



Industrial series 4080/4100
Catalogue

GINEERS Ltd. is a manufacturer of various measurement and indication industrial devices. There are different series and dimensions, suitable for various applications. We also offer standard and unique solutions in the field of automation and process control, weigh measurement, integrated systems for remote reading of data and physical quantities. Among that, we design and create suitable software, which can also be unique according to the requirements of particular client. Devices from series 4100 and 4080 are functionally identical, with many options, but with different sizes and shapes. Industrial devices from 4080 and 4100 are designed to be mount on a front panel in command rooms of electrical plants and other industrial buildings. It is possible to design specific devices, to combine devices of the series in one single device with different possibilities - all depends on the client's request.

If you have any questions or want to know more about our devices, please do not hesitate to contact us!

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DEVICES SERIES 4080 AND 4100



Series 4080 and 4100 devices are programmable measuring units for industrial use. All of these devices can have potential-free relay contacts acting if measured value goes outside certain programmed range. At this moment we have devices for measurement of voltage, current, frequency, power, resistance. It is possible to order unit for measuring any other physical quantities (such as temperature, pressure, humidity, etc.). All series 4080/4100 units have four-digit display.

Series 4080 and 4100 devices:

AM4080	AM4100	Ammeter AC/DC up to 10 A* (overload up to 10 times for 100 ms)
V4080	V4100	Voltmeter AC/DC for up to 600 VAC/ 800 VDC
KV4080	KV4100	Kilovoltmeter for measuring AC voltage 100VAC (or other voltage) at the secondary side of voltage transformer in electric substations and power plants
F4080	F4100	Frequency meter (50/60Hz, other options available)
SI4080	SI4100	Step indicator with analogue/BIN/BCD input and BIN/BCD output
VA4080	VA4100	Active and reactive power meter
CF4080	CF4100	Current/voltage cosine phase angle meter

* - ammeter for any current can be produced by connecting external shunt resistor or special current sensor.

Please contact us if you have any questions or special requirements!

General information

Series 4080/4100 devices are microprocessor-controlled and are fully programmable. Service and user settings are saved in non-volatile memory. This memory has about 100000 write-erase cycles which makes it practically ever-lasting. Service settings are code-protected; so can be made the user settings.

Display

The display of all series 4080/4100 units is super bright red, covered with special purple filter for better readability in any cases and ambient light. Series 4080 devices have display with digit height of 28 mm (20mm visible) while the common viewable area is 76x25 mm. Series 4100 devices have display with digit height of 30 mm (25.3mm visible), while the common viewable area is 94x29 mm. The display sizes provide viewing distance of at least 4/6 m.

Measuring principle

The measuring principle of devices series 4080/4100 is based of the well known dual-slope method and further modified. It ensures incredible accuracy (error below 0.5%), displayed value stability while preserving fast reaction of the device if measured value changes rapidly.

If measured value goes outside certain programmed range the device signalizes by three potential-free relay contacts (if the device have option "R"). In this mode the display blinks with frequency about 2-3Hz (blinking can be turned on and off by user menu).

Power supply

Series 4080/4100 units can be powered by voltage 55-250 VAC/ 80-350 VDC.

Dimensions

The dimensions of series 4080 devices are (H/W/D) 48/96/85 mm (without plugs). It allows placing these units on moderately small surface area of the board and thus saving space. Delivery of units with dimensions 96/96/85mm is also available.

The dimensions of series 4100 devices are 144/144/64 mm (without plugs). It allows direct replacement of the old analogue meters in the substations and power plants without the need of any additional mounting devices.

Variety

Series 4080/4100 devices comprise rich variety of options for every single device: potential-free contacts for remote signalization; code-protected user menu; high-voltage measurement (up to 600VAC/800VDC for V4100); additional BIN/BCD outputs (for SI4xx0); dual display for simultaneous monitoring of active and reactive power (for VA4xx0) and so on; it is also available to deliver any special devices with customer-specific options.

