Plug-in Signal Conditioners *M-UNIT*

D/A CONVERTER
(16-bit resolution)

MODEL **DA3**

MODEL & SUFFIX CODE SELECTION

DA3–❑❑–❑

MODEL
OUTPUT
Current
Z1 : Range 0 – 20mA DC
Voltage
V1 : Range -1 – +1V DC
V2 : Range -10 – +10V DC
RESPONSE TIME
1 : 400 msec.
2 : 10 msec.
POWER INPUT

AC Power	DC Power
M2 : 100 – 240V AC	**R3**: 12 – 24V DC
	P : 110V DC

ORDERING INFORMATION

Specify code number and variables. Factory default specifications are in Page 4.

- **Code number** (e.g. DA3-V11-M2)

RELATED PRODUCTS

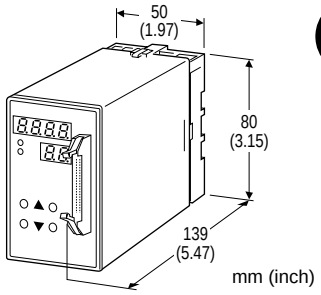
- Special cable (e.g. MCN26)
- Terminal block with connector (e.g. CNT)

GENERAL SPECIFICATIONS

Construction: Plug-in
Connection: M3.5 screw terminals and 26-pin connector
Housing material: Flame-resistant resin (black)
Isolation: Input to output to power
Overrange output: Approx. -15 – +115%
Setting: Front key pad

■DISPLAY
LED: 7 mm (.28") 7 segment, red
Number of display digits: 4 digits for DATA display; 2 digits for ITEM display
PV indication: Input signal in engineering unit
Overrange indication: LEDs flashing
Power saving mode: Displays turn off if the keys are untouched for a preset time period
PL1 (POL) LED: Red lights turn on at negative polarity.
PL2 (LOAD) LED: Red lights turn on at LOAD.

ISOLATION



Functions & Features
- Converts parallel digital signal into a DC output
- BCD, binary, offset binary, two's complement, reflected binary inputs
- Positive or negative logic selectable
- Display can be scaled in convenient engineering unit
- Scalable DC output range
- Parity check

Typical Applications
- Interface of analog signal for computers and PLC

INPUT & OUTPUT

■INPUT CODE: Code and logic are user-selectable.
BCD with polarity
Binary with polarity
Offset binary
Two's complement
Reflected binary
Connector: 26-pin connector (OMRON XG4A-2634)
Paired connector: OMRON XG4M-2630-T, XG5M-263❑-N
Cover: OMRON XG5S-2612

■INPUT LEVEL
Data input: TTL level (5V-CMOS level) or open collector, dry contact (saturation voltage ≤1V, sink surrent 1mA)
POL input: Same logic and level as for the data input
LOAD input: Same level as for the data input; logic user-selectable (default: LOAD at "L")
Common: Negative

■OUTPUT
- **DC Current**: 0 – 20mA DC

Operational range: 0 – 24mA DC
Load resistance: 600Ω maximum

•DC Voltage

Code V1: -1 – +1V DC
Operational range: -1.15 – +1.15V DC
Load resistance: 1000Ω minimum

Code V2: -10 – +10V DC
Operational range: -11.5 – +11.5V DC
Load resistance: 10kΩ minimum

INSTALLATION

Power input

AC: Operational voltage range 85 – 264V; 47 – 66 Hz, approx. 10VA

DC: Operational voltage range for R3: 10.8 – 26.4V ±10% or P: 85 – 150V; ripple 10% p-p max.; approx. 4W (160mA at 24V)

Operating temperature: -5 to +55°C (23 to 131°F)
Operating humidity: 30 to 90% RH (non-condensing)
Mounting: Surface or DIN rail
Dimensions: W50×H80×D139 mm (1.97"×3.15"×5.47")
Weight: 450 g (0.99 lbs)
Terminal assignment: See General Spec. Sheet Figure B-1.

