



Standard Specifications Type: MS3713

MS3700

Slim-shaped Plug-in Square-Root Extractor with isolated Dual Output

Overview

This MS3713 performs the operation of Square-Root Extraction for ADC/VDC signals and the conversion of the result into any desired DC signals to generate isolated No.1-and No.2-outputs. (RoHS-conformed)

Ordering Format

**MS 3 7 1 3** - □ - □ - □ - □

Type \_\_\_\_\_

Power Supply \_\_\_\_\_  
 A : AC 85 ~ 264V    D : DC 24V  
                           P : DC 85 ~ 264V

Input Signal \_\_\_\_\_  
 A : 4 ~ 20mA DC    3 : 0 ~ 1V DC  
 B : 2 ~ 10mA DC    4 : 0 ~ 10V DC  
 C : 1 ~ 5mA DC     5 : 0 ~ 5V DC  
 D : 0 ~ 20mA DC    6 : 1 ~ 5V DC  
 E : 4 ~ 20mA DC\*1   0 : Designated  
 H : 10 ~ 50mA DC    Voltage Signal  
 Z : Designated  
       Current Signal

※1 Shunt Resistor 50Ω

Output-1 \_\_\_\_\_  
 A : 4 ~ 20mA DC    1 : 0 ~ 10mV DC  
 D : 0 ~ 20mA DC    2 : 0 ~ 100mV DC  
 Z : Designated     3 : 0 ~ 1V DC  
       Current Signal    4 : 0 ~ 10V DC  
                               5 : 0 ~ 5V DC  
                               6 : 1 ~ 5V DC  
                               3W : ± 1V DC  
                               4W : ± 10V DC  
                               5W : ± 5V DC  
                               0 : Designated  
                               Voltage Signal

Output-2 \_\_\_\_\_  
 No entry: None  
 Similar to Out-1

☑ When Out-1 is set for Voltage, Out-2 cannot be designated for Current.  
 ☑ When both outputs are set for 4~20mA, the Output Load shall be less than 550Ω for Out-1, 350Ω for Out-2.

Option \_\_\_\_\_  
 No entry: None  
 / X : Special Order ..... +¥10,000  
 \* As for special order, consult MTT.

Items to be specified at ordering

• Type  
 (Ex.) MS3713-A-A66

Other items to be specified (example)  
 • For Input "Z": MS3713-A-ZAA (Input 8~20mA)  
 • For Output "0": MS3713-A-A60 (Output 2~5V)



SPECIFICATIONS

● Power Supply Section

<b>Power Supply</b>	AC85~264V (47~63Hz, Rating 100~240V) DC24V ± 10% DC85~264V (Rating 100~240V)
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**Power Sensitivity** Within ±0.1% of Span for each power supply voltage

**Power Supply Fuse** 160mA fuse

**Maximum Power Consumption**

Power Supply	AC85~264V	DC24V	DC85~264V
1 Single Output	5.5VA max. / 1.6W max. /	6.0W max.	
2 Dual Output	6.0VA max. / 2.0W max. /	7.2W max.	

● Input Section

**Input Resistance**

VDC Input Type	With Power (ON)	1MΩ min.
	Without Power (OFF)	1MΩ min.
VAC Input Type	4~20mA (Standard)	250Ω
	2~10mA	250Ω
	1~5mA	100Ω
	0~20mA	250Ω
	10~50mA	10Ω

**Maximum Input Load**

Voltage Input Type	30V DC max. Continuous (for Span smaller than 10V)
Current Input Type	40mA DC max. Continuous (for 4~20mA)

Range of Products available

	Current	Voltage
Input Range (DC)	0~100mA	0~300V
Input Span (DC)	100 μA~100mA	200mV~300V
Input Bias	0~100%	0~100%
	(Ex.1) 4~20mA ⇒ input span 16mA, bias 25%	
	(Ex.2) 2~6V ⇒ input span 4V, bias 50%	

● Output Section

**Output Load**

Voltage Output (DC)	1V Span or larger	2mA max.
	10mV	10kΩ min.
	100mV	100kΩ min.
Current Output (DC)	4~20mA Single output	750Ω min.
	4~20mA Dual output	Out-1 550Ω max. Out-2 350Ω max.

