

USER MANUAL

Modbus

IHP24-A
IHP24-AF
IHP24-B
IHP24-BF
IHP24-F
IHP24-I



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1 General

This manual covers software version:

Software ID : DHP-SW-016

Software Version: 3.07

1.1 Safety instructions

For a safe installation of a positioner, the following must be observed. The module must only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this product as well as all instructions in this manual.

The information in this user manual is subject to changes without notice.

2 Purpose

It is the purpose of this document, to list specifications, protocol commands and functions, the MODBUS communication protocol in Val Control products.

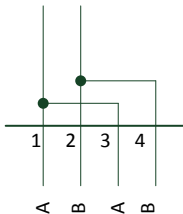
3 Specifications

MODBUS specification version V1.1b 2006

3.1 Electrical specifications for standard configuration

MODBUS	
Interface	RS485
Communication Settings	Default: 57600 Stop bit:1 Data size: 8 bit Parity: Even Others: 57600 Stop bit:2 Data size: 8 bit Parity: None 9600 Stop bit:2 Data size: 8 bit Parity: None 9600 Stop bit:1 Data size: 8 bit Parity: Even Bit Length is 10 bits for each data block.
Node ID	1-247 (Software selectable)
Response time	Max. 2 sec from slave
MODBUS mode	RTU with CRC16
Galvanic isolated	

3.2 Terminals



The IHP24 does not contain any internal termination resistors on the RS485 bus.

Termination resistors should have the value of 120 ohm. The termination resistors could be applied across terminal 3 and 4, since Term 1 is internally connected to Term 3 and Term 2 is internally connected to Term 4.

A maximum of 247 nodes can be connected on the same daisy chain bus.

3.3 Shielding

Typical shielding of the RS485 bus cable is done on the master side of the cable. Note the RS485 circuit is galvanic isolated in the slave.

4 Menu

The communication settings can be changed in the Menu at the following location.

Advanced menu	Default	Value	Reset	Description
6 Modbus				Modbus configuration
1 ID	1	1-247		Change the Modbus node ID
2 Baudrate	57600	9600/57600		Change the baudrate
3 Parity	Even	None/Even/Odd		Change the parity
4 Stopbits	1	1-2		Change the number of stopbits

5 MODBUS function codes

This section contains the supported MODBUS commands.

5.1 03 (0x03) Read holding registers

Reads Register 40001 - 49999

Request

	Length	Value
Function code	1 Byte	0x03
Starting address	2 Bytes	0x0000 to 0xFFFF
Quantity of registers	2 Bytes	1 to 125 (0xD7)

Response

	Length	Value
Function code	1 Byte	0x03
Byte count	1 Byte	2 x N*
Register value	N* x 2 Bytes	

Error

	Length	Value
Error code	1 Byte	0x83
Exception code	1 Byte	01 to 08

5.2 16 (0x10) Write multiple registers

Writes to Register 40001 - 49999

Request

	Length	Value
Function code	1 Byte	0x10
Starting address	2 Bytes	0x0000 to 0xFFFF
Quantity of registers	2 Bytes	0x0001 to 0x007B
Byte count	1 Byte	2 x N*
Registers value	N* x 2 Bytes	value

Response

	Length	Value
Function code	1 Byte	0x10
Byte count	1 Byte	0x0000 to 0xFFFF
Register value	N* x 2 Bytes	1 to 123 (0x7B)

Error

	Length	Value
Error code	1 Byte	0x90
Exception code	1 Byte	01 to 08

6 Identification

Register	Len	Access	Type	Name	Parameter Range/Units/Notes
				Identification	
40001	2	RO	U32	Software version	Description: Software Version Number
40003	7	RO	ASCII	Software ID	Description: Software Identification Number
40013	7	RO	ASCII	Manufacture name	Description: Product Manufacturer Name
40023	7	RO	ASCII	Type name	Description: Product Type Name
40035	16	RW	ASCII	Tag name	Description: User tag name

