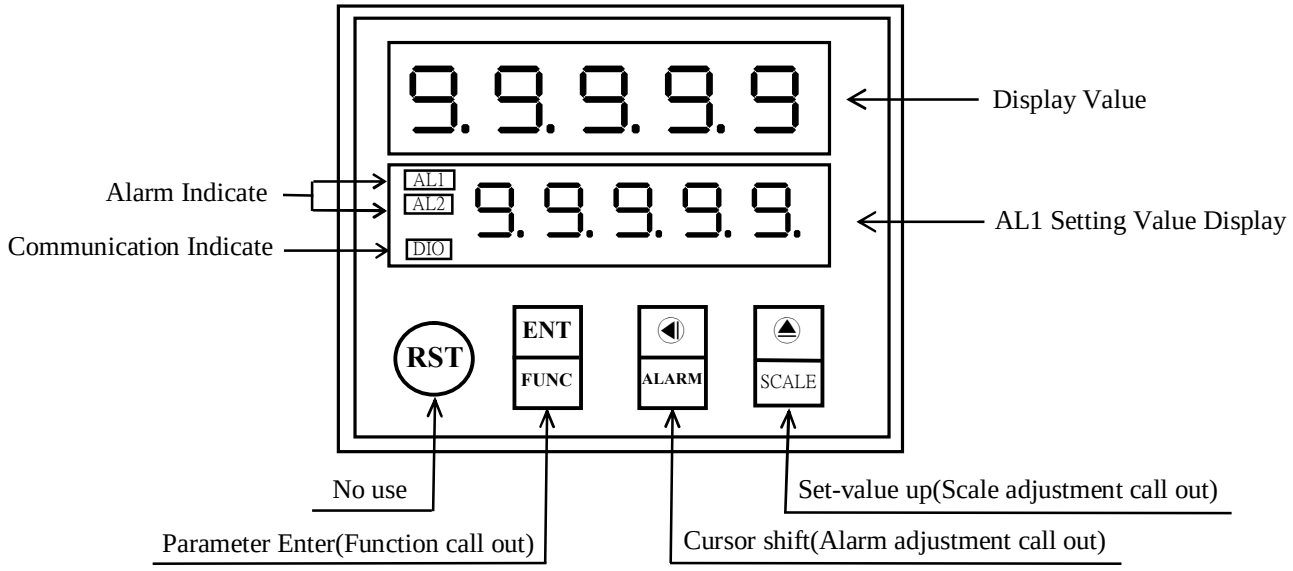
AXE Multi-function microprocess RPM & Line-speed controller meter(48x48mm) MR48 Series

■ Features

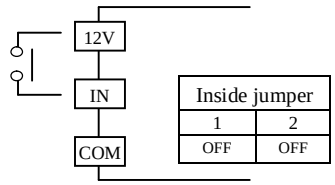
◎Accept more type sensors(switch,encoder,proximity switch,é etc)finish RPM/LINE SPEED transmit
◎Accuracy 0.03% F.S.
◎Accept input rates up to 50KHz
◎Readout range(-19999~99999)
◎RPM/LINE or LINE-SPEED unit can be modified
◎Daul input math function, B-A,B/A,(B/A)-1,1-(B/A),B/(A+B)
◎Input pulse of revolution 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)
◎16BIT DAC analog output can be modified,
◎Two alarm function
◎0.4" highlight display
◎RS485 Communication interface,Protocol MODBUS RTU MODE
◎BAUD RATE:38400/19200/9600/4800/2400
◎Decimal point can be modified
◎Man-machine interface,easy to operate
◎EEPROM Saving,data safekeeping about 10 years
◎Modified inside parameter,must have pass code

■ Name of Parts

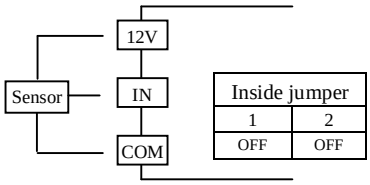


■ Connect Diagram

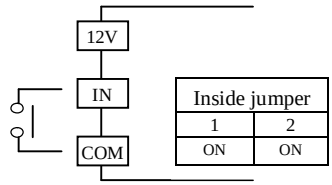
◎ Contact input (PNP)



