ORDERING INFORMATION MODEL : M6xXF1

PLEASE FILL IN THIS SECTION	FACTORY USE ONLY	
Model	Job No.	Approved by (Sales office)
Company	Ser No.	Issued by (Sales office)
Name	Sales	Approved by (Factory)
P/O No.		Set by (Factory)
		Ser No.

Specify the items you want to change. Default setting will be used if not specified.

DEFAULT shows values in case of nothing specified.

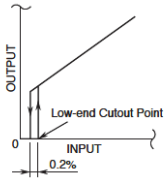
■SETTING

PARAMETER		AVAILABLE VALUE／AVAILABLE ITEM	DEFAULT VALUE	SET VALUE	FACTORY INTERNAL CHECK
Input	Low-end cutout *1	0.0000 ～ 99.9999 %	0.000 % (Low-end cutout function is cancelled.)	%	☐ Checked
Filter type *2		・Disable ・Moving average ・Dead-time computing ・Delay buffer ・Lead-time computing ・Ramp buffer	Moving average	☐ Disable ☐ Moving average ☐ Dead-time computing ☐ Delay buffer ☐ Lead-time computing ☐ Ramp buffer	☐ Checked
T:Filter time constant *3		0.0000 (No filter) 0.5000 ～ 100.0000 sec.	0.0000 (No filter)	sec.	☐ Checked
H:Sampling cycle		0.1000 ～ 100.0000 sec.	0.1000 sec.	sec.	☐ Checked
N:Filter samples		1 ～ 128	1		☐ Checked
U:Low-cut samples		((High-cut samples)+(Low-cut samples)+1) ≦128	0		☐ Checked
L:High-cut samples		((High-cut samples)+(Low-cut samples)+1) ≦128	0		☐ Checked
CP:Max.positive rate		0.0000 ～ 200.0000 %/sec.		%/sec.	☐ Checked
CN:Max.negative rate		0.0000 ～ 200.0000 %/sec.		%/sec.	☐ Checked
Linearization *4		0:Disable 1:Enable ・User's table linearization ・Inverted output ・Square root extraction (orifice, venturi) ・X^2 Output (Palmer-bowlus flume, Parshall fulme) ・$X^{5/2}$ Output(triangular V-notch weir) ・$X^{3/2}$ Output(rectangular weir)	0:Disable Linearization	☐ 0:Disable ☐ 1:Enable ☐ User's table linearization (Use the LINEARIZATION table.) ☐ Inverted output ☐ Square root extraction (orifice, venturi) ☐ X^2 Output (Palmer-bowlus flume, Parshall fulme) ☐ $X^{5/2}$ Output(triangular V-notch weir) ☐ $X^{3/2}$ Output(rectangular weir)	☐ Checked

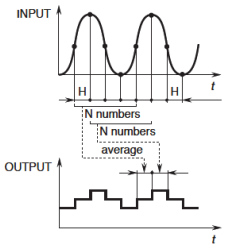
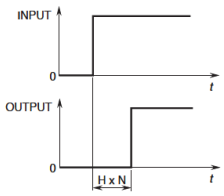
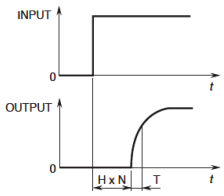
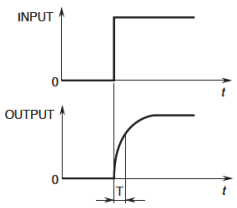
PARAMETER		AVAILABLE VALUE／AVAILABLE ITEM	DEFAULT VALUE	SET VALUE	FACTORY INTERNAL CHECK
Output	Input low limit *5	-2.0000 ～ 10.0000 %	-2.0000 %	%	☐ Checked
	Input high limit *5	90.0000 ～ 102.0000 %	102.0000 %	%	☐ Checked

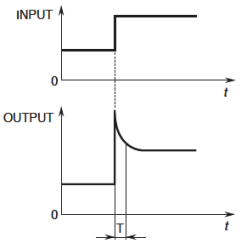
*1. Low-end cutout

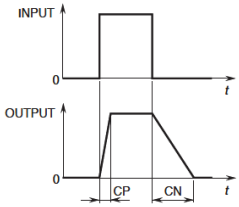
The input signals below the low end cutout point are handled as 0%.
The point has 0.2% hysteresis (deadband). The low-end cutout is applied exactly at the point when an increasing signal passes through the point, while it is applied at -0.2% of the point when a decreasing signal passes through it.
Set between 0.0000% and 99.9999%. With 0.0000% setting, the low-end cutout function is cancelled.



