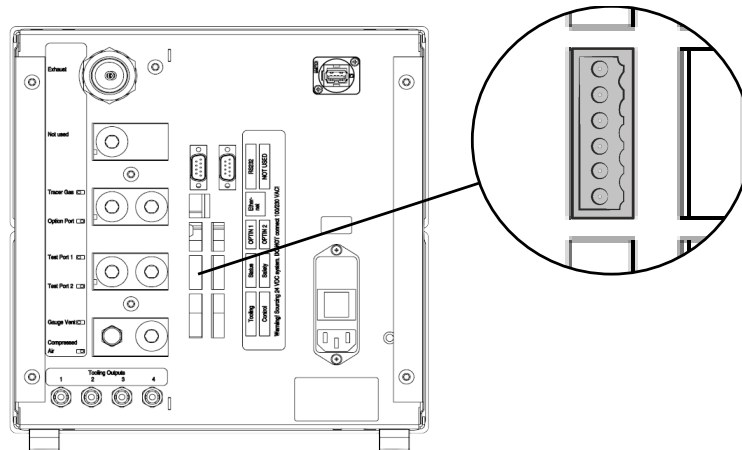
Connector:	6 pin male Weidmüller, Omnimate BL3.5. Mating screw terminal included.
Purpose:	Test Status Outputs. Sourcing 24 VDC transistor outputs.

Pin	Signal	Type	Load	Comment
1	RUNNING	OUT	0.5 A	Cycle running.
2	ACCEPT	OUT	0.5 A	Tested part accepted.
3	REJECT	OUT	0.5 A	Tested part rejected.
4	ERROR	OUT	0.5 A	Summing error.
5	EOT/FILLED	OUT	0.5 A	End of test or gas filled indicator (selectable).
6	COM	GND	-2.0 A	Common GND.

Gas filling status is available on the STATUS connector (pin 5) on the back of the unit. Connect to a lamp for easy notification of "End of test" status.
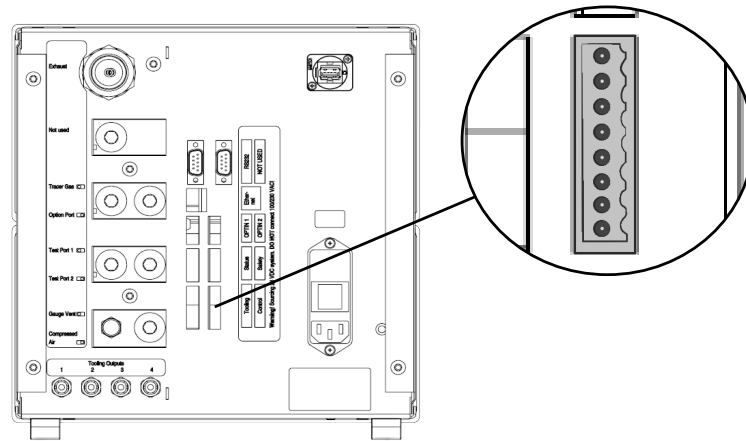
2.3.4 Tooling Interface
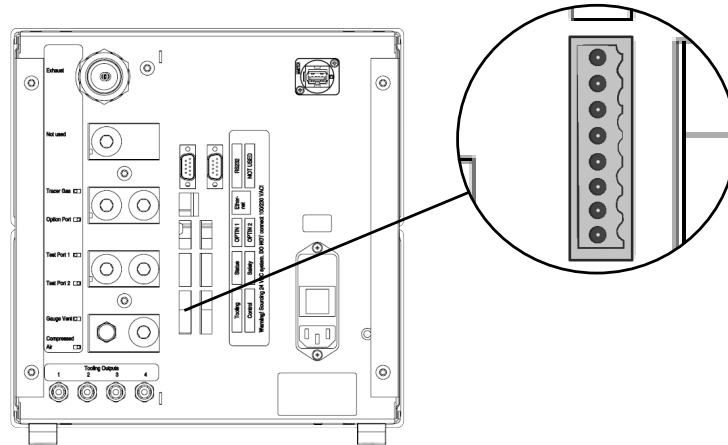
Connector:	8 pin male Weidmüller, Omnimate BL3.5. Mating screw terminal included.
Purpose:	Electrical tooling interface.

