OPERATING INSTRUCTIONS

EN

Translation of the original instructions

Serial link

Communication protocole - A4 Series

PFEIFFER VACUUM

Contents

1 About this manual

1.1 Validity

This operating manual is for customers of Pfeiffer Vacuum. It describes the functioning of the designated product and provides the most important information for safe use of the unit. The description follows applicable EU guidelines. All information provided in this operating manual refer to the current state of the product's development. The documentation remains valid as long as the customer does not make any changes to the product.

Up-to-date operating instructions can also be downloaded from www.pfeiffer-vacuum.com.

This manual covers products with the following part numbers:

Part number	Description
A4HxxCxxx6xxxxx	models for harsh applications
A4XxxCxxx6xxxxx	models for extremely harsh applications

1.1.1 Applicable documents

A4 Series Operating instructions	Part number: 122279

1.2 Conventions

1.2.1 Safety instructions

The safety instructions in Pfeiffer Vacuum operating instructions are the result of risk evaluations and hazard analyses and are oriented on international certification standards as specified by UL, CSA, ANSI Z-535, SEMI S2, ISO 3864 and DIN 4844. In this document, the following hazard levels and information are considered:

WARNING
Possibly imminent danger Indicates an imminent hazardous situation that can result in death or serious injury.

NOTICE
Command or note Command to perform an action or information about properties, the disregarding of which may result in damage to the product.

1.2.2 Instructions/Abbreviations used

➔ Work instructions: you must perform an operation here.

2 Safety

2.1 Safety precautions

NOTICE

Obligation to inform

Any person responsible for installing, using or maintaining the product must first read the security instructions in this operating manual and comply with them.

➔ It is the operating customer's responsibility to protect all operators against the dangers associated with the product, with the media pumped and with the entire installation.

WARNING

Risk of electromagnetic disturbance

The product's EMC rating is obtained on the understanding that it is installed in compliance with EMC rules.

➔ Use shielded links and connections for interfaces in environments that produce disturbance.

- Only qualified personnel trained in safety rules (EMC, electrical safety, chemical pollution) may carry out the installation and maintenance described in this manual. Our service centers can provide the necessary training.

2.2 Proper use

NOTICE

EC conformity

The manufacturer's declaration of conformity becomes invalid if the operator modifies the original product or installs additional components.

➔ Following installation into a plant and before commissioning, the operator must check the entire system for compliance with the valid EU directives and reassess it accordingly.

3 Product description

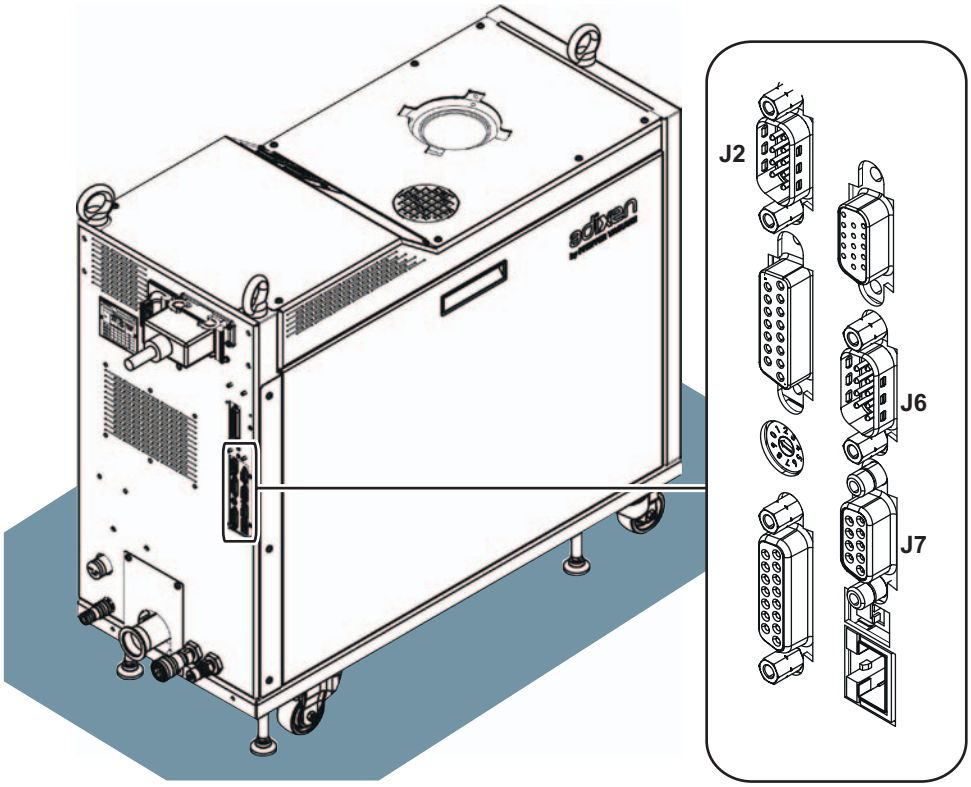
The dry pump is equipped with:
– 1 RS232 serial link
– 1 RS232/485 serial link
– 1 RS485 serial link

The configuration of serial links is adjusted:
– From the hand-held remote module (HHR) delivered with the pump, or
– From a computer connected to pump serial link.

Protocol available:
– “Dry Pump” protocol.
– Modbus protocol.

The serial link can be adjusted on **[NETWORK]**. In this case, the pump is used in a supervisor network via “Dry Pump” protocol.

3.1 Connectors location



J2	RS232 serial link	9-pin male D-Sub connector
J6	RS232/485 serial link	9-pin male D-Sub connector
J7	RS485 serial link	9-pin female D-Sub connector

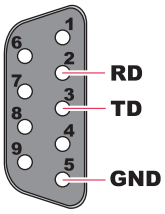
4 Installation

4.1 Wiring

4.1.1 RS232 serial link

2	RD	Reception Data
3	TD	Transmission Data
5	GND	Ground

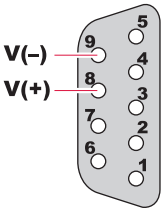
On J2 and J6



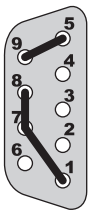
4.1.2 RS485 serial link

8	V(+)	RS485
9	V(–)	RS485

On J6 and J7



4.1.3 J7 cover plug

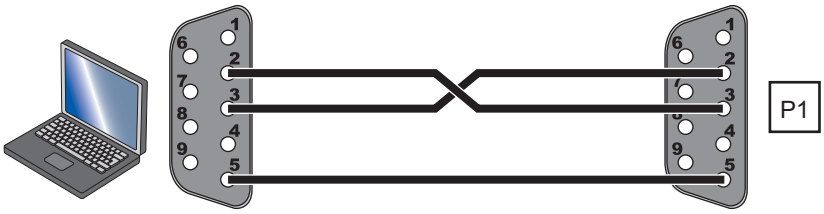


4.2 Case of use

The 3 connectors, J2, J6, J7, can be used at the same time according to the next operation.

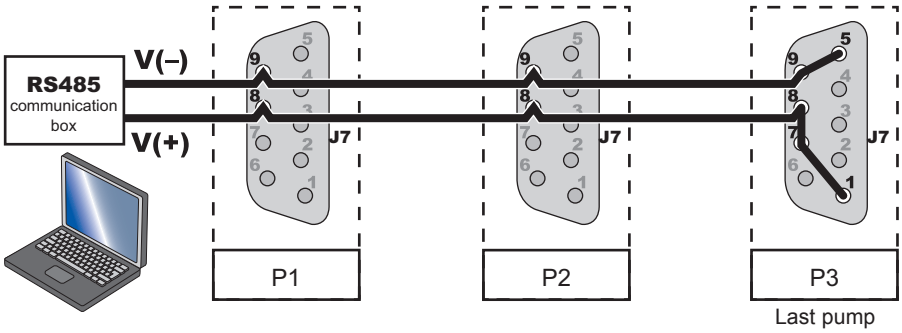
4.2.1 RS232 serial link

A computer manages one pump (P1) with RS232 serial link via J2 connector. The J2 parameters must be configured. The same connection must be done J6.



