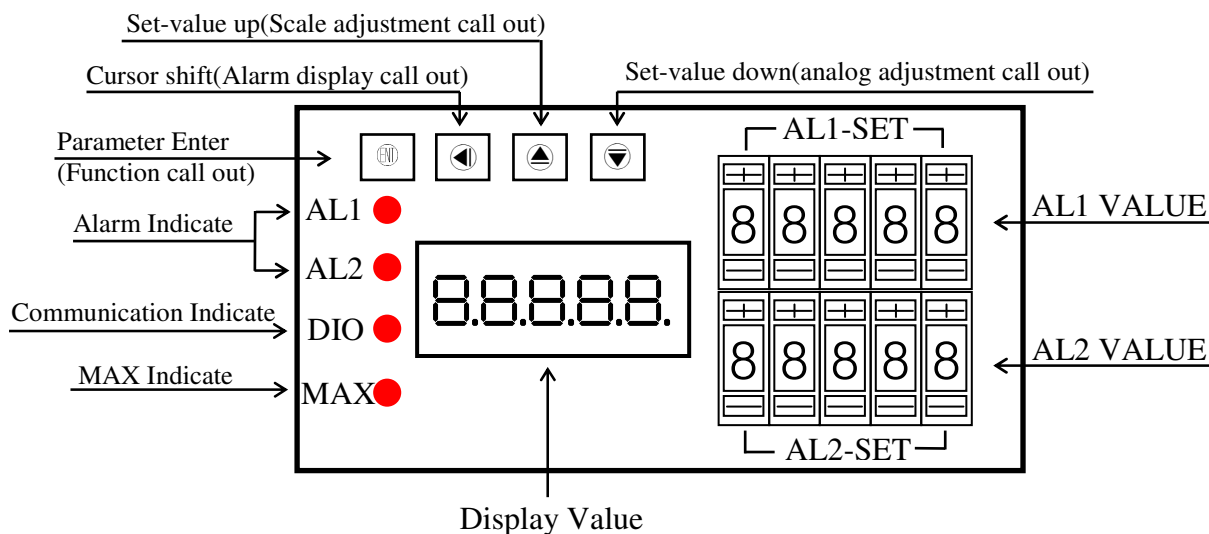# AXE Multi-function microprocess RPM&Line-speed controller meter(Pushwhell Switch) MMRP

■ Features
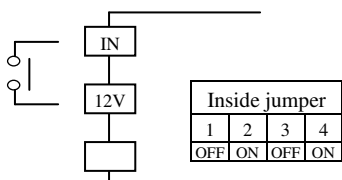
◎Accept more type sensors(switch, encoder, proximity switch,…etc)finish RPM/LINE SPEED transmit

◎Accuracy 0.03% F.S.

◎Accept input rates up to 50KHz, Readout range(0~99999)

◎Decimal point can be modified

◎RPM/LINE or LINE-SPEED unit can be modified

◎Input pulse of revolution can be modified(1~99999)

◎Diameter(LINE-SPEED)/scale(RPM)can be modified (0.0001~9.9999)

◎Display avrage times can be modified(1~99)

◎Daul input math function, B-A,B/A,(B/A)-1,1-(B/A),B/(A+B)

◎16BIT DAC analog output can be modified

◎Two alarm function

◎RS485 Communication interface, MODBUS RTU MODE

◎BAUD DRATE:19200/9600/4800/2400

◎0.4" highlight display

◎Man-machine interface, easy to operate

◎EEPROM Saving, data safekeeping about 10 years

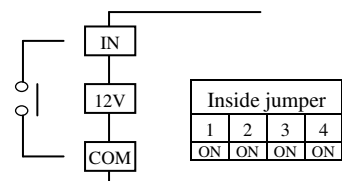◎Modified inside parameter, must have pass code

■ Name of Parts

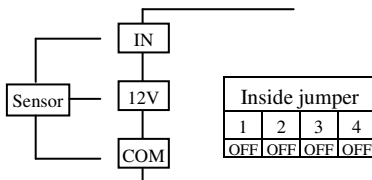Set-value up(Scale adjustment call out)

Cursor shift(Alarm display call out)

Set-value down(analog adjustment call out)

Parameter Enter (Function call out)

Alarm Indicate — AL1, AL2

Communication Indicate — DIO

MAX Indicate — MAX

AL1-SET / AL1 VALUE

AL2 VALUE / AL2-SET

Display Value

■ Connect Diagram

◎Contact input ((PNP 5V/12V)

IN	12V	Inside jumper
		1 2 3 4
		OFF ON OFF ON

◎Sensor input(PNP 5V/12V)