7 Error log

Register	Len	Access	Type	Name	Parameter Range/Units/Notes
				System error log	
40101	1	RO	U16	Number of errors	Default: 00000 Range: 0-10 Description: Number of entries in the log
40102	1	RO	U16	System error 1	Default: 00000 Range: 100-999 Description: Newest system error. See product manual for details
40103	1	RO	U16	System error 2	Default: 00000 Range: 100-999 Description: Value of error
40104	1	RO	U16	System error 3	Default: 00000 Range: 100-999 Description: Value of error
40105	1	RO	U16	System error 4	Default: 00000 Range: 100-999 Description: Value of error
40106	1	RO	U16	System error 5	Default: 00000 Range: 100-999 Description: Value of error
40107	1	RO	U16	System error 6	Default: 00000 Range: 100-999 Description: Value of error
40108	1	RO	U16	System error 7	Default: 00000 Range: 100-999 Description: Value of error
40109	1	RO	U16	System error 8	Default: 00000 Range: 100-999 Description: Value of error
40110	1	RO	U16	System error 9	Default: 00000 Range: 100-999 Description: Value of error
40111	1	RO	U16	System error 10	Default: 00000 Range: 100-999 Description: Value of oldest error, if a new error occurs this value will be removed.

8 Configuration

Register	Len	Access	Type	Name	Parameter Range/Units/Notes
				Configuration	
				Valve function	Description: Configure how to operate the valve
				Open	Description: Digital output settings when opening
42101	1	RW	U16	DO1	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Open state DO1
42102	1	RW	U16	DO2	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Open state DO2
42103	1	RW	U16	DO3	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Open state DO3
42104	1	RW	U16	DO4	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Open state DO4
				Close	Description: Digital output settings when closing
42201	1	RW	U16	DO1	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Close state DO1
42202	1	RW	U16	DO2	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Close state DO2
42203	1	RW	U16	DO3	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Close state DO3
42204	1	RW	U16	DO4	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Close state DO4
				Stay-put	Description: Digital output settings when sty-put
42301	1	RW	U16	DO1	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Stay Put state DO1
42302	1	RW	U16	DO2	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Stay Put state DO2
42303	1	RW	U16	DO3	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Stay Put state DO3
42304	1	RW	U16	DO4	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Stay Put state DO4
				Fail position	Description: Digital output settings when in stay put
42351	1	RW	U16	DO1	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Fail Position state DO1
42352	1	RW	U16	DO2	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Fail Position state DO2
42353	1	RW	U16	DO3	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Fail Position state DO3
42354	1	RW	U16	DO4	Default: 00002 Range: 00001: On; 00002: Off; 00003: Not Used; Description: Fail Position state DO4
				Position feedback	

42401	1	RW	U16	Position feedback input	Default: 00001 Range: 00001: Position sensor; 00002: Position loop; Description: Position feedback input signal
				End position	
42411	1	RW	U16	0% signal - output port	Default: 00000 Range: 00000: Not Used; 00001: DO1;00002: DO2;00003: DO3;00004: DO4;00005: DO5;00006: DO6; Description: Output to indicate that the valve is at 0%
42412	1	RW	U16	100% signal - output port	Default: 00000 Range: 00000: Not Used; 00001: DO1;00002: DO2;00003: DO3;00004: DO4;00005: DO5;00006: DO6; Description: Output to indicate that the valve is at 100%
42413	1	RW	U16	End position deadband	Default: 50 Range: 0-10000 Divider: 100 Unit: % Description: The deadband used to determine if the valve is at 0% or 100%
				Off/local signal	Description: Local remote configuration
42481	1	RW	U16	Off input signal	Default: 00000 Range: 00000: Not Used; 00001: DI1;00002: DI2;00003: DI3;00004: DI4;00005: DI5;00006: DI6;00007: DI7;00008: DI8; Description: Input signal to set the positioner in off mode
42482	1	RW	U16	Local input signal	Default: 00000 Range: 00000: Not Used; 00001: DI1;00002: DI2;00003: DI3;00004: DI4;00005: DI5;00006: DI6;00007: DI7;00008: DI8; Description: Input signal to set the positioner in local mode
				Emergency shutdown	
42483	1	RW	U16	Input signal	Default: 00000 Range: 00000: Not Used; 00001: DI1;00002: DI2;00003: DI3;00004: DI4;00005: DI5;00006: DI6;00007: DI7;00008: DI8;00009: DI9; Description: Emergency shutdown input port
				Manual valve control	
42484	1	RW	U16	Open signal	Default: 00000 Range: 00000: Not Used; 00001: DI1;00002: DI2;00003: DI3;00004: DI4;00005: DI5;00006: DI6;00007: DI7;00008: DI8; Description: Local open valve input signal
42485	1	RW	U16	Close signal	Default: 00000 Range: 00000: Not Used; 00001: DI1;00002: DI2;00003: DI3;00004: DI4;00005: DI5;00006: DI6;00007: DI7;00008: DI8; Description: Local close valve input signal
				Error signal	
42421	1	RW	U16	Error output signal	Default: 00000 Range: 00000: Not Used; 00001: DO1;00002: DO2;00003: DO3;00004: DO4;00005: DO5;00006: DO6;

