

3 1/2 位數 數字式製程顯示表

CSR-321

■ 特點

- 測量 製程訊號: mA, 直流電壓, 電位計, 脈衝
- 精度: $\pm 0.1\%$
- 3 1/2 數字式顯示: 1999
- 容易接線, 螺絲固定端子
- 外觀尺寸歐規標準 1/8 DIN (96x48 mm)
- 穩定性高&可靠度佳

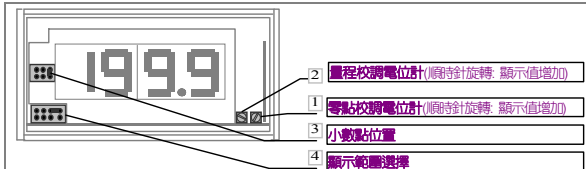


■ 技術規格

	測量範圍	分辨率	輸入阻抗
電流	0 ~ 1 mA	0.001 mA	≤ 200 ohm
	0 ~ 10 mA	0.01 mA	≤ 20 ohm
	0 ~ 20 mA	0.1 mA	≤ 10 ohm
	4 ~ 20 mA	0.1 mA	≤ 10 ohm
電壓	0 ~ 50 mV	0.1 mV	$\geq 5M$ ohm
	0 ~ 1 V	0.001 V	$\geq 1M$ ohm
	0 ~ 5 V	0.01 V	$\geq 1M$ ohm
	0 ~ 10 V	0.01 V	$\geq 1M$ ohm
電位計	50 ~ 100.0K ohm		$\geq 1M$ ohm
	脈衝	3.00 ~ 30.0K Hz	$\geq 1M$ ohm

- 量測精度: $\pm 0.1\%$ F.S. ± 1 digit
- 最高值校正: $\leq 10\%$ of R.O.
- 零點校正: $\leq 2\%$ of R.O.
- 響應時間: 大約 300ms
- 反向顯示: 當輸入訊號為反向 "-"
- 超量程顯示: 顯示 "1"
- 輸入過載能力: 電壓: 1.2 x 額定輸入(連續)訊號
1.5 x 額定輸入(連續)10 秒
電流: 10 x 額定輸入持續
由短路片選定任意位置
- 小數點指示: 操作溫度: 0~60 °C
- 操作相對溼度: 20~95 %RH
- 溫度系數: ≤ 100 PPM/°C(0~50°C)
 ≤ 50 PPM/°C(23 \pm 3°C)
- 庫存溫度: -10~70 °C
- 工作電源: AC 115/230V $\pm 10\%$, 50/60 Hz
特殊選項: DC 12V, 24V, 48V $\pm 10\%$
- 激勵電壓: DC 10V, 12V, 24V, 30mA
- 消耗功率: DC 3W, AC 4.5VA
- 導電強度: AC 2.0KV for 1 min
(在電源與輸入之間)
AC 3.0KV for 1 min
(在端子與外殼之間)
- 重量: 大約 350g
- 保護等級: IP55

■ 校正微調



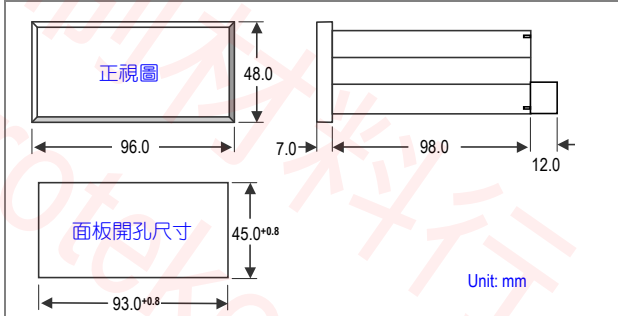
4 顯示範圍選擇:

選擇	位置選擇	顯示範圍	選擇	位置選擇	顯示範圍
1		1999~1700	5		900~ 625
2		1725~1300	6		625~ 425
3		1300~ 900	7		425~ 300
4		1200~ 825	8		300~ 200

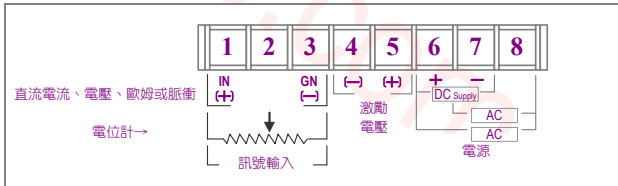
3 小數點位置選擇:



■ 規格尺寸



■ 接線圖



■ 訂貨選型資料

CSR-321 輸入範圍 - 激勵電壓 - 工作電源

電流		電壓		電位計		頻率		激勵電壓		工作電源	
CODE	輸入範圍	CODE	輸入範圍	CODE	輸入範圍	CODE	輸入範圍	CODE	激勵電壓	CODE	工作電源
A1	0 ~ 1 mA	V1	0 ~ 50 mV	RP1	50 ~ 10K ohm	S1	1.0 mV / V	H1	無	A	AC 115/230 V
A2	0 ~ 10 mA	V2	0 ~ 60 mV	RP2	10K ~ 100K ohm	S2	1.3 mV / V	H2	DC 10 V	D12	DC 12 V
A3	0 ~ 20 mA	V3	0 ~ 1 V	R1	199.9 ohm	S3	1.5 mV / V	H3	DC 12 V	D24	DC 24 V
A4	4 ~ 20 mA	V4	0 ~ 5 V	R2	1999 ohm	S4	2.0 mV / V	H4	DC 24 V	D48	DC 48 V
AO	特殊規格	V5	0 ~ 10 V	R3	10.00K ohm	S5	2.5 mV / V	H5	特殊規格	EO	特殊規格
		V6	1 ~ 5 V	RO	特殊規格	S6	3.0 mV / V	H6			
		VO	特殊規格			SO	特殊規格	HO			

C-06

4 1/2 位數 數字式製程顯示表

CSR-421

■ 特點

- 測量 製程訊號: mA, 直流電壓, 電位計, 脈衝
- 精度: $\pm 0.04\%$
- 4 1/2 數字式顯示: 19999
- 容易接線, 螺絲固定端子
- 外觀尺寸歐規標準 1/8 DIN (96x48 mm)
- 穩定性高&可靠度佳



■ 技術規格

	測量範圍	分辨率	輸入阻抗
電流	0 ~ 1 mA	0.0001 mA	≤ 200 ohm
	0 ~ 10 mA	0.001 mA	≤ 20 ohm
	0 ~ 20 mA	0.01 mA	≤ 10 ohm
	4 ~ 20 mA	0.01 mA	≤ 10 ohm
電壓	0 ~ 50 mV	0.01 mV	$\geq 5M$ ohm
	0 ~ 1 V	0.0001 V	$\geq 1M$ ohm
	0 ~ 5 V	0.001 V	$\geq 1M$ ohm
	0 ~ 10 V	0.001 V	$\geq 1M$ ohm
	1 ~ 5 V	0.001 V	$\geq 1M$ ohm
電位計	50.00 ~ 100.00K ohm		$\geq 1M$ ohm
脈衝	3.000 ~ 30.00K Hz		$\geq 1M$ ohm

- 測量精度: $\pm 0.04\%$ F.S. ± 1 digit
- 最高值校正: $\leq 10\%$ of R.O.
- 零點校正: $\leq 2\%$ of R.O.
- 取樣時間: 大約 3 次/秒
- 反向顯示: 當輸入訊號為反向 "-"
- 超量程顯示: "0000" 閃爍
- 輸入過載能力: 電壓: 1.2 x 額定輸入(連續)訊號
1.5 x 額定輸入(連續)10 秒
電流: 10 x 額定輸入持續
由短路片選定任意位置
- 小數點指示: 由短路片選定任意位置
- 操作溫度: 0-60 °C
- 操作相對溼度: 20-95 %RH
- 溫度系數: ≤ 100 PPM/°C(0~50°C)
 ≤ 50 PPM/°C(23 \pm 3°C)
- 庫存溫度: -10~70 °C
- 工作電源: AC 115/230V $\pm 10\%$, 50/60 Hz
特殊選項: DC 12V, 24V, 48V $\pm 10\%$
- 激勵電壓: DC 10V, 12V, 24V, 30mA
- 消耗功率: DC 3W, AC 4.5VA
- 導電強度: AC 2.0KV for 1 min
(在電源與輸入之間)
AC 3.0KV for 1 min
(在端子與外殼之間)
- 重量: 大約 350g

■ 校正微調

1 0 校對電位計輸入 0mA 或 0V (與蓋板轉顯示(自鎖))

2 量程校對電位計 (與蓋板旋轉 顯示(自鎖))

3 電壓校對電位計輸入 4mA 或 1V (與蓋板轉顯示(自鎖))

4 顯示範圍選擇

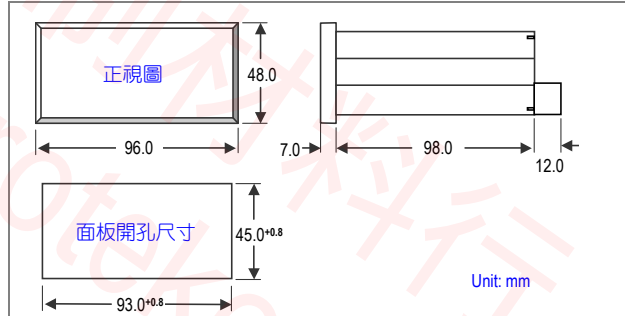
5 小數點位置

6 顯示範圍選擇

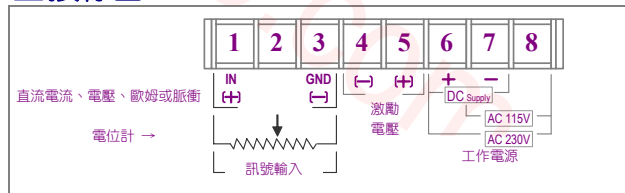
選擇	位置選擇	顯示範圍	選擇	位置選擇	顯示範圍
1	☐☐☐☐	1999~1700	5	☐☐☐☐	900~625
2	☐☐☐☐	1725~1300	6	☐☐☐☐	625~425
3	☐☐☐☐	1300~900	7	☐☐☐☐	425~300
4	☐☐☐☐	1200~825	8	☐☐☐☐	300~200

3 小數點位置選擇

■ 規格尺寸



■ 接線圖



■ 訂貨選型資料

CSR-421 輸入範圍 - 激勵電壓 - 工作電源

電流		電壓		電位計		頻率		激勵電壓		工作電源	
CODE	輸入範圍	CODE	輸入範圍	CODE	輸入範圍	CODE	輸入範圍	CODE	激勵電壓	CODE	工作電源
A1	0 ~ 1 mA	V1	0 ~ 50 mV	RP1	50 ~ 10K ohm	S1	1.0 mV / V	H1	無	A	AC 115/230 V
A2	0 ~ 10 mA	V2	0 ~ 60 mV	RP2	10K ~ 100K ohm	S2	1.3 mV / V	H2	DC 10 V	D12	DC 12 V
A3	0 ~ 20 mA	V3	0 ~ 1 V	R1	199.9 ohm	S3	1.5 mV / V	H3	DC 12 V	E2	DC 24 V
A4	4 ~ 20 mA	V4	0 ~ 5 V	R2	1999 ohm	S4	2.0 mV / V	H4	DC 24 V	E3	DC 48 V
O	特殊規格	V5	0 ~ 10 V	R3	10.00K ohm	S5	2.5 mV / V	H5	特殊規格	O	特殊規格
		V6	1 ~ 5 V	O	特殊規格	S6	3.0 mV / V	H6			
		O	特殊規格			O	特殊規格				

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CSEC-01/01

3 1/2 位數 數字式溫度表

CST-321

■ 特點

- 測量 T/C: K, J, T, E, R RTD: Pt100Ω
- 精度: T/C: ±0.25%, RTD: ±0.1%
- 三位半數字式顯示: 1999(特殊選項 199.99 在 Pt100Ω 輸入之內)
- 容易接線, 螺絲固定端子
- 外型尺寸歐規標準 1/8 DIN (96x48 mm)
- 穩定性高&可靠度佳



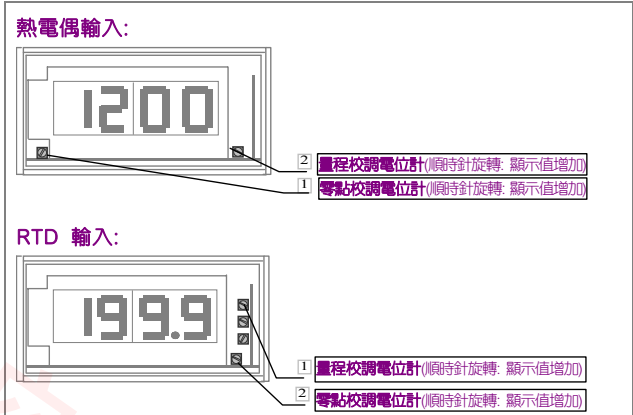
■ 測量參數

	測量範圍	分辨率	輸入阻抗
熱電偶	K 0~1200 °C	1 °C	≥1M ohm
	J 0~750 °C	1 °C	≥1M ohm
	T 0~400 °C	1 °C	≥1M ohm
	E 0~1000 °C	1 °C	≥1M ohm
	R 400~1600 °C	1 °C	≥1M ohm
RTD	Pt100 -199.9~199.9 °C	0.1 °C	≥1M ohm
	Pt100 0~800 °C	1 °C	≥1M ohm

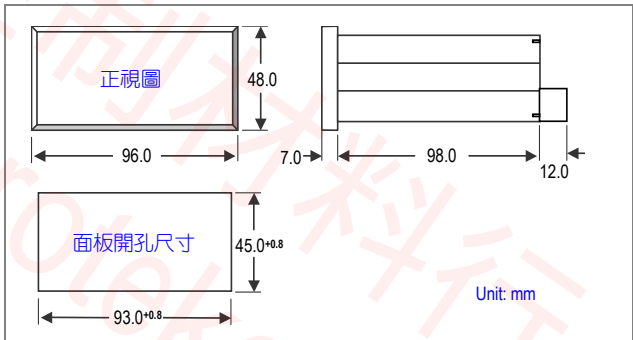
■ 技術規格

— 量測精度	T/C: ±0.25% F.S. ±1 digit RTD: ±0.1% F.S. ±1 digit
— 最高值校正:	≤10% of R.O.
— 零點校正:	≤2% of R.O.
— 取樣時間:	大約 3 次/秒
— 反向顯示:	當輸入訊號為反向 "-"
— 超量程顯示:	顯示 "1"
— 操作溫度:	0~60 °C
— 操作相對溼度:	20~95 %RH
— 溫度系數:	≤100 PPM/°C ≤50 PPM/°C (23 ±5 °C)
— 冷接點補償:	25 ±10°C, 誤差 < 0.5 °C
— 庫存溫度:	-10~70 °C
— 工作電源:	AC 115/230V ±10%, 50/60 Hz 特殊選項: DC 12V, 24V, 48V ±10% (隔離)
— 消耗功率:	DC 3W, AC 4.5VA
— 導電強度:	AC 2.0KV for 1 min (介于電源與輸入端之間) AC 3.0KV for 1 min (介于外殼與端子之間)
— 重量:	大約 350g

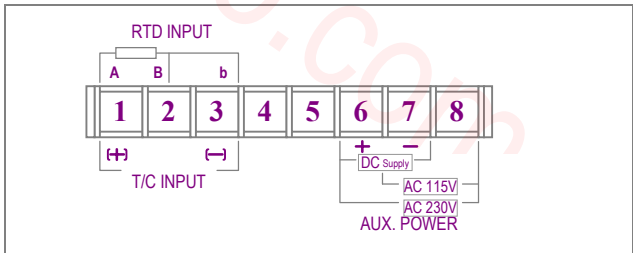
■ 校正微調



■ 規格尺寸



■ 接線圖



■ 訂貨選型資料

CST-321 輸入規格 — 輸入範圍 — 工作電源

CODE	輸入規格
K	K type
J	J type
T	T type
E	E type
R	R type
P	Pt100Ω
O	特殊規格

熱電偶		Pt100Ω	
CODE	輸入範圍	CODE	輸入範圍
A	0~100 °C	1	0~199.9 °C
B	0~200 °C	2	-50.0~50.0 °C
C	0~400 °C	3	-99.9~199.9 °C
D	0~600 °C	4	0~300 °C
E	0~1000 °C	5	0~600 °C
F	0~1200 °C	6	0~800 °C
G	400~1600 °C	O	特殊規格
O	特殊規格		

CODE	工作電源
A	AC 115/230 V
D12	DC 12 V
D24	DC 24 V
D48	DC 48 V
O	特殊規格

3 1/2 位數 溫度設定表

CST-321S

■ 特點

- 測量 T/C: K, J RTD: Pt100Ω
- 精度: T/C: ±0.5%, RTD: ±0.2%,
- 三位半數字式顯示: 1999
- 繼電器接點輸出
- 容易接線, 螺絲固定端子
- 外向尺寸歐規標準 1/8 DIN (96x48 mm)
- 穩定性高&可靠度佳



■ 測量參數

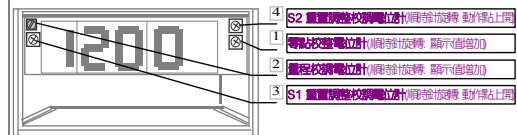
測量範圍		分辨率	輸入阻抗
熱電偶	K 0~1200 °C	1 °C	≥1M ohm
	J 0~750 °C	1 °C	≥1M ohm
RTD	Pt100 -199.9~199.9 °C	0.1 °C	≥1M ohm
	Pt100 0~800 °C	1 °C	≥1M ohm

■ 技術規格

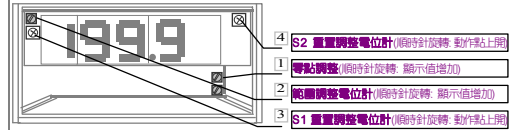
- 量測精度: T/C: ±0.5% F.S. ±1 digit
RTD: ±0.2% F.S. ±1 digit
- 最高值校正: ≤10% of R.O.
- 零點校正: ≤2% of R.O.
- 取樣時間: 大約 3 次/秒
- 反向顯示: 當輸入訊號為反向 "-"
- 超量程顯示: 顯示 "1"
- 繼電器動作點精度: ±0.5% F.S. ±1 digit
- 重置調整範圍: ±1% 通過電位計調整滿刻度
- 控制模式: ON/OFF
- 繼電器接點: SPDT for R1 & R2; AC 110V/5A, 220V/3A
- 操作溫度: 0~60 °C
- 操作相對溼度: 20~95 %RH
- 溫度系數: ≤100 PPM/°C (0 ~ 50 °C)
≤50 PPM/°C (23 ±5 °C)
- 冷接點補償: 25 ±10°C, error < 0.5 °C
- 庫存溫度: -10~70 °C
- 工作電源: AC 115/230V ±15%, 50/60 Hz
- 消耗功率: DC 3W, AC 4.5VA
- 導電強度: AC 2.0KV for 1 min (介于電源/輸入/輸出之間)
AC 3.0KV for 1 min (介于端子/外殼之間)
- 重量: 大約 500g

■ 校正微調

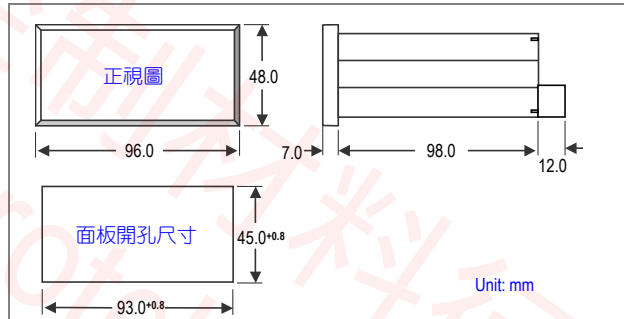
熱電偶輸入:



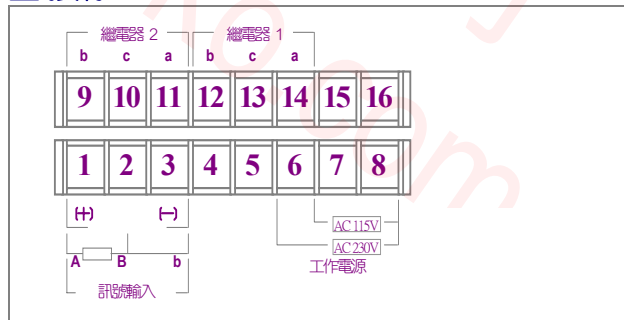
RTD 輸入:



■ 規格尺寸



■ 接線圖



■ 訂貨選型資料

CST-321S 輸入規格 - 輸入範圍 - 輸出範 工作電源

CODE	輸入規格	CODE	輸入範圍	CODE	輸出範圍	CODE	工作電源
K	K type	A	0~100 °C	1	0~199.9 °C	H	Hi
J	J type	B	0~200 °C	2	-50.0~50.0 °C	HH	Hi / Hi
P	Pt100Ω	C	0~400 °C	3	-99.9~199.9 °C	L	Low
O	特殊規格	D	0~600 °C	4	0~300 °C	LL	Low / Low
		E	0~1000 °C	5	0~600 °C	HL	Hi / Low
		F	0~1200 °C	6	0~800 °C		
		O	特殊規格	O	特殊規格		

3 1/2 位數 六點式溫度表

CST-321M

■ 特點

- 測量 T/C: K, J, T, E, R RTD: Pt100Ω
- 精度: T/C: ±0.25%, RTD: ±0.1%
- 三位半數字式顯示: 1999
- 容易接線, 螺絲固定端子
- 外型尺寸歐規標準 1/8 DIN (96x48 mm)
- 穩定性高&可靠度佳



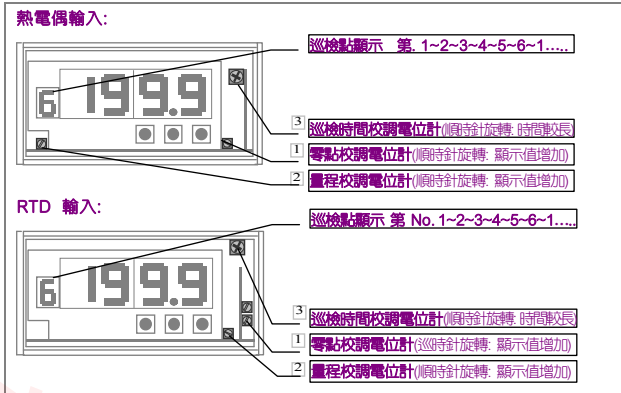
■ 測量參數

	測量範圍	分辨率	輸入阻抗
熱電偶	K 0 ~ 1200 °C	1 °C	≥ 1M ohm
	J 0 ~ 750 °C	1 °C	≥ 1M ohm
	T 0 ~ 400 °C	1 °C	≥ 1M ohm
	E 0 ~ 1000 °C	1 °C	≥ 1M ohm
	R 400 ~ 1600 °C	1 °C	≥ 1M ohm
RTD	Pt100 -199.9 ~ +199.9 °C	0.1 °C	≥ 1M ohm
	Pt100 0~800 °C	1 °C	≥ 1M ohm

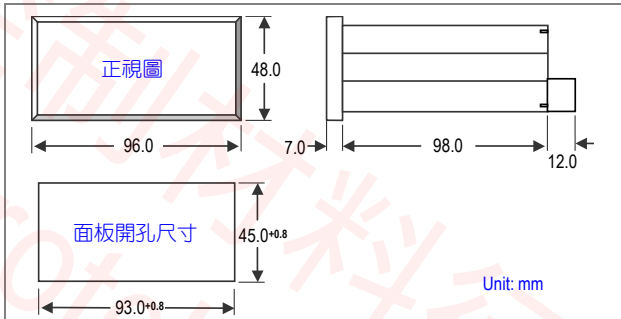
■ 技術規格

- 量測精度: T/C: ±0.25% F.S. ±1 digit
RTD: ±0.1% F.S. ±1 digit
- 最高點校正: ≤10% of R.O.
- 零點校正: ≤2% of R.O.
- 取樣時間: 大約 3 次/秒
- 巡檢模式: 自動巡檢或手動巡檢可切換
各點巡檢時間可通過電位計調整: 5-60s
- 反向顯示: 當輸入訊號為反向 " "
- 超量程顯示: 顯示 " 1 "
- 操作溫度: 0~60 °C
- 操作相對溼度: 20-95 %RH
- 溫度系數: ≤100 PPM/°C
≤50 PPM/°C (23 ±5 °C)
- 冷接點補償: 25 ±10°C, 誤差 < 0.5 °C
- 庫存溫度: -10~70 °C
- 工作電源: AC 115/230V ±10%, 50/60 Hz
- 消耗功率: DC 3W, AC 4.5VA
- 導電強度: AC 2.0KV for 1 min.
(介于電源/輸入之間)
- AC 3.0KV for 1 min.
(介于端子/外殼之間)
- 重量: 大約 500g

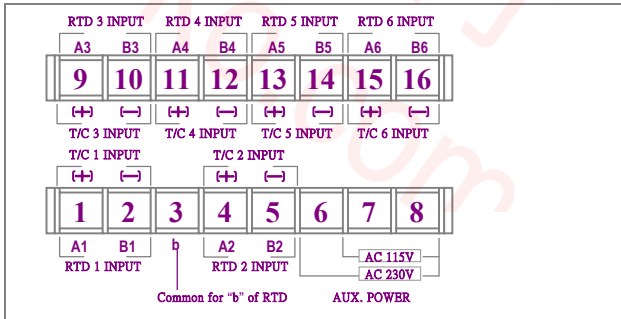
■ 校正微調



■ 規格尺寸



■ 接線圖



■ 訂貨選型資料

CST-321M 輸入規格 - 輸入範圍 - 工作電源

CODE	輸入規格	CODE	輸入範圍	CODE	輸入範圍	CODE	工作電源
K	K type	A	0 ~ 100 °C	1	0 ~ 199.9 °C	A	AC 115/230 V
J	J type	B	0 ~ 200 °C	2	-50.0 ~ +50.0 °C	O	特殊規格
T	T type	C	0 ~ 400 °C	3	-99.9 ~ +199.9 °C		
E	E type	D	0 ~ 600 °C	4	0 ~ 300 °C		
R	R type	E	0 ~ 1000 °C	5	0 ~ 600 °C		
P	Pt100Ω	F	0 ~ 1200 °C	6	0 ~ 800 °C		
O	特殊規格	G	400 ~ 1600 °C	O	特殊規格		
		O	特殊規格				

微電腦 控制表

CSS-4/5

特點

- 測量 直流電流 直流電壓 交流電流 交流電壓 頻率
- 過程訊號: mA, 直流電壓, 電位計, Pt100Ω
- 高精確度、高分辨率
- 人性化參數設定界面, 可選擇指撥開關設定或軟鍵開關設定, 現場設定容易
- 模塊設計, 常規輸入可調式範圍
- 三個繼電器輸出 (Hi / Low / Go)
- 稱重功能可在參考位置運行歸零
- 依據 CE 國際標準規範設計



測量參數

測量範圍阻抗	輸入阻抗	輸入範圍變化	輸入型式
電流	999.9 / 999.99 μ A	1K ohm	輸入範圍在訂單上詳細說明
	9.999 / 9.9999 mA	100 ohm	
	99.99 / 99.999 mA	10 ohm	
	1.000 / 1.0000 A	1 ohm	
	5.000 / 5.0000 A	0.02 ohm	
10.00 / 10.000 A	0.01 ohm		
電壓	99.99 / 99.999 mV	\geq 5M ohm	10V / 100V / 200V / 300 V / 600V 通過選擇可以切換
	999.9 / 999.99 mV	\geq 1M ohm	
	9.999 / 9.9999 V	\geq 1M ohm	
	99.99 / 99.999 V	\geq 1M ohm	
	150.0 / 150.00 V	\geq 1M ohm	
	300.0 / 300.00 V	\geq 1M ohm	
600.0 / 600.00 V	\geq 1M ohm		
頻率	99.99 / 99.999 Hz	\geq 1M ohm	輸入範圍在訂單上詳細說明
	999.9 / 999.99 Hz	\geq 1M ohm	
電位計	50.00 ~ 9.999K ohm	\geq 1M ohm	可改變的輸入模塊能改變輸入類型和必須經過校準
電阻	9.999 ~ 50.00K ohm	\geq 1M ohm	
Pt100Ω	-100.0~800.0 °C	\geq 1M ohm	可切換輸入範圍 P1 或 P2 輸入模式
	P1: -50~200.0 °C		
	P2: 0~400.0 °C		

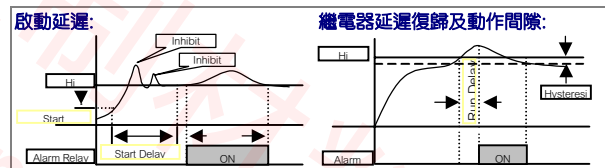
滿刻度範圍	4 位	4 1/2 位	5 位
指撥開關設定	-9999~+9999	0~+19999	0~+99999
軟鍵開關設定	-1999~+9999	-19999~+19999	-19999~+99999
精確度(交流)	\pm 0.1%滿刻度 \pm 1C	\pm 0.04%滿刻度 \pm 1C	
精確度(其它)	\pm 0.04%滿刻度 \pm 1C	\pm 0.02%滿刻度 \pm 1C	

- 取樣時間: <0.1 秒
- 顯示: 測量值: 0.56" 紅色的高亮度 LED
高限(Hi), 低限(Lo)輸出指示: 方型的紅色 LED
Go 輸出指示: 方型綠色 LED
- 超量程顯示: 顯示" OFL "
- 低量程顯示: 顯示" -OFL "
- 參數設定方式: 軟鍵開關 SET 移位, UP 數字增加, FUN/ENT 功
- 繼電器輸出設定方式: 指撥開關設定或軟鍵開關設定
- 繼電器輸出: Hi / Low / Go relays SPDT; 3A/115V, 2A/230V
- 參考位置調零: 通過接線端子輸入控制
- 激勵電壓: DC 10V/35mA, 24V/25mA
- 工作電源: AC 115/230V \pm 15%, 50/60 Hz
特殊選項: DC 12V, 24V, 48V
- 操作溫度: 0~55 °C
- 操作相對溼度: 20~90 %RH, 無結露
- 溫度系數: \leq 100 PPM/°C (0 ~ 50°C)
 \leq 50 PPM/°C (23 \pm 3°C)
- 庫存溫度: -10~70 °C
- 消耗功率: 4.5VA
- 導電強度: AC 2.0KV for 1 min
介于輸入/輸出/電源/外殼之間
- 絕緣: \geq 20M ohm
- RFI/EMI: EN50081-1, EN50082-2
- 安全規範: EN60950, EN61010

- 保護等級: 前面板: IP54
- 面板開孔尺寸: 93mm x 45mm
- 外表材質: ABS 防火材料
- 重量: 大約 500g

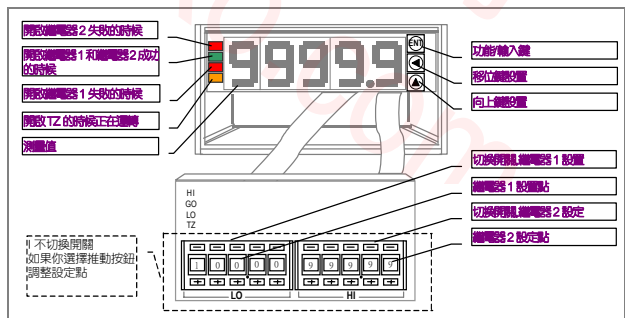
軟體功能

- 設定保護功能: Code: 密碼保護/設定值鎖定
- 量程功能設定: HS (量程): -9999 ~ 9999 / 0 ~ 99999
LS (零點): -9999 ~ 9999 / 0 ~ 99999
Mavg (移動平均顯示): 1~9 次取樣
Avg (平均): 1~99 次取樣
AHL: 可任意設定上限或下限報警
Sb (啟動延遲): -9999 ~ 9999 / 0 ~ 99999
Sdt (啟動延遲時間): 0 ~ 99 秒
Hy (動作間隙): 0 ~ 9999 / 0 ~ 99999
Rd (繼電器延遲復歸): 0 ~ 99 秒
- 控制功能設定:

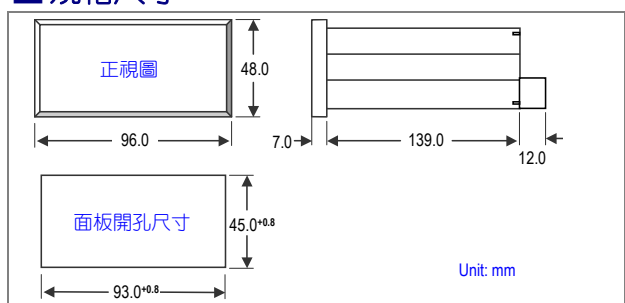


- 校準功能: 系統校準通過快速按鍵開關做軟件校調
InHi (高輸入): 依據輸入訊號高值校準
InLo (低輸入): 依據輸入訊號低值校準
- 參數存儲: By EEPROM

校正微調



規格尺寸



微電腦 — 控制表

CSS-4/5

■ 輸入範圍切換

電壓輸入範圍部分(在電源板上):

選擇位置	CN1		CN2							
	1	2	1	2	3	4	5	6	7	8
10 V										
100 V										
200 V										
300 V										
600 V										
過程訊號輸入										

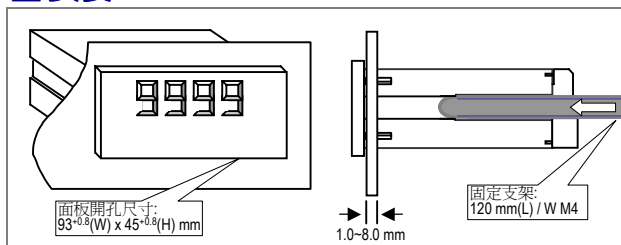
過程訊號輸入範圍部分
(在輸入模塊上):

切換開關	SW1			
	1	2	3	4
輸入範圍				
0 ~ 20 mA				on
4 ~ 20 mA	on			on
0 ~ 5 V				on
1 ~ 5 V	on			on
0 ~ 10 V				on
2 ~ 10 V	on			on

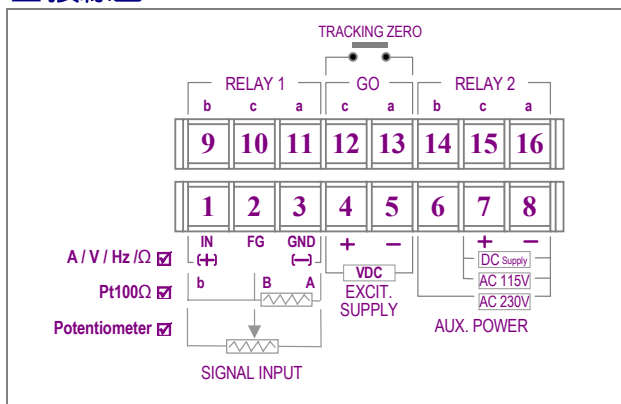
激勵電壓輸出範圍部分
(在激勵模塊上):

切換開關	JP1			JP2		
	1	2	3	1	2	3
激勵電壓						
DC 10 V						
DC 24 V						

■ 安裝



■ 接線圖



■ 訂貨選型資料

CSS- 位數 輸入規格 - 輸入範圍 - 繼電器輸出 設定方式 - Tare - 激勵電壓 - 工作電

CODE	顯示位數
40	4 位
41	4 1/2 位
50	5 位

CODE	輸入規格
D	直流
A	交流
TR	交流真實值
F	頻率
T	溫度
P	電位計
R	電阻

CODE	繼電器輸出
L	Low
H	Hi
LL	Low / LL
HH	Hi / HH
HL	Hi / Low
N	None

*當選擇 Tare 功能時,將沒有 Go 接點輸出

CODE	設定方式
P	軟體開關
D	指撥開關

CODE	T. ZERO
N	無
T	稍重調零
O	開集極
M	接點

CODE	激勵電壓
N	無
E1	DC 10 V
E2	DC 12 V
E3	DC 24 V
EO	特殊規格

CODE	工作電源
A	AC 115/230 V
D12	DC 12 V
D24	DC 24 V
D48	DC 48 V
O	特殊規格

電流		電壓		荷重元件		頻率		頻率模式		電位計		Pt100Ω	
CODE	輸入範圍	CODE	輸入範圍	CODE	輸入範圍	CODE	輸入範圍	CODE	輸入模式	CODE	輸入範圍	CODE	輸入範圍
A1	0 ~ 100 μA	V1	0 ~ 50 mV	S1	1.0 mV/V	H1	0 ~ 10 Hz	OC	開集極	P1	50 ~ 10K ohm	A	-50 ~ +50 °C
A2	0 ~ 1 mA	V2	0 ~ 60 mV	S2	1.25 mV/V	H2	0 ~ 20 Hz	MC	接點	P2	10K ~ 100K ohm	B	-100 ~ +100 °C
A3	0 ~ 10 mA	V3	0 ~ 100 mV	S3	1.5 mV/V	H3	0 ~ 50 Hz	V	脈衝	PO	特殊規格	C	0 ~ 100 °C
A4	0 ~ 100 mA	V4	0 ~ 1 V	S4	2.0 mV/V	H4	0 ~ 100 Hz	05	5 Vp-p	電阻(2-線式)		D	0 ~ 200 °C
A5	0 ~ 1 A	V5	0 ~ 5 V	S5	3.0 mV/V	H5	0 ~ 200 Hz	12	12 Vp-p	CODE 輸入範圍		E	0 ~ 400 °C
A6	0 ~ 5 A	V6	0 ~ 10 V	S6	4.0 mV/V	H6	0 ~ 500 Hz	24	24 Vp-p	R1	0 ~ 100 ohm	F	0 ~ 600 °C
A7	0 ~ 10 A	V7	0 ~ 100 V	S7	5.0 mV/V	H7	0 ~ 1K Hz	13	100 ~ 300 Vac	R2	0 ~ 1K ohm	G	0 ~ 800 °C
A8	0 ~ 20 mA	V8	0 ~ 150 V	S8	10.0 mV/V	H8	0 ~ 2K Hz	36	300 ~ 600 Vac	R3	0 ~ 10K ohm	P1	可切換 4 個輸入範圍: -50 ~ 0 °C, -50 ~ +50 °C, -50 ~ +100 °C, -50 ~ +200 °C
A9	4 ~ 20 mA	V9	0 ~ 300 V	S9	20.0 mV/V	H9	0 ~ 5K Hz	VO	特殊規格	RO	特殊規格		
AP	可切換 6 個輸入範圍: 4~20mA, 0~20mA, 1~5V, 0~5V, 0~10V, 2~10V	VA	0 ~ 600 V	SP	可切換 4 個輸入範圍: 1.0mV/V, 1.5mV/V, 2.0mV/V, 3.0mV/V	H10	0 ~ 10K Hz					P2	可切換 4 個輸入範圍: 0 ~ 50 °C, 0 ~ 100 °C, 0 ~ 200 °C, 0 ~ 400 °C
		VB	0 ~ 1000 V			HB	0 ~ 30K Hz						
AO	特殊規格	VC	1 ~ 5 V	SO	特殊規格	H11	0 ~ 30K Hz						
		VD	-10 ~ 0 ~ 10 V			HO	特殊規格						
		VP	可切換 5 個輸入範圍: 10V, 100V, 200V, 300V, 600V										
		VO	特殊規格										

CS3-PR PROCESS Indicator (24x48)



Miniature Indicator(24x48mm)



DESCRIPTION

CS3-PR Process Indicator has been designed in miniature size(24 x 48mm), and provide high accuracy 0.04% measurement, display and communication of DC signal 0~10V and 4(0)~20mA.

They are also to build 2 Relay outputs, 1 External Control Input, 1 Analogue output or 1 RS485(Modbus RTU Mode) interface with versatile functions such as control, alarm, re-transmission or communication.