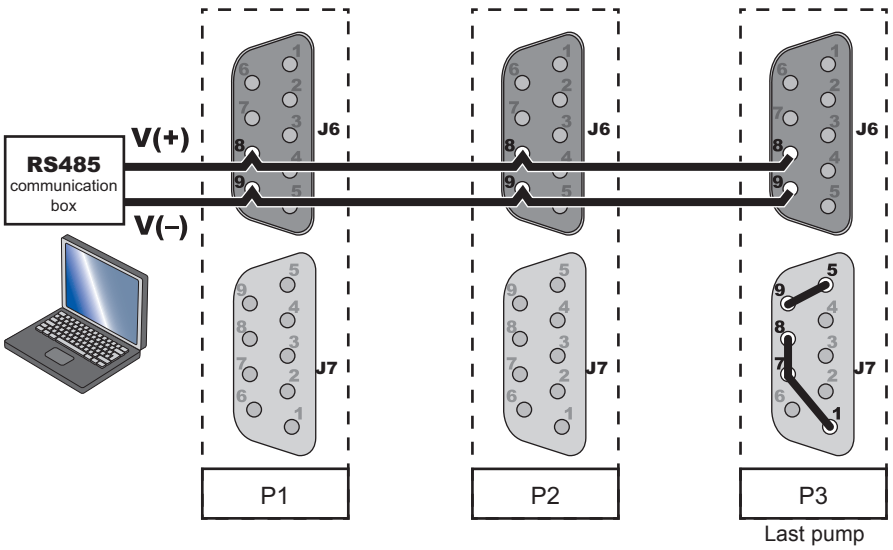
4.2.2 RS485 serial link on J7

A computer manages several pumps (P1, P2, P3) with RS485 serial link via J7 connector. The RS485 serial link parameters must be configured on J7. At the end of the line: the cover plug is installed on J6.



4.2.3 RS485 serial link on J6

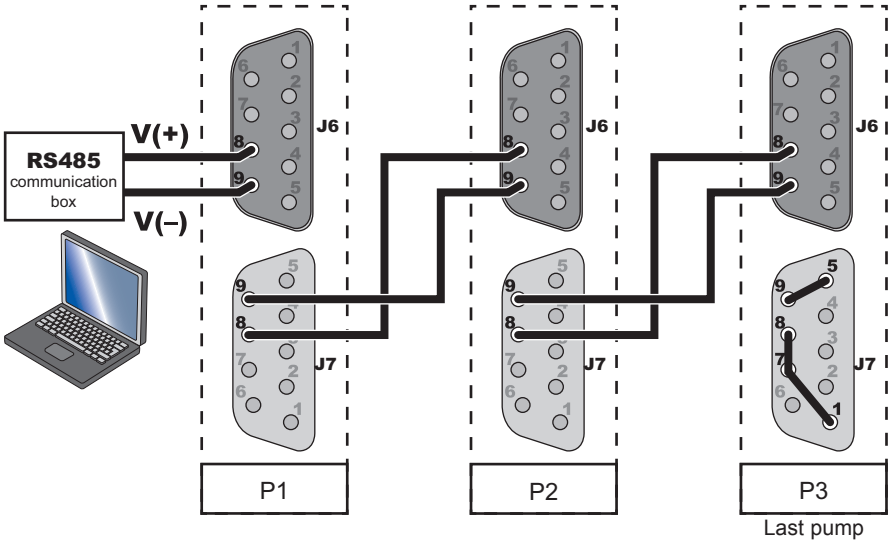
A computer manages several pumps (P1, P2, P3) with RS485 serial link via J6 connector. The J6 RS485 serial link is a J7 RS485 serial link copy: the RS485 serial link parameters must be configured on J7. At the end of the line: the cover plug is installed on J7.



4.2.4 RS485 serial link on J6 and J7

A computer manages several pumps (P1, P2, P3) with RS485 serial link via J6 and J7 connectors. The RS485 serial link parameters must be configured on J7. At the end of the line: the cover plug is installed on J7.

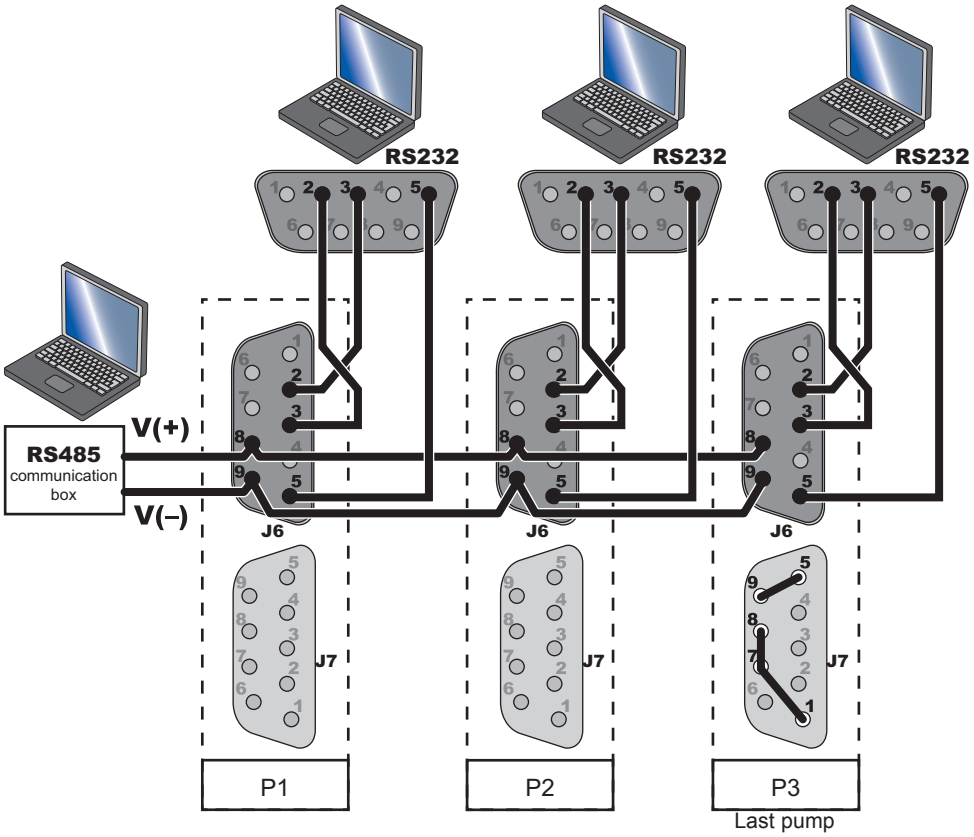
The communication will be lost if any one pump is disconnected.



4.2.5 RS485 and RS232 serial link on J6

A computer manages several pumps (P1, P2, P3) with RS485 serial link via J6 connector. The J6 RS485 serial link is a J7 RS485 serial link copy: the RS485 serial link parameters must be configured on J7. At the end of the line: the cover plug is installed on J7.

In an other way, other computer(s) control(s) the pump(s) with RS232 serial link. The RS232 serial link parameters must be configured on J6.



4.3 Serial link configuration

Each connector is independent. It is configured:

– From the HHR, in **[SETTING] [SERIAL LINK] [SERIAL J2]/[SERIAL J6]/[SERIAL J7]** menu.