					Description: Common error output signal
42422	1	RW	U16	Ok output signal	Default: 00000 Range: 00000: Not Used; 00001: DO1;00002: DO2;00003: DO3;00004: DO4;00005: DO5;00006: DO6; Description: Common ok output signal
				Stepping	Description: Configure the software stepping function
42501	1	RW	U16	Status	Range: 00001: On; 00002: Off; Description: Enable the stepping functionality
42502	1	RW	U16	Fail step	Range: 00002: Off; 00003: Open; 00004: Close; Description: Fail action in case of loss of control loop or position signal
42503	1	RW	U16	Open off-time extra	Default: 35 Range: 0-15000 Unit: ms Description: Extra pulse pause when opening
42504	1	RW	U16	Close off-time extra	Default: 35 Range: 0-15000 Unit: ms Description: Extra pulse pause when closing
42505	1	RW	U16	Open end pulses	Default: 5 Range: 0-250 Unit: pulses Description: Number of pulses when at the open position
42506	1	RW	U16	Close end pulses	Default: 5 Range: 0-250 Unit: pulses Description: Number of pulses when at the close position
				Linear correction	
42531	1	RW	U16	Status	Range: 00001: On; 00002: Off; Description: Enable the linear functionality
42532	1	RW	U16	25% ADC	Range: 0-65535
42533	1	RW	U16	50% ADC	Range: 0-65535
42534	1	RW	U16	75% ADC	Range: 0-65535
				Control parameters	
42431	1	RW	U16	Hysteresis	Default: 50 Range: 0-10000 Divider: 100 Unit: %
42441	1	RW	U16	Pos. ADC 1st end	Default: 0 Range: 0-65535 Divider: 1 Unit: ADC
42442	1	RW	U16	Pos. ADC 2nd end	Default: 65535 Range: 0-65535 Divider: 1 Unit: ADC
42443	1	RW	U16	Pos. direction	Default: 00001 Range: 00001: Direct; 00002: Reverse;
42452	1	RW	U16	Open on-time	Default: 100 Range: 5-1500 Unit: ms
42454	1	RW	U16	Open off-time	Default: 100 Range: 5-1500 Unit: ms

42462	1	RW	U16	Close on-time	Default: 100 Range: 5-1500 Unit: ms
42464	1	RW	U16	Close off-time	Default: 100 Range: 5-1500 Unit: ms
42471	1	RW	U16	Pulse open distance	Default: 200 Range: 0-10000 Divider: 100 Unit: %
42472	1	RW	U16	Pulse close distance	Default: 200 Range: 0-10000 Divider: 100 Unit: %

9 Pump control

Register	Len	Access	Type	Name	Parameter Range/Units/Notes
				Pump	
42601	1	RW	U16	Output	Default: 00000 Range: 00000: Not Used; 00001: DO1;00002: DO2;00003: DO3;00004: DO4;00005: DO5;00006: DO6; Description: Configure the pump output signal
42611	1	RW	U16	Controller	Default: 00000 Range: 00000: Not Used; 00001: Always Off; 00002: Always On; 00003: Auto; Description: Status of the PUC
42661		RW	U16	Motor safety relay input signal	Default: 00000 Range: 00000: Not Used; 00001: DI1; 00002: DI2; 00003: DI3; 00004: DI4; 00005: DI5; 00006: DI6; 00007: DI7; 00008: DI8; Description: The digital input for a motor safety relay
				Max running time	
42621	1	RW	U16	Status	Default: 00002 Range: 00001: On; 00002: Off; Description: Turn on the max running time function
42622	1	RW	U16	Time	Default: 120 Range: 0-255 Unit: sec Description: The maximum running time limit
				Pressure	
42631	1	RW	U16	Input signal	Default: 00000 Range: 00000: Not used; 00001: AI0; 00002: AI1; 00003: AI2; 00004: AI3; 00005: AI4; 00006: DI1 and DI2; 00007: DI3 and DI4; 00008: DI5 and DI6; 00009: DI7 and DI8; Description: The pressure input sensor
				Pump configuration	

