OMRON

Process Meter

K3NX

Advanced Intelligent Signal Processor Accepts Voltage/Current Input

- Easily programmable through the front panel or via RS-232C, RS-485, or RS-422.
- Programming with easy setup and calibration.
- Multi-range function allows single Process Meter to cover a wide range of inputs.
- Easy-to-use scaling function with the key programming method.
- A wide range of Output Boards, including communications and linear boards.
- Sensor power supply of 80 mA at 12 VDC.
- NEMA4X/IP66 front panel.
- Conforms to EMC standards, EN61010-1 (IEC61010-1).
- UL/CSA approved.

Ordering Information

■ Base Units

Model	Input type	Supply voltage	
		100 to 240 VAC	12 to 24 VDC
Basic Models These models provide a process value LED and front-panel control keys. Can be connected to available Output Board, or can be used for display only without an Output Board. 	DC voltage	K3NX-VD1A	K3NX-VD2A
	DC current	K3NX-AD1A	K3NX-AD2A
	AC voltage	K3NX-VA1A	K3NX-VA2A
	AC current	K3NX-AA1A	K3NX-AA2A
Set Value LED Models These models provide a process value LED, set value LED, and front-panel control keys. Can be connected to Relay Contact, Transistor, or Combination Output Boards. 	DC voltage	K3NX-VD1C	K3NX-VD2C
	DC current	K3NX-AD1C	K3NX-AD2C
	AC voltage	K3NX-VA1C	K3NX-VA2C
	AC current	K3NX-AA1C	K3NX-AA2C

■ Available Output Board Combinations

Output type	Output configuration	Output boards	Base units	
			Basic	Set Value LED Display
Relay contact	3 outputs: H, PASS, L (SPDT)	K31-C1	Yes	Yes
	5 outputs: HH, H, L, LL (SPST-NO), and PASS (SPDT)	K31-C2	Yes	Yes
	5 outputs: HH, H, L, LL (SPST-NC), and PASS (SPDT)	K31-C5	Yes	Yes
Transistor	5 outputs (NPN open collector)	K31-T1	Yes	Yes
	5 outputs (PNP open collector)	K31-T2	Yes	Yes
BCD (see note)	5-digit output (NPN open collector)	K31-B2	Yes	---
Linear	4 to 20 mA DC	K31-L1	Yes	---
	1 to 5 VDC	K31-L2	Yes	---
	1 mV/10 digits	K31-L3	Yes	---
	0 to 5 VDC	K31-L7	Yes	---
	0 to 10 VDC	K31-L8	Yes	---
Communication boards (see note)	RS-232C	K31-FLK1	Yes	---
	RS-485	K31-FLK2	Yes	---
	RS-422	K31-FLK3	Yes	---
Combination output and communication boards	BCD output + 5 transistor outputs (NPN open collector)	K31-B4	Yes	Yes
	4 to 20 mA + 5 transistor outputs (NPN open collector)	K31-L4	Yes	Yes
	1 to 5 V + 5 transistor outputs (NPN open collector)	K31-L5	Yes	Yes
	1 mV/10 digits + 5 transistor outputs (NPN open collector)	K31-L6	Yes	Yes
	0 to 5 VDC + 5 transistor outputs (NPN open collector)	K31-L9	Yes	Yes
	0 to 10 VDC + 5 transistor outputs (NPN open collector)	K31-L10	Yes	Yes
	RS-232C + 5 transistor outputs (NPN open collector)	K31-FLK4	Yes	Yes
	RS-485 + 5 transistor outputs (NPN open collector)	K31-FLK5	Yes	Yes
	RS-422 + 5 transistor outputs (NPN open collector)	K31-FLK6	Yes	Yes

Note: For details, refer to the *Communication Operation Manual.*

Model Number Legend:

Base Units and Output Boards can be ordered individually or as sets. Refer to the *Available Output Board Combinations* table on page 2.

Base Units

K3NX - □ □ □ □
1 2 3 4

Output Boards

K31 - □ □ □ □
5 6 7 8

Base Units with Output Boards

K3NX - □ □ □ □ - □ □ □ □
1 2 3 4 5 6 7 8

1, 2. Input Sensors Codes

VD: DC voltage input
AD: DC current input
VA: AC voltage input
AA: AC current input

3. Supply Voltage

1: 100 to 240 VAC
2: 12 to 24 VDC

4. Display

A: Basic
C: Set Value LED Display

5, 6, 7, 8. Output Type Codes

C1: 3 comparative relay contact outputs (H, PASS, L: SPDT)
C2: 5 comparative relay contact outputs (HH, H, L, LL: SPST-NO; PASS: SPDT)
C5: 5 comparative relay contact outputs (HH, H, L, LL: SPST-NC; PASS: SPDT)
T1: 5 comparative transistor outputs (NPN open collector)
T2: 5 comparative transistor outputs (PNP open collector)
B2: BCD output (NPN open collector) (see note)
B4: BCD output + 5 transistor outputs (NPN open collector)
L1: Linear output (4 to 20 mA) (see note)
L2: Linear output (1 to 5 VDC) (see note)
L3: Linear output (1 mV/10 digits) (see note)
L4: Linear output, 4 to 20 mA + 5 transistor outputs (NPN open collector)
L5: Linear output, 1 to 5 V + 5 transistor outputs (NPN open collector)
L6: Linear output, 1 mV/10 digits+ 5 transistor outputs (NPN open collector)
L7: Linear output, 0 to 5 VDC (see note)
L8: Linear output, 0 to 10 VDC (see note)
L9: Linear output, 0 to 5 VDC + 5 transistor outputs (NPN open collector)
L10: Linear output, 0 to 10 VDC + 5 transistor outputs (NPN open collector)
FLK1: Communication RS-232C (see note)
FLK2: Communication RS-485 (see note)
FLK3: Communication RS-422 (see note)
FLK4: RS-232C + 5 transistor outputs (NPN open collector)
FLK5: RS-485 + 5 transistor outputs (NPN open collector)
FLK6: RS-422 + 5 transistor outputs (NPN open collector)

Note: These output types are available on Basic Models only.

Specifications

■ Ratings

Supply voltage	100 to 240 VAC (50/60 Hz); 12 to 24 VDC
Operating voltage range	85% to 110% of supply voltage
Power consumption (see note)	15 VA max. (max. AC load with all indicators lit) 10 W max. (max. DC load with all indicators lit)
Sensor power supply	80 mA at 12 VDC±10% (Use a power supply of less than 50 VAC or 70 VDC for input signals.)
Insulation resistance	20 MΩ min. (at 500 VDC) between external terminal and case. Insulation provided between inputs, outputs, and power supply.
Dielectric withstand voltage	2,000 VAC for 1 min between external terminal and case. Insulation provided between inputs, outputs, and power supply.
Noise immunity	±1,500 V on power supply terminals in normal or common mode ±1 μs, 100 ns for square-wave noise with 1 ns
Vibration resistance	Malfunction: 10 to 55 Hz, 0.5-mm for 10 min each in X, Y, and Z directions Destruction: 10 to 55 Hz, 0.75-mm for 2 hrs each in X, Y, and Z directions
Shock resistance	Malfunction: 98 m/s^2 (10G) for 3 times each in X, Y, and Z directions Destruction: 294 m/s^2 (30G) for 3 times each in X, Y, and Z directions
Ambient temperature	Operating: –10°C to 55°C (with no icing) Storage: –20°C to 65°C (with no icing)
Ambient humidity	Operating: 25% to 85% (with no condensation)
Ambient atmosphere	Must be free of corrosive gas
EMC	Emission Enclosure: EN55011 Group 1 class A Emission AC Mains: EN55011 Group 1 class A Immunity ESD: EN61000-4-2: 4-kV contact discharge (level 2) 8-kV air discharge (level 3) Immunity-RF-interference: ENV50140: 10 V/m (amplitude modulated, 80 MHz to 1 GHz) (level 3) 10 V/m (pulse modulated, 900 MHz) Immunity Conducted Disturbance: ENV50141: 10 V (0.15 to 80 MHz) (level 3) Immunity Burst: EN61000-4-4: 2-kV power-line (level 3) 2-kV I/O signal-line (level 4)
Approved standards	UL508, CSA22.2; conforms to EN50081-2, EN50082-2, EN61010-1 (IEC61010-1); conforms to VDE106/part 100 (Finger Protection) when the terminal cover is mounted.
Weight	Approx. 400 g

Note: An Intelligent Signal Processor with DC supply voltage requires approximately 1 A DC as control power supply current the moment the Intelligent Signal Processor is turned on. Do not forget to take this into consideration when using several Intelligent Signal Processors. When the Intelligent Signal Processor is not in measuring operation (e.g., the Intelligent Signal Processor has been just turned on or is operating for startup compensation time), the display will read "□□□□□" and all outputs will be OFF.