IN	12V	COM	Inside jumper
			1 2 3 4
			OFF OFF OFF OFF

◎Contact input (NPN 5V/12V)

IN	12V	COM	Inside jumper
			1 2 3 4
			ON ON ON ON

◎Sensor input(NPN 5V/12V)

IN	12V	COM	Inside jumper
			1 2 3 4
			ON OFF ON OFF
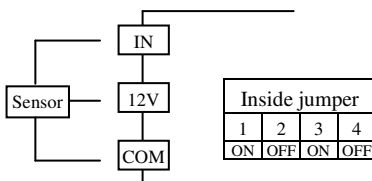
■ Inside jumper illustrates
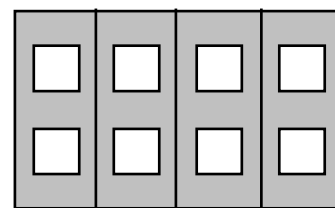
4 3 2 1

Position 1&2→ IN(A)

Position 3&4→ IN(B)

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 display page 2.Into paramerter setting page, the parameter mark & data is alternate display, If need modify data can press shift 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.In normal display, The key function is call out adjustment display scale 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 increment. (Key Response about 0.2 sec)	
▼Key Function		1.In normal display, The key function is call out adjustment analog output 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	12345	Press Ⓝ/FUNC key into P.COD setting page
2	P.COD(Pass code input page)	P.CodE 00000	1.Key in 5 digit pass code with◀&▲&▼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	
	AOP(Analog output setting group)	AoP	
	DOP(Communication setting group)	doP	
4	SYS(System setting group)	SYS	1.Press◀key decide SYS setting group, Press Ⓝ key into DP setting page
4-1	DP(Decimal Point setting page) Default = 0	dP 0	1.Decide decimal point position with▲&▼key (0 to 4) 2.Press Ⓝkey enter data and into TYPE setting page
4-2	TYPE(Display Type) Default = RPM	tYPE rPn	1.Decide display type with▲&▼key(RPM/LINE) 2.Press Ⓝkey enter data, If select LINE into step 4-3 UNIT setting page, otherwise into step 4-4 PPR-A setting page
4-3	UNIT(Line Speed Unit) Default = METER	Unit nEtEr	1.Decide line speed unit with ▲&▼key(METER/FOOT/YARD) 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 MODE setting page
4-6	MODE(Mode) Default = A	nodE A	1.Decide display mode with▲&▼key A　　　　　(Display value of input A) B　　　　　(Display value of input B) B-A　　　　(Display value of B-A) (B/A)x100　　(display value of (B/A)*100) (B/A-1)x100　[display value of ((B/A)-1)*100] (B/(A+B))x100　[display value of (B/(A+B))x100] (1-B/A)x100　[display value of (1-(B/A))*100] 2.Press Ⓝkey enter data and into TBASE setting page
4-7	TBASE (Sampling Time Base) Defaul t = 0.1	tbASE 00.1	1.Decide sampling time base with◀&▲&▼key(0.1~99.9sec) 2.Press Ⓝkey enter data and into AVG setting page
4-8	AVG (Display Average times) Default = 5	AuG 05	1.Decide display average times with◀&▲&▼key(1~99) 2.Press Ⓝkey enter data and into CODE setting page
4-9	CODE(Pass Code)	CodE	1.Decide pass code with◀&▲&▼key(0~99999)

