AXE MICROPROCESS DUAL INPUT RPM & LINE-SPEED CONTROLLER METER MMRD Series

■ Features

◎Dual input measure and display sensor pulse or AC signal
◎Accuracy 0.03% F.S.
◎Input range(0~25KHz)
◎Readout range(0~99999)
◎RPM or LINE-SPEED can be modified
◎Input pulse per revolution can be modified(1~99999)
◎Diameter(LINE-SPEED)/Scale(RPM) can be modified
  (0.0001~9.9999)
◎Display average times can be modified(1~99)

◎16BIT DAC analog output can be modified,
◎2 set independent alarm outputs with delay/hysteresis function
◎RS485 Communication interface, Protocol MODBUS RTU MODE
◎BAUD RATE:38400/19200/9600/4800/2400
◎Decimal point can be modified
◎0.4" LED highlight display
◎Man-machine interface, easy to operate
◎EEPROM Saving, data safekeeping about 10 years
◎Modified inside parameter, must have pass code

■ Name of Parts

IN2 Display   IN1 Display

IN2 Alarm Indicate   AL1 AL2   AL1 AL2 DIO   IN1 Alarm Indicate

Communication Indicate

ENT / FUNC   ◀ / ALARM   ▲   ▼ / A-ADJ

Set-value down(Analog output adjustment call out)

Set-value up

Cursor shift(Alarm adjustment call out)

Parameter Enter (Function call out)
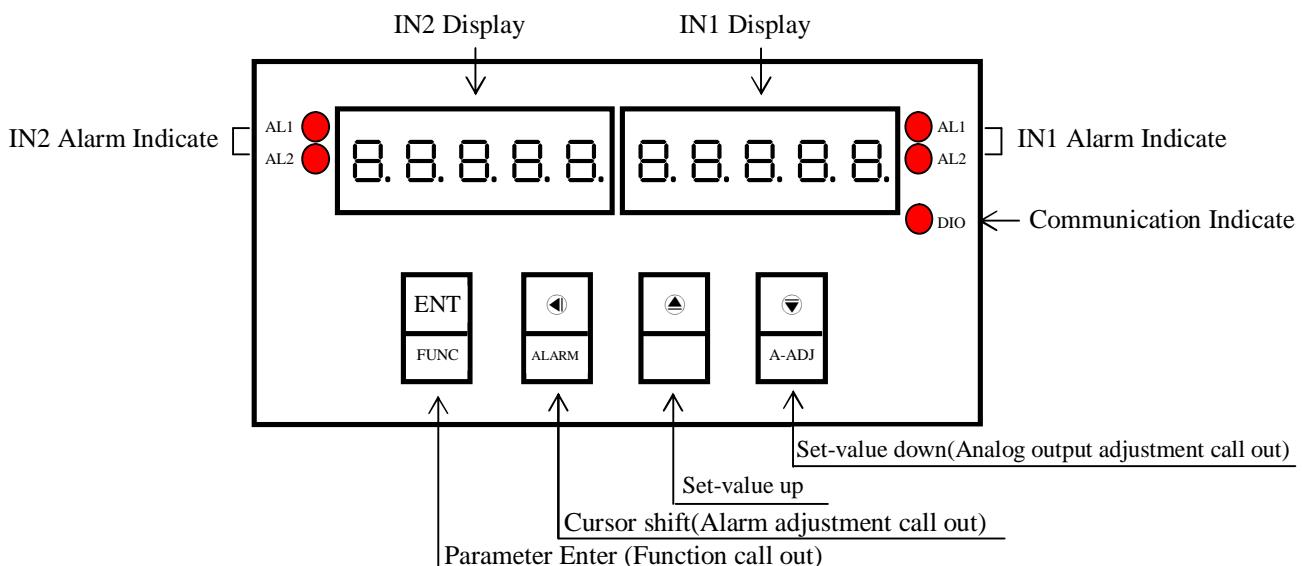
■ Connect Diagram