42632	1	RW	U16	Pump start value	Default: 8000 Range: 0-50000 Divider: 100 Unit: bar Description: Start pump when pressure is below this value
42633	1	RW	U16	Pump stop value	Default: 12000 Range: 0-50000 Divider: 100 Unit: bar Description: Stop pump when pressure is above this value
				Loop configuration	
42634	1	RW	U16	4mA value	Default: 0 Range: 0-50000 Divider: 100 Unit: bar Description: Pressure at 4mA
42635	1	RW	U16	20mA value	Default: 15000 Range: 0-50000 Divider: 100 Unit: bar Description: Pressure at 20mA
				Switch	
42636	1	RW	U16	Switch type	Default: 00001 Range: 00001: Normally Open; 00002: Normally Closed; Description: Switch type
				Level	
42641	1	RW	U16	Input signal	Default: 00000 Range: 00000: Not Used; 00001: AI1; 00002: AI2; 00003: AI3; 00004: AI4; 00005: DI1; 00006: DI2; 00007: DI3; 00008: DI4; 00009: DI5; 00010: DI6; 00011: DI7; 00012: DI8; Description: The level input sensor
42642	1	RW	U16	Pump stop value	Default: 100 Range: 0-999900 Unit: mm Description: Stop pump when the level is below this value
				Loop configuration	
42643	1	RW	U16	4mA value	Default: 0 Unit: mm Description: Level at 4mA

42644	1	RW	U16	20mA value	Default: 700 Unit: mm Description: Level at 20mA
				Switch	
42645	1	RW	U16	Switch type	Default: 00001 Range: 00001: Normally Open; 00002: Normally Closed; Description: Switch type
				Temperature	
42651	1	RW	U16	Input signal	Default: 00000 Range: 00000: Not Used; 00001: AI1; 00002: AI2; 00003: AI3; 00004: AI4; 00005: DI1; 00006: DI2; 00007: DI3; 00008: DI4; 00009: DI5; 00010: DI6; 00011: DI7; 00012: DI8; Description: The temperature input sensor
				Pump configuration	
				Pump stop high	
42652	1	RW	U16	Value	Default: 353 Unit: Kelvin Description: Stop pump then temperature is above this value
42653	1	RW	U16	Status	Default: 00002 Range: 00001: On; 00002: Off; Description: Enable the stop high function
				Pump stop low	
42654	1	RW	U16	Value	Default: 253 Unit: Kelvin Description: Stop pump then temperature is below this value
42655	1	RW	U16	Status	Default: 00002 Range: 00001: On; 00002: Off; Description: Enable the stop low function
				Loop configuration	
42656	1	RW	U16	4mA value	Default: 273 Unit: Kelvin Description: Temperature at 4mA
42657	1	RW	U16	20mA value	Default: 373 Unit: Kelvin Description: Temperature at 20mA
				Switch	

42658	1	RW	U16	Switch type	Default: 00001 Range: 00001: Normally Open; 00002: Normally Closed; Description: Switch type
				Pump Control - Valve	
				Pump start	
42662	1	RW	U16	Valve open	Default: 00002 Range: 00001: Yes; 00002: No; Description: Start pump when valve is opening
42663	1	RW	U16	Valve close	Default: 00002 Range: 00001: Yes; 00002: No; Description: Start pump when valve is closing
42664	1	RW	U16	Valve stay-put	Default: 00002 Range: 00001: Yes; 00002: No; Description: Start pump when valve is at stay-put
				Pump stop	
42665	1	RW	U16	Delay	Default: 5 Range: 0-240 Unit: sec Description: Stop the pump after this time delay

10 Live

Register	Len	Access	Type	Name	Parameter Range/Units/Notes
				Process values	
40201	1	RO	U16	SP - Flow	Range: 0-10000 Divider: 100 Unit: % Description: % value of the control loop - Flow
40202	1	RO	U16	PV - Flow	Range: 0-10000 Divider: 100 Unit: % Description: % value of the position loop/sensor - Flow
40203	1	RO	U16	TM - Flow	Range: 0-10000 Divider: 100 Unit: % Description: % value of the transmitter loop - Flow
40206	1	RO	U16	SP - Travel	Range: 0-10000 Divider: 100 Unit: % Description: % value of the control loop - Travel
40207	1	RO	U16	PV - Travel	Range: 0-10000 Divider: 100 Unit: % Description: % value of the position loop/sensor - Travel
40211	1	RO	U16	SP - mA	Range: 0-2150 Divider: 100 Unit: mA Description: mA value of the control loop from control room
40212	1	RO	U16	PV - mA	Range: 0-2150 Divider: 100 Unit: mA Description: mA value of the position loop
40213	1	RO	U16	TM - mA	Range: 0-2150 Divider: 100 Unit: mA Description: mA value of the transmitter loop to control room
				Pulse counter	

