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GMW GOSSEN Müller & Weigert

DINALOG A 144 x 36
A1400 Light-Strip Indicator

3-349-110-03
2/11.00 - 11.02

- Front panel dimensions: 144 x 36 mm
- Light-strip indicator with 71 high-contrast LEDs
- Red LED display color
- Digital display range for portrait format: –999 to 999
- Portrait or landscape format
- Measuring span and limit values can be adjusted digitally
- Easy programming
- Programmed parameters can be locked
- Power supply is electrically isolated from the measuring circuit
- Housing suitable for grid mounting
- Quick installation with mounting tabs
- Designed according to IEC 61010-1

CE

Applications

DINALOG indicators are suitable for all applications which require simultaneous monitoring of several measurement values.

High-contrast LED displays assure good legibility even in dark rooms. The display is designed for easy reading, even from unfavorable angles.

These indicators can thus be utilized where conventional analog indicators or light-strip indicators with LCDs are unusable due to poor lighting.

Each indicator can be equipped with various measuring modules for performance of the following tasks:

- Measurement of direct current up to ± 200 mA
- 4 ... 20 mA direct current measurement
- 4 ... 20 mA direct current measurement with auxiliary power for 2-wire measuring transducer
- Measurement of direct voltage up to ± 300 V
- Alternating current measurement with direct connection to ... / 1A or ... / 5 A current transformer
- Measurement of alternating voltage up to 700 V
- Temperature measurement with Pt100, or with J, K, R and S thermocouples
- Measurement of resistance up to 20 KΩ

Installation

These measuring instruments are specified for use within an ambient temperature range of 0 to 50 °C.

Maximum power consumption for each measuring instrument is approximately 5 W.

If several devices are installed at maximum component density, suitable ventilation must be used to assure that the maximum allowable temperature of 50 °C is not exceeded.

Description

The basic device is comprised of a DC voltmeter with a measuring range upper limit of 2 V. Measuring modules installed upstream transform the input signal into a corresponding direct voltage. Each device can thus be ideally adapted to the measuring task at hand . Analog-digital conversion is accomplished by means of the dual-slope method. The measuring cycle has a duration of approximately 200 ms.

Measuring span can be programmed with the front panel keys for the digital display, as well as for the light-strip. Adjustable limit value functions are also included for limit monitors. Limit value adjustment is accomplished with the same keys, but at a separate programming level which eliminates the possibility of inadvertent alteration of the indicator function during limit value selection.

All programmable values remain in memory, even if a power failure should occur. All selected parameters can be protected against

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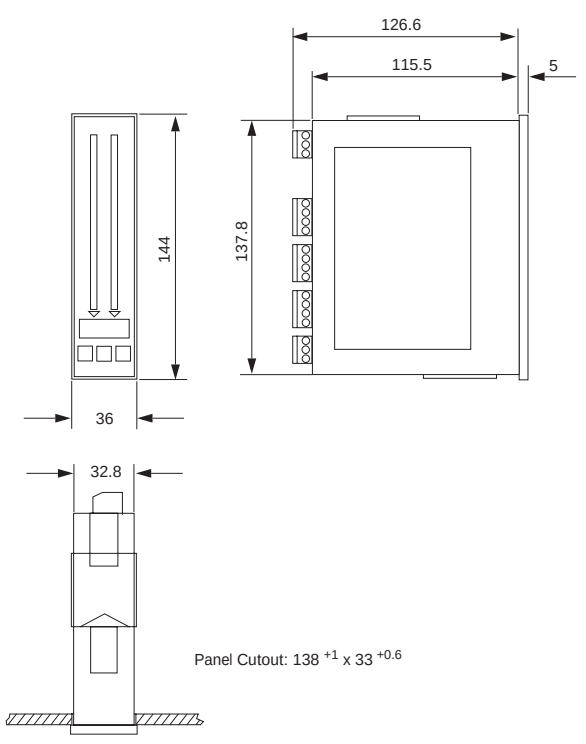
alteration by means of hardware configuration with an external contact.

