New Product

Graphical Panel Meter

WPMZ

Application Example

CE

66
Dustproof &
Water Resistant Structure
IP66 Front bezel

DC Voltage / Current Meter	Strain Gauge Meter	Rotation / Speed Meter	Flow Rate / Flow Totalizer
WPMZ-1	**WPMZ-3**	**WPMZ-5**	**WPMZ-6**

Ver.4

27 Jan,2021

Watanabe Electric Industry Co., Ltd.

Application Examples Contents

LCD display
Graphical Panel Meter

WPMZ Series
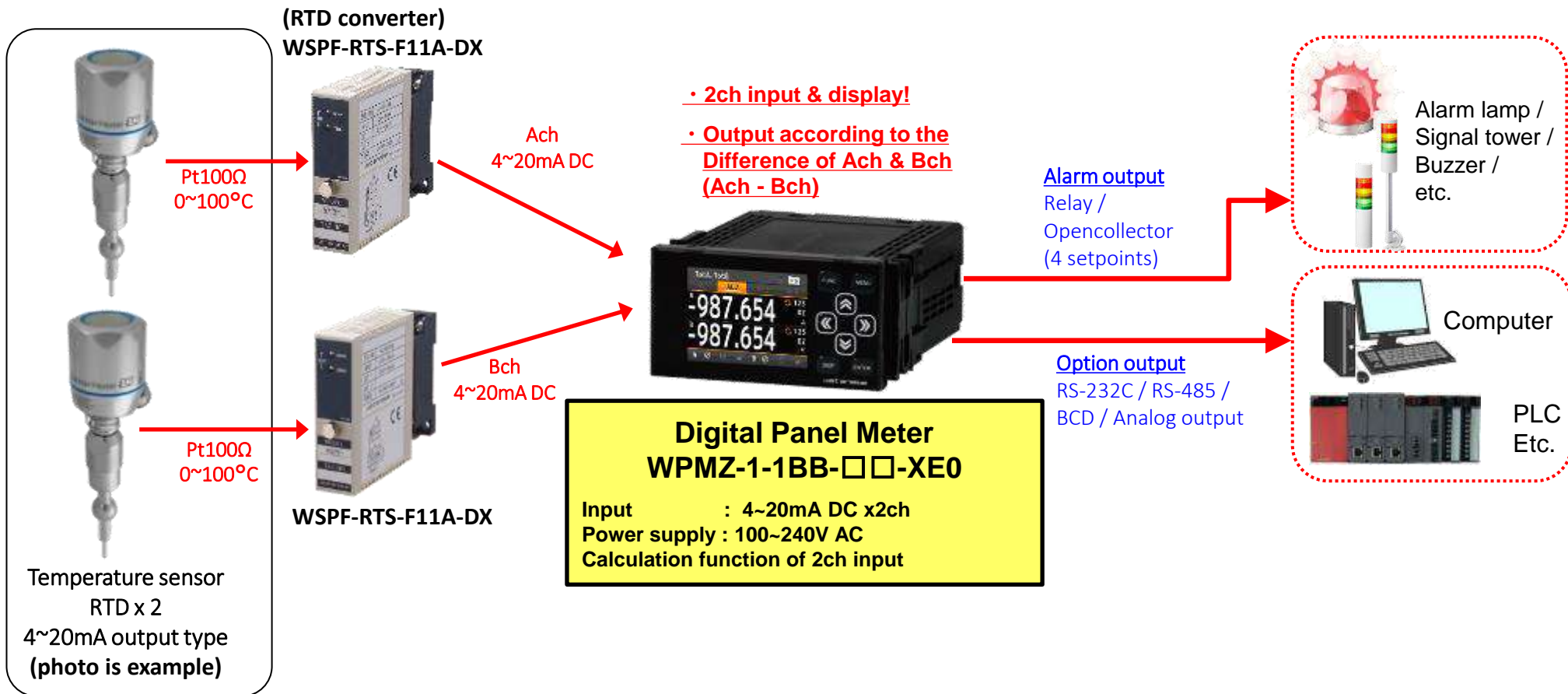
2.4 inch Full-color LCD

★ **2.4 inch Full color LCD display**
★ **User friendly cross key setting**
★ **Display select**
  • Value, Bar graph, Trend graph switchable
  • Display direction (Horizontal / Vertical)
  • 62 Unit selectable & custom unit available
★ **2 input & calculation**
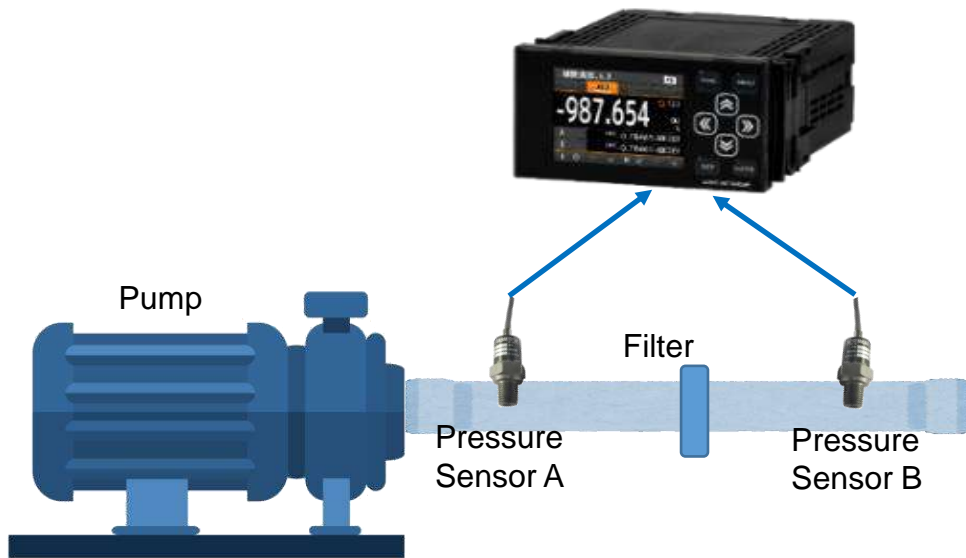★ **IP66 Front panel, Dustproof & water resistant**
★ **CE approved**

User friendly
Cross keys

CE

3

1) Convert RTD signal to 4-20mA by RTD converter WSPF-RTS-F11A-DX.
2) Input 2ch, Display Ach & Bch value in 1 display.
3) WPMZ-1 can **Calculate difference of 2ch input (Ach - Bch).**
   If calculation result is below or over setpoints (4 setpoints setting available)
   when one of RTD broken etc., then Relay signal will output to detect.

(RTD converter)
WSPF-RTS-F11A-DX

Pt100Ω
0~100°C

Ach
4~20mA DC

・ **2ch input & display!**
・ **Output according to the**
   Difference of Ach & Bch
   (Ach - Bch)

Bch
4~20mA DC

Pt100Ω
0~100°C

WSPF-RTS-F11A-DX

Alarm output
Relay /
Opencollector
(4 setpoints)

Option output
RS-232C / RS-485 /
BCD / Analog output

Alarm lamp /
Signal tower /
Buzzer /
etc.

