

Multi-monitors

MD

■ Sensor/controller components



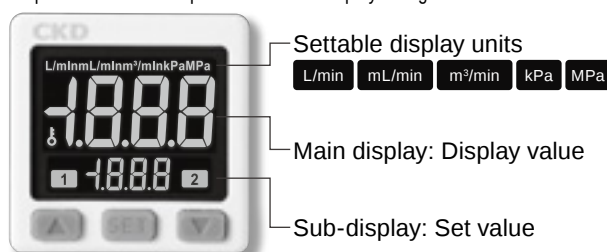
CONTENTS

● MD	1354
Display description, internal circuit and connection method	1357
⚠ Safety precautions	1358

Compatible with any flow rate and pressure regardless of the sensor

Multi-monitors

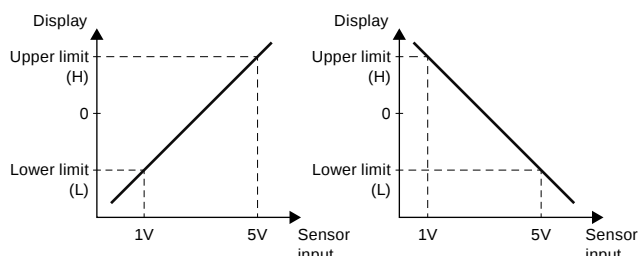
Simultaneous confirmation of the display value and the set value is possible.
Output of flow rate and pressure can be displayed regardless of the sensor.



Set display value freely within range

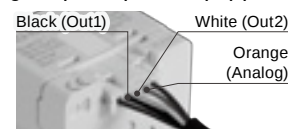
Scaling function

Enables conversion display of sensor input to arbitrary values.
The decimal point position can also be switched.



Analog output proportional to the displayed value available

Switch output 2 points + analog output 1 point equipped
Transmits analog output signal proportional to input signal of the sensor to PLC, etc.



Easy-to-read display

3-color display

The display value and set value are displayed in three colors.



Prevents misoperation

Lock function

Prevents misoperation such as touching the wrong key.



Saves power with display OFF when not setting

Energy saving mode function

In energy saving mode, the display will turn OFF after 30 seconds unless a button is pressed.

* Environment inspection is only available for "RoHS certificate" and "REACH certificate". Parts level detailed data is not supported.

CKD

1353

F.R.L.
F.R.
F (Filtr)
R (Reg)
L (Lub)
Drain Separ
Mech Press SW
Res press exh valve
SlowStart
Anti-bac/Bac-remove Filtr
Film Resist FR
Oil-ProhR
Med Press FR
No Cu/ PTFE FRL
Outdrs FRL
Adapter Joiner Press Gauge
CompFRL
LgFRL
PrecsR
VacF/R
Clean FR
ElecPneuR
AirBoost
Speed Ctrl
Silncr
CheckV/ other
Fit/Tube
Nozzle
Air Unit
PrecsCompn
Electro Press SW
ContactSW
AirSens
PresSW Cool
Air Flo Sens/Ctrl
WaterRISens
TotAirSys (Total Air)
TotAirSys (Gamma)
Gas generator
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending

F.R.L.
F.R.
F (Filtr)
R (Reg)
L (Lub)
Drain
Separ
Mech
Press SW
Res press
exh valve
SlowStart
Anti-bac/Bac-
remove Filtr
Film
Resist FR
Oil-ProhR
Med
Press FR
No Cu/
PTFE FRL
Outdrs FRL
Adapter
Joiner
Press
Gauge
CompFRL
LgFRL
PrecsR
VacF/R
Clean FR
ElecPneR
AirBoost
Speed Ctrl
Silncr
CheckV/
other
Fit/Tube
Nozzle
Air Unit
PrecsCompn
Electro
Press SW
ContactSW
AirSens
PresSW
Cool
Air Flo
Sens/Ctrl
WaterRtSens
TotAirSys
(Total Air)
TotAirSys
(Gamma)
Gas
generator
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg
etc
Ending



