

## Leak detector advanced from the digital flow switch DFS3

Sensing flow rate difference of IN-OUT  
 Approx. 3% leak detection detectable by setting to Min. leak detection (at flow rate 25 ℓ/min)  
 Highly reliable switch resistant to noise made by spot welders, etc.  
 Magnetic proximity type and iron proximity types are available according to detection methods



### Specifications

Type	Resin body	
Detection method	Magnetic proximity type	Iron proximity type
Type	LD1-1000-DC24V	LD1-5000-DC24V
Main unit material	Polyacetal (including glass)	
Fluid	Water	
Connection bore diameter	Rc3/8 (with piping adapter)	
Pressure range	0~0.7MPa	
Proof test pressure	1MPa	
Ambient temperature	0~+50°C (Not condensing)	
Fluid temperature	0~+70°C (Not freezing)	
Flow rate range	2.5~25ℓ/min	
Reading precision	±5%fs	
Hysteresis	5% or under	
Alarm output response time	Approx. 500ms	
Mounting direction	Free	
Flowing direction	Both directions (Upward: Primary side Downward: Secondary side)	
Output points	1c Contact point Relay output x 1 point (Common in insufficient flow rate and leak)	
Rated power supply	DC24V	
Leak detection flow rate	Leak of approx. 3% or more detectable by setting to Min. leak detection (at 25ℓ/min.)	

- (Notice) ● Be sure to use within the flow rate range.  
 ● Numerals in the table are those in case detected fluid is service water (at 20°C).  
 Flow rate range varies according to viscosity of the detected fluid.

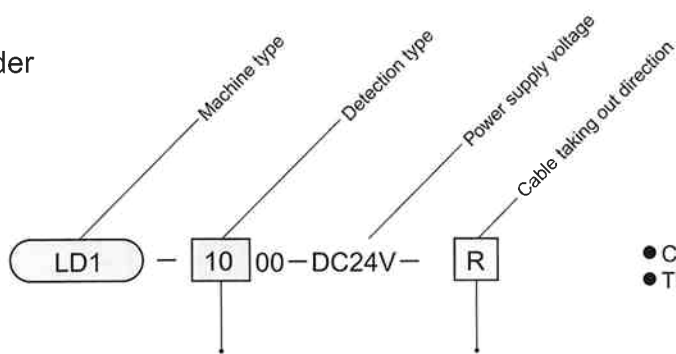
Electrical specifications

Power supply voltage	DC24V	
Allowable voltage range	±10% (Absolute Max. rating DC30V)	
Consumed power supply	2W or under	
Cable	VCTF 8-Core 0.3mm <sup>2</sup> Length 1m	
Frequency output	Method	Photo coupler output
	Max. allowable voltage	DC50V
	Load current	4mA or under (Output residual voltage 0.5V or under)

Output specifications

Contact point structure	1c×1 (Common in flow rate insufficient and leak, Driving the relay in exceeding the setting value )
Rated control capacity (in loading resistance)	DC30V 1A/AC125V 0.5A
Max. allowable power (in loading resistance)	30W(DC) / 62.5VA(AC)
Max. allowable voltage	DC110V / AC125V
Max. current	1A
Min. adaptable load	10μA 10mV DC
Insulation resistance between contact points resistance	DC500V By insulation resistance tester 1000MΩ or more
Withstand voltage between contact points	AC750V / minute
Electric life time	100,000 times or more (Rated load, 20 times of switching frequency)

How to order



- Cable length is 1m.
- The pipe adapter is connected in delivery.

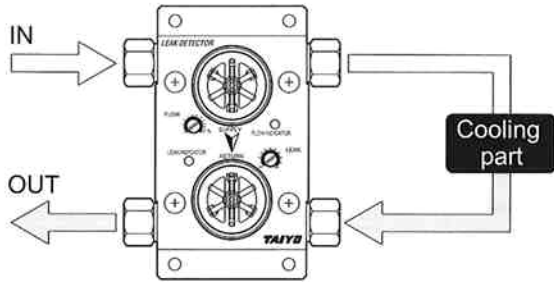
Symbol	Detection method
10	Magnetic proximity type
50	Iron proximity type

Not written: Left side (Standard)  
R Right side (Semi-standard)

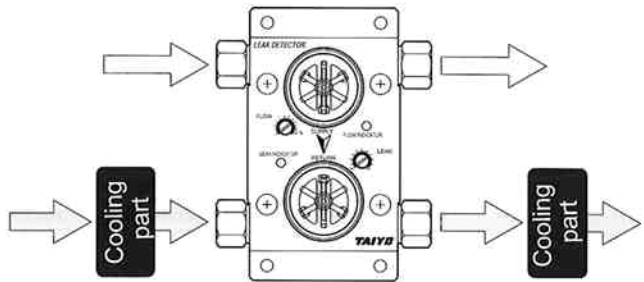
※Direction in viewing from the front side