FEATURE

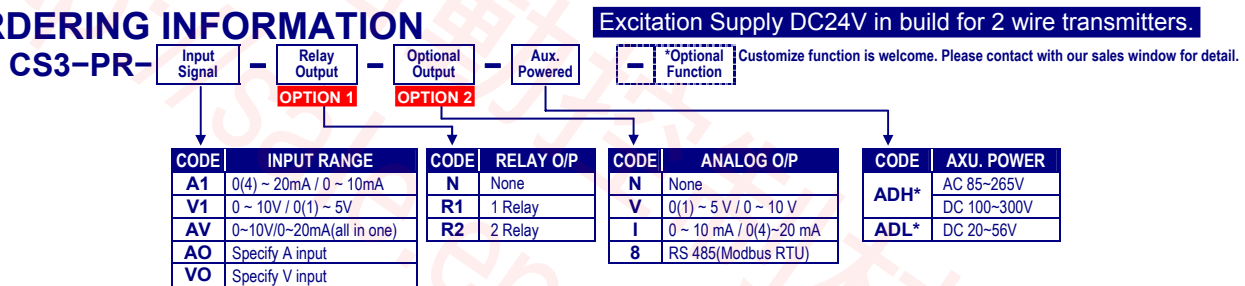
- Measuring linear signal 0~10V / 0(4)~20mA(with Square Root function) in one controller
- 2 relay can be programmed individual to be a Hi / Lo / Hi Latch / Lo Latch energized with Start Delay / Hysteresis / Energized & De-energized Delay functions, or to be a remote control.
- Analogue output or RS 485 communication port available in option
- 1 external control input can be programmed to be Relative PV(Tare) / PV Hold / DI (remote monitoring) / Reset for Maximum or Minimum Hold / Reset for Relay Energized Latch...
- CE Approved

APPLICATIONS

Process control, alarm and monitoring
Test equipments

Machinery indication, control and alarm
Central monitoring panel

ORDERING INFORMATION



TECHNICAL SPECIFICATION

Input

Measuring Range	Input Impedance	Measuring Range	Input Impedance
Voltage 0 ~ 10 V	≥ 1M ohm	Current 4(0)~20 mA	250 ohm

> The Meter can be 0~10V and 0~20mA in one unit, according to connection #1 or #2

Calibration: Digital calibration by front key
A/D converter: 16 bits resolution
Accuracy: ≤ ± 0.04% of FS ± 1C;
Sampling rate: 15 cycles/sec
Response time: ≤ 100 msec.(when the AvG = "1") in standard
Input type: 0~10V / 0~5V / 1~5V / 0~10mA / 0~20mA / 4~20mA programmable for coding AV(option)
Input range: Input High and Low programmable with square root function
 Ai.Hi: Settable range: 0.00~100.00% of input range
 Ai.Lo: Settable range: 0.00~100.00% of input range

Display & Functions

LED: Numeric: 5 digits, 0.4"(10.0mm)H red high-brightness LED
 Relay output indication: 2 square red LED
 RS 485 communication: 1 square orange LED
 E.C.I. function indication: 1 square green LED
 -19999~+29999;
Display range: Lo.SC: Low Scale; Settable range: -19999~+29999
 Hi.SC: High Scale; Settable range: -19999~+29999
Scaling function: Programmable from 0 / 0.0 / 0.00 / 0.000 / 0.0000
Decimal point: 0vFL, when input is over 20% of input range Hi
Over range indication: -0vFL, when input is under 20% of input range Lo
Under range indication: Maximum and Minimum value storage during power on.
Max / Mini recording: PV / Max(Mini) Hold / RS 485 programmable
Display functions: Up key can be set to be a function as ECI.1
Front key functions: Settable range: -19999~29999 counts
Low cut: Pv.Zro: Settable range: -19999~+29999
Digital fine adjust: Pv.SPn: Settable range: -19999~+29999

Reading Stable Function

Average: Settable range: 1~99 times
Moving average: Settable range: 1(None)~10 times
Digital Filter: Settable range: 0(None)/1~99 times

Control Functions(option)

Set points: Two set-points
Control relay: 2 Relays FORM-C, 1A/230Vac, 3A/115V
Relay energized mode: Energized levels compare with set-points:
 Hi / Lo / Hi.HLd / Lo.HLd programmable
Energized by RS485 command of master: DO programmable
Energized functions: Start delay / Energized & De-energized delay / Hysteresis
 Energized Latch
Start band(Minimum level for Energizing): 0~9999counts
Start delay time: 0.00.0~9(Minutes):59.9(Second)
Energized delay time: 0.00.0~9(Minutes):59.9(Second)
De-energized delay time: 0.00.0~9(Minutes):59.9(Second)
 Hysteresis: 0~5000 counts

External Control Inputs(ECI)

Input mode: 1 ECI points, Contact or open collect input, Level trigger
Functions: Relative PV(Tare) / PV Hold / Reset for Max or Mini. Hold / DI / Reset for Relay Energized latch
Debouncing time: Settable range 5 ~ 255 x 8m seconds

Analogue output(option)

Accuracy: ≤ ± 0.1% of F.S.;
Ripple: ≤ ± 0.1% of F.S.
Response time: ≤ 100 msec. (10~90% of input)
Isolation: AC 1.5 KV between input and output
Output range: Specify either Voltage or Current output in ordering
 Voltage: 0~5V / 0~10V / 1~5V programmable
 Current: 0~10mA / 0~20mA / 4~20mA programmable
Output capability: Voltage: 0~10V; ≥ 1000Ω;
 Current: 4(0)~20mA; ≤ 600Ω max

Functions: **Ao.HS**(output range high): Settable range: -19999~29999
Ao.LS(output range Low): Settable range: -19999~29999
Ao.LMt(output High Limit): 0.00~110.00% of output High
Ao.Zro: Settable range: -38011~+27524
Ao.SPn: Settable range: -38011~+27524

Digital fine adjust:

RS 485 communication(option)

Protocol: Modbus RTU mode
Baud rate: 1200/2400/4800/9600/19200/38400 programmable
Data bits: 8 bit
Parity: Even, odd or none (with 1 or 2 stop bit) programmable
Device no.: 1 ~ 255 programmable
Remote display: to show the value from RS485 command of master
Distance: 1200M
Terminate resistor: 150Ω at last unit.

Electrical Safety

Dielectric strength: AC 1.5 KV for 1 min, Between Power / Input / Output / Case
Insulation resistance: ≥ 100M ohm at 500Vdc, Between Power / Input / Output
Isolation: Between Power / Input / Relay / E.C.I./ Analogue or RS485
EMC: EN 55011:2002; EN 61326:2003
Safety(LVD): EN 61010-1:2001

Environmental

Operating temp.: 0~60 °C
Operating humi.(%RH): 20~95 %RH, Non-condensing
Temp. coefficient: ≤100 PPM/°C
Storage temperature: -10~70 °C
Enclosure: Front panel: IEC 549 (IP54); Housing: IP20

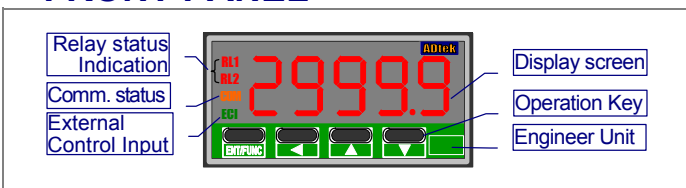
Mechanical

Dimensions: 48mm(W) x 24mm(H) x 102mm(D)
Panel cutout: 45mm(W) x 22.5mm(H)
Case materiel: ABS fire-protection (UL 94V-0)
Mounting: Panel flush mounting
Terminal block: Plastic NYLON 66 (UL 94V-0)
 5A 300Vac, M2.0, 0.5~1.3mm²(22~16AWG)
Weight: About 110g

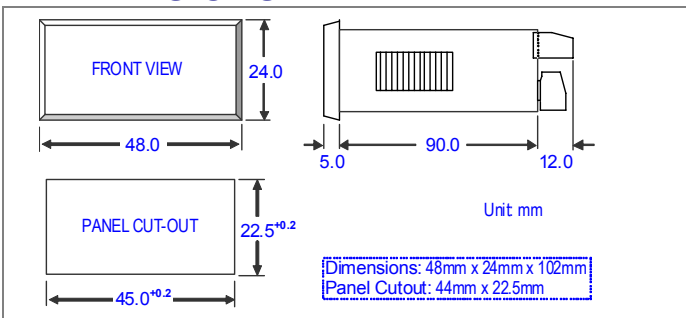
Power

Power supply: ADH: AC 85~265V, DC 100~300V or ADL: DC 20~56V
Excitation supply: DC 24V, 30mA maximum in standard
Power consumption: 4.5VA max.
Back up memory: By EEPROM

FRONT PANEL

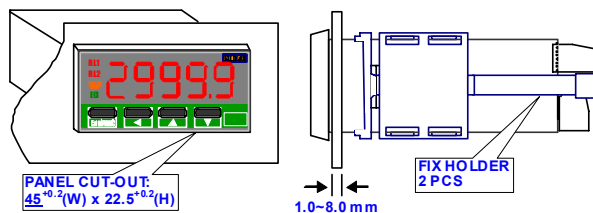


DIMENSIONS

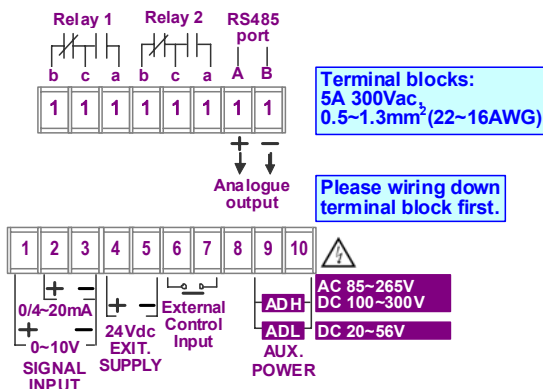


INSTALLATION

The meter should be installed in a location that dose not exceed the maximum operating temperature and provides good air circulation.

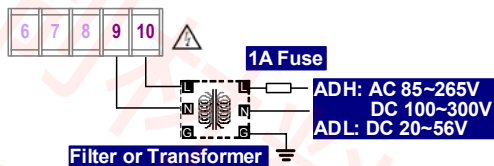


CONNECTION DIAGRAM

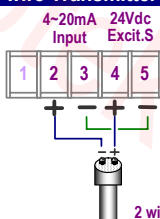


Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

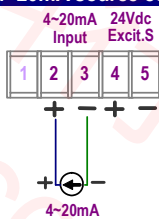
Power Supply



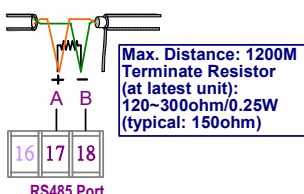
2 wire Transmitter connection



4~20mA source connection



RS485 Communication Port



FUNCTIONS DESCRIPTION

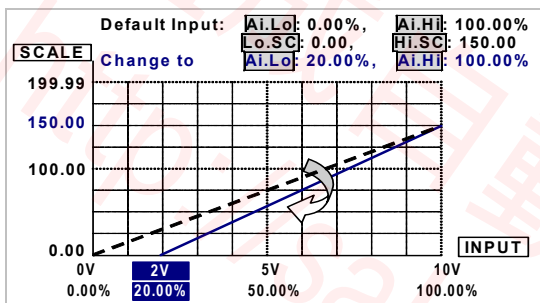
Input & Scaling Functions

Dual input types: (Option Code: AV)

Voltage and Current type are in one unit available in option. If the customer specify the input coding for **AV**, the meter will be calibrated for 0~10V and 0~20mA in factory. The user can use in 0~10V and 4(0)~20mA by difference terminals connection(#1 & #3 for 0~10V or #2 & #3 for 4(0)~20mA) and programming in **[RtYP]** of **[nPUT GrpUP]**.

Input range:

The meter has to be specified and fixed according to ordering code (ex. 0~10V or 4(0)~20mA) in factory. If the meter has to install in difference range of input, the meter can be set in function **[ALo]** and **[AHi]** in **[nPUT GrpUP]** to meet the input signal. For example: The meter is 0~10Vdc input, and the signal from sensor is 2~10Vdc. Please get into **[nPUT GrpUP]** to set **[ALo]** (Analogue input Low) to be 20.00%(10V x 20.00% = 2V), then the meter has been changed the input range to 2~10Vdc and the all relative parameters will work base on 2~10V. The meter doesn't need re-calibration after change the **[ALo]** and **[AHi]**.



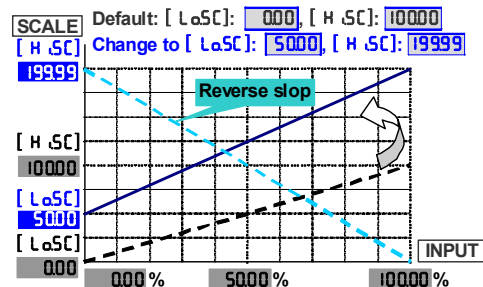
*The setting may cause display lower resolution. Please set lower resolution when the input signal has been high compressed.

Square root function:

The function can be set **[n]** or **[YES]** in **[nPUT GrpUP]** to measure the signal from differential pressure flow-meter. The formula is $\sqrt{(Pv/HS) \times HS}$

Scaling function:

The high and low of display range can be programmable to relative input signal high and low. Setting the **[LoSC]** (Low scale) and **[HiSC]** (High scale) in **[nPUT GrpUP]** to relative input signal. **Reverse scaling will be done too.** Please refer to the figure as below,



Display & Functions

Max / Mini recording:

The meter will storage the maximum and minimum value in **[User Level]** during power on in order to review drifting of PV.

Display functions:

(Please refer to step A-10)

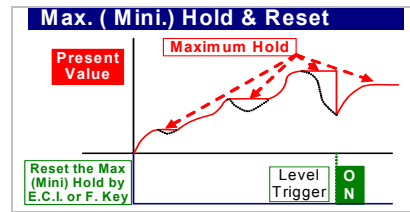
PV / Max(Mini) Hold / RS 485 programmable in [dSPly] function in [nPUT GrpUP]

Present Value [PV]: The display will show the value that relative to Input signal.

Maximum Hold [MxH] / Minimum Hold [MnH]:

The meter will keep display in maximum (minimum) value during power on, until manual reset by front key in **[User Level]**, **[E.C.I]** close by rear terminal (according to setting, please refer to the function of E.C.I. Group) or or press front up key to Reset (Up key set to be same function as ECI)

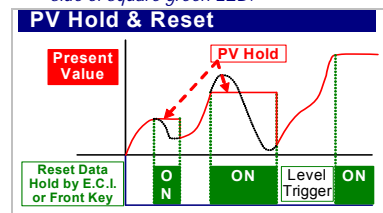
➤ Please find the **[M.H.]** sticker that enclosure the package of the meter to stick on the left side of square orange LED.



Remote Display by RS485 command [r5485]: The meter will show the value that received from RS485 command. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master can so that can be save cost and wiring from PLC.

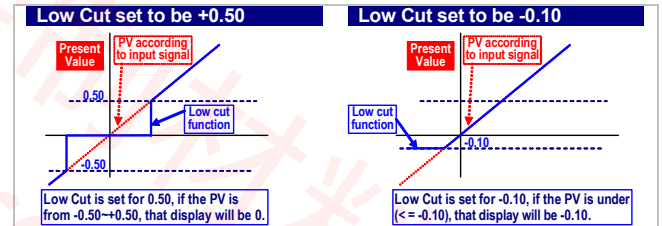
PV Hold [PuHld]: [E.C.I.] can be set to be **[PuHld]** function (Please refer to the function of ECI Group). The display will be hold, when the E.C.I. is closed.

➤ Please find the **[E.C.I.]** sticker to stick on the left side of square green LED.



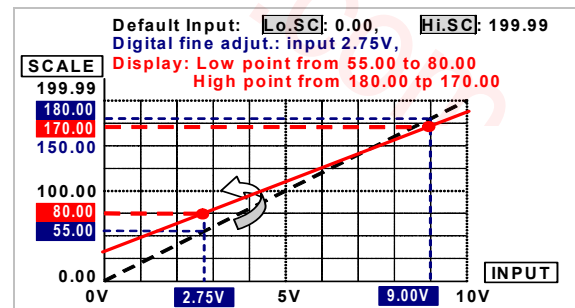
Low cut:

If the setting value is positive, it means when the absolutely value of $PV \leq$ Setting value, the display will be 0. If the setting value is negative, it means when the PV under setting value ($PV \leq$ -Setting value), the display will be setting value.



Digital fine adjustment:

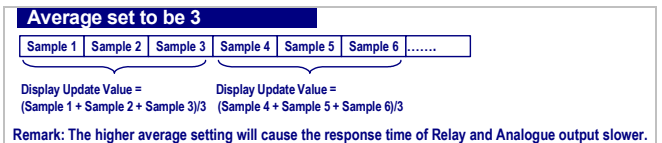
Users can get Fine Adjustment for Zero & Span of PV by front key of the meter, and "Just Key In" the value which user want to show in the current input signals. Especially, the **[PuPr0]** & **[PuSPn]** are not only in zero & span of PV, but also any lower point for **[PuPr0]** & higher point for **[PuSPn]**. The meter will be linearization for full scale. The adjustment can be clear in function **[P5CLR]**.



Reading Stable Function

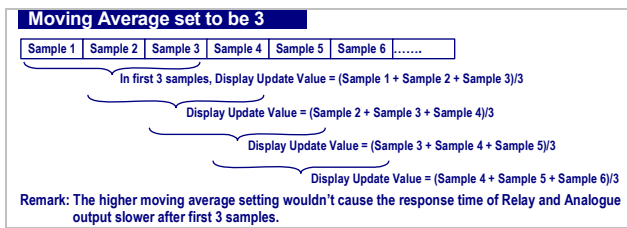
Average:

Basically, the sampling rate of meter is 15cycles/sec. If the function set to be 3 times, It means the meter will update of display will be 5 times/sec.



Moving average:

If the function to be set 3 times, the meter will update delay in first 3 samples, then it will update 15 times/sec. continuously.



Digital filter:

The digital filter can reduce the magnetic noise in field.

Control Functions(option)

Relay energized mode:

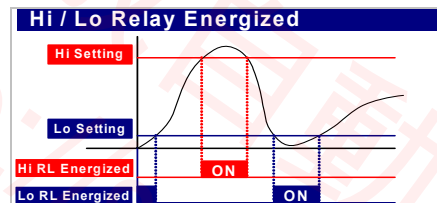
In all CS series, the relay functions are not only for alarm or control, but also for I/O interface as like as I/O of PLC. They can be programmed to be Hi(Latch) / Lo(Latch) energized to compare with set-point or DO to be energized by RS485 command directly.

Energized with set-points:

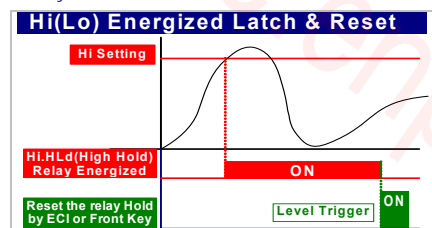
Hi / Lo / Hi.HLd / Lo.HLd programmable

Hi: Relay will energize when PV > Set-Point

Lo: Relay will energize when PV < Set-Point



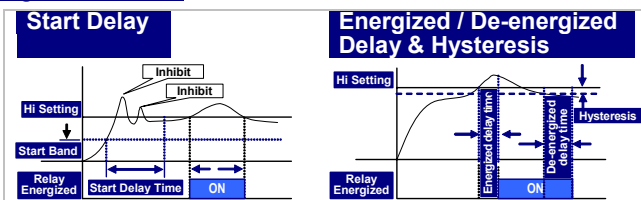
Hi.HLd (Lo.HLd): When the PV Higher (or lower) than set-point, the relay will be energized and latch until manual reset by from key in **[User Level]**, up key (If up key function has been set) or **[E.C.I.]** close by rear terminal.



Energized by RS485 command of master: DO function

The DO function was designed to get remote control by RS485 command of master. The typical application is to control a switch in field from computer center as like as digital output(DO) of PLC.

Energized functions: Start delay / Energized & De-energized delay / Hysteresis



External Control Inputs(ECI)

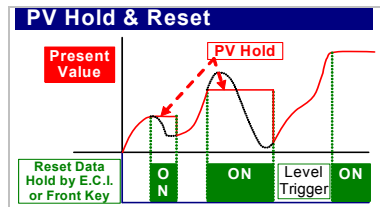
The one external control input is programmable to perform specific meter control or display functions. The E.C.I. has been designed in level trigger actions. Please pay attention, the ECI input will be disable while UP or Down Key has been set to be "YES".

Functions:

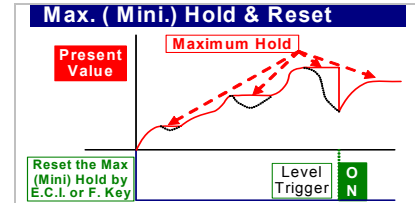
Relative PV / PV Hold / Reset Max or Mini. Hold / DI / Reset for Relay Energized latch; programmable

Relative PV or Tare: The E.C.I. can be set to be **[RELPU]** function. When the E.C.I. is closed, the reading will show the differential value until it's open.

PV Hold: The E.C.I. can be set to be **[PuHLd]** function. The display will be hold when the E.C.I. is closed, until the E.C.I. is to be open. Please refer to the figure on following;



Reset for Maximum or Minimum Hold: When the **[D5PLY]** function in **[INPUt GRoUP]** selected **[MAXH]** or **[MINH]**, the display will show Maximum or Minimum value, and can be reset by the E.C.I. Please refer to the figure as below;



DI: The E.C.I can be set to be **[di]** function. when the meter build in RS485 port, It is easier to get remote monitoring a switch status through the meter as like as DI of PLC.

Reset for Relay Energized Latch: If relay energized mode has set to be Energized latch **[H.HLd]** / **[LoHLd]**, the E.C.I. can be set to be **[Ry.RSt]**. When the PV meets the condition of relay energizing, the relay will be energized and latch until the E.C.I. is closed.

Debouncing time:

The function is for avoiding noise signal to into the meter. And The basic period is 8m seconds. It means you set the number that has to multiple 8m seconds. For example:

[DEbNC] set to be 5, it means 5 x 8m seconds = 40m seconds

Analogue output(option)

Please specify the output type either an 0~10V or 4(0)~20mA in ordering. The programmable output low and high scaling can be based on various display values. **Reverse slope output is possible by reversing point positions.**

Output range:

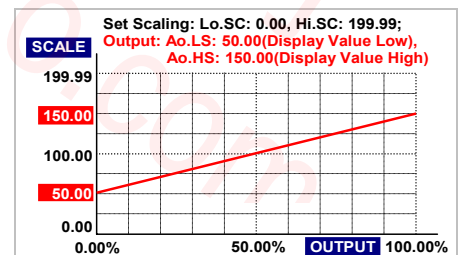
Voltage: 0~5V / 0~10V / 1~5V programmable

Current: 0~10mA / 0~20mA / 4~20mA programmable

Functions:

Ao.HS(output range high): setting the Display value High to versus output range High(as like as 20mA in 4~20)

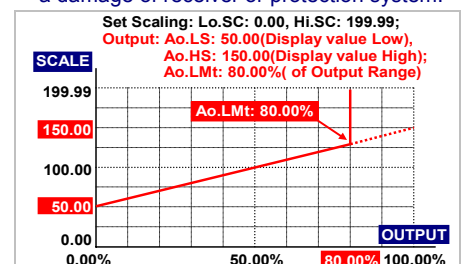
Ao.LS(output range Low): setting the Display value Low to versus output range Low(as like as 4mA in 4~20)



The range between **Ao.HS** and **Ao.LS** should be over 20% of span at least; otherwise, it will be got less resolution of analogue output.

Ao.LMt(output High Limit): 0.00~110.00% of output High

User can set the high limit of output to avoid a damage of receiver or protection system.



CS3-PR

Fine zero & span adjustment:

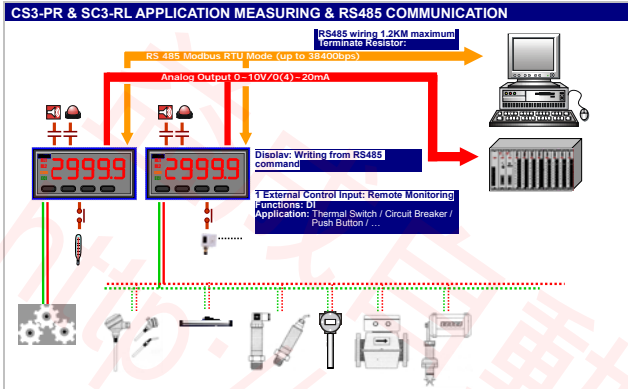
Users can get Fine Adjustment of analogue output by front key of the meter. Please connect standard meter to the terminal of analogue output. To press the front key(up or down key) of meter to adjust and check the output.

[Rozro] : Fine Zero Adjustment for Analogue Output;
Settable range: -38011~27524;

[Rospn] : Fine Span Adjustment for Analogue Output;
Settable range: -38011~27524;

RS 485 Communication(option)

The RS485's protocol is Modbus RTU mode, and baud rate up to 38400 bps. It's not only convenience to remote monitoring, display for reading and ECI status, but also for remote control in the case that doesn't have any DIO device in the field.

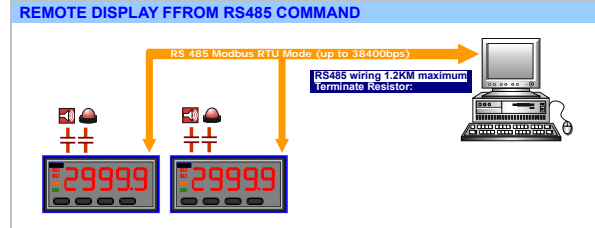


Remote display:

to show the value from RS485 command of master

The meter will show the value that received from RS485 command. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master so that can be **save cost and wiring** from PLC.

When the **[dSPly]** set to be RS485, it means, the PV screen will show the value from RS485 command & data. The data(number) will be same as PV that will compare with set-point, analogue output and ECI functions so that is to control analogue output, relay energized and so on.



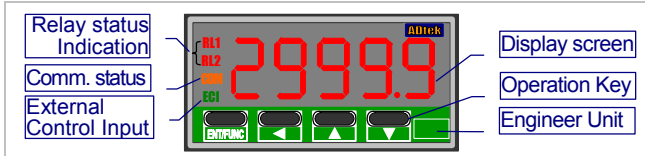
Calibration

System calibration by front key. The process of calibration, please refer to the operating manual

■ ERROR MASAGE

DESCRIPTION	DISPLAY	FLASH	REMARK
BEFORE POWER ON, PLEASE CHECK THE SPECIFICATION AND CONNECTION AGAIN.			
SELF-DIAGNOSIS AND ERROR CODE:			
ouFL : Display is positive-overflow (Signal is over display range)	ouFL		(Please check the input signal)
-ouFL : Display is negative-overflow (Signal is under display range)	-ouFL		(Please check the input signal)
ouFL : ADC is positive-overflow (Signal is higher than input high 20%)	ouFL		(Please check the input signal)
-ouFL : ADC is negative-overflow (Signal is lower than input low 20%)	-ouFL		(Please check the input signal)
EEP / FAiL : EEPROM occurs error	EEP	FAiL	(Please send back to manufactory for repaired)
Ai.C.nG / Pu : Calibrating Input Signal do not process	Ai.C.nG	Pu	(Please process Calibrating Input Signal)
Ai.C. / FAiL : Calibrating Input Signal error	Ai.C.	FAiL	(Please check Calibrating Input Signal)
Ao.C.nG / Pu : Calibrating Output Signal do not process	Ao.C.nG	Pu	(Please process Calibrating Output Signal)
Ai.C. / FAiL : Calibrating Output Signal error	Ai.C.	FAiL	(Please check Calibrating Output Signal)

FRONT PANEL:



Numeric Screens

0.4"(10.0mm) red high-brightness LED for 4 2/3 digital present value.

I/O Status Indication

- **Relay Energized:** 2 square red LED
RL1 display when Relay 1 energized;
RL2 display when Relay 2 energized;
- **External Control Input Energized:** 1 square green LED
EC1 display when E.C.I. 1 close(dry contact)
- **RS485 Communication:** 1 square orange LED
COM will flash when the meter is receive or send data, and **COM** flash quickly means the data transient quicker.

Stickers:

Each meter has stickers what are functions and engineer label enclosure.

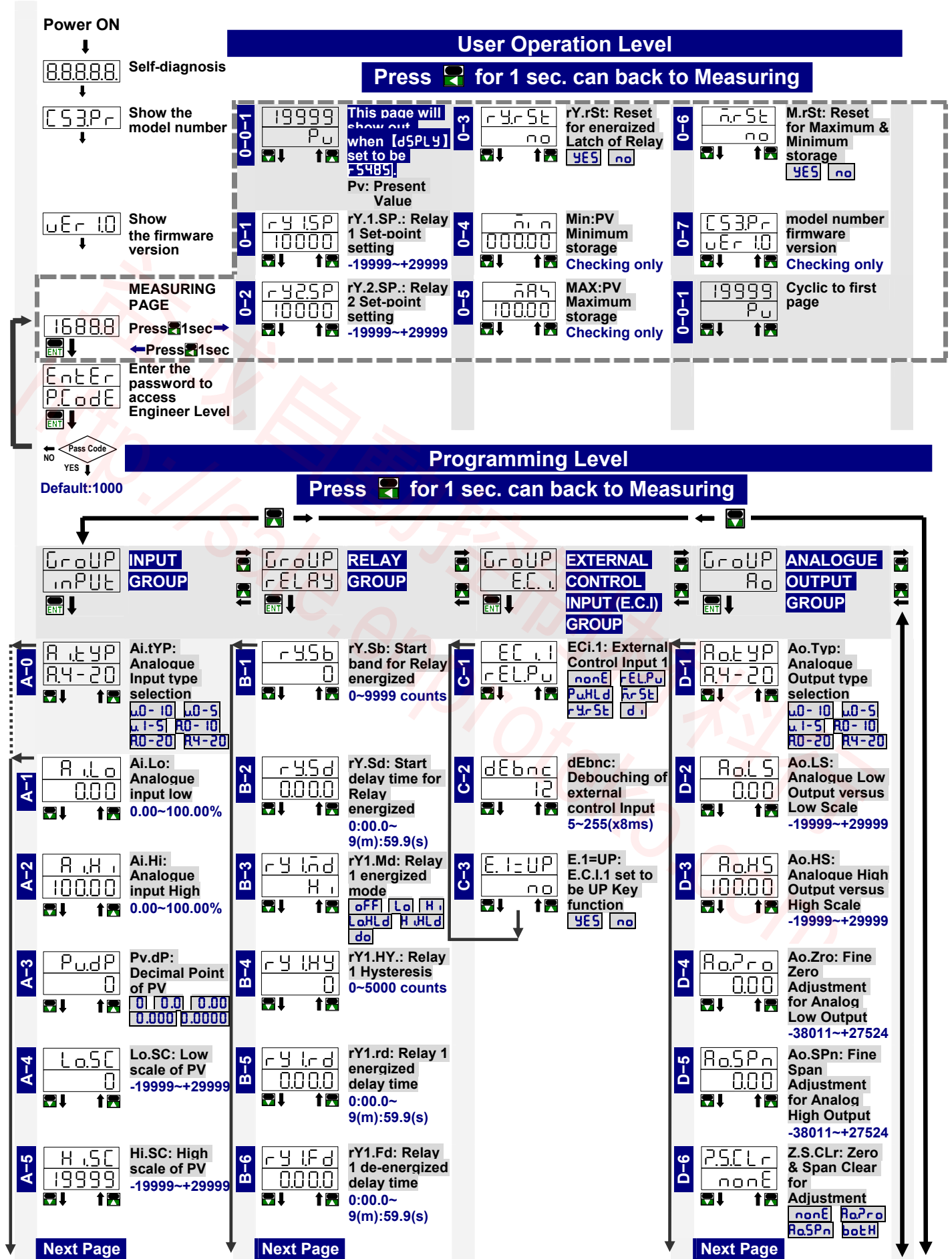
- **Relay energized mode:** **HH Hi Lo LL DO**
- **E.C.I. functions mode:**
PV.H PV.H(PV Hold) / **Tare** Tare / **DI** DI(Digital Input) /
M.RS M.RS(Reset for Maximum or Minimum hold) /
R.RS R.RS(Reset for Relay Latch)
- **Engineer Label:** over 80 types.

- **Operating Key:** 4 keys for **ENTR** Enter(Function) / **ESC** Shift(Escape) / **UP** Up key / **DOWN** Down key

	Setting Status	Function Index
UP key	Increase number	Go back to previous function index
DOWN key	Decrease number	Go to next function index
ESC key	Shift the setting position	Go back to this function index & abort the setting
ENTR key	Setting Confirmed and save to EEPROM	From the function index to get into setting status

- **Pass Word:** Settable range:0000~9999;
 User has to key in the right pass word so that get into **【Programming Level】**. Otherwise, the meter will go back to measuring page. If user forgets the password, please contact with our service window.
- **Function Lock:** There are 4 levels programmable.
 - **None:** no lock all.
 - **User Level:** User Level lock. User can get into User Level for checking but setting.
 - **Programming Level:** Programming level lock. User can get into programming level for checking but setting.
 - **ALL:** All lock. User can get into all level for checking but setting.
- **Front Key Function**
 - The **ENTR** Key can be set to be the same function as the setting of EC1.
 Ex. The EC1 set to be **PuHLd** and the function E.1=UP set to be **YES** in **【ECI GroUP】**. When user presses **ENTR** Key, the PV will hold as like as EC1 close.
 - **If the front key function has been set, the terminal input for EC1 will be disabling.**

OPERATING DIAGRAM(The detail description of operation, please refer to operating manual.)



CS3-PR

CS3-PR

A-6	Sq.roT	Sq.roT: Square Root function YES no	B-7	rY2.Md	Relay 2 energized mode oFF Lo H LLoHLd HHLd do	D-7	Ao.LMt	Analog Output High Limit 0.00~110.00%
A-7	Pv.Pro	Pv.Zro: Fine Low point Adjustment for PV display -19999~+29999	B-8	rY2.HY	Relay 2 Hysteresis 0~5000counts			
A-8	Pv.SPn	Pv.SPn: Fine High point Adjustment for PV display -19999~+29999	B-9	rY2.rd	Relay 2 energized delay time 0:00.0~9(m):59.9(s)			
A-9	Z.S.Clr	Z.S.Clr: Clear Fine Zero & Span Adjustment for PV display nonE PvPro PvSPn both	B-10	rY2.Fd	Relay 2 de-energized delay time 0:00.0~9(m):59.9(s)			
A-10	dSPLY	dSPLY: Display Function Pu n n i H n R5H F5485				GROUP	RS485	GROUP
A-11	Lo.Cut	Lo.Cut: Low Cut Function -19999~+29999						
A-12	AvG	AvG: Average update for PV 1(None)~99 times				E-1	AdRES	Adres: Device number of the meter 1~255
A-13	M.AvG	M.AvG: Moving Average update for PV 1(None)~10 times				E-2	baUD	Baud rate 1200 2400 4800 9600 19200 38400
A-14	d.FiLT	d.FiLT: Digital filter 0(None)/1~99 times				E-3	PrItY	Parity n5E61 n5E62 odd EvEn
A-15	P.CoDE	P.CoDE: Pass Code for enter Programming Level 0000~9999						
A-16	F.LoCk	F.LoCk: Function Level Lock nonE USEr EnG ALL						

> PLesae refer to operating manual for detail description

CS3-SG STRAIN GAUGE Indicator(24x48) **ADtek**

DESCRIPTION

CS3-SG Strain Gauge Indicator has been designed with high accuracy 0.04% measurement, display and communication of mV/V as like as Load Cell or Strain Gauge.

They are also building in 2 Relay outputs, 1 External Control Input, 1 Analogue output or 1 RS485(Modbus RTU Mode) interface with versatile functions such as control, alarm, re-transmission or communication for a wide range of machinery and testing equipments applications.

Miniature Indicator(24x48mm)



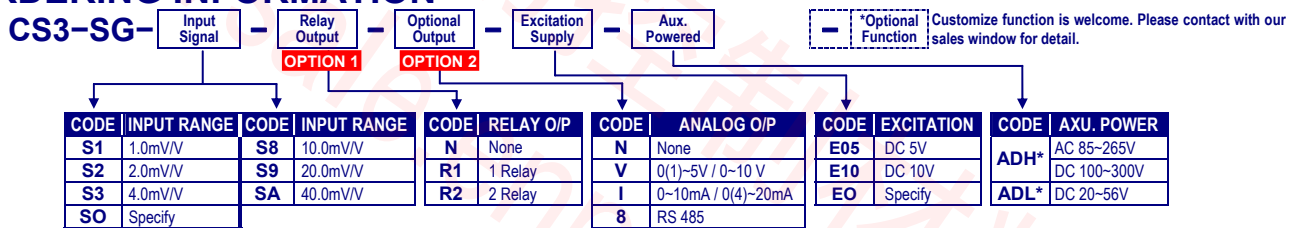
FEATURE

- Measuring load cell, strain gauge signal 0~1.0/~2.0/~4.0/~10.0/~20.0/~40.0mV/V(Specify)
- Field calibration with load cell or strain gauge to meet the system requirement
- 2 relay can be programmed individual to be a Hi / Lo / Hi Latch / Lo Latch energized with Start Delay / Hysteresis / Energized & De-energized Delay functions, or to be a remote control.
- Analogue output or RS 485 communication port available in option
- 1 external control input can be programmed to be Relative PV(Tare) / PV Hold / DI (remote monitoring) / Reset for Maximum or Minimum Hold / Reset for Relay Energized Latch....
- CE Approved & RoHS

APPLICATIONS

- Testing Equipments for weight/force Measuring, Alarm, Control and Communication with PC/PLC.
- Weighting control for packing machine, filling machine.
- Leakage testing equipment by tare and relay function.

ORDERING INFORMATION



TECHNICAL SPECIFICATION

Input		
Measuring Range	Input Impedance	Excitation Voltage
0 ~ 1.0/~2.0/~4.0 mV/V	≥ 1M ohm	DC 5V, 30mA
0 ~ 10.0/~20.0/~40.0 mV/V		or DC 10, 30mA

Calibration: Digital calibration by front key

Field calibration: Calibration with sensor input high & low to meet system structure. And field calibration reset is not change the accuracy & linear of factory calibration.

A/D Converter: 16 bits resolution

Accuracy: ≤± 0.04% of FS ± 1C;

Sampling Rate: 15 cycles/sec

Response Time: ≤100 msec.(when the AvG = "1") in standard

Input Range: Input High and Low programmable
 Ai.Hi: Settable range: 0.00~100.00% of input range
 Ai.Lo: Settable range: 0.00~100.00% of input range

Display functions

LED: Numeric: 5 digits, 0.4"(10.0mm)H red high-brightness LED
 Relay output indication: 2 square red LED
 RS 485 communication: 1 square orange LED
 E.C.I. function indication: 1 square green LED

Display range:

-19999~+29999;

Scaling Function:

Lo.SC: Low Scale; Settable range: -19999~+29999
 Hi.SC: High Scale; Settable range: -19999~+29999
 Programmable from 0 / 0.0 / 0.00 / 0.000 / 0.0000

Decimal point:

ovFL, when input is over 20% of input range Hi

Under range indication: -ovFL, when input is under 20% of input range Lo

Max / Mini recording: Maximum and Minimum value storage during power on.

Display functions: PV / Max(Mini) Hold / RS 485 programmable

Front key functions: Up key can be set to be a function as ECI.1

Low Cut:

Settable range: -19999~29999 counts

Digital Fine Adjust:

Pv.Zro: Settable range: -19999~+29999

Pv.SPn: Settable range: -19999~+29999

Reading Stable Function

Average:

Settable range: 1~99 times

Moving Average:

Settable range: 1(None)~10 times

Digital Filter:

Settable range: 0(None)/1~99 times

Control functions(option)

Set points:

Two set-points

Control Relay:

2 Relays FORM-C, 1A/230Vac, 3A/115V

Relay Energized Mode:

Energized levels compare with set-points:

Hi / Lo / Hi.HLD / Lo.HLD programmable

Energized by RS485 command of master: DO programmable

Energized Functions:

Start delay / Energized & De-energized delay / Hysteresis

Energized Latch

Start band(Minimum level for Energizing): 0~9999counts

Start delay time: 0.00.0~9(Minutes):59.9(Second)

Energized delay time: 0.00.0~9(Minutes):59.9(Second)

De-energized delay time: 0.00.0~9(Minutes):59.9(Second)

Hysteresis: 0~5000 counts

External Control Inputs(ECI)

Input mode:

1 ECI points, Contact or open collect input, Level trigger

Functions:

Relative PV(Tare) / PV Hold / Reset for Max or Mini. Hold /

DI / Reset for Relay Energized latch

Settable range 5 ~255 x 8m seconds

Debouncing time:

Analogue output(option)

Accuracy:

≤± 0.1% of F.S.;

Ripple:

≤± 0.1% of F.S.

Response time:

≤100 msec. (10~90% of input)

Isolation: AC 1.5 KV between input and output
Output range: Specify either Voltage or Current output in ordering
Voltage: 0~5V / 0~10V / 1~5V programmable
Current: 0~10mA / 0~20mA / 4~20mA programmable
Output Capability: **Voltage: 0~10V: ≥ 1000Ω**
Current: 0(4)~20mA: ≤ 600Ω max
Functions: **Ao.HS(output range high):** Settable range: -19999~29999
Ao.LS(output range Low): Settable range: -19999~29999
Ao.LMt(output High Limit): 0.00~110.00% of output High
Ao.Zro: Settable range: -38011~+27524
Ao.SPn: Settable range: -38011~+27524

RS 485 Communication(optional)
Protocol: Modbus RTU mode
Baud Rate: 1200/2400/4800/9600/19200/38400 programmable
Data Bits: 8 bits
Parity: Even, odd or none (with 1 or 2 stop bit) programmable
Address: 1 ~ 255 programmable
Remote Display: to show the value from RS485 command of master
Distance: 1200M
Terminate Resistor: 150Ω at last unit.

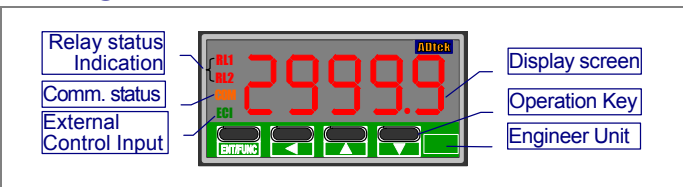
Electrical Safety
Dielectric Strength: AC 1.5 KV for 1 min, Between Power / Input / Output / Case
Insulation Resistance: ≥ 100M ohm at 500Vdc, Between Power / Input / Output
Isolation: Between Power / Input / Relay / E.C.I./ Analogue or RS485
EMC: EN 55011:2002; EN 61326:2003
Safety(LVD): EN 61010-1:2001

Environmental
Operating temp.: 0~60 °C
Operating humi.(%RH): 20~95 %RH, Non-condensing
Temp. coefficient: ≤ 100 PPM/°C
Storage temperature: -10~70 °C
Enclosure: Front panel: IEC 549 (IP54); Housing: IP20

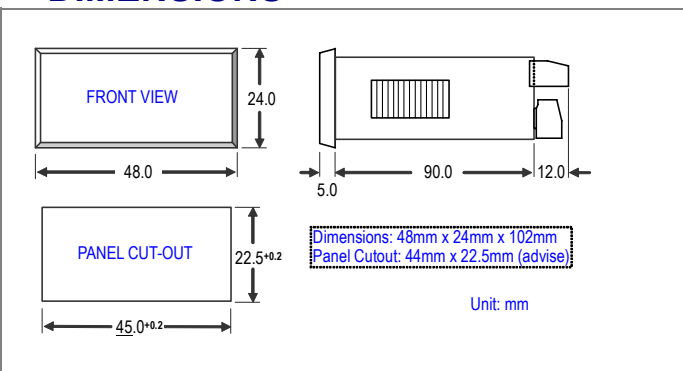
Mechanical
Dimensions: 48mm(W) x 24mm(H) x 102mm(D)
Panel cutout: 45mm(W) x 22.5mm(H)
Case Materiel: ABS fire-protection (UL 94V-0)
Mounting: Panel flush mounting
Terminal block: Plastic NYLON 66 (UL 94V-0)
 5A 300Vac, M2.0, 0.5~1.3mm²(22~16AWG)
 About 110g

Power
Power Supply: ADH: AC 85~265V, DC 100~300V or ADL: DC 20~56V
Excitation Supply: DC 5/10V, 30mA maximum in standard
Power consumption: 4.5VA max.
Back up memory: By EEPROM

FRONT PANEL

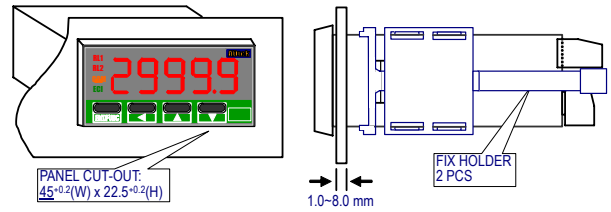


DIMENSIONS

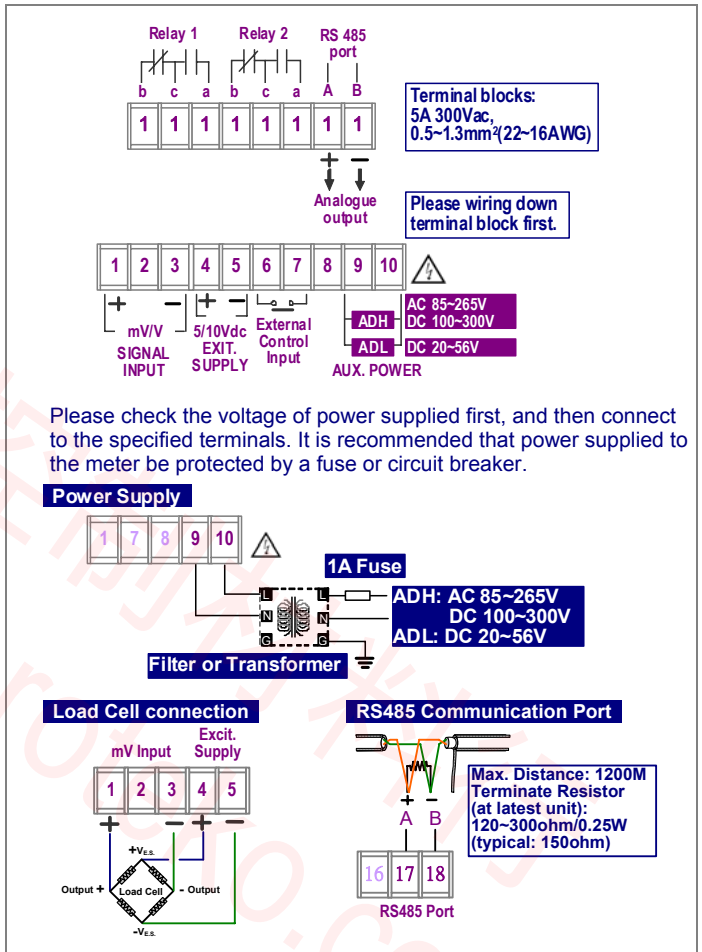


INSTALLATION

The meter should be installed in a location that dose not exceed the maximum operating temperature and provides good air circulation.