Multi-monitors

MD Series



Specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Display	Flow rate/ Pressure range (*)	Upper limit (H)	-100.0 to 0	1.000 to 0	1.50 to 0	2.00 to 0	4.00 to 0	5.00 to 0	10.00 to 0	12.0 to 0	20.0 to 0	25.0 to 0	
		Lower limit (L)	0	0	0	0	0	0	0	0	0	0	0
		Resolution	0.1	0.001	0.01	0.01	0.01	0.01	0.01	0.01	0.1	0.1	0.1
		Upper limit (H)	32.0 to 0	50.0 to 0	60.0 to 0	100.0 to 0	200 to 0	300 to 0	500 to 0	1000 to 0	1.000 to -1.000	2.00 to -2.00	
		Lower limit (L)	0	0	0	0	0	0	0	0	-1.000	-2.00	
		Resolution	0.1	0.1	0.1	0.1	1	1	1	1	0.001	0.01	
		Upper limit (H)	5.00 to -5.00	10.00 to -10.00	20.0 to -20.0	50.0 to -50.0	100.0 to -100.0	200 to -200	500 to -500	1000 to -1000	300 to -100	980 to -100	
		Lower limit (L)	-5.00	-10.00	-20.0	-50.0	-100.0	-200	-500	-1000	-100	-100	
		Resolution	0.01	0.01	0.1	0.1	0.1	1	1	1	1	1	1
	Unit (*)	With scaling function											
MPa, kPa, mL/min, L/min, m³/min													
Power supply voltage		12 to 24 VDC ±10% ripple (P-P) 10% or less											
Current consumption		40 mA or less (no load)											
Sensor input		1 to 5 V											
Sensor supply power current		Max. 100 mA											
Switch output		NPN: transistor, open collector 2 points Max. load current: 125 mA Max. power supply voltage: 30 VDC Internal voltage drop: 1.5 V or less						PNP: transistor, open collector 2 points Max. load current: 125 mA Max. power supply voltage: 24 VDC Internal voltage drop: 1.5 V or less					
Repeatability (switch output)		±0.1% F.S. ±1 digit or less											
Hysteresis	One-point mode	Adjustment possible (*)											
	Hysteresis mode												
	Window comparator mode												
Response time		2.5 ms or less (Chattering prevention: 25 ms, 100 ms, 250 ms, 500 ms, 1000 ms, and 1500 ms selectable)											
Switch output load short-circuit protection		Yes											
Display		Main/unit display: 2 colors (red, green) Sub-display: Orange (sampling rate: 5 times/sec)											
Display accuracy		±1% F.S. ±1 digit or less (reference temperature: 25 ±3°C)											
Display lamp		Orange (OUT1, OUT2)											
Analog output (voltage output)		Output voltage: 1 to 5 V ±2% F.S. or less (rated pressure range) Linearity: ±1% F.S. Output impedance: 1 kΩ											
Analog output (current output)		Output current: 4 to 20 mA ±2% F.S. or less (rated pressure range) Linearity: ±1% F.S. Max. load impedance: 250 Ω (12 V), 600 Ω (24 V) Min. load impedance: 50 Ω											
Environment conditions	Degree of protection	IP40											
	Ambient temperature	Usage: 0 (32°F) to 50°C (122°F), Storage: -10 (14°F) to 60°C (140°F) (no condensation or freezing)											
	Ambient humidity	Usage/Storage: 35 to 85% RH (no condensation)											
	Withstand voltage	1000 VAC, 1 minute (between the case and lead wire)											
	Insulation resistance	50 MΩ or less (500 VDC, between the case and lead wire)											
	Vibration resistance	Compound amplitude 1.5 mm, 10 Hz - 55 Hz - 10 Hz per minute, 2 hours each in X, Y, Z directions											
	Impact resistance	100 m/s² (10 G), 3 times each in X, Y, Z directions											
Temperature characteristics		±0.5 F.S. or less (25°C (77°F) reference) temperature range 0 (32°F) to 50°C (122°F)											
Lead wire		Oil resistant cable (0.15 mm²)											
Weight		Approx. 67 g (Lead wire 2 m)											

*The flow rate and pressure range can be selected from 30 patterns. Arbitrary figures can also be set with the scaling function.