Applicable Regulations and Standards

IEC 61010-1 / EN 61010-1 / VDE 0411-1 Part 1	Safety requirements for electrical equipment for measurement, control and laboratory use
IEC 60529 / EN 60529 VDE 0470 Part 1	Protection provided by enclosures for electric and electronic equipment (IP code)
IEC 61326-1 / +A1 / EN 61326-1 / +A1	Electromagnetic compatibility (EMC), generic standard for interference emission
IEC 61326-1 / +A1 / EN 61326-1 / +A1	Electromagnetic compatibility (EMC), generic standard for interference immunity

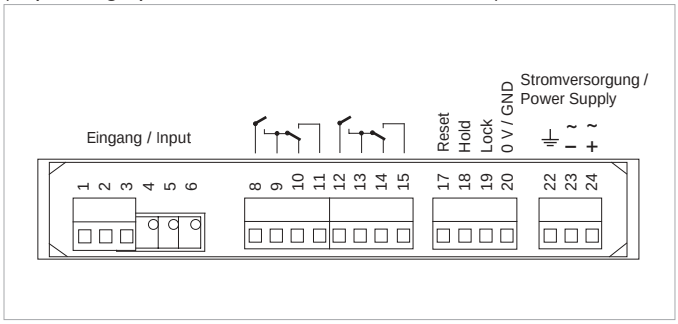
Dimensional Drawing



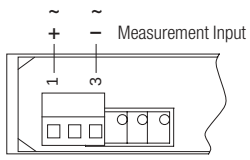
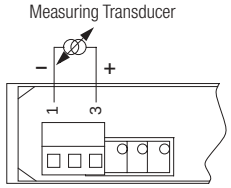
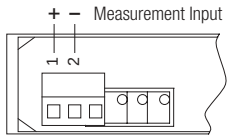
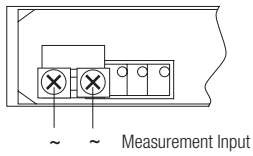
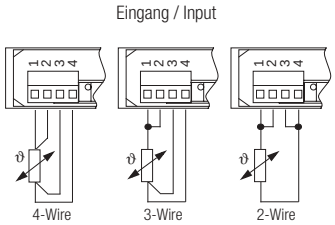
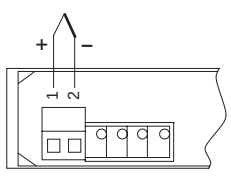
All dimensions in mm

Connector Terminal Assignments

(depending upon order information and features)



Measurement Input

Model	Range	Connector Terminal Assignments
DC	V, mV, mA, µA	
AC	V, mV, mA	
AC, true RMS	V, mV, mA	
DC with auxiliary power for 2-wire measuring transducer	mA	
Alternative setup for direct connection to current input	mA	
AC	A	
AC, true RMS	A	
Temperature measurement with PT100	all	
Temperature measurement with thermocouple	all	

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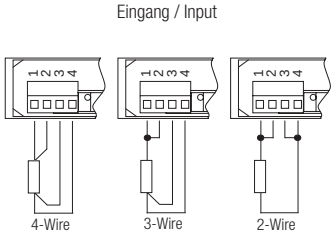
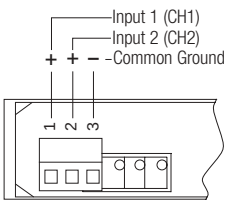
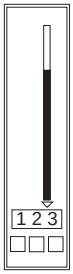
Model	Range	Connector Terminal Assignments
Resistance measurement	all	
Dual module for DC ranges	all	

Output

(depending upon device type, relay type and number of limit values)