40221	2	RO	U32	Cnt. DO1	Default: 0 Range: 0-4294967295 Unit: Cnt Description: Pulse counter for DO1
40223	2	RO	U32	Cnt. DO2	Default: 0 Range: 0-4294967295 Unit: Cnt Description: Pulse counter for DO2
40225	2	RO	U32	Cnt. DO3	Default: 0 Range: 0-4294967295 Unit: Cnt Description: Pulse counter for DO3
40227	2	RO	U32	Cnt. DO4	Default: 0 Range: 0-4294967295 Unit: Cnt Description: Pulse counter for DO4
				Digital Inputs	
40271	1	RO	U16	DI1	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DI1
40272	1	RO	U16	DI2	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DI2
40273	1	RO	U16	DI3	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DI3
40274	1	RO	U16	DI4	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DI4
40275	1	RO	U16	DI5	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DI5
40276	1	RO	U16	DI6	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DI6

40277	1	RO	U16	DI7	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DI7
40278	1	RO	U16	DI8	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DI8
					Default: -
				Digital outputs	Default: -
40241	1	RO	U16	DO1	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DO1
40242	1	RO	U16	DO2	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DO2
40243	1	RO	U16	DO3	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DO3
40244	1	RO	U16	DO4	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DO4
40245	1	RO	U16	DO5	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DO5
40246	1	RO	U16	DO6	Default: 00002 Range: 00000: Unknown; 00001: On; 00002: Off; Description: Current status of DO6
				Analogue Inputs	
40251	1	RO	U16	AI1	Range: 0-2150 Divider: 100 Unit: mA Description: mA value of the input

40252	1	RO	U16	AI2	Range: 0-2150 Divider: 100 Unit: mA Description: mA value of the input
40253	1	RO	U16	AI3	Range: 0-2150 Divider: 100 Unit: mA Description: mA value of the input
40254	1	RO	U16	AI4	Range: 0-2150 Divider: 100 Unit: mA Description: mA value of the input
				Analogue outputs	
40261	1	RO	U16	AO1	Range: 0-2150 Divider: 100 Unit: mA Description: Current status of AO1
40262	1	RO	U16	AO2	Range: 0-2150 Divider: 100 Unit: mA Description: Current status of AO2
				Control mode	
40281	1	RO	U16	Control mode status	Range: 00000: Unknown; 00001: Remote; 00002: Local; 00003: Off; 00004: ESD; Description: Control mode status (Local/Off/Remote)
				Pump control status	
40301	1	RO	U16	Pump status	Range: 00000: Not Defined; 00001: Active; 00002: Inactive; Description: Active = Pump output is powered, Inactive = Pump output is not powered
40302	1	RO	U16	Pressure signal	Divider: 100 Unit: Bar Description: Pressure signal in bar
40303	1	RO	U16	Pressure switch state	Range: 00000: Not Used; 00001: Normally Open; 00002: Normally Closed; Description: Pressure switch

40304	1	RO	U16	Level signal	Divider: 100 Unit: mm Description: Level signal in mm
40305	1	RO	U16	Level switch state	Range: 00000: Not Used; 00001: Normally Open; 00002: Normally Closed; Description: Level switch
40306	1	RO	U16	Temperature signal	Divider: 100 Unit: Kelvin Description: Temperature in Kelvin
40307	1	RO	U16	Temperature switch state	Range: 00000: Not Used; 00001: Normally Open; 00002: Normally Closed; Description: Temperature switch
Register	Len	Access	Type	Name	Parameter Range/Units/Notes
45600	1	RO	U16	Calibrated	Range: 00001: Yes; 00002: No; Description: Has the device been calibrated
				Calibration - noise	
42432	1	RO	U16	Calibration noise	Range: 0-10000 Divider: 100 Unit: % Description: Noise measured during the calibration
				Calibration - Travel Time	
42446	2	RO	U32	Travel time open	Divider: 1000 Unit: sec Description: Travel time measured during calibration
42448	2	RO	U32	Travel time close	Divider: 1000 Unit: sec Description: Travel time measured during calibration
				Calibration parameters	
				Signal calibration	
41015	1	RW	U16	Control loop - 4mA adc	Range: 0-65535 Unit: ADC Description: 4mA calibration value
41016	1	RW	U16	Control loop - 20mA adc	Range: 0-65535 Unit: ADC Description: 20mA calibration value