Input/Output Ratings

Relay Contact Output

(Incorporating a G6B Relay)

Item	Resistive load (cosϕ = 1)	Inductive load (cosϕ = 0.4, L/R = 7 ms)
Rated load	5 A at 250 VAC; 5 A at 30 VDC	1.5 A at 250 VAC, 1.5 A at 30 VDC
Rated carry current	5 A max. (at COM terminal)	
Max. contact voltage	380 VAC, 125 VDC	
Max. contact current	5 A max. (at COM terminal)	
Max. switching capacity	1,250 VA, 150 W	375 VA, 80 W
Min. permissible load (P level, reference value)	10 mA at 5 VDC	
Mechanical life	50,000,000 times min. (at a switching frequency of 18,000 times/hr)	
Electrical life (at an ambient temperature of 23°C)	100,000 times min. (at a rated load switching frequency of 1,800 times/hr)	

Transistor Output

Rated load voltage	12 to 24 VDC $^{+10\%}/_{-15\%}$
Max. load current	50 mA
Leakage current	100 μA max.

BCD Output

I/O signal name		Item	Rating
Inputs	REQUEST, HOLD, MAX, MIN, RESET	Input signal	No-voltage contact input
		Input current with no-voltage input	10 mA
		Signal level	ON voltage: 1.5 V max. OFF voltage: 3 V min.
Outputs	DATA, POLARITY, OVERFLOW, DATA VALID, RUN	Rated load voltage	12 to 24 VDC $^{+10\%}/_{-15\%}$
		Max. load current	10 mA
		Leakage current	100 μA max.

Note: Logic method: negative logic

Linear Output

Item	4 to 20 mA	1 to 5 V	1 mV/10 digits (see note)
Resolution	4,096		
Output error	±0.5% FS		±1.5% FS
Permissible load resistance	600 Ω max.	500 Ω min.	1 KΩ min.

Note: For the 1 mV/10-digit output, the output voltage changes for every 40 to 50 increment in the display value.

■ Communications

Item		RS-232C, RS-422	RS-485
Transmission method		4-wire, half-duplex	2-wire, half-duplex
Synchronization method		Start-stop synchronization	
Baud rate		1,200/2,400/4,800/9,600/19,200/38,400 bps	
Transmission code		ASCII (7-bit)	
Communications	**Write to K3NX**	Comparative set value, scaling value, remote/local programming, forced zero control, reset control of maximum/minimum values, and other setting mode items excluding communications conditions.	
	Read from K3NX	Process value, comparative set value, maximum value, minimum value, model data, error code, and others	

For details, refer to *Communication Operation Manual.*

■ Characteristics

Input signal	DC voltage/current, AC voltage/current
A/D conversion method	Double integral method
Sampling period	50 Hz: 12.5 times/s; 60 Hz: 15 times/s (selectable)
Display refresh period	Sampling period (sampling times multiplied by number of averaging times if simple average processing is selected.)
Max. displayed digits	5 digits (–19999 to 99999)
Display	7-segment LED
Polarity display	"–" is displayed automatically with a negative input signal.
Zero display	Leading zeros are not displayed.
Scaling function	Programmable with front-panel key inputs (range of display: –19999 to 99999). The decimal point position can be set freely.
HOLD function	Maximum hold (maximum data) Minimum hold (minimum data)
External controls	HOLD: (Process value held) RESET: (Maximum/Minimum data reset) ZERO: (Forced zero)
Comparative output hysteresis setting	Programmable with front-panel key inputs (1 to 9999).
Other functions	Variable linear output range (for models with linear outputs only) Remote/Local processing (available for communications output models only) Maximum/Minimum value data reset with front panel keys Forced-zero set with front panel keys Averaging processing function (simple or moving average) Startup compensation time (0.0 to 99.9 s) Comparative output pattern selection Security Field calibration
Output configuration	Relay contact output (3 or 5 outputs) Transistor output (NPN and PNP open collector), BCD (NPN open collector) Parallel BCD (NPN open collector) + transistor output (NPN open collector) Linear output (4 to 20 mA, 1 to 5 V) + transistor output (NPN open collector) Communication functions (RS-232C, RS-485, RS-422) Communication functions (RS-232C, RS-485, RS-422) + transistor output (NPN open collector)
Delay in comparative outputs (transistor output)	DC input: 200 ms max. AC input: 400 ms max.
Enclosure ratings	Front panel: NEMA4X for indoor use (equivalent to IP66) Rear case: IEC standard IP20 Terminals: IEC standard IP00
Memory protection	Non-volatile memory (EEPROM) (possible to rewrite 100,000 times)

■ Measuring Ranges

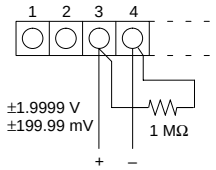
Input range		Measuring range	Input impedance	Reliability (see note 2)	Instantaneous overload (30 seconds)
DC voltage	A	±199.99 V	10 MΩ	±0.1%rdg ±1 digit max.	±400 V
	b	±19.999 V	1 MΩ	±0.1%rdg ±1 digit max.	±200 V
	C	±1.9999 V	10 MΩ min.	±0.1%rdg ±1 digit max.	±200 V
	d	±199.99 mV	10 MΩ min.	±0.1%rdg ±1 digit max.	±200 V
	E	1.0000 to 5.0000 V	1 MΩ	±0.1%rdg ±1 digit max.	±200 V
DC current	A	±199.99 mA	1 Ω	±0.1%rdg ±1 digit max.	±400 mA
	b	±19.999 mA	10 Ω	±0.1%rdg ±1 digit max.	±200 mA
	C	±1.9999 mA	100 Ω	±0.1%rdg ±1 digit max.	±200 mA
	d	4.000 to 20.000 mA	10 Ω	±0.1%rdg ±1 digit max.	±200 mA
AC voltage	A	0.0 to 400.0 V	1 MΩ	±0.3%rdg ±5 digit max.	700 V
	b	0.00 to 199.99 V	1 MΩ	±0.3%rdg ±5 digit max.	700 V
	C	0.000 to 19.999 V	1 MΩ	±0.5%rdg ±10 digit max.	400 V
	d	0.0000 to 1.9999 V	10 MΩ min.	±0.5%rdg ±10 digit max.	400 V
AC current	A	0.000 to 10.000 A	(0.5 VA CT) (see note 4)	±0.5%rdg ±20 digit max.	20 A
	b	0.0000 to 1.9999 A	(0.5 VA CT) (see note 4)	±0.5%rdg ±20 digit max.	20 A
	C	0.00 to 199.99 mA	1 Ω	±0.5%rdg ±10 digit max.	2 A
	d	0.000 to 19.999 mA	10 Ω	±0.5%rdg ±10 digit max.	2 A

Note: 1. The “rdg” stands for “reading value.”

2. The accuracy is guaranteed for the input frequency range of 40 Hz to 1 kHz (except for A and b ranges of AC current input) and the ambient temperature of 23±5°C.
If the actual input in each of the following measuring ranges is 10% of the maximum value or less, the following accuracy values will apply.