◎ Contact input (PNP)

IN
12V
COM

Inside jumper			
SW1		SW2	
1	2	1	2
OFF	ON	OFF	ON

◎ Contact input (NPN)

IN
12V
COM

Inside jumper			
SW1		SW2	
1	2	1	2
ON	ON	ON	ON

◎ Sensor input (PNP 5V/12V)

IN
12V
COM
Sensor

Inside jumper			
SW1		SW2	
1	2	1	2
OFF	OFF	OFF	OFF
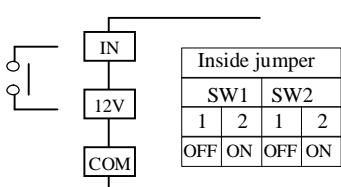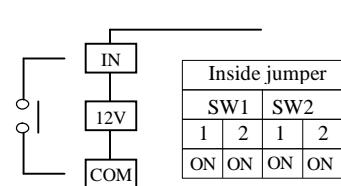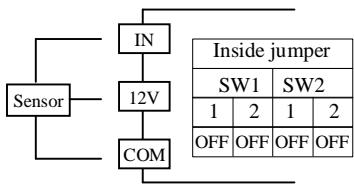
◎ Sensor input (NPN 5V/12V)

IN
12V
COM
Sensor

Inside jumper			
SW1		SW2	
1	2	1	2
ON	OFF	ON	OFF
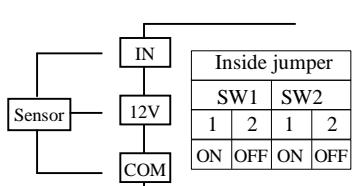
■ Input function jumper table

SW1   SW2

4 3 2 1   4 3 2 1
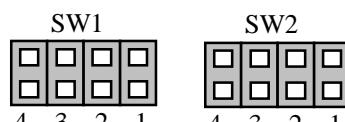
◎Position 1 ON:IN(A)/IN(B) -> (NPN)

◎Position 1 OFF:IN(A)/IN(B) -> (PNP)

◎Position 2 ON :IN(A)/IN(B) -> (0~50HZ)

◎Position 2 OFF:IN(A)/IN(B) -> (0~25KHZ)

■ Alarm Function description

◎ When ACT=HI,DEL= 0 :   Display value > Setting value(AL) + Hysteresis (HYS) → (Relay on)
                          Display value <= Setting value(AL) - Hysteresis (HYS) → (Relay off)
◎ When ACT=LO,DEL= 0 :   Display value >= Setting value(AL) + Hysteresis (HYS) → (Relay off)
                          Display value < Setting value(AL) - Hysteresis (HYS) → (Relay on)
◎ When ACT=HI,DEL= 1 ~ 99 sec.: Display value > Setting value(AL) + Hysteresis (HYS) + Delay time(DEL) → (Relay on)
                          Display value <= Setting value(AL) - Hysteresis (HYS) → (Relay off)
◎ When ACT=LO,DEL= 1 ~ 99 sec.: Display value >= Setting value(AL) + Hysteresis (HYS) → (Relay off)
                          Display value < Setting value(AL) - Hysteresis (HYS) + Delay time(DEL) → (Relay on)
◎ When ACT=HI,DEL= -1 ~ -99 sec.:Display value > Setting value(AL) + Hysteresis (HYS) → (Relay one shoot(DEL) and then off)
                          Display value <= Setting value(AL) - Hysteresis (HYS) → (Relay restore normal after the procedure)
◎ When ACT=LO,DEL= -1~ -99 sec.:Display value >= Setting value(AL) + Hysteresis (HYS)→(Relay restore normal after the procedure)
                          Display value < Setting value(AL) - Hysteresis (HYS) → (Relay one shoot(DEL) and then off)