Computer

PLC
Etc.

Digital Panel Meter
WPMZ-1-1BB-□□-XE0

Input   : 4~20mA DC x2ch
Power supply : 100~240V AC
Calculation function of 2ch input

Temperature sensor
RTD x 2
4~20mA output type
(photo is example)

Detects clogging from the pressure difference before and after the filter

Standard：(PressureA – PressureB) < 100
Clogged：(PressureA – PressureB) ≧ 100
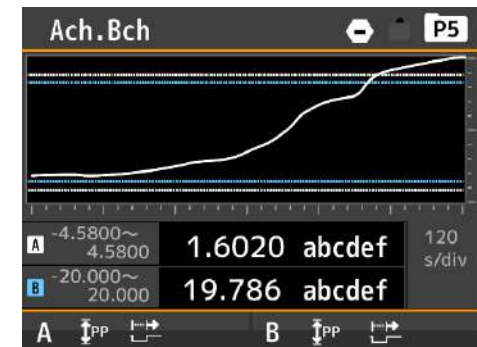
It is also possible to detect abnormalities that occur suddenly and grasp the situation up to that point.

Displacement sensor A

Displacement sensor B

4~20mA

4~20mA

Calculation result of 2 ch input
=Thickness value

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Alarm output
Relay /
Opencollector
(4 setpoints)

Alarm lamp /
Signal tower /
Buzzer /
etc.

Option output
RS-232C / RS-485 /
BCD / Analog output

Computer

PLC
Etc.

WPMZ-1-4BB-□□-XE0

・2ch input 4-20mA
・Various calculation

A (Sensor A value)

B (Sensor B value)

C =x-y
x=Total length
y=Rated width
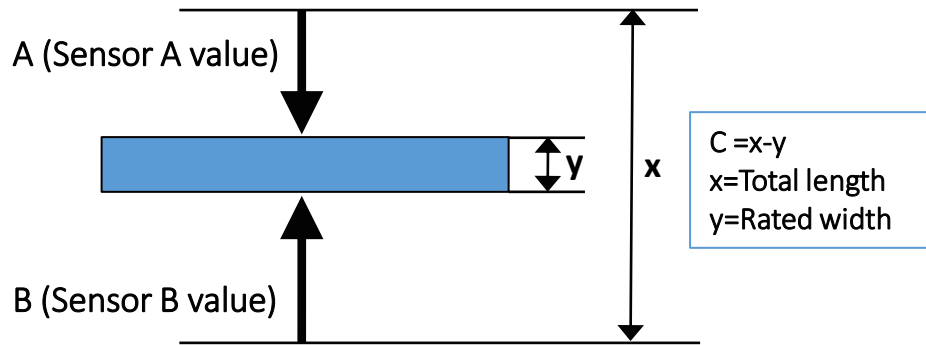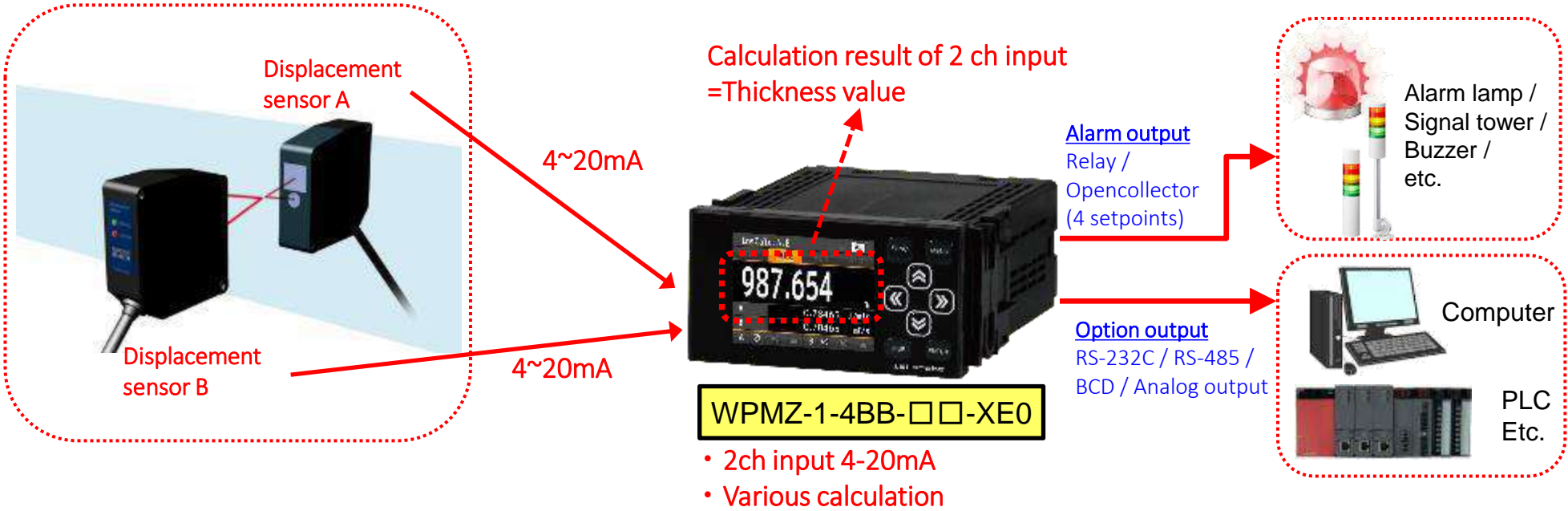
Example of Calculation method

(A+B)+C) x K = Thickness value
A = Sensor A value (Ach input)
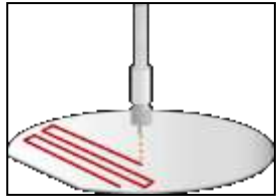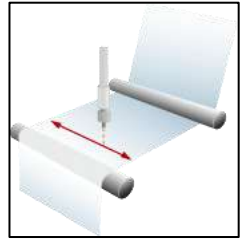B = Sensor B value (Bch input)
C = Total length (between A & B) − Rated width
K = -1

*C & K can set value by setting.
For example, if you want to display zero at 2cm width,
and total length between A & B is 10cm, set 8 as C by setting.
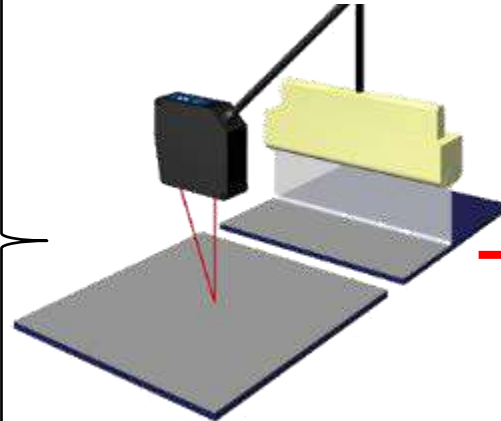Then calculation result will be difference from 2cm rated width.

