

Tools -> Parameter VM Mapping (0BA7 and later versions only)

VM overview

LOGO! Base Module uses VM (Variable Memory) as a local data communication interface for data exchange by means of connections/data-transfer configuration.

You can use LOGO!Soft Comfort with the Ethernet connections menu command following instructions in the [Tools -> Ethernet Connections \(0BA7 and later versions only\)](#) section to construct the network topology.

LOGO!Soft Comofort performs data exchange process as follows:

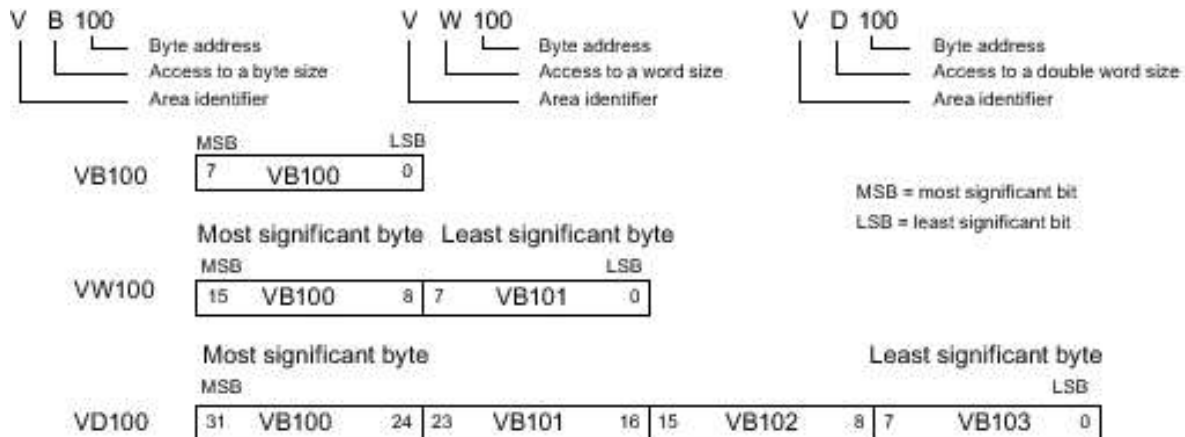
- The server stores the required data into the VM area specified by the data connection and data transfer. This is defined as a "share" action in the following section.
- The client unit reads the server's VM area and then updates the corresponding local VM area in its network process step.
- After the local update, the circuit program in the client can use the information in the local VM originated from the Server.

Note

LOGO! 8.FS4 supports two types of connection, S7 and Modbus. LOGO! 0BA7 and LOGO! 0BA8 only supports S7 connection.

Data type and VM address

The following illustrates VM addressing and data type usage:

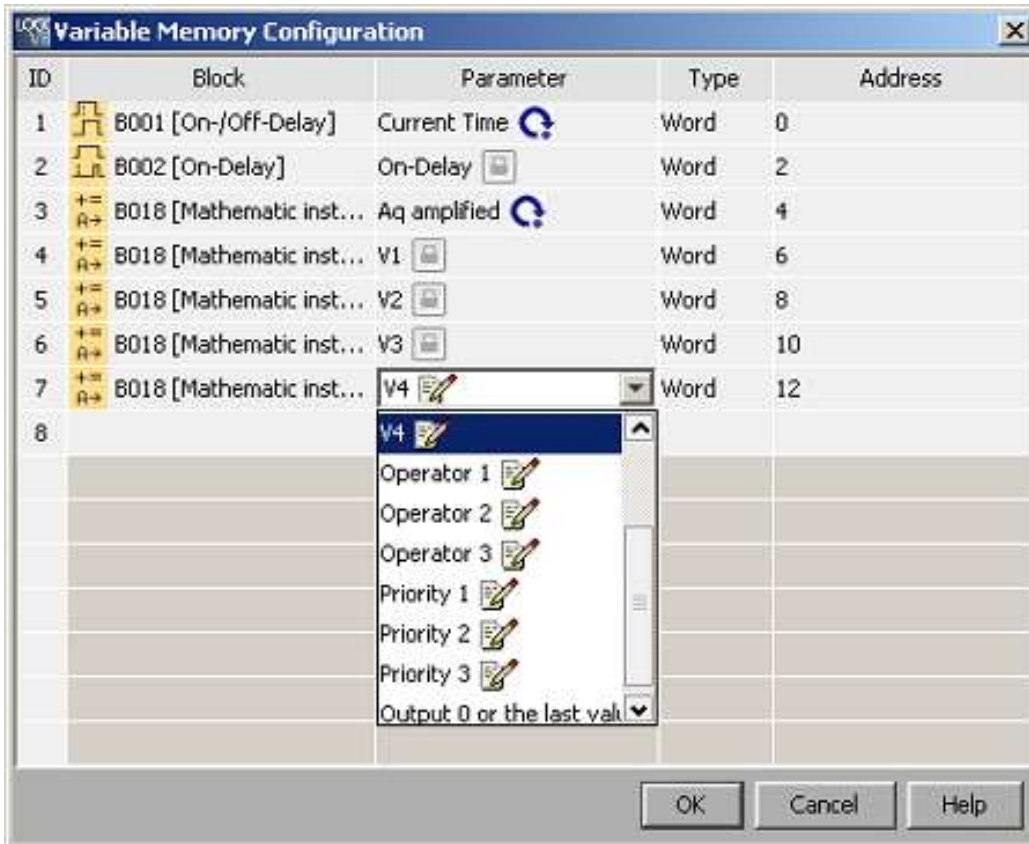


Creating a parameter VM mapping

When you change a parameter value in the local VM, the value in LOGO!Soft Comfort changes accordingly. In this way, LOGO!Soft Comfort synchronizes information with the local VM in real time.

LOGO!Soft Comfort synchronizes the parameter values of a block to the specified VM in each LOGO! cycle. After the synchronization, LOGO! Base Module can use the VM to communicate with other SIMATIC devices. You can map up to 64 parameters in VM for each LOGO! Base

Module in the Variable Memory Configuration dialog. The following screen is an example of the configuration dialog of parameter VM mapping:



The Block column lists the parameters for SFBs in the current program. The Parameter column provides a select list of the parameters of the corresponding block. The Type column displays the data type of the selected parameter. The Address column is also configurable. You can use it to identify the VM address used to save a parameter value.

The icon next to a parameter name indicates the property of this parameter:



The parameter value is a setting value and is writable.



The parameter value is an actual value and is read-only.



Although the parameter value is an actual value, you can still change the value.

NOTE:

Only the **Counter** parameter of Up/Down counter has such a flag.



The parameter value is referenced from an actual value of another already-programmed function block.

Note that if no flag appears, then the parameter value is a system value and remains read-only.

Within the parameter VM mapping window, you can achieve the following tasks:

- Select multiple record lines by pressing the **Ctrl** key or **Shift** key and clicking the ID of the desired line.

- Insert a down line by pressing the **Enter** key on the last cell of the desired line.
- Insert an up line by clicking the ID of the desired line and pressing the **Insert** key, or right-clicking the desired line to add a new row.
- Delete a line by clicking the ID of the desired line and pressing the **Delete** key, or right-clicking the desired line to delete an existing row.

You cannot change the parameter type and must configure a unique address for each parameter. The range for a parameter address is from 0 to 850. If the value you input exceeds this range, inputs and outputs will be modified to certain VM addresses automatically.