	Default = 0	0 0 0 0 0	2.Press Ⓝ key enter data and into LOCK setting page
4-10	LOCK(Panel Lock) Default = NO	L o C k n o	1.Decide panel lock with ▲&▼key(NO or YES) 2.Press Ⓝ key enter data and return SYS setting group
5	ROP(Alarm setting group)	r o P	1.Press ◀ key decide ROP setting group, press Ⓝ key into ACT1 setting page
5-1	ACT1(Alarm Active 1 setting page) Default = HI	A C t 1 H i	1.Decide active 1 with ▲&▼key(HI or LO) 2.Press Ⓝ key enter data and into ACT2 setting page
5-2	ACT2(Alarm Active 2 setting page) Default = HI	A C t 2 H i	1.Decide active 2 with ▲&▼key(HI or LO) 2.Press Ⓝ key enter data and into HYS1 setting page
5-3	HYS1(Alarm Hysteresis 1 setting page) Default = 0	H y S 1 0 0 0	1.Decide Hysteresis 1 with ◀&▲&▼key(0~999) 2.Press Ⓝ key enter data and into HYS2 setting page
5-4	HYS2(Alarm Hysteresis 2 setting page) Default = 0	H y S 2 0 0 0	1.Decide Hysteresis 2 with ◀&▲&▼key(0~999) 2.Press Ⓝ key enter data and into DEL1 setting page
5-5	DEL1(Alarm Delay 1 setting page) Default = 0	d E L 1 0 0 0.0	1.Decide delay 1 with ◀&▲&▼key(-99.9~99.9 sec) 2.Press Ⓝ key enter data and into DEL2 setting page Note:-0.1 ~ -99.9 sec = Alarm active time 　　0.1 ~ 99.9 sec = Alarm delay time
5-6	DEL2(Alarm Delay 2 setting page) Default = 0	d E L 2 0 0 0.0	1.Decide delay 2 with ◀&▲&▼key(-99.9~99.9 sec) 2.Press Ⓝ key enter data and return ROP setting group Note:-0.1 ~ -99.9 sec = Alarm active time 　　0.1 ~ 99.9 sec = Alarm delay time
6	AOP(Analog output setting group)	A o P	Press ◀ key decide AOP setting group , press Ⓝ key into ANLO setting page
6-1	ANLO(A/O Zero According to Display setting page) Default = 0	A n L o 0 0 0 0 0	1.Decide ANLO with ◀&▲&▼key(-19999~99999) 2.Press Ⓝ key enter data and into ANHI setting page
6-2	ANHI(A/ O Span According to Display setting page) Default = 99999	A n H i 9 9 9 9 9	1.Decide ANHI with ◀&▲&▼key(-19999~99999) 2.Press Ⓝ key enter data and into AZERO setting page
7	DOP(Communication setting group)	d o P	press ◀ key decide DOP setting group, press Ⓝ key into ADDR setting page
7-1	ADDR(Communication –Address setting page) Default = 0	A d d r 0 0 0	1.Decide address with ◀&▲&▼key(0~255) 2.Press Ⓝ key enter data and into BAUD setting page Note:If the setting value greater then 255,it will be return to zero.
7-2	BAUD(Communication Baud Rate setting page) Default = 19200	b A U d 1 9 2 0 0	1.Decide baud rate with ▲&▼key(19200,9600,4800,2400) 2.Press Ⓝ key enter data and into PARI setting page
7-3	PARI(Communication Parity Check setting page) Default = n82	P A r i n.8.2.	1.Decide parity check with ▲&▼key(n82,n81,even,odd) 2.Press Ⓝ key enter data and return DOP 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 display page
8-1	AL1 (Alarm value 1 display page) Default = 0	A L 1 0 0 0 0 0	1.Display alarm value 1 (0~99999) 2.Press Ⓝ key into AL2 display page

8-2	AL2 (Alarm value 2 display page) Default = 0	$\mathsf{AL2}$ $\mathsf{00000}$	1.Display alarm value 2 (0~99999) 2.Press Ⓝkey return normal display

Step	Parameter mark description	Parameter mark	Operation manual
9	Normal display	$\mathsf{12345}$	Press▲/D-ADJ key about 3 sec,into SCL-A setting page
9-1	SCL-A (Display Scale A setting page) Default = 1.0000	$\mathsf{SCL-A}$ $\mathsf{1.0000}$	1.Decide scale A with◀&▲&▼key(0.0001~9.9999) 2. Press Ⓝkey enter data and into SCL-B setting page
9-2	SCL-B (Display Scale B setting page) Default = 1.0000	$\mathsf{SCL-b}$ $\mathsf{1.0000}$	1.Decide scale B with◀&▲&▼key(0.0001~9.9999) 2.Press Ⓝkey enter data and return normal display

Step	Parameter mark description	Parameter mark	Operation manual
10	Normal display	$\mathsf{12345}$	Press▲/A-ADJ key about 3 sec, into AZERO setting page
10-1	AZERO(Analog Output Zero Adjustment page) Default = 0	APEro $\mathsf{00000}$	1.Adjustment analog output zero with◀&▲&▼key(±5999) 2.Press Ⓝkey enter data and into ASPAN adjustment page
10-2	ASPAN(Analog Output Span Adjustment page) Default = 0	ASPAn $\mathsf{00000}$	1.Adjustment analog output span with◀&▲&▼key(±5999) 2.Press Ⓝkey enter data and return normal display

Appendix	Error Mark description	Error Mark	Analyze & Description
1	Input over range error detect	ioFL	Input signal over range(0~50KHz)
2	Display over range error detect	doFL	Display over range(99999)
3	Display under range error detect	$\mathsf{-doFL}$	Display under range (-19999)
4	EEPROM error detect	$\mathsf{E-00}$	1.External interference when EEPROM read/write 2.EEPROM write over 100000 times (guarantee 10 years)
		no	Please power reset,if still display E-00,doing following step: 1.E-00 & No alternate display for inquire reset EEPROM
		YES	2.Decide Yes with▲key,press Ⓝkey return normal display 3.EEPROM was reset,Please follow step 1~9 setting again