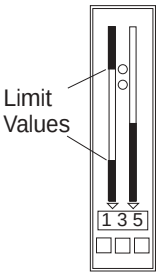
Device Type	Relay Type	Relay Terminal Assignments	
Single display	–	–	
Double display with one light-strip	–	–	
Double display with two light-strips	–	–	
Single contacting instrument (MECO)	see serial plate	Relay 1	Terminals 9, 10, 11 = changeover for 1st limit value
		Relay 2	Terminals 13, 14, 15 = changeover for 2nd limit value
		Relay 3	Terminals 8, 9 = normally open for 3rd limit value
		Relay 4	Terminals 12, 13 = normally open for 4th limit value
Double contacting instrument (in preparation)	see serial plate	Relay 1	Terminals 9, 10, 11 = changeover for 1st limit value
		Relay 2	Terminals 13, 14, 15 = changeover for 2nd limit value
		Relay 3	Terminals 8, 9 = normally open for 3rd limit value
		Relay 4	Terminals 12, 13 = normally open for 4th limit value
Single display with slave pointer	–	–	

(illustrations show portrait format)

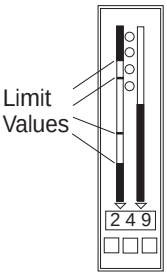


Single display with one light-strip and digital display

Double display with two light-strips and digital display



Single contacting instrument with two limit values and digital display



Single contacting instrument with four limit values and digital display

Available Device Types

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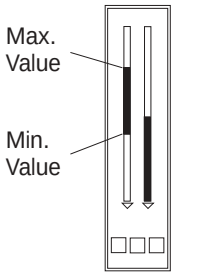
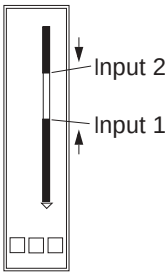
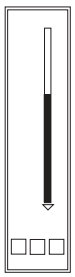


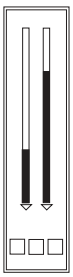
Single display
with slave pointer



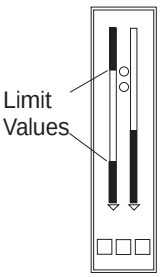
Double display
with one light-strip



Single display with
one light-strip,
no digital display



Double display with
two light-strips,
no digital display



Single contacting
instrument with two limit
values, no digital display

Double contacting
instrument
(in preparation)

Models with digital display are available in portrait format only. Models without digital display are available in either portrait or landscape format.

Technical Data

Display

Type: Analog	71 segment light-strip 2 channel selection LEDs 2 / 4 limit value LEDs (for contacting instruments only)
Digital	7 segment LED, 3 digits with minus sign (for measuring instruments in portrait format only)
Display Color	red
Light-Strip Height / Length	approx. 91 mm
Brightness	adjustable from 0 to 7
Display Range	–999 to 999
Character Height	approx. 8 mm
Polarity	"–" is displayed automatically
Decimal Point	programmable
Overload Display	8.8.8.
Underload Display	-8.8.

Scale

Format	portrait or landscape format
Scale Height / Length	91 mm
Scale Color	swan white
Graduation and Labelling	black, according to measuring range option: as requested

Input

Via Measuring Modules	according to the selected measuring range, see Measuring Range and Input Quantity under Order Information and Features
Voltage Module	
Input Impedance	> 1 MΩ for measurements > 2 V > 70 kΩ for measurements < 2 V
Current Module	
Voltage Drop	max. 2 V
Temperature Module, Pt100 / Resistance	
Sensor Current	2 mA
Thermocouples	
Input	J, K, R, S
Broken Sensor	overload display
Cold Spot Compensation	within a range of 0 to 50 °C
Dual Module	
Data	same as current and voltage modules

Analog-Digital Conversion

Measuring Method	dual-slope
Measuring Rate	8 times per second
Measuring Time	approx. 40 ms