CONNECTION DIAGRAM

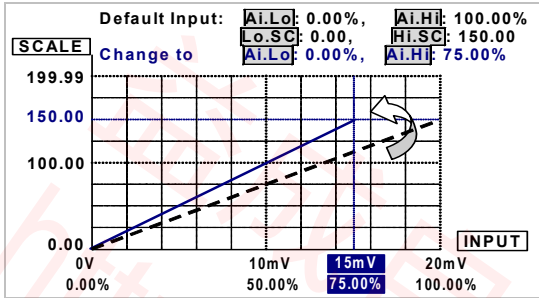


FUNCTIONS DESCRIPTION

Input & Scaling Functions

Input Range:

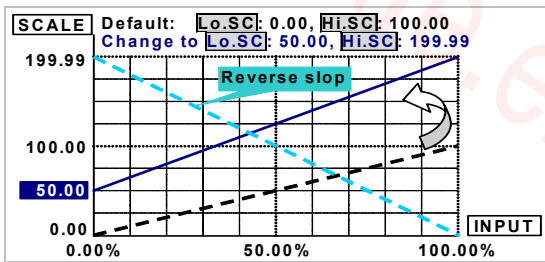
The meter has to be specified and fixed according to ordering code (ex. 0~20.0mV input) in factory. If the meter has to install in difference range of input, the meter can be set in function **[R.L.O.]** and **[R.H.I.]** in **[INPUT GROUP]** to meet the input signal. For example: The meter is 0~20.0mVdc input, and the signal from sensor is 0~15.0mVdc. Please get into **[INPUT GROUP]** to set **[R.H.I.]** (Analogue input high) to be 75.00%(20.0mV x 75.00% = 15.00mV), then the meter has been changed the input range to 0~15.00mVdc and the all relative parameters will work base on 0~15.00mV. The meter doesn't need re-calibration after change the **[R.L.O.]** and **[R.H.I.]**.



*The setting may cause display lower resolution. Please set lower resolution when the input signal has been high compressed.

Scaling Function:

The high and low of display range can be programmable to relative input signal high and low. Setting the **[Lo.Sc]** (Low scale) and **[Hi.Sc]** (High scale) in **[INPUT GROUP]** to relative input signal. **Reverse scaling will be done too.** Please refer to the figure as below,



*Too narrow scale may cause display lower resolution.

Display & Functions

Max / Mini recording:

The meter will storage the maximum and minimum value in **[User Level]** during power on in order to review drifting of PV.

Display functions:

(Please refer to step A-09)

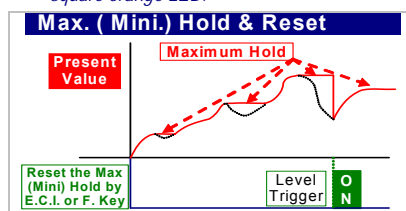
PV / Max(Mini) Hold / RS 485 programmable in [DISPLAY] function in [INPUT GROUP]

Present Value [P.V.]: The display will show the value that Relative to Input signal.

Maximum Hold [M.H.] / Minimum Hold [M.L.]:

The meter will keep display in maximum(minimum) value during power on, until manual reset by front key in **[User Level]**, **[E.C.I.]** close by rear terminal (according to setting, please refer to the function of E.C.I. Group) or or press front up key to Reset(Up key set to be same function as ECI)

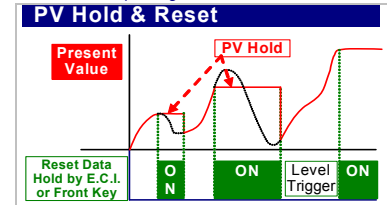
- Please find the [M.] sticker that enclosure the package of the meter to stick on the left side of square orange LED.



Remote Display by RS485 command [r5485]: The meter will show the value that received from RS485 command. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master can so that can be **save cost and wiring** from PLC.

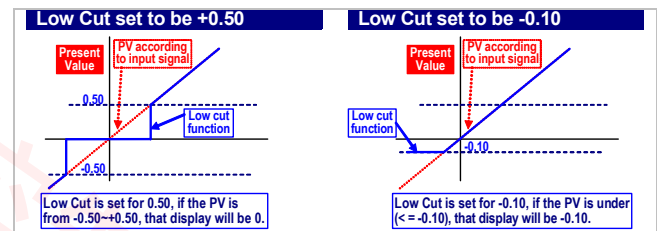
PV Hold [P.V.H.]: **[E.C.I.]** can be set to be **[P.V.H.]** function (Please refer to the function of ECI Group). The display will be hold, when the E.C.I. is closed.

- Please find the [E.C.I.] sticker to stick on the left side of square green LED.



Low Cut:

If the setting value is positive, it means when the absolutely value of $PV \leq$ Setting value, the display will be 0. If the setting value is negative, it means when the PV under setting value ($PV \leq$ -Setting value), the display will be setting value.

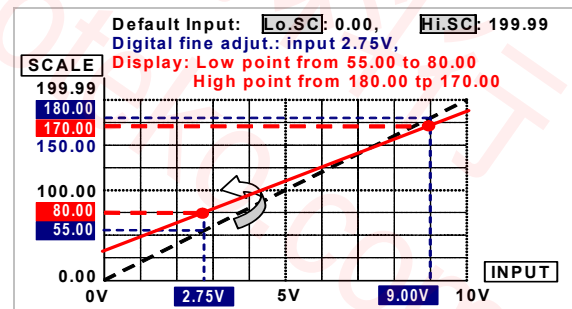


Digital Fine Adjustment:

Users can get Fine Adjustment for Zero & Span of PV by front key of the meter, and **"Just Key In"** the value which user want to show in the current input signals.

Especially, the **[P.W.P.O.]** & **[P.W.S.P.N.]** are not only in zero & span of PV, but also any lower point for **[P.W.P.O.]** & higher point for **[P.W.S.P.N.]**. The meter will be linearization for full scale.

The adjustment can be clear in function **[P.S.C.L.R.]**.



Reading Stable Function

Average:

Basically, the sampling rate of meter is 15cycles/sec. If the function set to be 3 times, It means the meter will update of display will be 5 times/sec.

Average set to be 3

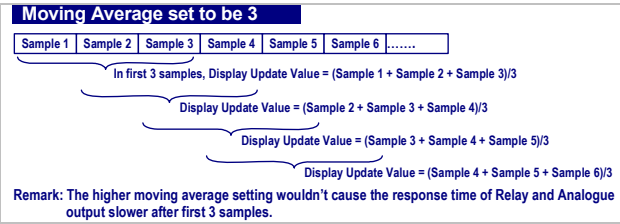
Sample 1 | Sample 2 | Sample 3 | Sample 4 | Sample 5 | Sample 6 |

Display Update Value = (Sample 1 + Sample 2 + Sample 3) / 3 Display Update Value = (Sample 4 + Sample 5 + Sample 6) / 3

Remark: The higher average setting will cause the response time of Relay and Analogue output slower.

Moving Average:

If the function to be set 3 times, the meter will update delay in first 3 samples, then it will update 15 times/sec. continuously.



Digital Filter: The digital filter can reduce the magnetic noise in field.

Control Functions(option)

Relay Energized Mode:

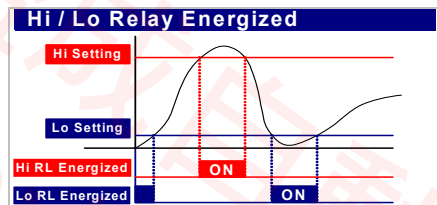
In all CS series, the relay functions are not only for alarm or control, but also for I/O interface as like as I/O of PLC. They can be programmed to be Hi(Latch) / Lo(Latch) energized to compare with set-point or DO to be energized by RS485 command directly.

Energized with set-points:

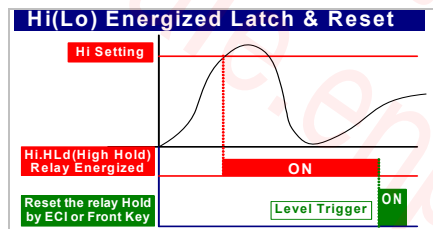
Hi / Lo / Hi.HLd / Lo.HLd programmable

Hi: Relay will energize when PV > Set-Point

Lo: Relay will energize when PV < Set-Point



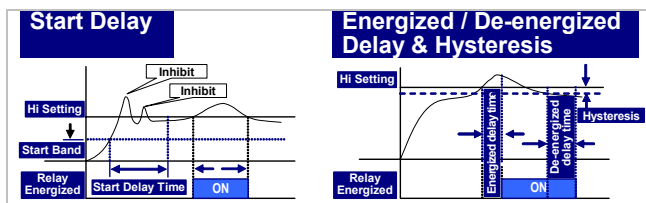
Hi.HLd (Lo.HLd): When the PV Higher (or lower) than set-point, the relay will be energized and latch until manual reset by from key in **[User Level]**, up key (If up key function has been set) or **[E.C.I.]** close by rear terminal.



Energized by RS485 command of master: DO function

The DO function was designed to get remote control by RS485 command of master. The typical application is to control a switch in field from computer center as like as digital output(DO) of PLC.

Energized Functions: Start delay / Energized & De-energized delay / Hysteresis



External Control Inputs(ECI)

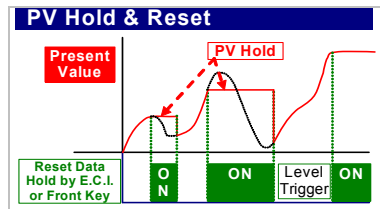
The one external control input is programmable to perform specific meter control or display functions. The E.C.I. has been designed in level trigger actions. Please pay attention, the ECI input will be disable while UP or Down Key has been set to be "YES".

Functions:

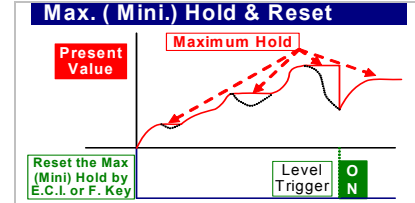
Relative PV / PV Hold / Reset Max or Mini. Hold / DI / Reset for Relay Energized latch; programmable

Relative PV or Tare: The E.C.I. can be set to be **[RELPU]** function. When the E.C.I. is closed, the reading will show the differential value until it's open.

PV Hold: The E.C.I. can be set to be **[PVHLd]** function. The display will be hold when the E.C.I. is closed, until the E.C.I. is to be open. Please refer to the Figure on following;



Reset for Maximum or Minimum Hold: When the **[d5PLY]** function in **[INPUT GROUP]** selected **[nARH]** or **[nminH]**, the display will show Maximum or Minimum value, and can be reset by the E.C.I. Please refer to the figure as below;



DI: The E.C.I. can be set to be **[d]** function. when the

meter build in RS485 port, It is easier to get remote monitoring a switch status through the meter as like as DI of PLC.

Reset for Relay Energized Latch: If relay energized mode has set to be Energized latch **[H.HLd]** / **[Lo.HLd]**, the E.C.I. can be set to be **[R.RST]**. When the PV meets the condition of relay energizing, the relay will be energized and latch until the E.C.I. is closed.

Debouncing time:

The function is for avoiding noise signal to into the meter. And The basic period is 8m seconds. It means you set the number that has to multiple 8m seconds. For example:

[dEbnC] set to be 5, it means 5 x 8m seconds = 40m seconds

Analogue output(option)

Please specify the output type either an 0~10V or 4(0)~20mA in ordering. The programmable output low and high scaling can be based on various display values. **Reverse slope output is possible by reversing point positions.**

Output range:

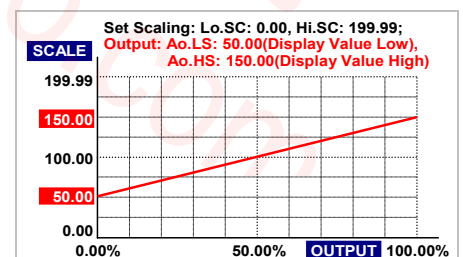
Voltage: 0~5V / 0~10V / 1~5V programmable

Current: 0~10mA / 0~20mA / 4~20mA programmable

Functions:

Ao.HS (output range high): setting the Display value High to versus output range High(as like as 20mA in 4~20)

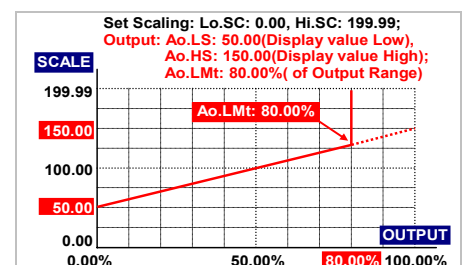
Ao.LS (output range Low): setting the Display value Low to versus output range Low(as like as 4mA in 4~20)



The range between **Ao.HS** and **Ao.LS** should be over 20% of span at least; otherwise, it will be got less resolution of analogue output.

Ao.LMt (output High Limit): 0.00~110.00% of output High

User can set the high limit of output to avoid a damage of receiver or protection system.



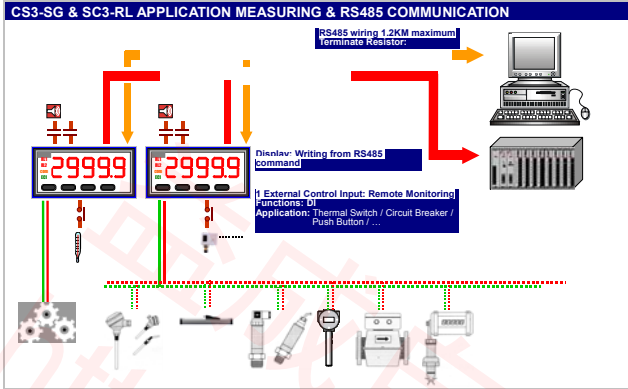
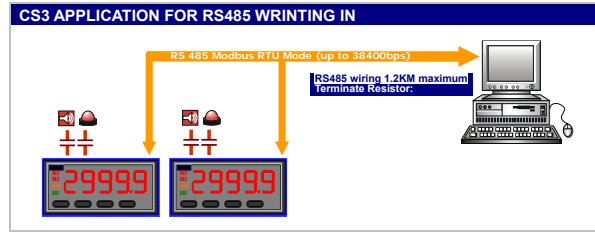
CS3-SG

Fine zero & span adjustment:

Users can get Fine Adjustment of analogue output by front key of the meter. Please connect standard meter to the terminal of analogue output. To press the front key(up or down key) of meter to adjust and check the output.

RS 485 communication(optional)

The RS485's protocol is Modbus RTU mode, and baud rate up to 38400 bps. It's not only convenience to remote monitoring, display for reading and ECI status, but also for remote control in the case that doesn't have any DIO device in the field.



Remote Display:

The meter will show the value that received from RS485 command. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master so that can be **save cost and wiring** from PLC.

When the [d5PLY] set to RS485, it means, the PV screen will show the value from RS485 command & data. The data(number) will be same as PV that will compare with set-point, analogue output and ECI functions so that is to control analogue output, relay energized and so on.

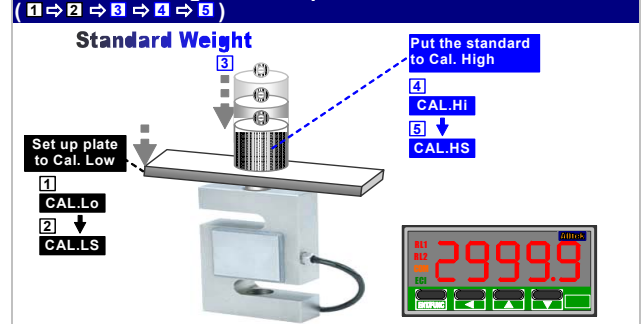
Calibration

System calibration by front key. The process of calibration, please refer to the operating manual

Field Calibration

In pass time, engineers have take a lot of time to adjust meters or converter to meet the structure of machinery zero and span for the Load Cell measuring. Now, our CS3-SG support easier process to do it called "Field Calibration".

Please according to the sequence to do the Field Cal.



Optional Function

Customize function with quantities is welcome. Please contact with our sales for detail. The appendix code of optional function will be added behind the code of auxiliary power as like as xxx-A-HSM.

High Speed Mode:

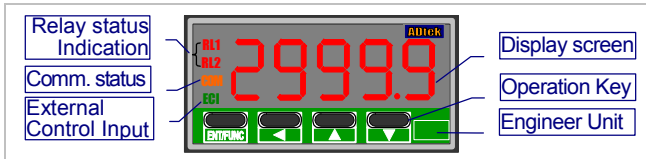
Code: -HSM

According the scaling, the controller can be specify higher sampling rate up to 60times/second(Average set to be 1). The relay trip, analogue output will be quicker response according to update of Present Value.

■ ERROR MASAGE

DESCRIPTION	DISPLAY	FLASH	REMARK
BEFORE POWER ON, PLEASE CHECK THE SPECIFICATION AND CONNECTION AGAIN.			
SELF-DIAGNOSIS AND ERROR CODE:			
ouFL : Display is positive-overflow (Signal is over display range)	ouFL		(Please check the input signal)
-ouFL : Display is negative-overflow (Signal is under display range)	-ouFL		(Please check the input signal)
ouFL : ADC is positive-overflow (Signal is higher than input high 20%)	ouFL		(Please check the input signal)
-ouFL : ADC is negative-overflow (Signal is lower than input low 20%)	-ouFL		(Please check the input signal)
EEP / FA IL : EEPROM occurs error	EEP	FA IL	(Please send back to manufactory for repaired)
A i.C.nG / Pu : Calibrating Input Signal do not process	A i.C.nG	Pu	(Please process Calibrating Input Signal)
A i.C. / FA IL : Calibrating Input Signal error	A i.C.	FA IL	(Please check Calibrating Input Signal)
AoC.nG / Pu : Calibrating Output Signal do not process	AoC.nG	Pu	(Please process Calibrating Output Signal)
A i.C. / FA IL : Calibrating Output Signal error	A i.C.	FA IL	(Please check Calibrating Output Signal)

FRONT PANEL:



Numeric Screens

0.4"(10.0mm) red high-brightness LED for 4 2/3 digital present value.

I/O Status Indication

- **Relay Energized:** 2 square red LED
RL1 display when Relay 1 energized;
RL2 display when Relay 2 energized;
- **External Control Input Energized:** 1 square green LED
ECI display when E.C.I. 1 close(dry contact)
- **RS485 Communication:** 1 square orange LED
COM will flash when the meter is receive or send data, and **COM** flash quickly means the data transient quicker.

Stickers:

Each meter has stickers what are functions and engineer label enclosure.

- **Relay energized mode:** **HH Hi Lo LL DO**
- **E.C.I. functions mode:**
PV.H PV.H(PV Hold) / **Tare** Tare / **DI** DI(Digital Input) /
M.RS M.RS(Reset for Maximum or Minimum hold) /
R.RS R.RS(Reset for Relay Latch)
- **Engineer Label:** over 80 types.

- **Operating Key:** 4 keys for **Enter(Function)** / **Shift(Escape)** / **Up key** / **Down key**

	Setting Status	Function Index
Up key	Increase number	Go back to previous function index
Down key	Decrease number	Go to next function index
Shift key	Shift the setting position	Go back to this function index, and abort the setting
Enter/Fun key	Setting Confirmed and save to EEPROM	From the function index to get into setting status

- **Pass Word:** Settable range:0000~9999;

User has to key in the right pass word so that get into **【Programming Level】**. Otherwise, the meter will go back to measuring page. If user forgets the password, please contact with our service window.

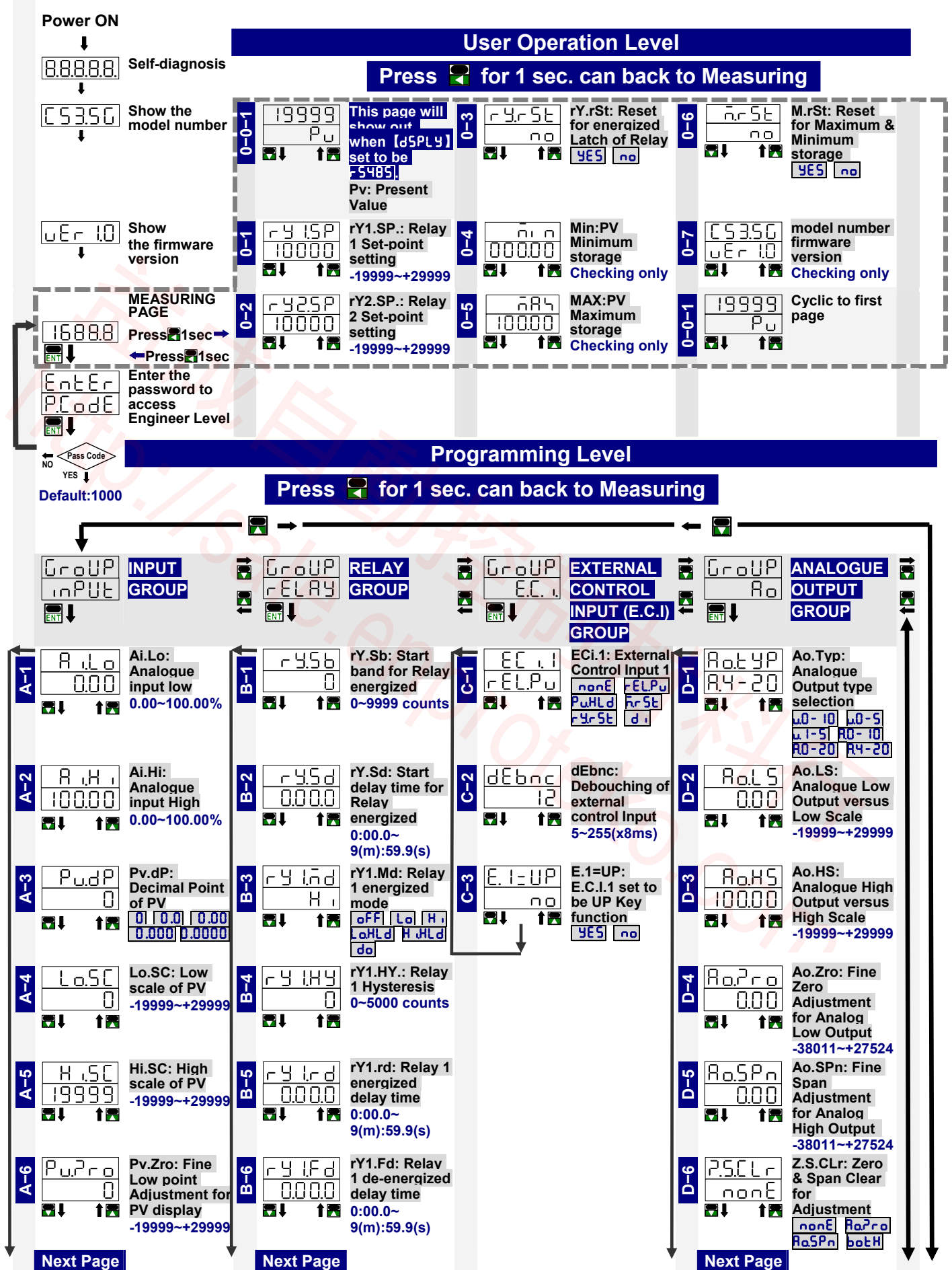
- **Function Lock:** There are 4 levels programmable.

- **None:** no lock all.
- **User Level:** User Level lock. User can get into User Level for checking but setting.
- **Programming Level:** Programming level lock. User can get into programming level for checking but setting.
- **ALL:** All lock. User can get into all level for checking but setting.

Front Key Function

- The **Up key** can be set to be the same function as the setting of ECI1.
 Ex. The ECI1 set to be **PuHld** and the function E.1=UP set to be **YES** in **【ECI Group】**. When user presses **Up key**, the PV will hold as like as ECI1 close.
- **If the front key function has been set, the terminal input for ECI will be disabling.**

OPERATING DIAGRAM (The detail description of operation, please refer to operating manual.)



CS3-SG

CS3-SG

A-7	Pv.SPn 0	Pv.SPn: Fine High point Adjustment for PV display -19999~+29999	B-7	rY2.Md H	rY.2.Md: Relay 2 energized mode bFF Lo H LoHLd H.HLd do	B-7	RoLnt 110.00	Ao.LMt: Analog Output High Limit 0.00~110.00%						
A-8	Z.S.Clr none	Z.S.Clr: Clear Fine Zero & Span Adjustment for PV display none PuPro PuSPn botH	B-8	rY2.HY 0	rY.2.HY: Relay 2 Hysteresis 0~5000counts	<table border="1"> <tr> <td>GROUP</td> <td>RS485</td> </tr> <tr> <td>r5485</td> <td>GROUP</td> </tr> </table>			GROUP	RS485	r5485	GROUP		
GROUP	RS485													
r5485	GROUP													
A-9	dSPLY Pu	dSPLY: Display Function Pu n n H nARH F5485	B-9	rY2.rd 0.000	rY2.rd: Relay 2 energized delay time 0:00.0~ 9(m):59.9(s)	<table border="1"> <tr> <td>AdRES</td> <td>Adres: Device number of the meter 1~255</td> </tr> <tr> <td>baUD</td> <td>baud: Baud rate 1200 2400 4800 9600 19200 38400</td> </tr> <tr> <td>PrTY</td> <td>PrTY: Parity nStb1 nStb2 odd EvEn</td> </tr> </table>			AdRES	Adres: Device number of the meter 1~255	baUD	baud: Baud rate 1200 2400 4800 9600 19200 38400	PrTY	PrTY: Parity nStb1 nStb2 odd EvEn
AdRES	Adres: Device number of the meter 1~255													
baUD	baud: Baud rate 1200 2400 4800 9600 19200 38400													
PrTY	PrTY: Parity nStb1 nStb2 odd EvEn													
A-10	Lo.Cut 0	Lo.Cut: Low Cut Function -19999~+29999	B-10	rY2.Fd 0.000	rY2.Fd: Relay 2 de-energized delay time 0:00.0~ 9(m):59.9(s)	<table border="1"> <tr> <td>AddrES</td> <td>Adres: Device number of the meter 1~255</td> </tr> <tr> <td>baUD</td> <td>baud: Baud rate 1200 2400 4800 9600 19200 38400</td> </tr> <tr> <td>PrTY</td> <td>PrTY: Parity nStb1 nStb2 odd EvEn</td> </tr> </table>			AddrES	Adres: Device number of the meter 1~255	baUD	baud: Baud rate 1200 2400 4800 9600 19200 38400	PrTY	PrTY: Parity nStb1 nStb2 odd EvEn
AddrES	Adres: Device number of the meter 1~255													
baUD	baud: Baud rate 1200 2400 4800 9600 19200 38400													
PrTY	PrTY: Parity nStb1 nStb2 odd EvEn													
A-11	AvG 5	AvG: Average update for PV 1(None)~ 99 times	<table border="1"> <tr> <td>GROUP</td> <td>RS485</td> </tr> <tr> <td>r5485</td> <td>GROUP</td> </tr> </table>						GROUP	RS485	r5485	GROUP		
GROUP	RS485													
r5485	GROUP													
A-12	M.AvG 1	M.AvG: Moving Average update for PV 1(None)~ 10 times												
A-13	d.FiLt 0	d.FiLt: Digital filter 0(None)/1~ 99 times												
A-14	P.CoDE 0000	P.CoDE: Pass Code for enter Programming Level 0000~9999												
A-15	F.LoCk none	F.LoCk: Function Level Lock none USEr EnG ALL												

> PLesae refer to operating manual for detail description
 > The process of Field Calibration is discription in manual.

CM1-PR 4 位數 可程式顯示器

■ 產品說明

CM1-PR 系列為一經濟簡單型可程式顯示表，其具備 20.0mm 大 LED 顯示、可按鍵設定顯示範圍 及其 抗干擾設計，品質可靠，安裝操作簡單，可滿足 電壓、電流 的一般量測需求。本儀表也具備了 2 組繼電器輸出、1 組類比輸出 或 1 組 RS485(Modbus RTU mode)通訊 功能 三選一(詳細功能請參考後頁說明)。操作按鍵內藏設計，更可避免人為無操作，尤其適合各種機械使用。



CM1-PR

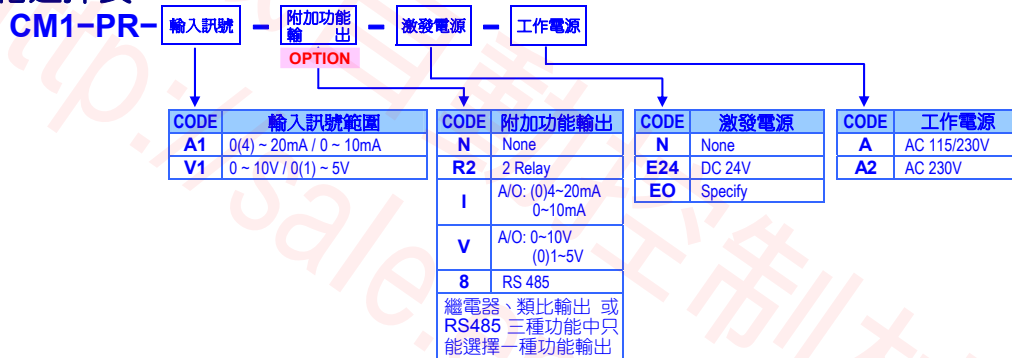
■ 特點

- 可指定量測 直流電壓 0~5V/~10V、直流電流 0~20mA/4~20mA
- 可附加三選一選購 2 組繼電器輸出、1 組類比輸出 或 1 組 RS485(Modbus RTU mode)通訊 功能
- 操作按鍵內藏(於前面板內)，可根據現場需求任意設定顯示範圍；端子直入設計，無接觸不良問題；安裝深度只有 72mm

■ 應用

- 配合 2 線式傳感器做 顯示、控制
- 控制訊號 量測、顯示 及 RS485 資料收集

■ 規格選擇表



■ 技術規格

輸入訊號範圍		輸入阻抗	
Voltage	0~10 V	≥ 1M ohm	
Current	4(0)~20 mA	250 ohm	

校正方式: 根據校正程序由按鍵操作
 A/D 轉換: 12 bits A/D 轉換器
 精確度: ± 0.1% of FS ± 1C
 取樣速度: 15 次/秒
 反應速度: ≤ 100 毫秒.(當 RuG = "1")

顯示與功能
 數字顯示: 4 位數, 0.8"(20.0mm)字高, 高亮度 LED
 顯示範圍: -1999~+9999
 顯示範圍設定: LoSC: 顯示低值設定 -1999~+9999
 HiSC: 顯示低值設定 -1999~+9999
 可設定 0 / 00 / 000 / 0000
 ouFL: 當輸入訊號超過輸入上限的 110%
 -ouFL: 當輸入訊號低過對應的 LoSC 設定值時
 記錄開機期間所發生的最大值及最小值
 LoLit: 可設定範圍 -1999~9999

顯示值穩定功能
 平均值顯示: RuG: 可設定範圍 1~99 次
 移動平均值顯示: nRuG: 可設定範圍 1~99 times
 數位濾波: dFilt: 可設定範圍 1~99 times

控制功能(選購)
 繼電器: 2 組繼電器
 2 組 FORM-C, 5A/230Vac, 10A/115V
 Hi / Lo / Hi.HLD / Lo.HLD 功能
 繼電器動作模式: 每個繼電器皆可設定個別的 繼電器動作&復歸延遲
 繼電器動作功能: 及 動作間隙

類比輸出(選購)
 精確度: ≤ ± 0.2% of F.S.; 12 bits DA converter
 漣波率: ≤ ± 0.1% of F.S.
 反應速度: ≤ 100 m-sec. (10~90% 額定輸出)
 隔離度: AC 2.0 KV between input and output
 輸出範圍: 電壓輸出 或 電流輸出(請於規格選擇表中選定)
 電壓輸出: 0~5V / 0~10V / 1~5V 可按鍵設定
 電流輸出: 0~10mA / 0~20mA / 4~20mA 可按鍵設定
 電壓輸出: 0~10V; ≥ 1000Ω;
 電流輸出: 4(0)~20mA; ≤ 600Ω max
輸出推動能力:
 功能:
輸出訊號調整:
 [r45b] 啟動不動作帶: 0~9999counts
 [r45d] 啟動時間延遲: 0:00.0~9(分鐘):59.9(秒)
 [r4rd] 動作時間延遲: 0:00.0~9(分鐘):59.9(秒)
 [r4fd] 復歸時間延遲: 0:00.0~9(分鐘):59.9(秒)
 [r4H4] 動作間隙: 0~5000 counts
 [RaLS] 輸出訊號下限所對應的顯示低值設定
 可設定範圍 -1999~9999
 [RaHS] 輸出訊號上限所對應的顯示高值設定
 可設定範圍 -1999~9999
 [RaPr] 輸出訊號下限微調: -1999~9999
 [RaSPn] 輸出訊號上限微調: -1999~9999

RS 485 通信(選購)
 通訊協議: Modbus RTU 模式
 串列傳輸速率: 1200/2400/4800/9600/19200/38400 可設定
 波特率: 8 位元
 同位元檢查: 奇、偶 or none (with 1 or 2 stop bit) 可設定
 通訊地址: 1~255 可設定
 接線距離: 1200M max
 終端電阻: 150Ω

CM1-PR

電源

工作電源: AC115/230V,50/60Hz;
耗電量: 小於 2.5VA
記憶儲存: EEPROM

電氣特性

介電強度: AC 2.0 KV · 1 分鐘, 電源 / 輸入 / 輸出 / 外殼 之間
絕緣電阻: ≥100M ohm at 500Vdc, 電源 / 輸入 / 輸出 之間
隔離: 電源 / 輸入 / 輸出 之間
EMC: EN 55011:2002; EN 61326:2003
安全規範(LVD): EN 61010-1:2001

工作環境

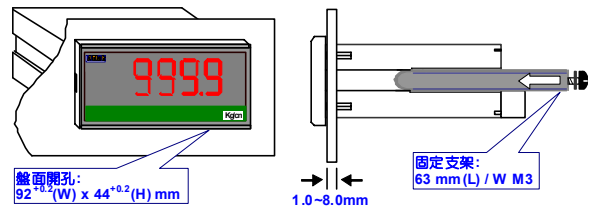
工作溫度: 0~60 °C
工作濕度(%RH): 20~95 %RH, 無結露
溫度係數: ≤ 100 PPM/°C
儲存溫度: -10~70 °C
防護等級: 前面版: IEC 549 (IP54); 本體: IP20
震動測試: 1~800Hz, 3.175g²/Hz

機構尺寸

外觀尺寸: 96mm(寬) x 48mm(高) x 72mm(深)
開孔尺寸: 92mm(寬) x 44mm(高)
外殼材質: ABS 防火材料 (UL 94V-0)
安裝方式: 盤面安裝
接線端子: Plastic NYLON 66 (UL 94V-0); 20A/300Vac, M3.5, 1.3mm²~3.5mm² (22~12AWG)
重量: 310g

■ 安裝方式

本表請安裝在不超過最大操作溫度和濕度的環境下。



■ 接線圖

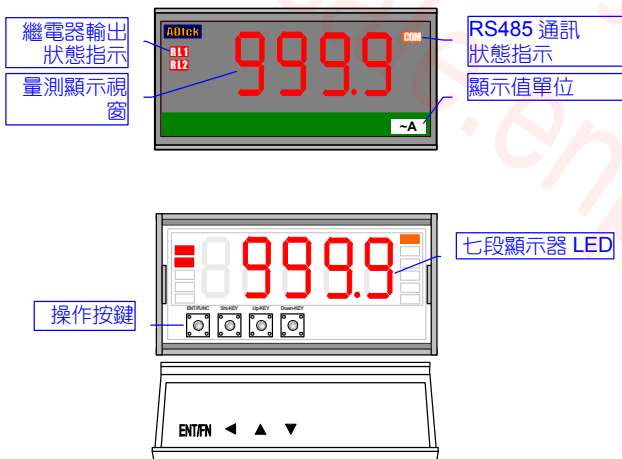
接線端子: 20A/300Vac, M3.5, 1.3~3.5mm² (22~12AWG)



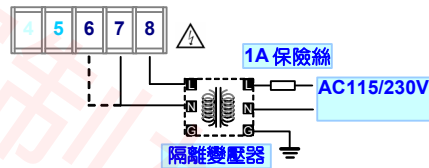
接線時, 請務必確認電源電壓是否正確並接入正確端子編號。為設備及儀表安全, 建議在儀表前安裝保險絲(Fuse) 或 斷路器(Breaker)。

⚠ 接線有可能變更, 請依照儀表上的接線圖接線。

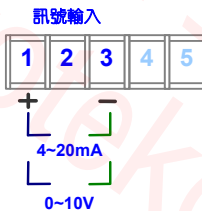
■ 前面板說明



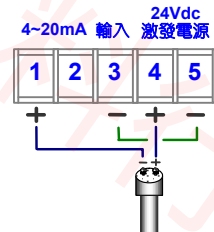
工作電源



訊號輸入



2 線式傳感器接線

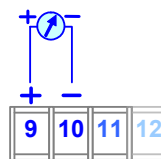


輸出 (繼電器、類比輸出 或 RS485 三種功能中只能選擇一種功能輸出)

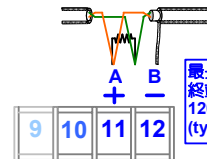
繼電器輸出



類比再傳送輸出

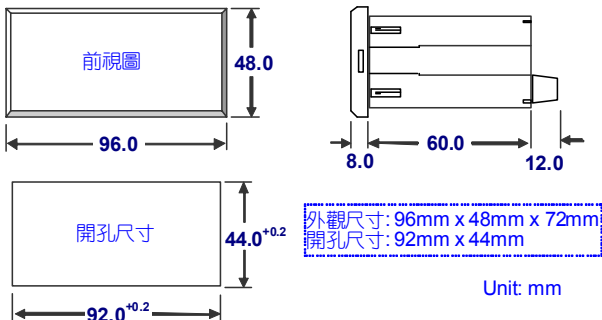


RS485 通訊接口



最長接線距離: 1200M
 終端電阻(最遠端裝置): 120~300ohm/0.25W (typical: 150ohm)

■ 外觀尺寸



CM1-RL 5 位數 可編程 轉速/線速表

■ 產品說明

CM1-RL 系列為一經濟簡單型可編程 轉速/線速表，其具備 20.0mm、5 位數大 LED 顯示、可按鍵設定顯示範圍 及其 抗干擾設計、品質可靠，安裝操作簡單，可滿足 轉速/線速 的一般量測需求。本儀表也具備了 2 組繼電器輸出、1 組類比輸出 或 1 組 RS485(Modbus RTU mode)通訊 功能 三選一(詳細功能請參考 後頁說明)。操作按鍵內藏設計，更可避免人為誤操作，尤其適合各種機械使用。



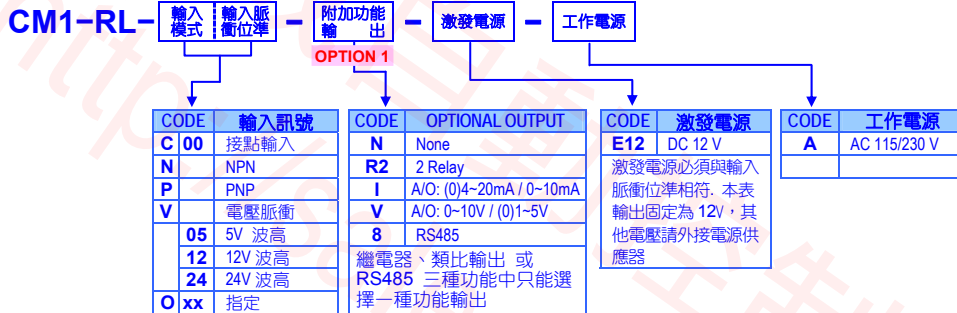
■ 特點

- 自由頻率輸入達 1Hz~6KHz，不需指定頻率範圍；輸入模式(NPN、PNP、...) 及脈衝位準 可由指撥開關直接切換
- 可附加三選一選購 2 組繼電器輸出、1 組類比輸出 或 1 組 RS485(Modbus RTU mode)通訊 功能
- 操作按鍵內藏(於前面板內)，可根據現場需求任意設定顯示範圍；端子直入設計，無接觸不良問題；安裝深度只有 72mm

■ 應用

- 配合近接開關、光電開關做 轉速/線速 顯示、控制 及 RS485 資料收集

■ 規格選擇表



■ 技術規格

輸入訊號範圍	輸入模式	輸入脈衝位準
1Hz ~ 50 Hz	機械接點	
1Hz ~ 50 Hz 1Hz ~ 6.00KHz	NPN	高電位: 8~12V; 低電位: 0.0~4.0 V (激發電源: 輸出固定 12Vdc)
	PNP	高電位: 超過 over 2/3 輸入位準 低電位: 低於 1/3 輸入位準
	電壓脈衝	高電位: 超過 over 2/3 輸入位準 低電位: 低於 1/3 輸入位準

輸入模式(NPN, PNP, Contact) 及輸入脈衝位準(5Vp, 12Vp, 24Vp) 可由儀表後端的指撥開關直接切換

校正方式: 無需校正
A/D 轉換: 脈衝直讀，無需 AD 轉換
精確度: ± 0.1% of FS ± 1C
取樣週期時間: 0.1~99 秒
反應速度: 15 次/秒.(≥15Hz, 當 $R_{UG} = "1"$)
 f 次/秒.(≤15Hz, 當 $R_{UG} = "1"$)

顯示與功能
數字顯示: 5 位數, 0.8"(20.0mm)字高, 高亮度 LED
顯示範圍: 0~99999
顯示參數: 轉速(RPM) / 轉速(RPS) / 線速度 / 頻率 可設定
顯示解析度: 小數點位置可選擇 自動 / 半自動 / 手動
 手動時可設定 0 / 00 / 000 / 0000
顯示單位: 線速度單位可設定 M/min CM/Min Yd/Min ft/Min
超高溢位顯示: $ouFL$: 當輸入訊號超過輸入上限的 110%
最大值/最小值紀錄: 記錄開機期間所發生的最大值及最小值
低值遮蔽功能: $LoCut$: 可設定範圍 -19999~19999

顯示值穩定功能
平均值顯示: R_{UG} : 可設定範圍 1~99 次
數位濾波: $dFilt$: 可設定範圍 1~99 times

控制功能(選購)

繼電器: 2 組繼電器
 2 組 FORM-C, 5A/230Vac, 10A/115V
繼電器動作模式: Hi / Lo / Hi.HLd / Lo.HLd 功能
繼電器動作功能: 每個繼電器皆可設定個別的 繼電器動作&復歸延遲 及 動作間隙
[r45b] 啟動不動作帶: 0~9999counts
[r45d] 啟動時間延遲: 0:00.0~9(分鐘):59.9(秒)
[r4rd] 動作時間延遲: 0:00.0~9(分鐘):59.9(秒)
[r4fd] 復歸時間延遲: 0:00.0~9(分鐘):59.9(秒)
[r4H4] 動作間隙: 0~5000 counts

類比輸出(選購)

精確度: ≤ ± 0.2% of F.S.; 12 bits DA converter
濾波率: ≤ ± 0.1% of F.S.
反應速度: ≤100 m-sec. (10~90% 額定輸出)
隔離度: AC 2.0 KV between input and output

輸出範圍: 電壓輸出 或 電流輸出(請於規格選擇表中選定)
 電壓輸出: 0~5V / 0~10V / 1~5V 可按鍵設定
 電流輸出: 0~10mA / 0~20mA / 4~20mA 可按鍵設定
輸出推動能力: 電壓輸出: 0~10V: ≥ 1000Ω;
 電流輸出: 4(0)~20mA: ≤ 600Ω max

功能: **[RoLS]** 輸出訊號下限所對應的顯示低值設定
 可設定範圍 -1999~9999
[RoHS] 輸出訊號上限所對應的顯示高值設定
 可設定範圍 -1999~9999
[RoPro] 輸出訊號下限微調: 0~99999
[RoSPn] 輸出訊號上限微調: 0~99999

RS 485 通信(選購)

通訊協議: Modbus RTU 模式
串列傳輸速率: 1200/2400/4800/9600/19200/38400 可設定
資料長度: 8 位元
同位元檢查: 奇、偶 or none (with 1 or 2 stop bit) 可設定
通訊地址: 1 ~ 255 可設定
接線距離: 1200M max
終端電阻: 150Ω.