Wafer

FPD

Plating

**Thickness measurement
Displacement sensor**

Analog signal
(current / voltage)

WPMZ-1

Measure integrating current,
and outputs when Integrating
current is at constant value

watanabe 7

6. WPMZ-1 2ch input & Analog output of higher value

Set WPMZ-1, 2ch calculation to "HiSelect".
This function calculate Larger value of Ach & Bch.
Set Analog output setting to output Calculation result.

Then you can output larger value of Ach & Bch by Analog output 4~20mA.

INPUT   **OUTPUT**

Pressure sensor A

**Ach
4~20mADC**

**Bch
4~20mADC**

Pressure sensor B

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Option output
Analog output
WPMZ-1 can select output from
(Ach / Bch / Calculation result)

Please select Calculation result
to output higher value of Ach or Bch

LCD Digital panel meter
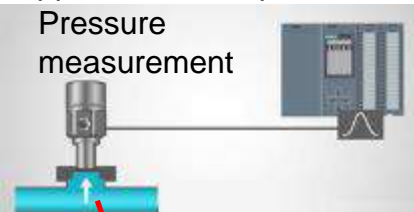**WPMZ-1-1BB-1R-XE0**

Input : 2ch 4~20mADC
Output : Higher value of Ach or Bch
        by 4~20mA
Power supply : 100~240VAC
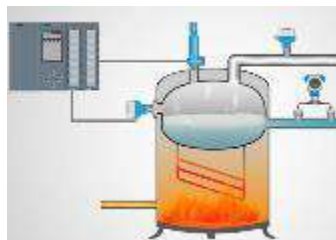
7. WPMZ-1 Connect Pressure/Level Sensor

Measure Pressure / Level of Water / Gas etc.,
by WPMZ-1 (DC current / voltage meter) connecting with pressure sensor / Level sensor.

Application example

Pressure measurement

Pressure measurement

Level measurement

BD Sensors (example)

BD Sensor : https://www.bdsensors.de/en/

Pressure sensors

Level Probes

Etc.

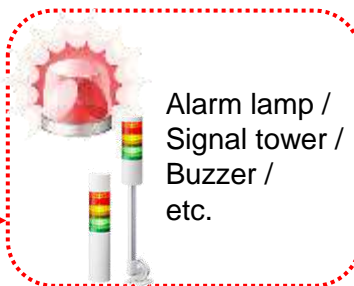**4~20mA**

Power supply 12V/24V to sensor

DC Voltage / Current meter
WPMZ-1 series

Input : 4~20mA
(DC Current/Voltage)

-97.654

Alarm output
Relay / Opencollector
(4 setpoints)

Option output
RS-232C / RS-485 /
BCD / Analog output

Alarm lamp / Signal tower / Buzzer / etc.

Computer

PLC

Garbage weight

Crane system

Alarm lamp /
Signal tower /
Buzzer /
etc.

Alarm output
Relay /
Opencollector
(4 setpoints)

Computer

(Example)

987.654

Loadcell signal
-3.5mV/V~3.5mV/V

Option output
RS-232C / RS-485 /
BCD / Analog output

PLC
Etc.

Load cell
For 3 ton or more
Rated output : -3.5mV/V~3.5mV/V

Load cell meter
WPMZ-3-□-SX-□□-XE0
Input : -3.5mV/V~3.5mV/V
Relay output : 4 set point (AL1/AL2/AL3/AL4)
Option output : Analog/RS-232C/
              RS-485/BCD
Power supply : Please inform
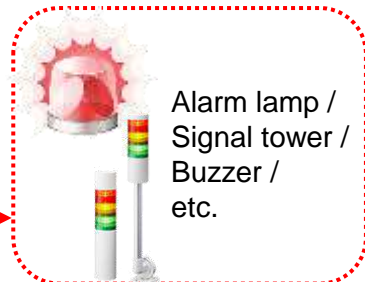
9. WPMZ-3 Surface measurement by Lasor sensor

Measure surface of roof tile by Lasor sensor, and OK/NG judgement by compare result.

WPMZ-3-1BX-□□-XE0

-987.654

Lasor sensor
(Displacement sensor)

4~20mA

Roof tile

Alarm output (4 setpoint)
Relay / Opencollector

Alarm lamp /
Signal tower /
Buzzer /
etc.

Option output
RS-232C / RS-485 /
BCD / Analog output

Computer

PLC
Etc.

Wave compare display (OK/NG judgement)

1)   Create Comparison waveform.
2)   Start measuring at Trigger ON by external control function.
3)   Measure and compare with comparison waveform.
4)   Alarm output by relay when NG.
      (NG when measurement waveform is over comparison waveform)

(Display example)

Comparison waveform
(Green line)

Measurement waveform
(White line)

NG display

OK display

10. WPMZ-3 Weight measurement of Conveyor

Conveyor at Site

Weight measurement of Conveyor at Site

Load cell

x2ch
Load cell
input

Alarm output
Relay / Opencollector
(4 setpoints)

Alarm lamp /
Signal tower /
Buzzer /
etc.

Option output
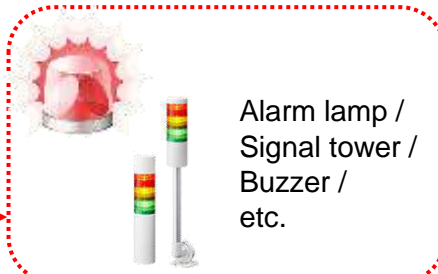RS-232C / RS-485 /
BCD / Analog output

Computer

PLC
Etc.

Strain gauge meter WPMZ-3

・2ch Load cell signal input
・2ch calculation function
・LCD Display
・Waveform comparison
・Multi hold function
・Alarm output (Relay / Open collector)
・Option output
　(BCD / Analog / RS-232C /RS-485)

Waveform comparison

The quality of the press is judged by the pressure waveform.

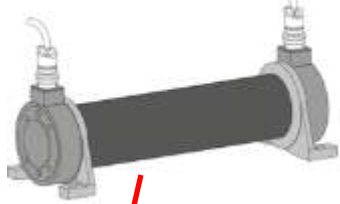Oil pressure Cylinder

Pressure sensor

Press machine

波形比較A

WaveCompareA
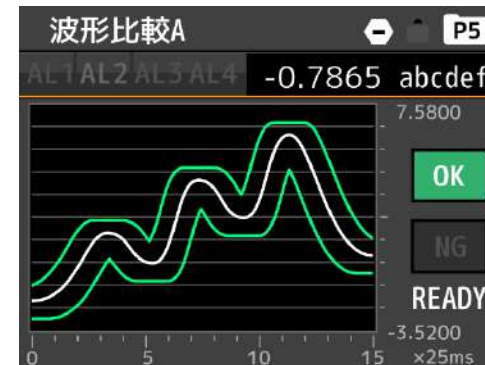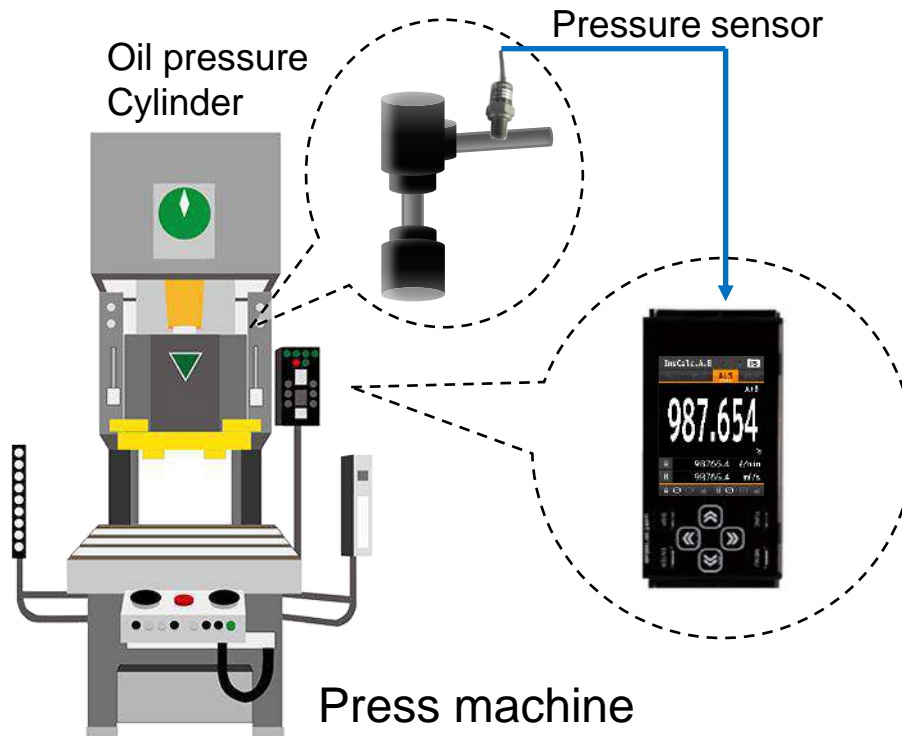
It is possible to judge not only the pressure level but also the concept of time.
High-speed sampling of 4000 times / sec at the fastest

Measure tension (Force) in rolls of wires, cables and similar materials, by WPMZ-3 (Strain gauge meter) connecting with tension sensor.
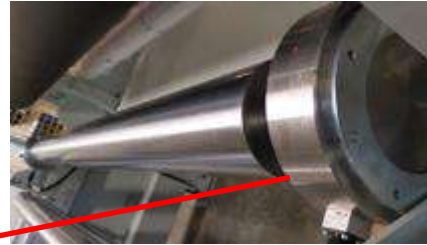
Application example

FMS RMGZ

FMS C series

FMS LMGZ

Tension (Force) sensors (Example)

FMS : https://www.fms-technology.com/en/

FMS RMGZ

FMS LMGZ

FMS C series

Etc.

0~1.8mV/V (350Ω)

Power supply 2.5V/5V/10V to sensor

Strain gauge meter WPMZ-3 series

Input : -3.5mV/V~3.5mV/V

-97.654

Alarm output Relay / Opencollector (4 setpoints)

Alarm lamp / Signal tower / Buzzer / etc.

Option output RS-232C / RS-485 / BCD / Analog output

Computer

PLC
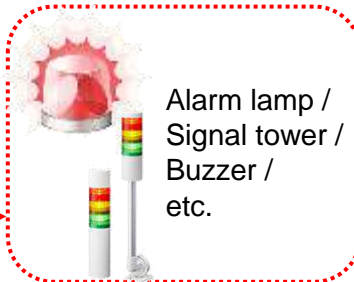
2ch input and 4 point alarm settings of WPMZ-3 enable low-cost crane weight monitoring.

Since one WPMZ-3 can manage the weight of a single crane and the total weight,
weight management using a summing box and multiple indicators are not required.
It is also possible to send data to a computer as alarm output or data for safety management.

Alarm lamp /
Signal tower /
Buzzer /
etc.

Alarm output
Relay /
Opencollector
(4 setpoints)

