



Smart Valve / Akıllı Vana

İçerik / Contents





| | |
|---|---|
| Modbus General Notes Genel Notlar | 2 |
| Modbus Register Overview Genel Bakış | 3 |
| Modbus Register Description Açıklamalar | 4 |



Modbus General Notes

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|--------------------------------|---|--|
| General information | Date | 25.01.2022 |
| | Product Name Ürün Adı | Smart Valve Akıllı Vana |
| | Actuator type Aktüatör Tipi | C020 C080 C200 C400 C1000 |
| Modbus RTU | Protocol | Modbus RTU over RS485, Modbus TCP over IP network |
| | Transmission formats | 1-8-N-2, 1-8-N-1, 1-8-E-1, 1-8-O-1 (Default: 1-8-N-1) and 7 |
| | Baud rates | 2400,4800,9600, 19200, 38400, 76800, 115200 (Default: 9600 Bd) |
| | Address | 1...247 (Default: 1) |
| | Number of nodes | Max. 32 (without repeater) |
| Modbus TCP | Terminating resistor Sonlandırma Direnci | 120 Ω |
| | Port | open (Default: 502) |
| Parameterisation | Tool Araçlar | through the intergrated webserver , Entegre Web Arayüz |
| Register implementation | <p>All data is arranged in a table and addressed by 1..n (Register No.) or 0..n-1 (Address). No distinction is made between data types (Discrete Inputs, Coils, Input Registers and Holding Registers). As a consequence, all data can be accessed with the two commands for Holding Register. The commands for Discrete Inputs and Input Registers can be used as an alternative.</p> <p>Tüm veriler bir tabloda düzenlenmiştir ve 1..n (Register No.) ya da 0..n-1 (Address) şeklinde adreslenir. Veri türleri arasında (Discrete Inputs, Coils, Input Registers ve Holding Registers) herhangi bir ayırım yapılmaz. Bunun sonucu olarak, tüm verilere Holding Register için kullanılan iki komut ile erişilebilir. Discrete Inputs ve Input Registers için kullanılan komutlar ise alternatif olarak kullanılabilir.</p> | |
| Commands | <p>Standard commands:</p> <p>Read Holding Registers [3] Write Single Register [6]</p> <p>Optional commands:</p> <p>Read Discrete Inputs [2] Read Input Registers [4] Write Multiple Registers [16]</p> | |

The areas highlighted in colors below are essential addresses for smart valve settings. In order to fully commission the smart valve, these addresses must be added. The uncolored ones are optional.

| | |
|---|---|
|  | This color code indicates the mode transitions and the addresses that store (save data) the entered parameters. |
|  | This color code indicates the valve's status (open, closed, and control) and the set parameter input addresses. |
|  | This color code indicates the threshold values that can be entered. |
|  | This color code indicates the addresses that display all values read from the Heatmeter and the valve's opening level . |