Input range		Reliability
DC voltage	A, b, C, d, E	±0.15% FS
DC current	A, b, C, d	±0.1% FS
AC voltage	A	±0.25% FS
	b	±0.5% FS
	C, d	±0.15% FS
AC current	A	±0.15% FS
	b	±0.1% FS
	C, d	±1.0% FS

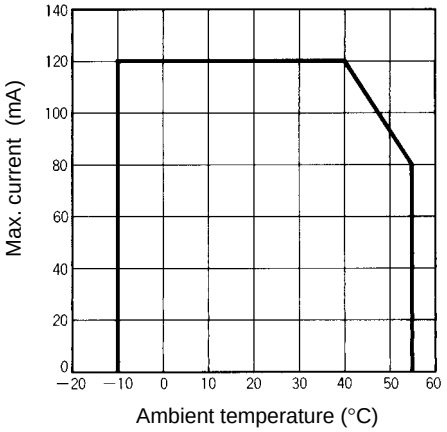
3. When using a DC voltage input model in the C and d range, do not open the input terminals. The input terminals can be opened, however, if a resistor of approximately 1 MΩ is connected to the input terminals.



4. “0.5 VA CT” indicates consumption VA of the internal CT.

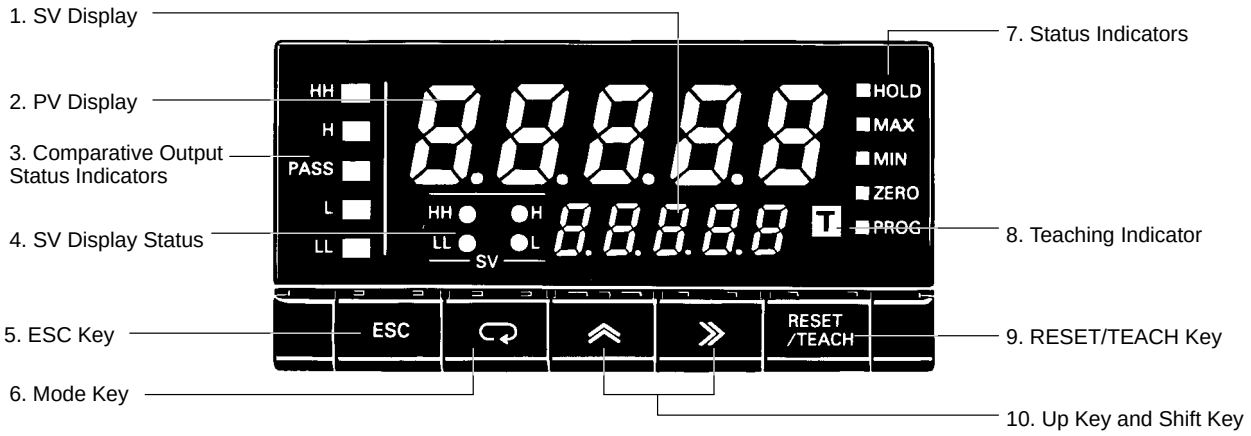
Engineering Data

Derating Curve for Sensor Power Supply



Note: The derating curve shown is for standard installation.
The derating curve depends on the mounting direction.

Nomenclature



Name	Functions
1. SV display	Displays the set value or parameter. Available for Set Value LED Models only.
2. PV display	Displays the process value in addition to the max./min. value or parameter.
3. Comparative output status indicators	Displays the status of comparative output.
4. SV display status	Indicates which comparative set value is currently on the SV display.
5. ESC Key	Used to return to the RUN mode from the Setting, Protect, or Maintenance mode. The process value, maximum value, or minimum value to be displayed can be selected.
6. Mode Key	Used to enter the Setting mode. Used to allow the PV display to indicate set values sequentially. Available for Basic Models only. Used to indicate set values sequentially on the SV display. Available for Set Value LED Models only.
7. Status indicators	HOLD: Lit when HOLD input is ON. MAX: Lit when the maximum value is indicated on the PV display. MIN: Lit when the minimum value is indicated on the PV display. ZERO: Lit when the forced zero function is activated. PROG: Lit or flashes while parameters are being set.
8. Teaching indicator	Lit when the teaching function is enabled and flashes when the Intelligent Signal Processor is in teaching operation.
9. RESET/TEACH Key	The forced zero, maximum value, and minimum value are reset by pressing this key. Teaching is available when the teaching function is enabled.
10. Up Key and Shift Key	The digit being set is scrolled by pressing the Shift Key. The set value increases by one whenever the Up Key is pressed.

Operation

■ Setting Procedures

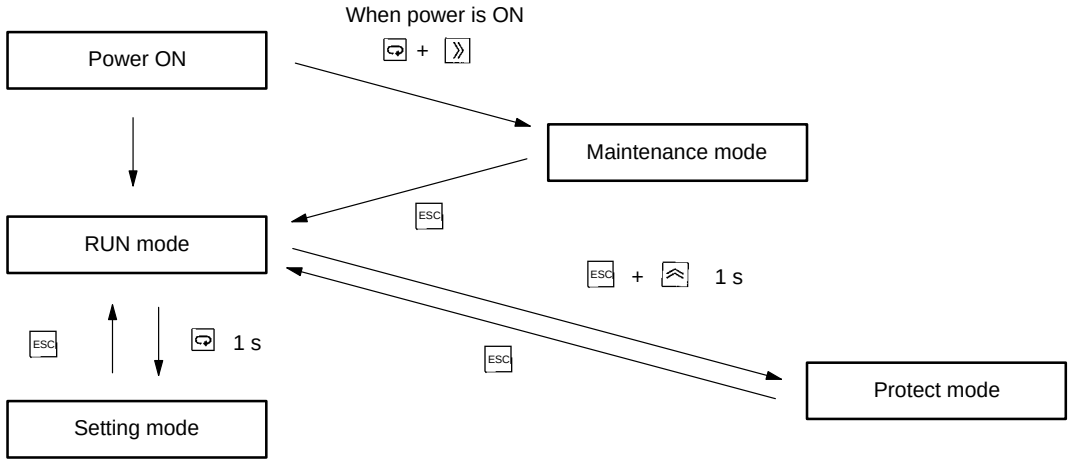
The K3NX has four modes: RUN mode for normal operations, Setting mode for initial parameter input, Protect mode for lock-out configuration, and Maintenance mode for initializing set values and user calibration. The parameters that are accessible on any individual K3NX will vary depending on the Output Board installed. Refer to the *K3NX Operation Manual* for details.

RUN Mode: Remains in this mode under normal operation.
The process value or the max./min. value can be monitored.
Using the front panel keys, the comparative set value can be changed and forced-zero reset or max./min. values reset can be performed.

Setting Mode: Used for making initial settings.
Includes four menus (Set value (SuSEt), scaling (SCALE), setup (SEtUP), option (oPt)) and the output test.

Protect Mode: Used for locking the front key operation or parameter changes.

Maintenance Mode: Used for initializing set values and user calibration of the inputs.
The user calibration is valid for selected input ranges.



SuSEt - Program set values
- Su.HH Enter set value HH
- Su. H Enter set value H
- Su. L Enter set value L
- Su.LL Enter set value LL

SCALE - Display scaling
- inP.2 Enter signal level for scaling point #2
- dSP.2 Enter display reading for scaling point #2
- inP.1 Enter signal level for scaling point #1
- dSP.1 Enter display reading for scaling point #1
- dEC.P Select decimal point

SEtUP - Program input range/Serial communications
- in.t Specifying input range
- Fr.E Select the supply frequency to eliminate inductive noise
- U.no Enter the unit no. for the host
- bPS Select the baud rate
- LEn Select the word bit length
- Sb.t Select the stop bits
- Pr.tY Select the parity bits

oPt - Supplementary settings related to display or control
- AVG Set for averaging process value
- St.tiME Set startup compensation time
- HYS Enter hysteresis value
- C.oUt Select the output pattern
- LSEt.H Enter the upper limit (H) of linear output range
- LSEt.L Enter the lower limit (L) of linear output range
- r.L Select the remote/local programming

tESt - Generating simulated input for testing the output function

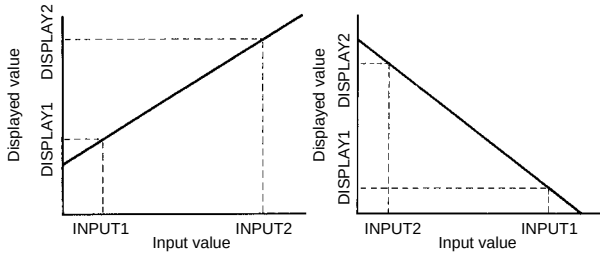
Prot - Program lock-out configuration
- ALL Enable all key protection
- SuSEt Enable set value change prohibition
- ZEro Enable prohibition of forced-zero reset using the front panel keys
- MM.rSt Enable prohibition of max./min. value reset using the front panel keys
- SECr Specify the menus to be protected against setting in the setting mode.