Load cell input

-97.654

WPMZ-3

Computer

Option output
RS-232C / RS-485 /
BCD / Analog output

PLC

60t
50t
30t
45t
20t

1) Crane unit weight ➡ Judgment based on the input value of each load cell sensor
2) Total crane weight ➡ Judgment based on the result of Addition of 2 points
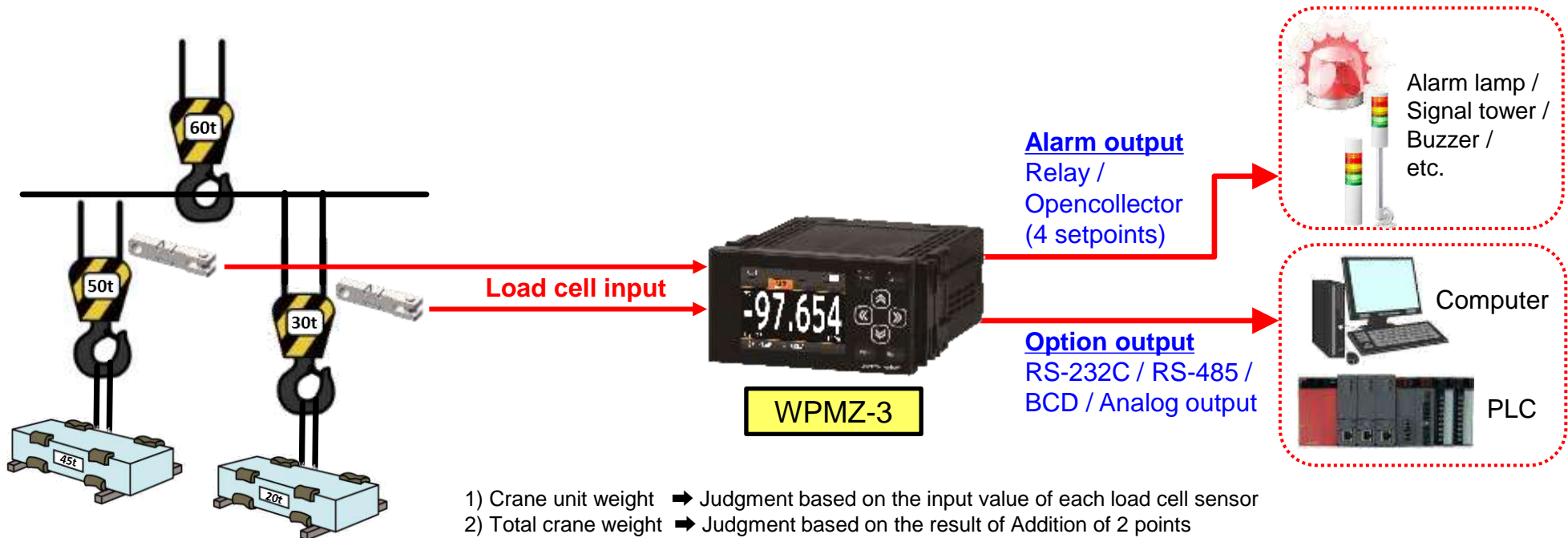
AR1:A<50t
AR2:B<30t
AR3:A+B<60t
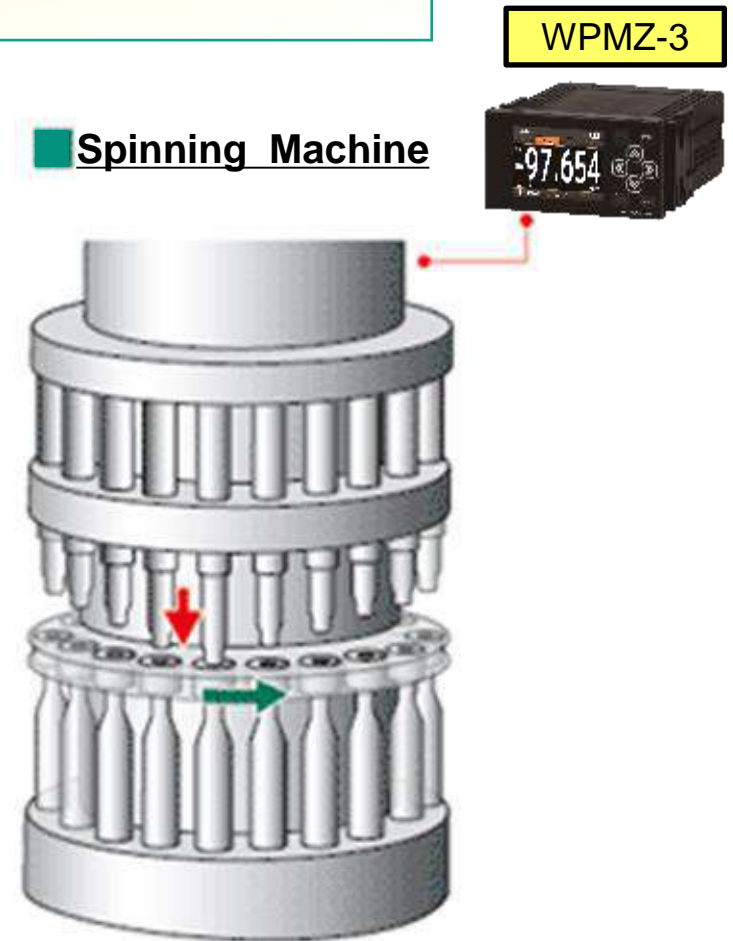
Supports applications where high-speed response is essential.
The peak value held by analog peak hold is processed at high speed at 3000 times per second, and judgment output is possible.
Ideal for applications with short takt times.

Bolting Machine

WPMZ-3

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Spinning Machine

WPMZ-3

-97.654
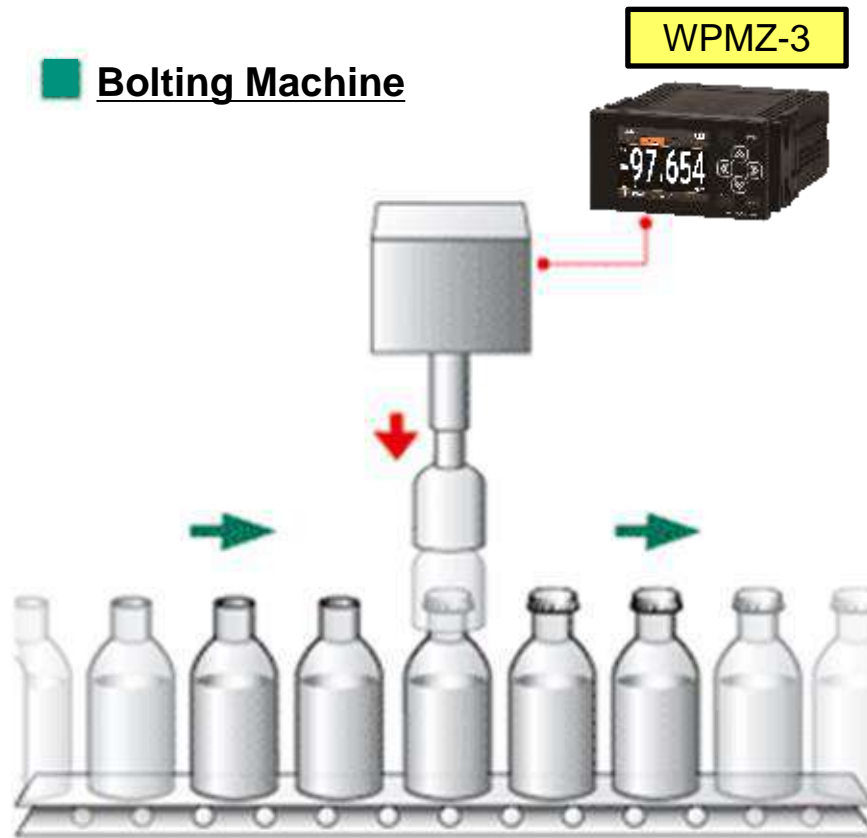
Tension measurement

WPMZ-3

Automotive Parts Tensile / Compression Test

WPMZ-3

Press machine weight measurement
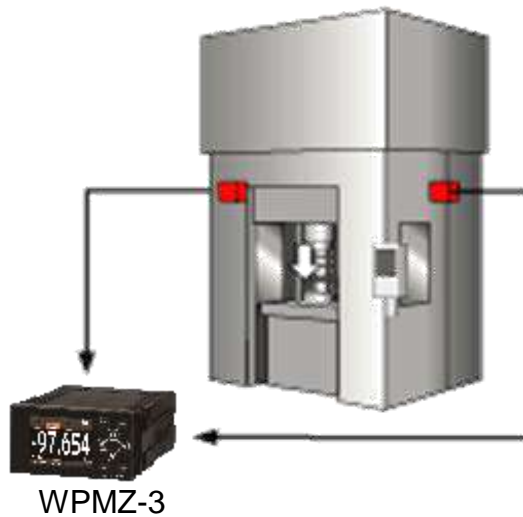
WPMZ-3

Clane weight measurement
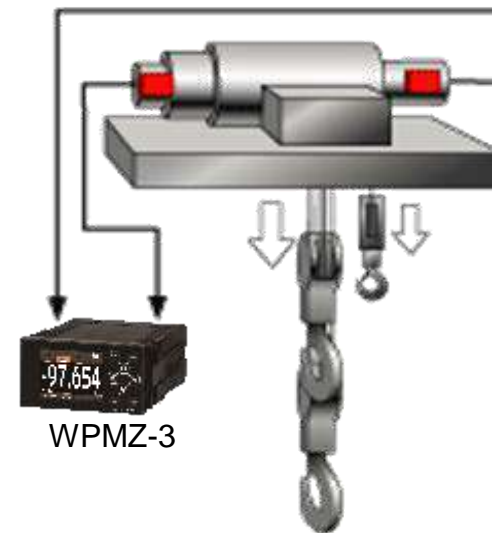
WPMZ-3

Weight measurement of cylinder with a scale load cell

WPMZ-3

-97.654

Low floor
scale load cell
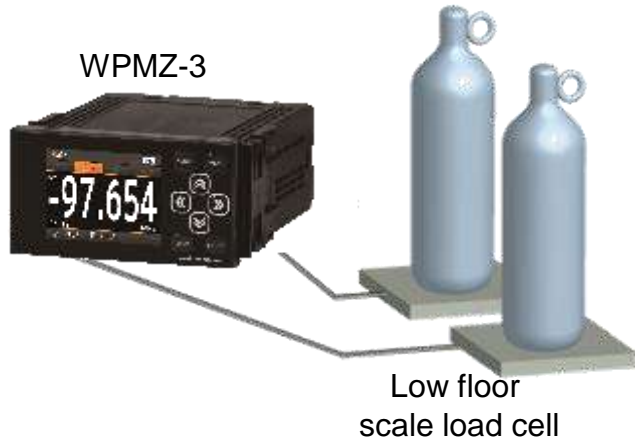
Automotive mission axial force measurement

WPMZ-3

-97.654

Liquid gas remaining amount measurement

-97.654

WPMZ-3

Low floor
scale load cell
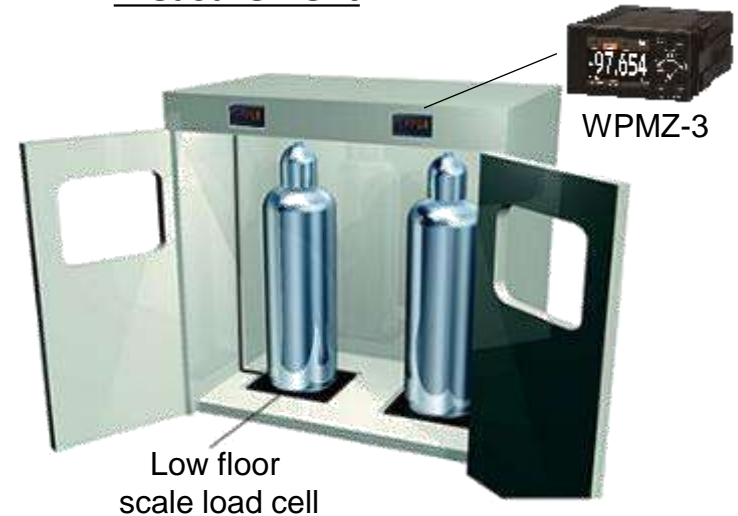
Control of the weight mixer

WPMZ-3

-97.654

Loadcell

PLC

WPMZ-5 Application : Conveyor

Rotation and Speed measurement of conveyor by WPMZ-5

Example

Drum filling Machine

Conveyor

Difference of Conveyor speed
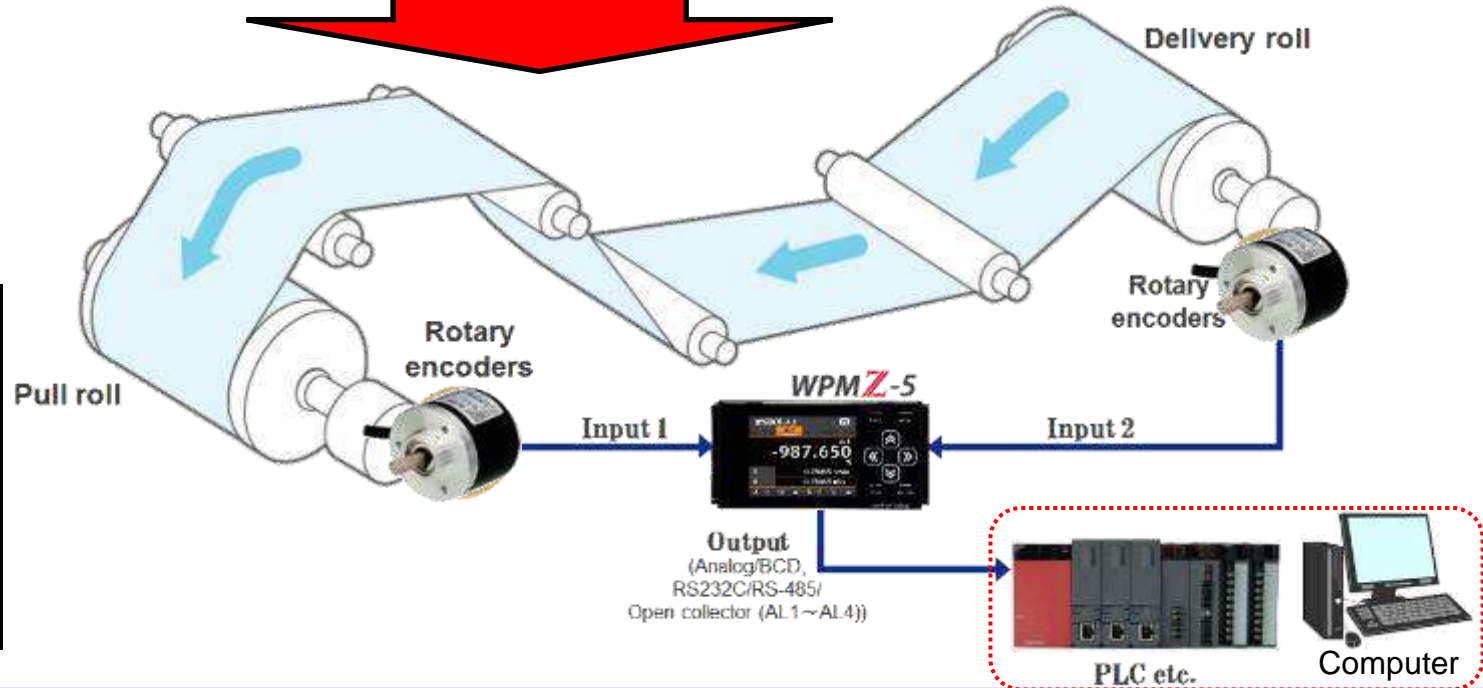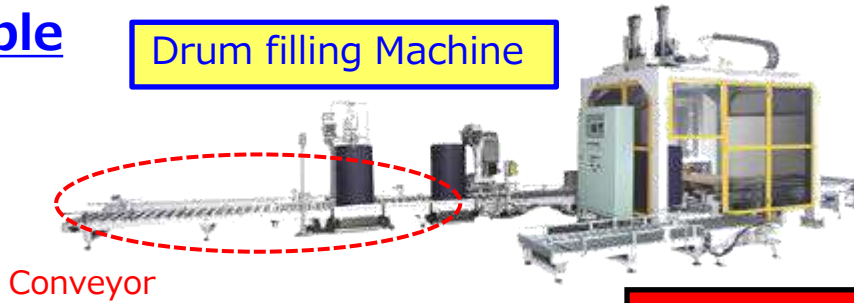
2 input Calculation	Calculation method
Absolute ratio	(B/A)×100
Relative error	(B/A-1)×100
Subtraction	B-A
Density	(B/(A+B))×100
Sum	A+B