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Error Limits

For Basic Device	
Without Module	± (0.1% of reading + 2 digits)
DC Module	± (0.1% of reading + 2 digits)
Temperature Coefficient	< 150 ppm / K
SMRR	> 30 dB at 50 Hz
CMRR	> 120 dB related to measuring range 200 mV at 50 Hz
AC Module (arithmetic)	
Intrinsic Error at 45 ... 65 Hz	± (0.2% of reading + 3 digits)
30 ... 1 kHz	± (0.3% of reading + 5 digits)
Temperature Coefficient	< 150 ppm / K
Temperature Offset Drift	± 0.1 digits / K
TRUE RMS Module	
Intrinsic Error at 45 ... 65 Hz	± (0.2% of reading + 3 digits)
20 Hz ... 1 kHz	± (0.3% of reading + 5 digits)
DC Measurement	± (2 % MW + 5 digits)
Crest Factor	6 (plus 0.5% of reading)
Temperature Coefficient	< 150 ppm / K
Temperature Offset Drift	± 0.1 digits / K
Temperature Module, Pt100 / Resistance	
Max. Error	± (0.4% of reading + 3 digits)
Temperature Coefficient	< 150 ppm / K
Temperature Offset Drift	± 0.1 digits / K
Ri max	100 Ω
Thermocouple Module	
Max. Error	± (0.4% of reading + 3 digits)
Linearization Error	< 1 K
Cold Spot Compensation Error	within a range of 10 to 50 °C < 2 K
Temperature Coefficient	< 150 ppm / K
Temperature Offset Drift	± 0.1 digits / K

The error limits for instruments without digital display generally amount to ± 1.5 % of the measuring range.

Control Inputs

Device Test (Reset)	controlled via floating contact
Save Display Value (Hold)	controlled via floating contact
Disable Programming (Lock)	controlled via floating contact

Relays

Contacts	1 changeover and 1 normally open contact each
Switching Capacity	5A / 250 V AC, 5 A / 30 V DC
Switching Time	max. 200 ms
Switching Hysteresis	adjustable from 0 to ± 100 digits

Power Supply

230 / 115 V AC ± 15% 50 / 60 Hz /
90 ... 260 V DC approx. 5 W
or
18 V ... 36 V DC /
24 V AC ± 15% 50 / 60 Hz approx. 4 W

Electrical Safety

Types	IEC 61010-1 / EN 61010-1 / VDE 0411 Part 1
Safety Class	II
Overvoltage Category	II
Fouling Factor	2
Protection	IEC 60529 / EN 60529
Housing Front Panel	IP 65
Terminals	IP 00
EMC	
Interference Immunity	IEC 61326-1 / +A1 / EN 61326-1 / +A1
Interference Emission	IEC 61326-1 / +A1 / EN 61326-1 / +A1
Operating Voltage	
DC Voltage Module	300 V
AC Voltage Module 100 / 700 V	600 V
DC / AC Current Module	300 V
Temperature Module Pt100	50 V
Resistance Module	50 V
Thermocouple Module	50 V
Dual Module for DC Ranges	50 V

Ambient Conditions

Operating Temp.	0 ... 50 °C
Storage Temperature	–20 ... 70 °C
Relative Humidity	max. 85%
Vibration Resistance	IEC 61010-1 / EN 61010-1

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Housing

Type	plastic, ABS
Front Dimensions	144 x 36 mm
Panel Cutout	138 $^{+1}$ x 33 $^{+0.6}$ mm
Panel Thickness	min. 1 to max. 54 mm
Bezel Height	5 mm
Installation Depth	max. 127 mm plus wiring
Weight	approx. 0.3 kg
Connectors	screw terminal blocks for wire with cross section of up to 2.5 square mm
Mounting	plastic mounting tabs