*The one-point set mode and window comparator mode hysteresis can be adjusted between 1 and 8 digits.

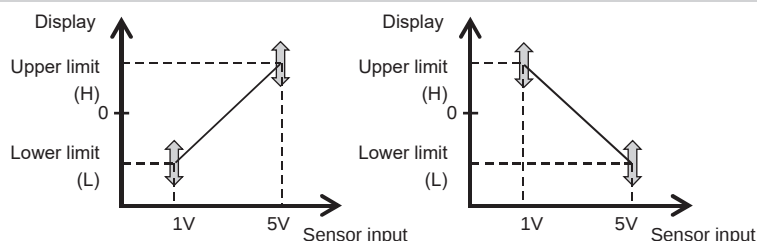
*The unit can be selected from MPa, kPa, mL/min, L/min, and m³/min.

Scaling function

Arbitrary figures can also be set for the flow rate/pressure range with the scaling function.

The number of figures after the decimal point can also be changed.

(Note) The upper (H) and lower (L) limits can be set within a range of ±1999. However, the upper (H) and lower (L) limits cannot be set with the same polarity (both positive or both negative).



How to order

● Multi-monitor model No.

MD - N V A

A Output

B Analog output format

C Compatible sensor

- (Standard attachment)
- 5-conductor cable 2 m: 1
 - Sensor connection connector (e-CON): 1

Code	Description
A Output	
N	Switch output (NPN) 2 points
P	Switch output (PNP) 2 points
B Analog output format	
V	Voltage output (1 to 5 V)
A	Current output (4 to 20 mA)
C Compatible sensor	
A	FSM-V, PPE, PPD3-A
B	WFK3000
C	WFC

(Note) The corresponding sensor is voltage output (1 to 5 V).

C	AWG	O.D.	Cover color	Sumitomo 3M model No.
A	24-26	ø1.0 to 1.2	Yellow	37104-3122-000 FL
B	24-26	ø1.2 to 1.6	Orange	37104-3163-000 FL
C	20-22	ø1.6 to 2.0	Gray	37104-2206-000 FL

● Discrete option model No.

MD - KD

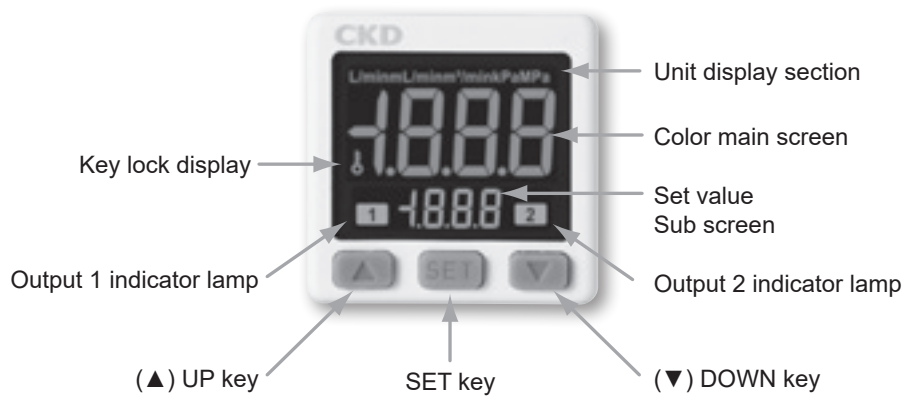
A Option

Code	Description
A Option	
KD	Parallel mounting bracket (mounting screws included)
KL	L-shaped mounting bracket (mounting screws included)
KHS	Panel adapter
KHSCB	Panel adapter + Front protective cover
C2	5-conductor connector cable 2 m

