## Digital Panel Meter Model 3124

Please take care that this instruction manual is certainly delivered to the person in charge of operating it．For safety and proper use of this product，please observe the following caution and also read the instruction manuals to follow before the initial operation．


## －Check at Delivery

－When the product is delivered to you，please check that its specifications conform to your requirement and that there is no damage in transit．This product is carefully inspected before delivery from factory under our strict quality control program，but if you find any defect or inconvenience，please inform us of the model name，serial number etc．of the product．

## －Cautions for Use

－No power on－off switch is provided on the model 3124 so it immediately starts to work when connected to the power source． The rated data of this instrument is，however，defined with the pre－heating for 15 minutes or more．
－When the product is installed in the cabinet，perform the appropriate heat radiation to keep less than $50^{\circ} \mathrm{C}$ in it．

## ■Standard Specifications



## 【1】Measuring input

| Model | Measuring | Input | Accuracy＊ | Overload |
| :---: | :--- | :--- | :--- | :--- |
| $3124-03$ | $\pm 1.9999 \mathrm{~V}$ | Approx． $1 \mathrm{M} \Omega$ | $\pm(0.05$ of rdg＋2digits $)$ | $\mathrm{DC} \pm 250 \mathrm{~V}$ |
| $3124-04$ | $\pm 19.999 \mathrm{~V}$ | Approx． $1 \mathrm{M} \Omega$ | $\pm(0.05$ of rdg＋2digits $)$ | $\mathrm{DC} \pm 250 \mathrm{~V}$ |
| $3124-05$ | $\pm 199.99 \mathrm{~V}$ | Approx． $10 \mathrm{M} \Omega$ | $\pm(0.05$ of rdg＋2digits $)$ | $\mathrm{DC} \pm 500 \mathrm{~V}$ |
| $3124-09$ | $\mathrm{DC} 1 \sim 5 \mathrm{~V}$ | Approx． $1 \mathrm{M} \Omega$ | $\pm(0.1$ of rdg＋5digits $)$ | $\mathrm{DC} \pm 250 \mathrm{~V}$ |
| $3124-\mathrm{V} 1$ | $\mathrm{DC} 0 \sim 1 \mathrm{~V}$ | Approx． $1 \mathrm{M} \Omega$ | $\pm(0.05$ of rdg＋2digits $)$ | $\mathrm{DC} \pm 250 \mathrm{~V}$ |
| $3124-\mathrm{V} 2$ | $\mathrm{DC} 0 \sim 5 \mathrm{~V}$ | Approx． $1 \mathrm{M} \Omega$ | $\pm(0.05$ of rdg＋2digits $)$ | $\mathrm{DC} \pm 250 \mathrm{~V}$ |
| $3124-\mathrm{V} 3$ | $\mathrm{DC} 0 \sim 10 \mathrm{~V}$ | Approx． $1 \mathrm{M} \Omega$ | $\pm(0.05$ of rdg＋2digits $)$ | $\mathrm{DC} \pm 250 \mathrm{~V}$ |
| $3124-19$ | $\mathrm{DC} 4 \sim 20 \mathrm{~mA}$ | Approx． $13 \Omega$ | $\pm(0.1$ of rdg＋5digits $)$ | $\mathrm{DC} \pm 150 \mathrm{~mA}$ |
| $3124-\mathrm{A} 1$ | $\mathrm{DC} 0 \sim 1 \mathrm{~mA}$ | Approx． $200 \Omega$ | $\pm(0.1$ of rdg＋2digits $)$ | $\mathrm{DC} \pm 50 \mathrm{~mA}$ |

＊Accuracy：Defined at $23^{\circ} \mathrm{C} \pm 5^{\circ} \mathrm{C}, 45$ to $75 \% \mathrm{RH}$ ．
Temperature coefficient：$\pm 100 \mathrm{ppm} /{ }^{\circ} \mathrm{C}$ for $3124-03,-04,-05, \mathrm{~V} 1$ to V3
$\pm 200 \mathrm{ppm} /{ }^{\circ} \mathrm{C}$ for $3124-09,-19,-\mathrm{Al}$
Within the 0 to $50^{\circ} \mathrm{C}$ temperature range．

## 【2】Display Color

| No． | Description |
| :---: | :--- |
| Blank | Red LED |
| G | Green LED |

【3】Option

| No． | Input |
| :---: | :--- |
| Blank | Nil |
| A01 | Display sampling 1 second |
| A02 | Fixed $10^{\circ}$ digit to 0 |
| A03 | Display sampling 1 second， <br> Fixed $10^{\circ}$ digit to 0 |

## ■General Specifications

Display
Scaling Function
Offset Fixing Function
Hold Function
Decimal Point
Over-range indication
Resolution
Display Cycle
Input Type
A/D Conversion
Noise Rejection
Insulation Resistance

