New Signal Conditioner VJ series

Yokogawa M&C corporation

1st Edition March 2000

Signal Conditioner Families

VJ series

Small Plug-In type
Intelligent
Communication

New

YTA series*

Temperature transmitter

JUXTA

M,J series

Plug-In type
Wide Variety

F,W series

Front Terminal
Intelligent

* YTA series is Yokogawa Electric 's Product.

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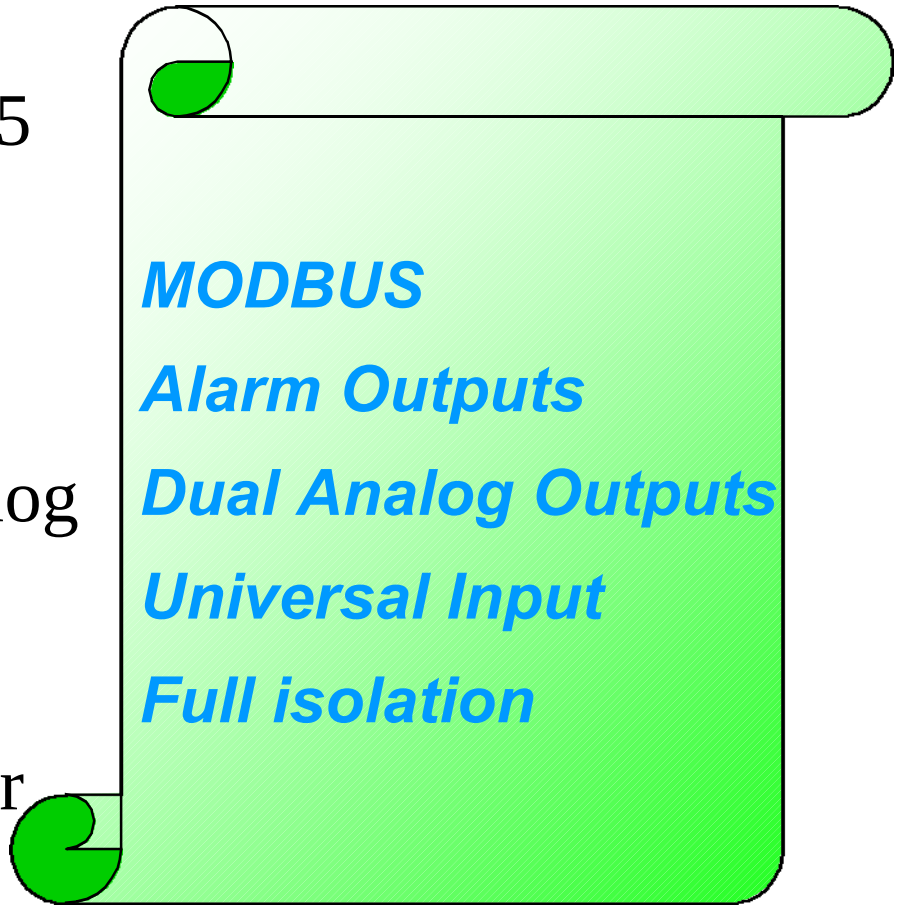
Excellent Features 1

- Focus on innovation.
  - Combination of RS485 MODBUS and analog output.
  - Combination of two alarm outputs and analog output.
  - Isolated dual analog outputs with AC power supply.



Excellent Features 2

- Focus on ease of use.
  - Field configurable universal input.
    - Configuration tool on PC or Handy Terminal.
  - Full Isolation between input, outputs and power supply.
  - UL / CSA / CE approvals (Low voltage drive models)
  - High accuracy +/- 0.1%
- ***Three year warranty***.
  - MCC warrantee three (3) years.

Line Up of VJ series

Model	Name	Full isolation	Intelligent	Universal Input	Free range	Two outputs	Communication	Alarm output	Parameter set	CE Marking
VJA1	Distributor	Y				Y				Y
VJA4	Distributor	(loop isolation)				2ch.				
VJA7	Distributor	Y	Y			Y	Y	Y	Y	Y
VJH1	Signal Isolator	Y				Y				Y
VJH7	Signal Isolator	Y	Y		Y	Y	Y	Y	Y	Y
VJC1	Loop Powered Isolator	Y				2ch.				
VJHF	High speed Isolator	Y				Y				
VJU7	Temperature SC	Y	Y	Y		Y	Y	Y	Y	Y
VJS7	Slide-wire Input SC	Y	Y		Y	Y	Y	Y	Y	Y
VJX7	Universal computing unit	Y	Y		Y	Y	Y	Y	Y	Y
VJF1	Pneumatic input SC	Y								Y
VJQ7	Analog to pulse SC	Y	Y		Y	Y	Y	Y	Y	Y
VJQ8	Pulse to analog SC	Y	Y	Y		Y	Y	Y	Y	Y
VJP8	Pulse rate converter	Y	Y	Y		Y	Y	Y	Y	Y
VJB1	CT Transmitter	Y								
VJG1	PT Transmitter	Y								
VJ77	Parameter setting tool	VJ77 runs on Windows95,98 or NT4.0								