Optional dimensions



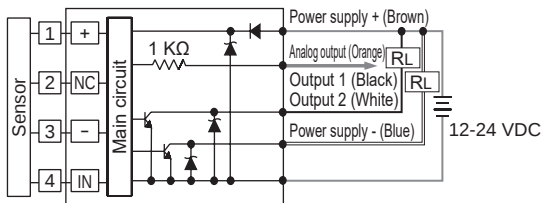
Display description



Internal circuit / connection method

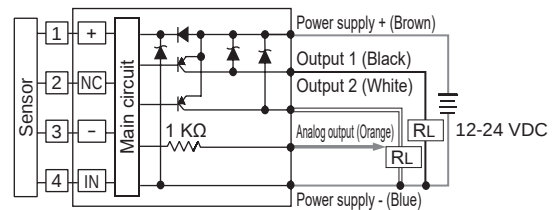
MD-NV

2NPN + Analog output (1 to 5 V)



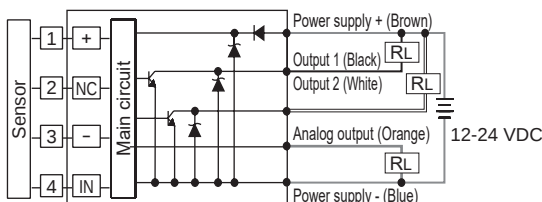
MD-PV

2PNP + Analog output (1 to 5 V)



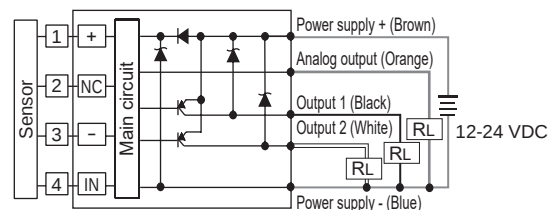
MD-NA

2NPN + Analog output (4 to 20 mA)



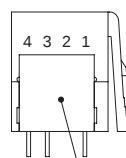
MD-PA

2PNP + Analog output (4 to 20 mA)

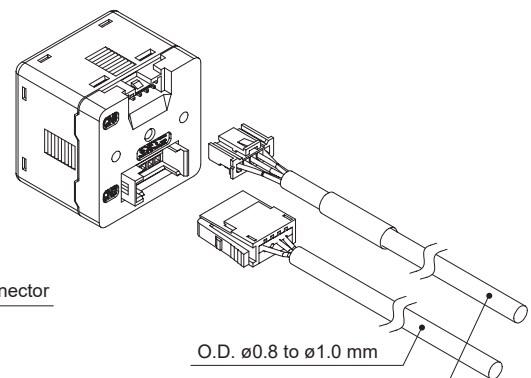


PIN No.	Sensor wiring
1	Power supply +
2	N.C.
3	Power supply -
4	Sensor input (1 to 5 V)

PIN No.	Cable color
1	Brown (Power supply +)
2	Orange (Analog output)
3	White (OUT2)
4	Black (OUT1)
5	Blue (Power supply -)



e-CON connector



Power line and output cable connector



F.R.L.
F.R.
F (Filtr)
R (Reg)
L (Lub)
Drain Separ
Mech Press SW
Res press exh valve
SlowStart
Anti-bac/Bac-remove Filtr
Film Resist FR
Oil-ProhR
Med Press FR
No Cu/ PTFE FRL
Outdrs FRL
Adapter Joiner Press Gauge
CompFRL
LgFRL
PrecsR
VacF/R
Clean FR
ElecPneuR
AirBoost
Speed Ctrl
Silncr
CheckV/ other
Fit/Tube
Nozzle
Air Unit
PrecsCompn
Electro Press SW
ContactSW
AirSens
PresSW Cool
Air Flo Sens/Ctrl
WaterRISens
TotAirSys (Total Air)
TotAirSys (Gamma)
Gas generator
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending