



CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1041385 (LR 67027-48)

Master Contract: 203894

Project: 1129055 (Ed. 5)

Date Issued: September 28, 2000

Issued to: Omron Electronics, Inc.
One East Commerce Dr.
Schaumburg, IL 60173
U.S.A.

Attention: Mr. Gilbert Guajardo

The products listed below are eligible to bear the CSA Mark shown



Issued by: M. Lloyd

Signature:

PRODUCTS

CLASS 2252 01 - PROCESS CONTROL EQUIPMENT

Programmable intelligent signal converters, panel mounted, Series K3N*, where "*" = C, H, P, R, V, X (followed by numbers and letters denoting specific features) and Series K3GN. Max. Ambient 55C.

Series K3*N:

Input Rating: 100 to 240V, 50/60Hz, 15VA max or 12-24V dc, 10W max.

Optional Outputs:

Transistor: 50mA max, 12-24V dc

BCD: 10mA max, 12-24V dc

Linear: 4-20mA max, or 1-5V dc

Communication: RS-232C, RS-422 or RS-435

Relay Contacts: 250V ac, 5A; 30V dc, 5A (resistive); 30V dc, 5A (inductive).

Signal Inputs: Refer to individual model series.

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CSA INTERNATIONAL

Certificate: 1041385
Project: 1129055 (Ed.5)

Master Contract: 203894
Date: September 28, 2000

Series K3GN:

Input Rating: 24V dc, 50/60Hz.

Outputs Rating:

Relay Contacts: 1A, 30V dc

Transistor: 50mA max, 12-24V dc

Communication: RS-485

Signal Input: Analog input (4-20mA, 1-5V dc, 0-10V dc), Pulse input (NPN open collector)

Notes:

1. For use in other equipment where the suitability of the combination is to be determined.
2. For use in a controlled environment.

APPLICABLE REQUIREMENTS

CSA Std C22.2 No. 142-M1987 - Process Control Equipment

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GSA INTERNATIONAL

Supplement to Certificate of Compliance

Certificate: 1041385 (LR67027-48)

Master Contract: 203894

Project: 1129055

Issued to: Omron Electronics, Inc.
One East Commerce Dr.
Schaumburg, IL 60173
U.S.A.

Attn: Mr. Gilbert Guajardo

*The products listed, including the latest revision described below,
are eligible to be marked in accordance with the referenced Certificate.*

Issued by: M. Lloyd

Signature: 

Product Certification History

Project	Date	Description
1129055	Sept. 28, 2000	Addition of alternate printed wiring board manufacturer and type in No 3, Part A
1071495	2000/03/22	Deletion of Class 2 input requirement.
1084420	2000/03/12	Change to Terminal Block and cover material
1041385	2000/02/25	Addition of Series K3GN.
-48	97/10/02	Initial Certification of K3N* Series.

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PRODUCTS

CLASS 2252 01 - PROCESS CONTROL EQUIPMENT

Programmable intelligent signal converters, panel mounted, Series K3N*, where "*" = C, H, P, R, V, X (followed by numbers and letters denoting specific features) and Series K3GN. Max. Ambient 55°C.

Series K3*N:

Input Rating: 100 to 240V, 50/60Hz, 15VA max or 12-24V dc, 10W max.

Optional Outputs:

Transistor: 50mA max, 12-24V dc

BCD: 10mA max, 12-24V dc

Linear: 4 -20mA max, or 1-5V dc

Communication: RS-232C, RS-422 or RS-435

Relay Contacts: 250V ac, 5A; 30V dc, 5A (resistive); 30V dc, 5A (inductive).

Signal Inputs: Refer to individual model series.

Series K3GN:

Input Rating: 24V dc, 50/60Hz.

Outputs Rating:

Relay Contacts: 1A, 30V dc

Transistor: 50mA max, 12-24V dc

Communication: RS-485

Signal Input: Analog input (4-20mA, 1-5V dc, 0-10V dc),
Pulse input (NPN open collector)

Notes:

1. For use in other equipment where the suitability of the combination is to be determined.
2. For use in a controlled environment.