Withstanding Voltage

Power Supply
Power Consumption
Operating Temperature
Storage Temperature
Mounting Method
Weight
: 0~19999 red or green LED (character height 8 mm ) with zero-suppress function.
: Full scale display -19999~+19999 Offset display -19999~+19999
: Function to fix a display reading of input less than offset value to the offset value.
: Measured data is held (Not isolated from input).
: Programmable by the connector (Not isolated from input).
: Blinking with $130 \%$ display. When exceeded 19999, blinking with 0000.
: $1 / 20000$
: 400ms
: Single ended, floating input.
: $\Delta-\Sigma$ conversion system.
: Normal mode (NMR) - 50dB or more.
: Input terminals - Case : DC500V 100M $\Omega$ or more. Power supply terminals - Case : DC500V $100 \mathrm{M} \Omega$ or more. Power supply terminals - Input terminals $:$ DC500V $100 \mathrm{M} \Omega$ or more.
: Input terminals - Case : AC1500V each for 1 min . Power supply terminals - Case : AC1500V each for 1 min . Power supply terminals - Input terminals : AC500V each for 1 min .
: DC4.75~32V
: Approx. 100mA at5V. Approx. 50mA at 12V. Approx. 35 mA at 24 VDC .
: $0 \sim 50^{\circ} \mathrm{C}$
: $-20 \sim 70^{\circ} \mathrm{C}$
: Snap-in type from the panel front.
: Approx. 45g

## ■ Dimensions



## Mounting

Remove the connector at the rear side of the case, then insert from the panel front.

Panel cut dimension is $45_{0}^{+0.5} \times 22.2_{0}^{+0.3} \mathrm{~mm}$.
Panel thickness should be 1 to 5 mm .

## - Scaling

Full scale value and Offset value are programmable within the range from -19999 to +19999 .
Refer to "Parameter Setting."
Example.1) From elevation (over 0\%) to suppression (belowEwonqle.2) From 100\%

Full scale value: 9000
Offset value: 1000


## ■Offset fixing

Display can be fixed to the offset value when the input value is lower than the offset value. Refer to "Setting method".
to $0 \%$
Full scale value: 0 Offisptay/aline: 19990



■Connector arrangement

| Terminal | Hi | Lo | COM | HOLD | DP1 | DP2 | DP3 | DP4 | - | + |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Function | + | - | Common | Hold | $10^{1}$ dig | $10^{2} \mathrm{dig}$ | $10^{3} \mathrm{dig}$ | $10^{4}$ dig | $\begin{gathered} \text { Power } \\ \text { DC } 4.75 \sim 32 \mathrm{~V} \end{gathered}$ |  |
|  | Input |  |  |  | Decimal point |  |  |  |  |  |

## - Input terminals (Input Hi, Lo)

Pay attention to the polarity when wiring. Connect input of higher electric potential to Hi. Input and power line shall lay separately. Otherwise, display may be unstable.

## - Hold (HOLD)

Display can be held by connecting the Hold terminal and the Common terminal.
Active "L" In $\leqq-1 \mathrm{~mA}$, "L" $=0 \sim 0.8 \mathrm{~V}$, "H" $=3.5 \sim 5 \mathrm{~V}$
Hold terminal is not isolated to the input. Use a photo-coupler or switch to insulate. It is essential when using the input floating. When using plural numbers of the product, the hold terminal should be insulated at each instruments.

- Decimal point ( $\mathbf{1 0} \mathbf{0}^{1}$ dig. $\sim 10^{4}$ dig.)

Decimal point is programmable. Connect and short-circuit the desired decimal point terminal and the common terminal. Active "L", In $\leqq-1 \mathrm{~mA}, ~ " L "=0 \sim 0.8 \mathrm{~V}, " H "=3.5 \sim 5 \mathrm{~V}$
Those terminals are not isolated to the input. Use a photo-coupler or switch to insulate. It is essential when using the input floating.

## - Common (COM)

For Hold and Decimal point terminals.

- Power supply (+,-)

Use within the range from DC 4.75 to 32 V .

## ■Option (Specify when ordering)

Display cycle can be set to 1 second
$10^{0}$ dig-can be set to 0 if input value is unstable.

## ■ Parameter Setting

- Component identification

- Setting method (Scaling, Offset locking)



## ■Maintenance

Store the instrument within the specified storage temperature $\left(-20 \sim 70^{\circ} \mathrm{C}\right)$.
When the front panel or the case becomes dirty, wipe it with soft cloth.
For heavy dirt, wipe it lightly with the soft cloth wetted with the neutral cleaner thinned by water, and finish the cleaning with dry cloth. Do not use organic solvent like benzene or paint thinner as they may deform or discolor the case.

## ■Calibration

In order to maintain long term accuracy, periodical calibration at an interval of about one year is recommended.
Make a calibration of the instrument with the ZERO and MAX volumes inside the front mask. Also, make a calibration in the ambient condition of $23^{\circ} \mathrm{C} \pm 5^{\circ} \mathrm{C}, 75 \% \mathrm{RH}$ or less.


## Warranty

The manufacturer warrants to the original retail customer its digital panel meter to be free of defects in material and workmanship for use under normal care and will repair or replace any meter at no charge to the customer during the one (1) year warranty period from the original factory shipment.

## Contact Information

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