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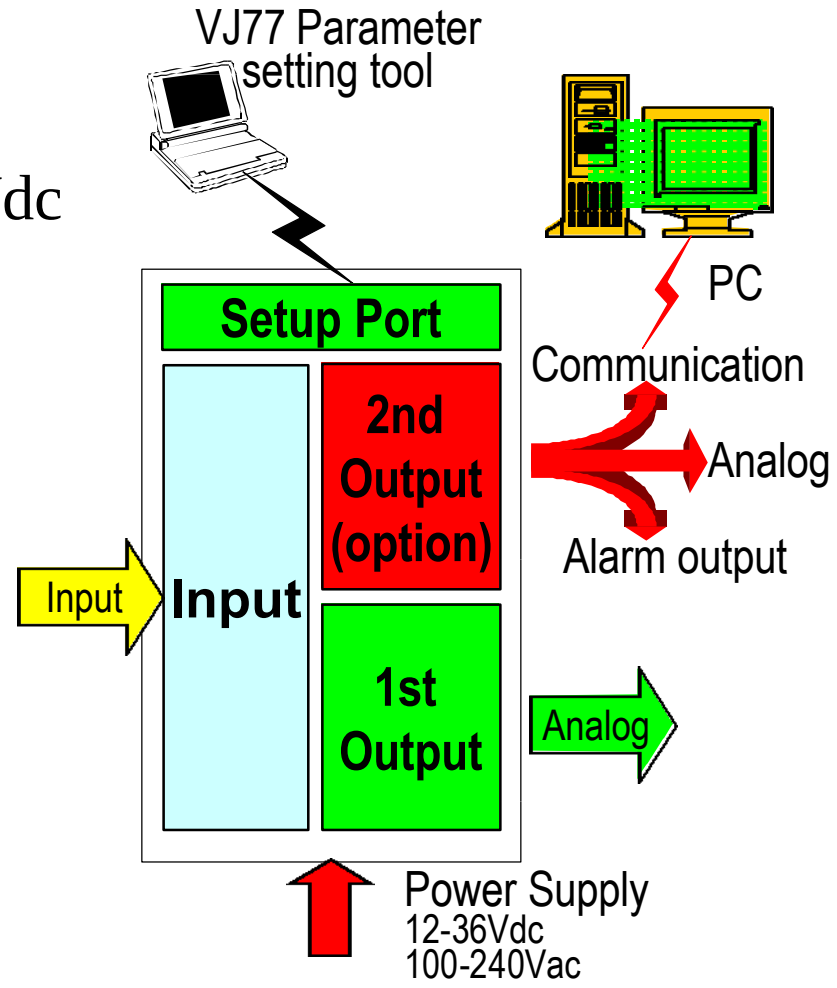
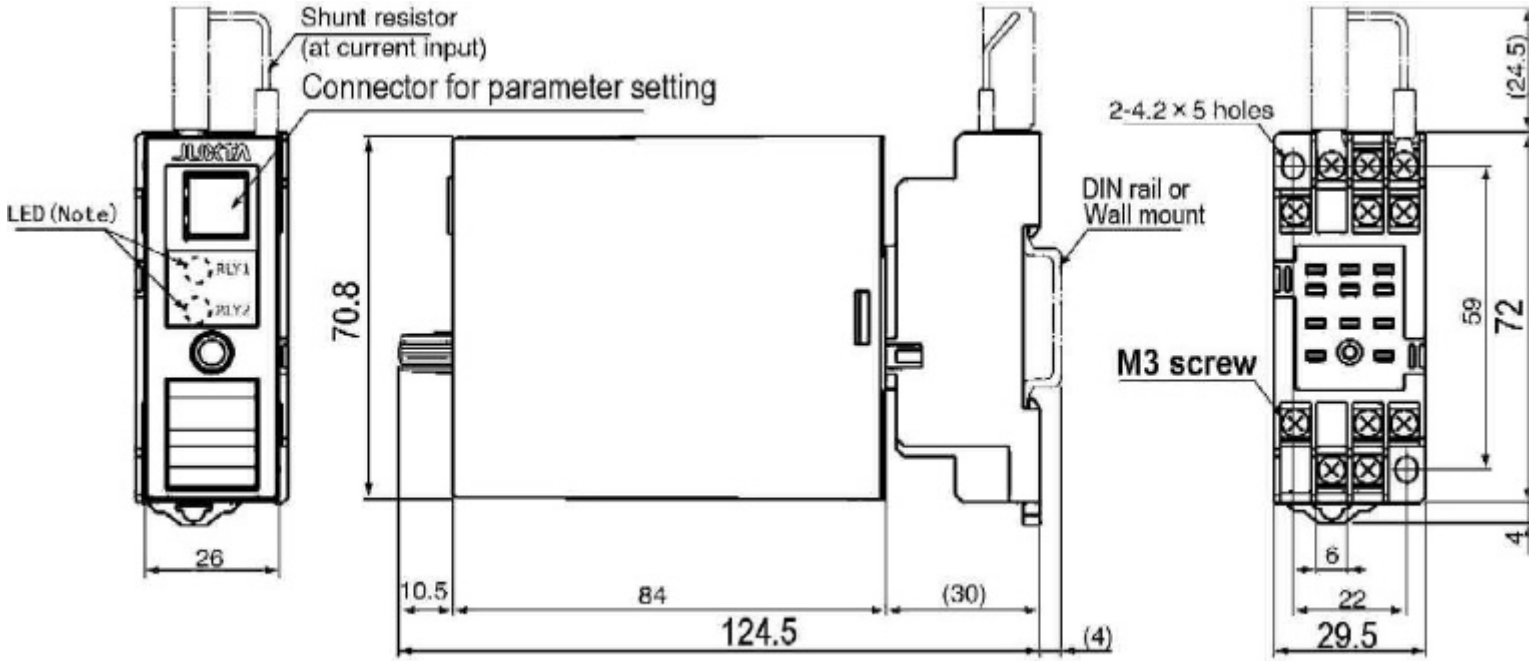
Common specifications 1

- Input : Field Configurable.
- Output Signals :
  - 1st. Output : 4-20mA or 1-5Vdc
  - 2nd Output(option) :
    - 4-20mA or 1-5Vdc
    - Communication
    - Alarm output
- Signal Isolation :
  - Input, Outputs, Power supply are isolated each other.
- Configurable by:
  - VJ77 package or JHT handy terminal



Common specifications 2

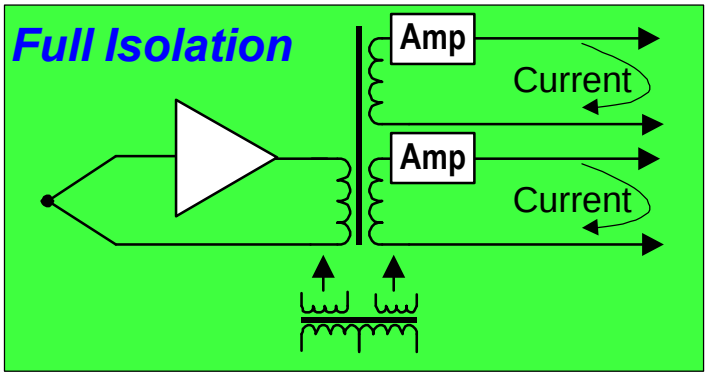
- Power : 15-30Vdc (CE, CSA, and UL available)
  100-240Vac
- Terminals: M3.0 screw terminals
- Mounting: DIN rail, Wall mounting

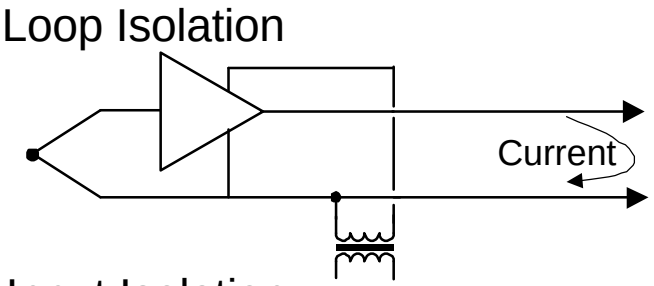


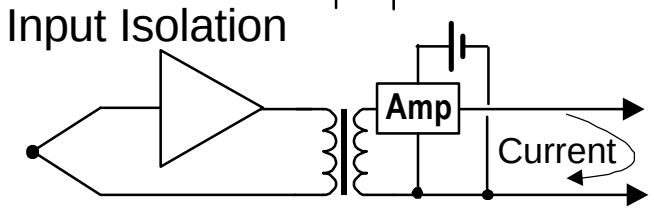
Note: Only when output-2 is contact output.

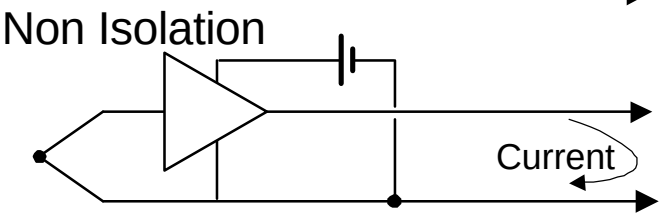
Why VJ use full isolation system

- *VJ* employ ***full isolation system***.
  - Suitable for Process automation applications.
  - Very tough against current looping and grounding in the field.
  - Dual analog outputs are isolated each other. Short circuit or grounding on one output do not cause the problem on other output.







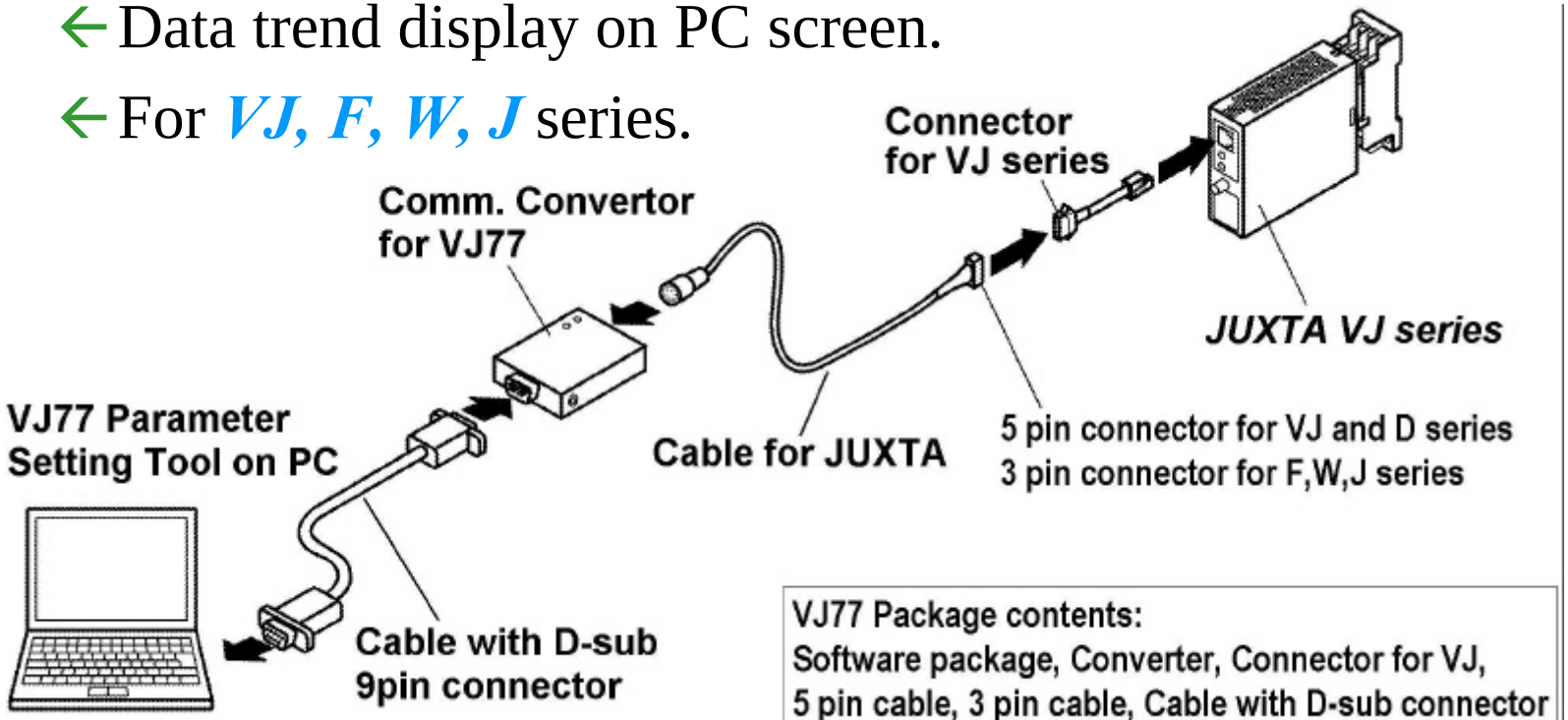


Comparison for Isolation system

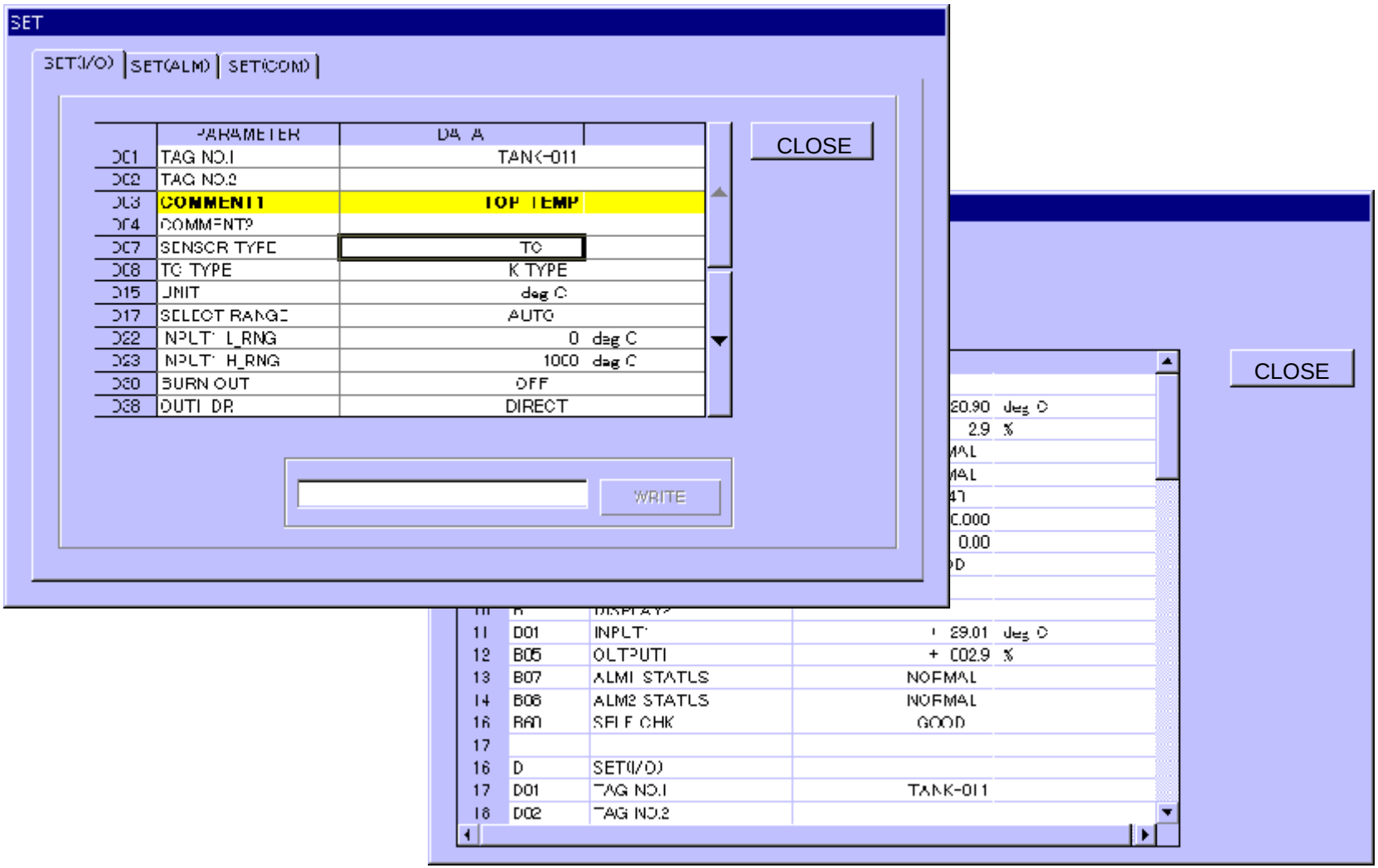
Isolation System	Merit	Demerit
Full Isolation	Tough against current looping and sensor grounding. Applicable for large-scale complex automation applications	(Expensive)
Loop Isolation	Tough against current looping. Applicable for large-scale automation applications. Both AC & DC power supply are available.	
Input Isolation	Tough against sensor grounding. Applicable for small-scale automation system.	Current looping may occur. Power supply is only DC system.
Non Isolation	Cheap, under $100 per channel. Applicable only for small & simple measurement system.	Sensor grounding & current looping may cause malfunction the system. Only DC power supply. Need careful engineering to apply to automation applications.

VJ77 Parameter Setting Tool

- All parameters are fully programmable via the Win 95/98/NT based VJ77 tool.
  - JHT200 hand-held terminal functions on PC.
  - Data trend display on PC screen.
  - For ***VJ, F, W, J*** series.