MARKINGS

The submitter's name and/or File No "LR 67027" (adjacent to the CSA Mark), model designation, electrical rating and the CSA Mark appear on a CSA Accepted type adhesive nameplate.

The relay contact rating may appear on the unit and/or in the instruction manual.

The date code appears on the nameplate or is stamped on the unit.

The wiring terminal identification appears adjacent to the terminals.

The max ambient temperature is marked on the nameplate and/or in the manual.

The following caution wording is marked on the equipment:

"CAUTION: FOR USE IN A CONTROLLED ENVIRONMENT. REFER TO MANUAL FOR ENVIRONMENTAL CONDITIONS" or equivalent.

- V. Output Unit
Blank - No output
C - Relay contact
T - Transistor
B - BCD
L - Linear
FLK - Communications unit (RS232C, RS485, or RS422)

+ The NPN or PNP signal input is supplied from a built in power supply, 80mA max 12V dc. For additional details, see Ill 1.

1. Case and Display Panel: See Photos 1 and 2.
Case Material: CSA Accepted plastic, (PBT/ABS) Novalloy-B45M0 (V-0 at 1.2 mm min.), manufactured by Daicel Chemical Industries Ltd.
Display Material: (ABS/PC) Novolloy-S3100, manufactured by Daicel Chemical Industries Ltd.
Reflector Material: SE1, SNV125, manufactured by GE Plastics Japan.
Note: The display panel cannot be removed without the use of a tool.

Dimensions: Min structural thickness 1.4mm. Overall approx 48mm by 96mm by 142mm.
Ventilation Openings: Arranged in rows, 23 on each side(3 by 10mm), 60 on bottom and 8 on top, each approx 1.4 by 15mm.
Securement: Case and display panel secured together by tabs.
2. (a) Terminal Block:
Material: Moulded ABS, manufactured by Daicel Polymers Ltd., N1.5 Type Novalloy S3100, SER91, barrier type. Min 1.0mm thick.
Rating: V-0, RTI 60°C
Terminal Plate: 0.8mm thick plated copper alloy.
Terminal Clamp: 1.2mm thick zinc plated iron.
Terminal Screw: 3.5mm zinc plated iron.
Mounting: Soldered to terminal board.
- (b) Terminal Cover:
Manufacturer: Daicel Chemical Ind.
Material Type: S3100
Dimensions: 90 mm by 42 mm by 2.2 mm thick
Mounting: Secured to case by 2 clips
3. Printed Wiring Boards: UR; Rated 94V-0.
CPU:
Manufacturer: Ohmuta Denshi Kogyo or electronics Kogyo Co. Ltd.
Type: MDK-TC94V-0, rated 105°C min or A01; rated 105°C min.
Dimensions: 87mm by 64mm by 1.2mm thick.
Mounting: Soldered to the display and ELV boards and mounts components in ELV circuits.

DISPLAY:

Manufacturer: Hitachi Chemical Co.

Type: HCD-111, rated 105°C min

Dimensions: 85mm by 40mm by 1.2mm thick.

Mounting: Soldered to the cpu board and held in place by tabs. Mounts components in ELV circuits.

OUTPUT:(OPTIONAL)

Manufacturer: Hikone Sanko

Type: SKH-994V-0, rated 105C min

Dimensions: 85mm by 53mm by 1.2mm thick.

Mounting: Female moulded polycarbonate connector through rear case opening. Mounts components in LV and ELV circuits.

The output unit consists of various output circuitry including 3/5 relays. The terminal block same as Item 2.

(X401-X405) Relay: Certified; Manufactured by Omron , Type G6B-2114P-US or G6B-1114P-US, rated 12V dc coil; 5A, 250V ac, 5A, 30V dc contact.

TERMINAL POWER BOARD:

Manufacturer: Ohmura Denshi Kogyo Co.

Type: MDK-294V-0

Ratings: 105 C min.

Dimensions: 76 mm by 20 mm by 1.2 mm

Mounting: Soldered to terminal pins and power supply board mounts components in LV and ELV circuits.

POWER SUPPLY BOARD:

Manufacturer: Sanwa Print Seisakusyo

Type: MDK-294V-0, rated 130C min.

Dimensions: 110mm by 87mm by 1.2mm thick.