– From a computer connected to pump serial link, see the command table depending on protocol type to the ***Parameter set*** chapter.

Setting table from the HHR, [SETTING] menu:

Selection				Choice	Setting range	Default setting
SERIAL LINK	SERIAL J2	RS TYPE	DRY PUMP	ECHO	DISABLED / ENABLED	DISABLED
				SPEED	9600 / 57600 Bauds	9600 Bauds
				PARITY	NO / EVEN / ODD	NO
				2 STOP BITS	DISABLED / ENABLED	DISABLED
				ADDRESS	0 to 255	0
			MODBUS	ECHO	DISABLED / ENABLED	DISABLED
				SPEED	9600 / 57600 Bauds	9600 Bauds
				PARITY	NO / EVEN / ODD	NO
				2 STOP BITS	DISABLED / ENABLED	DISABLED
				ADDRESS	0 to 255	0
				CRC	DISABLED / ENABLED	ENABLED
	SERIAL J6	RS TYPE	DRY PUMP	ECHO	DISABLED / ENABLED	DISABLED
				SPEED	9600 / 57600 Bauds	9600 Bauds
				PARITY	NO / EVEN / ODD	NO
				2 STOP BITS	DISABLED / ENABLED	DISABLED
				ADDRESS	0 to 255	0
			MODBUS	ECHO	DISABLED / ENABLED	DISABLED
				SPEED	9600 / 57600 Bauds	9600 Bauds
				PARITY	NO / EVEN / ODD	NO
				2 STOP BITS	DISABLED / ENABLED	DISABLED
				ADDRESS	0 to 255	0
				CRC	DISABLED / ENABLED	ENABLED
	SERIAL J7	RS TYPE	DRY PUMP	SPEED	9600 / 57600 Bauds	9600 Bauds
				PARITY	NO / EVEN / ODD	NO
				ADDRESS	0 to 255	0
			MODBUS	SPEED	9600 / 57600 Bauds	9600 Bauds
				ADDRESS	0 to 255	0
				CRC	DISABLED / ENABLED	ENABLED
			NETWORK	SPEED	9600 / 57600 Bauds	9600 Bauds
				PARITY	NO / EVEN / ODD	NO
				2 STOP BITS	DISABLED / ENABLED	DISABLED
				ADDRESS	0 to 255	0

5 Parameter set

Serial link remote control mode is actived when:
– The pump is powered.
– **[DEFINITION] [CONTROL MODE] [SERIAL LINK]** is selected.
see the product ***Operating instruction***.

5.1 “Dry pump” protocol

NOTICE
This protocole do not used all pump possibilities. This protocole will no more be used in next product releases. ➔ It is recommended to use Modbus protocol to have functions full access.

5.1.1 Instruction syntax description

Heading character — The decimal value of the ASCII code of the header character is between 001 and 127. The factory configuration is the decimal code “035” of the character “**#**”. It is possible to change it with **HDR** command (see ***5.1.4***).

Pump address — Number given to the pump, between 0 and 255.

Order — Command, read or write, on 3 characters (see ***5.1.4***).

Parameter — The number of character depends on the command (see ***5.1.4***).

End character — It is the message end character. ASCII code 13: <CR>. The character <LF> is not taken account by the unit.

5.1.2 Syntax

Command

Heading character	Pump address	Order	Paramete	End character
#	ADR	ORD	XXXXXXX	<CR>

Response

Heading character	Pump address	Response	End character
#	ADR	XXXXXXX	<CR>

Example of dialog:

Command: **#005 SYS ON**

Response: **#005 OK**

Command: **#005 ROO ON**

Response: **#005 ERR2**

5.1.3 Interpreting responses

OK or a specific response to the order if everything is correct.
ERR0: setting fault
ERR1: order fault
ERR2: parameter fault
ERR3: context fault
ERR4: checksum fault

5.1.4 List of commands

Description	Order	Parameter	Details
Pump address	**ADR**	XXX	To allocate an address to a pump: from 000 to 255. It can be modified only when the pump is stopped.
Faults display	**DEF**	XXY	Display the message XX number of Y type: XX: 0 to 09 (00 the newest, 09 the oldest) Y: 0=alarm, 1=alert, 2=Pre-alert, 3=Action, 4=Event
	DEF	-	Display the 10 latest Alerts or Alarms
	DEF	Y	Display the 10 latest messages of Y type: Y: 0=alarm, 1=alert, 2=Pre-alert, 3=Action, 4=Event
Read interval	**DLI**	XXX	Program the automatic read interval of pump status (STA). XXX: 001 to 255s
Automatic read activated	**DLR**		Start up the automatic read interval of pump status (STA).
Heading character	**HDR**	XXX	Input its ASCII value. XXX: 001 to 127 (example “047” is “/”). The code “020” corresponds to “no header character”.
Software version	**IDN**	-	Read the software version number.
Purge start/stop	**PUR**	ON or OFF	Start up the purge with PURON and stop with PUROFF. The coding wheel S1 is on 1.
Roots start/stop	**ROO**	ON or OFF	Start up the ROOTS with the command ROOON and stop with ROOOFF.
Separator character	**SEP**	XXX	Input its ASCII value. XXX: 001 to 255 (example “044” is “,”).
Pump start/stop	**SYS**	ON or OFF	Start up the pumping unit with SYSON and stop with SYSOFF.

Description	Order	Parameter	Details		
Options setting	**OPT**	XXY	The coding wheel S1 is on 1. Time and date are lost.		
			XX: Option	Y: Choice	Unit
			01: ANALOG 1	0=ENABLED / 1=DISABLED	
			02: LOG 1 ALARM	0=ENABLED / 1=DISABLED	
			03: LOG 2 ALARM	0=ENABLED / 1=DISABLED	
			05: AUTOSTART	0=ENABLED / 1=DISABLED	
			06: ROOTS COMMAND	0=ENABLED / 1=DISABLED	
			07: OPTION ROOTS 2	0=ENABLED / 1=DISABLED	
			08: PURGE COMMAND (1)	0=ENABLED / 1=DISABLED	
			13: LOG 3 ALARM	0=ENABLED / 1=DISABLED	
			16: STORAGE (2)	0=ENABLED / 1=DISABLED	
			34: TEMP USER	0=ENABLED / 1=DISABLED	
			35: HEAT 1	0=DISABLED / 2=CONTROL	
			37: TEMP FB	0=ENABLED / 1=DISABLED	
			39: ALARM DELAY 5S	0=ENABLED / 1=DISABLED	
			50: J2 RS232 TYPE	0=DRY PUMP / 1=MODBUS	
			52: J2 RS232 SPEED	3=9600 / 4=19200 / 5=38400 / 6=57600 / 7= 115200	bauds
			53: J2 RS232 PARITY	0=NO / 1=ODD / 2=EVEN)	
			54: J2 RS232 2 Bits Stop	0=DISABLED / 1=ENABLED	
			56: J2 RS232 ADDRESS	000 to 255	
			60: J6 RS232 TYPE	0=DRY PUMP / 1=MODBUS	
			62: J6 RS232 SPEED	3=9600 / 4=19200 / 5=38400 / 6=57600 / 7= 115200	bauds
			63: J6 RS232 PARITY	0=NO / 1=ODD / 2=EVEN)	
			64: J6 RS232 2 Bits Stop	0=DISABLED / 1=ENABLED	
			66: J6 RS232 ADDRESS	000 to 255	