### Operation, and How to use

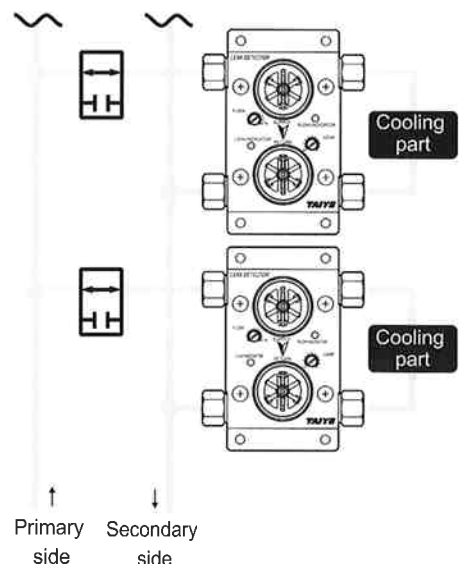
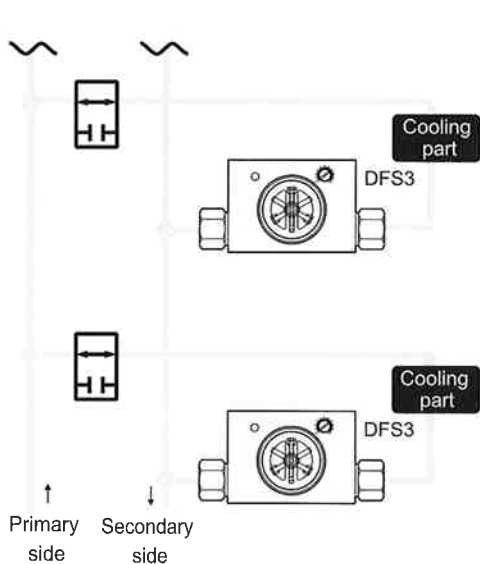
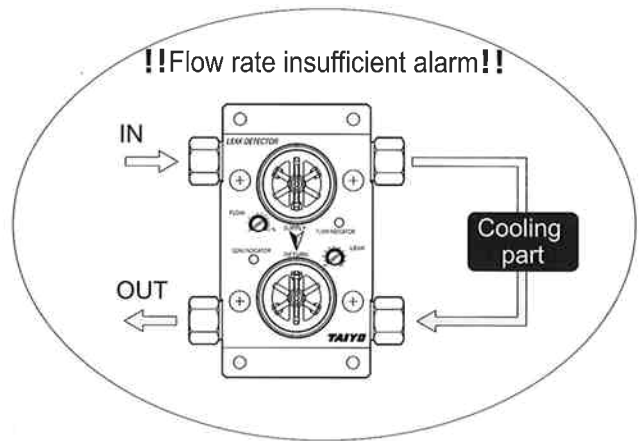
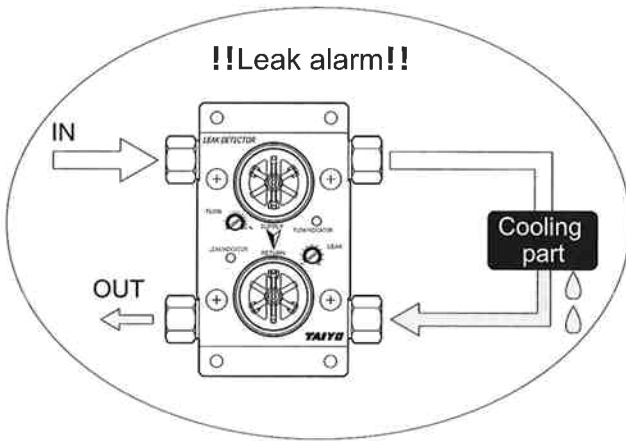
By flowing water in the LD1, the rotor rotates in proportion to flow rate. Rotor is detected by upper and lower sensors. Rotation numbers of the upper and lower rotors are identical theoretically, but rotation numbers different in each rotor are corrected in the internal circuit, and flow rate difference is monitored.



By monitoring flow rates between IN-OUT of the cooling part through LD1, leak in LD1 can be detected. In flow rate insufficient, alarm is issued also.