Network wiring

In the future the series 4080 devices are going to be provided with RS-485 interface, thus allowing communication by MODBUS protocol.



AM4080 AM4100

AM4080 and AM4100 are digital measuring, fully programmable panel instruments from series 4080 and 4100. AM4080/4100 measure current up to 10 A AC/DC (any other current can be measured by connecting external shunt resistor or current sensor). AM4080/4100 can be directly connected to current transformer with maximum secondary current of 10 AAC. The devices have potential-free contacts for remote signalization if measured current goes out of certain specified range (option "R"). AM4080/4100 are designed to be mounted on boards in control

AM4080/AM4100 options:

- (A/D)	basic option, there are no any relay contacts, user menu is not code-protected
A	AC current measure
D	DC current measure
S	for measuring with external shunt resistor
E	for measure with external current sensor (it is needed the type of the sensor to be specified)
R	there are three relay contacts that provide remote signalization, acting when certain programmed levels are reached
C	code-protected user menu

Every option can be ordered in any combination with other options, excluding versions "A" and "D", which exclude each other as well as versions "S" and "E". One of the options - "A" or "D" must be specified.

AM4080/4100 technical specification

measurement of DC or/and AC current	AM4080	AM4100
maximum input current	10 AAC/ADC (overload up to 10 times for 100 ms)	
inner shunt resistance	0.010 Ohm @ 5 AAC/ ADC; 0.005 Ohm @ 10 AAC/ ADC	
power supply range	55-250 VAC/ 80-350 VDC	
display	4-digit super bright red with purple filter	
display size	76x25 mm	94x29 mm
measurement error	<0.8 % rgd + 2 digit	
measuring cycle	< 1 s	
number of relay contacts	3xNO	
power consumption	< 3 W	
operating temperature	0 °C to +55 °C	
storage temperature	-50 °C to +90 °C	
dimensions (H/W/D)	48/96/85 mm (w/o plugs)	144/144/65 mm (w/o plugs)
mounting hole	43/90 mm	136/136 mm
protection class	IP52 front (panel mounted), IP31 back	
weight	190 g	320 g

AM4xx0 operating mode

AM4xx0 continuously measures and shows its input current (referred to the primary side of current transformer if coupled with) and continuously signalizes if the current is in certain programmed range by light-emitting diodes and relay contacts. If the current is out of range, the display blinks with frequency of 2-3Hz (blinking can be turned off any time from user menu). The device signalizes that measured current has gone outside range after programmed amount of time (programmed as number of consecutive out-of-range measurements) thus eliminating random short-time switching of the relays. Hysteresis is also added to relay switch-off characteristics to further improve noise characteristics of the remote signaling. If the current goes again in the specified range plus hysteresis current, **AM4xx0** turns the relays off instantly without any delay.

User-defined parameters

- nominal (primary) current
- decimal point position
- low current level
- high current level
- display blinking
- hysteresis
- relay delay



V4080 V4100

V4080 and V4100 are digital measuring, fully programmable panel instruments from series 4080 and 4100. V4080/V4100 measure voltage in range 0-270VAC/ 380VDC (up to 600VAC/ 800VDC available - option "H"). V4080/V4100 can measure its own supply voltage (basic option, minimum voltage 55VAC/80VDC) or it can measure the voltage applied to external voltage input (options "L" or "H"). The devices have potential-free contacts for remote signalization if measured voltage goes out of certain specified range (option "R"). V4080/4100 are designed to be mounted on boards in control rooms in electrical substations.

V4080/V4100 options:

- (A/D)	basic version - the unit measures its own power supply voltage, there are no potential-free contacts, user menu is not code-protected
A	AC voltage measurement
D	DC voltage measurement
L	additional voltage input, minimum input voltage is 0 VDC/VAC, maximum input voltage is 270 VAC/ 380 VDC
H	additional voltage input, minimum input voltage 0 VDC/VAC, maximum input voltage is 600 VAC/ 800 VDC
R	there are three relay contacts that provide remote signalisation, acting when certain programmed voltage levels are reached
C	code-protected user menu

Every option can be ordered in any combination with other options, excluding "A" and "D", which exclude each other as well as options "L" and "H". One of the options - "A" or "D" must be specified.