Delivery roll

Rotary encoders

Pull roll

Rotary encoders

Input 1

WPMZ-5

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Input 2

Output
(Analog/BCD,
RS232C/RS-485/
Open collector (AL1~AL4))

PLC etc.

Computer

Monitors the reduction rate and controls feedback

Large indicator

Rolling process

Encoder B

Encoder A

Alarm

BCD

PLC / Sequencer

-987.654

Open collector

Calculation result
(Analog signal)
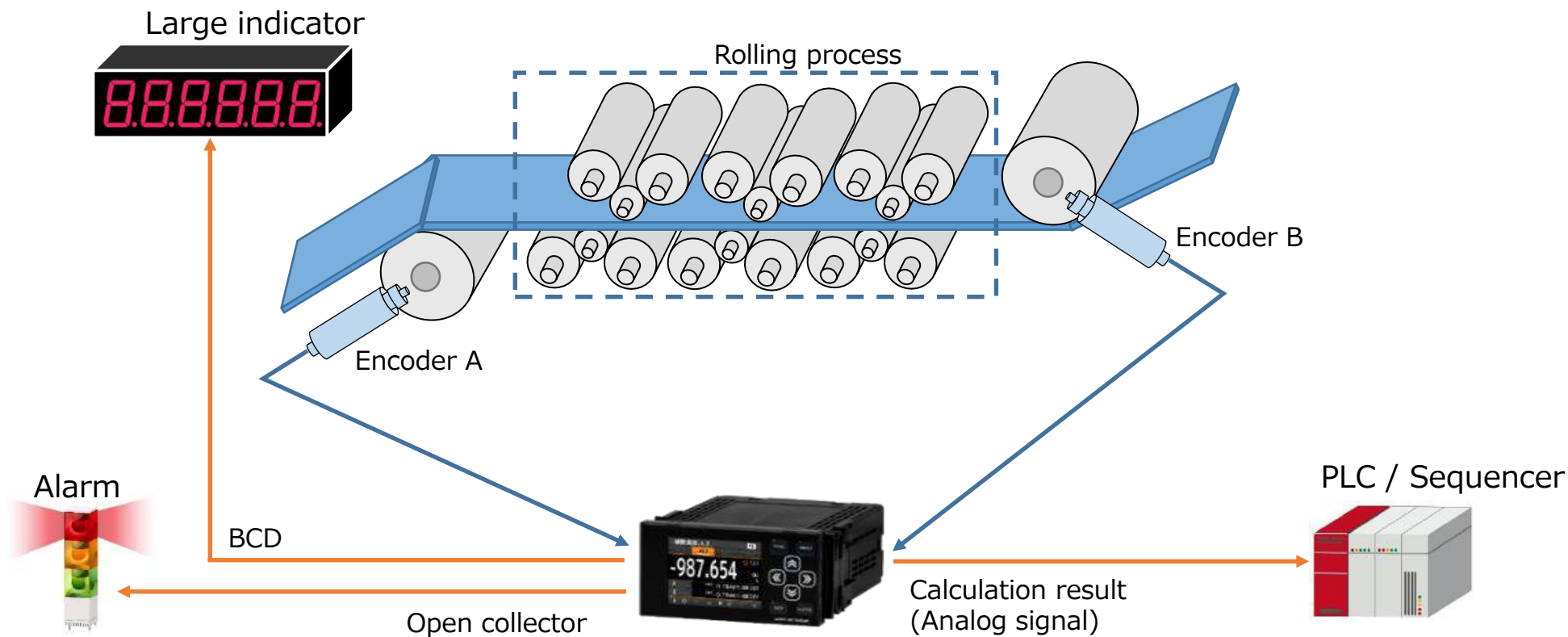
Programless calculation setting reduces PLC setting man-hours.

19. WPMZ-6 Monitor at Ethernet, converting Modbus RTU to TCP

Cloud server

LTE

Point

1) Measured data by WMB & WPMZ, and convert RS-485 Modbus RTU to Ethernet Modbus TCP by Modbus TCP/RTU converter.
   Then you can monitor data at PC on Ethernet.

2) Our WMB & WPMZ are Modbus RTU slave units.

Modbus TCP Master

Computer

Ethernet, Modbus TCP

Modbus TCP/RTU Converter
(Example) LINEEYE   SI-485MB series

Watanabe Products

RS-485, Modbus RTU

Modbus RTU Slave

Analog Input Module
(x8 input)
WMB-AI8

-97.654

WPMZ-6-1PX-5R-XE0

Input   : 1ch Pulse input
Option output : RS-485 Modbus RTU
Power supply : 100~240V AC

Stabilize the mixing process by monitoring
the difference of flow rate between two different liquid