電源

工作電源: AC115/230V±15%,50/60Hz;
耗電量: 小於 2.5VA
記憶儲存: EEPROM

電氣特性

介電強度: AC 2.0 KV, 1 分鐘, 電源 / 輸入 / 輸出 / 外殼 之間
絕緣電阻: ≥100M ohm at 500Vdc, 電源 / 輸入 / 輸出 之間
隔離: 電源 / 輸入 / 輸出 之間
EMC: EN 55011:2002; EN 61326:2003
安全規範(LVD): EN 61010-1:2001

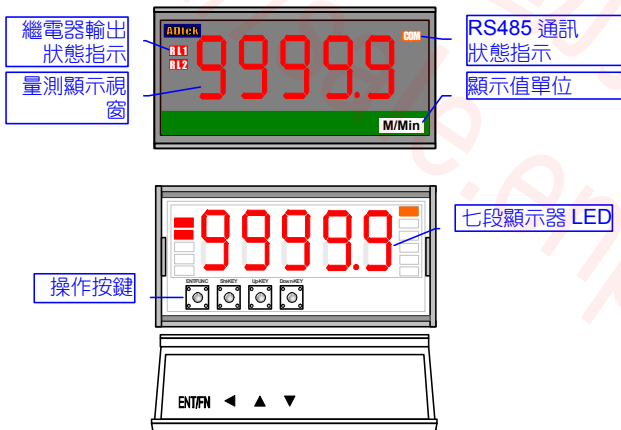
工作環境

工作溫度: 0~60 °C
工作濕度:(%RH): 20~95 %RH, 無結露
溫度係數: ≤ 100 PPM/°C
儲存溫度: -10~70 °C
防護等級: 前面版: IEC 529 (IP52); 本體: IP20
震動測試: 1~800Hz, 3.175g²/Hz

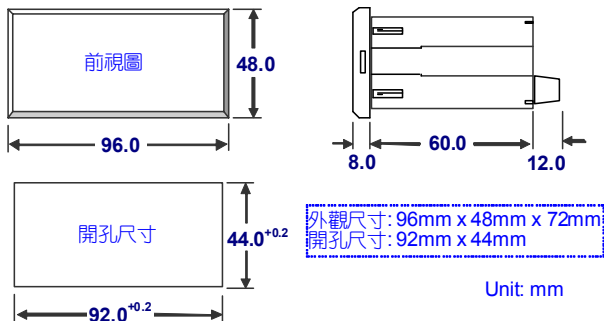
機構尺寸

外觀尺寸: 96mm(寬) x 48mm(高) x 72mm(深)
開孔尺寸: 92mm(寬) x 44mm(高)
外殼材質: ABS 防火材料 (UL 94V-0)
安裝方式: 盤面安裝
接線端子: Plastic NYLON 66 (UL 94V-0); 20A/300Vac, M3.5, 1.3mm²~3.5mm² (22~12AWG)
重量: 310g

前面板說明

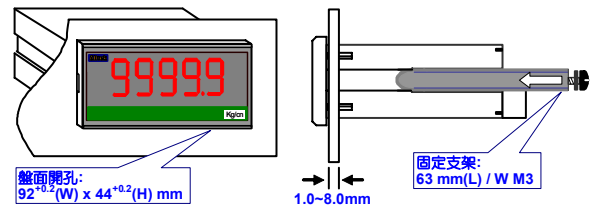


外觀尺寸

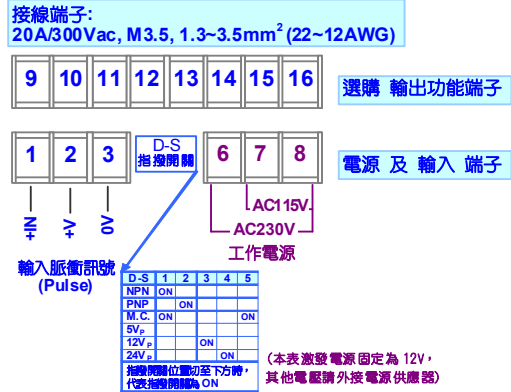


安裝方式

本表請安裝在不超過最大操作溫度和濕度的環境下。



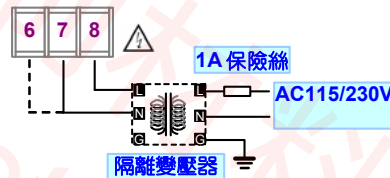
接線圖



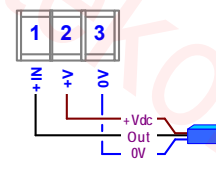
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⚠ 接線有可能變更, 請依照儀表上的接線圖接線。

工作電源



Sensor 輸入接線



指撥開關切換 輸入模式 及 脈衝位準 必須與輸入訊號相符

指撥開關 D-S	1	2	3	4	5
NPN	ON				
PNP		ON			
機械接點		ON			ON
電壓脈衝 5V _P					
電壓脈衝 12V _P				ON	
電壓脈衝 24V _P					ON

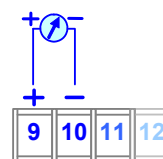
(本表激發電源固定為 12V, 其他電壓請外接電源供應器)

輸出 (繼電器、類比輸出 或 RS485 三種功能中只能選擇一種功能輸出)

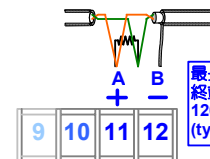
繼電器輸出



類比再傳送輸出



RS485 通訊接口



最長接線距離: 1200M
終端電阻(最遠端裝置): 120~300ohm/0.25W (typical: 150ohm)

修改日期 2011/09/26	修改前 ■規格選擇表 CM1-RL- <div style="display: flex; justify-content: space-around; margin-top: 10px;"> 輸入 模式 數位量 附加功能 輸...出 OPTION 1 電源電壓 工作電壓 </div> <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th>CODE</th> <th>輸入訊號</th> <th>CODE</th> <th>OPTIONAL OUTPUT</th> <th>CODE</th> <th>電源電壓</th> <th>CODE</th> <th>工作電壓</th> </tr> </thead> <tbody> <tr> <td>C 00</td> <td>接點輸入</td> <td>N</td> <td>None</td> <td>E05</td> <td>DC 5V</td> <td>A</td> <td>AC 115/230 V</td> </tr> <tr> <td>N</td> <td>NPN</td> <td>R2</td> <td>2 Relay</td> <td>E12</td> <td>DC 12V</td> <td></td> <td></td> </tr> <tr> <td>P</td> <td>PNP</td> <td>I</td> <td>AO (0-4-20mA / 0-10mA)</td> <td>E24</td> <td>DC 24V</td> <td></td> <td></td> </tr> <tr> <td>V</td> <td>電壓訊號</td> <td>V</td> <td>AO 0-10V / (0)1-5V</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>05</td> <td>15V 波高</td> <td>B</td> <td>RS485</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>12</td> <td>12V 波高</td> <td></td> <td>繼電器、類比輸出 或 RS485 三種功能中只能選 擇一種功能輸出</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>24</td> <td>24V 波高</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>O xx</td> <td>指定</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	CODE	輸入訊號	CODE	OPTIONAL OUTPUT	CODE	電源電壓	CODE	工作電壓	C 00	接點輸入	N	None	E05	DC 5V	A	AC 115/230 V	N	NPN	R2	2 Relay	E12	DC 12V			P	PNP	I	AO (0-4-20mA / 0-10mA)	E24	DC 24V			V	電壓訊號	V	AO 0-10V / (0)1-5V					05	15V 波高	B	RS485					12	12V 波高		繼電器、類比輸出 或 RS485 三種功能中只能選 擇一種功能輸出					24	24V 波高							O xx	指定							修改後 ■規格選擇表 CM1-RL- <div style="display: flex; justify-content: space-around; margin-top: 10px;"> 輸入 模式 數位量 附加功能 輸...出 OPTION 1 電源電壓 工作電壓 </div> <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th>CODE</th> <th>輸入訊號</th> <th>CODE</th> <th>OPTIONAL OUTPUT</th> <th>CODE</th> <th>電源電壓</th> <th>CODE</th> <th>工作電壓</th> </tr> </thead> <tbody> <tr> <td>C 00</td> <td>接點輸入</td> <td>N</td> <td>None</td> <td>E12</td> <td>DC 12V</td> <td>A</td> <td>AC 115/230 V</td> </tr> <tr> <td>N</td> <td>NPN</td> <td>R2</td> <td>2 Relay</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>P</td> <td>PNP</td> <td>I</td> <td>AO (0-4-20mA / 0-10mA)</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>V</td> <td>電壓訊號</td> <td>V</td> <td>AO 0-10V / (0)1-5V</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>05</td> <td>15V 波高</td> <td>B</td> <td>RS485</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>12</td> <td>12V 波高</td> <td></td> <td>繼電器、類比輸出 或 RS485 三種功能中只能選 擇一種功能輸出</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>24</td> <td>24V 波高</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>O xx</td> <td>指定</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	CODE	輸入訊號	CODE	OPTIONAL OUTPUT	CODE	電源電壓	CODE	工作電壓	C 00	接點輸入	N	None	E12	DC 12V	A	AC 115/230 V	N	NPN	R2	2 Relay					P	PNP	I	AO (0-4-20mA / 0-10mA)					V	電壓訊號	V	AO 0-10V / (0)1-5V					05	15V 波高	B	RS485					12	12V 波高		繼電器、類比輸出 或 RS485 三種功能中只能選 擇一種功能輸出					24	24V 波高							O xx	指定						
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V	電壓訊號	V	AO 0-10V / (0)1-5V																																																																																																																																															
05	15V 波高	B	RS485																																																																																																																																															
12	12V 波高		繼電器、類比輸出 或 RS485 三種功能中只能選 擇一種功能輸出																																																																																																																																															
24	24V 波高																																																																																																																																																	
O xx	指定																																																																																																																																																	

益成自動控制材料行
<http://sale.enproteko.com>

CSN 3 1/2 位數 數字式顯示器

■ 產品說明

CSN 系列為一經濟簡單型顯示表，其具備 20.0mm 大 LED 顯示及其抗干擾設計，品質可靠，安裝操作簡單。

全系列機種齊全，可指定 交直流電壓/電流、頻率、4~20mA、0~10V、熱電偶(Type K, J, E, T)、熱電阻(Rtd-Pt100Ω)、荷重元、電位計、電阻及 脈衝等訊號 的一般量測需求。



型號	量測 / 輸入 訊號	激發電源輸出
CSN-PR	直流電流 0~20mA / 4~20mA, 直流電壓 0~5V / 1~5V / 0~10V	選購
CSN-SG	荷重元 0~1.0mV/~2.0mV/~3.0mV/~4.0mV 每 1V	1
CSN-PM	電位計 0~2.0kΩ(3 線式), 2.0kΩ~100.0kΩ(3 線式)	不支援
CSN-T	熱電阻溫度 Pt100Ω, Pt50Ω, Pt1000Ω....; 熱電偶溫度 Type K, J, E, T	不支援

以上機種將於 2011 年陸續上市

■ 特點

- 使用者可調整 零點、粗調 及 微調 3 個電位計，直接調整現場顯示值
- 20.0mm 超大高亮度 LED 顯示；端子直入設計，無接觸不良問題；安裝深度只有 72mm

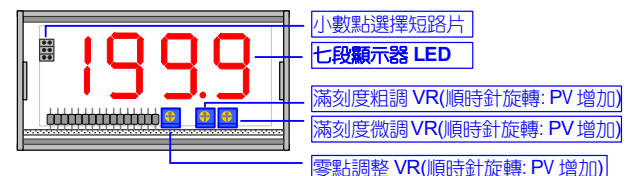
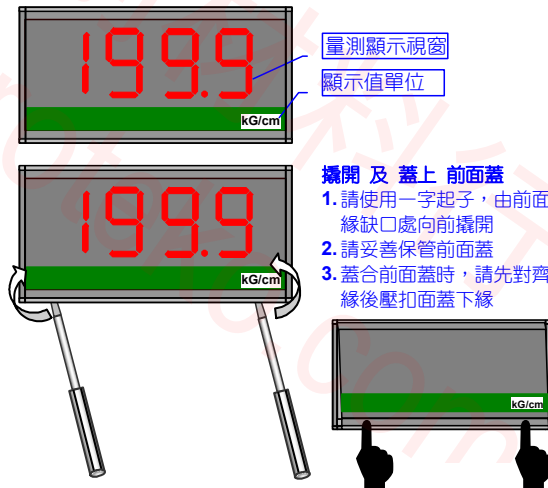
■ 技術規格

輸入規格		解析度	顯示精度	輸入阻抗
直流電流 CSN-PR	0 ~ 10 mA	根據訂單指定	±0.1% of FS ± 1C	250 ohm
	0 ~ 20 mA	根據訂單指定		250 ohm
	4 ~ 20 mA	根據訂單指定		250 ohm
直流電壓 CSN-PR	0 ~ 5 V	根據訂單指定	±0.1% of FS ± 1C	≥1M ohm
	0 ~ 10V	根據訂單指定		≥1M ohm
	1 ~ 5 V	根據訂單指定		≥1M ohm
荷重元 CSN-SG	1.0~4.0 mV/V	根據訂單指定	±0.1% of FS ± 1C	≥1M ohm
	10.0~40.0 mV/V	根據訂單指定		≥1M ohm
電位計 CSN-PM	0~2.0K ohm	根據訂單指定	±0.1% of FS ± 1C	≥1M ohm
	0~100k ohm	根據訂單指定		≥1M ohm
溫度 CSN-T	熱電阻(Rtd)	根據感測器類型	±0.1% of FS ± 1C	≥1M ohm
	熱電偶(T/C)		±0.25% of FS ± 1C	≥1M ohm

機構尺寸

外觀尺寸: 96mm(寬) x 48mm(高) x 72mm(深)
 開孔尺寸: 92mm(寬) x 44mm(高)
 外殼材質: ABS 防火材料 (UL 94V-0)
 安裝方式: 盤面安裝
 接線端子: Plastic NYLON 66 (UL 94V-0); 20A/300Vac, M3.5, 1.3mm²~3.5mm² (22~12AWG)
 重量: 310g

■ 前面板說明 及 校調



小數點選擇短路片



校正方式:

零點調整:

滿刻度調整:

取樣速度:

顯示與功能

數字顯示:

顯示範圍:

小數點設定:

超高溢位顯示:

超低溢位顯示:

輸入超載承受能力:

電位計(Potentiometer)校調

≤ 5% 滿刻度(順時針旋轉增加)

粗調電位計 0~100% (順時針旋轉增加)

微調電位計 ≤ 10% 滿刻度(順時針旋轉增加)

3 次/秒

4 位數, 0.8"(20.0mm)字高, 高亮度 LED

-1999~1999

短路片短路選擇顯示 0 / 00 / 000 / 0000

"1": 當輸入訊號超過輸入上限時

"-1": 當輸入訊號低過輸入下限時

電壓: 連續 1.2 倍額定輸入

1.5 倍 額定輸入承受 10 秒

電流: 10 倍額定輸入承受 10 秒

電源

工作電源:

激發電源:

耗電量:

AC 115/230V, 50/60Hz 或 AC 230V, 50/60Hz

CSN-PR: DC24V, 30mA; CSN-SG: DC5/10V, 40mA

2.5VA

電氣特性

介電強度:

絕緣電阻:

EMC:

安全規範(LVD):

AC 2.0 KV, 1 分鐘, 電源 / 輸入 之間

≥2000M ohm at 500Vdc, 電源 / 輸入 / 外殼 之間

EN 55011:2002; EN 61326:2003

EN 61010-1:2001

工作環境

工作溫度:

工作濕度(%RH):

溫度係數:

儲存溫度:

防護等級:

震動測試:

0~60 °C

20~95 %RH, 無結露

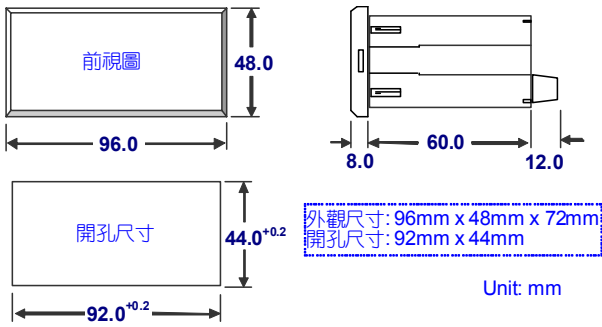
≤ 100 PPM/°C(0~50 °C)

-10~70 °C

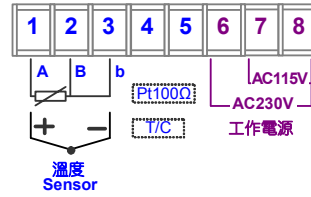
前面板: IEC 529 (IP52); 本體: IP20

1~800Hz, 3.175g²/Hz

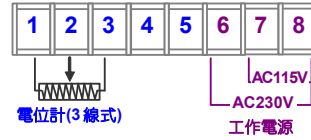
■外觀尺寸



CSN-T

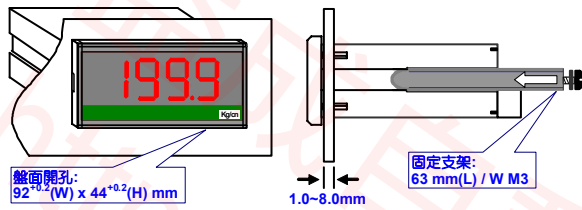


CSN-PM



■安裝方式

本表請安裝在不超過最大操作溫度和溼度的環境下。



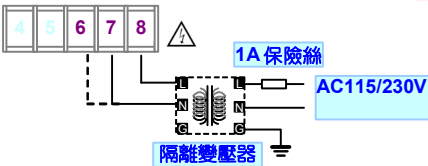
■接線圖

接線端子: 20A/300Vac, M3.5, 1.3~3.5mm² (22~12AWG)

接線時, 請務必確認電源電壓是否正確並接入正確端子編號。為設備及儀表安全, 建議在儀表前安裝保險絲(Fuse) 或 斷路器(Breaker)。

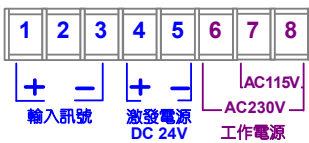
⚠ 接線有可能變更, 請依照儀表上的接線圖接線。

工作電源

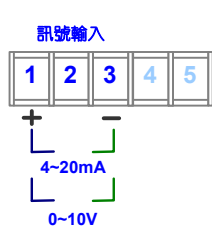


輸入訊號

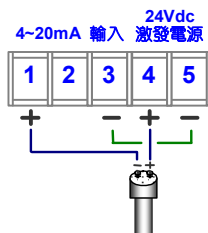
CSN-PR



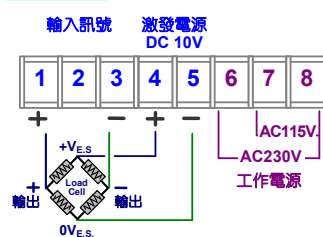
訊號輸入



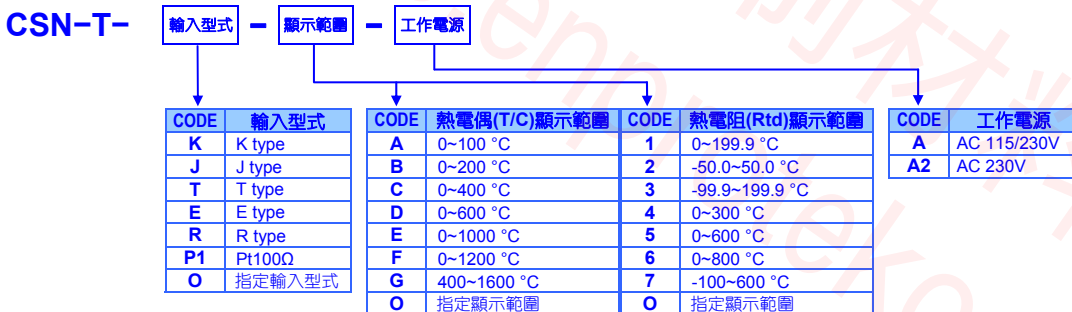
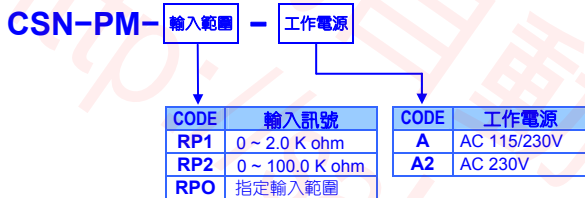
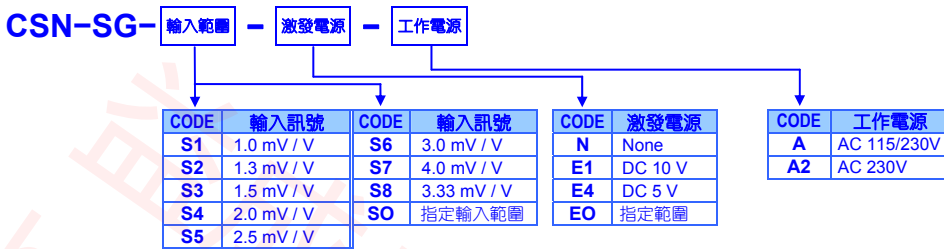
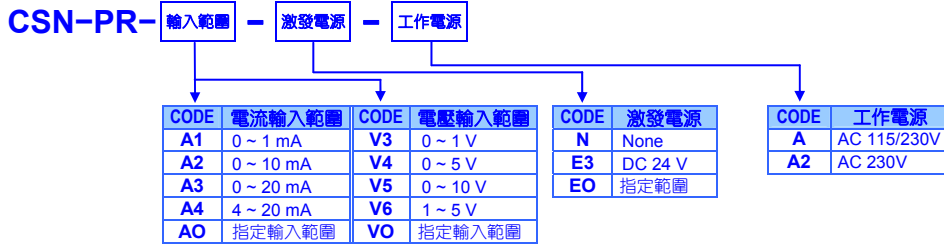
2 線式傳送器接線



CSN-SG



■規格選擇表



CS1-PM POTENTIOMETER Indicator

ADtek

DESCRIPTION

CS1-PM **economic** type Potentiometer Indicator has been designed with high accuracy measurement, display and communication of Ohm(3 wire) as like as **Positioner**.

☑ The meter supports Field Calibration function. It can be calibrated with sensor(Potentiometer) to meet machinery structure.

They are also available 1 option of 1 Relay outputs, 1 Analogue output or 1 RS485(Modbus RTU Mode) interface with versatile functions such as control, alarm, re-transmission or communication for a wide range of machinery and testing equipments applications.



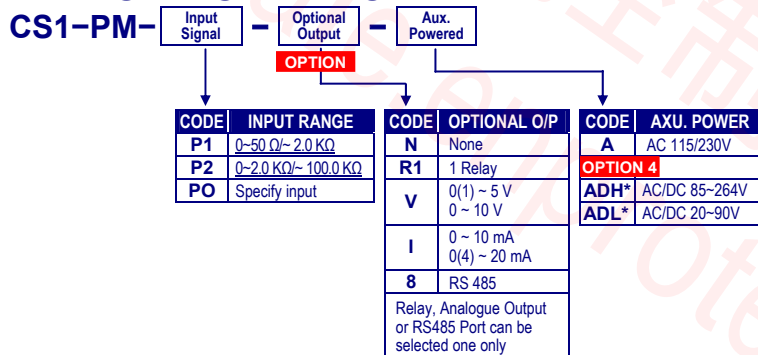
FEATURE

- Measuring potentiometer signal 0~50Ω/~2.0KΩ and 0~2.0KΩ/~100.0KΩ (3 wire) changeable by dip switch on rear of meter
- Field calibration with potentiometer to meet the system requirement
- Option available 1 of 1 relay, 1 analogue output or RS485(Modbus RTU mode)
- 1 relay can be programmed individual to be a Hi / Lo / Hi Latch / Lo Latch energized with Start Delay / Hysteresis / Energized & De-energized Delay functions.
- Analogue output or RS 485 communication port in option
- CE Approved & RoHS

APPLICATIONS

- Testing Equipments for thickness Measuring, Alarm, Control or Communication with PC/PLC
- Position indication for Valve, Gate or various application

ORDERING INFORMATION



TECHNICAL SPECIFICATION

Input		
Measuring Range	Input Impedance	Excitation Volt
0 Ω ~50 Ω / ~ 2.0 KΩ (3 wire)	≥1M ohm	About 0.2V
0 Ω ~2K Ω / ~100.0 KΩ (3 wire)		About 1.6V

> Above two ranges can be changed by dip switch on rear of meter.

Calibration: Digital calibration by front key
Field calibration: Calibration with sensor input high & low to meet system structure. And field calibration reset is not change the accuracy & linear of factory calibration.

A/D converter: 16 bits resolution
Accuracy: ±0.04% of FS ± 1C;
Sampling rate: 15 cycles/sec
Response time: ≤100 msec.(when the Avg = "1") in standard

Display & Functions

LED: Numeric: 5 digits, 0.8"(20.0mm)H red high-brightness LED
 Relay output indication: 1 square red LED
 RS 485 communication: 1 square orange LED
 E.C.I. function indication: 1 square green LED
 Max/Mini Hold indication: 2 square orange LED
 Down key function indication(Reset for Max.(Mini.) Hold / PV Hold / Rel. PV): 1 square green LED
Display range: -19999~29999;

Scaling function: Lo.SC: Low Scale; Settable range: -19999~+29999
 Hi.SC: High Scale; Settable range: -19999~+29999
 Programmable from 0 / 0.0 / 0.00 / 0.000 / 0.0000
Over range indication: ovFL, when input is over 120% of input range Hi
Under range indication: -ovFL, when input is under -20% of input range Lo
Max / Mini recording: Maximum and Minimum value storage during power on.
Display functions: PV / Max(Mini) Hold / RS 485 Programmable
Front key functions: Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable
 Settable range: -19999~29999 counts
Low cut: Pv.Zro: Settable range: -19999~+29999
Digital fine adjust: Pv.SpN: Settable range: -19999~+29999

Reading Stable Function

Average: Settable range: 1~99 times
Moving average: Settable range: 1(None)~10 times
Digital filter: Settable range: 0(None)/1~99 times

Control Functions(option)

Set-points: One set-point
Control relay: 1 Relay, FORM-C, 5A/230Vac, 10A/115V
Relay energized mode: Energized levels compare with set-points:
 Hi / Lo / Hi.HLd / Lo.HLd programmable
Energizing functions: Start delay / Energized & De-energized delay / Hysteresis Energized Latch
 Start band(Minimum level for Energizing): 0~9999counts
 Start delay time: 0:00.0~9(Minutes):59.9(Second)

Energized delay time: 0.00.0~9(Minutes):59.9(Second)
De-energized delay time: 0.00.0~9(Minutes):59.9(Second)
Hysteresis: 0~5000 counts

Analogue output(option)

Accuracy: $\leq \pm 0.1\%$ of F.S.;
Ripple: $\leq \pm 0.1\%$ of F.S.
Response time: ≤ 100 msec. (10~90% of input)
Isolation: AC 2.0 KV between input and output
Output range: Specify either Voltage or Current output in ordering
Voltage: 0~5V / 0~10V / 1~5V programmable
Current: 0~10mA / 0~20mA / 4~20mA programmable
Voltage: 0~10V; $\geq 1000\Omega$;
Current: 4(0)~20mA; $\leq 600\Omega$ max
Functions: **Ao.HS(output range high):** Settable range: -19999~29999
Ao.LS(output range Low): Settable range: -19999~29999
Digital fine adjust: **Ao.Zro:** Settable range: -38011~+27524
Ao.SPn: Settable range: -38011~+27524

RS 485 Communication(option)

Protocol: Modbus RTU mode
Baud rate: 1200/2400/4800/9600/19200/38400 programmable
Data bits: 8 bits
Parity: Even, odd or none (with 1 or 2 stop bit) programmable
Address: 1 ~ 255 programmable
Remote display: to show the value from RS485 command of master
Distance: 1200M
Terminate resistor: 150 Ω at last unit.

Electrical Safety

Dielectric strength: AC 2.0 KV for 1 min, Between Power / Input / Output / Case
Insulation resistance: $\geq 100M$ ohm at 500Vdc, Between Power / Input / Output
Isolation: Between Power / Input / Relay, Analogue, RS485
EMC: EN 55011:2002; EN 61326:2003
Safety(LVD): EN 61010-1:2001

Environmental

Operating temp.: 0~60 °C
Operating humidity: 20~95 %RH, Non-condensing
Temp. coefficient: ≤ 100 PPM/°C
Storage temp.: -10~70 °C
Enclosure: Front panel: IEC 549 (IP54); Housing: IP20

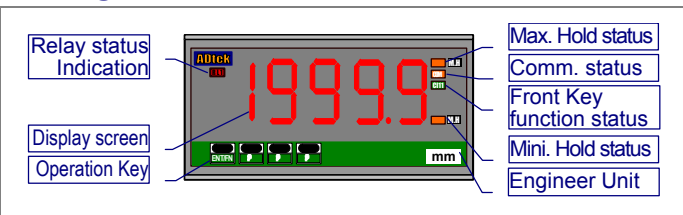
Mechanical

Dimensions: 96mm(W) x 48mm(H) x 72mm(D)
Panel cutout: 92mm(W) x 44mm(H)
Case material: ABS fire-resistance (UL 94V-0)
Mounting: Panel flush mounting
Terminal block: Plastic NYLON 66 (UL 94V-0)
 10A 300Vac, M2.6, 1.3~2.0mm²(16~12AWG)
Weight: 350g / 300g(Aux. Power Code: ADH or ADL)

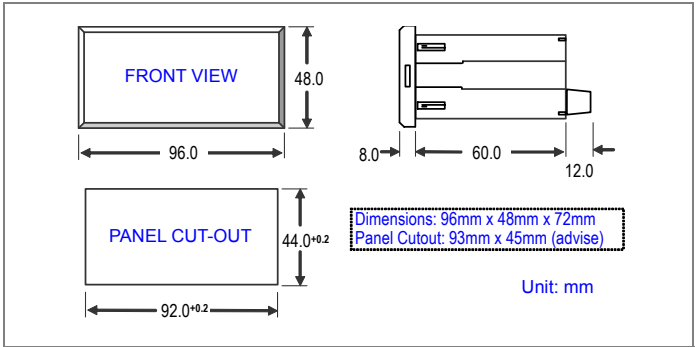
Power

Power supply: AC115/230V,50/60Hz;
Optional: AC/DC 85~264V or 20~90V(RoHS version)
Excitation supply: DC 5/10V, 30mA maximum in standard
Power consumption: 4.5VA maximum
Back up memory: By EEPROM

FRONT PANEL

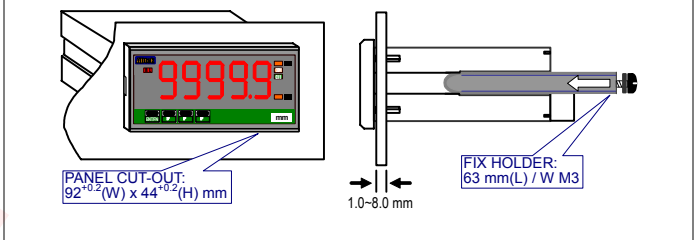


DIMENSIONS

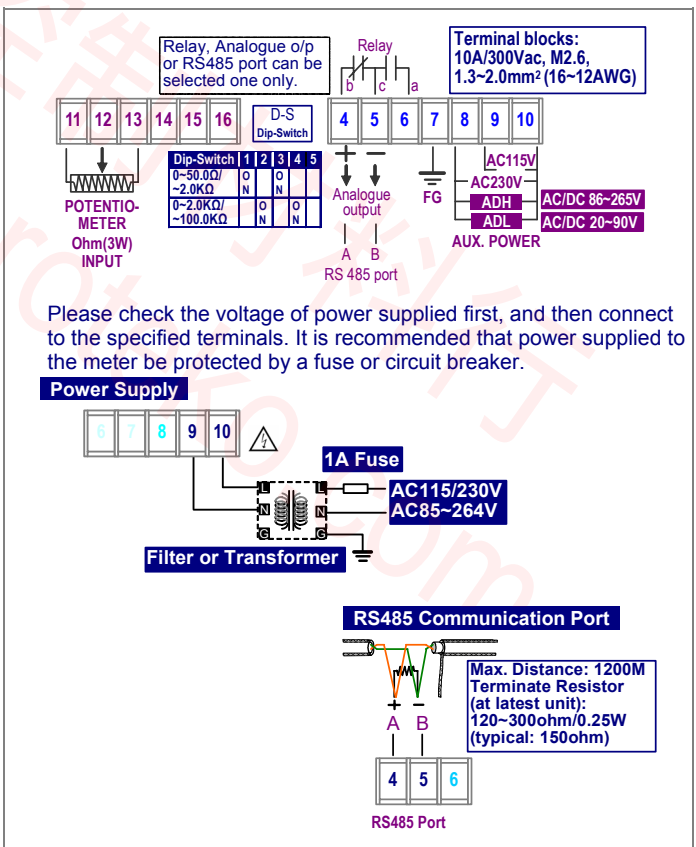


INSTALLATION

The meter should be installed in a location that dose not exceed the maximum operating temperature and provides good air circulation.



CONNECTION DIAGRAM



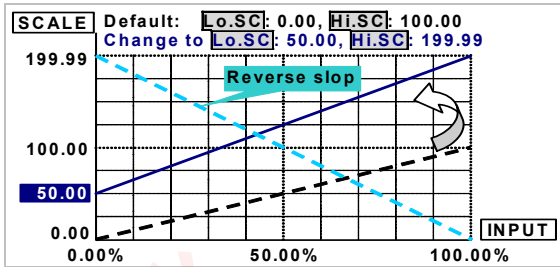
CS1-PM

FUNCTION DESCRIPTION

Input & Scaling Functions

Scaling function:

Setting the **Lo.SC** (Low scale) and **Hi.SC** (High scale) in [**inPUT GroUP**] to relative input signal. **Reverse scaling will be done too.** Please refer to the figure as below,



*Too narrow scale may cause display lower resolution.

Display & Functions

Max / Mini recording:

The meter will storage the maximum and minimum value in [**User Level**] during power on in order to review drifting of PV.

Display functions:

(Please refer to step A-09)

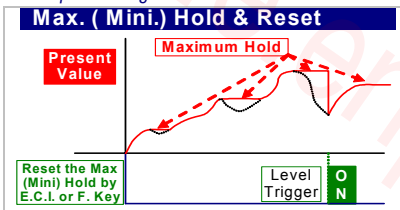
PV / Max(Mini) Hold / RS 485 programmable in [dSPly] function of [inPUT GroUP]

Present Value [PV]: The display will show the value that Relative to Input signal.

Maximum Hold [Max.H] / Minimum Hold [Mini.H]:

The meter will keep display in maximum (minimum) value during power on, until press front key to reset (If the down key function in [**inPUT GroUP**] has been set to **M.rSt**.)

- Please find the **M.H** sticker that enclosure the package of the meter to stick on the right side of square orange LED



Remote Display by RS485 command [RS485]: The meter will show the value that received from RS485 sending. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master can so that can be **save cost and wiring** from PLC.

Front key functions:

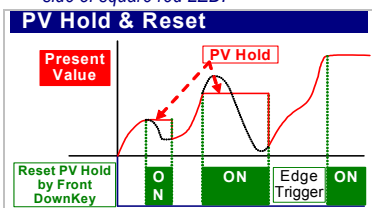
Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable in [dn.KEY] function of [inPUT GroUP]

Relative PV [REL.PV]: [**dn.KEY**] function can be set to be **REL.PV** function. When user press the **REL** key, the display will show the differential value (ΔPV), until press **REL** key again.

- Please find the **REL** sticker to stick on the right side of square red LED.

PV Hold [Pv.HLD]: [**dn.KEY**] function can be set to be **Pv.HLD** function. When user press the **REL** key, the display will be hold until press the **REL** key again.

- Please find the **PV.H** sticker to stick on the right side of square red LED.

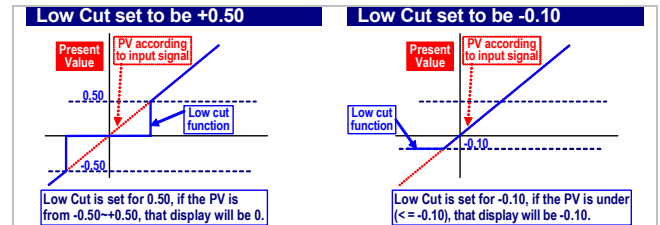


Reset for Max(Mini) Hold: when the [**dSPly**] in [**inPUT GroUP**] set to be **Max.H** or **Mini.H**, [**dn.KEY**] function can be set to be **M.rSt** to reset the display when it is holding in maxim or mini value.

Reset for relay energized latch: when the [**rY1.Md**] in [**rELAY GroUP**] set to be **Hi.HLD** or **Lo.HLD**, [**dn.KEY**] function can be set to be **PY.rSt** to reset the relay when it is energizing and latching.

Low cut:

If the setting value is positive, it means when the absolutely value of $PV \leq$ Setting value, the display will be 0. If the setting value is negative, it means when the PV under setting value ($PV \leq -$ Setting value), the display will be setting value.

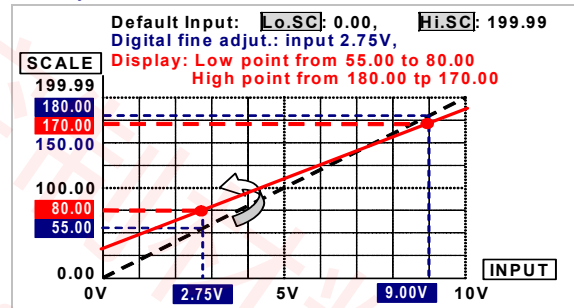


Digital fine adjustment:

Users can get Fine Adjustment for Zero & Span of PV by front key of the meter, and "Just Key In" the value which user want to show in the current input signals.

Especially, the [**Pv.Zro**] & [**Pv.SPn**] are not only in zero & span of PV, but also any lower point for [**Pv.Zro**] & higher point for [**Pv.SPn**]. The meter will be linearization for full scale.

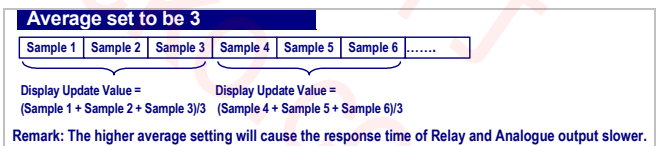
The adjustment can be clear in function [**Z.S.Clr**].



Reading Stable Function

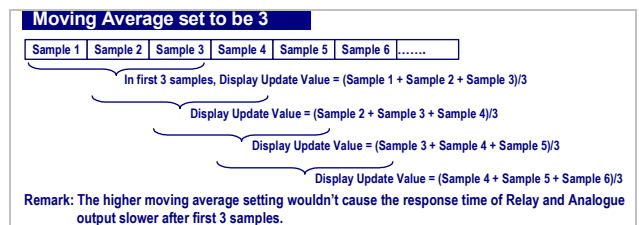
Average:

Basically, the sampling rate of meter is 15cycles/sec. If the function set to be 3 times, It means the meter will update of display will be 5 times/sec.



Moving average:

If the function to be set 3 times, the meter will update delay in first 3 samples, then it will update 15 times/sec continuously.



Digital Filter:

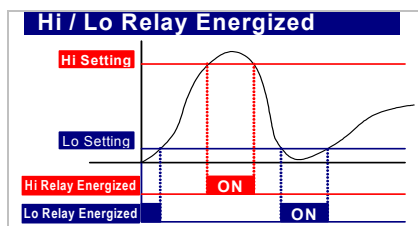
The digital filter can reduce the magnetic noise in field.