Key Introduce	Operation Manual
Ⓔ Key Function	1. In normal display, The key function is call out setting group 2. In parameter setting page, The key function is data Enter , and goto next page
◀ Key Function	1. In normal display, The key function is call out alarm value setting page 2. Into parameter setting page, the parameter mark&data is alternate display, If need modify data can press ◀ key into setting procedure, The display is lock parameter data, this time must let off key about 0.2 sec, press again, the cursor(twinkle express)is cycle moving left. (Key Response about 0.2 sec)
▲ Key Function	1. Into parameter setting page, the parameter mark&data is alternate display, If need modify data can press ▲ key into setting procedure, The display is lock parameter data, this time must let off key about 0.2 sec, press again, the parameter data will increment. (Key Response about 0.2 sec)
▼ Key Function	1. In normal display, The key function is call out adjustment analog output AZERO&ASPAN page 2. Into parameter setting page, the parameter mark&data is alternate display, If need modify data can press ▼ key into setting procedure, The display is lock parameter data, this time must let off key about 0.2 sec, press again the parameter data will decrement. (Key Response about 0.2 sec)
▲&▼ Key Function	1. In setting group or setting page press ▲&▼ key return normal display, but if in setting page the modify data will be lost
No Key in anything	1. In setting group or setting page no key in anything about 2 minutes, return normal display, but if in Setting page the modify data will be lost

Step	Parameter Mark Description	Parameter Mark	Operation Manual
1	Normal display	1 2 3 4 5	Press Ⓔ/FUNC key into P.CODE setting page
2	P.CODE(Pass code input page)	P.CodE 00000	1. Key in 5 digit pass code with ◀ or ▲ or ▼ key 2. Press Ⓔ key, the pass code is right into setting group , otherwise return normal display
3	SYS(System setting group)	SYS	1. Select setting group with ◀ key 2. Press Ⓔ key into setting page of selection setting group
	ROP(Alarm setting group)	roP	
	DOP(Communication setting group)	doP	
	AOP(Analog output setting group)	AoP	
4	SYS(System setting group)	SYS	Press◀key decide SYS setting group , press Ⓔ key into DP1 setting page
4-1	DP1(Decimal Point IN-1) Default = 0	dP 1 0.	1. Decide decimal point IN-1 position with ▲ or ▼ key (0 to 4) 2. Press Ⓔ key enter data and into DP2 setting page
4-2	DP2(Decimal Point IN-2) Default = 0	dP2 0.	3. Decide decimal point IN-2 position with ▲ or ▼ key (0 to 4) 4. Press Ⓔ key enter data and into TYPE setting page
4-3	TYPE(Type) Default = RPM	tYPE rPm	1. Decide Type with ▲ or ▼ key(RPM/LINE) 2. Press Ⓔ key enter data and into PPR-A setting page
4-4	PPR-A(Pulse Per Revolution of input A) Default = 1	PPr-A 00001	1. Decide pulse per revolution of input A with ◀&▲&▼ key(1~99999) 2. Press Ⓔ key enter data and into PPR-B setting page
4-5	PPR-B(Pulse Per Revolution of input B) Default = 1	PPr-b 00001	1. Decide pulse per revolution of input B with ◀&▲&▼ key(1~99999) 2. Press Ⓔ key enter data and into SCL-A setting page
4-6	SCL-A (Scale-A) Default = 1.0000	SCL-A 1.0000	1. Decide Scale-A with ◀ or ▲ or ▼ key (0.0001~9.9999) 2. Press Ⓔ key enter data and into SCL-B setting page Note:RPM(Scale = 0.0001~9.9999) Line-Speed(rotation diameter = 0.0001~9.9999M)
4-7	SCL-B (Scale-B) Default = 1.0000	SCL-b 1.0000	1. Decide Scale-B with ◀ or ▲ or ▼ key (0.0001~9.9999) 2. Press Ⓔ key enter data and into TBASE setting page Note:RPM(Scale = 0.0001~9.9999) Line-Speed(rotation diameter = 0.0001~9.9999M)
4-8	TBASE (Sampling Time Base) Default = 0.1	tbASE 0000.1	1. Decide sampling time base with ◀&▲&▼ key(0.1~99.9sec) 2. Press Ⓔ key enter data and into AVG setting page
4-9	AVG (Display Average	AuG	1. Decide display average times with ◀&▲&▼ key(1~99)