Description	Order	Parameter	Details		
Sensors setting	**SET**	XXYZZZZ	XXY: Sensor	ZZZZ: Value	Unit
			000: WARNING FB	PRE-WARNING to ALARM	W
			001: ALARM FB	WARNING to 9999	W
			002: PRE-WARNING FB	0500 to WARNING	W
			010: LP FB SETPOINT	0070 to HP FB	°C
			011: LP FB ALARM	SETPOINT+10 to 140	°C
			020: ANALOG 1 WARNING	0000 to ALARM	mV
			021: ANALOG 1 ALARM	WARNING to 9999	mV
			030: N2 TIME WARNING	0000 to 0600	s
			031: N2 TIME ALARM	0000 to 0600	s
			040: LOG1 TIME WARNING	0000 to 0600	s
			041: LOG1 TIME ALARM	0000 to 0600	s
			050: LOG2 TIME WARNING	0000 to 0600	s
			051: LOG2 TIME ALARM	0000 to 0600	s
			060: N2 PROLONG	0000 to 7200	s
			061: N2 STDBY DELAY	0000 to 0600s (V2.00.09)	s
			070: MAINT TIME WARN	0000 to 6553	x100h
			080: WATER FLOW WARN	130 to 960	L/h
			130: N2 WARNING	0000 to PRE-WARNING	slm
			131: N2 WARNING (idem)	0000 to PRE-WARNING	slm
			132: N2 PRE-WARNING	WARNING to 0120	slm
			140: CLOCK DAY	0000 to 0031	day
			150: CLOCK MONTH	0000 to 0012	month
			160: CLOCK YEAR	0000 to 0099	year
			170: CLOCK HOUR	0000 to 0023	h
			180: CLOCK MINUTE	0000 to 0059	mn
			190: CLOCK SEC	0000 to 003F	s
			200: HP FB SETPOINT	LP FB to 0130	°C
			210: R1 TEMP SETPOINT	0000 to 0130	°C
			211: R1 TEMP ALARM	SETPOINT+10 to 0160	°C
			220: LOG3 TIME WARNING	0000 to 0600	s
			221: LOG3 TIME ALARM	0000 to 0600	s
			300: WARNING R1	PRE-WARNING to ALARM	x100W
			301: ALARM R1	WARNING to 200	x100W
			302: PRE-WARNING R1	0500 to WARNING	x100W
			310: WARNING R2	PRE-WARNING to ALARM	x100W
			311: ALARM R2	WARNING to 200	x100W
			312: PRE-WARNING R2	0500 to WARNING	x100W
			322: PRE-WARNING PRESS	0500 to WARNING	mbar
			330: TEMP FB WARNING	0000 to ALARM	°C
			331: TEMP FB ALARM	WARNING to 160	°C
			350: WARNING TEMP USER	0000 to ALARM	°C
			351: ALARM TEMP USER	WARNING to 200	°C
			390: DELAY POWER FB	0000 to 6500	s
			400: HEAT1 SETPOINT	0100 to 0150	°C
			410: HEAT2 SETPOINT	0100 to 0150	°C
			420: HEAT3 SETPOINT	0100 to 0150	°C

Description	Order	Response	
Pump status	**STA**	Example: #000 00000100002 1041 0855 089 108 076 0282 00 00000000000000000000 0005<CR> #000 123456789AB CDEF GHJK LMN OPQ RST UVWX YZ abcdefghijklmnopqrstu wxyz<CR>	
		1: PUMP RUNNING	0= STOP / 1= RUNNING
		2: ROOTS RUNNING	0= STOP / 1= RUNNING
		3: N2 VALVE	0=CLOSED / 1=OPENED
		4: STDBY VALVE	0=CLOSED / 1=OPENED
		5: WATER VALVE	0=CLOSED / 1=OPENED
		6: INLET VALVE	0=CLOSED / 1=OPENED
		7: PERMIT VALVE	0=CLOSED / 1=OPENED
		8: HP FB VALVE	0=CLOSED / 1=OPENED
		9: HEAT1 POWER	0=POWER OFF / 1=POWER ON
		A: FAULT	0=OK / 1=ALERT / 2=ALARM
		B: CONTROL MODE	0=NO CONTROL / 1=REMOTE / 3=SERIAL LINK / 4=USER / 5=HHR
		CDEF: PRESSURE	0500 to 2000 mbar
		GHJK: FB POWER	0000 to 9999 W
		LMN: HP FB TEMP	000 to 160 °C
		OPQ: N2 FLOW	000 to 120 slm
		RST: LP FB TEMP	000 to 160 °C
		UVWX: R1 POWER	0000 to 9999 W
		YZ: N2 FLOW	000 to 99 slm
		a: PRESSURE	0=OK / 1=ALERT / 2=ALARM
		b: LP FB TEMP	0=OK / 1=ALERT / 2=ALARM
		c: FB POWER	0=OK / 1=ALERT / 2=ALARM
		d: ANALOG 1	0=OK / 1=ALERT / 2=ALARM
		e: LOG 1	0=OK / 1=ALERT / 2=ALARM
		f: LOG 2	0=OK / 1=ALERT / 2=ALARM
		g: FC FB+R1+R2	0=OK / 1=ALERT / 2=ALARM
		h: WATER FLOW	0=OK / 1=ALERT
		i: POWER FAIL	0=OK / 1=ALERT / 2=ALARM
		j: TEMP MOT	0=OK / 1=ALERT / 2=ALARM
		k: INLET VALVE WARNING	0=OK / 1=ALERT
		l: BREAKER FAULT	0=OK / 2=ALARM
		m: N2_PURGE FAULT	0=OK / 1=ALERT
		n: MAINTENANCE WARNING	0=OK / 1=ALERT / 2= ALARM
		o: ADP HIGH T° FAULT	0=OK / 1=ALERT / 2= ALARM
		p: ADP LOW T° WARNING	0=OK / 1=ALERT
		q: ROOTS T° FAULT	0=OK / 1=ALERT / 2= ALARM
		r: not used	r: not used
		s: E3 LOGIC FAULT	0=OK / 1=ALERT / 2= ALARM
		t: not used	t: not used
		u: not used	u: not used
		v: SEPARATOR	v: SEPARATOR
		wxyz: N2 PROLONG	00 to 7200 s

Description	Order	Response		
Parameters return	**LEW**	Example: #000 0150 0045 0000 1 1650 1450 0010 #000 A B C D E F G		
		A: not used		E: ALERT DELAY Pressure 120 slm
		B: not used		F: ALERT DELAY Pressure 60 slm
		C: not used		G: ALERT DELAY Purge after standby activation
		D: ALARM DELAY 5s ACTIVATION (1=activated)		
Returns the status of the parameters defined by SET	**LEV**	Example : #000 A001 A002 B001 B002 C001 C002 D001 D002 E001 E002 F001 F002 G000 H0000 I0000 J0000 K0000 L0000 M0000 N0000 O001 O002 P001 P002 Q001 Q002<CR>		
		1 to 3	adr	Address
		5 to 8	A001	FB power sensor warning threshold (W)
		10 to 13	A002	FB power sensor alarm threshold (W)
		15 to 18	B001	LP temperature setpoint on FB (°C)
		20 to 23	B002	LP temperature alarm on FB (°C)
		25 to 28	C001	Analog input 1 warning threshold (mV)
		30 to 33	C002	Analog input 1 alarm threshold (mV)
		35 to 38	D001	Purge flow delay warning threshold (s)
		40 to 43	D002	Purge flow delay alarm threshold (s)
		45 to 48	E001	Logic input 1 warning threshold (s)
		50 to 53	E002	Logic input 1 alarm threshold (s)
		55 to 58	F001	Logic input 2 warning threshold (s)
		60 to 63	F002	Logic input 2 alarm threshold (s)
		65 to 68	G000	Purge prolonged (s)
		70 to 74	H0000	Maintenance time warning (h)
		76 to 80	I0000	0
		82 to 86	J0000	0
		88 to 92	K0000	0
		94 to 98	L0000	0
		100 to 104	M0000	Purge warning threshold (slm)
		106 to 110	N0000	Purge alarm threshold (slm)
		112 to 115	O001	HP temperature setpoint on FB (°C)
		117 to 120	O002	HP temperature alarm on FB (°C)
		122 to 125	P001	RSV1 temperature setpoint (°C)
		127 to 130	P002	RSV1 alarm temperature (°C)
		132 to 135	Q001	Logic input 3 warning threshold (s)
		137 to 140	Q001	Logic input 3 alarm threshold (s)
Returns the status of the parameters defined by SET	**LEV**	Example : #000 A1234 B1234 C1234 D1234 E1234 F1234 G1234<CR>		
		1 to 3	adr	Address
		5 to 9	A1234	Run time
		11 to 15	B1234	Maintenance time
		17 to 31	C1234	Reserved
		23 to 27	D1234	Reserved
		29 to 33	E1234	Reserved
		35 to 39	F1234	Reserved
		41 to 45	G1234	Reserved

5.2 Modbus protocol

The Modbus protocol is an industrial bus in compliance with V1.1b3 modbus over serial line standards.