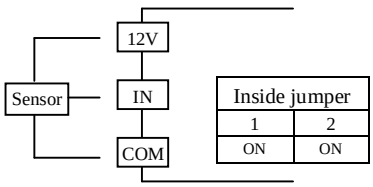
◎ Sensor input (PNP 5V/12V)



◎ Contact input (NPN)



◎ Sensor input (NPN 5V/12V)



■ Inside jumper illustrates

1 Position 1 ON : IN1 Input NPN,OFF = PNP
2 Position 2 ON : IN2 Input NPN,OFF = PNP

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 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),If the setting value have negative,Shift cursor(twinkle express) to the leftest and Press▲ key can positive / negative number alternate display
◀&▲ 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 ENT/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 ◀ or ▲ key 2.Press ENT 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 ENT 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 , PressENTkey 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 ENT key enter data and into CNTS setting page
4-2	CNTS(Count Rates Select) Default = 50KHZ	CntS 50KHZ	1.Decide Count Rates Select with ▲key (50HZ,50KHZ) 2. Press ENT key enter data and into TYPE setting page
4-3	TYPE(Display Type) Default = RPM	tYPE rPn	1.Decide display type with ▲ key(RPM/LINE) 2.Press ENT key enter data,If select LINE into step 4-4 UNIT setting page, otherwise into step 4-5 PPR-A setting page
4-4	UNIT(Line Speed Unit) Default = METER	Uni t nEtEr	1.Decide line speed unit with ▲ key(METER/FOOT/YARD) 2.Press ENT key enter data and into PPR-A setting page
4-5	PPR-A(Pulse Per Revolution of input A) Default = 1	PPr-A 0001	1.Decide pulse per revolution of input A with ◀&▲ key(1~99999) 2.Press ENT key enter data and into PPR-B setting page
4-6	PPR-B(Pulse Per Revolution of input B) Default = 1	PPr-b 0001	1.Decide pulseper revolution of input B with ◀&▲ key(1~99999) 2.Press ENT key enter data and into MODE setting page
4-7	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] 1A2B (Display value of input +A)(A lead B)(Max.25KHz) (Display value of input -A)(B lead A)(Max.25KHz) 2.Press ENT key enter data and into TBASE setting page