■ Parameters

Scaling SCAL

The Intelligent Signal Processor converts input signals into desired physical values.

INPUT2: Any input value
DISPLAY2: Displayed value corresponding to INPUT2
INPUT1: Any input value
DISPLAY1: Displayed value corresponding to INPUT1



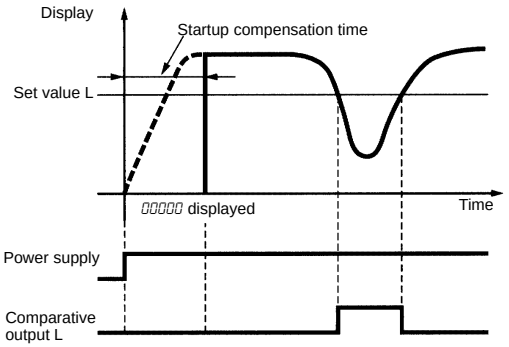
Average Processing AVG

The average processing function stabilizes displayed values by averaging the corresponding analog input signals that fluctuate dynamically or reducing the noise in the input signals.

Startup Compensation Time STCMP

The startup compensation time parameter keeps the measurement operation from sending an unnecessary output corresponding to instantaneous, fluctuating input from the moment the K3NX is turned ON until the end of the preset period.

The compensation time can be set in a range from 0 to 99.9 seconds as the waiting time until the devices subject to measurement become stable after the startup of the power supply.



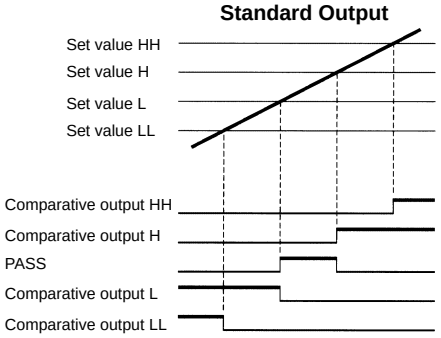
Hysteresis HYS

The hysteresis of comparative outputs can be set to prevent the chattering of comparative outputs. Refer to page 13 for more details.

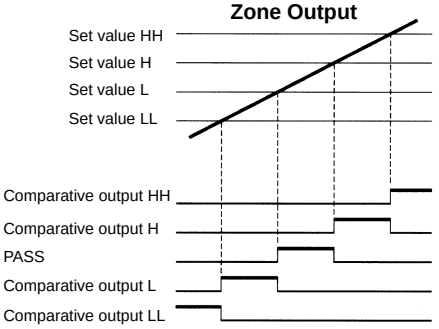
Output Pattern Selection OUT

The patterns of comparative output are selectable according to the level change. Select the pattern according to the application.

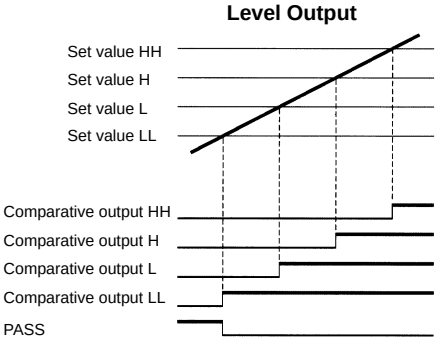
Standard Output



Zone Output



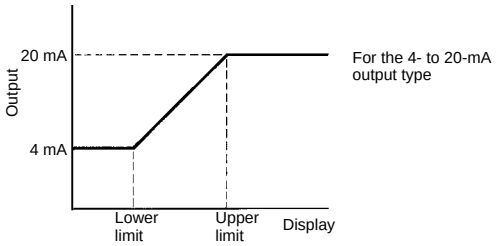
Level Output



Note: The following setting conditions must be satisfied, otherwise no zone output will turn ON correctly.
LL < L < H < HH

Linear Output Range LSET

A linear output range can be set as required. A value corresponding to the maximum output value and that corresponding to the minimum output value can be set.

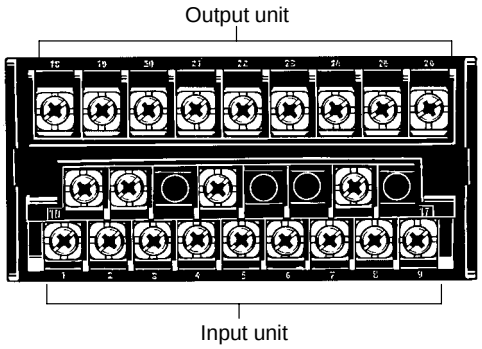


Remote/Local Selection RMT

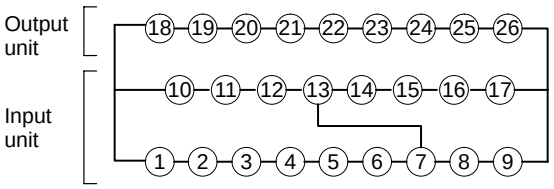
Select remote programming when performing all settings through the host devices and select local programming when performing settings through key operation.

■ External Connections

Terminal Arrangement

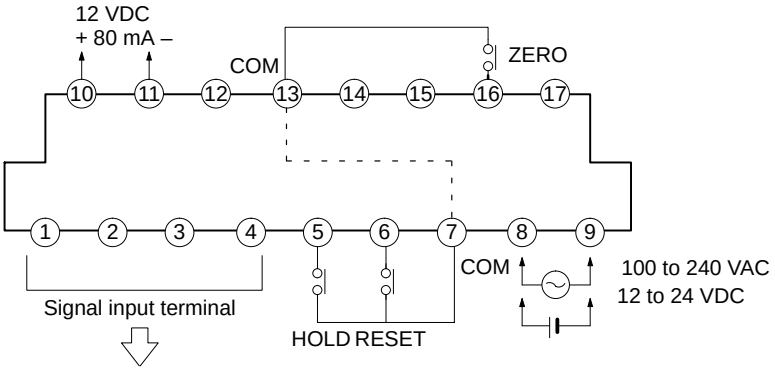


Terminal Numbers



Note: Terminals 7 to 13 are connected internally.

Input Unit

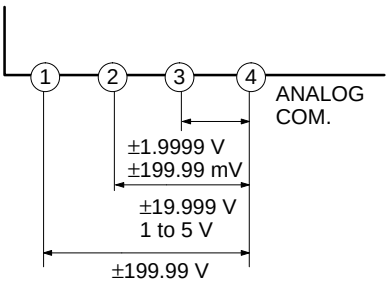


When inputting the external control signals through the open collector:

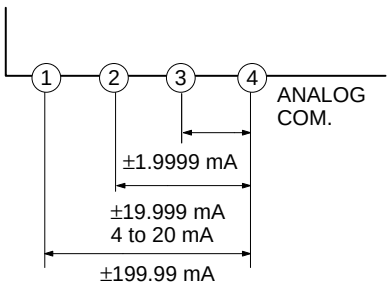
Transistor Inputs:
ON: Residual voltage must be 3 V max.
OFF: Leakage current must be 1.5 mA max.
The switching capacity must be 20 mA or greater.

When the external signal input is short-circuited, a voltage of approximately 5 V will be applied to between the terminals 5 to 7 and the COM terminal, and a current of approximately 18 mA (nominal value) will flow.