We use RTU version (Remote Terminal Unit).

The transmission are in hexadecimal code.

5.2.1 Instruction syntax description

Pump address — Number given to the pump, between 0 and 255.

Function code — To read a variable = 03

To write a variable = 10

Variable address — Listed in the table variable (see ***5.2.4***).

Number of words — Number of variables read or writed.

It is possible to read several variables and write several variables on the same command. **To avoid any mistake, we recommand to read/write only one variable at the same time.**

Number of bytes — Total number of bytes red or written. Number of bytes = 2 x Number of words.

If Number of words = 00 01, Number of bytes = 02

Variable value — Variable value red or written, in hexadecimal code.

CRC16 — Polynomial control parameter CRC (cyclical redundancy check). To calculate it, download an application on Internet: CRC16 modbus hexadecimal.

If [CRC] is set to [DISABLED], it do not compose the command.

5.2.2 Syntax

Two types of command: Read or Write

Variable reading

Pump address	Function code	Variable address	Number of words	CRC16
XX	03	AA AA	BB BB	CC CC

Response

Pump address	Function code	Number of bytes	First variable value	Next variable value	CRC16
XX	03	CC	EE EE	ZZ ZZ	CC CC

Variable writing

Pump address	Function code	Variable address	Number of words	Number of bytes	Value to enter	CRC16
XX	10	AA AA	BB BB	CC	EE EE	CC CC

Response

Pump address	Function code	Variable address	Number of words	CRC16
XX	10	AA AA	BB BB	CC CC

5.2.3 Examples

Example of **reading** of **purge prolongation duration** on the pump number **02**.

Pump address	Function code	Variable address	Number of words	CRC16
02	03	51 10	00 01	95 00

Response

Pump address	Function code	Number of bytes	First variable value	CRC16
02	03	02	07 08	FF B2

The purge prolongation duration is “0708” in hexadecimal = **1800 s (30 mn)**.

Example of **purge prolongation duration setting** to **10 mn** (600 s) on the pump number **02**. (i“0258” is the hexadecimal code for 600 s)

Pump address	Function code	Variable address	Number of words	Number of bytes	Value to enter	CRC16
02	10	51 10	00 01	02	02 58	F0 6F

Response

Pump address	Function code	Variable address	Number of words	CRC16
02	10	51 10	00 01	10 C3

Acknowlegement receipt of the command: the variable has been modified.

5.2.4 List of variables

Description	Choice	Modbus address	Unit	R(read)/ W(write)
Pump Status				
ADP state	0=STOP/1=START/2=STARTING/3=STOPPING	5000		R
RSV state	0=STOPPED/1=STARTED	5001		R
Purge state	0=CLOSED/1=OPENED	5002		R
Water state	0=CLOSED/1=OPENED	5003		R
Inlet valve state	0=CLOSED/1=OPENED	5004		R
Warning state	0=NOT PRESENT/1=PRESENT	5005		R
Alarm state	0=NOT PRESENT/1=PRESENT	5006		R
RSV2 opt	0=NOT PRESENT/1=PRESENT	5007		R
FB Speed	Value	5008	Hz	R
RSV1 Speed	Value	5009	Hz	R
RSV2 Speed	Value	500A	Hz	R
Pre-Warning State	0=NOT PRESENT/1=PRESENT	500B		R
Run Values				
Purge flow	Value	5010	slm	R
Water flow	Value	5011	L/h	R
Exhaust pressure	Value	5012	mbar	R
BF current	Value	5013	A	R
BF power	Value	5014	W	R
RSV1 current	Value	5015	A	R
RSV1 power	Value	5016	W	R
RSV2 current	Value	5017	A	R
RSV2 power	Value	5018	W	R
Pump Power	Value	5019	W	R
Main Voltage	Value	501A	V	R

Description	Choice	Modbus address	Unit	R(read)/ W(write)
Ambient temperature	Value	501B	°C	R
Low Pressure temperature	Value	501C	°C	R
High Pressure temperature	Value	501D	°C	R
RSV1 temperature	Value	501E	°C	R
RSV2 temperature	Value	501F	°C	R
Heater temperature 1	Value	5020	°C	R
Heater temperature 2	Value	5021	°C	R
Heater temperature 3	Value	5022	°C	R
User temperature	Value	5023	°C	R
Analogical input 1	Value	5024	mV	R
Analogical input 2	Value	5025	mV	R
Analogical input user	Value	5026	mV	R
BF frequency	Value	5027	Hz	R
RSV1 frequency	Value	5028	Hz	R
RSV2 frequency	Value	5029	Hz	R
LI4 sensor frequency	Value	502A	Hz	R
Pump Speed	Value	502B	Hz	R
N2 Prolong Delay	Value	502C	mn	R
Running Mode	0=NORMAL/1=STANDBY POWER/2=STANDBY N2	502D		R
Definition				
Auto start	0=DISABLED/1=ENABLED	5030		R/W
RSV command	0=DISABLED/1=ENABLED	5031		R/W
Purge command	0=DISABLED/1=ENABLED	5032		R/W
Inlet valve option	0=DISABLED/1=AUTO/2=MANUAL/3=SOFT PUMPING	5033		R/W
Control mode	0=HHR/1=REMOTE/2=SERIAL LINK/3=USER	5034		R/W
Pump model	0=A204/1=A804/2=A1504/3=A1804/4=A124/5=A604/ 6=A1204/7=A2204	5035		R/W
Pump type	0=H/1=X	5036		R/W
Frequency Converter	0=No FC/1=1FC/2=2FC	5037		R/W
Warning memorization	0=DISABLED/1=ENABLED	5039		R/W
RSV2 option	0=DISABLED/1=ENABLED	503B		R/W
Temperature Unit	0=°C/1=°F	503C		R/W
Pression Unit	0=mbar/1=Torr/2=Psi/3=hPa	503D		R/W
Idle Mode	0=DISABLED/1=ENABLED	503E		R/W
Language	0=FR/1=EN	503F		R/W
Settings				
Purge Warning	15...120	5100	slm	R/W
Purge Warning Time	0...600	5103	mn	R/W
Purge Alarm	15...30	5106	slm	R/W
Purge Alarm Time	0...600	5109	mn	R/W
Purge Pre-Warning	15...120	511A	slm	R/W
Purge Pre-Warning Time	0...600	511D	mn	R/W
Purge Prolongation Time	0...7200	5110	mn	R/W
Purge Standby Delay	0...600	5113	mn	R/W
H2O sensor Mass Warning Threshold	150...960	512D	L/h	R/W
H2O sensor Mass Warning Time	0...600	5130	mn	R/W
FB Speed	30/50/60	5160	Hz	R/W
FB Power Pre-Warning Threshold	500...4000	5163	W	R/W
FB Power Pre-Warning Time	0...600	5166	mn	R/W
FB Power Warning Threshold	3000...4900	5169	W	R/W
FB Power Warning Time	0...600	516C	mn	R/W
FB Power Alarm Threshold	4000...20000	516F	W	R/W
FB Power Alarm Time	0...6500	5172	mn	R/W
FB Speed Mode	0=FIXED/1=ANALOG	5175		R/W

