# CS2-RL PULSE (FREQ.) Indicator

ADTEK

## ■DESCRIPTION

**CS2-RL RPM Indicator has been designed with high accuracy measurement, display and communication of pulse (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 building in 4 Relay outputs, 3 External Control Inputs, 1 Analogue output and 1 RS485(Modbus RTU Mode) interface with versatile functions such as control, alarm, re-transmission and communication for a wide range of testing and machinery control applications.**


## ■FEATURE

- **Measuring Frequency AUTO RANGE 0.01~100KHz / ~140KHz(optional) / Contact, NPN, PNP, Voltage pulse can be switch on rear of meter**
- **Accuracy: ± 0.005%; Display range: 0~99999; Decimal Point auto moving according to input frequency**
- **4 relay can be programmed individual to be a Hi / Lo / Hi Latch / Lo Latch / Go energized with Start Delay / Hysteresis / Energized & De-energized Delay functions, or to be a remote control.**
- **Analogue output and RS 485 communication port in option**
- **3 external control inputs can be programmed individual to be Tare (Relative PV) / PV Hold / Maximum or Minimum Hold / DI (remote monitoring) / Reset for Relay Energized Latch….**
- **CE Approved & RoHS**

## ■ORDERING INFORMATION

**CS2-RL-** [Input Mode][Input level] – [Relay Output] – [Analogue Output] – [RS 485 Port] – [AUX. POWER] – [Optional Function]

OPTION 1 OPTION 2 OPTION 3

**Customize function is welcome. Please contact with our sales for detail.**

| CODE | INPUT MODE | |
|---|---|---|
| C | 00 | Contact |
| N | | NPN |
| P | | PNP |
| V | | Voltage Pulse |
| | 05 | 5V pulse |
| | 12 | 12V pulse |
| | 24 | 24V pulse |
| U | P | Pick Up sensor |

**Input mode and level can be changed by dip switches on rear of meter**

| CODE | REALY OUTPUT |
|---|---|
| N | None |
| R2 | 2 Relay |
| R4 | 4 Relay |

**Please specify the range of amplitude, if the input mode has specified to be pick up sensor.**

| CODE | ANALOG O/P |
|---|---|
| N | None |
| V | 0(1) ~ 5 V<br>0 ~ 10 V |
| I | 0 ~ 10 mA<br>0(4)~20 mA |

| CODE | RS 485 PORT |
|---|---|
| N | None |
| 8 | RS 485 |

| CODE | AUX. POWER |
|---|---|
| A | AC115/230V |
| OPTION 4 | |
| ADH | AC 85~264V<br>DC 100~300V |
| ADL | AC/DC 20~56V |

## ■TECHNICAL SPECIFICATION

### Input

| Input Frequency | Input Mode | Input Level |
|---|---|---|
| 0.01Hz ~ 50 Hz | Mech. Contact | |
| 0.01Hz ~ 50 Hz<br>0.01Hz ~ 100KHz<br>0.01Hz ~ 140KHz (optional) | NPN | High Level: over 2/3 of input level<br>Low Level: under 1/3 of input level |
| | PNP | |
| | Voltage Pulse | |
| | Pick Up Sensor | Specified by order |

**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:** 4 square red LED
**RS 485 communication:** 1 square orange LED
**E.C.I. function indication:** 3 square green LED
**Max/Mini Hold indication:** 2 square orange LED
**Display type:** **RPM / RPS / Linear line speed / Frequency programmable**
**Display range:** **0.0000~99999** with auto moving of decimal point
**Resolution of PV:** Decimal point will Auto-changed according to input
**(Auto-Moving for d.p.)** **Auto / Semi-Auto / Fix; 3 mode programmable**

**Compensation factor:** Compensate error from 0.001~9.999
**Over range indication:** ouFL, 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:** PuPro: Settable range: 0~+99999
PuSPn: Settable range: 0~+99999

### Reading Stable Function

**Average:** Settable range: 1~99 times
**Digital filter:** Settable range: 0(None)/1~99 times

### Control Functions(option)

**Set-points:** Four set-points
**Control relay:** Four relays
Relay 2 & Relay 3: Dual FORM-C, 5A/230Vac, 10A/115V
Relay 1 & Relay 4: Dual FORM-A, 1A/230Vac, 3A/115V
**D.P. of set point:** Programmable from 0 / 0.0 / 0.00 / 0.000 / 0.0000
**Relay energized mode:** Energized levels compare with set-points:
Hi / Lo / Go.12 / Go.23 / **Hi.HLd** / **Lo.HLd**; programmable
**DO function: Energized by RS485 command of master.**
**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