V4080/V4100 technical parameters

measurement of DC and/or AC voltage	V4080	V4100
minimum input voltage	0 VAC/ VDC; 55 VAC/ 80 VDC	
maximum input voltage	270 VAC/ 380 VDC; 600VAC/ 800VDC	
measuring circuit resistance	min. 200 kOhm	
display	4-digit super bright red with purple filter	
display size	76x25 mm	94x29 mm
measurement error	<0.5 % rgd + 2 digit	
measuring cycle	< 1 s	
number of relay contacts	3xNO	
power consumption	< 3 W	
operating temperature	0 °C to +55 °C	
storage temperature	-50 °C to +90 °C	
dimensions (H/W/D)	48/96/85 mm (w/o plugs)	144/144/65 mm (w/o plugs)
mounting hole	43/90 mm	136/136 mm
protection class	IP52 front (panel mounted), IP31 back	
weight	190 g	320 g

V4xx0 operating mode

V4xx0 continuously measures and shows its input voltage and continuously signalizes if the voltage is inside or outside programmed range by light-emitting diodes and relay contacts. If the voltage goes outside range, the display blinks with frequency 2-3Hz (blinking can be turned off any time from user menu). The device signalizes that measured voltage has gone outside range after programmed amount of time (programmed as number of consecutive out-of range measurements) thus eliminating random short-time switching of the relays. Hysteresis is also added to relay switch-off characteristics to further improve noise characteristics of the remote signaling. If the voltage goes again in the specified range plus hysteresis voltage, **V4080** turns the relays off instantly without any delay.

User-defined parameters

- high voltage level
- low voltage level
- display blinking
- hysteresis
- relay delay



KV4080 **KV4100**

KV4080 and KV4100 are digital measuring, fully programmable panel instruments from series 4080 and 4100. KV4080/4100 devices are used for middle/high voltage measurement in electrical substations and power plants. They measure the secondary voltage of a voltage transformer with nominal secondary voltage 100VAC (or other voltage in range of 60-220VAC) and show the primary voltage in kilovolts. KV4080/KV4100 are powered by the measured voltage. KV4080/4100 are designed to be mounted on boards in control rooms in electrical substations.

KV4080/KV4100 options:

- | | |
|----------|---|
| - | basic option, there are no any relay contacts, user menu is not code-protected |
| R | there are three relay contacts that provide remote signalization, acting when certain programmed voltage levels are reached |
| C | code-protected user menu |

KV4080/KV4100 technical specification

	KV4080	KV4100
nominal input voltage	100 VAC	
minimum input voltage	55 VAC	
maximum input voltage	270 VAC	
measuring circuit resistance	min. 200 kOhm	
display	4-digit super bright red with purple filter	
display size	76x25 mm	94x29 mm
measurement error	<0.5 % rgd + 2 digit	
measuring cycle	< 1 s	
number of relay contacts	3xNO	
power consumption	< 3 W	
operating temperature	0 °C to +55 °C	
storage temperature	-50 °C to +90 °C	
dimensions (H/W/D)	48/96/85 mm (w/o plugs)	144/144/65 mm (w/o plugs)
mounting hole	43/90 mm	136/136 mm
protection class	IP52 front (panel mounted), IP31 back	
weight	190 g	320 g

KV4xx0 operating mode

KV4xx0 continuously measures and shows its input voltage, referred to the primary side of the voltage transformer and signalizes if the voltage is inside or outside programmed range by light-emitting diodes and relay contacts. If the voltage goes outside range, the display blinks with frequency 2-3Hz (blinking can be turned off any time from user menu). The device signalizes that measured voltage has gone outside range after programmed amount of time (programmed as number of consecutive out-of-range measurements) thus eliminating random short-time switching of the relays. Hysteresis is also added to relay switch-off characteristics to further improve noise characteristics of the remote signaling. If the voltage goes again in the specified range plus hysteresis voltage, **KV4080** turns the relays off instantly without any delay.