Mounting: Soldered to the terminal board and held in place by tabs. Mounts components in LV and ELV circuits.

Note: Abnormals were performed in the primary circuit in order to qualify for reduced spacings.

The following components are located on the power supply board.

- (a) C219 Line-to-Line Capacitor (100-240V ac Supply Types): Certified (LR 58627)-manufactured by Nitsukō Corp., Type CFJC, rated 0.047uF, 250V.
- (b) C204 Storage Capacitor: Aluminum electrolytic, manufactured by Nippon Chemi-Con Corporation.

100-240V ac Supply Types: Rated 47uF, 400V, 105C.

C211 Storage Capacitor: Aluminum electrolytic, manufactured by Nippon Chemi-Con Corporation.
12-24V dc Supply Types: Rated 2200uF, 35V, 105C.

(c) D203 Diode:

- i. 100-240V ac Supply Types: Diode bridge, Type S1WB(A)60S, manufactured by Shindengen Electric Mfg., Co., or equivalent, rated 600V, 1.0A.
- ii. 12-24V dc Supply Types: Diode Type ERC81-004VA, manufactured by Fuji Electric Co., Ltd., or equivalent, rated 40V, 2.6A.

(d) ZNR201 Varistor: CSA Accepted Component; Manufactured by Matsushita Electrical Industrial Co., Ltd.

- i. 100-240V ac Supply Types: Type D471, rated 470V, 400A (surge current)
- ii. 12-24V dc Supply Types: Type D560, rated 56V, 400A (surge current).

(e) R211 Resistor:

- i. 100-240V ac Supply Types: Ceramic, rated 18 ohms, 2W.
- ii. 12-24V dc Supply Types: Ceramic, rated 0.33 ohms, 2W.

(f) IC201 Transistor (For 100-240V ac Supply Types): Manufactured by Matsushita Electric., designated MIP0223SY, rated 700V.

For 12-24V dc Supply Types Q202: Toshiba Electric., designated 2SK2391, rated 100V.

(g) L202 Inductor (For 100-240V ac Supply Types): Manufactured by Tokin Corp., designated SU10VF03080.

Core: E-E, ferrite, 18mm od by 10mm by 5mm thick, rated 250V ac, 50/60Hz, 0.3A, 10.0mH.

Primary Winding: 1. 0.2mm dia, 120 turns.
2. 0.2mm dia, 120 turns.

Insulation:

	<u>Material</u>	<u>Temp. Rating</u>	<u>Total Thickness</u>
Bobbin	PBT phenolic	130C/Class B	0.80mm min
Primary-Primary			
Interwinding	Bobbin	130C/Class B	0.80mm
Primary-Core	Bobbin	130C/Class B	0.80mm

For 12-24V dc Types: Type SNH-1002, manufactured by Tokin, rated 2Adc, 100uH

(h) T201 Transformer: Accepted. Manufactured by Ozeki Co.,Ltd., designated: K3N-1K, 100-240V ac supply; 12-24V dc supply, K3N-2K; power type.

Core: Ferrite, 30mm by 22.5mm by 6.0mm thick .

Primary and Secondary Windings: See Ills 2 and 3.

Insulation: See Ills 2 and 3.

Note: Flying leads insulated by silicone rubber tube and secured to the pcb by RTV.

PART B: Series K3NH

General: Part B is similar to Part A except for the following:

The model designation breakdown is as follows:

$\frac{K3NH-}{I} \quad \frac{TA}{II} \quad \frac{1}{III} \quad \frac{A}{IV} - \frac{C1}{V}$

- I. K3NH - Basic series designation.
- II. Input Setting +
TA - Thermocouple, RTD inputs
- III. Supply Voltage
1 - 100 to 240V ac
2 - 12 to 24V dc
- IV. Display Type
A - PV (Process Value) LED display (basic model)
C - SV (Set Value) LED display
- V. Output Unit
Blank - No output
C - Relay contact
T - Transistor
B - BCD
L - Linear
FLK - Communications unit (RS232C, RS485, or RS422)

+ Thermocouple, RTD input, 10V dc max, 20mA dc max. For additional details, see III 1.