Description	Choice	Modbus address	Unit	R(read)/ W(write)
RSV1 Speed	A604/A804: 30/50/60 A1204/A1504: 30/65/75 A1804: 30/75/100	5180	Hz	R/W
RSV1 Power Pre-Warning Threshold	500...3000	5183	W	R/W
RSV1 Power Pre-Warning Time	0...600	5186	mn	R/W
RSV1 Power Warning Threshold	2000...4000	5189	W	R/W
RSV1 Power Warning Time	0...600	518C	mn	R/W
RSV1 Power Alarm Threshold	3000...20000	518F	W	R/W
RSV1 Power Alarm Time	0...600	5192	mn	R/W
RSV1 Speed Mode	0=FIXED/1=ANALOG	5195		R/W
RSV2 Speed	-	51A0	Hz	R/W
RSV2 Power Pre-Warning Threshold	500...3000	51A3	W	R/W
RSV2 Power Pre-Warning Time	0...600	51A6	mn	R/W
RSV2 Power Warning Threshold	2000...4000	51A9	W	R/W
RSV2 Power Warning Time	0...600	51AC	mn	R/W
RSV2 Power Alarm Threshold	3000...20000	51AF	W	R/W
RSV2 Power Alarm Time	0...600	51B2	mn	R/W
RSV2 Speed Mode	0=FIXED/1=ANALOG	51B5		R/W
Main voltage Low Warning Threshold	180...530	51C0	V	R/W
Main voltage High Warning Threshold	180...530	51C3	V	R/W
Heater sensor Warning Time	0...600	51D3	mn	R/W
Heater sensor Alarm Time	0...600	51D9	mn	R/W
Soft pumping Delay	0...600	5210	mn	R/W
Logical sensor 1 Warning Time	0...600	5223	mn	R/W
Logical sensor 1 Alarm Time	0...600	5229	mn	R/W
Logical sensor 2 Warning Time	0...600	5233	mn	R/W
Logical sensor 2 Alarm Time	0...600	5239	mn	R/W
Logical sensor 3 Warning Time	0...600	5243	mn	R/W
Logical sensor 3 Alam Time	0...600	5249	mn	R/W
FB Temp LP Setpoint	Type H:60...90; Type X:70...90	526D	°C	R/W
FB Temp LP Alarm Threshold	Type H:70...120; Type X:50...120	5270	°C	R/W
FB Temp HP Setpoint	80...100	528D	°C	R/W
FB Temp HP Alarm Threshold	Type H:70...130; Type X:50...130	5290	°C	R/W
RSV1 Temp Mode	0=DISABLED/1=MEASUREMENT	52A0		R/W
RSV1 Temp Warning Threshold	80...150	52A1	°C	R/W
RSV1 Temp Warning Time	0...600	52A4	mn	R/W
RSV1 Temp Alarm Threshold	80...160	52A7	°C	R/W
RSV1 Temp Alarm Time	0...600	52AA	mn	R/W
RSV2 Temp Mode	0=DISABLED/1=MEASUREMENT	52C0		R/W
RSV2 Temp Warning Threshold	80...150	52C1	°C	R/W
RSV2 Temp Warning Time	0...600	52C4	mn	R/W
RSV2 Temp Alarm Threshold	80...160	52C7	°C	R/W
RSV2 Temp Alarm Time	0...600	52CA	mn	R/W
Heater 1 Temp Mode	0=DISABLED/2=REGULATION	52E0		R/W
Heater 1 Temp Setpoint	100...150	52ED	°C	R/W
Heater 1 Temp Alarm Threshold	100...170	52F0	°C	R/W
Heater 2 Temp Mode	0=DISABLED/2=REGULATION	5300		R/W
Heater 2 Temp Setpoint	100...150	530D	°C	R/W
Heater 2 Temp Alarm Threshold	100...170	5310	°C	R/W
Heater 3 Temp Mode	0=DISABLED/2=REGULATION	5320		R/W
Heater 3 Temp Setpoint	70...150	532D	°C	R/W
Heater 3 Temp Alarm Threshold	70...150	5330	°C	R/W
User Temp Mode	0=DISABLED/1=MEASUREMENT	5340		R/W
User Temp Warning Threshold	0...150	5341	°C	R/W
User Temp Warning Time	0...600	5344	mn	R/W

Description	Choice	Modbus address	Unit	R(read)/ W(write)
User Temp Alarm Threshold	130...200	5347	°C	R/W
User Temp Alarm Time	0...600	534A	mn	R/W
Exhaust Pressure Pre-Warning Threshold	500...1650	5350		R/W
Exhaust Pressure Pre-Warning Time	0...600	5353	mn	R/W
Analogic Input 1 Mode	0=DISABLED/1=ENABLED	5360		R/W
Analogic Input 1 Warning Threshold	0...5000	5361	mV	R/W
Analogic Input 1 Warning Time	0...600	5364	mn	R/W
Analogic Input 1 Alarm Threshold	2000...10000	5367	mV	R/W
Analogic Input 1 Alarm Time	0...600	536A	mn	R/W
Analogic Input User Mode	0=DISABLED/1=ENABLED	5280		R/W
Analogic Input User Warning Threshold	0...5000	5281	mV	R/W
Analogic Input User Warning Time	0...600	5284	mn	R/W
Analogic Input User Alarm Threshold	2000...10000	5287	mV	R/W
Analogic Input User Alarm Time	0...600	528A	mn	R/W
Serial J2 Type	0=DRY PUMP/1=Modbus	5390		R/W
Serial J2 Echo	0=DISABLED/1=ENABLED	5391		R/W
Serial J2 Speed	0=9600/1=19200/2=38400/3=57600/4=115200	5392		R/W
Serial J2 Parity	0=DISABLED/1=EVEN/2=ODD	5393		R/W
Serial J2 Stop Bits	0=1 stop bit/1=2 stop bits	5394		R/W
Serial J2 Address	0...255	5395		R/W
Serial J2 CRC	0=DISABLED/1=ENABLED	5396		R/W
Serial J6 Type	0=DRY PUMP/1=Modbus	53A0		R/W
Serial J6 Echo	0=DISABLED/1=ENABLED	53A1		R/W
Serial J6 Speed	0=9600/1=19200/2=38400/3=57600/4=115200	53A2		R/W
Serial J6 Parity	0=DISABLED/1=EVEN/2=ODD	53A3		R/W
Serial J6 Stop Bits	0=1 stop bit/1=2 stop bits	53A4		R/W
Serial J6 Address	0...255	53A5		R/W
Serial J6 CRC	0=DISABLED/1=ENABLED	53A6		R/W
Serial J7 Type	0=DRY PUMP/1=Modbus/2=Network	5399		R/W
Serial J7 Echo	0=DISABLED/1=ENABLED	539A		R/W
Serial J7 Speed	0=9600/1=19200/2=38400/3=57600/4=115200	539B		R/W
Serial J7 Parity	0=DISABLED/1=EVEN/2=ODD	539C		R/W
Serial J7 Stop Bits	0=1 stop bit/1=2 stop bits	539D		R/W
Serial J7 Address	0...255	539E		R/W
Serial J7 CRC	0=DISABLED/1=ENABLED	539F		R/W
Date (Day)	1...31	53B0		R/W
Date (Month)	1...12	53B1		R/W
Date (Yeah)	01...99	53B2		R/W
Date (Hours)	00...23	53B3	h	R/W
Date (Minutes)	00...59	53B4	mn	R/W
Date (Seconds)	00...59	53B5	s	R/W
Config Remote contact (45-46)	0=Pre-Warning/1=Pump Running	5B10		R/W
Parameters				
Purge Sensor Warning	0=DISABLED/1=ENABLED	5C05		R/W
Purge Sensor Alarm	0=DISABLED/1=ENABLED	5C06		R/W
Purge Sensor Pre-Warning	0=DISABLED/1=ENABLED	5C2F		R/W
Logical sensor 1 Warning	0=DISABLED/1=ENABLED	5C07		R/W
Logical sensor 1 Alarm	0=DISABLED/1=ENABLED	5C08		R/W
Logical sensor 2 Warning	0=DISABLED/1=ENABLED	5C09		R/W
Logical sensor 2 Alarm	0=DISABLED/1=ENABLED	5C0A		R/W
Logical sensor 3 Warning	0=DISABLED/1=ENABLED	5C0B		R/W
Logical sensor 3 Alarm	0=DISABLED/1=ENABLED	5C0C		R/W
Analogic Input 1 Warning	0=DISABLED/1=ENABLED	5C0D		R/W
Analogic Input 1 Alarm	0=DISABLED/1=ENABLED	5C0E		R/W