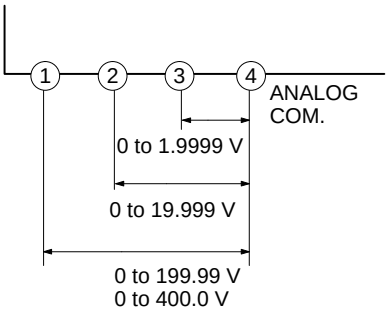
VD: DC Voltage Input



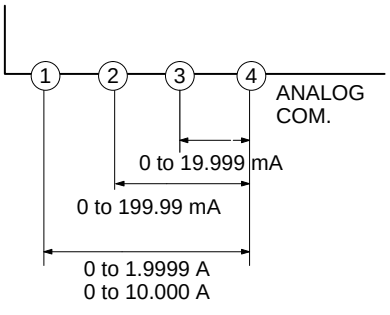
AD: DC Current Input



VA: AC Voltage Input

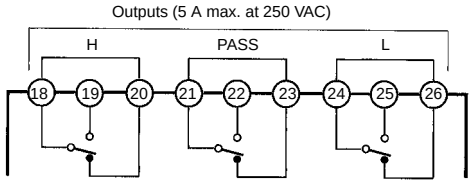


AA: AC Current Input

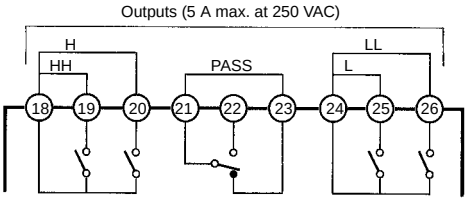


Output Unit

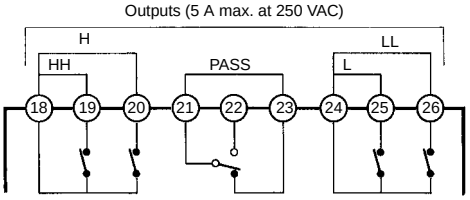
K31-C1: Relay (3 Outputs)



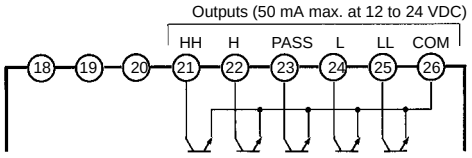
K31-C2: Relay (5 Outputs)



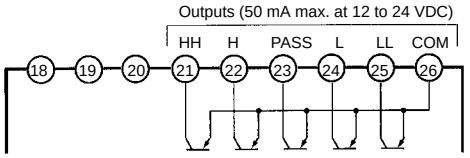
K31-C5: Relay (5 Outputs)



K31-T1: Transistor (NPN Open Collector)



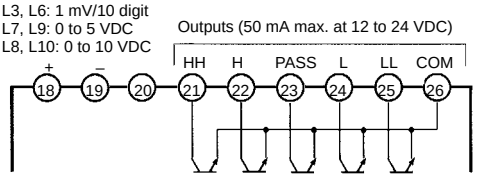
K31-T2: Transistor (PNP Open Collector)



K31-L1, L2, L3,-L4, -L5, -L6, -L7, -L8, -L9, -L10: Linear

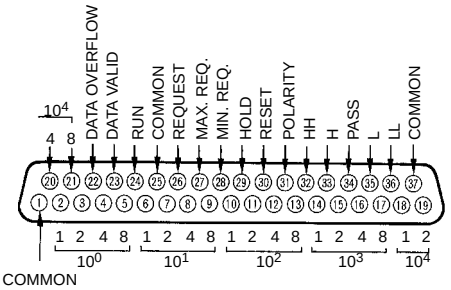
(Terminals 21 to 26 are provided only on K31-L4, -L5, -L6, -L9, -L10.)

L1, L4: 4 to 20 mA
L2, L5: 1 to 5 V
L3, L6: 1 mV/10 digit
L7, L9: 0 to 5 VDC
L8, L10: 0 to 10 VDC

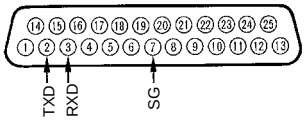


K31-B2, -B4: BCD (NPN Open Collector)

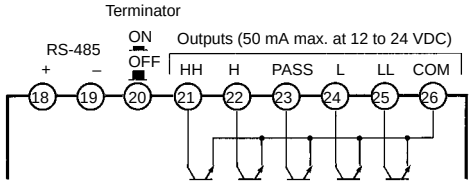
(Terminals 32 to 36 are provided only on K31-B4.)



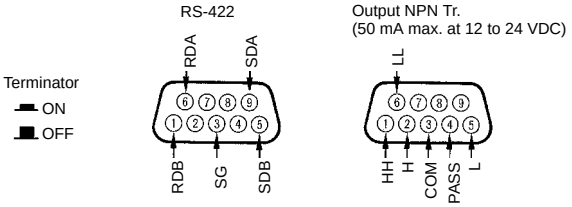
K31-FLK1: RS-232C



K31-FLK2, -FLK5: RS-485
(Terminals 21 to 26 are provided only on K31-FLK5.)

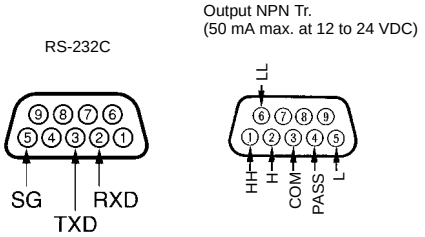


K31-FLK3, -FLK6: RS-422
(The right connector is provided only on K31-FLK6)



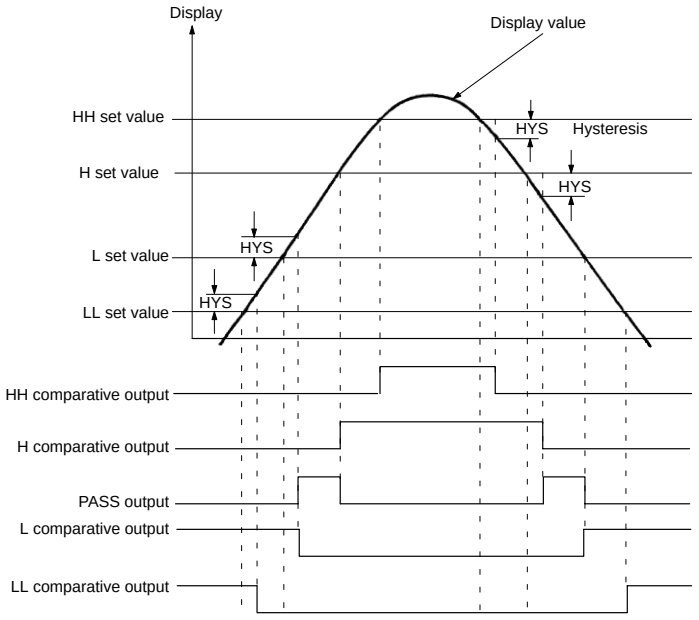
- D-sub 37P Connectors for BCD output (attachment)
  Plug: XM2A-3701
  Hood: XM2S-3711
- D-sub 25P connectors for RS-232C output (K31-FLK1) (order separately)
  Plug: XM2A-2501
  Hood: XM2S-2511
- D-sub 9P connectors for RS-422 output (K31-FLK3 and K31-FLK6) (order separately)
  Plug: XM2A-0901
  Hood: XM2S-0911
- D-sub 9P connectors for RS-232C output (K31-FLK4) (order separately)
  Plug: XM2D-0901
  Hood: XM2D-0911

K31-FLK4: RS-232C + Transistor (NPN Open Collector)



■ Output Operation Timing in RUN Mode (Relay or Transistor Outputs)

The following timing chart is for a 5-comparative Output Board when the standard output pattern is selected.