### External Control Inputs(ECI)

| | |
|---|---|
| **Input mode:** | 3 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.; 16 bits DA converter** |
| **Ripple:** | ≤± 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<br>**Voltage:** 0~5V / 0~10V / 1~5V programmable<br>**Current:** 0~10mA / 0~20mA / 4~20mA programmable |
| **Output capability:** | **Voltage: 0~10V: ≥ 1000Ω;**<br>**Current: 4(0)~20mA: ≤ 600Ω max** |
| **Functions:** | RaH5 (output range high): Settable range: -19999~29999<br>RaL5 (output range Low): Settable range: -19999~29999<br>RaLnt (output High Limit): 0.00~110.00% of output High |
| **Digital fine adjust:** | RaPro: Settable range: -38011~+27524<br>RaSPn: 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 / E.C.I. |
| **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 |

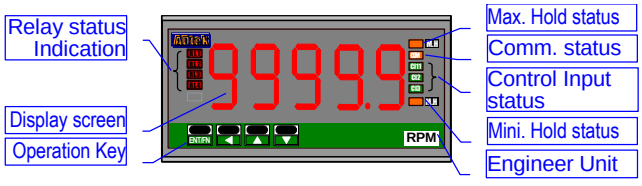
### Mechanical

| | |
|---|---|
| **Dimensions:** | 96mm(W) x 48mm(H) x 120mm(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)<br>10A 300Vac, M2.6, 1.3~2.0mm²(16~22AWG) |
| **Weight:** | 550g / 350g(Aux. Power Code: ADH or ADL) |

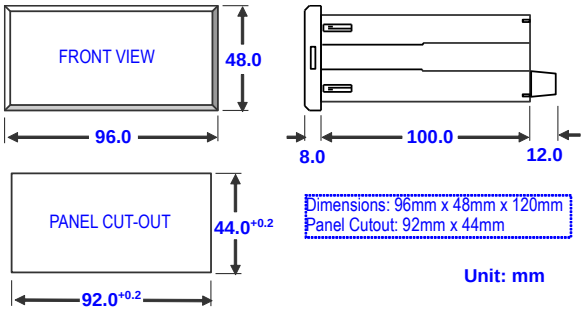
### Power

| | |
|---|---|
| **Power supply:** | AC115/230V,50/60Hz;<br>**Optional: AC 85~264V, DC 100~300V, AC/DC 20~56V** |
| **Excitation supply:** | Excitation supply has to match the input mode / 30mA |
| **Power consumption:** | 5.0VA maximum |
| **Back up memory:** | By EEPROM |

## ■FRONT PANEL

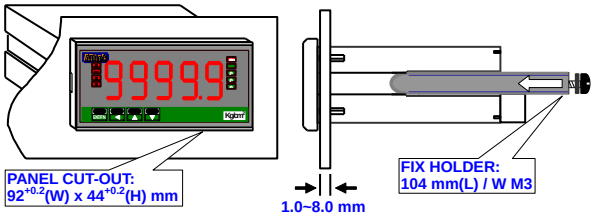



## ■DIMENSIONS

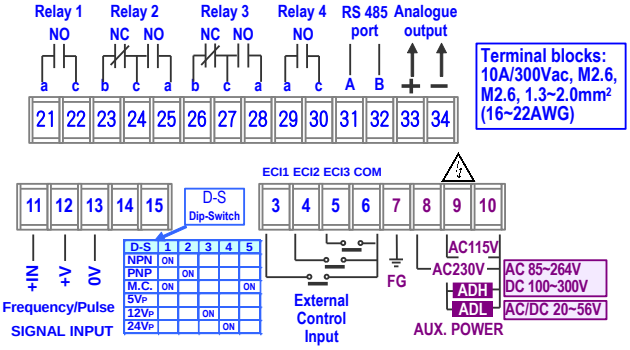



## ■INSTALLATION

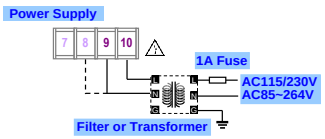
The meter should be installed in a location that does not exceed the maximum operating temperature and provides good air circulation.

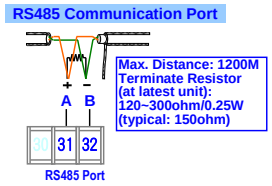



## ■CONNECTION DIAGRAM

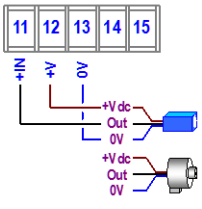



Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.




**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 5Vp | | | | | |
| Voltage pulse 12Vp | | | ON | | |
| Voltage pulse 24Vp | | | | ON | |
| D-S is on when it is in down site | | | | | |