	times) Default = 5	`00005`	2.Press Ⓝ key enter data and into CODE setting page
4-10	CODE(Pass Code) Default = 0	`CodE` `00000`	1.Decide pass code with ◀&▲&▼ key(0~99999) 2.Press Ⓝ key enter data and into LOCK setting page
4-11	LOCK(Panel Lock) Default = NO	`LoCY` `no`	1.Decide panel lock with ▲&▼ key(NO or YES) 2.Press Ⓝ key enter data and return SYS setting group
5	ROP(Alarm setting group)	`roP`	Press ◀ key decide ROP setting group,press Ⓝ key into ACT1.1 setting page
5-1	ACT1.1(Alarm Active 1-1) Default = HI	`ACt 1.1` `Hi`	1.Decide Alarm Active 1-1 with ▲ or ▼ key(HI or LO) 2.Press Ⓝ key enter data and into ACT1.2 setting page
5-2	ACT1.2(Alarm Active 1-2) Default = HI	`ACt 1.2` `Hi`	1.Decide Alarm Active 1-2 with ▲ or ▼ key(HI or LO) 2.Press Ⓝ key enter data and into ACT2.1 setting page
5-3	ACT2.1(Alarm Active 2-1) Default = HI	`ACt2.1` `Hi`	1.Decide Alarm Active 2-1 with ▲ or ▼ key(HI or LO) 2.Press Ⓝ key enter data and into ACT2.2 setting page
5-4	ACT2.2(Alarm Active 2-2) Default = HI	`ACt2.2` `Hi`	1.Decide Alarm Active 2-2 with ▲ or ▼ key(HI or LO) 2.Press Ⓝ key enter data and into HYS1.1 setting page
5-5	HYS1.1(Alarm Hysteresis 1-1) Default = 0	`HYS 1.1` `00000`	1.Decide Hysteresis 1-1 with ◀ or ▲ or ▼ key(0~999) 2.Press Ⓝ key enter data and into HYS1.2 setting page
5-6	HYS1.2(Alarm Hysteresis 1-2) Default = 0	`HYS 1.2` `00000`	1.Decide Hysteresis 1-2 with ◀ or ▲ or ▼ key(0~999) 2.Press Ⓝ key enter data and into HYS2.1 setting page
5-7	HYS2.1(Alarm Hysteresis 2-1) Default = 0	`HYS2.1` `00000`	1.Decide Hysteresis 2-1 with ◀ or ▲ or ▼ key(0~999) 2.Press Ⓝ key enter data and into HYS2.2 setting page
5-8	HYS2.2(Alarm Hysteresis 2-2) Default = 0	`HYS2.2` `00000`	1.Decide Hysteresis 2-2 with ◀ or ▲ or ▼ key(0~999) 2.Press Ⓝ key enter data and into DEL1.1 setting page
5-9	DEL1.1(Alarm Delay 1-1) Default = 0	`dEL 1.1` `00000`	1.Decide Alarm Delay 1-1 with ◀ or ▲ or ▼ key(-99~99 sec) 2.Press Ⓝ key enter data and into DEL1.2 setting page Note:-1 ~ -99 sec = Alarm active time 1 ~ 99 sec = Alarm delay time
5-10	DEL1.2(Alarm Delay 1-2) Default = 0	`dEL 1.2` `00000`	1.Decide Alarm Delay 1-2 with ◀ or ▲ or ▼ key(-99~99 sec) 2.Press Ⓝ key enter data and into DEL2.1 setting page Note:-1 ~ -99 sec = Alarm active time 1 ~ 99 sec = Alarm delay time
5-11	DEL2.1(Alarm Delay 2-1) Default = 0	`dEL 2.1` `00000`	1.Decide Alarm Delay 2-1 with ◀ or ▲ or ▼ key(-99~99 sec) 2.Press Ⓝ key enter data and into DEL2.2 setting page Note:-1 ~ -99 sec = Alarm active time 1 ~ 99 sec = Alarm delay time
5-12	DEL2.2(Alarm Delay 2-2) Default = 0	`dEL 2.2` `0000.0`	1.Decide Alarm Delay 2-2 with ◀ or ▲ or ▼ key(-99~99sec) 2.Press Ⓝ key enter data and return ROP setting group Note:-1 ~ -99 sec = Alarm active time 1 ~ 99 sec = Alarm delay time
6	DOP(Communication setting group)	`doP`	press ◀ key decide DOP setting group,press Ⓝ key into ADDR setting page
6-1	ADDR(Communication ó Address setting page) Default = 0	`Addr` `00000`	1.Decide address with ◀ or ▲ or ▼ key(0~255) 2.Press Ⓝ key enter data and into BAUD setting page
6-2	BAUD(Communication Baud Rate setting page) Default = 19200	`bAUd` `19200`	1.Decide baud rate with ▲ or ▼ key(38400,19200,9600,4800,2400) 2.Press Ⓝ key enter data and into PARI setting page