Display Panels of VJ77



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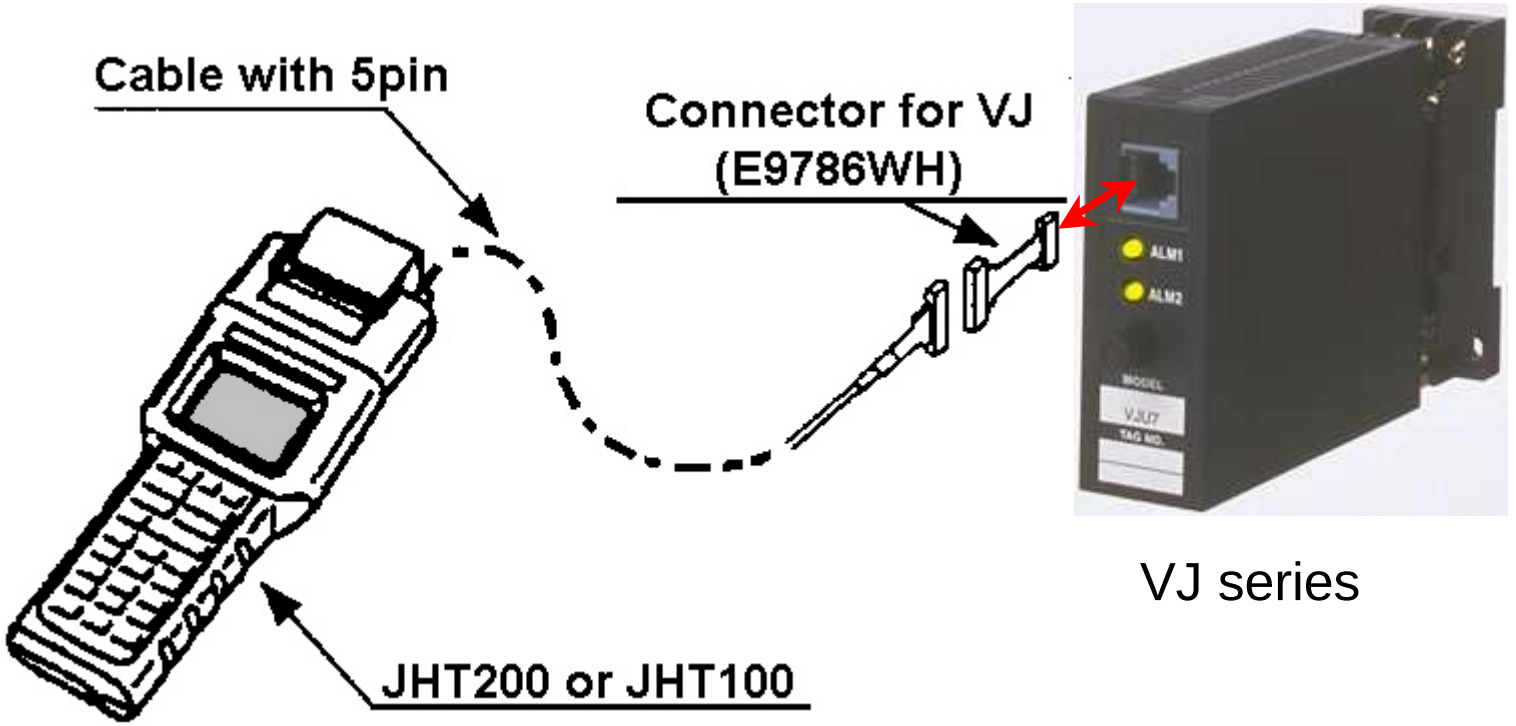
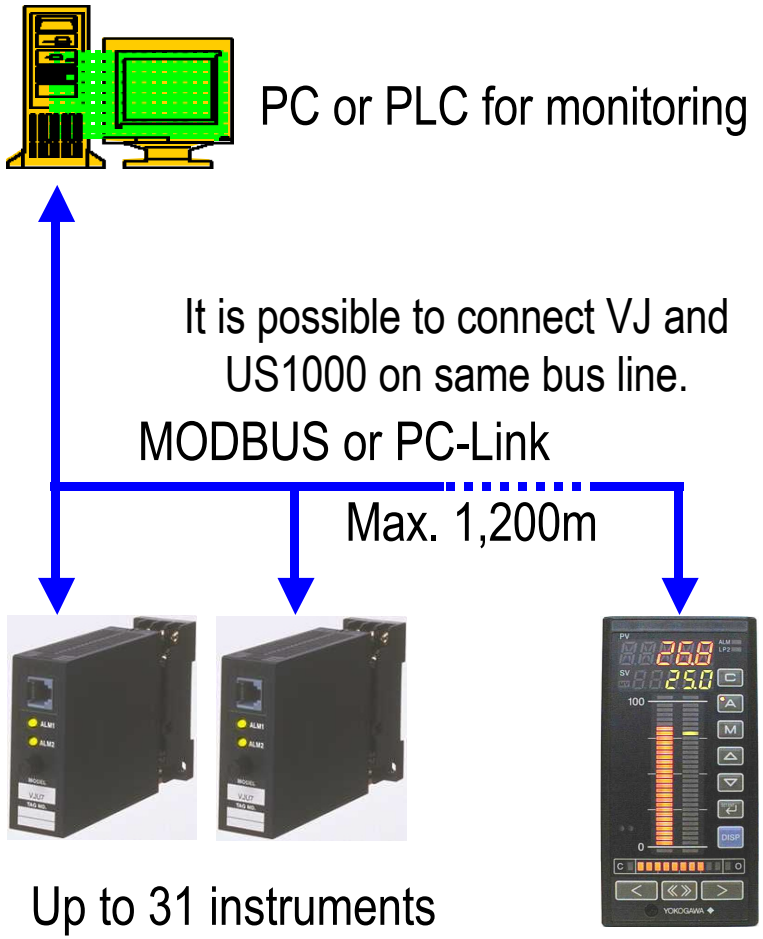
Parameter Setting by Handy Terminal