CS1-PM

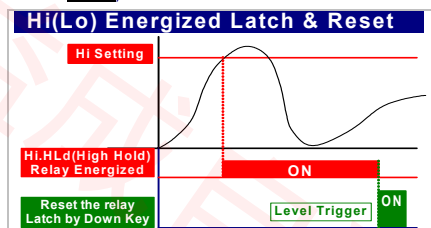
Control Functions(option)

Relay energized mode: Hi/Lo/Hi.HLd/Lo.HLd programmable

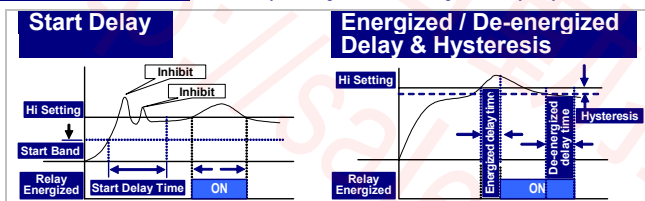
Hi: Relay will energize when PV > Set-Point
Lo: Relay will energize when PV < Set-Point



Hi.HLd (Lo.HLd): When the PV is Higher (or lower) than set-point, the relay will be energized and latch until manual reset by from key in [User Level] or press down key to reset(If the [dn.KEY] function set to be F.Y.rSt)



Energized Functions: Start delay / Energized & De-energized delay / Hysteresis



Analogue output(option)

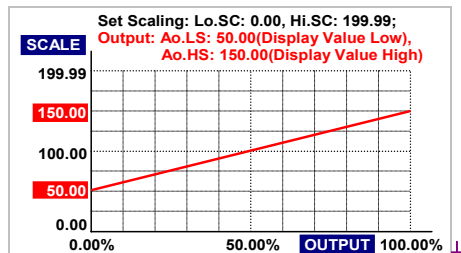
Please specify the output type either an 0~10V or 4(0)~20mA in ordering. The programmable output low and high scaling can be based on various display values. Reverse slope output is possible by reversing point positions.

Output range:

Voltage: 0~5V / 0~10V / 1~5V programmable
Current: 0~10mA / 0~20mA / 4~20mA programmable

Functions:

Ao.HS(output range high): setting the Display value High to versus output range High(as like as 20mA in 4~20)
Ao.LS(output range Low): setting the Display value Low to versus output range Low(as like as 4mA in 4~20)



The range between Ao.HS and Ao.LS should be over 20% of span at least; otherwise, it will be got less resolution of analogue output.

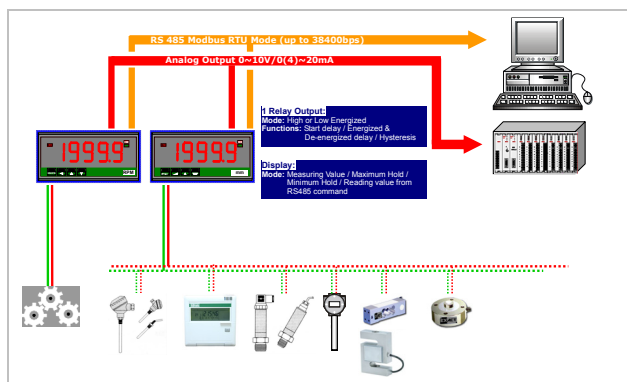
Fine zero & span adjustment:

Users can get Fine Adjustment of analogue output by front key of the meter. Please connect standard meter to the terminal of analogue output. To press the front key(up or down key) of meter to adjust and check the output.

- [Ao.Zro] : Fine Zero Adjustment for Analog Output; Settable range: -38011~27524;
- [Ao.Spn] : Fine Span Adjustment for Analog Output; Settable range: -38011~27524;

RS 485 communication(optional)

The RS485's protocol is Modbus RTU mode, and baud rate up to 38400bps. It's convenience to remote monitoring, display for reading.

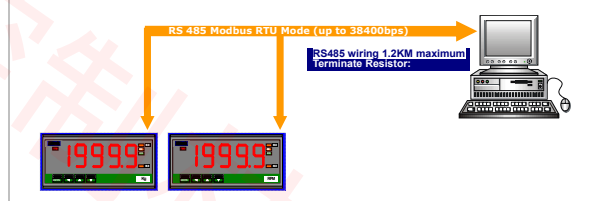


Remote Display: to show the value from RS485 command of master

The meter will show the value that received from RS485 command. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master so that can be **save cost and wiring** from PLC.

When the [dSPly] set to be RS485, it means, the PV screen will show the number from RS485 command & data. The data(number) will be same as PV that will compare with set-point, analogue output and ECI functions so that is to control analogue output, relay energized and so on.

CS1 APPLICATION FOR REMOTE DISPLAY FROM RS485 COMMAND



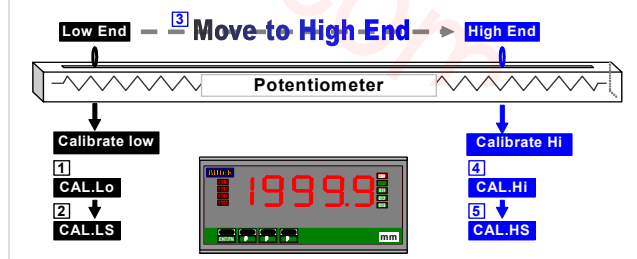
Calibration

System calibration by front key. The process of calibration, please refer to the operating manual

Field Calibration

In pass time, engineers have take a lot of time to adjust meters or converter to meet the structure of machinery zero and span for the Load Cell measuring. Now, our CS1-PM support easier process to do it called "Field Calibration".

Please according to the sequence to do the Field Cal. (1 → 2 → 3 → 4 → 5)



Optional Function

Customize function with quantities is welcome. Please contact with our sales for detail. The appendix code of optional function will be added behind the code of auxiliary power.

■ ERROR MASAGE

DESCRIPTION	DISPLAY	FLASH	REMARK
BEFORE POWER ON, PLEASE CHECK THE SPECIFICATION AND CONNECTION AGAIN.			
SELF-DIAGNOSIS AND ERROR CODE:			
ouFL : Display is positive-overflow (Signal is over display range)	ouFL		(Please check the input signal)
-ouFL : Display is negative-overflow (Signal is under display range)	-ouFL		(Please check the input signal)
ouFL : ADC is positive-overflow (Signal is higher than input 120%)	ouFL		(Please check the input signal)
-ouFL : ADC is negative-overflow (Signal is lower than input -120%)	-ouFL		(Please check the input signal)
EEP / FA IL : EEPROM occurs error	EEP	FA IL	(Please send back to manufactory for repaired)
A I.C.nG / Pu : Calibrating Input Signal do not process	A I.C.nG	Pu	(Please process Calibrating Input Signal)
A I.C. / FA IL : Calibrating Input Signal error	A I.C.	FA IL	(Please check Calibrating Input Signal)
AoC.nG / Pu : Calibrating Output Signal do not process	AoC.nG	Pu	(Please process Calibrating Output Signal)
A I.C. / FA IL : Calibrating Output Signal error	A I.C.	FA IL	(Please check Calibrating Output Signal)

■ FRONT PANEL:

Relay status Indication

Display screen

Operation Key

Max. Hold status

Comm. status

Front Key function status

Mini. Hold status

Engineer Unit

RL1

COM

MLH

PV.H PV.H(PV Hold) / **Tare** Tare / **DI** DI(Digital Input)

M.RS M.RS(Maximum or Minimum Reset) /

R.RS R.RS(Reset for Relay Latch)

Engineer Label: over 80 types.

■ **Operating Key:** 4 keys for Enter(Function) / Shift(Escape) / Up key / Down key

	Setting Status	Function Index
Up key	Increase number	Go back to previous function index
Down key	Decrease number	Go to next function index
Shift key	Shift the setting position	Go back to this function index, and abort the setting
Enter/Fun key	Setting Confirmed and save to EEPROM	From the function index to get into setting status

■ **Pass Word:** Settable range:0000~9999;

User has to key in the right pass word so that get into **【 Programming Level 】**. Otherwise, the meter will go back to measuring page. If user forgets the password, please contact with the service window.

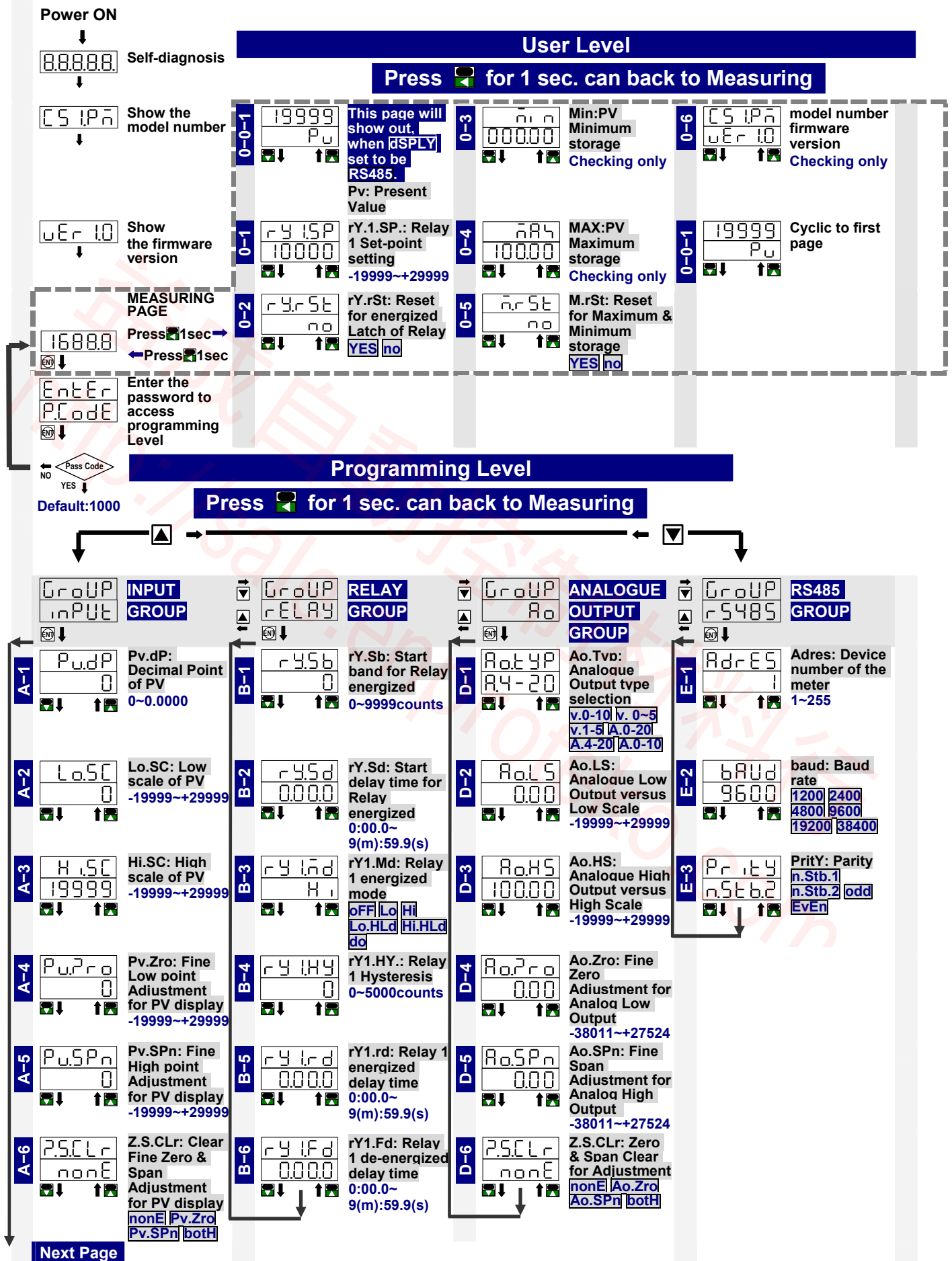
■ **Function Lock:** There are 4 levels programmable.

- **None:** no lock all.
- **User Level:** User Level lock. User can get into User Level for checking but setting.
- **Programming Level:** Programming level lock. User can get into programming level for checking but setting.
- **ALL:** All lock. User can get into all level for checking but setting.

■ **Front Key Function**

- The Key can be set to be rEL.Pv / Pv.HLd / M.rSt / rY.rSt programmable.

OPERATING DIAGRAM (The detail description of operation, please refer to operating manual.)



CS1-PM

A-7	dSPly Pu	dSPLY: Display Function Pv Mini.H MAx.H RS485
A-8	Lo.CUt 0	Lo.Cut: Low Cut Function -19999~+29999
A-9	AvG 5	AvG: Average update for PV 1(None)~99 times
A-10	M.AvG 1	M.AvG: Moving Average update for PV 1(None)~10 times
A-11	d.FiLT 0	d.FiLT: Digital filter 0(None)/1~99 times
A-12	dn.KEY nonE	dn.KEY: Down key function nonE rEL.Pv Pv.HLd M.rSt rY.rSt
A-13	P.CoDE 0000	P.CoDE: Pass Code for enter Programming Level 0000~9999
A-14	F.LoCk nonE	F.LoCk: Function Level Lock nonE USEr EnG ALL

- > Plesae refer to operating manual for detail description
- > The process of "Field Calibration", please refer to operating manual for detail description

CS1-PR PROCESS Indicator



DESCRIPTION

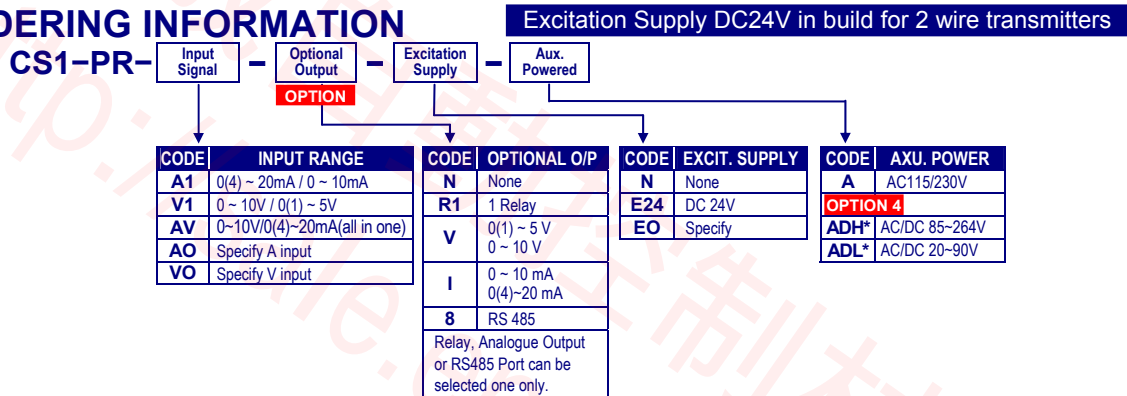
CS1-PR economic type Process Indicator has been designed with high accuracy measurement, display and communication of DC signal 0~10V and 4(0)~20mA. They are also available 1 option of 1 Relay outputs, 1 Analogue output or 1 RS485(Modbus RTU Mode) interface with versatile functions such as control, alarm, re-transmission or communication for a wide range of industrial applications.



FEATURE

- Measuring linear signal 0~10V and 0(4)~20mA in one indicator(input code: AV)
- Square Root function available by programming
- Option available 1 of 1 relay, 1 analogue output or RS485(Modbus RTU mode)
- 1 relay can be programmed individual to be a Hi / Lo / Hi Latch / Lo Latch energized with Start Delay / Hysteresis / Energized & De-energized Delay functions.
- Analogue output or RS 485 communication port in option
- CE Approved & RoHS

ORDERING INFORMATION



TECHNICAL SPECIFICATION

Input

Input Range	Input Impedance	Input Range	Input Impedance
Voltage 0 ~ 10 V	≥ 1M ohm	Current 4(0)~20 mA	250 ohm

➤ The Meter can be 0~10V and 0~20mA in one unit, according to connection #11 or #12

Calibration: Digital calibration by front key
A/D converter: 16 bits resolution
Accuracy: ±0.04% of FS ± 1C;
Sampling rate: 15 cycles/sec
Response Time: ≤100 msec.(when the AvG = "1") in standard
Input type: 0~10V / 0~5V / 1~5V / 0~10mA / 0~20mA / 4~20mA programmable for coding AV(option)

Display & Functions

LED: Numeric: 5 digits, 0.8"(20.0mm)H red high-brightness LED
 Relay output indication: 1 square red LED
 RS 485 communication: 1 square orange LED
 E.C.I. function indication: 1 square green LED
 Max/Mini Hold indication: 2 square orange LED
 Down key function indication(Reset for Max.(Mini.) Hold / PV Hold / Rel. PV): 1 square green LED

Display range: -19999~29999;
Scaling function: Lo.SC: Low Scale; Settable range: -19999~+29999
 Hi.SC: High Scale; Settable range: -19999~+29999
 Programmable from 0 / 0.0 / 0.00 / 0.000 / 0.0000

Decimal point: ovFL, when input is over 120% of input range Hi
 Under range indication: -ovFL, when input is under -20% of input range Lo
 Maximum and Minimum value storage during power on.

Max / Mini recording: PV / Max(Mini) Hold / RS 485 Programmable
Display functions: Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable
Front key functions: Settable range: -19999~29999 counts

Low cut:

Digital fine adjust: Pv.Zro: Settable range: -19999~+29999
 Pv.SPn: Settable range: -19999~+29999

Reading Stable Function

Average: Settable range: 1~99 times
Moving average: Settable range: 1(None)~10 times
Digital filter: Settable range: 0(None)/1~99 times

Control Functions(option)

Set-points: One set-point
Control relay: 1 Relay, FORM-C, 5A/230Vac, 10A/115V
Relay energized mode: Energized levels compare with set-points: Hi / Lo / Hi.HLd / Lo.HLd programmable
Energizing functions: Start delay / Energized & De-energized delay / Hysteresis Energized Latch
Start band(Minimum level for Energizing): 0~9999counts
Start delay time: 0:00.0~9(Minutes):59.9(Second)
Energized delay time: 0:00.0~9(Minutes):59.9(Second)
De-energized delay time: 0:00.0~9(Minutes):59.9(Second)
 Hysteresis: 0~5000 counts

Analogue output(option)

Accuracy: ≤±0.1% of F.S.;
Ripple: ≤±0.1% of F.S.
Response time: ≤100 msec. (10~90% of input)
Isolation: AC 2.0 KV between input and output
Output range: Specify either Voltage or Current output in ordering
Voltage: 0~5V / 0~10V / 1~5V programmable
Current: 0~10mA / 0~20mA / 4~20mA programmable
Voltage: 0~10V: ≥ 1000Ω;
Current: 4(0)~20mA: ≤ 6000 max
Ao.HS(output range high): Settable range: -19999~29999
Ao.LS(output range Low): Settable range: -19999~29999
Ao.Zro: Settable range: -38011~+27524
Ao.SPn: Settable range: -38011~+27524

RS 485 Communication(option)

Protocol: Modbus RTU mode
Baud rate: 1200/2400/4800/9600/19200/38400 programmable
Data bits: 8 bits
Parity: Even, odd or none (with 1 or 2 stop bit) programmable
Address: 1 ~ 255 programmable
Remote display: to show the value from RS485 command of master
Distance: 1200M
Terminate resistor: 150Ω at last unit.

Electrical Safety

Dielectric strength: AC 2.0 KV for 1 min, Between Power / Input / Output / Case
Insulation resistance: ≥100M ohm at 500Vdc, Between Power / Input / Output
Isolation: Between Power / Input / Relay, Analogue, RS485
EMC: EN 55011:2002; EN 61326:2003
Safety(LVD): EN 61010-1:2001

Environmental

Operating temp.: 0~60 °C
Operating humidity: 20~95 %RH, Non-condensing
Temp. coefficient: ≤100 PPM/°C
Storage temp.: -10~70 °C
Enclosure: Front panel: IEC 549 (IP54); Housing: IP20

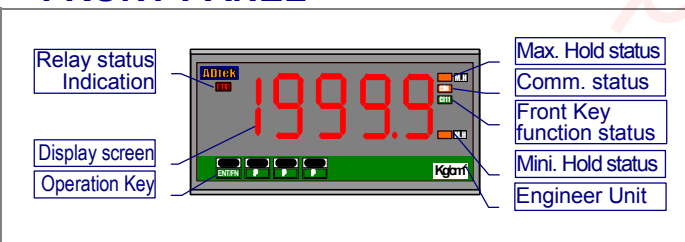
Mechanical

Dimensions: 96mm(W) x 48mm(H) x 72mm(D)
Panel cutout: 92mm(W) x 44mm(H)
Case materiel: ABS fire-resistance (UL 94V-0)
Mounting: Panel flush mounting
Terminal block: Plastic NYLON 66 (UL 94V-0)
 10A 300Vac, M2.6, 1.3~2.0mm²(16~12AWG)
Weight: 350g / 300g(Aux. Power Code: ADH or ADL)

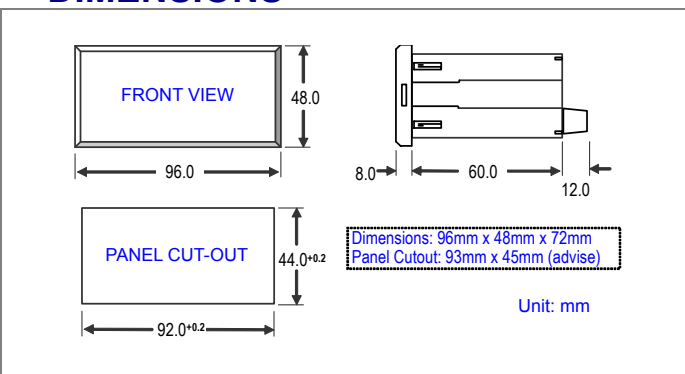
Power

Power supply: AC115/230V,50/60Hz;
 Optional: AC/DC 85~264V or 20~90V(RoHS version)
Excitation supply: DC24V/30mA maximum in standard
Power Consumption: 4.5VA maximum
Back up memory: By EEPROM

FRONT PANEL

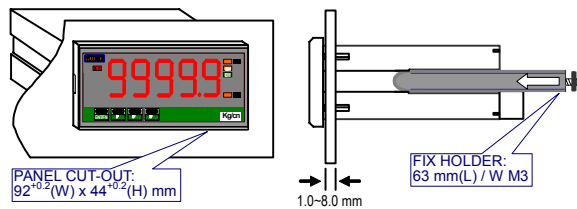


DIMENSIONS

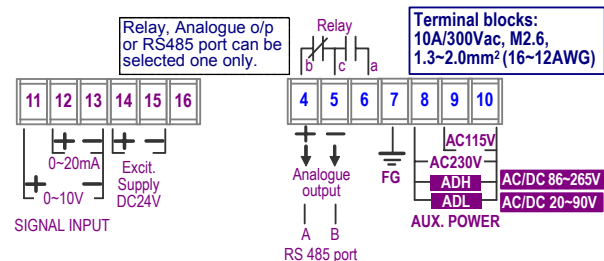


INSTALLATION

The meter should be installed in a location that does not exceed the maximum operating temperature and provides good air circulation.

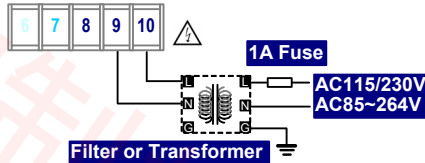


CONNECTION DIAGRAM

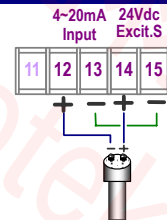


Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

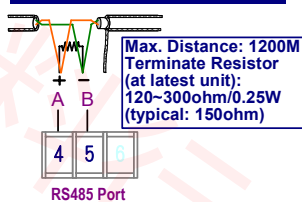
Power Supply



2 wire Transmitter connection



RS485 Communication Port



FUNCTION DESCRIPTION

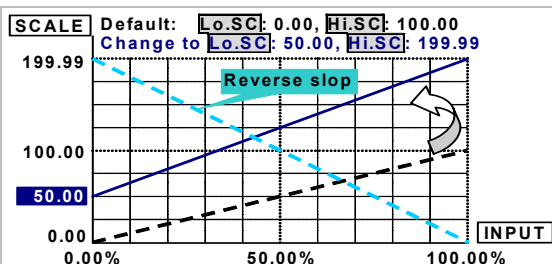
Input & Scaling Functions

Dual input types: (Option Code: AV)

Voltage and Current Type are in one unit available in option. If the customer specify the input coding for AV, the meter will be calibrated for 0~10V and 0~20mA in factory. The user can use in 0~10V or 4(0)~20mA by difference terminals connection(#11 & #13 for 0~10V or #12 & #13 for 4(0)~20mA) and programming in [Ai.TYP] of [inPUt GroUP] .

Scaling function:

Setting the **Lo.SC**(Low scale) and **Hi.SC**(High scale) in [inPUt GroUP] to relative input signal. **Reverse scaling will be done too.** Please refer to the figure as below,



*Too narrow scale may course display lower resolution.

Display & Functions

Max / Mini recording:

The meter will storage the maximum and minimum value in [User Level] during power on in order to review drifting of PV.

Display functions:

(Please refer to step A-07)

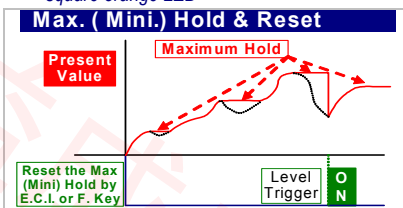
PV / Max(Mini) Hold / RS 485 programmable in [dSPly] function of [inPUt GroUP]

Present Value [PV]: The display will show the value that Relative to Input signal.

Maximum Hold [Max.H] / Minimum Hold [Mini.H]:

The meter will keep display in maximum(minimum) value during power on, until press front key to reset (If the down key function in [inPUt GroUP] has been set to [M.rSt].)



- Please find the  sticker that enclosure the package of the meter to stick on the right side of square orange LED





Remote Display by RS485 command [RS485]: The meter will show the value that received from RS485 sending. In past, The meter normally receive or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master can so that can be **save cost and wiring** from PLC.

Front key functions:

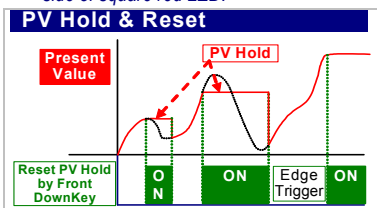
Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable in [dn.KEY] function of [inPUt GroUP]

Relative PV [REL.PV]: [dn.KEY] function can be set to be [REL.PV] function. When user press the  key, the display will show the differential value(ΔPV), until press  key again.

- Please find the  sticker to stick on the right side of square red LED.

PV Hold [Pv.HLd]: [dn.KEY] function can be set to be [Pv.HLd] function. When user press the  key, the display will be hold until press the  key again.

- Please find the  sticker to stick on the right side of square red LED.

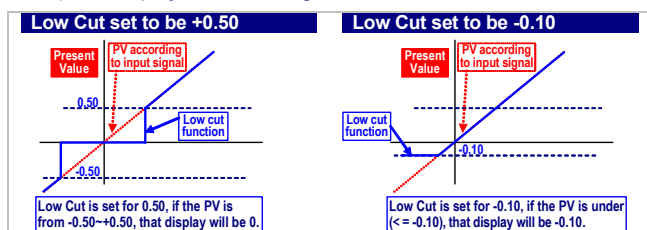


Reset for Max(Mini) Hold: when the [dSPly] in [inPUt GroUP] set to be [Max.H] or [Mini.H], [dn.KEY] function can be set to be [M.rSt] to reset the display when it is holding in maxim or mini value.

Reset for relay energized latch: when the [rY1.Md] in [rELAY GroUP] set to be [Hi.HLd] or [Lo.HLd], [dn.KEY] function can be set to be [Y.rSt] to reset the relay when it is energizing and latching.

Low cut:

If the setting value is positive, it means when the absolutely value of $PV \leq \text{Setting value}$, the display will be 0. If the setting value is negative, it means when the PV under setting value ($PV \leq -\text{Setting value}$), the display will be setting value.

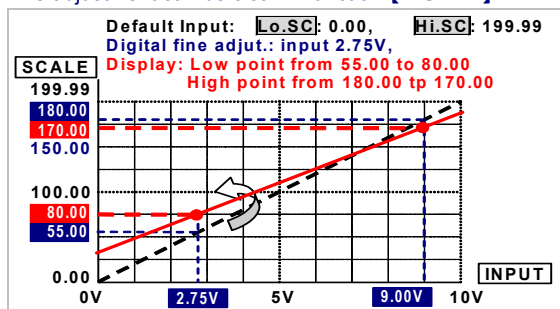


Digital fine adjustment:

Users can get Fine Adjustment for Zero & Span of PV by front key of the meter, and "Just Key In" the value which user want to show in the current input signals.

Especially, the [Pv.Zro] & [Pv.SPn] are not only in zero & span of PV, but also any lower point for [Pv.Zro] & higher point for [Pv.SPn]. The meter will be linearization for full scale.

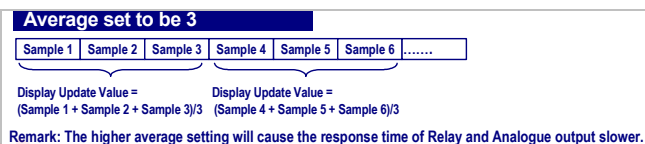
The adjustment can be clear in function [Z.S.Clr] .



Reading Stable Function

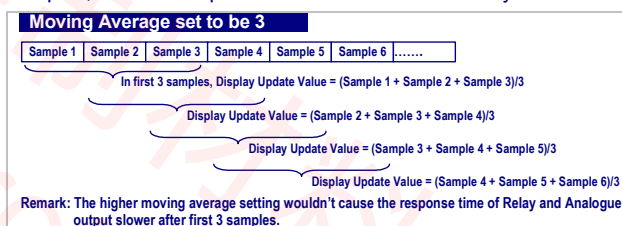
Average:

Basically, the sampling rate of meter is 15cycles/sec. If the function set to be 3 times, It means the meter will update of display will be 5 times/sec.



Moving average:

If the function to be set 3 times, the meter will update delay in first 3 samples, then it will update 15 times/sec continuously.



Digital filter:

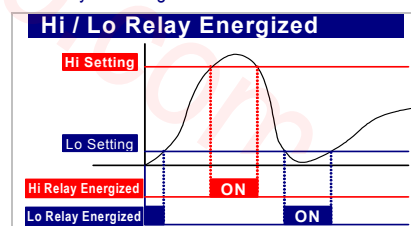
The digital filter can reduce the magnetic noise in field.

Control functions(option)

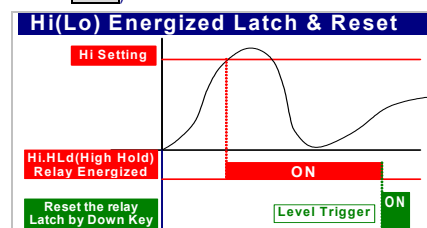
Relay energized mode: Hi / Lo / Hi.HLd / Lo.HLd programmable

Hi: Relay will energize when PV > Set-Point

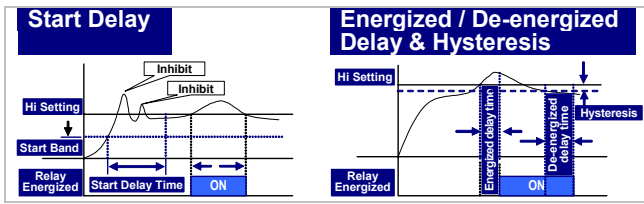
Lo: Relay will energize when PV < Set-Point



Hi.HLd (Lo.HLd): When the PV is Higher (or lower) than set-point, the relay will be energized and latch until manual reset by front key in [User Level] or press down key to reset (If the [dn.KEY] function set to be [Y.rSt])

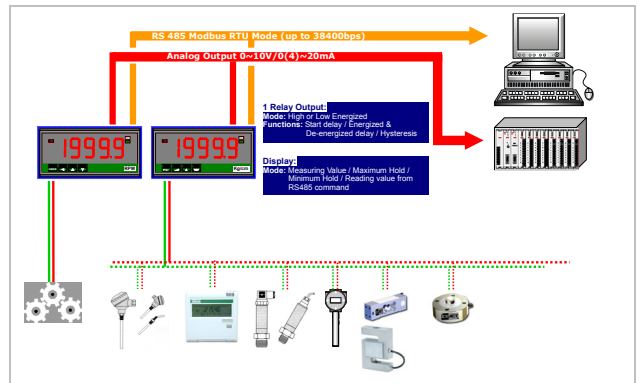


Energized functions: Start delay / Energized & De-energized delay / Hysteresis



RS 485 Communication(option)

The RS485's protocol is Modbus RTU mode, and baud rate up to 38400bps. It's convenience to remote monitoring, display for reading.

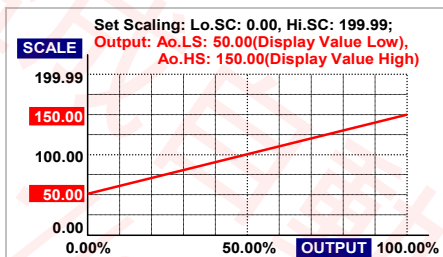


Analogue output(option)

Please specify the output type either an 0~10V or 4(0)~20mA in ordering. The programmable output low and high scaling can be based on various display values. Reverse slope output is possible by reversing point positions.

Output range: Voltage: 0~5V / 0~10V / 1~5V programmable
Current: 0~10mA / 0~20mA / 4~20mA programmable

Functions:
Ao.HS(output range high): setting the Display value High to versus output range High(as like as 20mA in 4~20)
Ao.LS(output range Low): setting the Display value Low to versus output range Low(as like as 4mA in 4~20)



The range between Ao.HS and Ao.LS should be over 20% of span at least; otherwise, it will be got less resolution of analogue output.

Fine zero & span adjustment:

Users can get Fine Adjustment of analogue output by front key of the meter. Please connect standard meter to the terminal of analogue output. To press the front key(up or down key) of meter to adjust and check the output of meter.

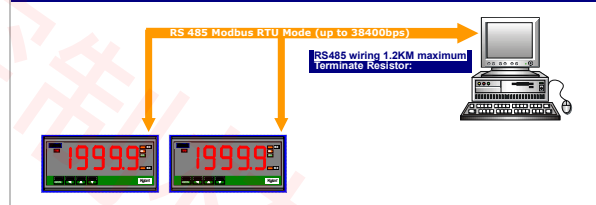
- [Ao.Zro] : Fine Zero Adjustment for Analog Output; Settable range: -38011~27524;
- [Ao.Spn] : Fine Span Adjustment for Analog Output; Settable range: -38011~27524;

Remote display:

The meter will show the value that received from RS485 command. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master so that can **save cost and wiring** from PLC.

When the [dSPLY] set to RS485, it means, the PV screen will show the number from RS485 command & data. The data(number) will be same as PV that will compare with set-point, analogue output and ECI functions so that is to control analogue output, relay energized and so on.

CS1 APPLICATION FOR REMOTE DISPLAY FROM RS485 COMMAND

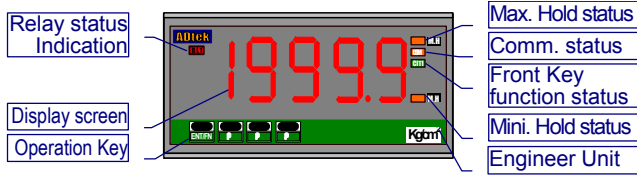


■ ERROR MASAGE

DESCRIPTION	DISPLAY	FLASH	REMARK
BEFORE POWER ON, PLEASE CHECK THE SPECIFICATION AND CONNECTION AGAIN.			
SELF-DIAGNOSIS AND ERROR CODE:			
ouFL : Display is positive-overflow (Signal is over display range)	ouFL		(Please check the input signal)
-ouFL : Display is negative-overflow (Signal is under display range)	-ouFL		(Please check the input signal)
ouFL : ADC is positive-overflow (Signal is higher than input 120%)	ouFL		(Please check the input signal)
-ouFL : ADC is negative-overflow (Signal is lower than input -120%)	-ouFL		(Please check the input signal)
E E P / F A I L : EEPROM occurs error	E E P	F A I L	(Please send back to manufactory for repaired)
A I C.n G / P u : Calibrating Input Signal do not process	A I C.n G	P u	(Please process Calibrating Input Signal)
A I C. / F A I L : Calibrating Input Signal error	A I C.	F A I L	(Please check Calibrating Input Signal)
A o C.n G / P u : Calibrating Output Signal do not process	A o C.n G	P u	(Please process Calibrating Output Signal)
A I C. / F A I L : Calibrating Output Signal error	A I C.	F A I L	(Please check Calibrating Output Signal)

CS1-PR

FRONT PANEL:



Numeric Screens

0.8"(20.0mm) red high-brightness LED for 5 digital present value.

I/O Status Indication

- **Relay Energized:** 1 square red LED **RL1** display when Relay 1 energized;
- **RS485 Communication:** 1 square orange LED **COM** will flash when the meter is receive or send data, and **COM** flash quickly means the data transient quicker.
- **Max/Mini Hold indication:** 2 square orange LEDs **M.H** displayed: When the display function has been selected in Maximum or Minimum Hold function.

Stickers:

Each meter has a sticker what are functions and engineer label enclosure.

- **Relay energized mode:** **HH Hi Lo LL DO**
- **Down key functions mode:**
PV.H PV.H(PV Hold) / **Tare** Tare / **DI** DI(Digital Input)
M.RS M.RS(Maximum or Minimum Reset) /
R.RS R.RS(Reset for Relay Latch)
- **Engineer Label:** over 80 types.

- **Operating Key:** 4 keys for **ENTER** Enter(Function) / **ESCAPE** Shift(Escape) / **UP** Up key / **DOWN** Down key

	Setting Status	Function Index
UP Up key	Increase number	Go back to previous function index
DOWN Down key	Decrease number	Go to next function index
ESCAPE Shift key	Shift the setting position	Go back to this function index, and abort the setting
ENTER Enter/Fun key	Setting Confirmed and save to EEPROM	From the function index to get into setting status

- **Pass Word:** Settable range:0000~9999;

User has to key in the right pass word so that get into **【 Programming Level 】**. Otherwise, the meter will go back to measuring page. If user forgets the password, please contact with the service window.

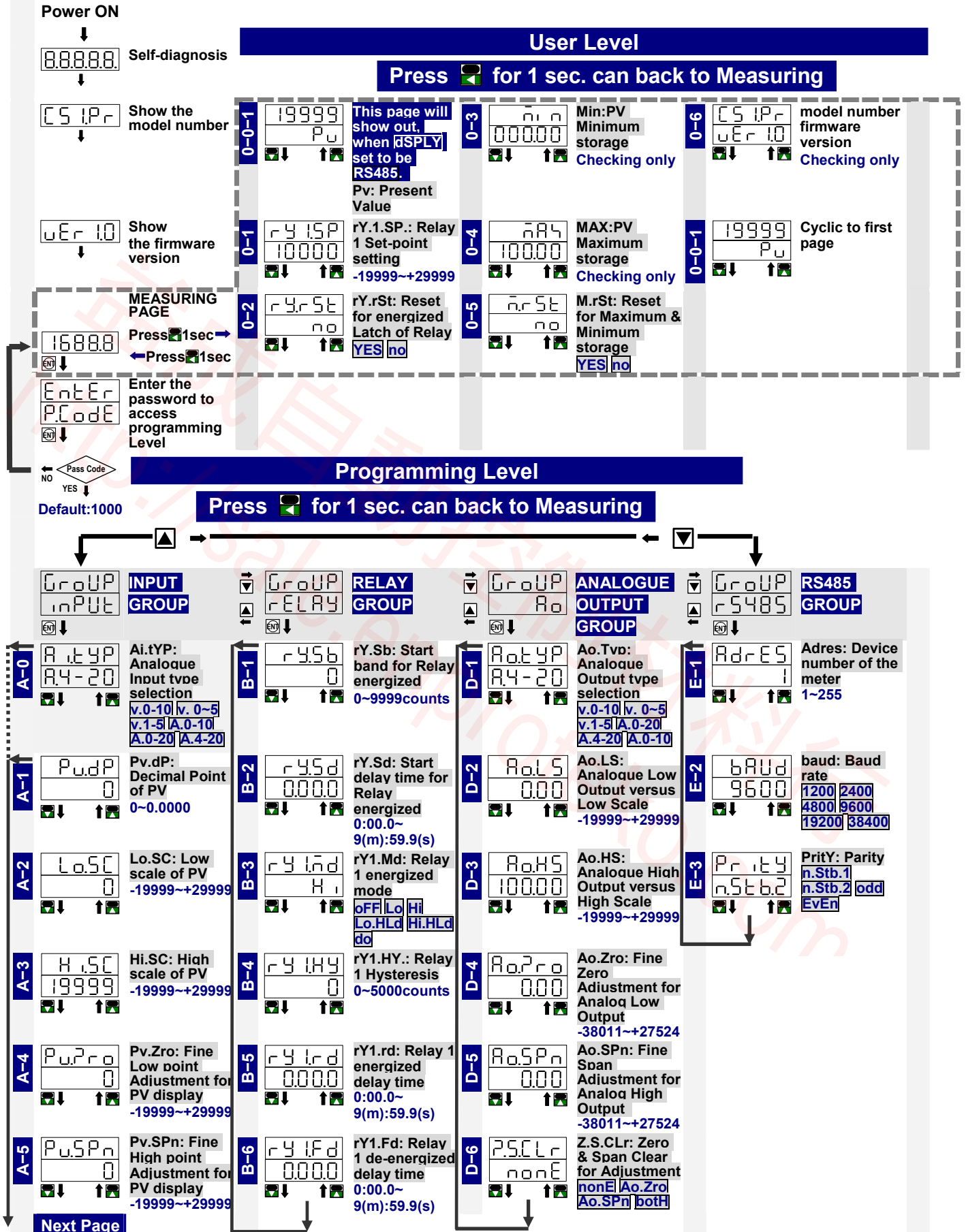
- **Function Lock:** There are 4 levels programmable.

- **None:** no lock all.
- **User Level:** User Level lock. User can get into User Level for checking but setting.
- **Programming Level:** Programming level lock. User can get into programming level for checking but setting.
- **ALL:** All lock. User can get into all level for checking but setting.

- **Front Key Function**

- The **DOWN** Key can be set to be **rEL.Pv** / **Pv.HLd** / **M.rSt** / **rY.rSt** programmable.

OPERATING DIAGRAM (The detail description of operation, please refer to operating manual.)