PART C: Series K3NP

General: Part C is similar to Part A except for the following:

The model designation breakdown is as follows:

$\frac{K3NP-}{I} \quad \frac{NB}{II} \quad \frac{1}{III} \quad \frac{A}{IV} - \frac{C1}{V}$

- I. K3NP - Basic series designation.
- II. Input Setting +
NB - NPN inputs
PB - PNP inputs

III. Supply Voltage

- 1 - 100 to 240V ac
- 2 - 12 to 24V dc

IV. Display Type

- A - PV (Process Value) LED display (basic model)
- B - SV (Set Value) LED display

V. Output Type Codes

Blank - No output

- C1 - Three comparative relay contact outputs (H, Pass, L)
- C2 - Five comparative relay contact outputs (HH, H, L, LL: All SPT-NO; PASS: SPDT)
- T1 - T Transistor output (NPN open-collector)
- T2 - T Transistor output (PNP open-collector)
- B2 - BCD output (NPN open-collector)
- B4 - BCD output (PNP open-collector)
- FLK1 - Communication RS232C
- FLK2 - Communication RS485
- FLK3 - Communications RS422
- FLK4 - Communication RS232C + five transistor outputs (NPN open-collector)
- FLK5 - Communication RS485 + five transistor outputs (NPN open-collector)
- FLK6 - Communication RS422 + five transistor outputs (NPN open-collector)
- L1 - 4-20mA dc linear output + five transistor outputs (NPN open-collector)
- L2 - 1-5V dc linear output + five transistor outputs (NPN open-collector)
- L4 - 4-20mA dc linear output + five transistor outputs (NPN open-collector)
- L5 - 1-5V dc linear output + five transistor outputs (NPN open-collector)

+ The NPN or PNP signal input is supplied from built in power supply, 80mA max, 12V dc. For additional details, see III 1.

PART D - Series K3NR

General: Part D is similar to Part A, except for the following:

The model designation breakdown is as follows:

<u>K3NR-</u>	<u>NB</u>	<u>I</u>	<u>A</u>	<u>-</u>	<u>C1</u>
I	II	III	IV		V

- I. K3NR - Basic series designation.
- II. Input Setting +
 - NB - NPN inputs
 - PB - PNP inputs
- III. Supply Voltage
 - 1 - 100 to 240V ac
 - 2 - 12 to 24V dc
- IV. Display Type
 - A - PV (Process Value) LED display (basic model)
 - C - SV (Set Value) LED display

V. Output Unit

Blank - No output

C - Relay contact

T - Transistor

B - BCD

L - Linear

FLK - Communications unit (RS232C, RS485, or RS422)

+ The NPN or PNP signal input is supplied from built in power supply, 80mA max 12V dc. For additional details, see III 1.

PART E: Series K3NV

General: Part E is similar to Part A except for the following:

The model designation breakdown is as follows:

K3NV- LC 1 A - Cl
I II III IV V

I. K3NV - Basic series designation.

II. Input Setting +
LC - dc Voltage - 200mV dc max

III. Supply Voltage
1 - 100 to 240V ac
2 - 12 to 24V dc

IV. Display Type
A - PV (Process Value) LED display (basic model)
B - SV (Set Value) LED display

V. Output Unit
Blank - No output
C - Relay contact
T - Transistor
B - BCD
L - Linear
FLK - Communications unit (RS232C, RS485, or RS422)

+ The DC voltage input signal is supplied from built in power supply, 120mA max., 10V dc. For additional details, see III 1

PART F: Series K3NX

General: Part F is similar to Part A except for the following:

The model designation breakdown is as follows:

K3NX- VA I A - C1
I II III IV V

I. - K3NX - Basic series designation

II. - Input Classification

VD - dc voltage - 199.99V dc max
AD - dc current - 199.99mA dc max
VA - ac voltage - 400V ac max
AA - ac current - 10A ac max