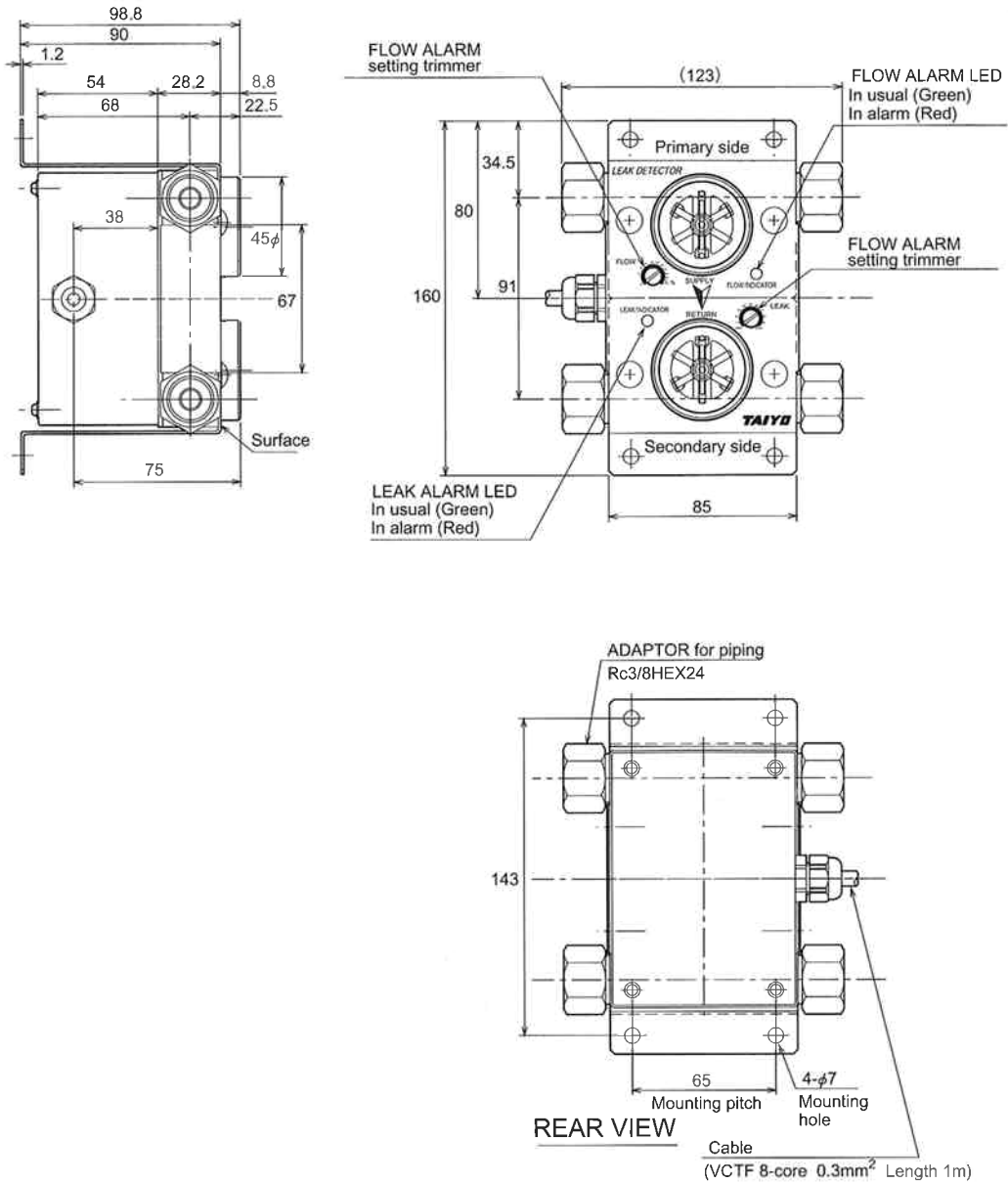
By using the LD1 lower part for monitoring flow rate as usual while monitoring flow rate at the LD1 upper part as master flow rate, flow rate can be monitored regardless of lowering of flow rate and pipe resistance due to contamination at the detected cooling part and in the pipes. In cleaning in the pipes, the LD1 upper part can be used as the spare line.



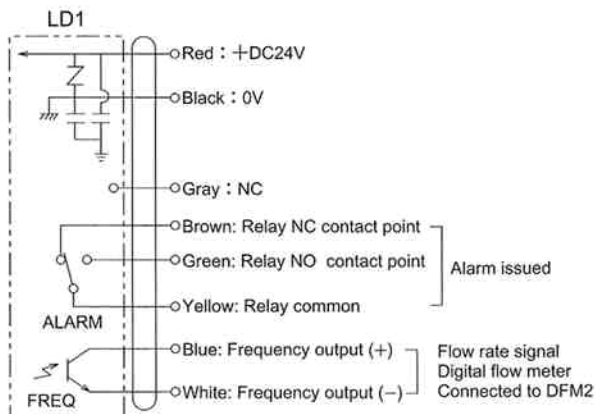
In the ordinary leak detection method at the cooling part, by flow rate fluctuation on the primary side due to leak at one position, flow switches of the normal lines might output alarm. For preventing this, setting rate of flow rate alarm must have been kept excessively lowered.

In LD1, difference of flow rates of IN and OUT is monitored and alarm is output in case flow rates differ; therefore, only the line causing leak can be stopped without influenced by flow rate fluctuation on the primary side. Also, alarm is made in case flow rate on the primary side is lowered by trouble of the feed pump, etc.

Dimensions



Wiring method



※In handling, please refer to the Instruction Manual.