The nominal primary voltage of the voltage transformer can be displayed any time by pressing the arrow button.

User-defined parameters

- nominal primary voltage
- decimal point position
- high voltage level
- low voltage level
- display blinking
- hysteresis
- relay delay

F4080 F4100



F4080 and F4100 are digital, fully programmable panel instruments from series 4080 and 4100. F4080/F4100 devices are used for frequency measurement 50/60Hz in electrical substations and power plants. They are powered by the measured AC voltage. F4080/4100 have potential-free contacts for remote signalization if measured frequency goes out of certain specified range (option "R"). F4080/4100 are designed to be mounted on boards in control rooms in electrical substations.

F4080/F4100 options:

-	basic option - there are no potential-free contacts, user menu is not code-protected
R	there are three relay contacts that provide remote signalization, acting when certain programmed voltage levels are reached
C	code-protected user menu

F4080/F4100 technical specification

	F4080	F4100
nominal input frequency	50/60 Hz	
input frequency range	20-100 Hz	
power supply range	55-270 VAC	
measuring circuit resistance	min. 200 kOhm	
display	4-digit super bright red with purple filter	
display size	76x25 mm	94x29 mm
measurement error	<0.3 % rgd + 2 digit	
measuring cycle	< 1 s	
number of relay contacts	3xNO	
power consumption	< 3 W	
operating temperature	0 °C to +55 °C	
storage temperature	-50 °C to +90 °C	
dimensions (H/W/D)	48/96/85 mm (w/o plugs)	144/144/65 mm (w/o plugs)
mounting hole	43/90 mm	136/136 mm
protection class	IP52 front (panel mounted), IP31 back	
weight	190 g	320 g

F4xx0 operating mode

F4xx0 continuously measures and shows its input voltage frequency and signalizes if the frequency is inside or outside programmed range by light-emitting diodes and relay contacts. If the frequency goes outside range, the display blinks with frequency 2-3Hz (blinking can be turned off any time from user menu). The device signalizes that measured frequency has gone outside range after programmed amount of time (programmed as number of consecutive out-of-range measurements) thus eliminating random short-time switching of the relays. Hysteresis is also added to relay switch-off characteristics to further improve noise characteristics of the remote signaling. If the frequency goes again in the specified range plus hysteresis frequency, **F4xx0** turns the relays off instantly without any delay.

User-defined parameters

- low frequency level
- high frequency level
- display blinking
- hysteresis
- relay delay



SI4080 SI4100

SI4080 and SI4100 are digital measuring, fully programmable panel instruments from series 4080 and 4100. SI4080/4100 shows the current position of the tap changer of the high-voltage transformer in electrical substations. These meters are part of tap changer-motor drive equipment. The position of the tap changer can be read either analogue (by resistor matrix) or digital (BIN or BCD input). SI4080/4100 are designed to be mounted on boards in control rooms in electrical substations.

SI4080/SI4100 options:

- (A/D)	basic option - reads and shows current tap changer step
A	analogue input (resistor matrix)
D	digital BIN or BCD input
B	digital BIN or BCD output for remote signalization
C	code-protected user menu

Every option can be ordered in any combination with other options, excluding versions "A" and "D". One of "A" and "D" options must be specified.