6-3	PARI(Communication Parity Check setting page) Default = n82	P A r i n.8.2.	1.Decide parity check with ▲ or ▼ key(n82,n81,even,odd) 2.Press Ⓝ key enter data and return DOP setting group
7	AOP(Analog output setting group)	A o P	Press ◀ key decide AOP setting group , press Ⓝ key into AO.SEL setting page
7-1	AO.SEL(Analog Output Select) Default = IN1	A o.S E L i n 1	1.Decide Analog Output Select with ▲ or ▼ key(IN1 or IN2) 2.Press Ⓝ key enter data and into ANLO setting page
7-2	ANLO(A/O Zero According to Display setting page) Default = 0	A n L o 0 0 0 0 0	1.Decide A/O Zero According to Display with ◀ or ▲ or ▼ key (0~99999) 2.Press Ⓝ key enter data and into ANHI setting page
7-3	ANHI(A/ O Span According to Display setting page) Default = 99999	A n H i 9 9 9 9 9	1.Decide A/ O Span According to Display with ◀ or ▲ or ▼ key (0~99999) 2.Press Ⓝ key enter data and return AOP setting group

Step	Parameter mark description	Parameter mark	Operation manual
8	Normal display	1 2 3 4 5	Press ◀/ALARM key about 3 sec,into AL1-1 setting page
8-1	AL1-1 (IN1 Alarm value 1-1) Default = 0	A L 1 - 1 0 0 0 0 0	1.Decide IN1 alarm value 1-1 with ◀ or ▲ or ▼ key(0~99999) 2.Press Ⓝ key enter data and into AL1-2 setting page
8-2	AL1-2 (IN1 Alarm value 1-2) Default = 0	A L 1 - 2 0 0 0 0 0	1.Decide IN1 alarm value 1-2 with ◀ or ▲ or ▼ key(0~99999) 2.Press Ⓝ key enter data and into AL2-1 setting page
8-3	AL2-1 (IN2 Alarm value 2-1) Default = 0	A L 2 - 1 0 0 0 0 0	1.Decide IN2 alarm value 2-1 with ◀ or ▲ or ▼ key(0~99999) 2.Press Ⓝ key enter data and into AL2-2 setting page
8-4	AL2-2 (IN2 Alarm value 2-2) Default = 0	A L 2 - 2 0 0 0 0 0	1.Decide IN2 alarm value 2-2 with ◀ or ▲ or ▼ key(0~99999) 2.Press Ⓝ key enter data and return normal display