CS1-PR

A-6		Z.S.Clr: Clear Fine Zero & Span Adjustment for PV display nonE Pv.Zro Pv.SPn both
A-7		dSPLY: Display Function Pv Mini.H Max.H RS485
A-8		Lo.Cut: Low Cut Function -19999~+29999
A-9		AvG: Average update for PV 1(None)~99 times
A-10		M.AvG: Moving Average update for PV 1(None)~10 times
A-11		d.FiLt: Digital filter 0(None)/1~99 times
A-12		dn.KEY: Down key function nonE rEL.Pv Pv.HLd M.rSt rY.rSt
A-13		P.CodE: Pass Code for enter Programming Level 0000~9999
A-14		F.LoCk: Function Level Lock nonE USEr EnG ALL

▶ Plesae refer to operating manual for detail description

CS1-RL PULSE (FREQ.) Indicator

DESCRIPTION

CS1-F economic type Frequency Indicator has been designed with high accuracy measurement, display and communication of Frequency.

☑ The innovation feature is auto-range input from 0.01Hz~ 100KHz (option ~140KHz) and the display resolution will auto-change to show the highest according to input frequency.

They are also available 1 option of 1 Relay outputs, 1 Analogue output or 1 RS485 (Modbus RTU Mode) interface with versatile functions such as control, alarm, re-transmission or communication for a wide range of panels and testing applications.



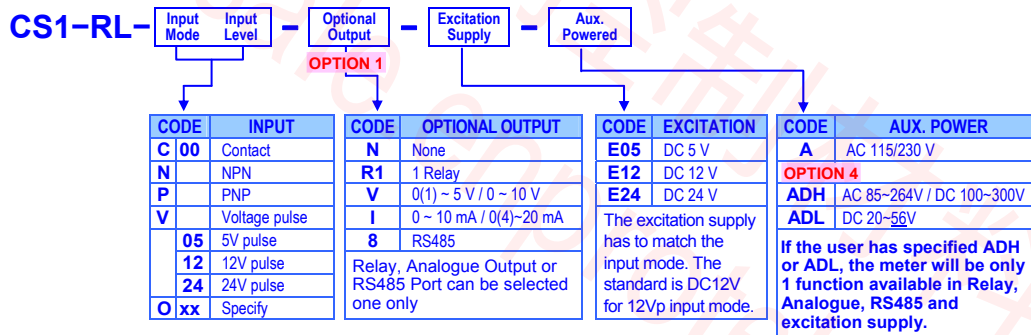
FEATURE

- Measuring Frequency AUTO RANGE 0.01~100KHz / ~140KHz (optional) / Voltage pulse or sine wave (specify).
- Accuracy: ± 0.005%; Display range: 0~99999; Decimal Point auto moving according to input frequency
- Option available 1 of 1 relay, 1 analogue output or RS485(Modbus RTU mode)
- 1 relay can be programmed individual to be a Hi / Lo / Hi Latch / Lo Latch energized with Start Delay / Hysteresis / Energized & De-energized Delay functions.
- Analogue output or RS 485 communication port in option
- CE Approved & RoHS

APPLICATIONS

- RPM, Linear line speed of Machinery Measuring, Alarm or Communication with PC/PLC
- Testing Equipments for Frequency Measuring, Alarm or Communication

ORDERING INFORMATION



TECHNICAL SPECIFICATION

Input		
Input Frequency	Input Mode	Input Level
0.01Hz ~ 50 Hz	Mech. Contact	
0.01Hz ~ 50 Hz 0.01Hz ~ 100KHz 0.01Hz ~ 140KHz (option)	NPN	High Level: 8~12V; Low Level: 0.0~4.0 V (with excitation supply 12Vdc)
	PNP	
	Voltage Pulse	High Level: over 2/3 of input level Low Level: under 1/3 of input level

Input Mode (NPN, PNP, Contact) & Level (5Vp, 12Vp, 24Vp) changeable by dip switch of rear terminal block.

- Calibration:** Doesn't need calibration
- Input range:** Auto range: 0.01Hz ~ 100KHz (~140KHz in option);
- Accuracy:** ≤± 0.005% of FS± 1C;
- Sampling time:** 15 cycles/sec(≥15Hz);
f cycles/sec(≤15Hz)
- Response time:** ≤100 m-sec(when the AvG = "1")
- Time out function:** Auto, Manual programmable, In manual mode, the period of time out can be set 0.0 sec~999.9sec

- Display & Functions**
- LED:**
 - Numeric: 5 digits, 0.8"(20.0mm)H red high-brightness LED
 - Relay output indication: 1 square red LED
 - RS 485 communication: 1 square orange LED
 - E.C.I. function indication: 1 square green LED
 - Max/Mini Hold indication: 2 square orange LED

- Display type:** Down key function indication (Reset for Max.(Mini.) Hold / PV Hold / Relative. PV): 1 square green LED
- Display range:** RPM / RPS / Linear line speed / Frequency programmable 0.0000~99999 with auto moving of decimal point
- Resolution of PV:** Decimal point will Auto-changed according to input
- Compensation factor:** Auto / Semi-Auto / Fix; 3 mode programmable Compensate error from 0.001~9.999
- Over range indication:** oofL, when input is over 20% of input range Hi
- Max / Mini recording:** Maxi & Mini Value of PV storage during power on.
- Display functions:** PV / Max(Mini) Hold / RS 485 programmable
- Front key functions:** Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable
- Low cut:** Settable range: -19999~29999 counts
- Digital fine adjust:** P.u.P.r.o.: Settable range: 0~+99999
P.u.S.P.n.: Settable range: 0~+99999

- Reading Stable Function**
- Average:** Settable range: 1~99 times
- Moving average:** Settable range: 1(None)~10 times
- Digital filter:** Settable range: 0(None)/1~99 times

CS1-RL

Control Functions(option)

- Set-points:** One set-point
- Control relay:** 1 Relay, FORM-C, 5A/230Vac, 10A/115V
- Relay energized mode:** Energized levels compare with set-points:
Hi / Lo / Hi.HLd / Lo.HLd programmable
- Energizing functions:** Start delay / Energized & De-energized delay / Hysteresis
Energized Latch
- Start band**(Minimum level for Energizing): 0~9999counts
- Start delay time:** 0:00.0~9(Minutes):59.9(Second)
- Energized delay time:** 0.00.0~9(Minutes):59.9(Second)
- De-energized delay time:** 0.00.0~9(Minutes):59.9(Second)
- Hysteresis:** 0~5000 counts

Analogue output(option)

- Accuracy:** $\leq \pm 0.1\%$ of F.S.;
- Ripple:** $\leq \pm 0.1\%$ of F.S.
- Response time:** ≤ 100 m-sec. (10~90% of input)
- Isolation:** AC 2.0 KV between input and output
- Output range:** Specify either Voltage or Current output in ordering
Voltage: 0~5V / 0~10V / 1~5V programmable
Current: 0~10mA / 0~20mA / 4~20mA programmable
- Output capability:** **Voltage: 0~10V: $\geq 1000\Omega$;**
Current: 4(0)~20mA: $\leq 600\Omega$ max
- Functions:** **R_oHS** (output range high): Settable range: 0~99999
R_oLS (output range Low): Settable range: 0~99999
R_oP_ro: Settable range: -38011~27524
R_oSp_n: Settable range: -38011~27524
- Digital fine adjust:**

RS 485 Communication(option)

- Protocol:** Modbus RTU mode
- Baud Rate:** 1200/2400/4800/9600/19200/38400 programmable
- Data Bits:** 8 bits
- Parity:** Even, odd or none (with 1 or 2 stop bit) programmable
- Address:** 1 ~ 255 programmable
- Remote Display:** to show the value from RS485 command of master
- Distance:** 1200M
- Terminate Resistor:** 150 Ω at last unit.

Electrical Safety

- Dielectric Strength:** AC 2.0 KV for 1 min, Between Power / Input / Output / Case
- Insulation Resistance:** $\geq 100M$ ohm at 500Vdc, Between Power / Input / Output
- Isolation:** Between Power / Input / Relay, Analogue, RS485
- EMC:** EN 55011:2002; EN 61326:2003
- Safety(LVD):** EN 61010-1:2001

Environmental

- Operating Temp.:** 0~60 °C
- Operating Humidity:** 20~95 %RH, Non-condensing
- Temp. Coefficient:** ≤ 100 PPM/°C
- Storage Temp.:** -10~70 °C
- Enclosure:** Front panel: IEC 529 (IP52); Housing: IP20

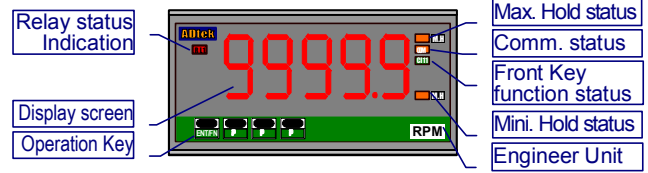
Mechanical

- Dimensions:** 96mm(W) x 48mm(H) x 72mm(D)
- Panel cutout:** 92mm(W) x 44mm(H)
- Case material:** ABS fire-resistance (UL 94V-0)
- Mounting:** Panel flush mounting
- Terminal block:** Plastic NYLON 66 (UL 94V-0)
10A 300Vac, M2.6, 1.3~2.0mm²(16~22AWG)
- Weight:** 350g

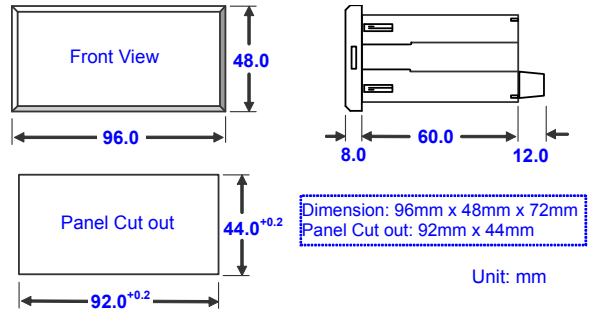
Power

- Power Supply:** AC115/230V, 50/60Hz;
Optional: AC 85~264V / DC 100~300V or DC 20~56V
- Excitation Supply:** DC12V, 24V/30mA maximum
- Power Consumption:** 3.0VA maximum
- Back Up Memory:** By EEPROM

FRONT PANEL

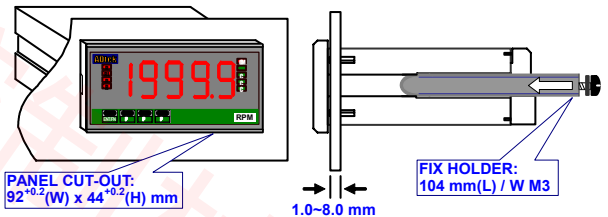


DIMENSIONS

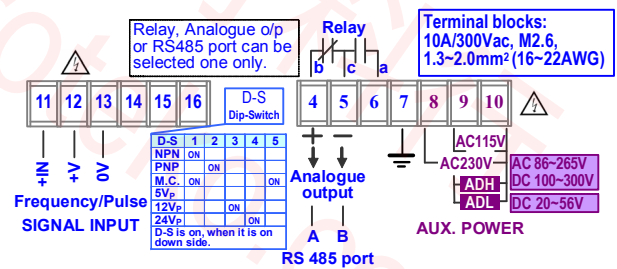


INSTALLATION

The meter should be installed in a location that does not exceed the maximum operating temperature and provides good air circulation.

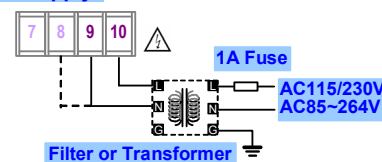


CONNECTION DIAGRAM

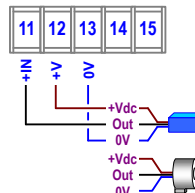


Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

Power Supply



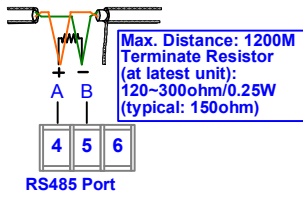
Sensor input connection



Please change the dip-switch on rear of meter to match the input mode and level.

D-S	1	2	3	4	5
NPN	ON				
PNP		ON			
Mech. Contact	ON			ON	
Voltage pulse 5V _p					
Voltage pulse 12V _p			ON		
Voltage pulse 24V _p				ON	
D-S is on when it is in down site					

RS485 Communication Port



FUNCTION DESCRIPTION

Input Functions

Input range: Auto-Range: 0.01Hz~100.00KHz(option 140KHz),
The meter has been designed very wide input auto-range from 0.01Hz~100.00KHz (Option: 0.01Hz~140.00KHz) that can cover almost any application for RPM, Linear Line Speed and Frequency. User doesn't need to specify the input range.

Auto range display: programmable between Auto Range / Semi-Auto Range / manual range, The description as below,

Auto range [AUto]: The decimal point will be auto changed according to the input frequency so that keep reading in the highest resolution.

Semi-Auto range [SEn]:
The decimal point will be auto changed according to the input frequency to keep reading in the highest resolution under setting position of decimal point, According to the setting of decimal point. So, it's possible to show "overflow", if the input frequency is over the display range.

Manual range [MANUL]: The decimal point will be fixed

Time out of input:

In the case of low frequency, the meter can not to identify that is low frequency and no input until the next pulse input. Sometimes, it takes a long period.

The meter builds in a time out function to cut out the reading to be "0". There are two modes [MANUL] / [AUto] can be programmed.

Manual [MANUL]: There is a period named [to] can be set from 0.0 sec ~ 999.9 sec. The reading will display "0", when the next pulse doesn't input during the setting time.

Auto range [AUto]: The reading will display "0", when the next pulse doesn't input during the time that gave by formula of meter's firmware.

Period of time out: Settable: 0.0 sec~999.9sec
If the time out mode [to] set to be [MANUL], it's will be show out.

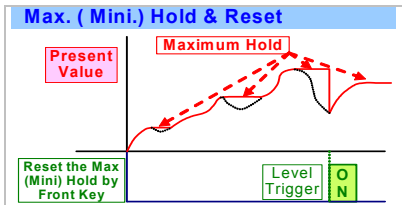
Display & Functions

Max / Mini recording: The meter wills storage the maximum and minimum value in [user level] during power on in order to review drifting of PV. PV / Max(Mini) Hold / RS 485 programmable in [d5PLy] function of [inPUt GroUP]

Present Value [Pu]: The display will show the value that Relative to Input signal.

Maximum Hold [MAHd] / Minimum Hold [MINHd]:

The meter will keep display in maximum (minimum) value during power on, until press front key to reset (If the down key function in [inPUt GroUP] has been set to [rSt]).
▶ Please find the [ML] sticker that enclosure the package of the meter to stick on the right side of square orange LED



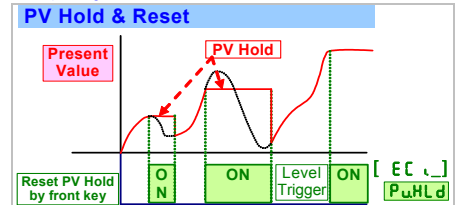
Remote Display by RS485 command [S485]:

The meter will show the value that received from RS485 sending. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master can so that can be save cost and wiring from PLC.

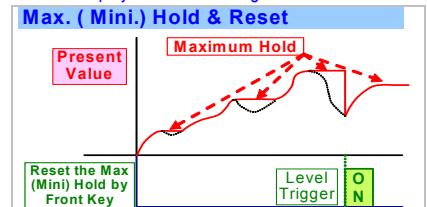
Front key functions:

Relative PV [RELPU]: The [dndEY] function can be set to be [RELPU] function. When user presses the [key], the display will show the differential value (ΔPV), until press [key] again.
▶ Please find the [R.PV] sticker to stick on the right side of square green LED.

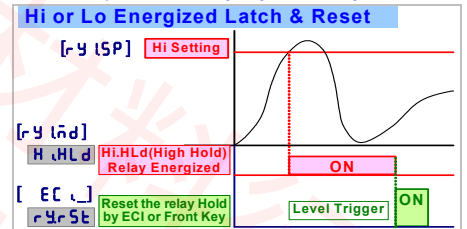
PV Hold [PwHLd]: The [dndEY] function can be set to be [PwHLd] function. When user presses the [key], the display will be hold until press the [key] again.
▶ Please find the [P.H] sticker to stick on the right side of square green LED.



Reset for Max(Mini) Hold [rSt]:
when the [d5PLy] in [inPUt GroUP] set to be [MANHd] or [MINHd], [dndEY] function can be set to be [rSt] to reset the display when it is holding in maxi or mini value.

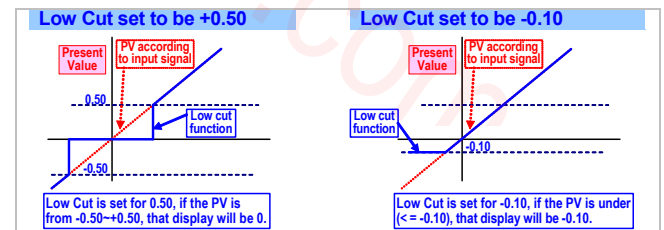


Reset for relay energized latch [rSt]:
when the [rY lnd] in [RELAY GroUP] set to be [MANHd] or [MINHd], [dndEY] function can be set to be [rSt] to reset the relay when it is energizing and latching.



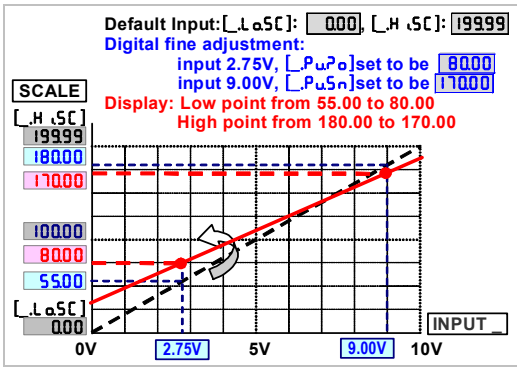
Low cut:

If the setting value is positive, it means when the absolutely value of PV ≤ Setting value, the display will be 0. If the setting value is negative, it means when the PV under setting value (PV ≤ -Setting value), the display will be setting value.



Digital fine adjustment:

Users can get Fine Adjustment for Zero & Span of PV by front key of the meter, and "Just Key In" the value which user want to show in the current input signals. Especially, the [PwPn] & [PwSPn] are not only in zero & span of PV, but also any lower point for [PwPn] & higher point for [PwSPn]. The meter will be linearization for full scale. The adjustment can be clear in function [P5CLr]



Compensation factor: Settable range: 0.001~9.999
 The factor is compensation of display. There are some applications that are indirect detection of sensor as like as Gear, wheel. User can set the factor to compensate the display.

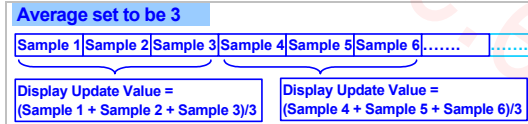
User installs the proximity switch to detect the RPM of left wheel, and want to show the right wheel. It's easy to set the factor to do it.
 Frequency: 50Hz; Left wheel: diameter: 1M; Right wheel: diameter: 0.35M



Set:
 PV type [P.tYP] to be RPM [r.Pn]
 Pulse/Rotation [PPr] to be 1 Pulse/Rotation
 The meter will show 1480RPM of left wheel.
 Set: [FRCr] to be 2.857(1M/0.35M), then the meter will show 4228.5RPM for right wheel

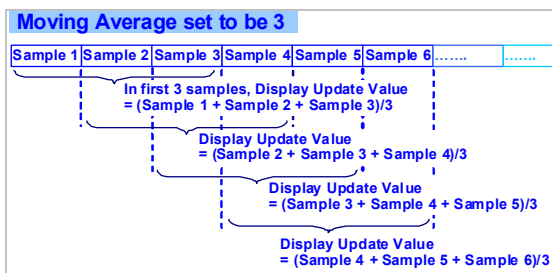
Reading Stable Function

Average:
 Basically, the sampling rate of meter is 15cycles/sec. If the function set to be 3 times, It means the meter will update of display will be 5 times/sec.



Remark: The higher average setting will cause the response time of Relay and Analogue output slower.

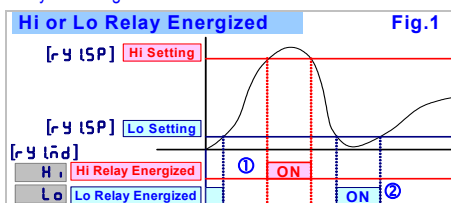
Moving average:
 If the function to be set 3 times, the meter will update delay in first 3 samples, then it will update 15 times/sec continuously.



Digital filter: The digital filter can reduce the magnetic noise in field.

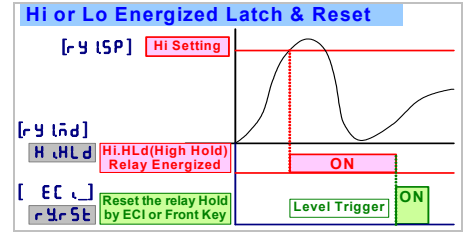
Control functions(option)

Relay energized mode: Hi / Lo / Hi.HLd / Lo.HLd programmable
 Hi [H] (Fig.1-①): Relay will energize when PV > Set-Point
 Lo [Lo] (Fig.1-②): Relay will energize when PV < Set-Point

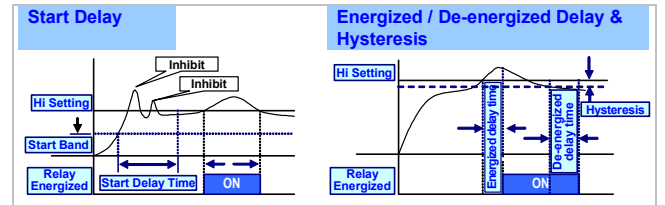


Hi.HLd [H.HLd] (Lo.HLd [Lo.HLd]):

When the PV is Higher (or lower) than set-point, the relay will be energized and latch until manual reset by from key in [user level] or press down key to reset(if the [dndEY] function set to be [r.y SE])



Energized functions: Start delay / Energized & De-energized delay / Hysteresis



Analogue output(option)

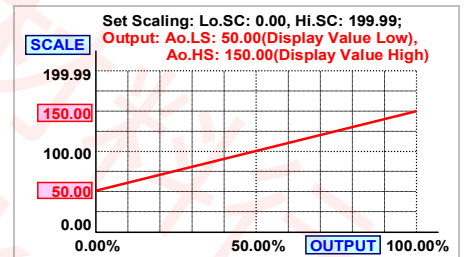
Please specify the output type either an 0~10V or 4(0)~20mA in ordering. The programmable output low and high scaling can be based on various display values. Reverse slope output is possible by reversing point positions.

Output range: Voltage: 0~5V / 0~10V / 1~5V programmable
 Current: 0~10mA / 0~20mA / 4~20mA programmable

Functions:

Output range high [RoHS]: Setting the Display value High to versus output range High(as like as 20mA in 4~20)

Output range low [RALS]: Setting the Display value Low to versus output range Low(as like as 4mA in 4~20)



The range between [RoHS] and [RALS] should be over 20% of span at least; otherwise, it will be got less resolution of analogue output.

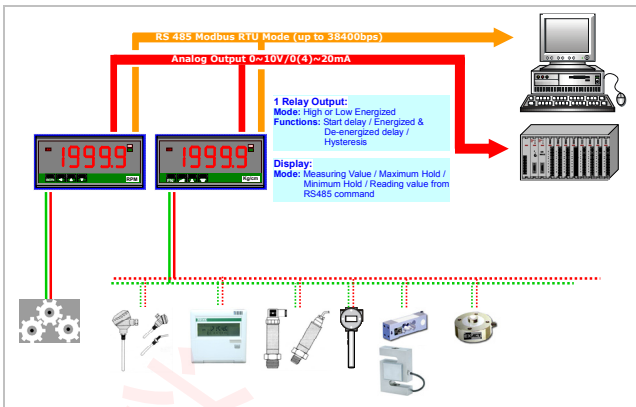
Fine zero & span adjustment:

Users can get Fine Adjustment of analogue output by front key of the meter. Please connect standard meter to the terminal of analogue output. To press the front key(up or down key) of meter to adjust and check the output.

Zero adjust [RoZro]: Fine Zero Adjustment for Analog Output; Settable range: -38011~27524;
Span adjust [RoSPn]: Fine Span Adjustment for Analog Output; Settable range: -38011~27524;

RS 485 Communication(option)

The RS485's protocol is Modbus RTU mode, and baud rate up to 38400 bps. It's convenience to remote monitoring, display for reading.

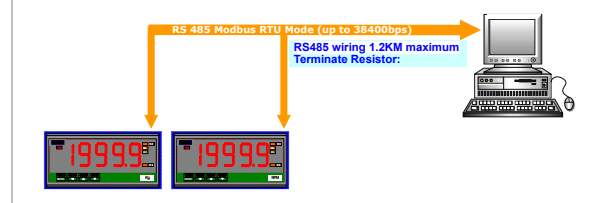


Remote display:

The meter will show the value that received from RS485 command. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master so that can be **save cost and wiring** from PLC.

When the [d5PL9] set to be RS485, it means, the PV screen will show the number from RS485 command & data. The data (number) will be same as PV that will compare with set-point, analogue output and ECI functions so that is to control analogue output, relay energized and so on.

CS1 APPLICATION FOR REMOTE DISPLAY FROM RS485 COMMAND



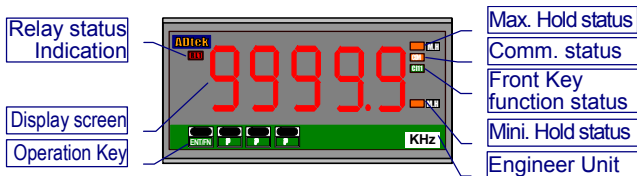
■ ERROR MESSAGE

BEFORE POWER ON, PLEASE CHECK THE SPECIFICATION AND CONNECTION AGAIN.

SELF-DIAGNOSIS AND ERROR CODE:

DISPLAY	DESCRIPTION	REMARK
ouFL	Display is positive-overflow (Signal is over display range)	(Please check the input signal)
-ouFL	Display is negative-overflow (Signal is under display range)	(Please check the input signal)
ouFL	ADC is positive-overflow (Signal is higher than input 120%)	(Please check the input signal)
-ouFL	ADC is negative-overflow (Signal is lower than input -120%)	(Please check the input signal)
EEP ↔ FAiL	EEPROM occurs error	(Please send back to manufactory for repaired)
AiLNG ↔ Pu	Calibrating Input Signal do not process	(Please process Calibrating Input Signal)
AiL ↔ FAiL	Calibrating Input Signal error	(Please check Calibrating Input Signal)
RoLNG ↔ Pu	Calibrating Output Signal do not process	(Please process Calibrating Output Signal)
RoL ↔ FAiL	Calibrating Output Signal error	(Please check Calibrating Output Signal)

■ FRONT PANEL:



■ Numeric Screens

0.8"(20.0mm) red high-brightness LED for 5 digital present values.

■ I/O Status Indication

- **Relay Energized:** 1 square red LED
RL1 display when Relay 1 energized;
- **RS485 Communication:** 1 square orange LED
COM will flash when the meter is receive or send data, and **COM** flash quickly means the data transient quicker.
- **Max/Mini Hold indication:** 2 square orange LEDs
MH displayed: When the display function has been selected in Maximum or Minimum Hold function.

■ Stickers:

Each meter has a sticker what are functions and engineer label enclosure.

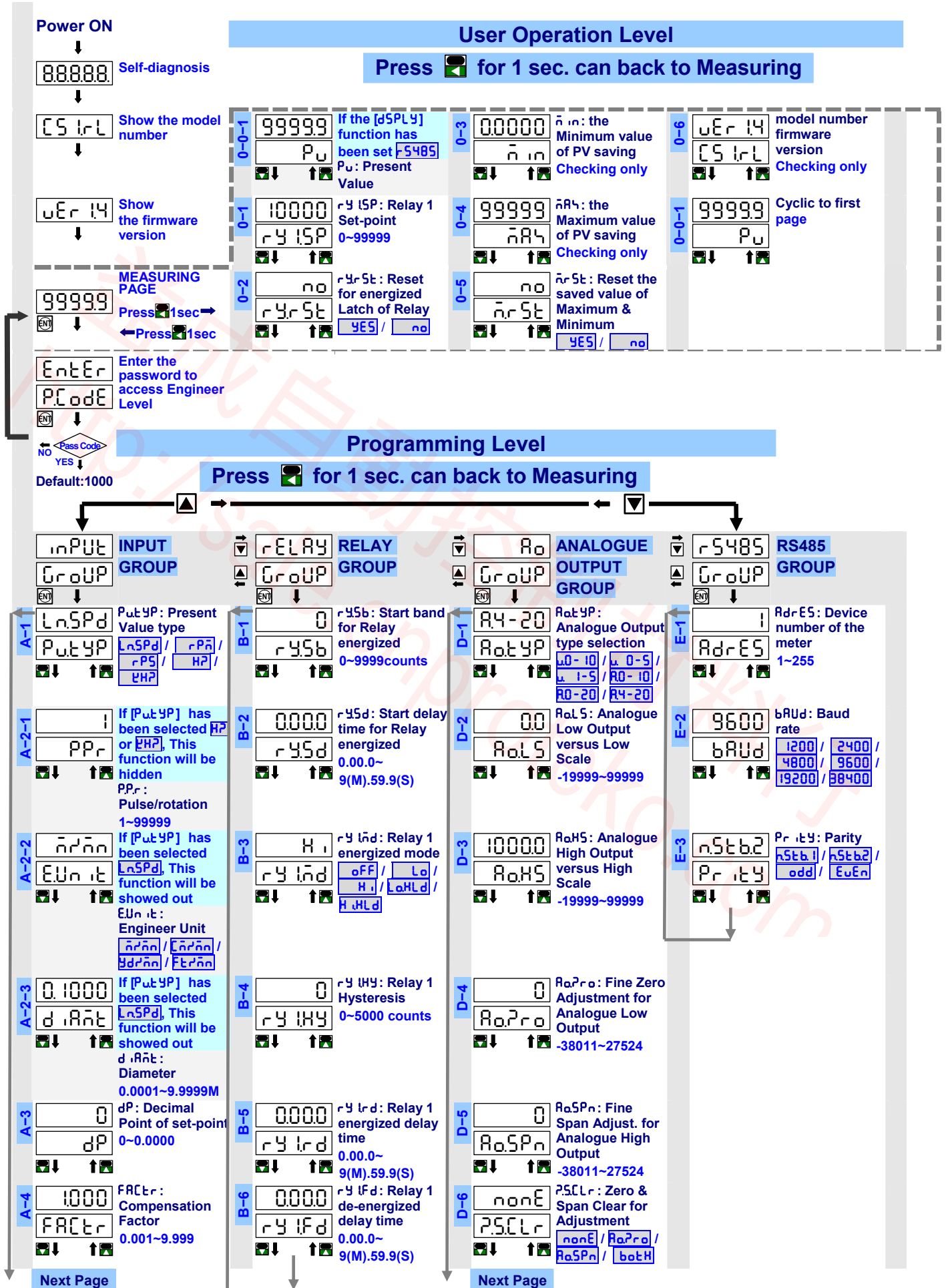
- **Relay energized mode:** **HH** **Hi** **Lo** **LL** **DO**
- **Down key functions mode:**
PV.H PV.H(PV Hold) / **Tare** Tare / **DI** DI(Digital Input)
M.RS M.RS(Maximum or Minimum Reset) /
R.RS R.RS(Reset for Relay Latch)
- **Engineer Label:** over 80 types.

- **Operating Key:** 4 keys for **ENTER** Enter(Function) / **SHIFT** Shift(Escape) / **UP** Up key / **DOWN** Down key

	Setting Status	Function Index
UP Up key	Increase number	Go back to previous function index
DOWN Down key	Decrease number	Go to next function index
SHIFT Shift key	Shift the setting position	Go back to this function index, and abort the setting
ENTER Enter/Fun key	Setting Confirmed and save to EEPROM	From the function index to get into setting status

- **Pass Word:** Settable range:0000~9999;
User has to key in the right pass word so that get into **[Programming level]**. Otherwise, the meter will go back to measuring page. If user forgets the password, please contact with the service window.
- **Function Lock:** There are 4 levels programmable.
- **None** **nonE**: no lock all.
- **User Level** **USER**: User Level lock. User can get into User Level for checking but setting.
- **Programming Level** **ENG**: Programming level lock.
User can get into programming level for checking but setting.
- **ALL** **RLl**: All lock. User can get into all level for checking but setting.
- **Front Key Function:**
The **ENTER** Key can be set to be **ELPu** / **PuHd** / **RS** / **RS** programmable.

OPERATING DIAGRAM (The detail description of operation, Please refer to operating manual)



A-5	0 PuSPn	PuSPn: Fine High point Adjustment for PV display 0~+99999
A-6	no SCLr	SCLr: Clear Fine Span Adjustment for PV display YES / no
A-7	Pu dSPLY	dSPLY: Display Function Pu / rAnHd / rAnUL / F5485
A-8	0 LoCUT	LoCUT: Low Cut Function 0~99999
A-9	AUTO tOnD	tOnD: Input time out Mode AUTO / rAnUL
A-10	00 tO	If [tOnD] has been selected rAnUL, This function will be showed out tO: How long will be time out 0.0~999.9sec
A-11	AUTO rAnGE	rAnGE: Reading Range with decimal point switching. AUTO / SEr / rAnUL
A-12	S AVG	AVG: Average update for PV 1(None)~99 times
A-13	1 rAVG	rAVG: Moving Average update for PV 1(None)~10 times
A-14	0 dFILT	dFILT: Digital filter 0(None)/1~99 times
A-15	nonE dnKEY	dnKEY: Down key function nonE / rELPu / PuHLd / rSt / rSt
A-16	0 PCodE	PCodE: Pass Code for enter Engineer Level 0000~9999
A-17	nonE FLocY	FLocY: Function Level Lock nonE / USEr / EnG / ALL

D-7	11000 RoLnt	RoLnt: Analog Output High Limit 0.00~110.00%
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▶ Please refer to operating manual for detail description.

CS1-RS RESISTANCE Indicator

ADtek

DESCRIPTION

CS1-RS economic type Resistance Indicator has been designed with high accuracy measurement, display and communication of Ohm(2 wire) as like as Coil of motor or transformer.

☑ The meter supports Field Calibration function. It can be calibrated with sensor(Resistance) to meet machinery structure.

They are also available 1 option of 1 Relay outputs, 1 Analogue output or 1 RS485(Modbus RTU Mode) interface with versatile functions such as control, alarm, re-transmission or communication for a wide range of machinery and testing equipments applications.



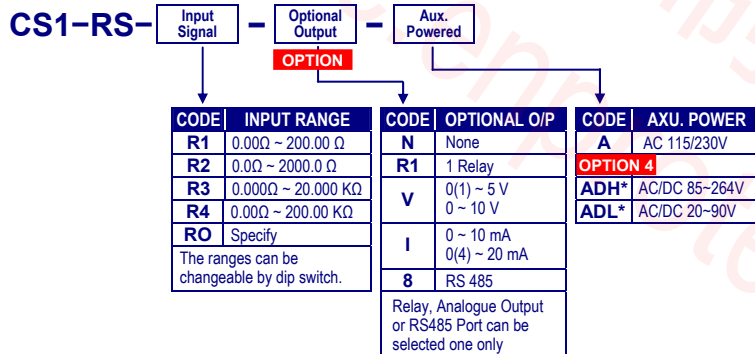
FEATURE

- Measuring resistance 0~200Ω/2000Ω/20.0KΩ/200.0KΩ (2 wire) changeable by dip switch on rear of meter
- Field calibration with resistance to meet the system requirement
- Option available 1 of 1 relay, 1 analogue output or RS485(Modbus RTU mode)
- 1 relay can be programmed individual to be a Hi / Lo / Hi Latch / Lo Latch energized with Start Delay / Hysteresis / Energized & De-energized Delay functions.
- Analogue output or RS 485 communication port in option
- CE Approved & RoHS

APPLICATIONS

- Testing Equipments for resistance (as like as coil of motor, transformer, relay ..) Measuring, Alarm or Communication with PC/PLC.
- Components of resistance online testing station.

ORDERING INFORMATION



TECHNICAL SPECIFICATION

Input		Input Impedance ≥1M ohm
Measuring Range		
0.0 Ω ~ 200.00 Ω (2 wire)		
0.0 Ω ~ 2000.0 Ω (2 wire)		
0.00 Ω ~ 20.000 KΩ (2 wire)		
0.00 Ω ~ 200.00 KΩ (2 wire)		

The ranges can be changeable by dip switch on rear of meter.

Calibration: Digital calibration by front key
Field calibration: Calibration with sensor input high & low to meet system structure. And field calibration reset is not change the accuracy & linear of factory calibration.

A/D converter: 16 bits resolution
Accuracy: ≤± 0.04% of FS ± 1C;
Sampling rate: 15 cycles/sec
Response time: ≤100 msec.(when the AvG = "1") in standard

Display & Functions

LED: Numeric: 5 digits, 0.8"(20.0mm)H red high-brightness LED
 Relay output indication: 1 square red LED
 RS 485 communication: 1 square orange LED
 E.C.I. function indication: 1 square green LED

Max/Mini Hold indication: 2 square orange LED
Down key function indication(Reset for Max.(Mini.) Hold / PV Hold / Rel. PV): 1 square green LED
 -19999~29999;

Lo.SC: Low Scale; Settable range: -19999~+29999
Hi.SC: High Scale; Settable range: -19999~+29999
 Programmable from 0 / 0.0 / 0.00 / 0.000 / 0.0000
ovFL, when input is over 120% of input range Hi
-ovFL, when input is under -20% of input range Lo
Maximum and Minimum value storage during power on.
PV / Max(Mini) Hold / RS 485 Programmable
Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable
 Settable range: -19999~29999 counts
Pv.Zro: Settable range: -19999~+29999
Pv.SPn: Settable range: -19999~+29999

Display range:
Scaling function:

Decimal point:
Over range indication:
Under range indication:
Max / Mini recording:
Display functions:
Front key functions:

Low cut:
Digital fine adjust:

Reading Stable Function

Average: Settable range: 1~99 times
Moving average: Settable range: 1(None) ~10 times
Digital filter: Settable range: 0(None)/1~99 times

Control Functions(option)

Set-points: One set-point
Control relay: 1 Relay, FORM-C, 5A/230Vac, 10A/115V
Relay energized mode: Energized levels compare with set-points:
Hi / Lo / Hi.HLd / Lo.HLd programmable
Energizing functions: Start delay / Energized & De-energized delay / Hysteresis Energized Latch
Start band(Minimum level for Energizing): 0~9999counts
Start delay time: 0:00.0~9(Minutes):59.9(Second)
Energized delay time: 0:00.0~9(Minutes):59.9(Second)
De-energized delay time: 0:00.0~9(Minutes):59.9(Second)
Hysteresis: 0~5000 counts

Analogue output(option)

Accuracy: $\leq \pm 0.1\%$ of F.S.;
Ripple: $\leq \pm 0.1\%$ of F.S.
Response time: ≤ 100 msec. (10~90% of input)
Isolation: AC 2.0 KV between input and output
Output range: Specify either Voltage or Current output in ordering
Voltage: 0~5V / 0~10V / 1~5V programmable
Current: 0~10mA / 0~20mA / 4~20mA programmable
Output capability: **Voltage: 0~10V: $\geq 1000\Omega$;**
Current: 4(0)~20mA: $\leq 600\Omega$ max
Functions: **Ao.HS**(output range high): Settable range: -19999~29999
Ao.LS(output range Low): Settable range: -19999~29999
Ao.Zro: Settable range: -38011~+27524
Ao.SPn: Settable range: -38011~+27524

RS 485 Communication(option)

Protocol: Modbus RTU mode
Baud rate: 1200/2400/4800/9600/19200/38400 programmable
Data bits: 8 bits
Parity: Even, odd or none (with 1 or 2 stop bit) programmable
Address: 1 ~ 255 programmable
Remote display: to show the value from RS485 command of master
Distance: 1200M
Terminate resistor: 150 Ω at last unit.

Electrical Safety

Dielectric strength: AC 2.0 KV for 1 min, Between Power / Input / Output / Case
Insulation resistance: $\geq 100M$ ohm at 500Vdc, Between Power / Input / Output
Isolation: Between Power / Input / Relay, Analogue, RS485
EMC: EN 55011:2002; EN 61326:2003
Safety(LVD): EN 61010-1:2001

Environmental

Operating temp.: 0~60 °C
Operating humidity: 20~95 %RH, Non-condensing
Temp. coefficient: ≤ 100 PPM/°C
Storage temp.: -10~70 °C
Enclosure: Front panel: IEC 549 (IP54); Housing: IP20

Mechanical

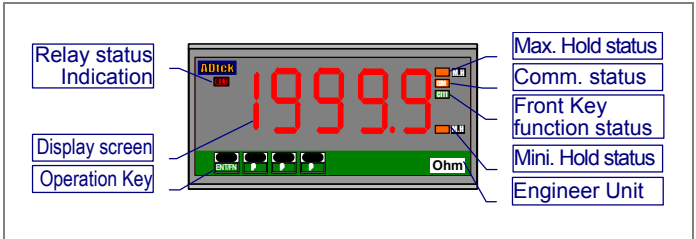
Dimensions: 96mm(W) x 48mm(H) x 72mm(D)
Panel cutout: 92mm(W) x 44mm(H)
Case material: ABS fire-resistance (UL 94V-0)
Mounting: Panel flush mounting
Terminal block: Plastic NYLON 66 (UL 94V-0)
 10A 300Vac, M2.6, 1.3~2.0mm²(16~12AWG)

Weight: 350g / 300g(Aux. Power Code: ADH or ADL)

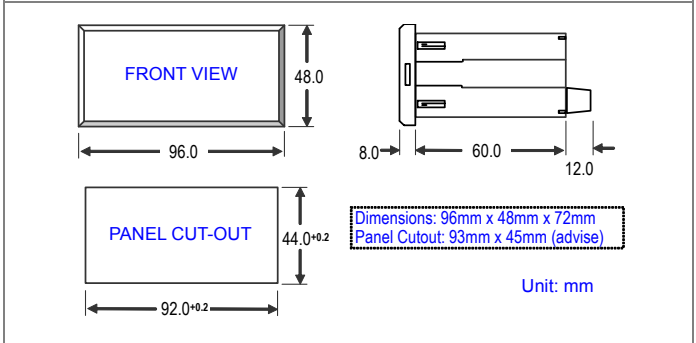
Power

Power supply: AC115/230V,50/60Hz;
Optional: AC/DC 85~264V or 20~90V(RoHS version)
Power consumption: 4.5VA maximum
Back up memory: By EEPROM

FRONT PANEL

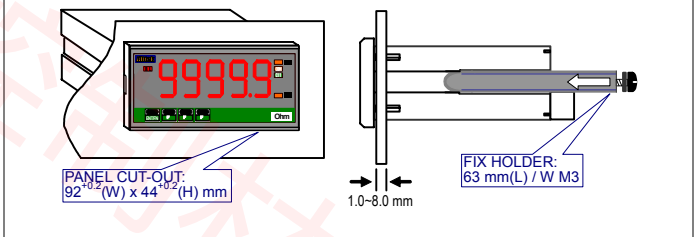


DIMENSIONS

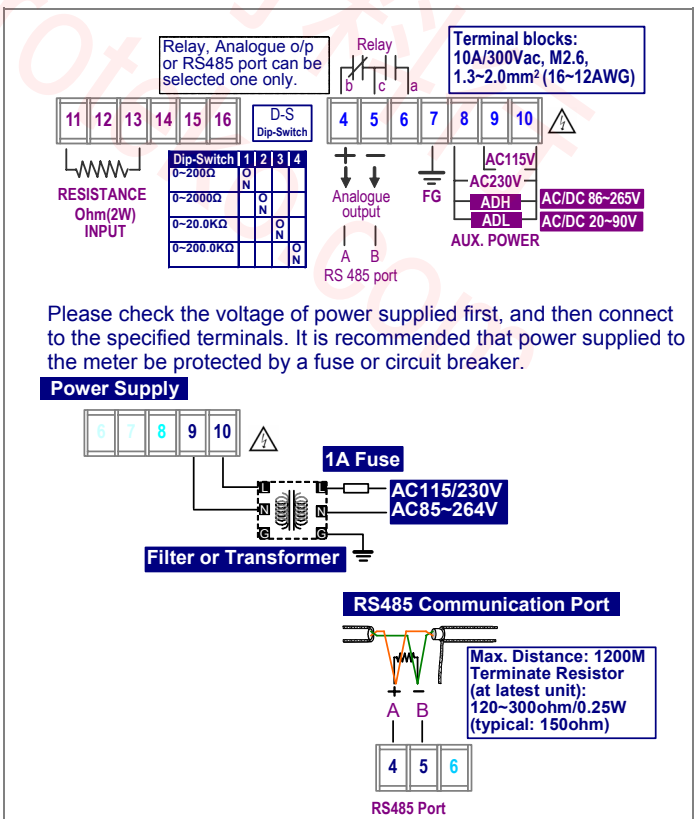


INSTALLATION

The meter should be installed in a location that dose not exceed the maximum operating temperature and provides good air circulation.