Pin	Signal	Type	Load	Comment
1	+24 VDC	SUPPLY	300 mA	Tooling switch supply (e.g. proximity switch).
2	TS1	IN	-7 mA	Tooling switch 1.
3	TS2	IN	-7 mA	Tooling switch 2.
4	TS3	IN	-7 mA	Tooling switch 3.
5	TS4	IN	-7 mA	Tooling switch 4.
6	MARKER*	OUT	0.5 A	Marker output. Selectable mark on REJECT or ACCEPT.
7	COM	GND	-1.0 A	Common GND.
8	COM	GND	-1.0 A	Common GND.

*: MARKER output (Tooling Connector, pin 6) can be used to send a start pulse to marking equipment such as an engraving machine or a valve controlling a simple pneumatic stamp. Function and length of pulse is set by the following two parameters:

- Marker Output:

  Length of marker output pulse.

  Output will go high at end of gas test and stay high for the given time.

- Marker Output High if Leak:

  Decides function of marker pulse. To mark rejected part set to OFF.

  To mark accepted part, set to ON.

2.3.5 Control Output

Connector:	8 pin male Weidmüller, Omnimate BL3.5. Mating screw terminal included.
Purpose:	External start and stop. Control of optional external valves.

Pin	Signal	Type	Load	Comment
1	+24 VDC	SUPPLY	2.0 A	Start and stop switch and supply.
2	EXTSTART	IN	-7 mA	Start button return (NO contacts) or contact to +24 VDC.
3	EXTSTOP	IN	-7 mA	Stop button return side (NO contact) or contact to +24 VDC.
4	EVAC1	OUT	0.5 A	Venturi valve output.
5	EVAC2	OUT	0.5 A	Evacuation valve output.
6	GASFILL	OUT	0.5 A	Fill valve output.
7	OPTOUT	OUT	0.5 A	
8	COM	GND	-1.0 A	Common GND for outputs.