● Output Section

<b>Zero Adjustment</b>	Approx. ±5% of Span
<b>Range</b>	Adjustable by Trimmer on front panel
<b>Zero Adjustment</b>	Approx. ±5% of Span
<b>Range</b>	Adjustable by Trimmer on front panel

**Root Square Extraction**

$X = 10 \times \sqrt{Y}$   
 (X = Output signal 0~100%) (Y = Input signal 0~100%)  
 (The Cut-off function will operate in case the output gets down to 9% or less.)

**Range of Products available**

	Current	Voltage
Output Range (DC)	0~20mA	-10~10V
Output Span (DC)	4~20mA	10mV~20V
Output Bias	0~100%	-100~100%

(Ex.1) 4~20mA ⇒ output span 16mA, bias 25%

(Ex.2) -1~4V ⇒ output span 5V, bias -20%

\* Current Output smaller than 0.1mA shall be out of the accuracy guarantee.

● Standard Performance

<b>Conversion Accuracy</b>	Within ±0.2%/F.S. (Input within 1~100%, at 25°C±5°C)
<b>Temp. Effect</b>	Within ±0.2% of Span with every 10°C variation
<b>Response Time</b>	120msec. max. (0~90%) with 100% step input
<b>C M R R</b>	100dB min. (500V AC, 50/60Hz)
<b>Signal Isolation</b>	Between Input—Out1—Out2—Power Supply—Ground, mutually
<b>Isolation Resistance</b>	100MΩ min. (@500V DC) Between Out1—Out2—Power Supply—Ground
<b>Dielectric Strength</b>	Between Input—[Out1,Out2]—[Power Supply, Ground]: 2000V AC, Shut Down Current 0.5mA for 1 minute Between Power Supply—Ground: 2000V AC, Shut Down Current 5mA for 1 minute Between Out1—Out2: 500V AC, Shut Down Current 0.5mA for 1 minute
<b>S. W. C.</b>	Conformed to ANSI/IEEE C37.90.1-1989
<b>Operation Environment</b>	Temperature: -5~55°C Humidity: 5~90%RH (Non-Condensing)
<b>Storage Temp.</b>	-10~60°C

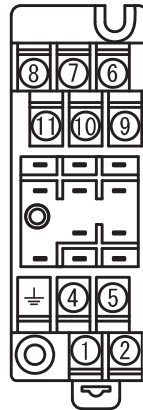
● Installation / Physical Specifications

<b>Installation</b>	Wall-mounting &/or DIN-rail mounting
<b>Wiring</b>	M3.5 screw terminal connection (with P.S. terminal cover/Screw drop-protection)
<b>Screw Tightening Torques</b>	0.8~1[N·m] recommendable
<b>Outer Dimension</b>	W29×H86×D125mm (incl. set screws and terminal block)
<b>Mass</b>	Main Body 120g max, Terminal Block 80g max.

● Materials

<b>Housing</b>	ABS resin (UL-94V-0)
<b>Terminal Block</b>	ABS resin (UL-94V-0)
<b>Terminal Screws</b>	Iron / Nickel-plated
<b>Terminal Surface Treatment</b>	0.2 μm gold-plated
<b>P.C. Board</b>	Glass-Epoxy (FR-4:UL-94V-0)
<b>Moisture-proof Coating</b>	: HumiSeal 1A27NS (Polyurethane Resin)

Terminal Arrangement / Signal Assignment



①	P(+)	POWER
②	N(-)	
⊥	GND	
④	+ OUTPUT 1	
⑤	- OUTPUT 1	
⑥	N. C	
⑦	+ OUTPUT 2	
⑧	- OUTPUT 2	
⑨	+ INPUT	
⑩	- INPUT	
⑪	N. C	

Block Diagram