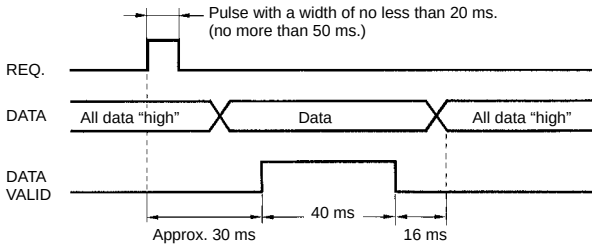


Note: The hysteresis value set in setting mode will be applied to all set values.

■ BCD Output Timing Chart

A request signal from an external device (such as a Programmable Controller) is required to read BCD data.

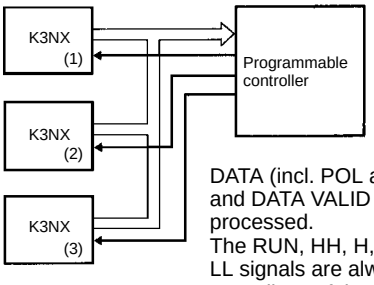
Single Sampling Data Output



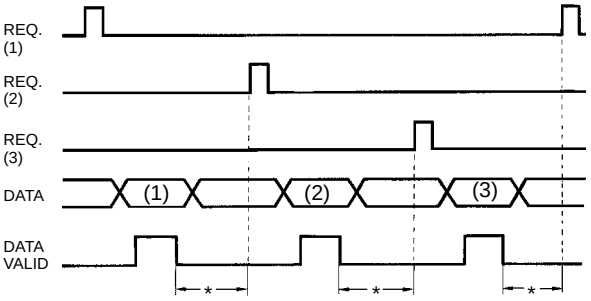
Approximately 30 ms after the REQ signal rises, a sample is taken and the DATA VALID signal is output. Read the data when the DATA VALID signal is ON.

The DATA VALID signal will turn OFF in 40 ms, and then in 16 ms, the data will go OFF.

Models with a BCD output have an open collector output configuration so that wired-OR connection is possible.

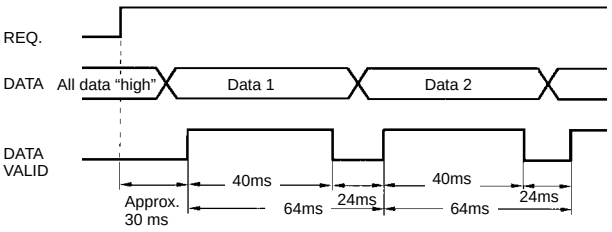


DATA (incl. POL and OVER) and DATA VALID are wired-OR processed.
The RUN, HH, H, PASS, L, and LL signals are always output regardless of the status of the REQ signal. Do not OR-wire these signals.



*The period between the DATA VALID signal and the REQ signal should be no less than 20 ms max.

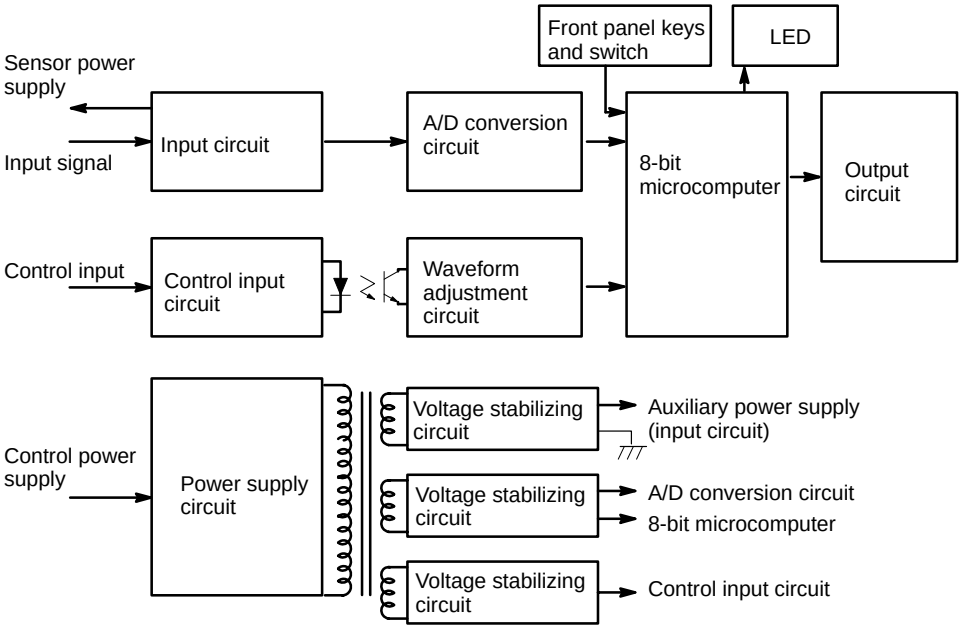
Continuous Data Output



The K3NX outputs each measurement at an interval of 64 ms when a REQ signal is ON continuously.

If the HOLD signal is ON at the moment the DATA output is switched from data 1 to data 2 or vice versa, the output BCD data will be either data 1 or data 2 according to the timing of the HOLD signal. However, output data will never below.

■ Block Diagram

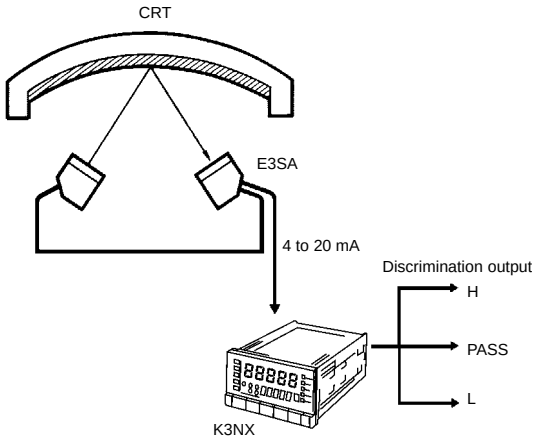


■ Application Examples

Detection of Aluminum Deposition

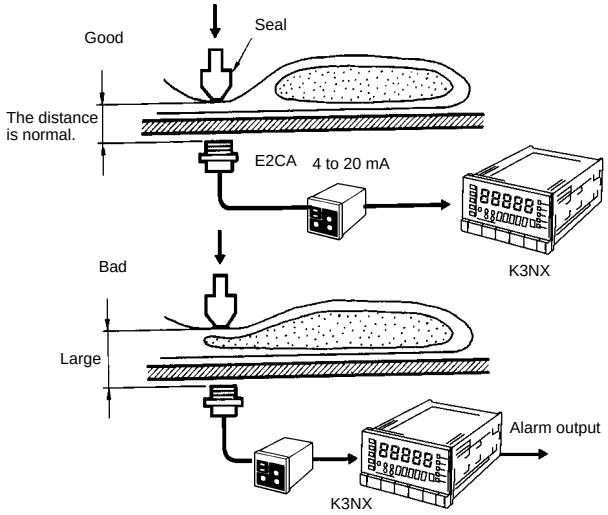
Detects via the E3SA the change in reflected light according to the amount of aluminum deposition on the CRT.

The input is processed and displayed in percentage by the scaling function.



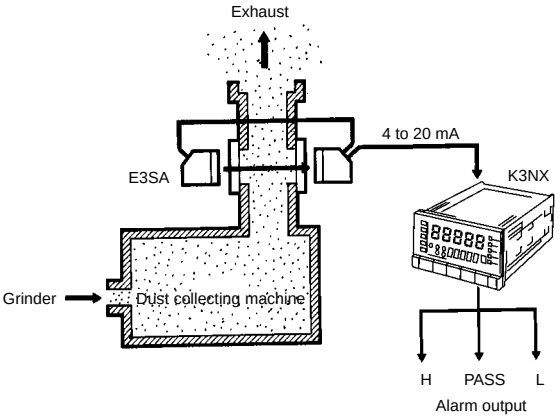
Detection of Improper Packing

Detects the difference between a good and bad seal.