2.4 USB Port
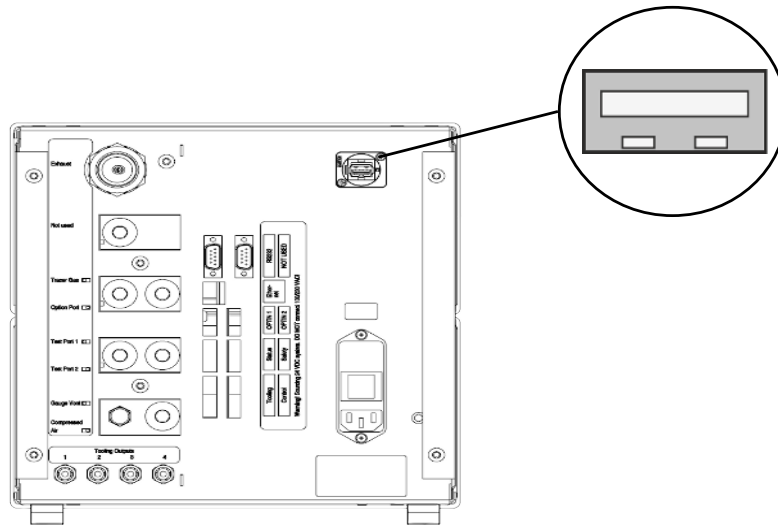
Connector:	USB
Purpose:	Used for import and export of recipes.

✓ USB is connected.
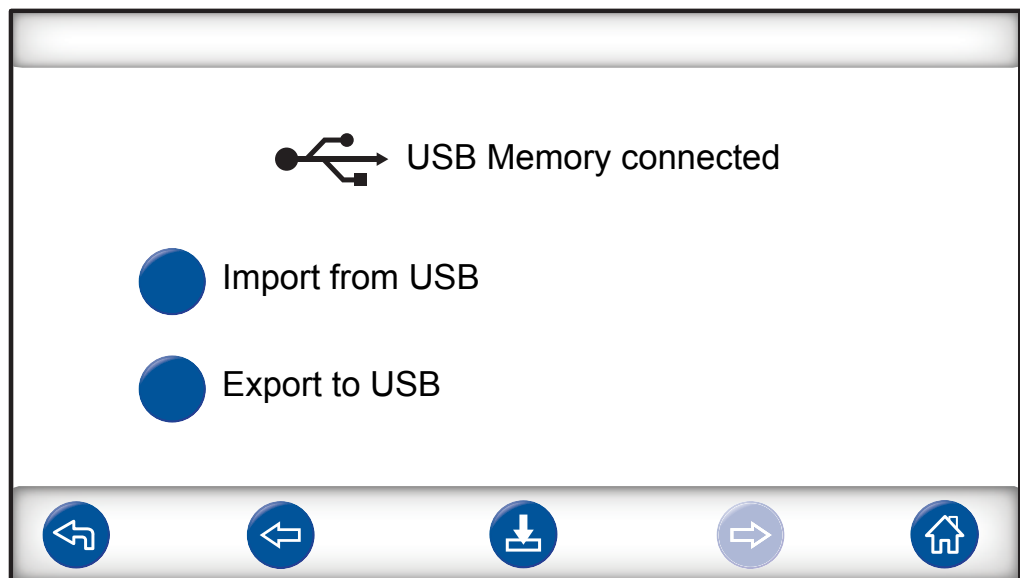
► To import a recipe press the button "Import from USB". An icon for USB is shown when installing the USB flash drive.
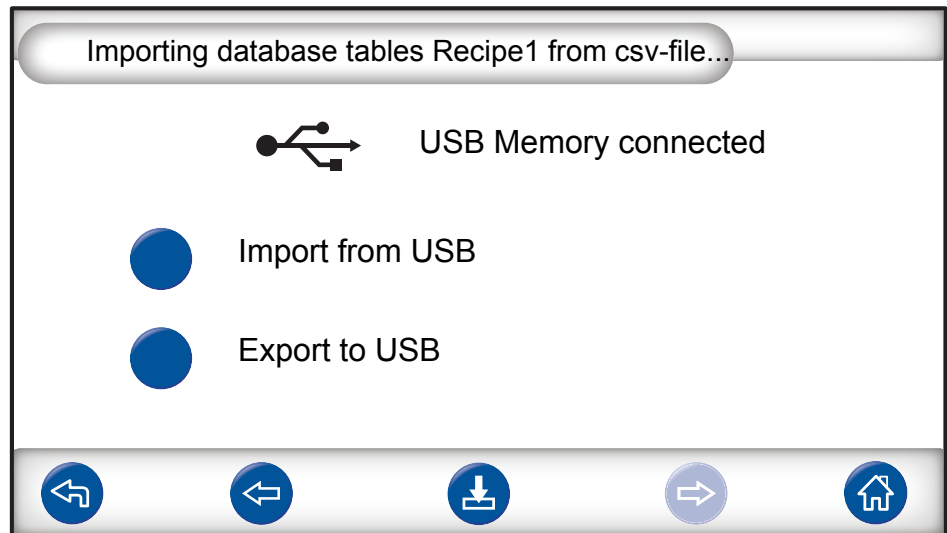
⇨ After importing all recipes are imported into a file named "Recipe1.csv".