Modbus Register Overview Table

| No. | Address | Description | Register Type | Access |
|-----|---------|--|---------------|--------|
| 1 | 0 | Control Mode | int16 | R/W |
| 2 | 1 | ΔT Manager Status | int16 | R/W |
| 3 | 2 | Override Control | int16 | R/W |
| 4 | # | # Reserved | # | # |
| 5 | 4 | Save Data | int16 | R/W |
| 6 | # | # Reserved | # | # |
| 7 | 6 | Valve Status | int16 | R |
| 8 | 7 | Sensor 1 Temperature Error Counter | int16 | R |
| 9 | 8 | Sensor 2 Temperature Error Counter | int16 | R |
| 10 | 9 | Energy Realized Error Counter | int16 | R |
| 11 | 10 | Position Set Point Data [°] | int16 | R/W |
| 12 | 11 | Absolute Position [°] | int16 | R |
| 13 | 12 | Flow Treshold Value HighWord LowWord | int32 float | R/W |
| 14 | 13 | | | |
| 15 | 14 | Energy Treshold Value HighWord LowWord | int32 float | R/W |
| 16 | 15 | | | |
| 17 | 16 | ΔT Treshold Value HighWord LowWord | int32 float | R/W |
| 18 | 17 | | | |
| 19 | 18 | Volumetric Max Value HighWord LowWord | int32 float | R/W |
| 20 | 19 | | | |
| 21 | 20 | Flow Set Point Data HighWord LowWord | int32 float | R/W |
| 22 | 21 | | | |
| 23 | 22 | Energy Set Point Data HighWord LowWord | int32 float | R/W |
| 24 | 23 | | | |
| 25 | 24 | ΔT Set Point Data HighWord LowWord | int32 float | R/W |
| 26 | 25 | | | |
| 27 | 26 | Absolute Flow Read Data[m3/h] HighWord LowWord | int32 float | R |
| 28 | 27 | | | |
| 29 | 28 | Absolute Energy Read Data[kWh] HighWord LowWord | int32 float | R |
| 30 | 29 | | | |
| 31 | 30 | Absolute Cubic Volume Flow Read Data[m3] HighWord LowWord | int32 float | R |
| 32 | 31 | | | |
| 33 | 32 | Absolute Total Energy Read Data [kWh] HighWord LowWord | int32 float | R |
| 34 | 33 | | | |
| 35 | 34 | Absolute ΔT Read Data [°C] HighWord LowWord | int32 float | R |
| 36 | 35 | | | |
| 37 | 36 | Absolute Temperature 1 Read Data [°C] HighWord LowWord | int32 float | R |
| 38 | 37 | | | |
| 39 | 38 | Absolute Temperature 2 Read Data [°C] HighWord LowWord | int32 float | R |
| 40 | 39 | | | |
| 41 | 40 | Absolute Differantial Water Pressure [Bar] HighWord LowWord | int32 float | R |
| 42 | 41 | | | |
| 43 | 42 | Analog Output Feedback Signal Selection [V/C] | int16 | R / W |
| 44 | 43 | Absolute Feedback Voltage Data [V] HighWord LowWord | int32 float | R / W |
| 45 | 44 | | | |
| 46 | 45 | Absolute Feedback Current Data [mA] HighWord LowWord | int32 float | R / W |

| | | | | |
|----|----|--|---------------|-------|
| 47 | 46 | | | |
| 48 | 47 | Volumetric Min Value HighWord LowWord | int32 float | R / W |
| 49 | 48 | | | |
| 50 | 49 | Regime Optimisation Mode | int16 | R/W |
| 51 | 50 | Regime Optimisation Set Value HighWord LowWord | int32 float | R / W |
| 52 | 51 | | | |
| 53 | 52 | Maintenance Mode | int16 | R/W |