Step	Parameter mark description	Parameter mark	Operation manual
9	Normal display	1 2 3 4 5	Press ▼/A-ADJkey about 3 sec,into AZERO adjustment page
9-1	AZERO(Analog Output Zero Adjustment page) Default = 0	A P E r o 0 0 0 0 0	1.Adjustment analog output zero with ◀ or ▲ or ▼ key(±6000) 2.Press Ⓝ key enter data and into ASPAN adjustment page
9-2	ASPAN(Analog Output Span Adjustment page) Default = 0	A S P A n 0 0 0 0 0	1.Adjustment analog output span with ◀ or ▲ or ▼ key(±6000) 2.Press Ⓝ key enter data and return normal display

Appendix	Error Mark description	Error Mark	Analyze & Description
1	Input over range error detect	i o F L	Input signal over range(0~25KHz)
2	Display over range error detect	d o F L	Display over range(99999)
3	EEPROM error detect	E - 0 0 n o Y E S	1.External interference when EEPROM read/write 2.EEPROM write over 1 million times(guarantee 10 years) Please power reset,if still display E-00,doing following step: 1.E-00 & No alternate display for inquire reset EEPROM 2.Decide Yes with▲or▼key,pressⓃkey return normal display 3.EEPROM was reset,Please follow step 1~9 set again

MMRD Modbus RTU Mode Protocol Address Map

Data format 16Bit/32Bit, sign bit 8000~7FFF(-32768~32767),80000000~7FFFFFFF(-2147483648~2147483647)