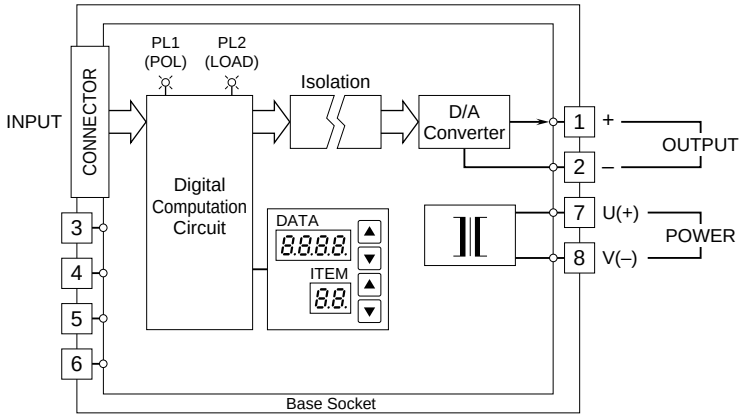
PERFORMANCE in percentage of span

Accuracy: ±0.1%
Temp. coefficient: ±0.015%/°C (±0.008%/°F)
Resolution: 16 bits
Response time: ≤400 msec. or ≤10 msec. (0 – 90%) as specified by model suffix code, with ITEM 16 set to 0.0.
Line voltage effect: ±0.1% over voltage range
Insulation resistance: ≥100MΩ with 500V DC
Dielectric strength: 2000V AC @1 minute (input to output to power)
2000V AC @1 minute (input or output or power to ground)

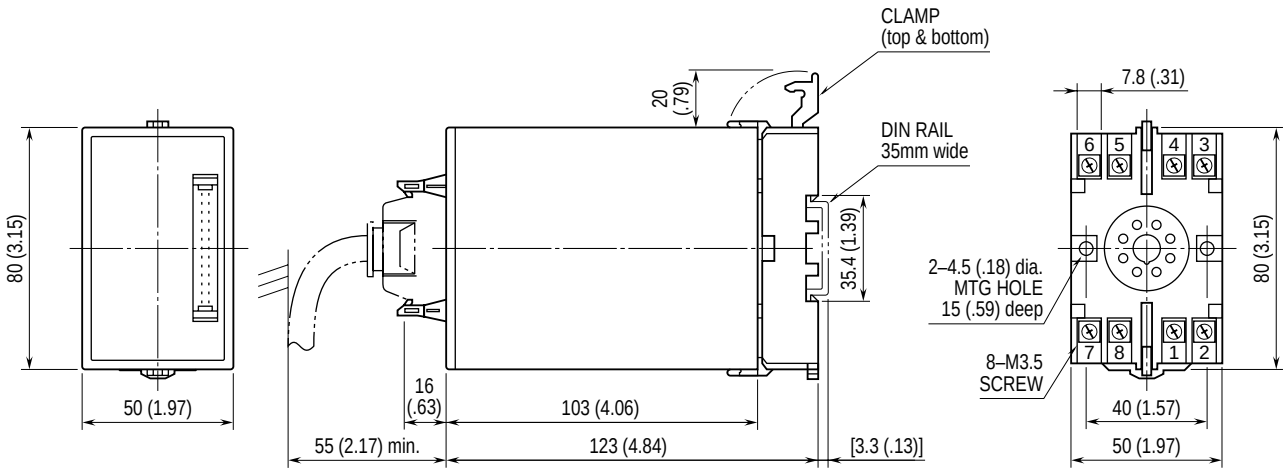
STANDARDS & APPROVALS

CE conformity: EMC Directive (89/336/EEC)
EMI EN61000-6-4
EMS EN61000-6-2
Low Voltage Directive (73/23/EEC)
Installation category II
Pollution degree 2
Max. operating voltage 300V
Input or output to power – Reinforced insulation
Input to output – Basic insulation

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



EXTERNAL DIMENSIONS mm (inch)



•When mounting, no extra space is needed between units.

Specifications subject to change without notice.

INPUT CONNECTOR (26-pin)

■BCD INPUT

PIN NO.	ASSIGNMENT	PIN NO.	ASSIGNMENT
1	1×10^0	17	COM (–)
2	2×10^0	18	COM (–)
3	4×10^0	19	No connection
4	8×10^0	20	POL
5	1×10^1	21	LOAD *1
6	2×10^1	22	LOAD *1
7	4×10^1	23	P^0 *2
8	8×10^1	24	P^1
9	1×10^2	25	P^2
10	2×10^2	26	P^3
11	4×10^2		
12	8×10^2		
13	1×10^3		
14	2×10^3		
15	4×10^3		
16	8×10^3		

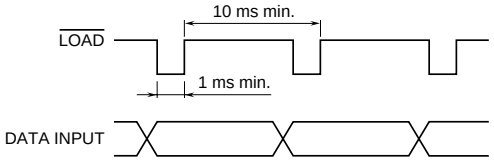
*1. Pin No. 21 and 22 are internally connected.
*2. P^0 corresponds to $n \times 10^0$, P^1 to $n \times 10^1$, P^2 to $n \times 10^2$, P^3 to $n \times 10^3$. Only P^0 corresponds when the parity for all digits are valid.
Note: With the number of bits set to 14 (or 12, 10, 8) with ITEM 10, Pin No. 1 – 14 (or 1 – 12, 1 – 10, 1 – 8) are valid.