Modbus Register Description

| No. | Address | Description | Register Type | Unit |
|-----|---------|---|---------------|------|
| 1 | 0 | Control Mode: 0: Position Control Mode 1: Flow Control Mode 2: Energy Control Mode 3: ΔT Control Mode | int16 | # |
| 2 | 1 | ΔT Manager Status 0: ΔT Manager : OFF 1: ΔT Manager : ON | int16 | # |
| 3 | 2 | Override Control 0: Position Set Point [Valve will be act according to set point data] 1: Fully Close Valve Data 2: Fully Open Valve Data | int16 | # |
| 4 | # | # | # | # |
| 5 | 4 | Save Data 0: Data All set points and modes are not saved (save status closed) 1: Data All set points and modes are saved (save status open) When the Save Data is 1 (save all adjustments) after this Register has to be Closed (Save Data = 0) | int16 | # |
| 6 | # | # | # | # |
| 7 | 6 | Valve Status 0: Valve Closed Data 1: Valve Opened Data 2: Valve In Control Data When the read valve position data is 0°, Valve fully Closed When the read valve position data is 90°, Valve fully Opened When the read valve position data between 0 - 90°, Valve in control data | int16 | ° |
| 8 | 7 | Sensor 1 Temperature Error Counter When the temperature sensor has problem, the counter is count until the problem is solved | int16 | # |
| 9 | 8 | Sensor 2 Temperature Error Counter When the temperature sensor has problem, the counter is count until the problem is solved | int16 | # |
| 10 | 9 | Energy Realized Error Counter When the temperature sensor has problem, the counter is count until the problem is solved | int16 | # |
| 11 | 10 | Position Set Point Data [°] Set valve position btw 0-90° | int16 | ° |
| 12 | 11 | Absolute Read Position Data [°] Read Valve Position Data btw 0-90° | int16 | ° |
| 13 | 12 | Flow Treshold Value HighWord LowWord Set Flow Treshold Data | int32 float | m3/h |
| 14 | 13 | | | |
| 15 | 14 | Energy Treshold Value HighWord LowWord Set Energy Treshold Data | int32 float | kWh |
| 16 | 15 | | | |
| 17 | 16 | ΔT Treshold Value HighWord LowWord Set ΔT Treshold Value | int32 float | °C |
| 18 | 17 | | | |
| 19 | 18 | Volumetric Max Value HighWord LowWord Set Volumetric Max Value | int32 float | m3/h |
| 20 | 19 | | | |
| 21 | 20 | Flow Set Point Data HighWord LowWord Set Flow Value | int32 float | m3/h |
| 22 | 21 | | | |
| 23 | 22 | Energy Set Point Data HighWord LowWord Set Energy Data | int32 float | kWh |
| 24 | 23 | | | |
| 25 | 24 | ΔT Set Point Data HighWord LowWord | int32 float | °C |
| 26 | 25 | | | |
| 27 | 26 | Absolute Flow Read Data[m3/h] HighWord LowWord Reading the Flow value in cubic meter | int32 float | m3/h |
| 28 | 27 | | | |
| 29 | 28 | Absolute Energy Read Data[kWh] HighWord LowWord Reading the Energy Data in kWh | int32 float | kWh |
| 30 | 29 | | | |

| | | | | |
|----|----|---|---------------|------|
| 31 | 30 | Absolute Cubic Volume Flow Read Data[m3] HighWord LowWord Reading the Volumetric Flow in cubic meter [m3] | int32 float | m3 |
| 32 | 31 | | | |
| 33 | 32 | Absolute Total Energy Read Data [kWh] HighWord LowWord Reading the Total Energy Value [kWh] | int32 float | kWh |
| 34 | 33 | | | |
| 35 | 34 | Absolute ΔT Read Data [°C] HighWord LowWord Reading the ΔT = T1-T2 Value in °C | int32 float | °C |
| 36 | 35 | | | |
| 37 | 36 | Absolute Temperature 1 Read Data [°C] HighWord LowWord Reading the T1 Temperature Data | int32 float | °C |
| 38 | 37 | | | |
| 39 | 38 | Absolute Temperature 2 Read Data [°C] HighWord LowWord Reading the T2 Temperature Data | int32 float | °C |
| 40 | 39 | | | |
| 41 | 40 | Absolute Differential Water Pressure [Bar] HighWord LowWord Reading the Differential Water Pressure Data | int32 float | Bar |
| 42 | 41 | | | |
| 43 | 42 | Analog Output Feedback Signal Selection [V/C] | int16 | # |
| 44 | 43 | Absolute Feedback Voltage Data [V] HighWord LowWord Reading the Feedback Voltage Signal Data | int32 float | V |
| 45 | 44 | | | |
| 46 | 45 | Absolute Feedback Current Data [mA] HighWord LowWord Reading the Feedback Current Signal Data | int32 float | mA |
| 47 | 46 | | | |
| 48 | 47 | Volumetric Min Value HighWord LowWord Set Volumetric Min Value | int32 float | m3/h |
| 49 | 48 | | | |
| 50 | 49 | Regime Optimisation Mode Mode : 1: ON Mode : 0: OFF | int16 | # |
| 51 | 50 | Regime Optimisation Set Value HighWord LowWord Set Value | int32 float | °C |
| 52 | 51 | | | |
| 53 | 52 | Maintenance Mode Mode : 1: ON Mode : 0: OFF | int16 | # |

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