Address	Name	Description	Accept
0000	DP1	IN1 Decimal Point,Input Range 0000~0004(0~4)(0:10^0,1:10^{-1},2:10^{-2},3:10^{-3},4:10^{-4})	R/W
0001	DP2	IN2 Decimal Point,Input Range 0000~0004(0~4)(0:10^0,1:10^{-1},2:10^{-2},3:10^{-3},4:10^{-4})	R/W
0002	TYPE	Input Type,Input Range 0000~0001(0~1)(0:RPM,1:LINE)	R/W
0003	LOCK	Panel Lock,Input Range 0000~0001(0~1)(0:NO,1:YES)	R/W
0004	ACT1.1	Alarm Active 1-1,Input Range 0000~0001(0~1)(0:HI,1:LO)	R/W
0005	ACT1.2	Alarm Active 1-2,Input Range 0000~0001(0~1)(0:HI,1:LO)	R/W
0006	ACT2.1	Alarm Active 2-1,Input Range 0000~0001(0~1)(0:HI,1:LO)	R/W
0007	ACT2.2	Alarm Active 2-1,Input Range 0000~0001(0~1)(0:HI,1:LO)	R/W
0008	HYS1.1	Alarm Hysteresis 1-1,Input Range 0000~03E7(0~999)	R/W
0009	HYS1.2	Alarm Hysteresis 1-2,Input Range 0000~03E7(0~999)	R/W
000A	HYS2.1	Alarm Hysteresis 2-1,Input Range 0000~03E7(0~999)	R/W
000B	HYS2.2	Alarm Hysteresis 2-2,Input Range 0000~03E7(0~999)	R/W
000C	DEL1.1	Alarm Delay 1-1,Input Range FF9D~0063(-99~99)	R/W
000D	DEL1.2	Alarm Delay 1-2,Input Range FF9D~0063(-99~99)	R/W
000E	DEL2.1	Alarm Delay 2-1,Input Range FF9D~0063(-99~99)	R/W
000F	DEL2.2	Alarm Delay 2-2,Input Range FF9D~0063(-99~99)	R/W
0010	ADDR	Communication Address,Input Range 0000~00FF(0~255)	R/W
0011	BAUD	Communication Baud Rate,Input Range 0000~0004(0~4)(0:38400,1:19200,2:9600,3:4800,4:2400)	R/W
0012	PARI	Communication Parity Check,Input Range 0000~0003(0~3)(0:N82,1:N81,2:EVEN,3:ODD)	R/W
0013	AO.SEL	Analog Output Select,Input Range 0000~0001(0~1)(0:IN1,1:IN2)	R/W
0014	TBASE	Sampling Time Base, Input Range 0001~03E7(1~999)	R/W
0015	AVG	Display Average times, Input Range 0001~0063(1~99)	R/W
0016	A_ZERO	Analog Output Zero Adjust,Input Range E890~1770(-6000~6000)	R/W
0017	A_SPAN	Analog Output Span Adjust,Input Range E890~1770(-6000~6000)	R/W
0018	CODE	Pass Code,Input Range 00000000~0001869F(0~99999)high word	R/W
0019		Pass Code,Input Range 00000000~0001869F(0~99999)low word	R/W
001A	SCL-A	Scale-A,Input Range 00000001~0001869F(1~99999)high word	R/W
001B		Scale-A,Input Range 00000001~0001869F(1~99999)low word	R/W
001C	SCL-B	Scale-B,Input Range 00000001~0001869F(1~99999)high word	R/W
001D		Scale-B,Input Range 00000001~0001869F(1~99999)low word	R/W
001E	PPR-A	Pulse Per Revolution of input A, Input Range 00000001~0001869F(1~99999) high word	R/W
001F		Pulse Per Revolution of input A, Input Range 00000001~0001869F(1~99999) low word	R/W
0020	PPR-B	Pulse Per Revolution of input B, Input Range 00000001~0001869F(1~99999) high word	R/W
0021		Pulse Per Revolution of input B, Input Range 00000001~0001869F(1~99999) low word	R/W
0022	AL1-1	IN1 Alarm value 1-1,Input Range 00000000~0001869F(0~99999)high word	R/W
0023		IN1 Alarm value 1-1,Input Range 00000000~0001869F(0~99999)low word	R/W
0024	AL1-2	IN1 Alarm value 1-2,Input Range 00000000~0001869F(0~99999)high word	R/W
0025		IN1 Alarm value 1-2,Input Range 00000000~0001869F(0~99999)low word	R/W
0026	AL2-1	IN2 Alarm value 2-1,Input Range 00000000~0001869F(0~99999)high word	R/W
0027		IN2 Alarm value 2-1,Input Range 00000000~0001869F(0~99999)low word	R/W
0028	AL2-2	IN2 Alarm value 2-2,Input Range 00000000~0001869F(0~99999)high word	R/W
0029		IN2 Alarm value 2-2,Input Range 00000000~0001869F(0~99999)low word	R/W
002A	ANLO	Analog Output Zero According to Display,Input Range 00000000~0001869F(0~99999)high word	R/W
002B		Analog Output Zero According to Display,Input Range 00000000~0001869F(0~99999)low word	R/W
002C	ANHI	Analog Output Span According to Display,Input Range 00000000~0001869F(0~99999)high word	R/W
002D		Analog Output Span According to Display,Input Range 00000000~0001869F(0~99999)low word	R/W
002E	DISP1	IN1 Display Value, Display Range 00000000~0001869F(0~99999)high word	R
002F		IN1 Display Value, Display Range 00000000~0001869F(0~99999)low word	R
0030	DISP2	IN2 Display Value, Display Range 00000000~0001869F(0~99999)high word	R
0031		IN2 Display Value, Display Range 00000000~0001869F(0~99999)low word	R
0032	STATUS	Display & Alarm Status, Display Range 0000~00FF(0~255) Bit0:AL1-1,Bit1:AL1-2,Bit2:AL2-1,Bit3:AL2-2,Bit4:DISP1 DOFL,Bit5:DISP1 IOFL,Bit6:DISP2 DOFL,Bit7:DISP2 IOFL	R