Order Information

Description / Features	Article Number
DINALOG A 144 x 36 Light-Strip Indicator	A1400
Model	
Single display / single contacting instrument	A1
Double display	A2
Single display with slave pointer	A3
Double display with one light-strip	A4
Format	
Landscape	B1
Portrait	B2
Display Type	
Light-strip only	BA0
Light-strip and digital display (portrait format only)	BA1
Limit Values (contacting instrument functions)	
No limit values	C0
2 limit values (for single contacting instrument only)	C1
4 limit values (for single contacting instrument only)	C2
Relay Switching Capacity (for limit monitors only)	
Working current (relay pulls in for alarm signal)	CA1
Closed-circuit current (relay is released for alarm signal)	CA2
Function of Limit Values 1 and 2	
Alarm signal is generated if actual value is below limit value, min. contact. Alarm signal is generated if limit value is exceeded, max. contact.	
Min-Max contacts	CB1
Min-Min contacts	CB2
Max-Max contacts	CB3
Max-Min contacts	CB4
Function of Limit Values 3 and 4 (only for devices with 4 limit values)	
Min-Max contacts	CC1
Min-Min contacts	CC2
Max-Max contacts	CC3
Max-Min contacts	CC4
Measuring Range / Input Quantities (for double displays only)	
Direct Current	
0 ... 20 mA	D001
4 ... 20 mA	D002
4 ... 20 mA with 24 V / 20 mA output for measuring transducer	D003
0 ... x mA (x = min. 0.2 mA, max. 300 mA)	D900
± x mA (x = min. 0.2 mA, max. 200 mA)	D901
Direct Voltage	
0 ... 10 V	D010
0 ... 200 V	D013
0 ... x V (x = min. 2 V, max. 300 V)	D910
± x V (x = min. 2 V, max. 300 V)	D911
0 ... 60 mV	D015
0 ... 150 mV	D016
0 ... 200 mV	D017
0 ... 300 mV	D018
Alternating Current, Sinusoidal	
0 ... 1 A	D027
0 ... 5 A	D028
0 ... x mA (x = min. 2 mA, max. 200 mA)	D920

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Description / Features	Article Number
Alternating Voltage, Sinusoidal	
0 ... 200 V	D020
0 ... 700 V	D021
0 .... x V (x = min. 0.2 V, max. 300 V)	D921
Alternating Current, True RMS	
0 ... 1 A	D022
0 ... 5 A	D023
0 ... x mA (x = min. 2 mA, max. 200 mA)	D925
Alternating Voltage, True RMS	
0 ... 200 V	D025
0 ... 700 V	D026
0 ... x V (x = min. 0.2 V, max. 300 V)	D926
Temperature, Pt100	
–200 ... 800 °C, 3-wire connection	D060
–200 ... 800 °C, 2 / 4-wire connection	D061
–99.9 ... 99.9 °C, 3-wire connection	D062
–99.9 ... 99,9 °C, 2 / 4-wire connection	D063
–328 ... 999 °F, 3-wire connection	D064
–328 ... 999 °F, 2 / 4-wire connection	D065
Temperature, Thermocouple	
TYPE J –200 ... 999 °C	D070
TYPE K –200 ... 999 °C	D071
TYPE R 0 ... 999 °C	D072
TYPE S 0 ... 999 °C	D073
TYPE J –328 ... 999 °F	D074
TYPE K –328 ... 999 °F	D075
TYPE R 0 ... 999 °F	D076
TYPE S 0 ... 999 °F	D077
Resistance	
0 ... 20 kΩ, 2-wire connection	D081
0 ... 20 kΩ, 3-wire connection	D082
0 ... 20 kΩ, 4-wire connection	D083
0 ... 2 kΩ, 2-wire connection	D084
0 ... 2 kΩ, 3-wire connection	D085
0 ... 2 kΩ, 4-wire connection	D086
0 ... 200 Ω, 2-wire connection	D087
0 ... 200 Ω, 3-wire connection	D088
0 ... 200 Ω, 4-wire connection	D089
Measuring Range/ Input Quantities (for double display)	
Direct Current	
Both measurement inputs: 0 ... 20 mA	DD006
Both measurement inputs: 4 ... 20 mA	DD007
Both measurement inputs: 0 ... x mA (x = min. 0.2 mA, max. 200 mA)	DD900
Both measurement inputs: ± x mA (x = min.0.2 mA, max. 200 mA)	DD901
Input 1: 0 ... x mA, Input 2: 0 ... y mA (x, y = min. 0.2 mA, max. 200 mA)	DD902
Direct Voltage	
Both inputs: 0 ... 10 V	DD016
Both inputs: 0 ... x V (x = min. 2 V, max. 300 V)	DD912
Both inputs: ± x V (x = min. 2 V, max. 300 V)	DD913
Input 1: 0 ... x V, Input 2: 0 ... y V (x, y = min. 2 V, max. 300 V)	DD914