■BINARY, TWO'S COMPLEMENT INPUTS

PIN NO.	ASSIGNMENT	PIN NO.	ASSIGNMENT
1	B^0	17	COM (–)
2	B^1	18	COM (–)
3	B^2	19	No connection
4	B^3	20	POL
5	B^4	21	LOAD *1
6	B^5	22	LOAD *1
7	B^6	23	P^0 *2
8	B^7	24	P^1
9	B^8	25	P^2
10	B^9	26	P^3
11	B^{10}		
12	B^{11}		
13	B^{12}		
14	B^{13}		
15	B^{14}		
16	B^{15}		

*1. Pin No. 21 and 22 are internally connected.
*2. P^0 corresponds to B^0 through B^3, P^1 to B^4 through B^7, P^2 to B^8 through B^{11}, P^3 to B^{12} through B^{15}. Only P^0 corresponds when the parity for all digits are valid.
Note: With the number of bits set to 14 (or 12, 10, 8) with ITEM 10, Pin No. 1 – 14 (or 1 – 12, 1 – 10, 1 – 8) are valid.

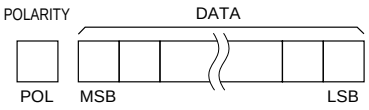
TIMING CHART

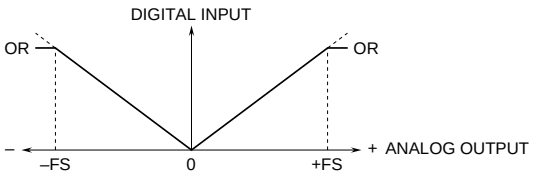


The unit reads data detecting that the logic of $\overline{\text{LOAD}}$ input is changed to the predetermined status.

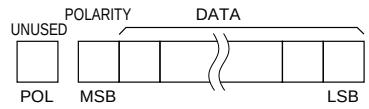
INPUT-OUTPUT RELATION EXAMPLES

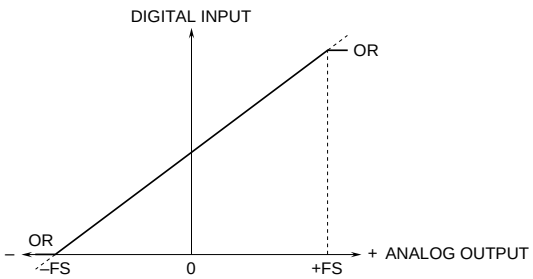
■BCD, BINARY (WITH POLARITY)



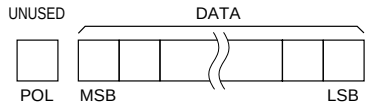


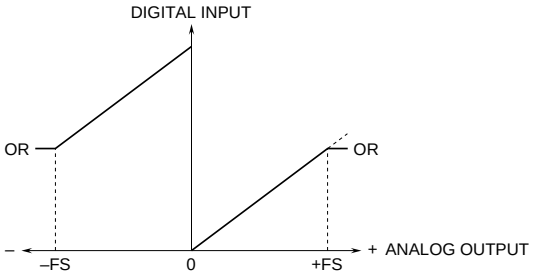
■OFFSET BINARY





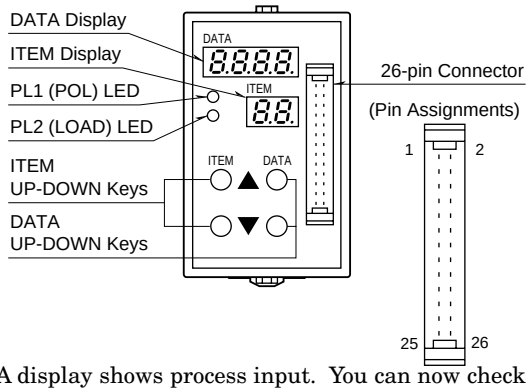
■TWO'S COMPLEMENT





FRONT PANEL CONFIGURATION & PROGRAMMING

■PROGRAMMING PROCEDURE



1. Press ITEM UP or DOWN key until ITEM display indicates “01”.
2. Press Data UP or DOWN key and choose “2” on DATA display.
   1 : Data indication only.
   2 : All parameters are modifiable.
3. Press ITEM UP or DOWN key until ITEM display shows the ITEM No. you need to change.
4. Press DATA UP or DOWN key and choose a DATA No. or value you need on DATA display.
5. Repeat above 3 and 4. (Entered data is stored when you move to a new ITEM.)
6. Press ITEM UP or DOWN key until ITEM display indicates “01”.
7. Press DATA UP or DOWN key and choose “1” on the display.
8. Press ITEM UP or DOWN key until ITEM display indicates “P”. DATA display shows process input. You can now check data setting by choosing ITEM No.