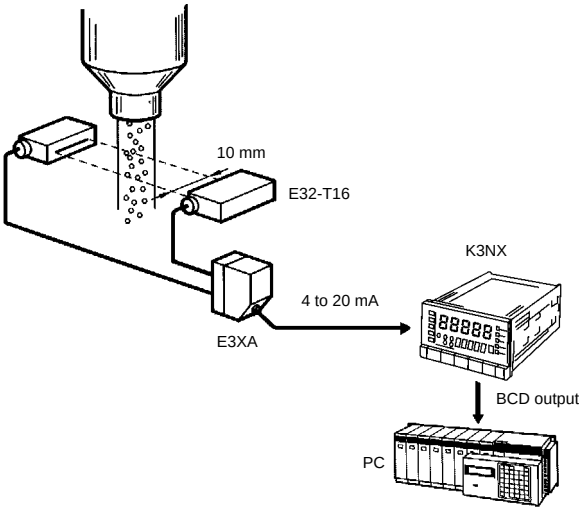
Detection of Dust Exhaust

The change in the density of the dust is detected via the E3SA and discriminated by the K3NX.



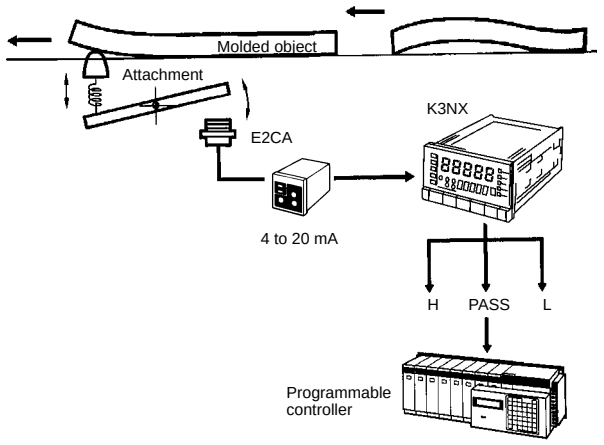
Detection of Discharged Powder

The output of the analog photoelectric sensor is processed and displayed after scaling. Monitoring the powder level is possible with the BCD data sent to the PC.



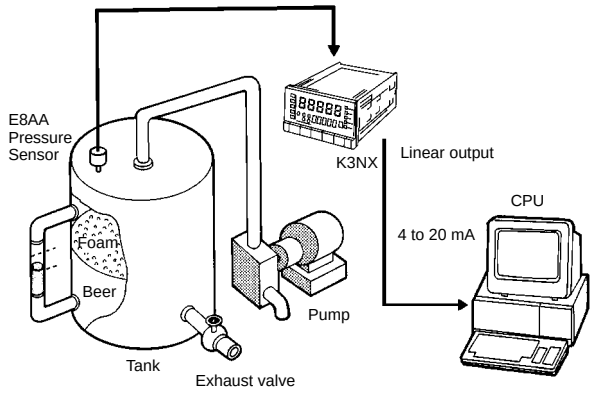
Detection of Warped Object

The warp of the object is converted into the movement of the attachment which the linear proximity sensor detects. The result is displayed and discriminated by the K3NX

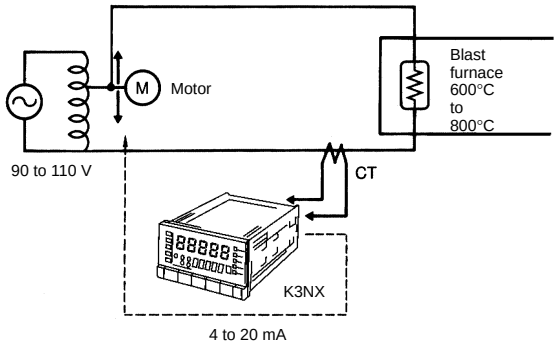


Monitoring of Tank Pressure

The output of the pressure sensor is processed and the pressure is displayed. The integrated monitoring of the operation is possible by sending the linear output data to the CPU.



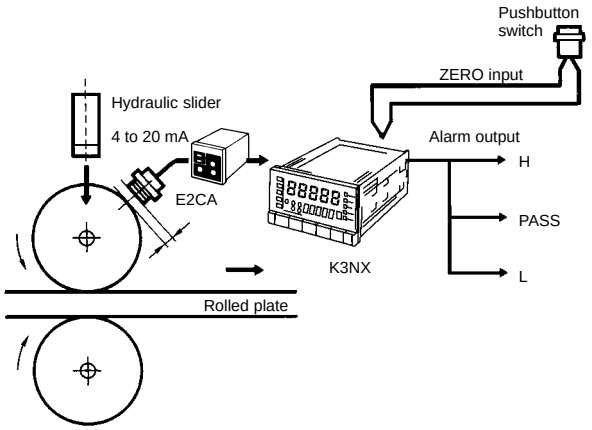
Monitoring and Controlling Blast Furnace Temperature



Display of Pressure Roller Position and Detection of Dislocation

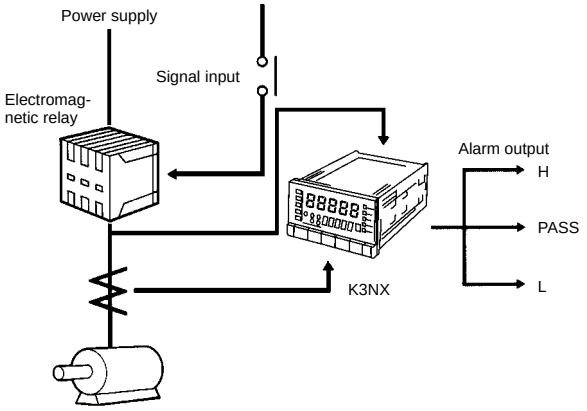
The linear proximity sensor detects and processes the position of the roller that varies according to the thickness of the plate. From the displayed result, the dislocation of the plate is detected.

With the forced zero input parameter, the level setting can be made with ease.



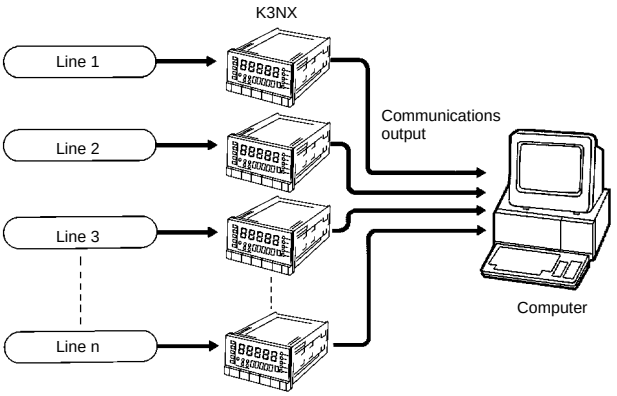
Monitoring of Motor Load Current

If the startup time compensation of the K3NX is enabled, the K3NX will not be influenced by the inrush current from starting the motor, and no signal will be output from the K3NX.