*2. Filter type

Disable	No Filter function is used.
Moving average	The module samples input signals every H seconds and, excluding U numbers of highest-value samples and L numbers of lowest-value samples, outputs proportionally to the average of the rest [N × (U + L)] of sampled data. When a new input is sampled after another H seconds, it gives up the oldest sample and calculates a new average including the latest sample and outputs proportionally. When the number of samples to be calculated equals 0 or less, it outputs an error.  **Parameter** / **Selection or Programmable Range** Sampling cycle H: 0.1000 to 100.0000 seconds Filter samples N: 1 to 128 High-cut samples U: ([High-cut samples] + [Low-cut samples] + 1) ≤ 128 Low-cut samples L: ([High-cut samples] + [Low-cut samples] + 1) ≤ 128
Dead-time computing	The module does not respond to an input signal for a preset dead-time* duration. In addition, with adjusting a time constant T, it generates a first order lag output after the dead-time. Set 0.0000 for the time constant when the first order lag is not needed. $X_0(s) = \frac{e^{-HNs}}{1+Ts} X_1(s)$ where X_1 : Input X_0 : Output Dead time = H × N (s) **Parameter** / **Selection or Programmable Range** Sampling cycle H: 0.1000 to 100.0000 seconds Filter samples N: 1 to 128 Filter time constant T: 0.5000 to 100.0000 seconds *Output is refreshed every sampling cycle. The response time may be delayed by 1 cycle at the maximum. **• Step input with dead-time**  **• Step input with dead-time plus time constant** 
Delay buffer	The module generates a first order lag output. $X_0(s) = \frac{1}{1+Ts} X_1(s)$ where X_1 : Input X_0 : Output **Parameter** / **Selection or Programmable Range** Filter time constant T: 0.5000 to 100.0000 seconds **• Step input with time constant** 

<table>
<tr>
<td>Lead-time computing</td>
<td>
The module operates a lead-time equation.
$X_0(s) = (1 + Ts) X_1(s)$
where X_1 : Input
X_0 : Output
<table>
<tr><th>Parameter</th><th>Selection or Programmable Range</th></tr>
<tr><td>Filter time constant T</td><td>0.5000 to 100.0000 seconds</td></tr>
</table>
• Step input with lead-time constant


</td>
</tr>
<tr>
<td>Ramp buffer</td>
<td>
The modules output does not change faster than a preset maximum rate, positive CP and negative CN, no matter how fast its input changes.
Setting 0.0000 cancels the filter.
<table>
<tr><th>Parameter</th><th>Selection or Programmable Range</th></tr>
<tr><td>Max. positive rate CP</td><td>0.0000 to 200.0000 %/second</td></tr>
<tr><td>Max. negative rate CN</td><td>0.0000 to 200.0000 %/second</td></tr>
</table>
• Step input with rate-of-change limits


</td>
</tr>
</table>

*3. Filter time constant

First order lag filter used other than for the M6xXF1. Time contact, time required for an step input to track and reach approx. 63% of the full-scale, is selectable from 0.5 to 30 seconds. No filter is applied when set to 0.
For the M6xXF1, this parameter is used with specific filter functions. Refer to respective filter types for more information.

*4. Sampling cycle, Filter Samples, Low-cut samples, High- cut samples, Max. positive rate, Max. negative rate are parameters specifically used with the M6xXF1 filter functions.

*5. Linearization

Choose among the following:
0:Disable
1:Enable

With‘0:Disable’selected, the output % is proportional to the input %.
With‘1:Enable’selected, the input % is converted into the output % according a user specified table.

When you choose 1:Enable,use the LINEARIZATION table. For more information, refer to Section Linearization.

*6. Output high limit, Output low limit

The output signal is limited within the range between the high limit and the low limit.
For example, when the high limit is set to 90% and the low limit to 10%, the input signal between 90% and 102% is converted as 90%, while the input between -2% and 10% is converted as 10%.

Linearization

Choose among the following:

User's Table Linearization

The input is converted into a linearized output according to the user specified segment data table, defined with pairs of X (input) and Y (output) values.

2 to 101 segment points can be specified.

Inverted Output

The output is inversely proportional to the input.

$X_0 = 100 - X_1$

where X_1 : Input
X_0 : Output

Square Root Extraction (orifice, venturi)

The output is inversely proportional to the input.

$X_0 = 10\sqrt{X_1}$

where X_1 : Input
X_0 : Output

X^2 Output (Palmer-Bowlus flume, Parshall flume)

$X_0 = X_1^2 / 100$

where X_1 : Input
X_0 : Output

$X^{5/2}$ Output (triangular or V-notch weir)

$X_0 = X_1^{5/2} / 1000$

where X_1 : Input
X_0 : Output

$X^{3/2}$ Output (rectangular weir)

$X_0 = X_1^{3/2} / 10$

where X_1 : Input
X_0 : Output

■LINEARIZATION

Specify the input & output values and the units.
X[n] = Input Value of n-th (mA, V, %)
Y[n] = Output Value of n-th (mA, V, %)
-2% ≤ X[n] ≤ 102%, -2% ≤ Y[n] ≤ 102%, X[n] < X[n+1]

Factory Internal check
☐ Checked

n	X (UNIT:)	Y (UNIT:)	n	X	Y
0			25		
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18			43		
19			44		
20			45		
21			46		
22			47		
23			48		
24			49		

n	X	Y	n	X	Y
50			75		
51			76		
52			77		
53			78		
54			79		
55			80		
56			81		
57			82		
58			83		
59			84		
60			85		
61			86		
62			87		
63			88		
64			89		
65			90		
66			91		
67			92		
68			93		
69			94		
70			95		
71			96		
72			97		
73			98		
74			99		
			100		