The following table provides mappings between I/O and VM addresses for LOGO! 0BA8:

Block Type	VM Address (From)	VM Address (To)	Range
I	1024	1031	8 bytes
AI	1032	1063	32 bytes
Q	1064	1071	8 bytes
AQ	1072	1103	32 bytes
M	1104	1117	14 bytes
AM	1118	1245	128 bytes
NI	1246	1261	16 bytes
NAI	1262	1389	128 bytes
NQ	1390	1405	16 bytes
NAQ	1406	1469	64 bytes

The following table provides mappings between I/O and VM addresses for LOGO! 0BA7:

DI	VM Address	DQ	VM Address
I1	V923.0	Q1	V942.0
I2	V923.1	Q2	V942.1
I3	V923.2	Q3	V942.2
I4	V923.3	Q4	V942.3
I5	V923.4	Q5	V942.4
I6	V923.5	Q6	V942.5
I7	V923.6	Q7	V942.6
I8	V923.7	Q8	V942.7
I9	V924.0	Q9	V943.0

I10	V924.1	Q10	V943.1
I11	V924.2	Q11	V943.2
I12	V924.3	Q12	V943.3
I13	V924.4	Q13	V943.4
I14	V924.5	Q14	V943.5
I15	V924.6	Q15	V943.6
I16	V924.7	Q16	V943.7
I17	V925.0		
I18	V925.1		
I19	V925.2		
I20	V925.3		
I21	V925.4		
I22	V925.5		
I23	V925.6		
I24	V925.7		
AI	VM Address	AQ	VM Address
AI1	VW926	AQ1	VW944
AI2	VW928	AQ2	VW946
AI3	VW930		
AI4	VW932		
AI5	VW934		
AI6	VW936		
AI7	VW938		
AI8	VW940		
AM	VM Address	M	VM Address
AM1	VW952	M1	V948.0
AM2	VW954	M2	V948.1
AM3	VW956	M3	V948.2

AM4	VW958	M4	V948.3
AM5	VW960	M5	V948.4
AM6	VW962	M6	V948.5
AM7	VW964	M7	V948.6
AM8	VW966	M8	V948.7
AM9	VW968	M9	V949.0
AM10	VW970	M10	V949.1
AM11	VW972	M11	V949.2
AM12	VW974	M12	V949.3
AM13	VW976	M13	V949.4
AM14	VW978	M14	V949.5
AM15	VW980	M15	V949.6
AM16	VW982	M16	V949.7
		M17	V950.0
		M18	V950.1
		M19	V950.2
		M20	V950.3
		M21	V950.4
		M22	V950.5
		M23	V950.6
		M24	V950.7
		M25	V951.0
		M26	V951.1
		M27	V951.2

The following VM addresses are occupied for special purposes:

VM Address	Reserved for	Range
984	Diagnostic Bits Array	1 Byte

985	"Year" of Real Time Clock (RTC)	1 Byte
986	"Month" of RTC	1 Byte
987	"Day" of RTC	1 Byte
988	"Hour" of RTC	1 Byte
989	"Minute" of RTC	1 Byte
990	"Second" of RTC	1 Byte

The LOGO! Base Module can share the following data with S7/Modbus by VM address:

Data Type	Number	Memory Type
Digital input	24	Byte
Digital output	16	Byte
Digital flag	27	Byte
Analog input	8	Word
Analog output	2	Word
Analog flag	16	Word
Value parameter	**	**
Actual value	**	**

The length (Byte, Word, or DWord) indicates the number of bytes in the VM area required by the parameter.

LOGO! Base Module can also share the time and date information with SIEMENS SIMATIC S7/Modbus compatible devices and HMI devices using VM addresses from 991 to 1002.

LOGO!Soft Comfort links the block parameters that you specify in the Variable Memory Configuration dialog with a VM address.

Not all of the VM area is available for configuration. LOGO!Soft Comfort reserves some bytes of the VM area. You cannot specify more than 64 parameters. If you attempt to specify more than 64, LOGO!Soft Comfort displays a failed operation message.

After the data transfer from a LOGO! Base Module to LOGO!Soft Comfort, you can view only analog values within the range of -32768 to 32767 on LOGO!Soft Comfort. If an analog value exceeds the value range, then only the nearest upper limit (32767) or lower limit (-32768) can be displayed.