Description	Choice	Modbus address	Unit	R(read)/ W(write)
FB Power Pre-Warning	0=DISABLED/1=ENABLED	5C11		R/W
FB Power Defaults Warning	0=DISABLED/1=ENABLED	5C12		R/W
FB Power Defaults Alarm	0=DISABLED/1=ENABLED	5C13		R/W
RSV1 Power Pre-Warning	0=DISABLED/1=ENABLED	5C14		R/W
RSV1 Power Defaults Warning	0=DISABLED/1=ENABLED	5C15		R/W
RSV1 Power Defaults Alarm	0=DISABLED/1=ENABLED	5C16		R/W
RSV2 Power Pre-Warning	0=DISABLED/1=ENABLED	5C17		R/W
RSV2 Power Defaults Warning	0=DISABLED/1=ENABLED	5C18		R/W
RSV2 Power Defaults Alarm	0=DISABLED/1=ENABLED	5C19		R/W
Ana User Input Warning	0=DISABLED/1=ENABLED	5C1A		R/W
Ana User Input Alarm	0=DISABLED/1=ENABLED	5C1B		R/W
Heater Sensor Alarm	0=DISABLED/1=ENABLED	5C1F		R/W
Exhaust Pressure Pre-Warning	0=DISABLED/1=ENABLED	5C24		R/W
RSV1 Temp Warning	0=DISABLED/1=ENABLED	5C30		R/W
RSV1 Temp Alarm	0=DISABLED/1=ENABLED	5C31		R/W
RSV2 Temp Warning	0=DISABLED/1=ENABLED	5C32		R/W
RSV2 Temp Alarm	0=DISABLED/1=ENABLED	5C33		R/W
User Temp Warning	0=DISABLED/1=ENABLED	5C34		R/W
User Temp Alarm	0=DISABLED/1=ENABLED	5C35		R/W
Times				
Run time (LSB)		5400	h	R
Run time (MSB)		6400	h	R
Partial time Value		5410	h	R
Partial time Warning		5413	h	R
Warnings / Alarms				
Low voltage WARNING	0=Not Present/1=Present	5900 bit 0		R
Low voltage ALARM	0=Not Present/1=Present	5900 bit 1		R
Reverse Running WARNING	0=Not Present/1=Present	5900 bit 2		R
Reverse Running ALARM	0=Not Present/1=Present	5900 bit 3		R
EMO WARNING	0=Not Present/1=Present	5900 bit 4		R
EMO ALARM	0=Not Present/1=Present	5900 bit 5		R
FB Breaker WARNING	0=Not Present/1=Present	5900 bit 6		R
FB Breaker ALARM	0=Not Present/1=Present	5900 bit 7		R
RSV1 Breaker WARNING	0=Not Present/1=Present	5900 bit 8		R
RSV1 Breaker ALARM	0=Not Present/1=Present	5900 bit 9		R
FB Contactor WARNING	0=Not Present/1=Present	5900 bit 10		R
FB Contactor ALARM	0=Not Present/1=Present	5900 bit 11		R
RSV1 contactor WARNING	0=Not Present/1=Present	5900 bit 12		R
RSV1 contactor ALARM	0=Not Present/1=Present	5900 bit 13		R
RSV1 seizure WARNING	0=Not Present/1=Present	5900 bit 14		R
RSV1 seizure ALARM	0=Not Present/1=Present	5900 bit 15		R
RSV2 seizure WARNING	0=Not Present/1=Present	6900 bit 0		R
RSV2 seizure ALARM	0=Not Present/1=Present	6900 bit 1		R
RSV1 clogging WARNING	0=Not Present/1=Present	6900 bit 2		R
RSV1 clogging ALARM	0=Not Present/1=Present	6900 bit 3		R
RSV2 clogging WARNING	0=Not Present/1=Present	6900 bit 4		R
RSV2 clogging ALARM	0=Not Present/1=Present	6900 bit 5		R
Maintenance WARNING	0=Not Present/1=Present	6900 bit 6		R
Maintenance ALARM	0=Not Present/1=Present	6900 bit 7		R
Main Power WARNING	0=Not Present/1=Present	6900 bit 8		R
Main Power ALARM	0=Not Present/1=Present	6900 bit 9		R
N2 Sensor WARNING	0=Not Present/1=Present	5901 bit 0		R
N2 Sensor ALARM	0=Not Present/1=Present	5901 bit 1		R
Cover pressure sensor WARNING	0=Not Present/1=Present	5901 bit 2		R
Cover pressure sensor ALARM	0=Not Present/1=Present	5901 bit 3		R