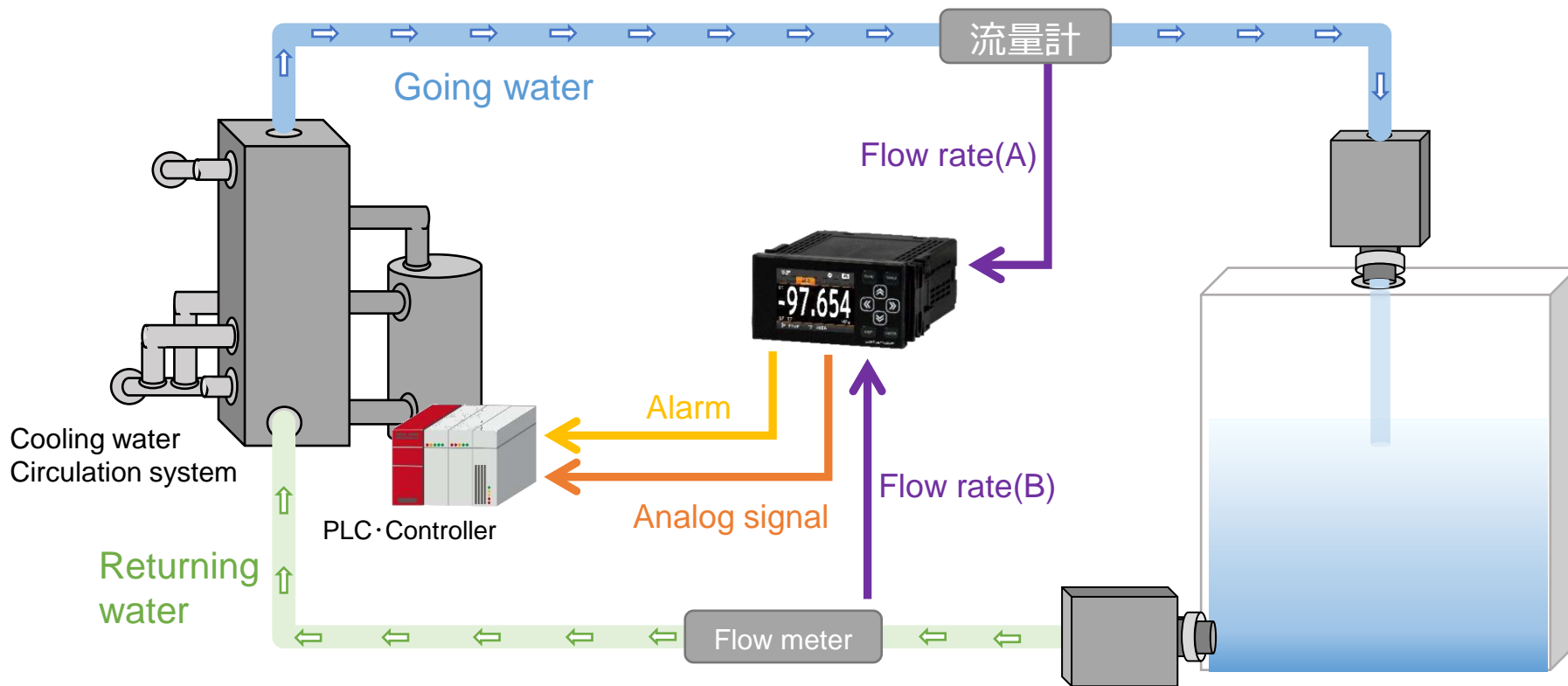| 2 input Calculation	Calculation method	WPMZ-6	
		Instantaneous	Totalized
Absolute ratio	(B/A)×100	○	×
Relative error	(B/A-1)×100	○	×
Subtraction	B-A	○	○
Density	(B/(A+B))×100	○	×
Sum	A+B	○	○

Tank A

Tank B

Signal tower
etc.

**Open collector output
(AL1～AL4)**

Computer etc.

**RS-232C/RS-485
output**

Flow Sensor

Flow Sensor

WPMZ-6

Analog output

-987.650

Input 1

PLC etc.

Input 2
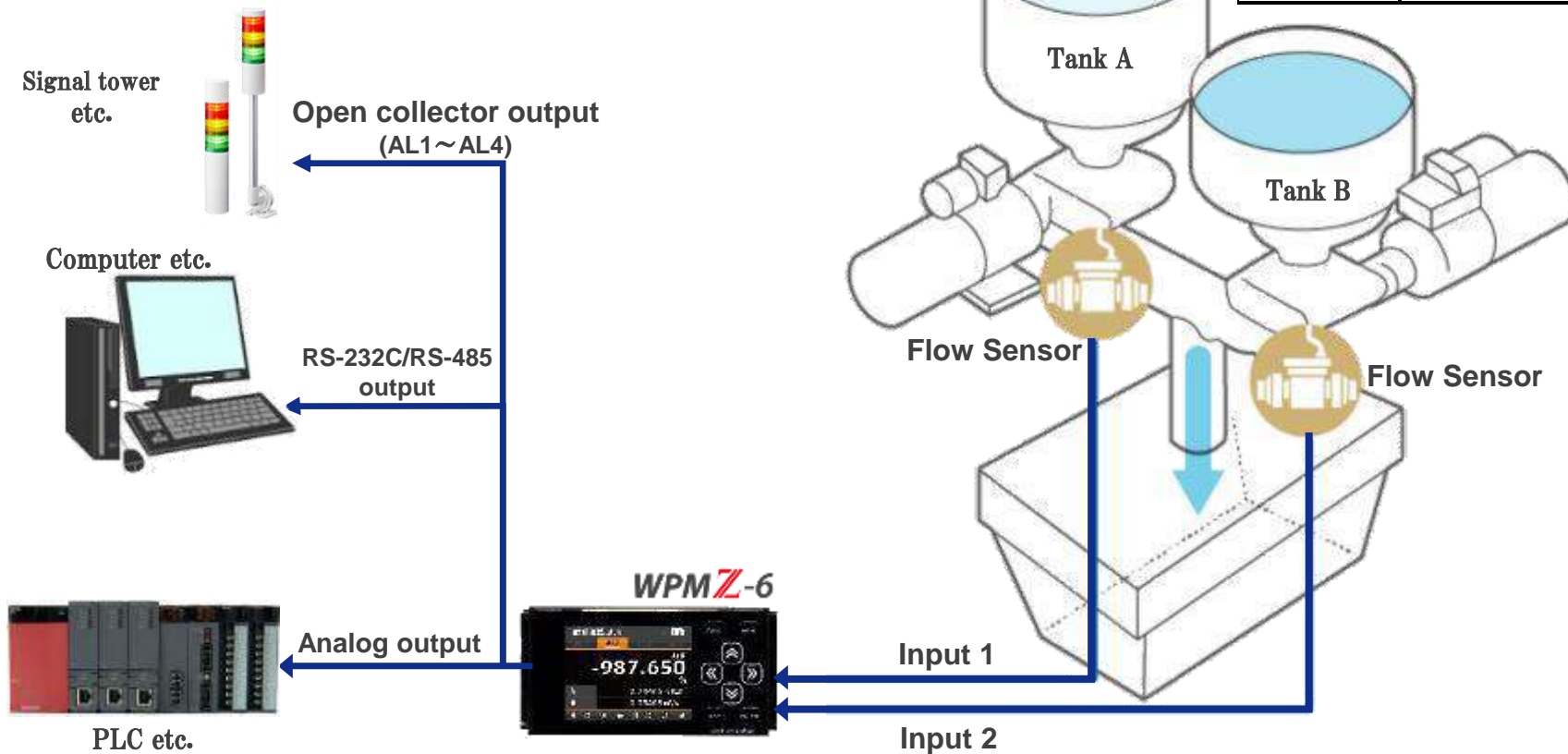
Outputs the difference calculation result to the PLC / controller

流量計

Going water

Flow rate(A)

-97.654

Alarm

Cooling water
Circulation system

PLC・Controller

Analog signal

Flow rate(B)

Returning
water

Flow meter

**Adjustment operation such as changing the alarm level
can be easily performed on site.**