MMRP 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	DP	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	TYPE	Display Type, Input Range 0000~0001 (0~1) (0:RPM,1:LINE)	R/W
0002	LOCK	Panel Lock, Input Range 0000~0001 (0~1)(NO/YES)	R/W
0004	UNIT	Line Speed Unit, Input Range 0000~0002 (0~2) (0:METER,1:FOOT,2:YARD)	R/W
0005	MODE	Mode, Input Range 0000~0006 (0~6)(0:A,1:B,2:B-A,3: (B/A)x100,4: (B/A-1)x100,5: (B/(A+B))x100,6: (1-B/A)x100)	R/W
0006	TBASE	Sampling Time Base, Input Range 0001~03E7 (0.1~99.9)	R/W
0007	AVG	Display Average times, Input Range 0001~0063 (1~99)	R/W
0008	ACT1	Alarm Active 1,Input Range 0000~0001(0~1) (0:HI,1:LO)	R/W
0009	ACT2	Alarm Active 2,Input Range 0000~0001(0~1) (0:HI,1:LO),	R/W
000A	HYS1	Alarm hysteresis 1,Input Range 0000~03E7 (0~999)	R/W
000B	HYS2	Alarm hysteresis 2,Input Range 0000~03E7 (0~999)	R/W
000C	DEL1	Alarm Delay 1,Input Range FC19~03E7 (-99.9~99.9)	R/W
000D	DEL2	Alarm Delay 2,Input Range FC19~03E7 (-99.9~99.9)	R/W
000E	ADDR	Communication Address, Input Range 0000~00FF (0~255)	R/W
000F	BAUD	Communication Baud Rate, Input Range 0000~0003 (0~3)(0:19200,1:9600,2:4800,3:2400)	R/W
0010	PARI	Communication Parity Check, Input Range 0000~0003 (0~3)(0:N82,1:N81,2:EVEN,3:ODD)	R/W
0011	A_ZERO	Analog Output Zero Adjust, Input Range E891~176F (-5999~5999)	R/W
0012	A_SPAN	Analog Output Span Adjust, Input Range E891~176F (-5999~5999)	R/W
0013	CODE	Pass Code, Input Range 00000000~0001869F (0~99999)high word	R/W
0014		Pass Code, Input Range 00000000~0001869F (0~99999)low word	R/W
0015	PPR-A	Pulse Per Revolution of input A, Input Range 00000001~0001869F (1~99999)high word	R/W
0016		Pulse Per Revolution of input A, Input Range 00000001~0001869F (1~99999)low word	R/W
0017	PPR-B	Pulse Per Revolution of input B, Input Range 00000001~0001869F (1~99999)high word	R/W
0018		Pulse Per Revolution of input B, Input Range 00000001~0001869F (1~99999)low word	R/W
0019	SCL-A	Display Scale A, Input Range 00000001~0001869F (0.0001~9.9999)high word	R/W
001A		Display Scale A, Input Range 00000001~0001869F (0.0001~9.9999)low word	R/W
001B	SCL-B	Display Scale B, Input Range 00000001~0001869F (0.0001~9.9999)high word	R/W
001C		Display Scale B, Input Range 00000001~0001869F (0.0001~9.9999)low word	R/W
001D	ANLO	Analog Output Zero According to Display, Input Range FFFFB1E1~0001869F (-19999~99999)high word	R/W
001E		Analog Output Zero According to Display, Input Range FFFFB1E1~0001869F (-19999~99999)low word	R/W
001F	ANHI	Analog Output Span According to Display, Input Range FFFFB1E1~0001869F (-19999~99999)high word	R/W
0020		Analog Output Span According to Display, Input Range FFFFB1E1~0001869F (-19999~99999)low word	R/W
0021	AL1	Alarm 1,Input Range FFFFD8F1~0001869F (-9999~99999)high word	R
0022		Alarm 1,Input Range FFFFD8F1~0001869F (-9999~99999)low word	R
0023	AL2	Alarm 2,Input Range FFFFD8F1~0001869F (-9999~99999)high word	R
0024		Alarm 2,Input Range FFFFD8F1~0001869F (-9999~99999)low word	R
0025	DISP	Display Value, Display Range FFFFB1E1~0001869F (-19999~99999)high word	R
0026		Display Value, Display Range FFFFB1E1~0001869F (-19999~99999)low word	R
0027	STATUS	Status, Display Range 0000~003F(0~63) Bit0:AL1,Bit1:AL2,Bit2:DOFL,Bit3:-DOFL,Bit4:IOFL,Bit5:MAX	R