Description	Choice	Modbus address	Unit	R(read)/ W(write)
Exhaust pressure sensor WARNING	0=Not Present/1=Present	5901 bit 4		R
Exhaust pressure sensor ALARM	0=Not Present/1=Present	5901 bit 5		R
FB Motor temp sensor ALARM	0=Not Present/1=Present	5901 bit 7		R
FB Motor temp sensor WARNING	0=Not Present/1=Present	5901 bit 8		R
RSV1 Motor temp sensor ALARM	0=Not Present/1=Present	5901 bit 11		R
RSV2 Motor temp sensor WARNING	0=Not Present/1=Present	5901 bit 12		R
Heater 1 WARNING	0=Not Present/1=Present	5901 bit 14		R
Heater 1 ALARM	0=Not Present/1=Present	5901 bit 15		R
Heater 2 WARNING	0=Not Present/1=Present	6901 bit 0		R
Heater 2 ALARM	0=Not Present/1=Present	6901 bit 1		R
Heater 3 WARNING	0=Not Present/1=Present	6901 bit 2		R
Heater 3 ALARM	0=Not Present/1=Present	6901 bit 3		R
FB LP WARNING	0=Not Present/1=Present	6901 bit 4		R
FB LP ALARM	0=Not Present/1=Present	6901 bit 5		R
FB HP WARNING	0=Not Present/1=Present	6901 bit 6		R
FB HP ALARM	0=Not Present/1=Present	6901 bit 7		R
RSV1 WARNING	0=Not Present/1=Present	6901 bit 8		R
RSV1 ALARM	0=Not Present/1=Present	6901 bit 9		R
RSV2 WARNING	0=Not Present/1=Present	6901 bit 10		R
RSV2 ALARM	0=Not Present/1=Present	6901 bit 11		R
User Temp WARNING	0=Not Present/1=Present	6901 bit 12		R
User Temp ALARM	0=Not Present/1=Present	6901 bit 13		R
Ambiant Temp M6 WARNING	0=Not Present/1=Present	6901 bit 14		R
Ambiant Temp M6 ALARM	0=Not Present/1=Present	6901 bit 15		R
FC FB ALARM	0=Not Present/1=Present	5902 bit 1		R
FC FB underspeed WARNING	0=Not Present/1=Present	5902 bit 2		R
FC FB underspeed ALARM	0=Not Present/1=Present	5902 bit 3		R
FC FB overcurent WARNING	0=Not Present/1=Present	5902 bit 4		R
FC FB overcurent ALARM	0=Not Present/1=Present	5902 bit 5		R
FC FB overvoltage WARNING	0=Not Present/1=Present	5902 bit 6		R
FC FB overvoltage ALARM	0=Not Present/1=Present	5902 bit 7		R
FC FB overpower WARNING	0=Not Present/1=Present	5902 bit 8		R
FC FB overpower ALARM	0=Not Present/1=Present	5902 bit 9		R
FC FB overtemperature WARNING	0=Not Present/1=Present	5902 bit 10		R
FC FB overtemperature ALARM	0=Not Present/1=Present	5902 bit 11		R
FC FB motor overload WARNING	0=Not Present/1=Present	5902 bit 12		R
FC FB motor overload ALARM	0=Not Present/1=Present	5902 bit 13		R
FC FB undervoltage WARNING	0=Not Present/1=Present	5902 bit 14		R
FC FB undervoltage ALARM	0=Not Present/1=Present	5902 bit 15		R
FC FB phase missing WARNING	0=Not Present/1=Present	6902 bit 0		R
FC FB phase missing ALARM	0=Not Present/1=Present	6902 bit 1		R
FC FB communication WARNING	0=Not Present/1=Present	6902 bit 2		R
FC FB communication ALARM	0=Not Present/1=Present	6902 bit 3		R
FC RSV1 ALARM	0=Not Present/1=Present	5903 bit 1		R
FC RSV1 underspeed WARNING	0=Not Present/1=Present	5903 bit 2		R
FC RSV1 underspeed ALARM	0=Not Present/1=Present	5903 bit 3		R
FC RSV1 overcurent WARNING	0=Not Present/1=Present	5903 bit 4		R
FC RSV1 overcurent ALARM	0=Not Present/1=Present	5903 bit 5		R
FC RSV1 overvoltage WARNING	0=Not Present/1=Present	5903 bit 6		R
FC RSV1 overvoltage ALARM	0=Not Present/1=Present	5903 bit 7		R
FC RSV1 overpower WARNING	0=Not Present/1=Present	5903 bit 8		R
FC RSV1 overpower ALARM	0=Not Present/1=Present	5903 bit 9		R
FC RSV1 overtemperature WARNING	0=Not Present/1=Present	5903 bit 10		R
FC RSV1 overtemperature ALARM	0=Not Present/1=Present	5903 bit 11		R
FC RSV1 motor overload WARNING	0=Not Present/1=Present	5903 bit 12		R

Description	Choice	Modbus address	Unit	R(read)/ W(write)
FC RSV1 motor overload ALARM	0=Not Present/1=Present	5903 bit 13		R
FC RSV1 undervoltage WARNING	0=Not Present/1=Present	5903 bit 14		R
FC RSV1 undervoltage ALARM	0=Not Present/1=Present	5903 bit 15		R
FC RSV1 phase missing WARNING	0=Not Present/1=Present	6903 bit 0		R
FC RSV1 phase missing ALARM	0=Not Present/1=Present	6903 bit 1		R
FC RSV1 communication WARNING	0=Not Present/1=Present	6903 bit 2		R
FC RSV1 communication ALARM	0=Not Present/1=Present	6903 bit 3		R
FC RSV2 ALARM	0=Not Present/1=Present	5904 bit 1		R
FC RSV2 underspeed WARNING	0=Not Present/1=Present	5904 bit 2		R
FC RSV2 underspeed ALARM	0=Not Present/1=Present	5904 bit 3		R
FC RSV2 overcurent WARNING	0=Not Present/1=Present	5904 bit 4		R
FC RSV2 overcurent ALARM	0=Not Present/1=Present	5904 bit 5		R
FC RSV2 overvoltage WARNING	0=Not Present/1=Present	5904 bit 6		R
FC RSV2 overvoltage ALARM	0=Not Present/1=Present	5904 bit 7		R
FC RSV2 overpower WARNING	0=Not Present/1=Present	5904 bit 8		R
FC RSV2 overpower ALARM	0=Not Present/1=Present	5904 bit 9		R
FC RSV2 overtemperature WARNING	0=Not Present/1=Present	5904 bit 10		R
FC RSV2 overtemperature ALARM	0=Not Present/1=Present	5904 bit 11		R
FC RSV2 motor overload WARNING	0=Not Present/1=Present	5904 bit 12		R
FC RSV2 motor overload ALARM	0=Not Present/1=Present	5904 bit 13		R
FC RSV2 undervoltage WARNING	0=Not Present/1=Present	5904 bit 14		R
FC RSV2 undervoltage ALARM	0=Not Present/1=Present	5904 bit 15		R
FC RSV2 phase missing WARNING	0=Not Present/1=Present	6904 bit 0		R
FC RSV2 phase missing ALARM	0=Not Present/1=Present	6904 bit 1		R
FC RSV2 communication WARNING	0=Not Present/1=Present	6904 bit 2		R
FC RSV2 communication ALARM	0=Not Present/1=Present	6904 bit 3		R
Isolation valve WARNING	0=Not Present/1=Present	5905 bit 0		R
Isolation valve ALARM	0=Not Present/1=Present	5905 bit 1		R
Soft pumping valve WARNING	0=Not Present/1=Present	5905 bit 2		R
Soft pumping valve ALARM	0=Not Present/1=Present	5905 bit 3		R
Logic Input 1 WARNING	0=Not Present/1=Present	5905 bit 4		R
Logic Input 1 ALARM	0=Not Present/1=Present	5905 bit 5		R
Logic Input 2 WARNING	0=Not Present/1=Present	5905 bit 6		R
Logic Input 2 ALARM	0=Not Present/1=Present	5905 bit 7		R
Logic Input 3 WARNING	0=Not Present/1=Present	5905 bit 8		R
Logic Input 3 ALARM	0=Not Present/1=Present	5905 bit 9		R
Heater WARNING (contact)	0=Not Present/1=Present	5905 bit 10		R
Analogic Input 1 WARNING	0=Not Present/1=Present	5905 bit 12		R
Analogic Input 1 ALARM	0=Not Present/1=Present	5905 bit 13		R
Analogic Input 2 WARNING	0=Not Present/1=Present	5905 bit 14		R
Analogic Input 2 ALARM	0=Not Present/1=Present	5905 bit 15		R
Water Flow WARNING	0=Not Present/1=Present	6905 bit 0		R
Water Flox ALARM	0=Not Present/1=Present	6905 bit 1		R
Logic Input 4 WARNING	0=Not Present/1=Present	6905 bit 2		R
Logic Input 4 ALARM	0=Not Present/1=Present	6905 bit 3		R
User Input WARNING	0=Not Present/1=Present	6905 bit 4		R
User Input ALARM	0=Not Present/1=Present	6905 bit 5		R
N2 WARNING	0=Not Present/1=Present	6905 bit 6		R
N2 ALARM	0=Not Present/1=Present	6905 bit 7		R
Exhaust Pressure WARNING	0=Not Present/1=Present	6905 bit 8		R
Exhaust Pressure ALARM	0=Not Present/1=Present	6905 bit 9		R

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