III. - Supply Voltage

1 - 100 - 240V ac
2 - 12-24V dc

IV. - Display Type.

A - PV (process value) LED display (basic model)
B - SV (set value) LED display

V. - Output Type Codes

Blank - No output

C1 - Three comparative relay contact outputs (H, Pass, L)
C2 - Five comparative relay contact outputs (HH, H, L, LL: All SPT-NO; PASS:SPDT)
T1 - T Transistor outputs (NPN open-collector)
T2 - T Transistor outputs (PNP open-collector)
B2 - BCD output (NPN open-collector)
B4 - BCD output (PNP open-collector)
FLK1 - Communication RS232C
FLK2 - Communication RS485
FLK3 - Communication RS422
FLK4 - Communication RS232C + five transistor outputs (NPN open-collector)
FLK5 - Communication RS485 + five transistor outputs (NPN open-collector)
FLK6 - Communication RS422 + five transistor outputs (NPN open-collector)
L1 - 4-20mA DC linear output + five transistor outputs (NPN open-collector)
L2 - 1-5V DC linear output + five transistor outputs (NPN open-collector)
L4 - 4-20mA DC linear output + five transistor outputs (NPN open-collector)
L5 - 1-5V DC linear output + five transistor outputs (NPN open-collector)

+The ac/dc voltage, ac/dc current input signals are supplied from built in power supply 80mA max, 12V dc. For additional details, see III.

PART G:

General: Part G is similar to Part A except for the following:

The model designation breaks down as follows:

K3NV- LC 1 A - C1
I II III IV V

I. - K3NV - Basic series designation

II. - Input Classification
LC - dc voltage - 200mV dc max

III. - Supply Voltage
1 - 100 - 240V ac
2 - 12-24V dc

IV. - Display Type.
A - PV (process value) LED display (basic model)
C - SV (set value) LED display

V. - Output Type Codes
Blank - No output
C1 - Three comparative relay contact outputs (H, Pass, L)
C2 - Five comparative relay contact outputs (HH, H, L, LL: All SPT-NO; PASS:SPDT)
T1 - Transistor outputs (NPN open-collector)
T2 - Transistor outputs (PNP open-collector)
B2 - BCD output (NPN open-collector)
B4 - BCD output (PNP open-collector)
FLK1 - Communication RS232C
FLK2 - Communication RS485
FLK3 - Communication RS422
FLK4 - Communication RS232C + five transistor outputs (NPN open-collector)
FLK5 - Communication RS485 + five transistor outputs (NPN open-collector)
FLK6 - Communication RS422 + five transistor outputs (NPN open-collector)
L1 - 4-20mA DC linear output + five transistor outputs (NPN open-collector)
L2 - 1-5V DC linear output + five transistor outputs (NPN open-collector)
L4 - 4-20mA DC linear output + five transistor outputs (NPN open-collector)
L5 - 1-5V DC linear output + five transistor outputs (NPN open-collector)

PART H:

General: Part H is similar to Part A except for the following:

The model designation breaks down as follows:

K3NR- NB 1 A - C1
I II III IV V

- I. - K3NR - Basic series designation
- II. - Input Classification
NB - NPN Transistor inputs
PB - PNP Transistor inputs
- III. - Supply Voltage
1 - 100 - 240V ac
2 - 12-24V dc
- IV. - Display Type.
A - PV (process value) LED display (basic model)
C - SV (set value) LED display
- V. - Output Type Codes
Blank - No output
C1 - Three comparative relay contact outputs (H, Pass, L)
C2 - Five comparative relay contact outputs (HH, H, L, LL: All SPT-NO; PASS:SPDT)
T1 - Transistor outputs (NPN open-collector)
T2 - Transistor outputs (PNP open-collector)
B2 - BCD output (NPN open-collector)
B4 - BCD output (PNP open-collector)
FLK1 - Communication RS232C
FLK2 - Communication RS485
FLK3 - Communication RS422
FLK4 - Communication RS232C + five transistor outputs (NPN open-collector)
FLK5 - Communication RS485 + five transistor outputs (NPN open-collector)
FLK6 - Communication RS422 + five transistor outputs (NPN open-collector)
L1 - 4-20mA DC linear output + five transistor outputs (NPN open-collector)
L2 - 1-5V DC linear output + five transistor outputs (NPN open-collector)
L4 - 4-20mA DC linear output + five transistor outputs (NPN open-collector)
L5 - 1-5V DC linear output + five transistor outputs (NPN open-collector)