Note : DO NOT press UP and DOWN keys simultaneously.

ITEM	MDF. CODE	DATA	CONTENTS	DEFAULT
P	N/A	-9999 – 9999 (-FFFF – FFFF)	Input display in engineering unit, BCD (as set in ITEM 08/09) ( ) for binary, offset binary, two's complement, reflected binary	—
01		1, 2	Modification code 1 : Data indication only. 2 : All parameters are modifiable.	1
02	N/A	0, 1	Status indication (“0” is normally indicated.) 0: Normal 1: Memory error 10: Out of input range -15 – 115%	0
03/L	2	-15.0 – 115.0	Input indicated in % (of the range set in ITEM 17/18) Loop test output with ITEM 01 DATA 2 (‘L’ is indicated as ITEM No.)	—
04	2	-99.99 – 99.99	Zero adjustment (%) (fine adj. of the value set in ITEM 17)	0.00
05	2	-99.99 – 99.99	Span adjustment (%) (fine adj. of the value set in ITEM 18)	0.00
06	2	0, 1, 2, 3, 4	Display code 0 : BCD with polarity (decimal) 1 : Binary with polarity 2 : Offset binary 3 : Two's complement 4 : Relfected binary	0
07	2	0, 1, 2, 3, 4	Available number of bits 0: 16 bits 1: 14 bits 2: 12 bits 3: 10 bits 4: 8 bits	0
08	2	-9999 – 9999	BCD Display range scaling 0% *1	-9999
09	2	-9999 – 9999	Display range scaling 100% *1	9999
08	2	-7FFF – 7FFF	Binary Display range scaling 0% *1	-7FFF
09	2	-7FFF – 7FFF	Display range scaling 100% *1	7FFF
08	2	0000 – FFFF	Offset binary Display range scaling 0% *1	0000
09	2	0000 – FFFF	Display range scaling 100% *1	FFFF
08	2	8000 – 7FFF	Two's complement Display range scaling 0% *1	8000
09	2	8000 – 7FFF	Display range scaling 100% *1	7FFF
08	2	0000 – FFFF	Reflected binary Display range scaling 0% *1	0000
09	2	0000 – FFFF	Display range scaling 100% *1	FFFF
10	2	0, 1	Data input logic*2 0 : Positive 1 : Negative	1
11	2	0, 1, 2	LOAD input logic 0 : LOAD at Low or shortcircuit 1 : LOAD at High or opencircuit 2 : Unavailable (not used)	0
12	2	0, 1	POL input 0 : Unavailable (not used) 1 : Available (used)	1
13	2	0, 1	POL input logic 0 : Negative at Low or shortcircuit 1 : Negative at High or opencircuit	1
14	2	0, 1, 2	Parity check 0: Disable 1: Enable Parity per each digit 2: Enable Parity for all digits	0
15	2	0, 1	Odd or even parity 0 : Odd 1 : Even	0
16	2	0.0 – 60.0	Delay buffer (seconds, 0 – 90%) When the Response Time model suffix code is specified to 1, the set value is only effective at 5.0 or higher value.	0.0

ITEM	MDF. CODE	DATA	CONTENTS	DEFAULT
17	2	-1.00 – 1.00	Output code V1 0% output voltage (V) *3	-1.00
18	2	-1.00 – 1.00	100% output voltage (V) *3	1.00
17	2	-10.0 – 10.0	Output code V2 0% output voltage (V) *3	-10.0
18	2	-10.0 – 10.0	100% output voltage (V) *3	10.0
17	2	0.0 – 20.0	Output code Z1 0% output current (mA) *3	4.0
18	2	0.0 – 20.0	100% output current (mA) *3	20.0
19	2	0 – 99	Power ON-delay time (seconds)	5
20	2	0, 1 – 60	Power-saving mode 0 : Continuous display 1 – 60 : Time before display turned off (minutes)	10
21	2	0 – 9999	Parity check error count The count value is reset to 0 with double-clicking the DATA DOWN key.	0
22	3	0, 1	Reset all settings *4	0
23	N/A	–	ROM version	–

*1: ITEM 08 < ITEM 09. *2: ITEM 11 or 13 is independent from ITEM 10.

*3: Of the range set in ITEM 08/09. ITEM 17 < ITEM 18.

*4: Press DATA UP key and choose DATA 1. Double-click DATA DOWN key. The display shows DATA 0 after the initialization is complete.