VJ series

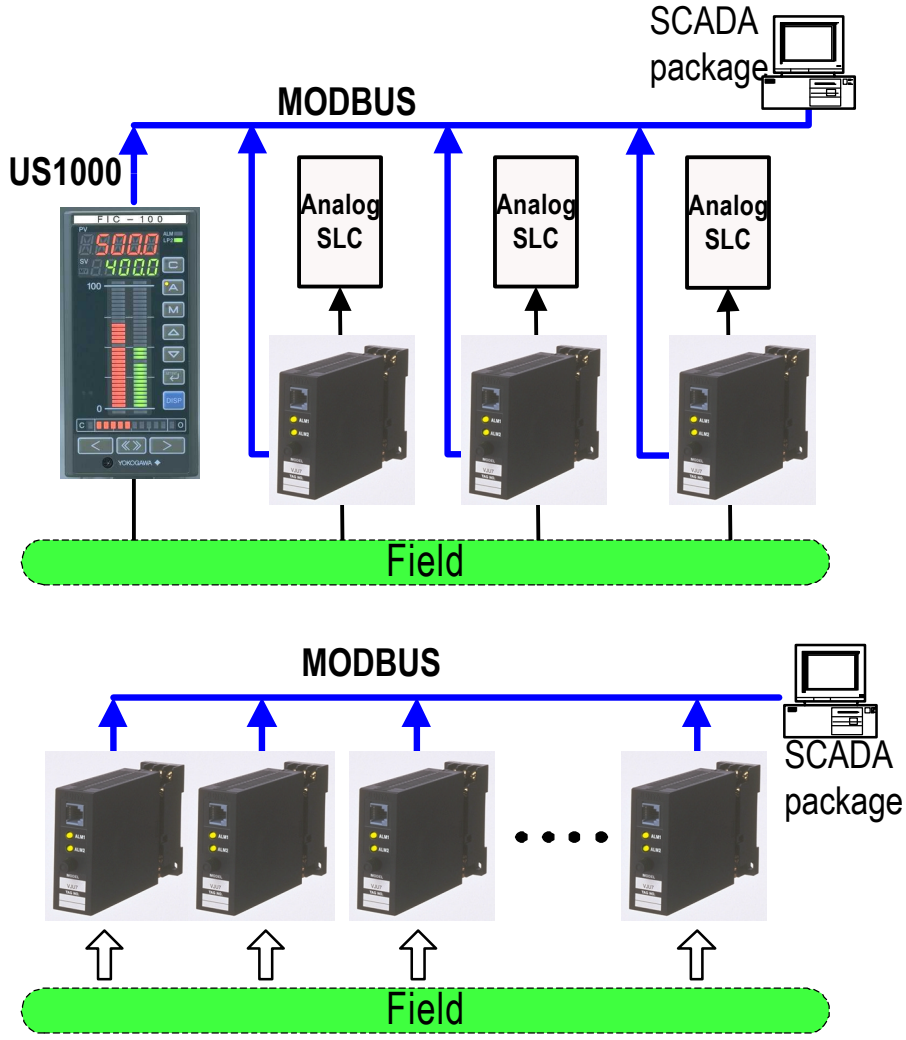
Communication function

- VJ can communicate with a PC or PLC by MODBUS, PC-Link or Ladder Protocol.
- MODBUS
  - RTU(Binary) mode, ASCII mode
- PC-Link, Ladder
  - YOKOGAWA's proprietary protocol.
- VJ and Yokogawa controllers can be connected by same MODBUS communication line.



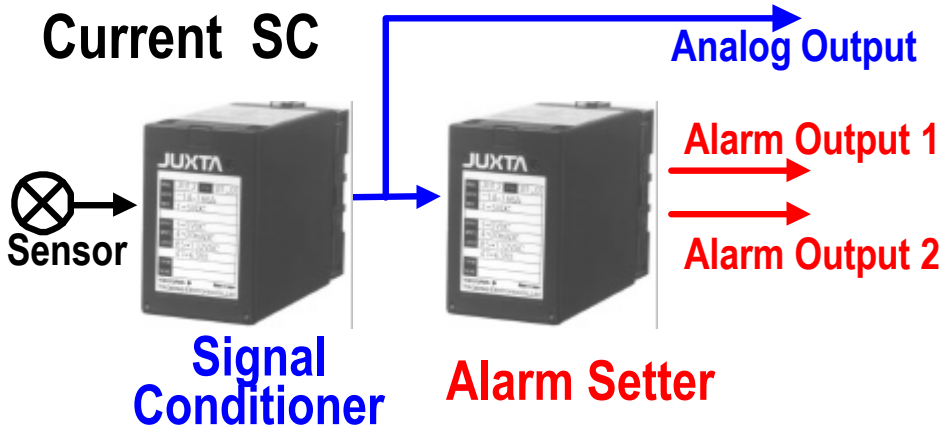
PC Monitoring System

- Easy to build up the PC monitoring system by replacing old SC to VJ.
- Field Input modules for PC and PLC system.

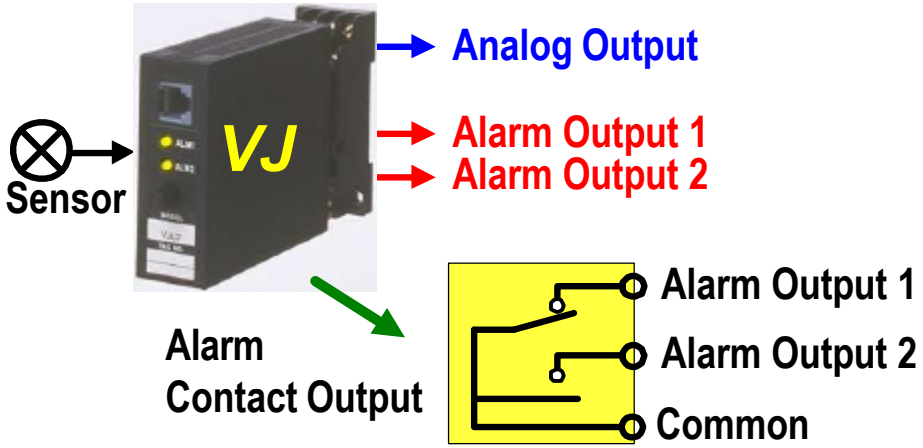


Alarm outputs function

- Two relay contact for 2nd output.
  - Dual alarm : Hi/Low, Hi/Hi, Low/Low
  - Alarm Setpoints can be changed by VJ77 parameter setting tool or JHT200.
  - Relay ratings: 30VDC 300mA



JUXTA VJ



VJA7 Distributor

- Microprocessor based distributor.
- Computation Functions:
  - SQRT, Hi/Low Alarm
- Output Signals:
  - First Analog output
  - Second output
    - Analog output
    - Hi/Low Alarm relay outputs
    - MODBUS communication
- Fully isolated signals & power supply.

2nd Output

1st Output

2W transmitter

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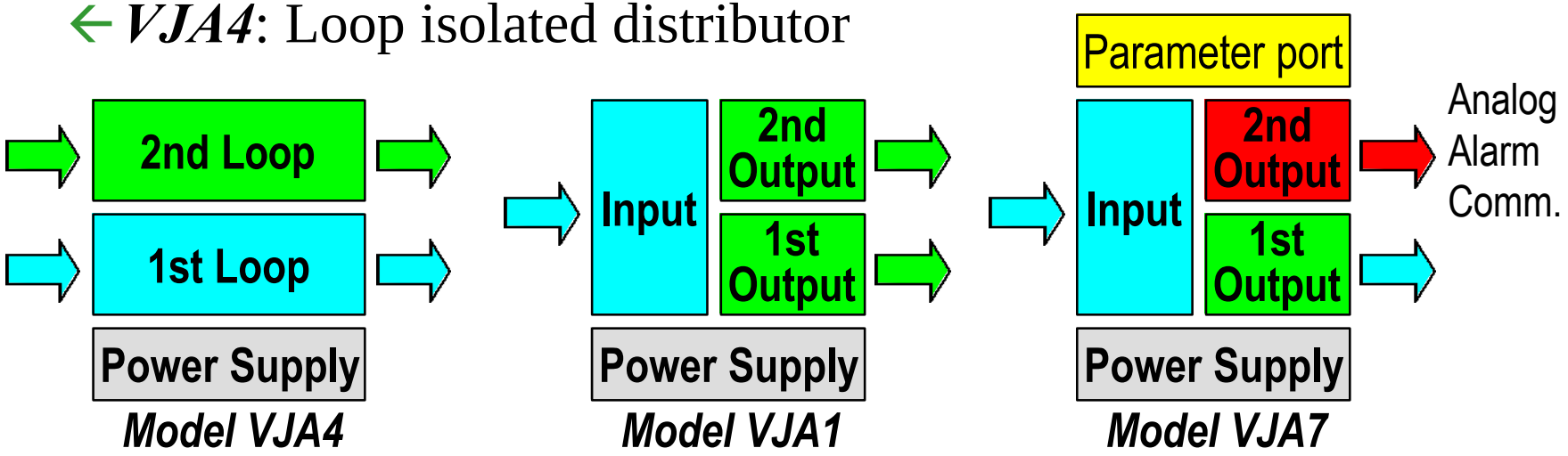
Three types of Distributors