41025	1	RW	U16	Position loop - 4mA adc	Range: 0-65535 Unit: ADC Description: 4mA calibration value
41026	1	RW	U16	Position loop - 20mA adc	Range: 0-65535 Unit: ADC Description: 20mA calibration value
41035	1	RW	U16	AI1 - 4mA adc	Range: 0-65535 Unit: ADC Description: 4mA calibration value
41036	1	RW	U16	AI1 - 20mA adc	Range: 0-65535 Unit: ADC Description: 20mA calibration value
41045	1	RW	U16	AI2 - 4mA adc	Range: 0-65535 Unit: ADC Description: 4mA calibration value
41046	1	RW	U16	AI2 - 20mA adc	Range: 0-65535 Unit: ADC Description: 20mA calibration value
41055	1	RW	U16	AI3 - 4mA adc	Range: 0-65535 Unit: ADC Description: 4mA calibration value
41056	1	RW	U16	AI3 - 20mA adc	Range: 0-65535 Unit: ADC Description: 20mA calibration value
41065	1	RW	U16	AI4 - 4mA adc	Range: 0-65535 Unit: ADC Description: 4mA calibration value
41066	1	RW	U16	AI4 - 20mA adc	Range: 0-65535 Unit: ADC Description: 20mA calibration value
41805	1	RW	U16	Transmitter loop - 4mA adc	Range: 0-65535 Unit: ADC Description: 4mA calibration value
41806	1	RW	U16	Transmitter loop - 20mA adc	Range: 0-65535 Unit: ADC Description: 20mA calibration value
				Factory defaults	
49150	1	RO	U16	Control loop - 4mA	Range: 0-65535 Unit: ADC Description: Factory default 4mA calibration value

49151	1	RO	U16	Control loop - 20mA	Range: 0-65535 Unit: ADC Description: Factory default 20mA calibration value
49152	1	RO	U16	Position loop - 4mA	Range: 0-65535 Unit: ADC Description: Factory default 4mA calibration value
49153	1	RO	U16	Position loop - 20mA	Range: 0-65535 Unit: ADC Description: Factory default 20mA calibration value
49154	1	RO	U16	AI1 - 4mA	Range: 0-65535 Unit: ADC Description: Factory default 4mA calibration value
49155	1	RO	U16	AI1 - 20mA	Range: 0-65535 Unit: ADC Description: Factory default 20mA calibration value
49156	1	RO	U16	AI2 - 4mA	Range: 0-65535 Unit: ADC Description: Factory default 4mA calibration value
49157	1	RO	U16	AI2 - 20mA	Range: 0-65535 Unit: ADC Description: Factory default 20mA calibration value
49158	1	RO	U16	AI3 - 4mA	Range: 0-65535 Unit: ADC Description: Factory default 4mA calibration value
49159	1	RO	U16	AI3 - 20mA	Range: 0-65535 Unit: ADC Description: Factory default 20mA calibration value
49160	1	RO	U16	AI4 - 4mA	Range: 0-65535 Unit: ADC Description: Factory default 4mA calibration value
49161	1	RO	U16	AI4 - 20mA	Range: 0-65535 Unit: ADC Description: Factory default 20mA calibration value

49165	1	RO	U16	Transmitter - 4mA	Range: 0-65535 Unit: ADC Description: Factory default 4mA calibration value
49166	1	RO	U16	Transmitter - 4mA	Range: 0-65535 Unit: ADC Description: Factory default 20mA calibration value

11 Commands

Register	Len	Access	Type	Name	Parameter Range/Units/Notes
42701	1	RW	U16	Set Setpoint	Range: 0-10000 Divider: 100 Unit: %
Register	Len	Access	Type	Name	Parameter Range/Units/Notes
				Manual Control	
42702	1	RW	U16	Actuator	Range: 1: Disable; 2:Stayput; 3:Open; 4:Close; 5:Pulse open; 6:Pulse open;
42703	1	RW	U16	Activate manual mode	Range: 00001:Remote; 00002:Manual;
42704	1	RW	U16	Set setpoint	Range: 0-10000 Divider: 100 Unit: %