CONNECTION DIAGRAM

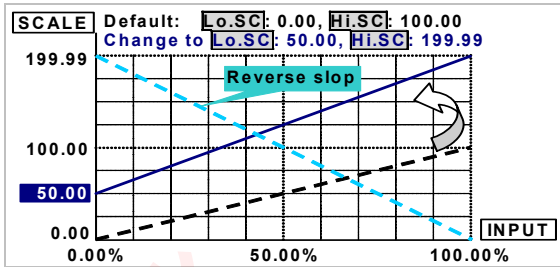


FUNCTION DESCRIPTION

Input & Scaling Functions

Scaling function:

Setting the **Lo.SC** (Low scale) and **Hi.SC** (High scale) in [**inPUT GroUP**] to relative input signal. **Reverse scaling will be done too.** Please refer to the figure as below,



*Too narrow scale may cause display lower resolution.

Display & Functions

Max / Mini recording:

The meter will storage the maximum and minimum value in [**User Level**] during power on in order to review drifting of PV.

Display functions:

(Please refer to step A-09)

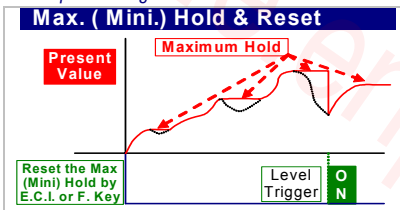
PV / Max(Mini) Hold / RS 485 programmable in [dSPly] function of [inPUT GroUP]

Present Value [PV]: The display will show the value that Relative to Input signal.

Maximum Hold [Max.H] / Minimum Hold [Mini.H]:

The meter will keep display in maximum (minimum) value during power on, until press front key to reset (If the down key function in [**inPUT GroUP**] has been set to **M.rSt**.)

- Please find the **M.H** sticker that enclosure the package of the meter to stick on the right side of square orange LED



Remote Display by RS485 command [RS485]: The meter will show the value that received from RS485 sending. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master can so that can be **save cost and wiring** from PLC.

Front key functions:

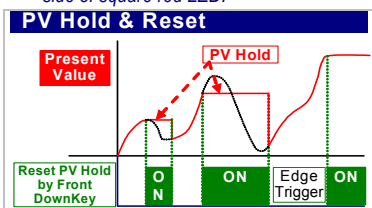
Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable in [dn.KEY] function of [inPUT GroUP]

Relative PV [REL.PV]: [**dn.KEY**] function can be set to be **REL.PV** function. When user press the **REL** key, the display will show the differential value (ΔPV), until press **REL** key again.

- Please find the **REL** sticker to stick on the right side of square red LED.

PV Hold [Pv.HLD]: [**dn.KEY**] function can be set to be **Pv.HLD** function. When user press the **REL** key, the display will be hold until press the **REL** key again.

- Please find the **PV.H** sticker to stick on the right side of square red LED.

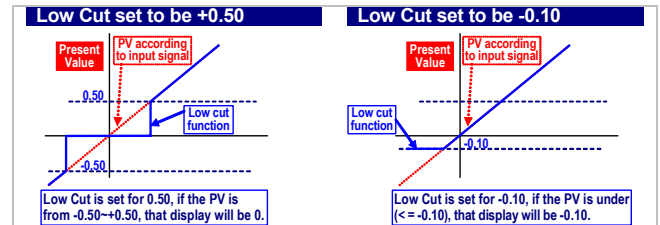


Reset for Max(Mini) Hold: when the [**dSPly**] in [**inPUT GroUP**] set to be **Max.H** or **Mini.H**, [**dn.KEY**] function can be set to be **M.rSt** to reset the display when it is holding in maxim or mini value.

Reset for relay energized latch: when the [**rY.Md**] in [**rELAY GroUP**] set to be **Hi.HLD** or **Lo.HLD**, [**dn.KEY**] function can be set to be **PY.rSt** to reset the relay when it is energizing and latching.

Low cut:

If the setting value is positive, it means when the absolutely value of $PV \leq$ Setting value, the display will be 0. If the setting value is negative, it means when the PV under setting value ($PV \leq$ -Setting value), the display will be setting value.

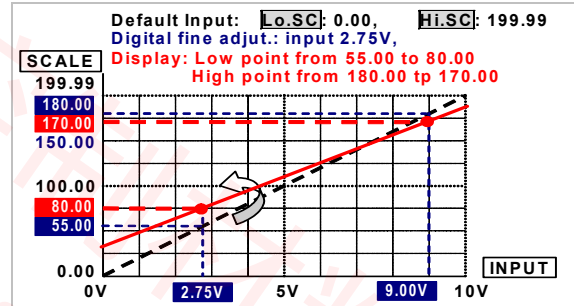


Digital fine adjustment:

Users can get Fine Adjustment for Zero & Span of PV by front key of the meter, and **Just Key In** the value which user want to show in the current input signals.

Especially, the [**Pv.Zro**] & [**Pv.SPn**] are not only in zero & span of PV, but also any lower point for [**Pv.Zro**] & higher point for [**Pv.SPn**]. The meter will be linearization for full scale.

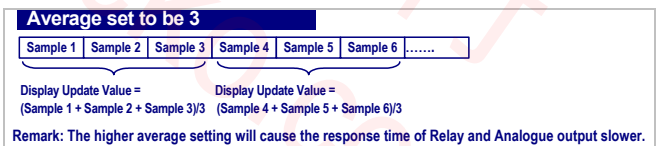
The adjustment can be clear in function [**Z.S.Clr**].



Reading Stable Function

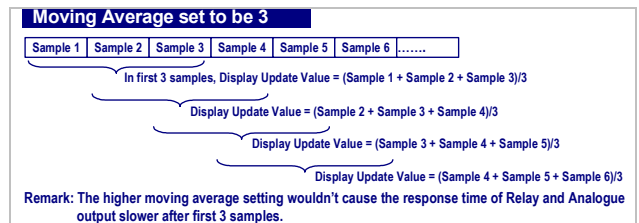
Average:

Basically, the sampling rate of meter is 15cycles/sec. If the function set to be 3 times, It means the meter will update of display will be 5 times/sec.



Moving average:

If the function to be set 3 times, the meter will update delay in first 3 samples, then it will update 15 times/sec continuously.



Digital Filter:

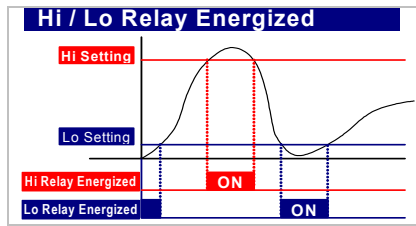
The digital filter can reduce the magnetic noise in field.

CS1-RS

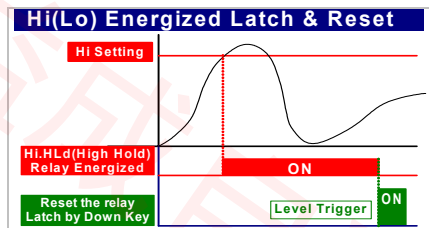
Control Functions(option)

Relay energized mode: Hi/Lo/Hi.HLd/Lo.HLd programmable

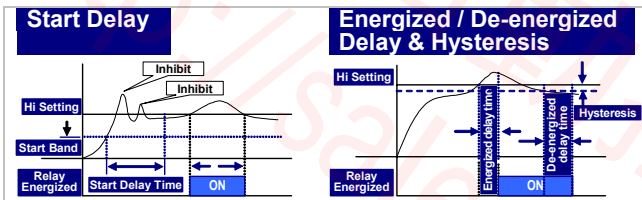
Hi: Relay will energize when PV > Set-Point
Lo: Relay will energize when PV < Set-Point



Hi.HLd (Lo.HLd): When the PV is Higher (or lower) than set-point, the relay will be energized and latch until manual reset by from key in [User Level] or press down key to reset(If the [dn.KEY] function set to be Fy.rSt)



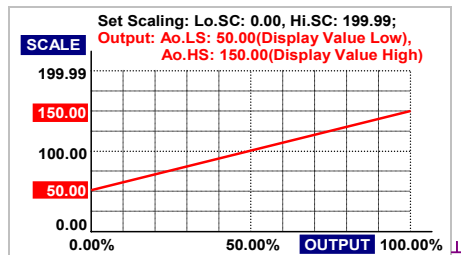
Energized Functions: Start delay / Energized & De-energized delay / Hysteresis



Analogue output(option)

Please specify the output type either an 0~10V or 4(0)~20mA in ordering. The programmable output low and high scaling can be based on various display values. Reverse slope output is possible by reversing point positions.

Output range: Voltage: 0~5V / 0~10V / 1~5V programmable
Current: 0~10mA / 0~20mA / 4~20mA programmable
Functions:
Ao.HS(output range high): setting the Display value High to versus output range High(as like as 20mA in 4~20)
Ao.LS(output range Low): setting the Display value Low to versus output range Low(as like as 4mA in 4~20)



The range between Ao.HS and Ao.LS should be over 20% of span at least; otherwise, it will be got less resolution of analogue output.

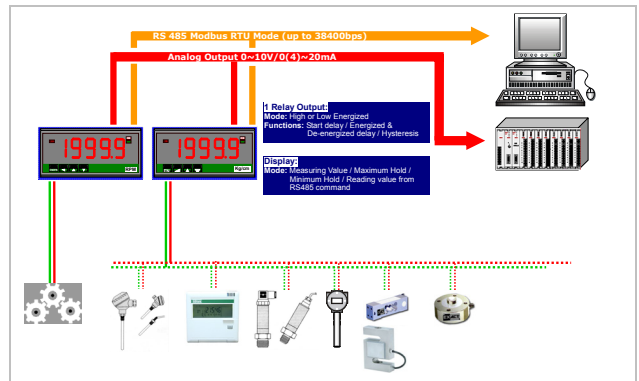
Fine zero & span adjustment:

Users can get Fine Adjustment of analogue output by front key of the meter. Please connect standard meter to the terminal of analogue output. To press the front key(up or down key) of meter to adjust and check the output.

- [Ao.Zro]** : Fine Zero Adjustment for Analog Output;
Settable range: -38011~27524;
- [Ao.Spn]** : Fine Span Adjustment for Analog Output;
Settable range: -38011~27524;

RS 485 communication(optional)

The RS485's protocol is Modbus RTU mode, and baud rate up to 38400bps. It's convenience to remote monitoring, display for reading.

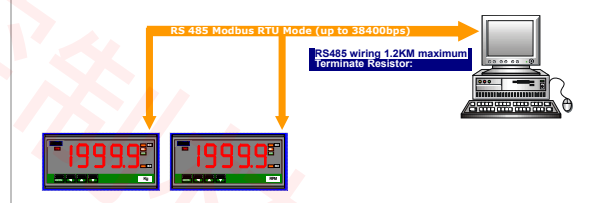


Remote Display: to show the value from RS485 command of master

The meter will show the value from RS485 command. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master so that can be **save cost and wiring** from PLC.

When the [dSPly] set to be RS485, it means, the PV screen will show the number from RS485 command & data. The data(number) will be same as PV that will compare with set-point, analogue output and ECI functions so that is to control analogue output, relay energized and so on.

CS1 APPLICATION FOR REMOTE DISPLAY FROM RS485 COMMAND



Calibration

System calibration by front key. The process of calibration, please refer to the operating manual

Field Calibration

In pass time, engineers have take a lot of time to adjust meters or converter to meet the structure of machinery zero and span for the Load Cell measuring. Now, our CS1-RS support easier process to do it called "Field Calibration".

Optional Function

Customize function with quantities is welcome. Please contact with our sales for detail. The appendix code of optional function will be added behind the code of auxiliary power.

■ ERROR MASAGE

DESCRIPTION	DISPLAY	FLASH	REMARK
BEFORE POWER ON, PLEASE CHECK THE SPECIFICATION AND CONNECTION AGAIN.			
SELF-DIAGNOSIS AND ERROR CODE:			
ouFL : Display is positive-overflow (Signal is over display range)	ouFL		(Please check the input signal)
-ouFL : Display is negative-overflow (Signal is under display range)	-ouFL		(Please check the input signal)
ouFL : ADC is positive-overflow (Signal is higher than input 120%)	ouFL		(Please check the input signal)
-ouFL : ADC is negative-overflow (Signal is lower than input -120%)	-ouFL		(Please check the input signal)
E E P / F A I L : EEPROM occurs error	E E P	F A I L	(Please send back to manufactory for repaired)
A I C n G / P u : Calibrating Input Signal do not process	A I C n G	P u	(Please process Calibrating Input Signal)
A I C . / F A I L : Calibrating Input Signal error	A I C .	F A I L	(Please check Calibrating Input Signal)
A o C n G / P u : Calibrating Output Signal do not process	A o C n G	P u	(Please process Calibrating Output Signal)
A I C . / F A I L : Calibrating Output Signal error	A I C .	F A I L	(Please check Calibrating Output Signal)

■ FRONT PANEL:



Relay status Indication

Display screen

Operation Key

Max. Hold status

Comm. status

Front Key function status

Mini. Hold status

Engineer Unit

Numeric Screens
0.8"(20.0mm) red high-brightness LED for 5 digital present value.

I/O Status Indication





- **Relay Energized:** 1 square red LED
RL1 display when Relay 1 energized;
- **RS485 Communication:** 1 square orange LED
COM will flash when the meter is receive or send data, and **COM** flash quickly means the data transient quicker.
- **Max/Mini Hold indication:** 2 square orange LEDs
MLH displayed: When the display function has been selected in Maximum or Minimum Hold function.

Stickers:
Each meter has a sticker what are functions and engineer label enclosure.

- **Relay energized mode:** **HH** **Hi** **Lo** **LL** **DO**
- **Down key functions mode:**
PV.H PV.H(PV Hold) / **Tare** Tare / **DI** DI(Digital Input)
- **M.RS** M.RS(Maximum or Minimum Reset) /
- **R.RS** R.RS(Reset for Relay Latch)
- **Engineer Label:** over 80 types.

■ Operating Key: 4 keys for Enter(Function) /

 Shift(Escape) /  Up key /  Down key

	Setting Status	Function Index
 Up key	Increase number	Go back to previous function index
 Down key	Decrease number	Go to next function index
 Shift key	Shift the setting position	Go back to this function index, and abort the setting
 Enter/Fun key	Setting Confirmed and save to EEPROM	From the function index to get into setting status


■ Pass Word: Settable range:0000~9999;

User has to key in the right pass word so that get into **【 Programming Level 】**. Otherwise, the meter will go back to measuring page. If user forgets the password, please contact with the service window.

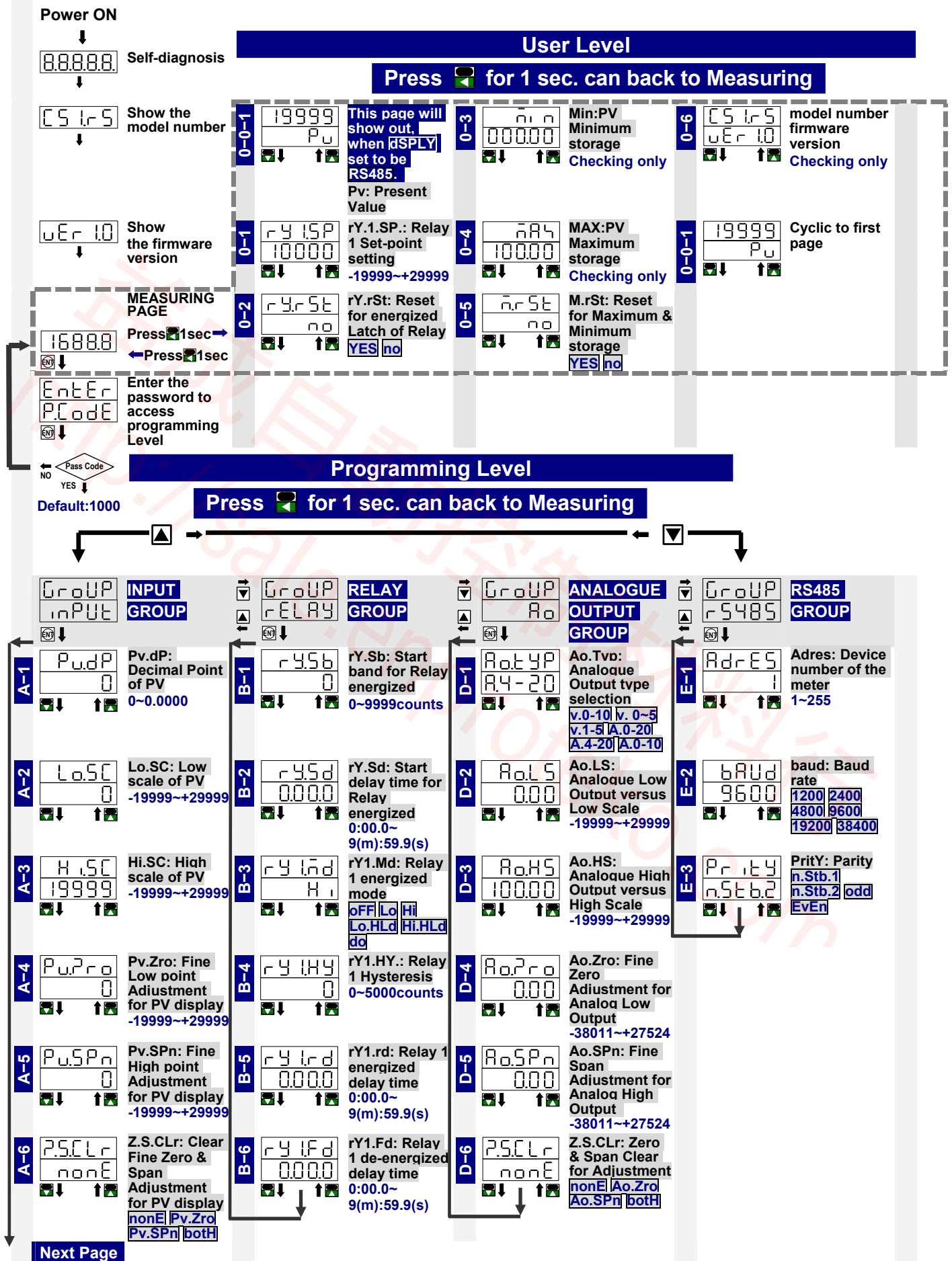
■ Function Lock: There are 4 levels programmable.

- **None:** no lock all.
- **User Level:** User Level lock. User can get into User Level for checking but setting.
- **Programming Level:** Programming level lock. User can get into programming level for checking but setting.
- **ALL:** All lock. User can get into all level for checking but setting.

■ Front Key Function

- The  Key can be set to be **rEL.Pv** / **Pv.HLd** / **M.rSt** / **rY.rSt** programmable.

OPERATING DIAGRAM (The detail description of operation, please refer to operating manual.)



A-7	dSPly P _w	dSPLY: Display Function Pv Mini.H MAx.H RS485
A-8	Lo.CuT 0	Lo.Cut: Low Cut Function -19999~+29999
A-9	AvG 5	AvG: Average update for PV 1(None)~ 99 times
A-10	M.AvG 1	M.AvG: Moving Average update for PV 1(None)~ 10 times
A-11	d.FiLT 0	d.FiLT: Digital filter 0(None)/1~ 99 times
A-12	dn.KEY nonE	dn.KEY: Down key function nonE rEL.Pv Pv.HLd M.rSt Y.rSt
A-13	P.CoDE 0000	P.CoDE: Pass Code for enter Programming Level 0000~9999
A-14	F.LoCk nonE	F.LoCk: Function Level Lock nonE USEr EnG ALL

- Plesae refer to operating manual for detail description
- The process of "Field Calibration", please refer to operating manual for detail description

CS1-SG STRAIN GAUGE Indicator

ADtek

DESCRIPTION

CS1-SG **economic** type Strain Gauge/Load Cell Indicator has been designed with high accuracy measurement, display and communication of DC signal 0~1.0/~4.0mV or 0~10.0/~40.0mV.

☑ The meter supports Field Calibration function. It can be calibrated with sensor (Load Cell/Strain Gauge) to meet machinery structure.

They are also available 1 option of 1 Relay outputs, 1 Analogue output or 1 RS485 (Modbus RTU Mode) interface with versatile functions such as control, alarm, re-transmission or communication for a wide range of industrial applications.



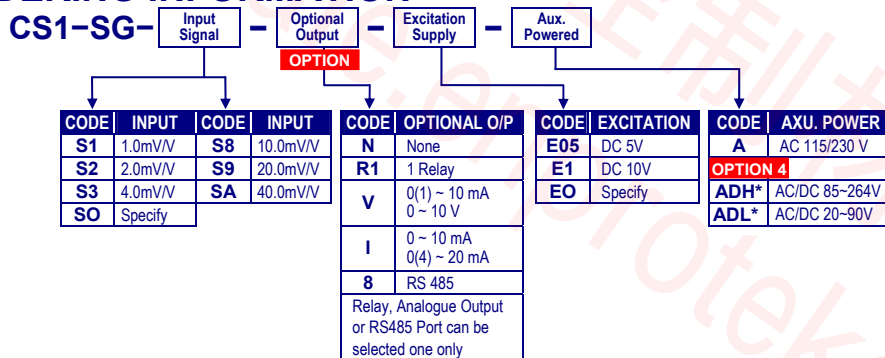
FEATURE

- Measuring load cell, strain gauge signal 0~1.0/~2.0/~4.0/~10.0/~20.0/~40.0mV/V (Specify)
- Field calibration with **load cell** or **strain gauge** to meet the system requirement
- Option available 1 of 1 relay, 1 analogue output or RS485 (Modbus RTU mode)
- 1 relay can be programmed individual to be a Hi / Lo / Hi Latch / Lo Latch energized with Start Delay / Hysteresis / Energized & De-energized Delay functions.
- Analogue output or RS 485 communication port in option
- CE Approved & RoHS

APPLICATIONS

- Testing Equipments for weight/force Measuring, Alarm or Communication with PC/PLC
- Weighting control for packing machine, filling machine.

ORDERING INFORMATION



TECHNICAL SPECIFICATION

Input	Measuring Range	Input Impedance	Excitation Voltage
	0~1.0/~2.0/~4.0 mV/V	≥1M ohm	DC 5V, 40mA
	0~10.0/~20.0/~40.0 mV/V		or DC 10V, 40mA

Calibration: Digital calibration by front key
Field calibration: Calibration with sensor input high & low to meet system structure. And field calibration reset is not change the accuracy & linear of factory calibration.

A/D converter: 16 bits resolution
Accuracy: ±0.04% of FS ±1C;
Sampling rate: 15 cycles/sec
High speed mode: can be 60cycles/sec maximum (scale between:0~6000 digits)

Response time: ≤100 msec.(when the AvG = "1") in standard

Display & Functions

LED: Numeric: 5 digits, 0.8"(20.0mm)H red high-brightness LED
 Relay output indication: 1 square red LED
 RS 485 communication: 1 square orange LED
 E.C.I. function indication: 1 square green LED
 Max/Mini Hold indication: 2 square orange LED
 Down key function indication(Reset for Max.(Mini.) Hold / PV Hold / Rel. PV): 1 square green LED

Display range: -19999~29999;

Scaling function: Lo.SC: Low Scale; Settable range: -19999~+29999
 Hi.SC: High Scale; Settable range: -19999~+29999
 Programmable from 0 / 0.0 / 0.00 / 0.000 / 0.0000
Decimal point: ovFL, when input is over 120% of input range Hi
Under range indication: -ovFL, when input is under -20% of input range Lo
Max / Mini recording: Maximum and Minimum value storage during power on.
Display functions: PV / Max(Mini) Hold / RS 485 Programmable
Front key functions: Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable
Low cut: Settable range: -19999~29999 counts
Digital fine adjust: Pv.Zro: Settable range: -19999~+29999
 Pv.Spn: Settable range: -19999~+29999

Reading Stable Function

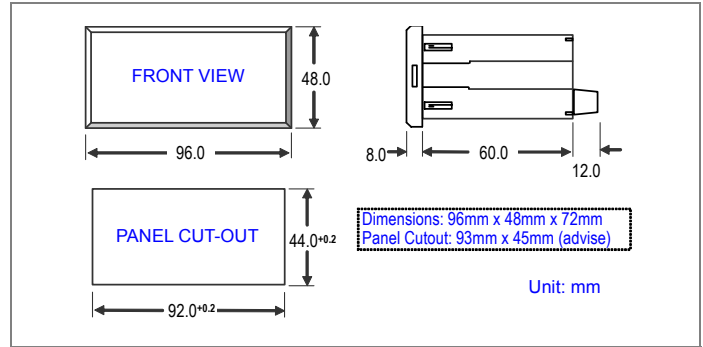
Average: Settable range: 1~99 times
Moving average: Settable range: 1 (None) ~10 times
Digital filter: Settable range: 0 (None) / 1~99 times

Control Functions(option)

Set-points: One set-point
Control relay: 1 Relay, FORM-C, 5A/230Vac, 10A/115V
Relay energized mode: Energized levels compare with set-points:
 Hi / Lo / Hi.HLd / Lo.HLd programmable
Energizing functions: Start delay / Energized & De-energized delay / Hysteresis Energized Latch
Start band(Minimum level for Energizing): 0~9999counts
Start delay time: 0:00.0~9(Minutes):59.9(Second)

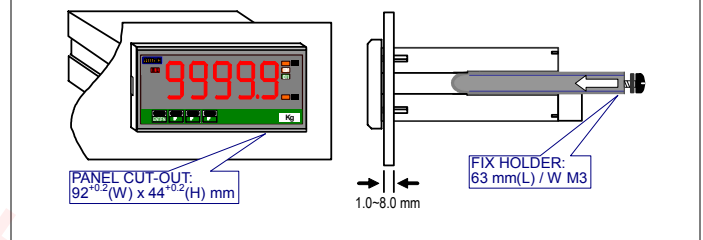
Energized delay time: 0.00.0~9(Minutes):59.9(Second)
De-energized delay time: 0.00.0~9(Minutes):59.9(Second)
Hysteresis: 0~5000 counts

■ DIMENSIONS

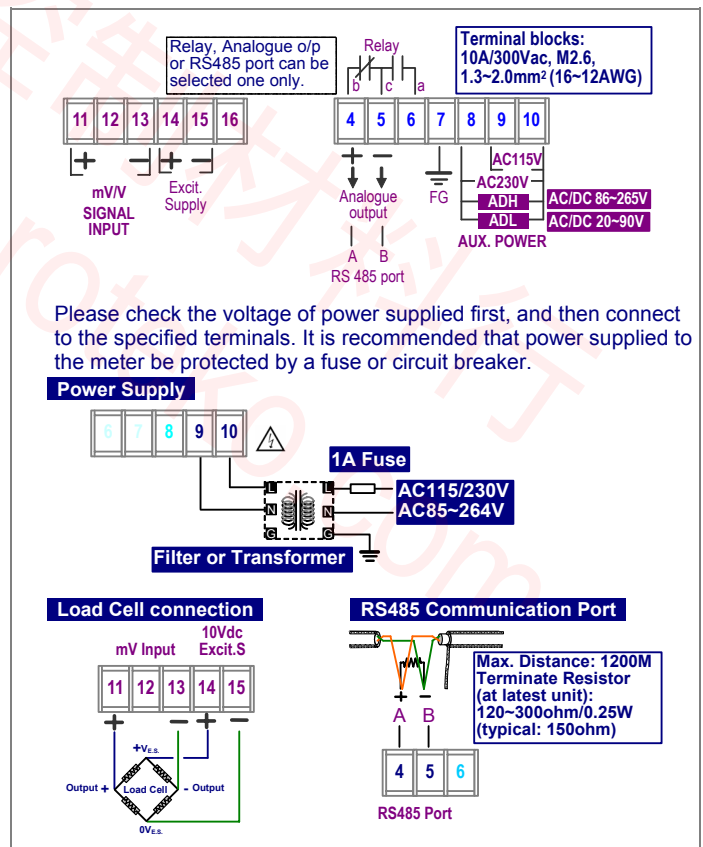


■ INSTALLATION

The meter should be installed in a location that does not exceed the maximum operating temperature and provides good air circulation.



■ CONNECTION DIAGRAM



Analogue output(option)

Accuracy: $\leq \pm 0.1\%$ of F.S.;
Ripple: $\leq \pm 0.1\%$ of F.S.
Response time: ≤ 100 msec. (10~90% of input)
Isolation: AC 2.0 KV between input and output
Output range: Specify either Voltage or Current output in ordering
Voltage: 0~5V / 0~10V / 1~5V programmable
Current: 0~10mA / 0~20mA / 4~20mA programmable
Output capability: **Voltage:** 0~10V; $\geq 1000\Omega$;
Current: 4(0)~20mA; $\leq 600\Omega$ max
Functions: **Ao.HS(output range high):** Settable range: -19999~29999
Ao.LS(output range Low): Settable range: -19999~29999
Digital fine adjust: **Ao.Zro:** Settable range: -38011~+27524
Ao.SPn: Settable range: -38011~+27524

RS 485 Communication(option)

Protocol: Modbus RTU mode
Baud rate: 1200/2400/4800/9600/19200/38400 programmable
Data bits: 8 bits
Parity: Even, odd or none (with 1 or 2 stop bit) programmable
Address: 1 ~ 255 programmable
Remote display: to show the value from RS485 command of master
Distance: 1200M
Terminate resistor: 150 Ω at last unit.

Electrical Safety

Dielectric strength: AC 2.0 KV for 1 min, Between Power / Input / Output / Case
Insulation resistance: $\geq 100M$ ohm at 500Vdc, Between Power / Input / Output
Isolation: Between Power / Input / Relay, Analogue, RS485
EMC: EN 55011:2002; EN 61326:2003
Safety(LVD): EN 61010-1:2001

Environmental

Operating temp.: 0~60 °C
Operating humidity: 20~95 %RH, Non-condensing
Temp. coefficient: ≤ 100 PPM/°C
Storage temp.: -10~70 °C
Enclosure: Front panel: IEC 549 (IP54); Housing: IP20

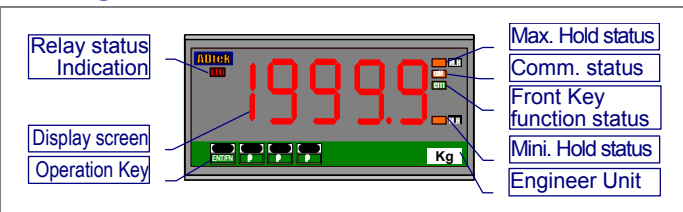
Mechanical

Dimensions: 96mm(W) x 48mm(H) x 72mm(D)
Panel cutout: 92mm(W) x 44mm(H)
Case material: ABS fire-resistance (UL 94V-0)
Mounting: Panel flush mounting
Terminal block: Plastic NYLON 66 (UL 94V-0)
 10A 300Vac, M2.6, 1.3~2.0mm²(16~12AWG)
Weight: 350g / 300g(Aux. Power Code: ADH or ADL)

Power

Power supply: AC115/230V,50/60Hz;
Optional: AC/DC 85~264V or 20~90V(RoHS version)
Excitation supply: DC 5/10V, 30mA maximum in standard
Power consumption: 4.5VA maximum
Back up memory: By EEPROM

■ FRONT PANEL

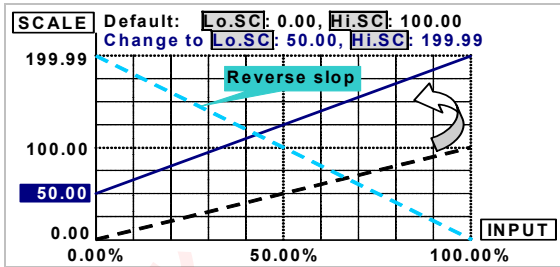


FUNCTION DESCRIPTION

Input & Scaling Functions

Scaling function:

Setting the **Lo.SC** (Low scale) and **Hi.SC** (High scale) in [**inPUT GroUP**] to relative input signal. **Reverse scaling will be done too.** Please refer to the figure as below,



*Too narrow scale may cause display lower resolution.

Display & Functions

Max / Mini recording:

The meter will storage the maximum and minimum value in [**User Level**] during power on in order to review drifting of PV.

Display functions:

(Please refer to step A-09)

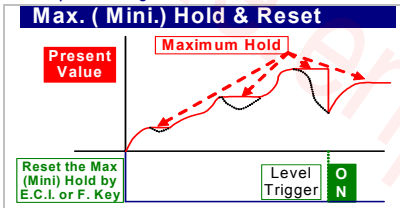
PV / Max(Mini) Hold / RS 485 programmable in [dSPly] function of [inPUT GroUP]

Present Value [PV]: The display will show the value that Relative to Input signal.

Maximum Hold [Max.H] / Minimum Hold [Mini.H]:

The meter will keep display in maximum (minimum) value during power on, until press front key to reset (If the down key function in [**inPUT GroUP**] has been set to **M.rSt**.)

- Please find the **M.H** sticker that enclosure the package of the meter to stick on the right side of square orange LED



Remote Display by RS485 command [RS485]: The meter will show the value that received from RS485 sending. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master can so that can be **save cost and wiring** from PLC.

Front key functions:

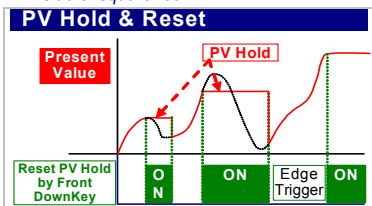
Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable in [dn.KEY] function of [inPUT GroUP]

Relative PV [REL.PV]: [**dn.KEY**] function can be set to be **REL.PV** function. When user press the **REL** key, the display will show the differential value (ΔPV), until press **REL** key again.

- Please find the **REL** sticker to stick on the right side of square red LED.

PV Hold [Pv.HLD]: [**dn.KEY**] function can be set to be **Pv.HLD** function. When user press the **REL** key, the display will be hold until press the **REL** key again.

- Please find the **PV.H** sticker to stick on the right side of square red LED.

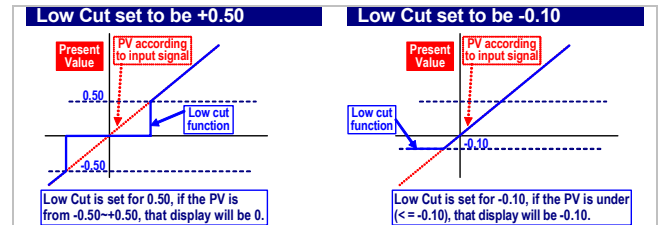


Reset for Max(Mini) Hold: when the [**dSPly**] in [**inPUT GroUP**] set to be **Max.H** or **Mini.H**, [**dn.KEY**] function can be set to be **M.rSt** to reset the display when it is holding in maxim or mini value.

Reset for relay energized latch: when the [**rY1.Md**] in [**rELAY GroUP**] set to be **Hi.HLD** or **Lo.HLD**, [**dn.KEY**] function can be set to be **PY.rSt** to reset the relay when it is energizing and latching.

Low cut:

If the setting value is positive, it means when the absolutely value of $PV \leq$ Setting value, the display will be 0. If the setting value is negative, it means when the PV under setting value ($PV \leq -$ Setting value), the display will be setting value.

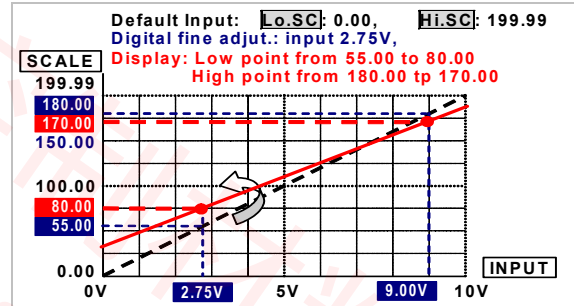


Digital fine adjustment:

Users can get Fine Adjustment for Zero & Span of PV by front key of the meter, and "Just Key In" the value which user want to show in the current input signals.

Especially, the [**Pv.Zro**] & [**Pv.SPn**] are not only in zero & span of PV, but also any lower point for [**Pv.Zro**] & higher point for [**Pv.SPn**]. The meter will be linearization for full scale.

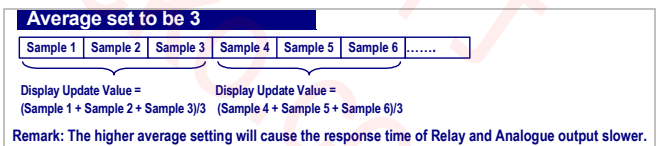
The adjustment can be clear in function [**Z.S.Clr**].



Reading Stable Function

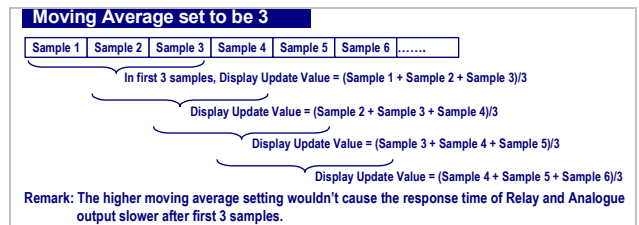
Average:

Basically, the sampling rate of meter is 15cycles/sec. If the function set to be 3 times, It means the meter will update of display will be 5 times/sec.



Moving average:

If the function to be set 3 times, the meter will update delay in first 3 samples, then it will update 15 times/sec continuously.



Digital Filter:

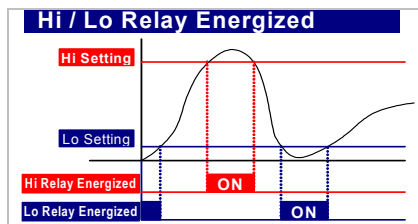
The digital filter can reduce the magnetic noise in field.

CS1-SG

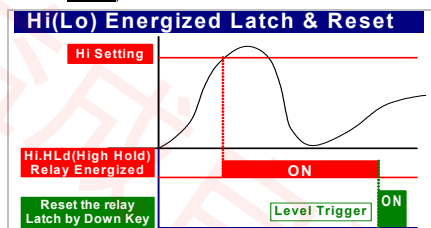
Control Functions(option)

Relay energized mode: Hi/Lo/Hi.HLd/Lo.HLd programmable

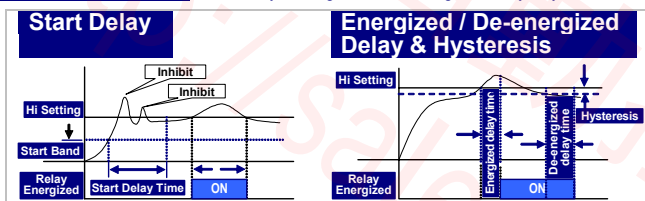
Hi: Relay will energize when PV > Set-Point
Lo: Relay will energize when PV < Set-Point



Hi.HLd (Lo.HLd): When the PV is Higher (or lower) than set-point, the relay will be energized and latch until manual reset by from key in [User Level] or press down key to reset(If the [dn.KEY] function set to be F.Y.rSt)



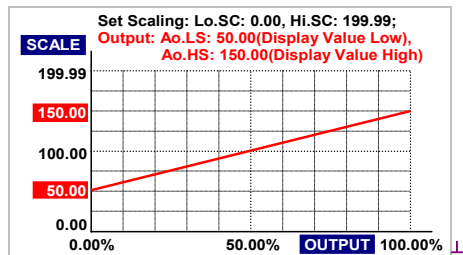
Energized Functions: Start delay / Energized & De-energized delay / Hysteresis



Analogue output(option)

Please specify the output type either an 0~10V or 4(0)~20mA in ordering. The programmable output low and high scaling can be based on various display values. Reverse slope output is possible by reversing point positions.

Output range: Voltage: 0~5V / 0~10V / 1~5V programmable
Current: 0~10mA / 0~20mA / 4~20mA programmable
Functions:
Ao.HS(output range high): setting the Display value High to versus output range High(as like as 20mA in 4~20)
Ao.LS(output range Low): setting the Display value Low to versus output range Low(as like as 4mA in 4~20)



The range between Ao.HS and Ao.LS should be over 20% of span at least; otherwise, it will be got less resolution of analogue output.