- Applications for Alarm or Communication function.
  - ***VJA7***: Microprocessor based distributor
- General purpose distributor for process automation.
  - ***VJA1***: Fully isolated distributor
- Simple and small applications.
  - ***VJA4***: Loop isolated distributor

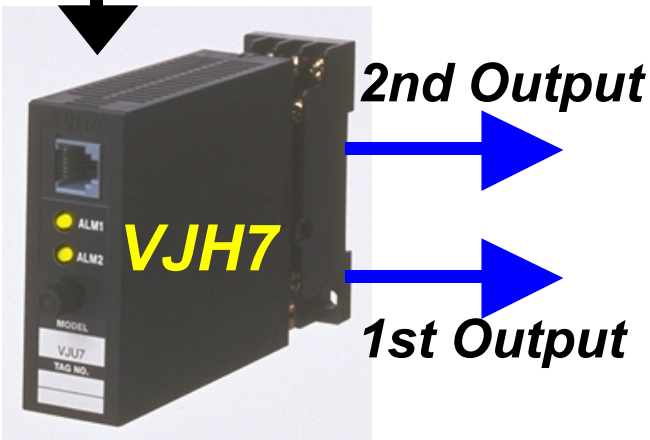


Blocks are isolated each other.

VJH7 Signal Isolator

- Input V or mA signal
  - max. span : -10 to 10Vdc
  - min. span : 100mVor 5mA
- Computation Functions:
  - Hi/Low Alarm
- Output Signals
  - Same as VJA7 Distributor.
- Accuracy
  - 0.1% when input span is over 500mV.

DCS, PLC or other System

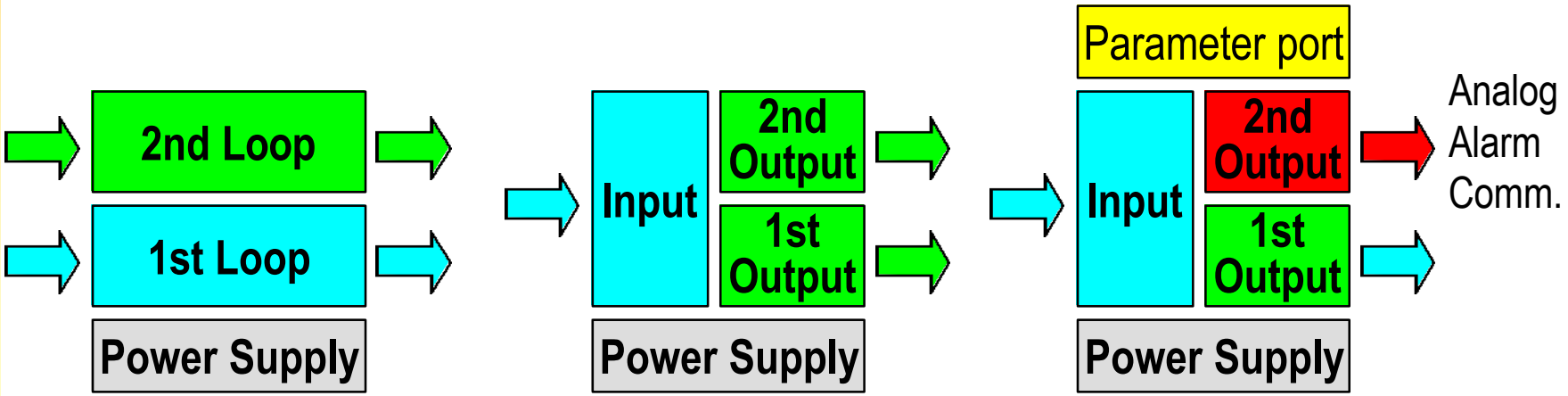


2nd Output

1st Output

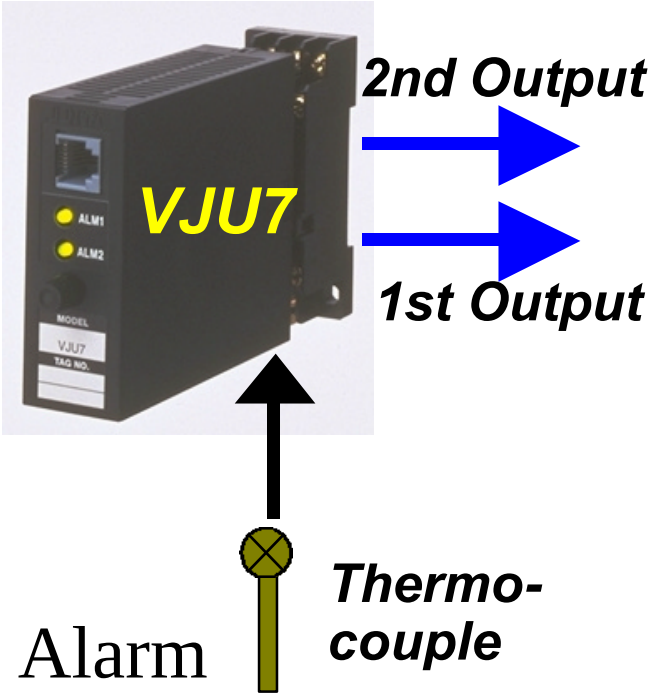
Three types of Isolators

- General purpose Isolators
  - VJH7: For communication or Alarm outputs
  - VJH1: Isolator with 2 analog outputs
- Fast response type, time const. is 50 micro sec: VJHF
- Isolator without power supply: VJC1



VJU7 Temperature SC

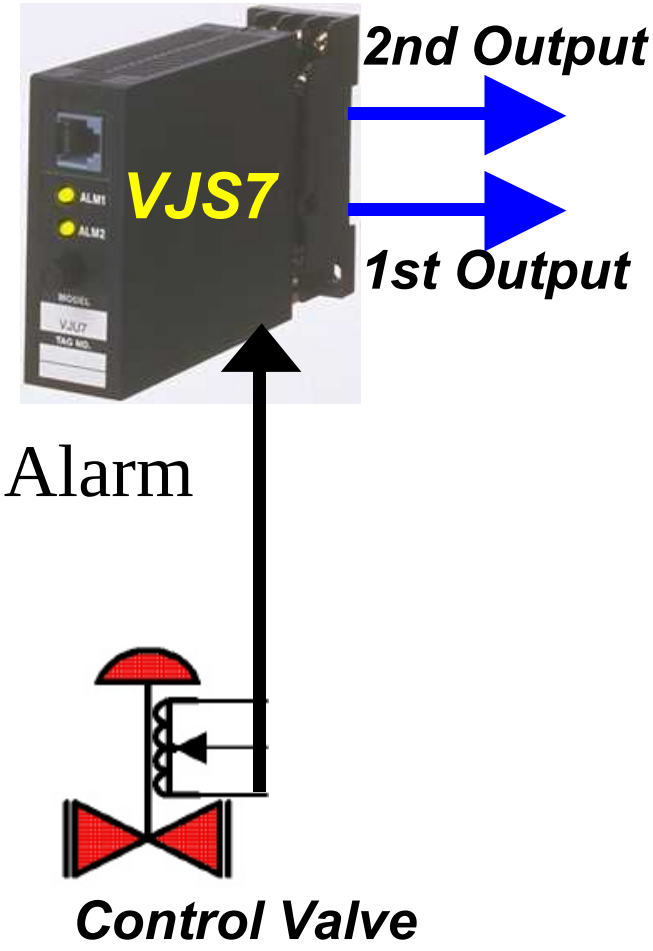
- Input TC , RTD, mV
  - TC: K,J,T,B,S,R,N,E,W3,W5
  - RTD: Pt100
  - mV: range -10 to 100mV,
    min. span 3mV
- Input types & ranges can be changed by the JHT200 or PC.
- Computation Functions: Hi/Low Alarm
- Output Signals Same as VJA7 Distributor.
- Accuracy 0.1%