Description / Features	Article Number
Digital Display Range (not for double displays)	
Same as measuring range with max. resolution (standard)	E00
± x (x = min. 50, max. 999)	E91
0 ... x (x = min. 100, max. 999)	E92
x ... y (y – x = min. 100, y = max. 999)	E93
– x ... y (y – x = min. 100, x = min. –999)	E94
Digital Display Range for Double Displays	
Same as measuring range with max. resolution (standard)	E00
For input 1: 0 ... x For input 2: 0 ... y (x, y = min. 100, max. 999)	E95
For input 1: ± x, For input 2: ± y (x, y = min. 50, max. 999)	E96
Decimal Point at Digital Display for Input 1	
Same as measuring range with max. resolution	ED0
No decimal point	ED1
Decimal point: xx.x	ED2
Decimal point: x.xx	ED3
Decimal point: .xxx	ED4
Decimal Point at Digital Display for Input 2 (for double displays only)	
Same as measuring range with max. resolution	EE0
No decimal point	EE1
Decimal point: xx.x	EE2
Decimal point: x.xx	EE3
Decimal point: .xxx	EE4
Scale	
Same as measuring range	F00
0 ... 100	F01
± 100	F02
0 ... x	F90
± x	F91
x ... y	F92
– x ... y	F93
0 ... x, 0 ... y (for double displays only)	F94
± x, ± y (for double displays only)	F95
± x, 0 ... y (for double displays only)	F96
x1 ... y1, x2 ... y2 (for double displays only)	F97
Light-Strip Starting Point	
Light-strips start at 0 (standard)	FA0
Light-strips start at minimum scale value	FA1
Light-strips start at maximum scale value	FA2
Light-strips run in opposite directions (only for double display with one light-strip)	FA3
Measured Quantity for the Light-Strip	
Same as measuring range (standard)	FM0
No measured quantity	FM1
%	FM2
As requested (max. 3 characters)	FM9
Measured Quantity for 2nd Light-Strip (for double displays only)	
Same as measuring range (standard)	FN0
%	FN1
As requested (max. 3 characters)	FN9
Auxiliary Voltage	
230 V / 115 V AC or 90 ... 260 V DC	H1
24 V AC or 18 ... 36 V DC	H2

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Description / Features	Article Number
A dditional Scale Labelling	
No additional labelling (standard)	S0
With additional labelling	S9
Additional Scale Labelling for 2nd Light-Strip (for double displays only)	
No additional labelling (standard)	SA0
With additional labelling	SA9
Device Designation at Rear Panel	
No designation (standard)	T0
With designation as requested	T9

Order Examples:

- DINALOG A 144 x 36 light-strip indicator,
  portrait format double display with digital display,
  both inputs: 0 ... 10 V,
  display range for digital display: 0 ... 9.99 V,
  both scales: 0 ... 100,
  power supply: 230 V AC.
  Article Number:
  A1400 A2 B2 BA1 DD016 E95(x,y = 999) ED3 EE3 F01 H1

- DINALOG A 144 x 36 light-strip indicator,
  portrait format single contacting instrument with digital display,
  4 limit values as changeover and normally open contacts, all as Min-Max contacts,
  working current pull-in,
  input: 4 ... 20 mA,
  display range for digital display: 0 ... 600 L/h,
  scale: 0 ... 600 L/h,
  power supply: 24 V DC.
  Article Number:
  A1400 A1 B2 BA1 C2 CB1 CC1 CA1 D002 E92(x = 600) ED0 F90(x = 600) FM9(L/h) H2

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