PART I:

General: Part I is similar to Part A except for the following:

The model designation breaks down as follows:

K3NP- NB 1 A - C1
 I II III IV V

I. - K3NP - Basic series designation

II. - Input Classification

NB - NPN Transistor inputs, Voltage pulse (4 to 30VDCp-p)

PB - PNP Transistor inputs

III. - Supply Voltage

3 - 100 - 240V ac

4 - 12-24V dc

IV. - Display Type.

A - PV (process value) LED display (basic model)

C - SV (set value) LED display

V. - Output Type Codes

Blank - No output

C1 - Three comparative relay contact outputs (H, Pass, L)

C2 - Five comparative relay contact outputs (HH, H, L, LL: All SPT-NO; PASS:SPDT)

T1 - Transistor outputs (NPN open-collector)

T2 - Transistor outputs (PNP open-collector)

B2 - BCD output (NPN open-collector)

B4 - BCD output (PNP open-collector)

FLK1 - Communication RS232C

FLK2 - Communication RS485

FLK3 - Communication RS422

FLK4 - Communication RS232C + five transistor outputs (NPN open-collector)

FLK5 - Communication RS485 + five transistor outputs (NPN open-collector)

FLK6 - Communication RS422 + five transistor outputs (NPN open-collector)

L1 - 4-20mA DC linear output + five transistor outputs (NPN open-collector)

L2 - 1-5V DC linear output + five transistor outputs (NPN open-collector)

L4 - 4-20mA DC linear output + five transistor outputs (NPN open-collector)

L5 - 1-5V DC linear output + five transistor outputs (NPN open-collector)

PART J: Series K3GN

The model designation breaks down as follows:

K3GN- ND C FLK - DC24V
I II III IV V

- I. - K3GN - Basic series designation
- II. - Input Setting
ND - DC voltage/DC current/NPN Transistor inputs
- III. - Output Type
C - Relay (2 output, 1a)
T1 - Transistor (NPN open corrector 3 output)
- IV. - Communication Output
FLK - Communication RS485
- V. - Power Supply
DC24V - 24V dc

- 1. Case: Teijin Chemicals Ltd., designated LN-2250. Overall dimensions measure 0.7mm thick min, 48 by 48 by 80mm
- 2. Terminal Block:
 - Material: Daicel Polymers Ltd., ABS N1.5 Type Cevian SER91, barrier type. Minimum 1.0mm thick
 - Terminal Plate: 0.8mm thick plated copper alloy
 - Terminal Clamp: 1.2mm thick zinc plated iron
 - Terminal Screw: 3.5mm zinc plated iron
 - Mounting: Soldered to input/power board
- 3. Printed Wiring Boards:
 - CPU material: Ohmuta Denshi Kogyo Co. Ltd., 94V-0 Type MDK-TC94V-0, rated 105 min
 - INPUT material: Hikone Sanko Co. Ltd., 94V-0 Type SKH-994V-0, rated 105 min
 - POWER material: Sanwa Print Seisakusyo Co. Ltd., 94V-0 Type N9V, rated 130 min
 - DISPLAY material: Hitachi Chemical Co. Ltd., 94V-0 Type HCD-111, rated 105 min
- 4. Varistor (SA201)
 - Rating: 68V min for DC24V model
- 5. Capacitor (C201)
 - Rating: 35V, 56uF min for DC24V model
- 6. Resistor (R201)
 - Rating: 0.68ohm, 1/2W min for DC24V model
- 7. Diode (D201)
 - Rating: 1.1A, 40V min

- 8. Resistor (R212)
Rating: 10Kohm, 1/4W min for DC24V model

- 9. IC (IC201)
Manufacturer: Motorola
Type: MC33362DWR2 for DC24V model

- 10. Transformer (T201)
Manufacturer: Ozeki Co., Ltd.
Type: FT22024A for DC24V model

- 11. Relay (X301, X302): Certified
Manufacturer: Omron Co., Ltd.
Type: G6K-2G
Rating: 0.3A, 125V, 0.5A, 60V dc resistive, 1.0A, 30V dc resistive, coil 24V dc