VJS7 Potentiometer Transmitter

- Input
  - 3-wire type potentiometer
  - Full Resistance : 100 to 10k ohm
  - Input ranges can be changed by PC or JHT200 or PC.
- Computation Functions: Hi/Low Alarm
- Output Signals

  Same as VJA7 Distributor.
- Accuracy 0.1%



VJX7 Universal Computing Unit 1

- Free program capability.
  - Computing Functions:
    Linearizer, Ratio setter, First order lag,
    First order lead, Velocity limiter,
    Moving Average, Dead time
  - Free program: 40 steps

- Signal computation with one analog input.
  - Second analog output can be used as independent output.
  - Relay outputs are used as independent status outputs.
- Computing functions, Free program and input range can be changed by VJ77 and JHT100/200.

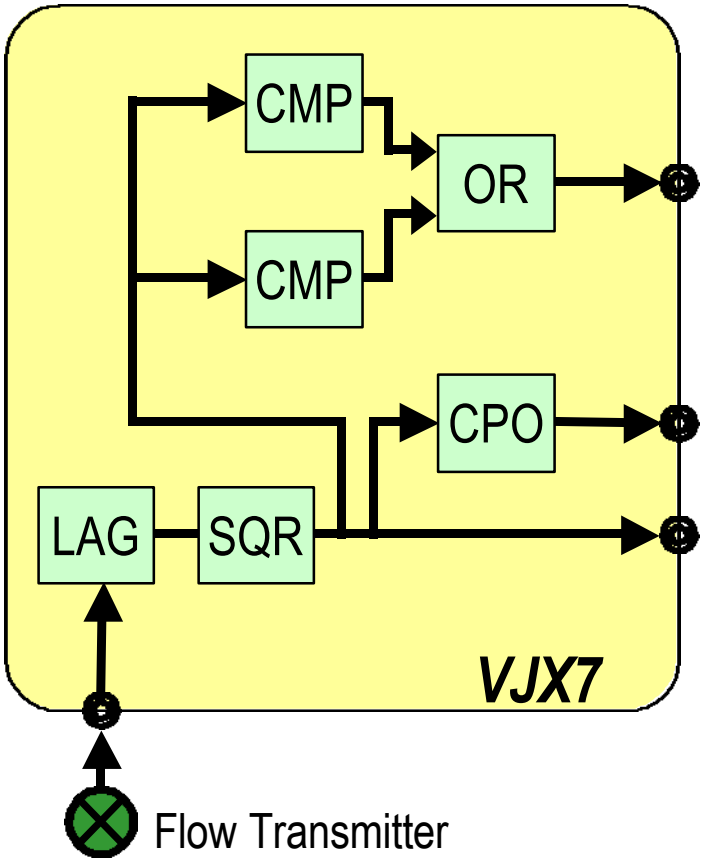
VJX7 Universal Computing Unit 2

- Free Program: 40steps

```
LD X1
LD C20
LAG
ST Y1
END
```

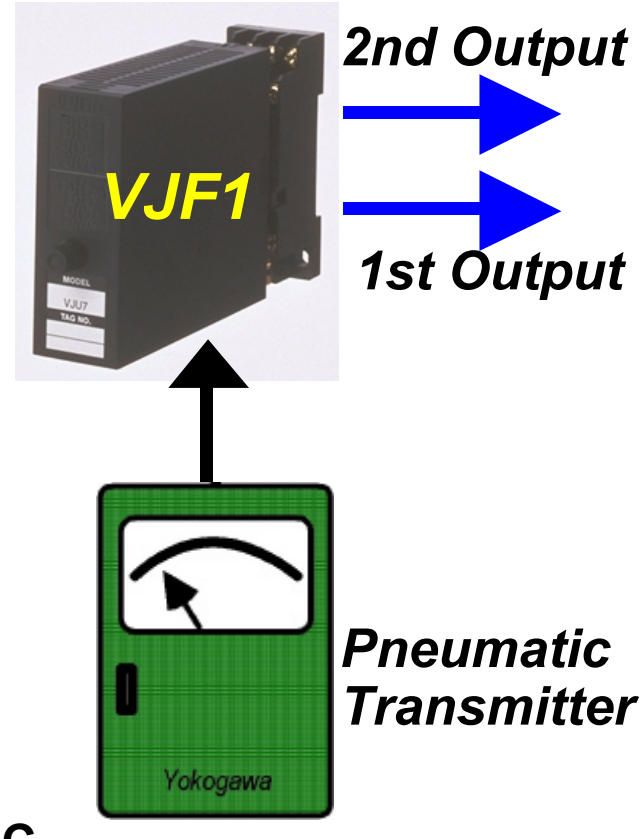
- function commands:

+ - * /, SQR, ABS, selector, limiter, linearizer, compare, switch, lag, lead,dead time,VEL, VLM, moving average,timer, counter pulse,Sin,Cos,Tan,Log, Ln, Exp,Y^x, AND,OR,NOT,EOR, etc.



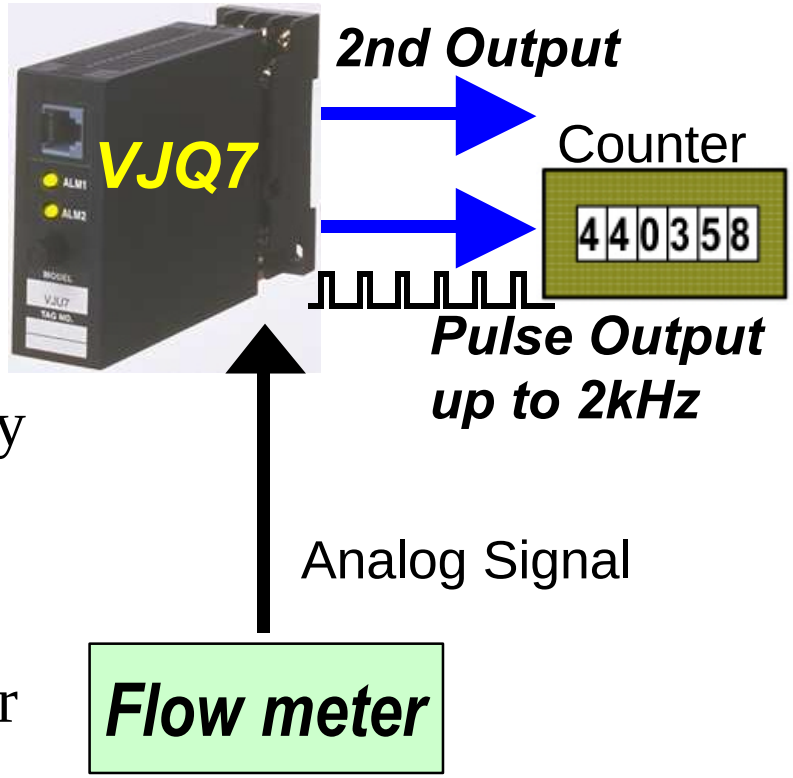
VJF1 Pneumatic input SC

- Ideal for interface from Pneumatic Transmitter to PLC, DCS and Controllers.
- Input 20-100kPa dry air
  - 3-15psi or 0.2-1.0kg/cm^2 as option
  - Input connection 6mm tube
- Output Signals
  - 1 -5V or 4 - 20mA dc
- Accuracy 0.2%