► To export a recipe to press the button "Export to USB".
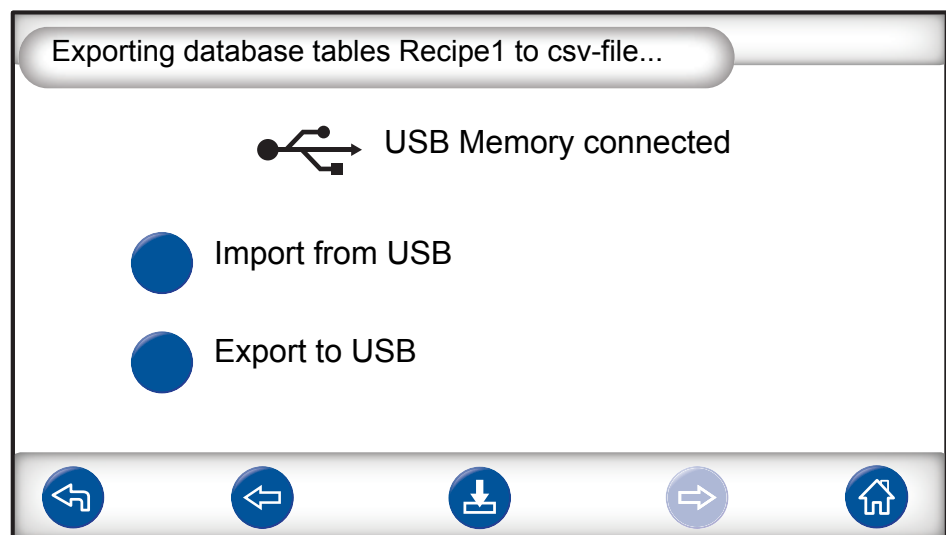
⇨ After exporting all recipes are exported into a file named "Recipe1.csv".

2.5 Safety Interface

Risk assessment is the sole duty of the user of the ILS500 F/FHP.

Connector:	6 pin male Weidmüller, Omnimate BL3.5. Mating screw terminal included.
Purpose:	Emergency stop interface.

Pin	Signal	Type	Load	Comment
1	+24 VDC	SUPPLY	2.5 A	
2	AUX1	-	+/-1-5 A*	Terminal 1 of safe relay contacts for auxiliary external use.
3	AUX2	-	+/-1-5 A*	Terminal 2 of safe relay contacts for auxiliary external use.
4	ESTATUS	OUT	0.5 A	Internal emergency circuit stopped. Use for reset lamp or PLC monitoring.
5	SAFESPLY**	SUPPLY	-2.5 A	24 VDC supply from EXTERNAL emergency stop circuitry.
6	COM	GND	1.0 A	Common GND.

*: 250 VAC 5 A cosj =1; 30 VDC 5 A L/R = 0 ms; 240 VAC 2A cosj = 0.3; 24 VDC 1A L/R = 48 ms

**: SAFESPLY feeds risk associated loads inside the ILS500 F/FHP. These include all gas and tooling valves.

3 Commands

3.1 RS232 Commands

The printer port can also be used to control the ILS500 F/FHP. The most commonly used functions can be started/configured over the RS232 interface. Always use New Line (0A,LF) as end character.

Command	Action
M<0A>	Start measurement
Q<0A>	Stop measurement
S<0A>	Statistics (see table below)
RS<0A>	Reset statistics
R<09>	Factory Default <0A> loads a recipe. For example "R<09>Factory Default" loads the recipe Factory Default. When the recipe is loaded the recipe name is echoed back. If a recipe name isn't in the ILS500 F/FHP, the answer from the ILS500 F/FHP will be "Not a recipe name!"

Statistics	Printed data	Explanation
REC:AP29	Recipe name	Printed if recipes is activated
TOT:00031	Total	
ACC:00009	Accepted	
REJ:00022	Rejected	
EVA:00001	Evacuation	
VDE:00000	Vacuum decay	
BLO:00006	-Blockage test	
FIL:00001	-Gas filling	
PRE:00000	-Pressure decay	
GAS:00014	Gas detector	

The number printed behind the colon represents the number of occurrences. For example: TOT:00031 means that 31 total tests have been made.