SI4080/SI4100 technical specification

	SI4080	SI4100
input	analogue/ BIN/ BCD	
digital input voltage range	5-48 VDC	
analogue input single resistor step	6/ 8/ 10 Ohm	
analogue input maximum matrix resistance	390 Ohm	
analogue input maximum steps	39 @ 10 Ohm; 48 @ 8 Ohm; 64 @ 6 Ohm	
digital input maximum steps	127 @ BIN-input; 79 @ BCD-input	
maximum wiring length	* 200 m @ 0.75mm ² ; 400 m @ 1.5 mm ² ; 700 m @ 2.5 mm ²	
power supply range	55-250 VAC/ 80-350 VDC	
display	4-digit super bright red with purple filter	
display size	76x25 mm	94x29 mm
measuring cycle	< 1 s	
number of output relays	7	
power consumption	< 3 W	
operating temperature	0 °C to +55 °C	
storage temperature	-50 °C to +90 °C	
dimensions (H/W/D)	48/96/85 mm (w/o plugs)	144/144/65 mm (w/o plugs)
mounting hole	43/90 mm	136/136 mm
protection class	IP52 front (panel mounted), IP31 back	
weight	190 g	320 g

* - at maximum matrix resistance 390 Ohm; at lower resistance maximum wiring length may reach over 3km. For further information please contact the manufacturer or authorized dealer.

SI4xx0 operating mode

The current position (step) of the tap changer is displayed. After changing the tap position the new position is displayed with reaction time lower than 1s and the new position is coded as programmed by the user (BIN or BCD) and sent to the output. While arrow button is pressed and the analogue input is selected, the maximum step number for the resistor matrix is displayed.

User-defined parameters

- input type - analogue/ BIN/ BCD
- output type - BIN/BCD
- steps number at analogue input
- delay after step change
- analogue input single resistor step and number of resistors
- set each step display

VA4080 VA4100



VA(R)4080 and VA(R)4100 are digital measuring, fully programmable panel instruments from series 4080 and 4100. VA(R)4080/4100 measure signed active (VA4xx0) and reactive (VAR4xx0) electric power in electrical substations and power plants. VA(R)4080/4100 are designed to be mounted on boards in control rooms in electrical substations.

VA4080/VA4100 options:

- | | |
|----------|---|
| - | basic option - measures and shows either active or reactive power |
| D | dual display, active and reactive power are shown simultaneously |
| R | free-potential relay contacts for remote signalization are provided |
| C | code-protected user menu |

VA4080/VA4100 technical specification

	VA4080	VA4100
voltage input range	0-120 VAC/ 0-250 VAC	
current input range	0-1 AAC/ 0-5 AAC/ 0-10 AAC	
power supply range	from input voltage	55-250 VAC/ 80-350 VDC
display	4-digit super bright red with purple filter	
display size	76x25 mm	94x29 mm
measurement error	< 1.5 % rgd + 6 digit (active), < 2.5 % rgd + 8 digit (reactive)	
measuring cycle	< 1 s	
number of relay contacts	3xNO	
power consumption	< 3 W	
operating temperature	0 °C to +55 °C	
storage temperature	-50 °C to +90 °C	
dimensions (H/W/D)	48/96/105 mm (w/o plugs)	144/144/85 mm (w/o plugs)
mounting hole	43/90 mm	136/136 mm
protection class	IP52 front (panel mounted), IP31 back	
weight	210 g	340 g

VA4xx0 operating mode

VA4xx0 displays currently measured power - active on the upper display and reactive on the lower display, if the device has dual display. If it has single display, it shows the manufacturer programmed type of power (active or reactive). While pressing the arrow button the display shows the nominal primary power, calculated from current and voltage transformers ratio.

VA4xx0 wiring

VA4xx0 can be connected to the current and voltage lines either directly (if voltage and current values are in the specified operating range) or by current and/or voltage transformers. It is recommended that at least one transformer is used (either current or voltage) as the current and voltage inputs are not isolated.

User-defined parameters

- nominal primary voltage and decimal point position
- nominal primary current and decimal point position
- show power sign (on/off)
- display blinking
- power high level
- power low level
- hysteresis
- relays delay



CF4080 CF4100

CF4080 and CF4100 are digital measuring, fully programmable panel instruments from series 4080 and 4100. CF4080/4100 measure signed value of cosine of phase angle between their voltage and current inputs. CF4080/4100 are designed to be mounted on boards in control rooms in electrical substations.