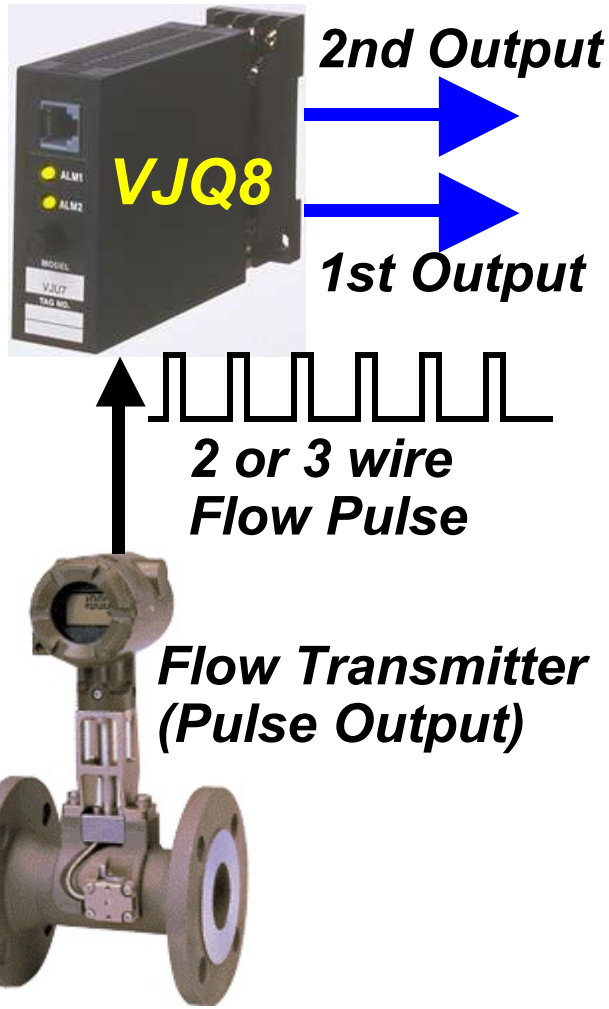
VJQ7 Analog to Pulse SC

- Convert the Analog flow signal to pulse for Electric Counter.
- Input
  - 0 - 50mA or -10 to 10Vdc
  - Input range can be changed by the VJ77 or JHT100/200.
- Computation Functions:
  - Hi/Low Alarm, Inside counter
- Accuracy 0.1%



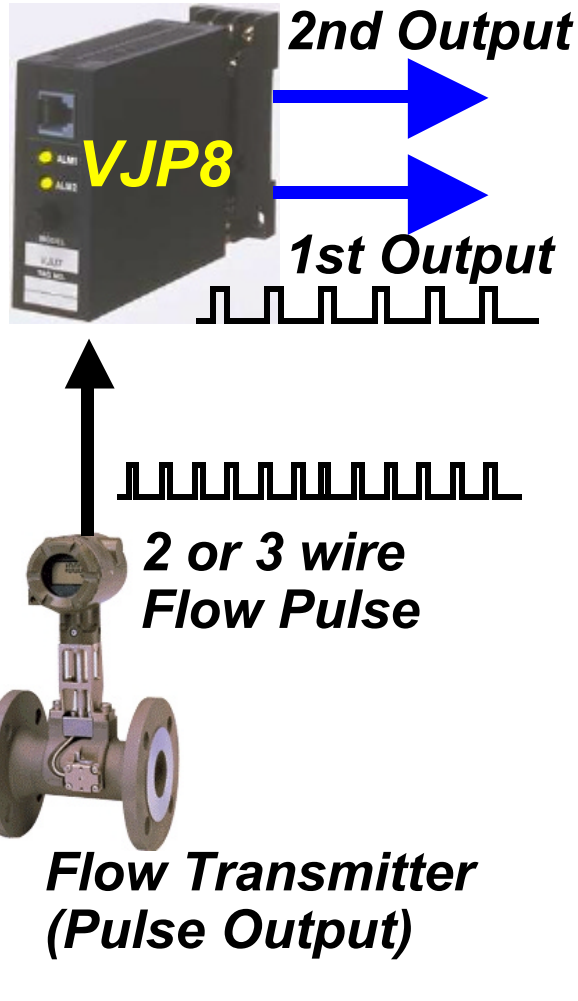
VJQ8 Pulse to Analog SC

- Convert the Pulse flow signal to analog signal for DCS/PLC.
- Input
  - 2 wire or 3 wire pulse signal with 12 or 24V power supply.
  - Input frequency: Up to 100kHz
  - Input type and range are set by the VJ77 or JHT100/200.
- Alarm Functions: Hi/Low Alarm
- Accuracy 0.1%



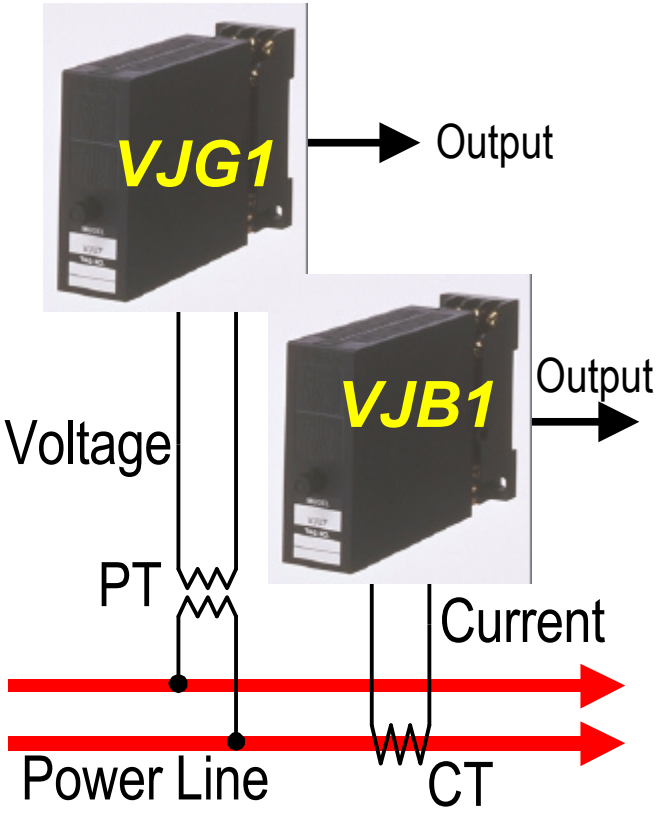
VJP8 Pulse Rate Converter

- Divide and isolate the pulse input signal for DCS/PLC.
- Input
  - 2 or 3 wire pulse signal with/without 12 or 24V power supply.
  - Input frequency:Up to 100kHz
  - Pulse rate: 0.0000 - 2.0000
  - Input type and pulse rate are set by the VJ77 or JHT100/200.
- Output 2: Pulse or Communication
- Accuracy 0.1%



AC Voltage & Current Transmitters

- Model ***VJG1*** : PT transmitter
  - Input: 0-110VAC, 0-150VAC
    40Hz-10kHz, RMS-computing
  - Output: 1-5V or 4-20mAdc
  - Accuracy: 0.5%
- Model ***VJB1***: CT transmitter
  - Input: 0-1A AC, 0-5A AC
    40Hz-10kHz, RMS-computing
  - Output: 1-5V or 4-20mAdc
  - Accuracy: 0.5%



PT: Potential Transformer
CT: Current Transformer

Thank you

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