Parameter settings

Function Block	Data type	Read/Write	Parameter settings in LOGO! Soft Comfort	Parameter settings on a partner device
On-Delay				

Current Time	VW	R		
On-Delay	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Remaining Time	VW	R		
On-Delay Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Off-Delay				
Current Time	VW	R		
On-Delay	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Remaining Time	VW	R		
On-Delay Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
On-/Off-Delay				
Current Time	VW	R		
On Time (TH)	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Off Time (TL)	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
On Time (TH) Remaining Time	VW	R		
Off Time (TL) Remaining Time	VW	R		
On Time (TH) Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Off Time (TL) Time Base	VB	R/W	10 milliseconds	1

Base			Seconds	2
			Minutes	3
Current Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Retentive On-Delay				
Current Time	VW	R		
On-Delay	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Remaining Time	VW	R		
On-Delay Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Wiping Relay (Pulse Output)				
Current Time	VW	R		
Off Time (TL)	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Off Time (TL) Remaining Time	VW	R		
Off Time (TL) time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Edge Triggered Wiping Relay				
Current Time	VW	R		
Pulse Width (TH)	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Interpulse Width (TL)	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Pulse Width (TH)	VW	R		

Remaining Time				
Interpulse Width (TL) Remaining Time	VW	R		
Pulse Width (TH) Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Interpulse Width (TL) Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Current Time Base	VB	R	10 milliseconds	1
			Seconds	2
			Minutes	3
Asynchronous Pulse Generator				
Current Time	VW	R		
Pulse Width	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Interpulse Width	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Pulse Remaining Time	VW	R		
Interpulse Remaining Time	VW	R		
Pulse Width (TH) Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Interpulse Width (TL) Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Current Time Base	VB	R	10 milliseconds	1
			Seconds	2
			Minutes	3

Random Generator				
Current Time	VW	R		
Max. On Delay (TH)	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Max. Off Delay (TL)	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Max. On Delay (TH) Remaining Time	VW	R		
Max. Off Delay (TL) Remaining Time	VW	R		
Max. On Delay (TH) Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Max. Off Delay (TL) Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Current Time Base	VB	R	10 milliseconds	1
			Seconds	2
			Minutes	3
Stairway Lighting Switch				
Current Time	VW	R		
Off Delay	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Pre-Warning Time (T!)	VW	R		
Pre-Warning Period (T!L)	VW	R		
Off Delay Remaining	VW	R		
Pre-Warning Time (T!) Remaining	VW	R		

Pre-Warning Period (T!L) Remaining	VW	R		
Off Delay Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
MultipleFunctionSwitch				
Current Time	VW	R		
Off Delay Time (T)	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Permanent Light (TL)	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Pre-Warning Time (T!)	VW	R		
Pre-Warning Period (T!L)	VW	R		
Off Delay Time (T) Remaining	VW	R		
Permanent Light (TL) Remaining	VW	R		
Pre-Warning Time (T!) Remaining	VW	R		
Pre-Warning Period (T!L) Remaining	VW	R		
Off Delay Time (T) Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Permanent Light (TL) Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Current Time Base	VB	R	10 milliseconds	1
			Seconds	2
			Minutes	3

Weekly Timer (When an entry box is set unavailable or a function is disabled, "0xFF" is displayed on an HMI or S7/Modbus PLC and "*" is displayed on a Base Module.)				
Week Day 1	VB	R/W	Sunday	Bit 0
			Monday	Bit 1
			Tuesday	Bit 2
			Wednesday	Bit 3
			Thursday	Bit 4
			Friday	Bit 5
			Saturday	Bit 6
				NOTE: If the related bit is 1, then the day is set.
On Time 1	VW	R/W	h:m	h:m
Off Time 1	VW	R/W	h:m	h:m
Week Day 2	VB	R/W	Sunday	Bit 0
			Monday	Bit 1
			Tuesday	Bit 2
			Wednesday	Bit 3
			Thursday	Bit 4
			Friday	Bit 5
			Saturday	Bit 6
				NOTE: If the related bit is 1, then the day is set.
On Time 2	VW	R/W	h:m	h:m
Off Time 2	VW	R/W	h:m	h:m
Week Day 3	VB	R/W	Sunday	Bit 0
			Monday	Bit 1
			Tuesday	Bit 2
			Wednesday	Bit 3
			Thursday	Bit 4
			Friday	Bit 5
			Saturday	Bit 6