4-8	TBASE (Sampling Time Base) Defaul t = 0.1	tBASE 00.1	1.Decide sampling time base with ◀&▲ key(0.1~99.9sec) 2.Press EN key enter data and into AVG setting page
4-9	AVG (Display Average times) Default = 5	AuG 05	1.Decide display average times with ◀&▲ key(1~99) 2.Press EN 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 EN key enter data and into LOCK setting page
4-11	LOCK(Panel Lock) Default = NO	LoCK no	1.Decide panel lock with ▲ key(NO or YES) 2.Press EN key enter data and return SYS setting group
5	ROP(Alarm setting group)	roP	1.Press ◀ key decide ROP setting group,press EN key into ACT1 setting page
5-1	ACT1(Alarm Active 1 setting page) Default = HI	ACt 1 Hi	1.Decide active 1 with ▲ key(HI or LO) 2.Press EN key enter data and into ACT2 setting page
5-2	ACT2(Alarm Active 2 setting page) Default = HI	ACt2 Hi	1.Decide active 2 with ▲ key(HI or LO) 2.Press EN key enter data and into HYS1 setting page
5-3	HYS1(Alarm Hysteresis 1 setting page) Default = 0	HYS 1 000	1.Decide Hysteresis 1 with ◀ or ▲ key(0~999) 2.Press EN key enter data and into HYS2 setting page
5-4	HYS2(Alarm Hysteresis 2 setting page) Default = 0	HYS2 000	1.Decide Hysteresis 2 with ◀ or ▲ key(0~999) 2.Press EN key enter data and into DEL1 setting page
5-5	DEL1(Alarm Delay 1 setting page) Default = 0	dEL 1 000.0	1.Decide delay 1 with ◀ or ▲ key(-99.9~99.9 sec) 2.Press EN 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	dEL2 000.0	1.Decide delay 2 with ◀ or ▲ key(-99.9~99.9 sec) 2.Press EN 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)	AoP	Press ◀ key decide AOP setting group , press EN key into ANLO setting page
6-1	ANLO(A/O Zero According to Display setting page) Default = 0	AnLo 00000	1.Decide ANLO with ◀ or ▲ key(-19999~99999) 2.Press EN key enter data and into ANHI setting page
6-2	ANHI(A/ O Span According to Display setting page) Default = 99999	AnHi 99999	1.Decide ANHI with ◀ or ▲ key(-19999~99999) 2.Press EN key enter data and into AZERO setting page
6-3	AZERO(Analog Output Zero Adjustment page) Default = 0	APErO 00000	1.Adjustment analog output zero with ◀ or ▲ key(±5999) 2.Press EN key enter data and into ASPAN adjustment page
6-4	ASPAN(Analog Output Span Adjustment page) Default = 0	ASPAn 00000	1.Adjustment analog output span with ◀ or ▲ key(±5999) 2.Press EN key enter data and return AOP setting group
7	DOP(Communication setting group)	doP	press ◀ key decide DOP setting group,press EN key into ADDR setting page
7-1	ADDR(Communication ï Add ress setting page) Default = 0	Addr 000	1.Decide address with ◀ or ▲ key(0~255) 2.Press EN 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	bAUd 19200	1.Decide baud rate with ▲ key(38400,19200,9600,4800,2400) 2.Press EN key enter data and into PARI setting page

7-3	PARI(Communication Parity Check setting page) Default = n82	PAr1 n.8.2.	1.Decide parity check with ▲ key(n82,n81,even,odd) 2.Press ENT key enter data and return DOP setting group

Step	Parameter mark description	Parameter mark	Operation manual
8	Normal display	12345	Press ◀/ALARM key about 3 sec,into AL1 1setting page
8-1	AL1 (Alarm value 1 setting page) Default = 0	AL 1 00000	1.Decide alarm value 1 with ◀ or ▲ key(-19999~99999) 2.Press ENT key enter data and into AL2 setting page
8-2	AL2 (Alarm value 2 setting page) Default = 0	AL2 00000	1.Decide alarm value 2 with ◀ or ▲ key(-19999~99999) 2.Press ENT key enter data and return normal display

Step	Parameter mark description	Parameter mark	Operation manual
9	Normal display	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	SCL-A 1.0000	1.Decide scale A with ◀ or ▲ key(0.0001~9.9999) 2. Press ENT key enter data and into SCL-B setting page
9-2	SCL-B (Display Scale B setting page) Default = 1.0000	SCL-b 1.0000	1.Decide scale B with ◀ or ▲ key(0.0001~9.9999) 2.Press ENT 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	-doFL	Display under range (-19999)
4	EEPROM error detect	E-00 no YES	1.External interference when EEPROM read/write 2.EEPROM write over 100000 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▲key,press ENT key return normal display 3. EEPROM was reset,Please follow step 1~9 setting again

MR48 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
0003	CNTS	Count Rates Select,Input Range 0000~0001 (0~1) (0:50HZ,1:50KHZ)	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 0000~0007 (0~7)(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), 7:1A2B	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 0000~0004 (0~4)(0:38400,1:19200,2:9600,3:4800,4:2400)	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 FFFFB1E1~0001869F (-19999~99999)high word	R/W
0022		Alarm 1,Input Range FFFFB1E1~0001869F (-19999~99999)low word	R/W
0023	AL2	Alarm 2,Input Range FFFFB1E1~0001869F (-19999~99999)high word	R/W
0024		Alarm 2,Input Range FFFFB1E1~0001869F (-19999~99999)low word	R/W
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 0000~001F(0~31) Bit0:AL1,Bit1:AL2,Bit2:DOFL,Bit3:-DOFL,Bit4:IOFL	R