CF4080/CF4100 options:

- | | |
|----------|---|
| - | basic option - measures and shows phase angle cosine |
| R | free-potential relay contacts for remote signalization are provided |
| C | code-protected user menu |

CF4080/CF4100 technical specification

	CF4080	CF4100
voltage input range	0-120 VAC/ 0-250 VAC	
current input range	0-1 AAC/ 0-5 AAC/ 0-10 AAC	
power supply range	from input voltage	55-250 VAC/ 80-350 VDC
display	4-digit super bright red with purple filter	
display size	76x25 mm	94x29 mm
measurement error	< 1.5 % rgd + 4 digit	
measuring cycle	< 1 s	
number of relay contacts	3xNO	
power consumption	< 3 W	
operating temperature	0 °C to +55 °C	
storage temperature	-50 °C to +90 °C	
dimensions (H/W/D)	48/96/105 mm (w/o plugs)	144/144/85 mm (w/o plugs)
mounting hole	43/90 mm	136/136 mm
protection class	IP52 front (panel mounted), IP31 back	
weight	210 g	340 g

CF4xx0 operating mode

CF4xx0 continuously measures and displays the phase angle cosine between its voltage and current input. If the values of the input voltage and/or current are too small to provide correct measurement of the cosine of the phase angle, a "----" is shown on the display.

CF4xx0 wiring

CF4xx0 can be connected to the current and voltage lines either directly (if voltage and current values are in the specified operating range) or by current and/or voltage transformers. It is recommended that at least one transformer is used (either current or voltage) as the current and voltage inputs are not isolated.

User-defined parameters

- show cosine of phase angle sign (on/off)
- display blinking
- high level of cosine function
- low level of cosine function
- hysteresis
- relays delay

Series 4080

Devices from industrial series 4080 are programmable digital measurement and indication instruments. They have 4-digit LED-display (75x22 mm), with dimensions (H/W/D) 48/96/85 mm, and are intended for industrial applications. The device series includes measurement of: current, voltage, frequency, power, resistance, though it is possible to manufacture instrument for a random physical quantity (temperature, pressure, etc.). Relay contacts for remote signaling are provided.

Series 4100

Devices from industrial series 4100 are programmable digital measurement and indication instruments. They have 4-digit LED-display (94x29 mm), with dimensions (H/W/D) 144/144/65 mm, and are intended for industrial applications. The device series includes measurement of: current, voltage, frequency, power, resistance, though it is possible to manufacture instrument for a random physical quantity (temperature, pressure, etc.). Relay contacts for remote signaling are provided.

Series 5036

Devices from industrial series 5036 are programmable digital measurement and indication instruments. They have 5-digit LED-display (35x12 mm), with dimensions (H/W/D) 48/48/72 mm. and are intended for industrial applications. The device series includes measurement of: current, voltage, frequency, timers, hour counters, fuel-meter, though it is possible to manufacture instrument for a random physical quantity (temperature, pressure, etc.).

Weigh measurement

We offer standard and unique solutions in the field of weigh measuring, both intended to industrial and trade aims. We produce simple or more complex electronic weigh scale indicators which have many build-in functions, making them easy to use. They can also control other external equipment, to send data to a computer and many more. For further information please see our 'weight' section.

M-bus devices

M-BUS is a cheap and reliable communication protocol. It is been here quite a while in civil building installations, for remote reading of tax and tariff devices in apartments or offices. We offer the whole variety of instruments and software, needed to build a system for remote reading of tax instruments via M-bus interface.

Automation and process control

We make a lot of engineering work in the field of automation. Mostly we are trying to produce unique control boards for various processes in automation industry. Our firm has successfully made full automation in several factories for packaging goods.

Software

We make software among with our devices and instruments, because that is the main advantage of digital technic. The user can control processes, create database, make reports, print notes, etc. using personal computer. Although we have standard programs, we are ready to make new projects in software field to fulfil client requirements.



If you have any question or special requirements, please visit our web-site www.gineers.com, or contact us at **+359 2 975-81-05!**

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