3.2 RS232 Results

RS232 Results

Results	Explanation
TEST_ACCE	Test accepted (if a leak detector is connected)

Results	Explanation
TEST_REJE	Test rejected (if a leak detector is connected)
USER_FAIL	User has pressed stop
EVAC_FAIL	Evacuation failed
VDEC_FAIL	Vacuum decay test failed
FILL_FAIL	Tracer gas filling failed
PDEC_FAIL	Pressure decay test failed
BLOC_FAIL	Blockage test failed
REFI_FAIL	Tracer gas refill failed
TEST_STRT	Test cycle started
TEST_DONE	Test cycle finished
FILL_DONE	Filling completed
RECH_DONE	Recipe change done
RECH_FAIL	Recipe change failed
ERROR	Hardware error on ILS500

On the ILS500 (Service/RS232), you can choose if you want to include time and date in every result from the ILS500 or not. If it's on the result will be:

"TEST_ACCE<09>2013- 09-04 13:23:03<09>Factory Default<0A>" and if it's off: **"TEST_ACCE<0A>"**.

3.3 Modbus Commands

Name	DataType	Size	Address	AccessRight	
Modbus_Start_CMD	BOOL	1	00001	Write	Starts a fill cycle.
Modbus_Stop_CMD	BOOL	1	00002	Write	Stops a fill cycle and resets leak lamp.
Modbus_Recipe_Change	BOOL	1	00003	Write	Initiates a recipe change. Goes low after recipe has been changed.
Modbus_Recipe_Change_Error	BOOL	1	00004	Read	Goes high if recipe could not be found. Goes low when a new recipe change has been initiated.
Accept	BOOL	1	00005	Read	Accept signal same as green light
Reject	BOOL	1	00006	Read	Reject signal, same as red light.

Name	DataType	Size	Address	AccessRight	
Cycle_Running	BOOL	1	00007	Read	Cycle Running signal same as yellow light
Standby_Seq	BOOL	1	00010	Read	Part of Sequence
Tooling_Active	BOOL	1	00011	Read	Part of Sequence
PreEvac_Seq	BOOL	1	00012	Read	Part of Sequence
Fill_Seq	BOOL	1	00013	Read	Part of Sequence
Test_Seq	BOOL	1	00014	Read	Part of Sequence
Exhaust_Gas_Seq	BOOL	1	00015	Read	Part of Sequence
After_Evac_Seq	BOOL	1	00016	Read	Part of Sequence
Purging_Object_Seq	BOOL	1	00017	Read	Part of Sequence
Vac_Decay_Seq	BOOL	1	00018	Read	Part of Sequence
Double_Rec_Active	BOOL	1	00019	Read	Part of Sequence
Pre_Evac_Failed	BOOL	1	00020	Read	Fail Cause
Fill_Failed	BOOL	1	00021	Read	Fail Cause
Refill_Failed	BOOL	1	00022	Read	Fail Cause
Gas_Remove_Failed	BOOL	1	00023	Read	Fail Cause
Vac_Decay_Failed	BOOL	1	00024	Read	Fail Cause
Press_Decay_Failed	BOOL	1	00025	Read	Fail Cause
Blockage_Failed	BOOL	1	00026	Read	Fail Cause
User_Stop	BOOL	1	00027	Read	Fail Cause
HW_Error	BOOL	1	00028	Read	Fail Cause
Pressure_Too_High	BOOL	1	00029	Read	Fail Cause
Pressure Value	FLOAT	1	30001	Read	Actual pressure in Test Ports of ILS500F
Modbus_Load_Recipe_Name	STRING	32	40001	ReadWrite	Name of recipe to be loaded. ASCII signs maximum 32 characters.
Modbus_Load_Recipe_Name_End	INT16	1	40017	None	End of Recipe Name to be loaded. Shouldn't be used.
Modbus_Current_Recipe_Name	STRING	32	40021	Read	Current loaded recipe in ILS500F.
Modbus_Current_Recipe_Name_End	INT16	1	40037	None	End of Current loaded recipe. Shouldn't be used.

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