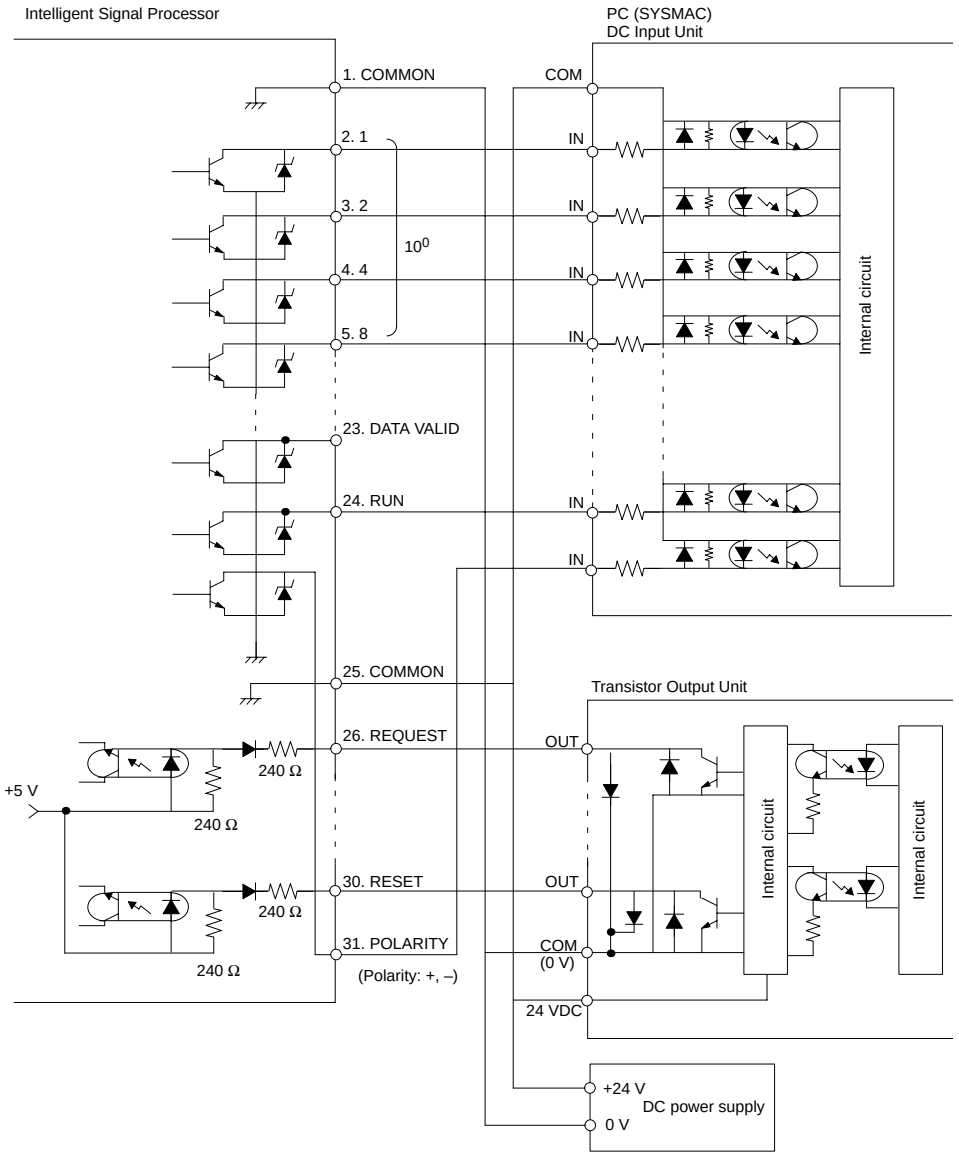
Concentrated Monitoring of Supply Voltage for Each Line

The voltage of the power supply for each line is locally displayed and the data is transferred to the CPU for careful monitoring.



Installation

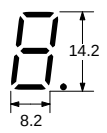
■ Example of Connection to Programmable Controller

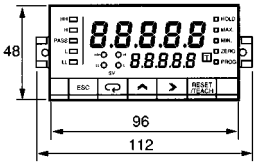


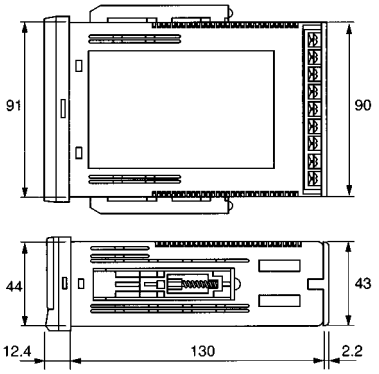
Dimensions

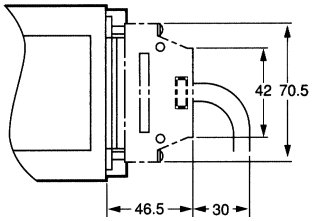
Note: All units are in millimeters unless otherwise indicated.

PV Display

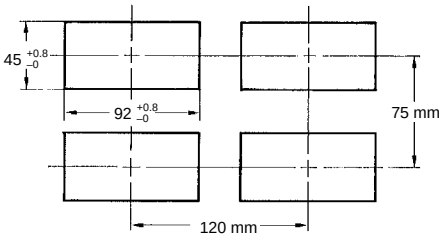








Panel Cutouts

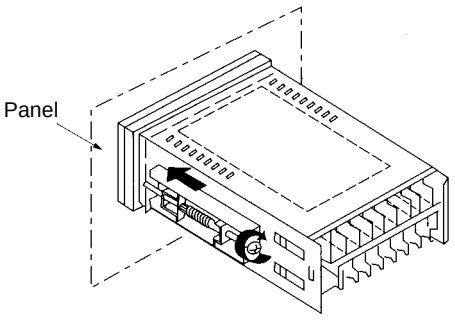


Precautions

- Be careful not to touch any terminals, otherwise you may receive an electric shock.
- Please do not disassemble the product nor touch the internal components of the product, otherwise you may receive an electric shock.
- Be sure that the power supply voltage is within the rated range.
- Do not use the Intelligent Signal Processor in locations with flammable gas or combustible substances.
- Be sure to wire the terminals correctly by checking the terminal names.
- Be sure that the terminal screws are tightened securely when wiring.

Mounting

Recommended panel thickness is 1 to 3.2 mm.



Attach the mounting bracket on the left and right sides of the Intelligent Signal Processor as shown in the illustration above and gradually tighten each screw evenly in turn by considering the balance of the tightening force until the ratchets start slipping without being further tightened.

Mount the Processor as horizontally as possible.

Never use the Processor in locations where corrosive gas (particularly sulfur or ammonia gas) is generated.

As much as possible avoid use of the Processor in a location subject to severe shock or vibration, excessive dust, or excessive moisture.

Select an indoor mounting location where the Intelligent Signal Processor is at the rated temperature and humidity and free from direct sunlight.

Separate the Processor from machines generating high-frequency noise, such as high-frequency welding machines and high-frequency sewing machines.

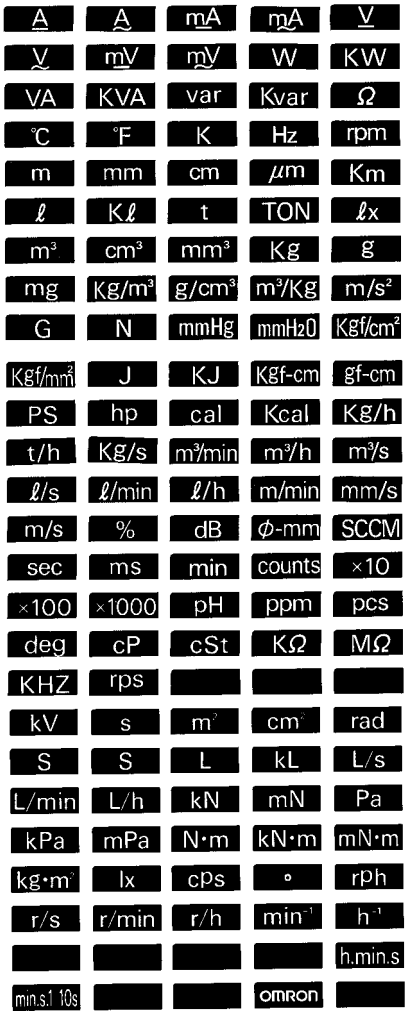
Operation

A Processor model with a Relay Contact or Transistor Output Board may not output any alarm signal normally if the model has an error. It is recommended that an independent alarm device be connected to the model.

The parameters are factory-set so that the Processor will operate normally. The settings of the parameters may be changed according to the application.

Unit Label (Attached)

No product is shipped with the unit label attached. Select a unit label from the sheet provided and attach it to the Processor.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. N084-E1-1B **In the interest of product improvement, specifications are subject to change without notice.**

OMRON Corporation
Industrial Automation Company

Measuring and Supervisory Controls Department
28th Fl., Crystal Tower Bldg.,
1-2-27, Shiromi, Chuo-ku,
Osaka 540-6028 Japan
Tel: (81)6-6949-6035/Fax: (81)6-6949-6069

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