				NOTE: If the related bit is 1, then the day is set.
On Time 3	VW	R/W	h:m	h:m
Off Time 3	VW	R/W	h:m	h:m
Pulsely	VB	R/W	Off	0
			On	1
Yearly Timer (When an entry box is set unavailable, "0xFF" is displayed on an HMI or S7/Modbus PLC and "-" is displayed on a Base Module.)				
On Time	VW	R/W	Month:Day	Month:Day
Off Time	VW	R/W	Month:Day	Month:Day
On Year	VB	R/W	Year	Year
Off Year	VB	R/W	Year	Year
Monthly	VB	R/W	No	0
			Yes	1
Yearly	VB	R/W	No	0
			Yes	1
Pulsely	VB	R/W	Off	0
			On	1
Astronomical Clock				
Longitude	VD	R/W		VBx+0
			W	1
			E	0
			°	VBx+1
			'	VBx+2
			"	VBx+3
Latitude	VD	R/W		VBx+0
			S	1
			N	0
			°	VBx+1
			'	VBx+2

			"	VBx+3
Time Zero (E+; W-)	VW	R/W		-11 to 12 Low byte bit 7 means sign, for example: 00000001 10000000 means -1.
SunRise Time	VW	R		h:m
SunSet Time	VW	R		h:m
Stop Watch				
Time Base	VB	R/W	10 milliseconds	0
			Seconds	1
			Minutes	2
			Hours	3
Current Time	VD	R		
Lap Time	VD	R		
Output Time	VW	R		
Up/Down Counter				
Counter	VD	R/W		0 to 999999
On Threshold	VD	R/W		0 to 999999
Off Threshold	VD	R/W		0 to 999999
start value	VD	R/W		0 to 999999
Hours Counter				
Maintenance Interval (MI)	VD	R/W		0 to 599999 (9999H 59M)
Time-to-Go (MN)	VD	R		
Total Time (OT)	VD	R		
Threshold Trigger				
Frequency	VW	R		
On Threshold	VW	R/W		0 to 9999
Off Threshold	VW	R/W		0 to 9999
Gate Time	VW	R		
Analog Threshold Trigger				

On	VW	R/W		-20000 to 20000
Off	VW	R/W		-20000 to 20000
Gain	VW	R/W		
Offset	VW	R/W		
Ax, Amplified	VW	R		
Analog Differential Trigger				
On	VW	R/W		-20000 to 20000
Differential	VW	R/W		-20000 to 20000
Gain	VW	R/W		
Offset	VW	R/W		
Ax, Amplified	VW	R		
Off	VW	R		
Analog Comparator				
On	VW	R/W		-20000 to 20000
Off	VW	R/W		-20000 to 20000
Gain	VW	R/W		
Offset	VW	R/W		
Ax, Amplified	VW	R		
Ay, Amplified	VW	R		
Ax(Amplified)-Ay (Amplified)	VW	R		
Analog Watchdog				
Gain	VW	R/W		
Offset	VW	R/W		
Aen (Comparison Value)	VW	R		
Ax, Amplified	VW	R		
Differential (+)	VW	R/W		0 to 20000
Differential (-)	VW	R/W		0 to 20000
Analog Amplifier				
Analog Amplifier: Gain	VW	R/W		-1000 to 1000