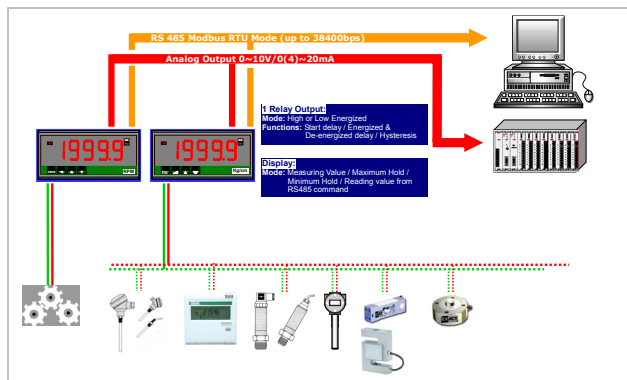
Fine zero & span adjustment:

Users can get Fine Adjustment of analogue output by front key of the meter. Please connect standard meter to the terminal of analogue output. To press the front key(up or down key) of meter to adjust and check the output.

- [Ao.Zro] : Fine Zero Adjustment for Analog Output; Settable range: -38011~27524;
- [Ao.Spn] : Fine Span Adjustment for Analog Output; Settable range: -38011~27524;

RS 485 communication(optional)

The RS485's protocol is Modbus RTU mode, and baud rate up to 38400 bps. It's convenience to remote monitoring, display for reading.

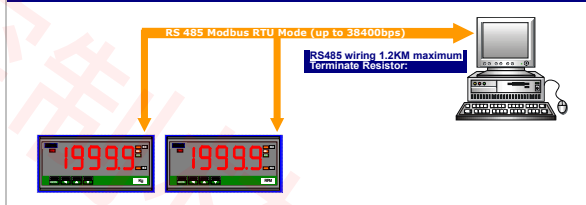


Remote Display: to show the value from RS485 command of master

The meter will show the value that received from RS485 command. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master so that can be **save cost and wiring** from PLC.

When the [dSPly] set to be RS485, it means, the PV screen will show the number from RS485 command & data. The data(number) will be same as PV that will compare with set-point, analogue output and ECI functions so that is to control analogue output, relay energized and so on.

CS1 APPLICATION FOR REMOTE DISPLAY FROM RS485 COMMAND



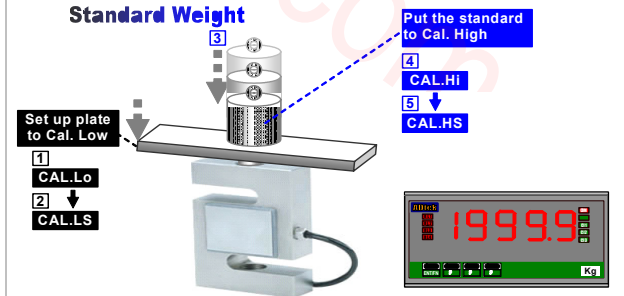
Calibration

System calibration by front key. The process of calibration, please refer to the operating manual

Field Calibration

In pass time, engineers have take a lot of time to adjust meters or converter to meet the structure of machinery zero and span for the Load Cell measuring. Now, our CS1-SG support easier process to do it called "Field Calibration".

Please according to the sequence to do the Field Cal. (1 ⇒ 2 ⇒ 3 ⇒ 4 ⇒ 5)




Optional Function

Customize function with quantities is welcome. Please contact with our sales for detail. The appendix code of optional function will be added behind the code of auxiliary power.

■ ERROR MASAGE

DESCRIPTION	DISPLAY	FLASH	REMARK
BEFORE POWER ON, PLEASE CHECK THE SPECIFICATION AND CONNECTION AGAIN.			
SELF-DIAGNOSIS AND ERROR CODE:			
ouFL : Display is positive-overflow (Signal is over display range)	ouFL		(Please check the input signal)
-ouFL : Display is negative-overflow (Signal is under display range)	-ouFL		(Please check the input signal)
ouFL : ADC is positive-overflow (Signal is higher than input 120%)	ouFL		(Please check the input signal)
-ouFL : ADC is negative-overflow (Signal is lower than input -120%)	-ouFL		(Please check the input signal)
E E P / F A I L : EEPROM occurs error	E E P	F A I L	(Please send back to manufactory for repaired)
A I C . n G / P u : Calibrating Input Signal do not process	A I C . n G	P u	(Please process Calibrating Input Signal)
A I C . / F A I L : Calibrating Input Signal error	A I C .	F A I L	(Please check Calibrating Input Signal)
A o C . n G / P u : Calibrating Output Signal do not process	A o C . n G	P u	(Please process Calibrating Output Signal)
A I C . / F A I L : Calibrating Output Signal error	A I C .	F A I L	(Please check Calibrating Output Signal)

■ FRONT PANEL:



Relay status Indication

Display screen

Operation Key

Max. Hold status

Comm. status

Front Key function status

Mini. Hold status

Engineer Unit

■ Numeric Screens
0.8”(20.0mm) red high-brightness LED for 5 digital present value.

■ I/O Status Indication

- **Relay Energized:** 1 square red LED
RL1 display when Relay 1 energized;
- **RS485 Communication:** 1 square orange LED
COM will flash when the meter is receive or send data, and **COM** flash quickly means the data transient quicker.
- **Max/Mini Hold indication:** 2 square orange LEDs
M.H displayed: When the display function has been selected in Maximum or Minimum Hold function.

■ Stickers:
Each meter has a sticker what are functions and engineer label enclosure.

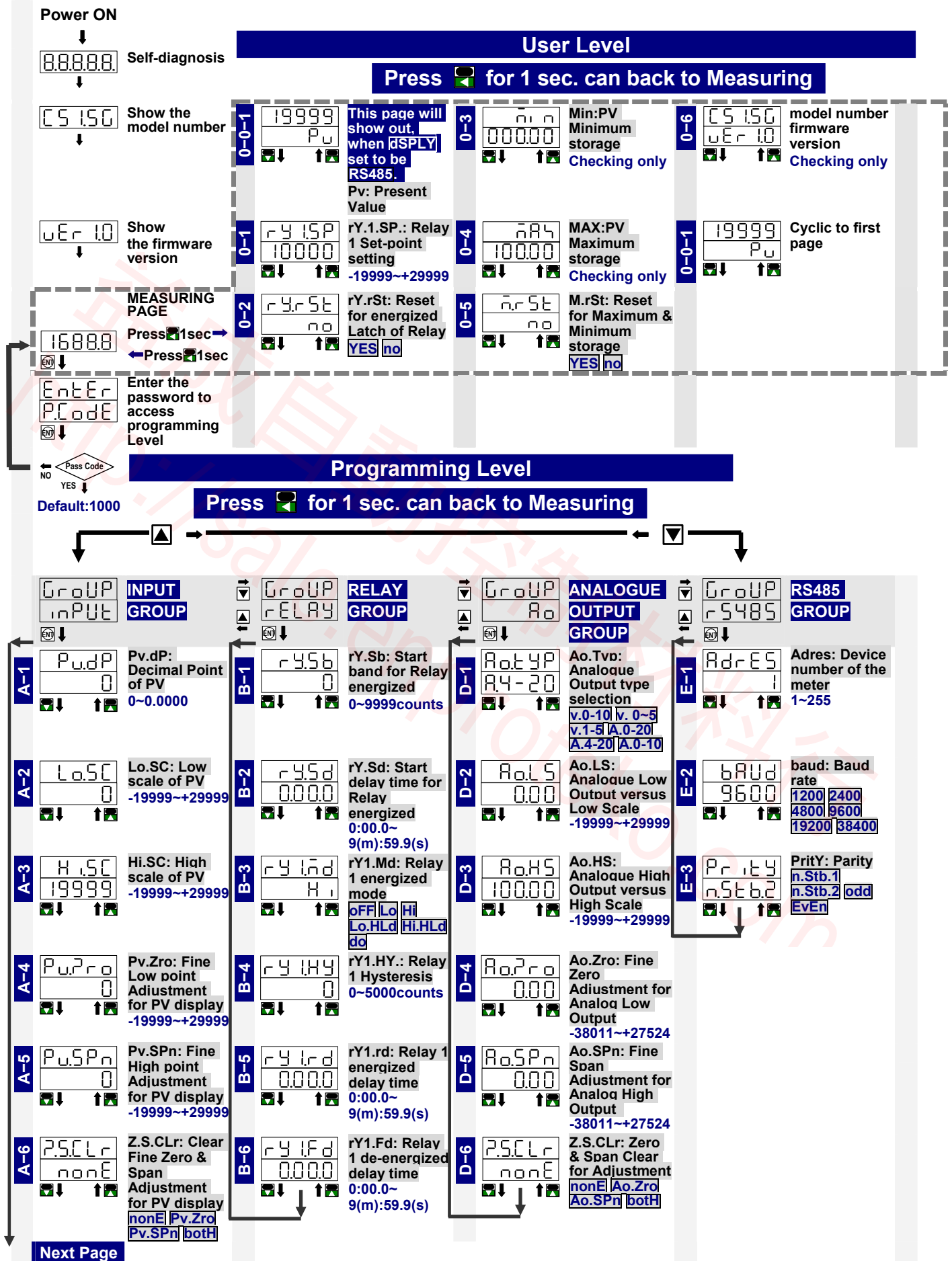
- **Relay energized mode:** **HH HI Lo LL DO**
- **Down key functions mode:**
PV.H PV.H(PV Hold) / **Tare** Tare / **DI** DI(Digital Input)
M.RS M.RS(Maximum or Minimum Reset) /
R.RS R.RS(Reset for Relay Latch)
- **Engineer Label:** over 80 types.

- **Operating Key:** 4 keys for **Enter**(Function) / **Shift**(Escape) / **Up** key / **Down** key

	Setting Status	Function Index
Up key	Increase number	Go back to previous function index
Down key	Decrease number	Go to next function index
Shift key	Shift the setting position	Go back to this function index, and abort the setting
Enter/Fun key	Setting Confirmed and save to EEPROM	From the function index to get into setting status

- **Pass Word:** Settable range:0000~9999;
User has to key in the right pass word so that get into **[Programming Level]**. Otherwise, the meter will go back to measuring page. If user forgets the password, please contact with the service window.
- **Function Lock:** There are 4 levels programmable.
 - **None:** no lock all.
 - **User Level:** User Level lock. User can get into User Level for checking but setting.
 - **Programming Level:** Programming level lock. User can get into programming level for checking but setting.
 - **ALL:** All lock. User can get into all level for checking but setting.
- **Front Key Function**
 - The **Enter** Key can be set to be **rEL.Pv** / **Pv.HLd** / **M.rSt** / **rY.rSt** programmable.

OPERATING DIAGRAM (The detail description of operation, please refer to operating manual.)



CS1-SG

A-7	dSPly Pu	dSPly: Display Function Pv Mini.H MAx.H RS485
A-8	Lo.CUt 0	Lo.Cut: Low Cut Function -19999~+29999
A-9	AvG 5	AvG: Average update for PV 1(None)~99 times
A-10	M.AvG 1	M.AvG: Moving Average update for PV 1(None)~10 times
A-11	d.FiLT 0	d.FiLT: Digital filter 0(None)/1~99 times
A-12	dn.KEY nonE	dn.KEY: Down key function nonE rEL.Pv Pv.HLd M.rSt Y.rSt
A-13	P.CoDE 0000	P.CoDE: Pass Code for enter Programming Level 0000~9999
A-14	F.LoCk nonE	F.LoCk: Function Level Lock nonE USEr EnG ALL

- Plesae refer to operating manual for detail description
- The process of "Field Calibration", please refer to operating manual for detail description

CS1-T TEMPERATURE Indicator



DESCRIPTION

CS1-T **economic** type Temperature Indicator has been designed with high accuracy measurement, display and communication of **Thermocouple or Pt100Ω**.

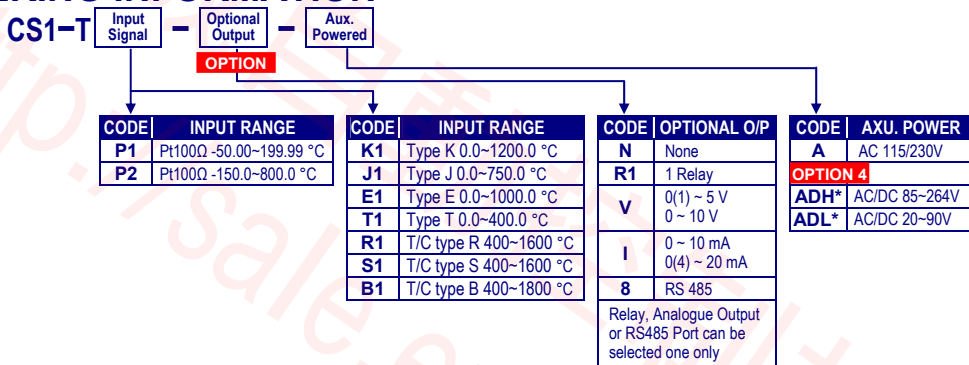
They are also available 1 option of 1 Relay outputs, 1 Analogue output or 1 RS485(Modbus RTU Mode) interface with versatile functions such as control, alarm, re-transmission or communication for a wide range of machinery and testing equipments applications.



FEATURE

- Measuring RTD: Pt100Ω; Thermocouple: K, J, E, T, R, S, B
- Option available 1 of 1 relay, 1 analogue output or RS485(Modbus RTU mode)
- 1 relay can be programmed individual to be a Hi / Lo / Hi Latch / Lo Latch energized with Start Delay / Hysteresis / Energized & De-energized Delay functions.
- Analogue output or RS 485 communication port in option
- CE Approved & RoHS

ORDERING INFORMATION



TECHNICAL SPECIFICATION

Input

Measuring Range	Input Impedance	Excitation Supply
P1 Pt100Ω -50.00~199.99 °C	≥1M ohm	Sensing Current: 1.6mA
P2 Pt100Ω -150.0~800.0 °C	≥1M ohm	
K1 Type K 0.0~1200.0 °C	≥1M ohm	
J1 Type J 0.0~750.0 °C	≥1M ohm	
E1 Type E 0.0~1000.0 °C	≥1M ohm	
T1 Type T 0.0~400.0 °C	≥1M ohm	
R1 T/C type R 400~1600 °C	≥1M ohm	
S1 T/C type S 400~1600 °C	≥1M ohm	
B1 T/C type B 400~1800 °C	≥1M ohm	

Calibration:

Digital calibration by front key

Field calibration:

Calibration with sensor input high & low to meet system structure. And field calibration reset is not change the accuracy & linear of factory calibration.

A/D converter:

16 bits resolution

Accuracy:

Pt100Ω: ≤ ±0.1% of FS ± 1C;
Thermocouple: ≤ ±0.2% of FS ± 1C;

Sampling rate:

15 cycles/sec

Response time:

≤100 msec.(when the AvG = "1") in standard

Cold junction in T/C:

25 ± 10°C, error ≤ 0.5°C

Display & Functions

LED:

Numeric: 5 digits, 0.8"(20.0mm)H red high-brightness LED
Relay output indication: 1 square red LED
RS 485 communication: 1 square orange LED
E.C.I. function indication: 1 square green LED
Max/Mini Hold indication: 2 square orange LED
Down key function indication(Reset for Max.(Mini.) Hold / PV Hold / Rel. PV): 1 square green LED

Display range:

-19999~29999;

Scaling function:

Fix range, please don't set.
Fix range, please don't set.

Decimal point:

Programmable from 0 / 0.0 / 0.00 / 0.000 / 0.0000

Over range indication:

ovFL, when input is over 120% of input range Hi

Under range indication:

-ovFL, when input is under -20% of input range Lo

Max / Mini recording:

Maximum and Minimum value storage during power on.

Display functions:

PV / Max(Mini) Hold / RS 485 Programmable

Front key functions:

Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable

Low cut:

Settable range: -19999~29999 counts

Digital fine adjust:

Pv.Zro: Settable range: -19999~+29999

Pv.SPn: Settable range: -19999~+29999

Reading Stable Function

Average:

Settable range: 1~99 times

Moving average:

Settable range: 1(None)~10 times

Digital filter:

Settable range: 0(None)/1~99 times

Control Functions(option)

Set-points:

One set-point

Control relay:

1 Relay, FORM-C, 5A/230Vac, 10A/115V

Relay energized mode:

Energized levels compare with set-points:

Hi / Lo / Hi.HLd / Lo.HLd programmable

Energizing functions:

Start delay / Energized & De-energized delay / Hysteresis Energized Latch

Start band(Minimum level for Energizing): 0~9999counts

Start delay time: 0:00.0~9(Minutes):59.9(Second)

Energized delay time: 0:00.0~9(Minutes):59.9(Second)

De-energized delay time: 0:00.0~9(Minutes):59.9(Second)

Hysteresis: 0~5000 counts

Analogue output(option)

Accuracy:

≤±0.1% of F.S.;

Ripple:

≤±0.1% of F.S.

Response time:

≤100 msec. (10~90% of input)

Isolation:

AC 2.0 KV between input and output

Output range:

Specify either Voltage or Current output in ordering

Output capability:

Voltage: 0~5V / 0~10V / 1~5V programmable
 Current: 0~10mA / 0~20mA / 4~20mA programmable
 Voltage: 0~10V; $\geq 1000\Omega$;
 Current: 4(0)~20mA; $\leq 600\Omega$ max
Ao.HS(output range high): Settable range: -19999~29999
Ao.LS(output range Low): Settable range: -19999~29999
Ao.Zro: Settable range: -38011~+27524
Ao.SPn: Settable range: -38011~+27524

Functions:

Digital fine adjust:

RS 485 Communication(option)

Protocol: Modbus RTU mode
Baud rate: 1200/2400/4800/9600/19200/38400 programmable
Data bits: 8 bits
Parity: Even, odd or none (with 1 or 2 stop bit) programmable
Address: 1 ~ 255 programmable
Remote display: to show the value from RS485 command of master
Distance: 1200M
Terminate resistor: 150 Ω at last unit.

Electrical Safety

Dielectric strength: AC 2.0 KV for 1 min, Between Power / Input / Output / Case
Insulation resistance: $\geq 100M$ ohm at 500Vdc, Between Power / Input / Output
Isolation: Between Power / Input / Relay, Analogue, RS485
EMC: EN 55011:2002; EN 61326:2003
Safety(LVD): EN 61010-1:2001

Environmental

Operating temp.: 0~60 °C
Operating humidity: 20~95 %RH, Non-condensing
Temp. coefficient: ≤ 100 PPM/°C
Storage temp.: -10~70 °C
Enclosure: Front panel: IEC 549 (IP54); Housing: IP20

Mechanical

Dimensions: 96mm(W) x 48mm(H) x 72mm(D)
Panel cutout: 92mm(W) x 44mm(H)
Case material: ABS fire-resistance (UL 94V-0)
Mounting: Panel flush mounting
Terminal block: Plastic NYLON 66 (UL 94V-0)
 10A 300Vac, M2.6, 1.3~2.0mm²(16~12AWG)

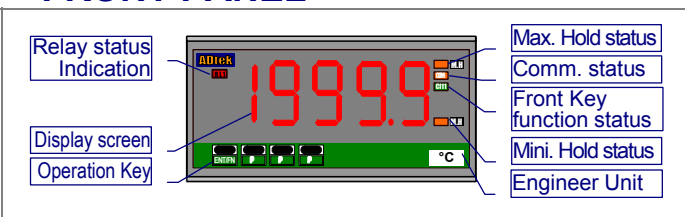
Weight:

350g / 300g(Aux. Power Code: ADH or ADL)

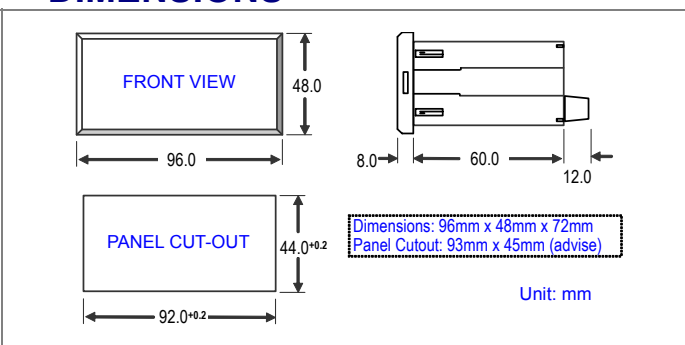
Power

Power supply: AC115/230V,50/60Hz;
 Optional: AC/DC 85~264V or 20~90V(RoHS version)
Power consumption: 4.5VA maximum
Back up memory: By EEPROM

FRONT PANEL

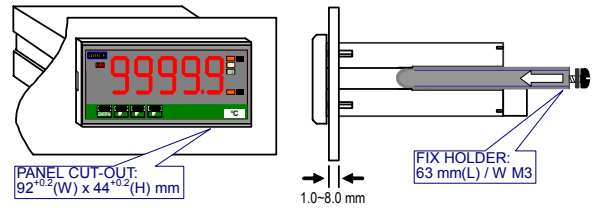


DIMENSIONS

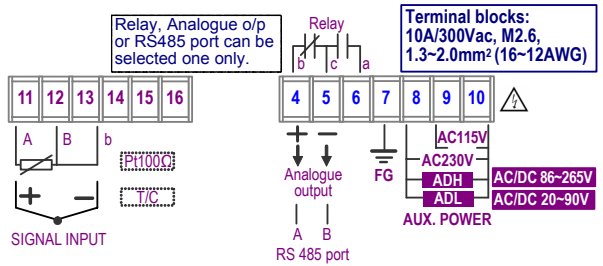


INSTALLATION

The meter should be installed in a location that dose not exceed the maximum operating temperature and provides good air circulation.

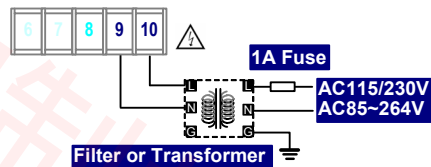


CONNECTION DIAGRAM

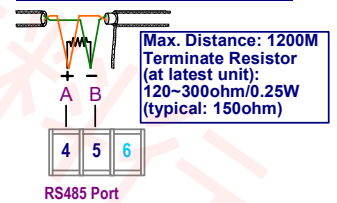


Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

Power Supply



RS485 Communication Port



FUNCTION DESCRIPTION

Display & Functions

Max / Mini recording: The meter will storage the maximum and minimum value in [User Level] during power on in order to review drifting of PV.

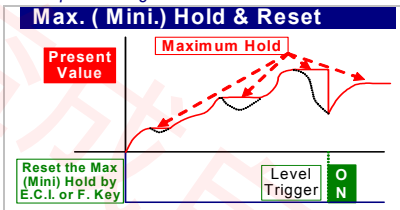
Display functions: PV / Max(Mini) Hold / RS 485 programmable in

(Please refer to step A-09)

Max (Mini) Hold / RS 485 programmable in
[dSPly] function of [inPUt GroUP]
Present Value [PV]: The display will show the value that Relative to Input signal.



Maximum Hold [Max.H] / Minimum Hold [Mini.H]:
 The meter will keep display in maximum (minimum) value during power on, until press front key to reset (If the down key function in [inPUt GroUP] has been set to [M.rSt].)

- Please find the  [M.H] sticker that enclosure the package of the meter to stick on the right side of square orange LED





Remote Display by RS485 command [RS485]: The meter will show the value that received from RS485 sending. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master can so that can be **save cost and wiring** from PLC.

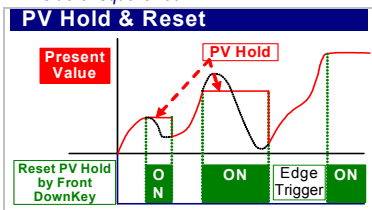
Front key functions: **Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable in [dn.KEY] function of [inPUt GroUP]**

Relative PV [rEL.PV]: [dn.KEY] function can be set to be [rEL.PV] function. When user press the  key, the display will show the differential value (ΔPV), until press  key again.

- Please find the  [REL.PV] sticker to stick on the right side of square red LED.

PV Hold [Pv.HLD]: [dn.KEY] function can be set to be [Pv.HLD] function. When user press the  key, the display will be hold until press the  key again.

- Please find the  [Pv.HLD] sticker to stick on the right side of square red LED.

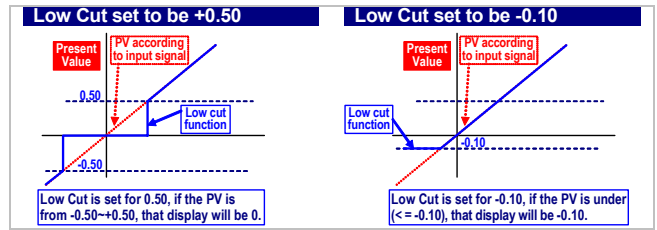


Reset for Max(Mini) Hold: when the [dSPly] in [inPUt GroUP] set to be [Max.H] or [Mini.H], [dn.KEY] function can be set to be [M.rSt] to reset the display when it is holding in maxim or mini value.

Reset for relay energized latch: when the [rY1.Md] in [rELAY GroUP] set to be [Hi.HLD] or [Lo.HLD], [dn.KEY] function can be set to be [rY.rSt] to reset the relay when it is energizing and latching.

Low cut:

If the setting value is positive, it means when the absolutely value of $PV \leq$ Setting value, the display will be 0. If the setting value is negative, it means when the PV under setting value ($PV \leq -$ Setting value), the display will be setting value.

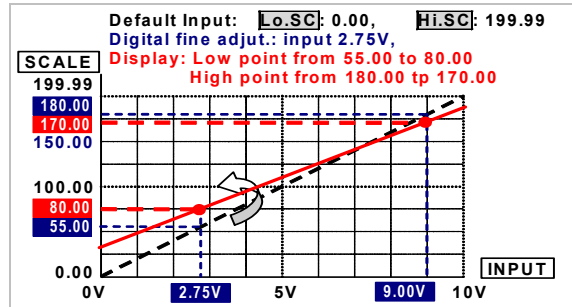


Digital fine adjustment:

Users can get Fine Adjustment for Zero & Span of PV by front key of the meter, and "Just Key In" the value which user want to show in the current input signals.

Especially, the [Pv.Zro] & [Pv.SPn] are not only in zero & span of PV, but also any lower point for [Pv.Zro] & higher point for [Pv.SPn]. The meter will be linearization for full scale.

The adjustment can be clear in function [Z.S.Clr] .



Reading Stable Function

Average:

Basically, the sampling rate of meter is 15cycles/sec. If the function set to be 3 times, It means the meter will update of display will be 5 times/sec.

Average set to be 3

Sample 1 Sample 2 Sample 3 Sample 4 Sample 5 Sample 6

Display Update Value = (Sample 1 + Sample 2 + Sample 3) / 3 Display Update Value = (Sample 4 + Sample 5 + Sample 6) / 3

Remark: The higher average setting will cause the response time of Relay and Analogue output slower.

Moving average:

If the function to be set 3 times, the meter will update delay in first 3 samples, then it will update 15 times/sec continuously.

Moving Average set to be 3

Sample 1 Sample 2 Sample 3 Sample 4 Sample 5 Sample 6

In first 3 samples, Display Update Value = (Sample 1 + Sample 2 + Sample 3) / 3

Display Update Value = (Sample 2 + Sample 3 + Sample 4) / 3

Display Update Value = (Sample 3 + Sample 4 + Sample 5) / 3

Display Update Value = (Sample 4 + Sample 5 + Sample 6) / 3

Remark: The higher moving average setting wouldn't cause the response time of Relay and Analogue output slower after first 3 samples.

Digital Filter:

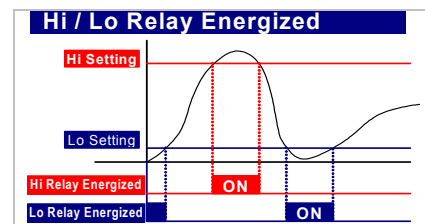
The digital filter can reduce the magnetic noise in field.

Control Functions(option)

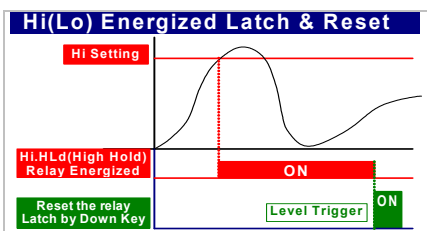
Relay energized mode: Hi / Lo / Hi.HLD / Lo.HLD programmable

Hi: Relay will energize when $PV >$ Set-Point

Lo: Relay will energize when $PV <$ Set-Point

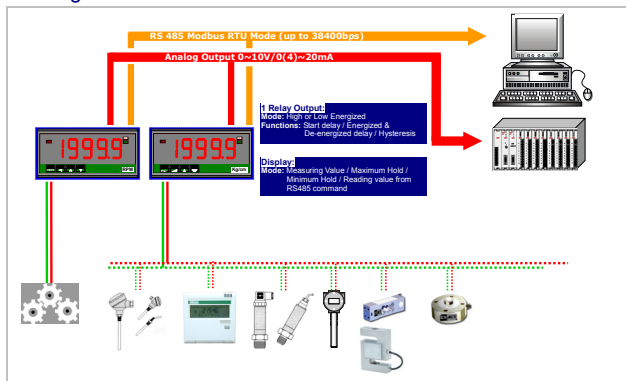


Hi.HLD (Lo.HLD): When the PV is Higher (or lower) than set-point, the relay will be energized and latch until manual reset by from key in [User Level] or press down key to reset (If the [dn.KEY] function set to be [rY.rSt])

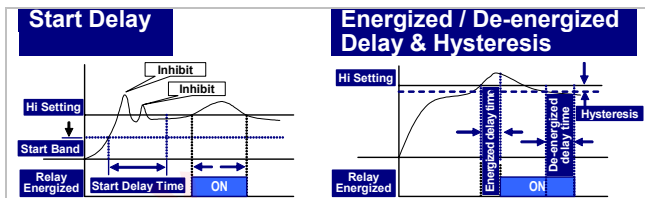


RS 485 communication(optional)

The RS485's protocol is Modbus RTU mode, and baud rate up to 38400bps. It's convenience to remote monitoring, display for reading.



Energized Functions: Start delay / Energized & De-energized delay / Hysteresis

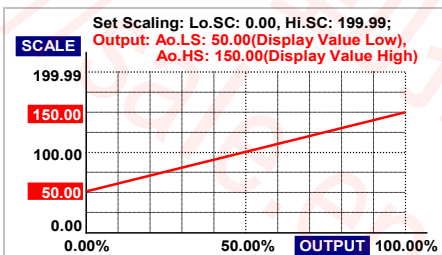


Analogue output(option)

Please specify the output type either an 0~10V or 4(0)~20mA in ordering. The programmable output low and high scaling can be based on various display values. Reverse slope output is possible by reversing point positions.

Output range: Voltage: 0~5V / 0~10V / 1~5V programmable
Current: 0~10mA / 0~20mA / 4~20mA programmable

Functions:
Ao.HS(output range high): setting the Display value High to versus output range High(as like as 20mA in 4~20)
Ao.LS(output range Low): setting the Display value Low to versus output range Low(as like as 4mA in 4~20)



The range between Ao.HS and Ao.LS should be over 20% of span at least; otherwise, it will be got less resolution of analogue output.

Fine zero & span adjustment:

Users can get Fine Adjustment of analogue output by front key of the meter. Please connect standard meter to the terminal of analogue output. To press the front key(up or down key) of meter to adjust and check the output.

- [**Ao.Zro**] : Fine Zero Adjustment for Analog Output;
Settable range: -38011~27524;
- [**Ao.Spn**] : Fine Span Adjustment for Analog Output;
Settable range: -38011~27524;

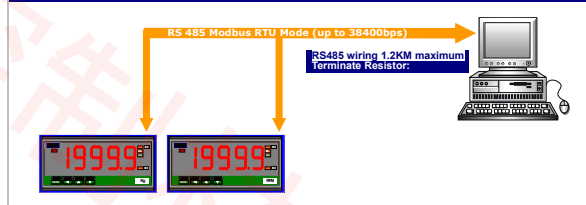
Remote Display:

to show the value from RS485 command of master

The meter will show the value that received from RS485 command. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master so that can be **save cost and wiring** from PLC.

When the [**dSPLY**] set to be RS485, it means, the PV screen will show the number from RS485 command & data. The data(number) will be same as PV that will compare with set-point, analogue output and ECI functions so that is to control analogue output, relay energized and so on.

CS1 APPLICATION FOR REMOTE DISPLAY FROM RS485 COMMAND



Calibration

System calibration by front key. The process of calibration, please refer to the operating manual

Optional Function

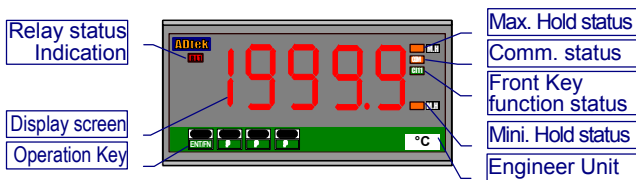
Customize function with quantities is welcome. Please contact with our sales for detail. The appendix code of optional function will be added behind the code of auxiliary power.

■ ERROR MASAGE

DESCRIPTION	DISPLAY	FLASH	REMARK
BEFORE POWER ON, PLEASE CHECK THE SPECIFICATION AND CONNECTION AGAIN.			
SELF-DIAGNOSIS AND ERROR CODE:			
ouFL : Display is positive-overflow (Signal is over display range)	ouFL		(Please check the input signal)
-ouFL : Display is negative-overflow (Signal is under display range)	-ouFL		(Please check the input signal)
ouFL : ADC is positive-overflow (Signal is higher than input 120%)	ouFL		(Please check the input signal)
-ouFL : ADC is negative-overflow (Signal is lower than input -120%)	-ouFL		(Please check the input signal)
E E P / F A I L : EEPROM occurs error	E E P	F A I L	(Please send back to manufactory for repaired)
A I C.n G / P u : Calibrating Input Signal do not process	A I C.n G	P u	(Please process Calibrating Input Signal)
A I C. / F A I L : Calibrating Input Signal error	A I C.	F A I L	(Please check Calibrating Input Signal)
A o C.n G / P u : Calibrating Output Signal do not process	A o C.n G	P u	(Please process Calibrating Output Signal)
A I C. / F A I L : Calibrating Output Signal error	A I C.	F A I L	(Please check Calibrating Output Signal)

CS1-T

FRONT PANEL:



Relay status Indication
Display screen
Operation Key
Max. Hold status
Comm. status
Front Key function status
Mini. Hold status
Engineer Unit

Numeric Screens
0.8”(20.0mm) red high-brightness LED for 5 digital present value.

I/O Status Indication

- Relay Energized:** 1 square red LED
RL1 display when Relay 1 energized;
- RS485 Communication:** 1 square orange LED
COM will flash when the meter is receive or send data, and **COM** flash quickly means the data transient quicker.
- Max/Mini Hold indication:** 2 square orange LEDs
M.H displayed: When the display function has been selected in Maximum or Minimum Hold function.

Stickers:
Each meter has a sticker what are functions and engineer label enclosure.

- Relay energized mode:** **HH HI LO LL DO**
- Down key functions mode:**
PV.H PV.H(PV Hold) / **Tare** Tare / **DI** DI(Digital Input)
M.RS M.RS(Maximum or Minimum Reset) /
R.RS R.RS(Reset for Relay Latch)
- Engineer Label:** over 80 types.

Operating Key: 4 keys for **Enter(Function)** / **Shift(Escape)** / **Up key** / **Down key**

	Setting Status	Function Index
Up key	Increase number	Go back to previous function index
Down key	Decrease number	Go to next function index
Shift key	Shift the setting position	Go back to this function index, and abort the setting
Enter/Fun key	Setting Confirmed and save to EEPROM	From the function index to get into setting status

Pass Word: Settable range:0000~9999;

User has to key in the right pass word so that get into **[Programming Level]**. Otherwise, the meter will go back to measuring page. If user forgets the password, please contact with the service window.

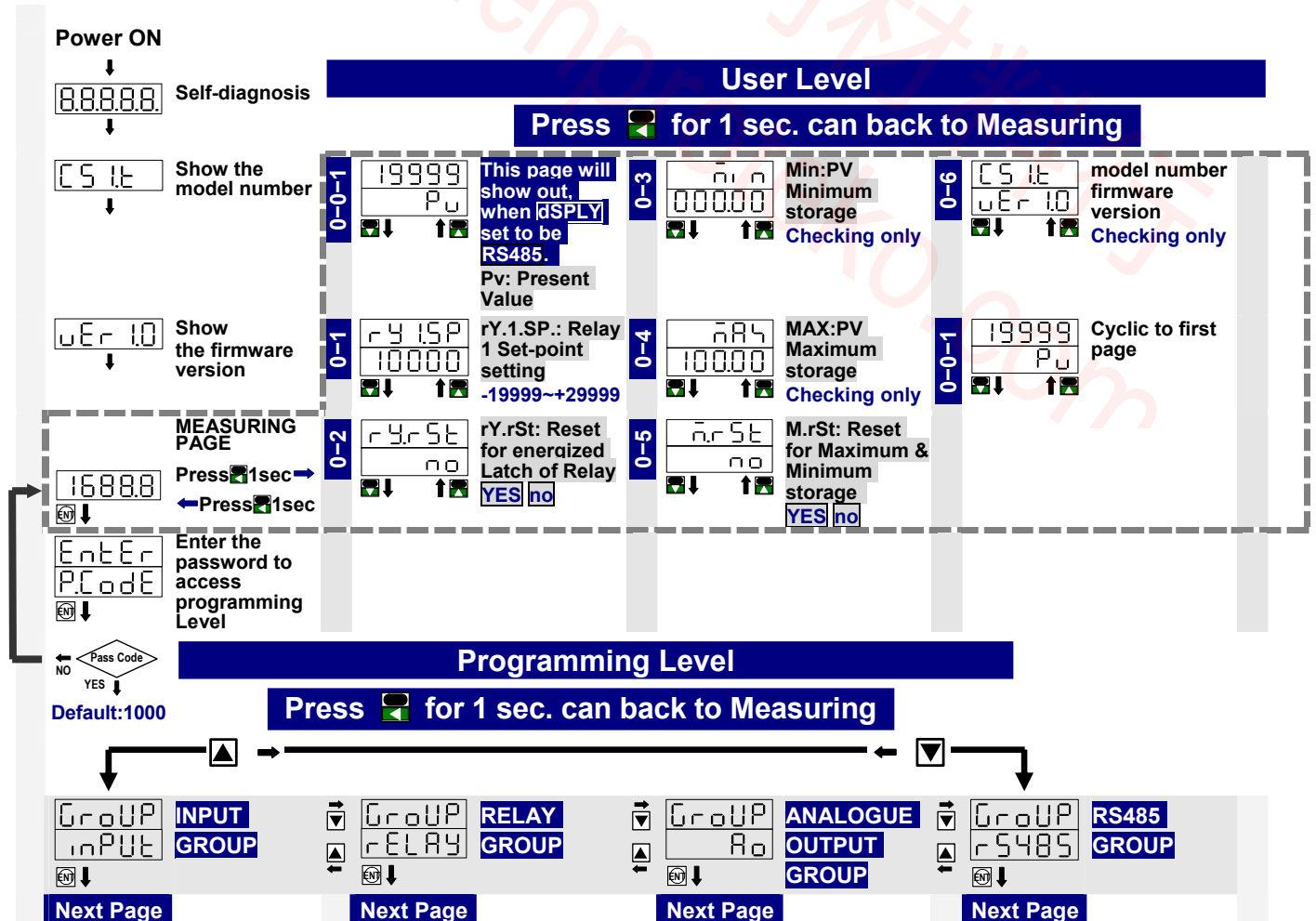
Function Lock: There are 4 levels programmable.

- None:** no lock all.
- User Level:** User Level lock. User can get into User Level for checking but setting.
- Programming Level:** Programming level lock. User can get into programming level for checking but setting.
- ALL:** All lock. User can get into all level for checking but setting.

Front Key Function

- The **Enter** Key can be set to be **rEL.Pv** / **Pv.HLd** / **M.rSt** / **rY.rSt** programmable.

OPERATING DIAGRAM (The detail description of operation, please refer to operating manual.)



CS1-T

A-1	Pv.dP 0	Pv.dP: Decimal Point of PV Don't set	B-1	rY.Sb 0	rY.Sb: Start band for Relay energized 0~9999counts	D-1	Ao.tVp A.4-20	Ao.TVp: Analogue Output type selection v.0-10 v.0-5 v.1-5 A.0-20 A.4-20 A.0-10	E-1	AdRES 1	AdRES: Device number of the meter 1~255
A-2	Lo.SC 0	Lo.SC: Low scale of PV Don't set	B-2	rY.Sd 0000	rY.Sd: Start delay time for Relay energized 0:00.0~9(m):59.9(s)	D-2	Ao.LS 000	Ao.LS: Analogue Low Output versus Low Scale -19999~+29999	E-2	baUD 9600	baud: Baud rate 1200 2400 4800 9600 19200 38400
A-3	Hi.SC 19999	Hi.SC: High scale of PV Don't set	B-3	rY1.Md H1	rY1.Md: Relay 1 energized mode oFF Lo Hi Lo.HLd Hi.HLd do	D-3	Ao.HS 10000	Ao.HS: Analogue High Output versus High Scale -19999~+29999	E-3	PrItY n.Stb.2	PrItY: Parity n.Stb.1 n.Stb.2 odd EvEn
A-4	Pv.Zro 0	Pv.Zro: Fine Low point Adjustment for PV display -19999~+29999	B-4	rY1.HY 0	rY1.HY.: Relay 1 Hysteresis 0~5000counts	D-4	Ao.Zro 000	Ao.Zro: Fine Zero Adjustment for Analoa Low Output -38011~+27524			
A-5	Pv.SPn 0	Pv.SPn: Fine High point Adjustment for PV display -19999~+29999	B-5	rY1.rd 0000	rY1.rd: Relay 1 energized delay time 0:00.0~9(m):59.9(s)	D-5	Ao.SPn 000	Ao.SPn: Fine Span Adjustment for Analoa High Output -38011~+27524			
A-6	Z.S.CLR nonE	Z.S.CLR: Clear Fine Zero & Span Adjustment for PV display nonE Pv.Zro Pv.SPn both	B-6	rY1.Fd 0000	rY1.Fd: Relay 1 de-energized delay time 0:00.0~9(m):59.9(s)	D-6	Z.S.CLR nonE	Z.S.CLR: Zero & Span Clear for Adjustment nonE Ao.Zro Ao.SPn both			
A-7	dSPLY Pv	dSPLY: Display Function Pv Mini.H M.Ax.H RS485									
A-8	Lo.Cut 0	Lo.Cut: Low Cut Function -19999~+29999									
A-9	AvG 5	AvG: Average update for PV 1(None)~99 times									
A-10	M.AvG 1	M.AvG: Moving Average update for PV 1(None)~10 times									
A-11	d.FILt 0	d.FILt: Digital filter 0(None)/1~99 times									
A-12	dn.KEY nonE	dn.KEY: Down key function nonE rEL.Pv Pv.HLd M.rSt rY.rSt									
A-13	P.CodE 0000	P.CodE: Pass Code for enter Programming Level 0000~9999									
A-14	F.LoCk nonE	F.LoCk: Function Level Lock nonE USEr EnG ALL									

> Plesae refer to operating manual for detail description