Analog Amplifier: Offset	VW	R/W		-10000 to 10000
Analog Amplifier: Ax, Amplified	VW	R		
Analog Multiplexer				
AQ Amplified	VW	R		
V1 (S1=0; S2=0)	VW	R/W		-32768 to 32767
V2 (S1=0; S2=1)	VW	R/W		-32768 to 32767
V3 (S1=1; S2=0)	VW	R/W		-32768 to 32767
V4 (S1=1; S2=1)	VW	R/W		-32768 to 32767
PWM				
Min.	VW	R/W		-10000 to 20000
Max.	VW	R/W		-10000 to 20000
Gain	VW	R/W		-1000 to 1000
Offset	VW	R/W		-10000 to 10000
Ax, Amplified (Current Period)	VW	R		
T	VW	R/W	Unit: Seconds	Value range: 0 to 9999
			Unit: Minutes or Hours	Value range: 0 to 5999
Periodic Time Base	VB	R/W	10 milliseconds	1
			Seconds	2
			Minutes	3
Mathematic Instructions				
AQ Amplified	VW	R		
V1	VW	R/W		-32768 to 32767
V2	VW	R/W		-32768 to 32767
V3	VW	R/W		-32768 to 32767
V4	VW	R/W		-32768 to 32767
Operator 1	VB	R/W		VBx+0
			+	0
			-	1

			*	2
			/	3
Operator 2	VB	R/W		VBx+0
			+	0
			+	1
			*	2
			/	3
Operator 3	VB	R/W		VBx+0
			+	0
			-	1
			*	2
			/	3
Priority1	VB	R/W	L	0
			M	1
			H	2
Priority2	VB	R/W	L	0
			M	1
			H	2
Priority3	VB	R/W	L	0
			M	1
			H	2
Reset Mode	VB	R/W	Reset to zero	0
			Keep last value	1
Analog Ramp				
Gain	VW	R/W		
Offset	VW	R/W		
Current Level	VW	R		
Level 1 (L1)	VW	R/W		-10000 to 20000
Level 2 (L2)	VW	R/W		-10000 to 20000
Largest Output Value	VW	R		
Start/Stop Offset	VW	R/W		0 to 20000

Speed of Change	VW	R/W		1 to 10000
PI Controller				
Set Value (SP)	VW	R/W		-10000 to 20000
PV, Amplified	VW	R		
Aq	VW	R		
Kc	VW	R/W		0 to 9999
Integration Time (TI)	VW	R/W	Unit: Minutes	0 to 5999
Direction	VB	R/W	+	0
			-	1
Manual Output (Mq)	VW	R/W		0 to 1000
min	VW	R/W		-10000 to 20000
max	VW	R/W		-10000 to 20000
Gain	VW	R/W		-1000 to 1000
Offset	VW	R/W		-10000 to 10000
Analog Filter				
Dialog Parameter Average Value Sample Number	VB	R/W		3 to 8
			8	3
			16	4
			32	5
			64	6
			128	7
			256	8
Ax	VW	R		
Aq	VW	R		
Max/Min				
Mode	VB	R/W		0, 1, 2 and other value
Ax	VW	R		
Minimum Value	VW	R		
Maximum Value	VW	R		
Aq	VW	R		

When reset=0, reset Min/Max	VB	R/W		0 or 1
Average Value				
Sample Time	VW	R/W	Unit: Seconds or Minutes	Value range: 0 to 59
			Unit: Hours	Value range: 0 to 23
			Unit: Days	Value range: 0 to 365
Number of Samples	VW	R/W	Unit: Seconds	Value range: 1 to St*100
			Unit: Days	Value range: 1 to 32767
			Unit: Hours	Value range: 1 to 32767
			Unit: Seconds and ≤ 5 Minutes	Value range: 1 to St*6000
			Unit: Seconds and ≥ 6 Minutes	Value range: 1 to 32767
Ax	VW	R		
Aq	VW	R		
Sample Time Time Base	VB	R/W	Seconds	1
			Minutes	2
			Hours	3
			Days	4