RISH DPM 196 Hz & F48x96 AK

Data Sheet

Applications:

The digital panel meter ***RISH*** DPM 196 Hz & F48x96 AK has been designed for frequency measurement in industrial applications.

Frequency measurement ranges available are 12…199.9 Hz and 12…500 Hz.

Features:

- **Display range : 0…+1999**
- **Simple configuration**
- **Supply voltage : 230V (50 / 60Hz)**
- **Also available with 24V DC and 110 VAC (50 / 60Hz) Supply Voltage**

Specifications :

Display

Type	7 segment LED
Colour	Red
Character Height	14 mm
Display Range	max. 1999
Decimal Point	Selectable by jumpers at front side
Overflow Display	"1" , if display > 1999

Input

Input voltage	80…500V (for 196 HZ) 80...700V (for F48x96Ak)
Measuring range	12…199.9 Hz 12…500 Hz

Calibration

Instruments are calibrated at the factory.

Range adjustment span : Fine adjustment is possible

Error Limits

Intrinsic Error ± (0.25% of max. display + 5 digits)

Additional Error

Temperature Coefficient	<190 ppm / ^{0}C
Zero Point Drift	< 0.2 digits / ^{0}C

Environment Conditions

Climatic class	Class 2 to VDE / DIN 3540
Safety class	II to IEC 348 / VDE 0411
Protection class	IP 20 to IEC EN 60 529
front	IP 50
Overvoltage category	II
Device safety	According to IEC EN 61 010
EMC immunity	According to DIN EN 61 000-4-1 to 4
EMC radiated interference	According to IEC EN 61326 class B

Test voltages: (Test duration 2 Sec.)

UH (Aux. voltage)	**230 / 110V AC**	**24V DC**
Supply – input signal	2 kV	0.5 kV
Supply – housing	2 kV	0.5 kV
Input signal – housing	2 kV	2 kV

A-D Conversion

Conversion Method	Dual slope
Integration Time	Approx. 100 ms
Measurements per Second	Typically 3 per sec.

RISH DPM **196 Hz**

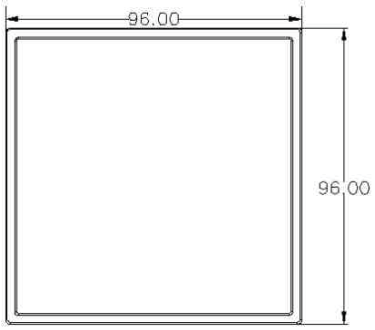
Power supply	3 ranges for power supply are available.		
	Direct voltage DC	: 24 V DC (21...30V)	5.5W approx. (isolated).
	Alternating voltage AC	: 110 V AC (+ 10% / -15%)	5.5W approx. (isolated).
		: 230 V AC (+ 10% / -15%)	5.5W approx. (isolated).
	Frequency	: 47 – 60 Hz.	
Ambient conditions	Operating temperature	: 0 ... 55 °C.	
	Storage temperature	: - 25 ... 70 °C.	
	Relative Humidity	: max. 85%	
Dimensions and Weights	Bezel size	: 96 mm x 96 mm DIN 43 700	
	Panel cut-out	: 92 + 0.8 mm x 92 + 0.8 mm	
	Overall depth	: 55 mm.	
	Weight	: 500 gm. Approx.	
Sundry	Connections	: Plug-in screw terminal blocks.	

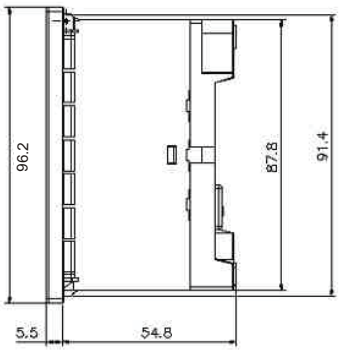
RISH DPM **F48x96 AK**

Power supply	3 ranges for power supply are available.		
	Direct voltage DC	: 24 V DC (21...30V)	5.5W approx. (isolated).
	Alternating voltage AC	: 110 V AC (+ 10% / -15%)	5.5W approx. (isolated).
		: 230 V AC (+ 10% / -15%)	5.5W approx. (isolated).
	Frequency	: 47 – 60 Hz.	
Ambient conditions	Operating temperature	: 0 ... +50 °C.	
	Storage temperature	: - 20 ... +70 °C.	
	Relative Humidity	: max. 85%	
Dimensions and Weights	Bezel size	: 96 mm x 48 mm	
	Panel cut-out	: 92 F 0.8 mm x 43.5 + 0.6 mm	
	Overall depth	: 138 mm.	
	Weight	: 500 gm. Approx.	
Sundry	Connections	: Plug-in.	

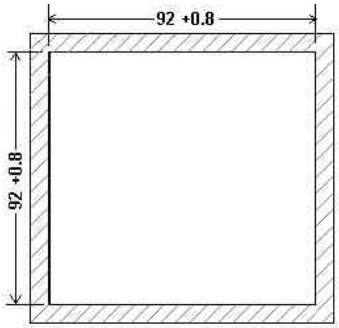
Design & Installation :

RISH DPM **196 Hz**

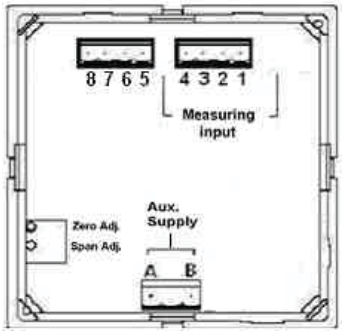




Installation cut-out

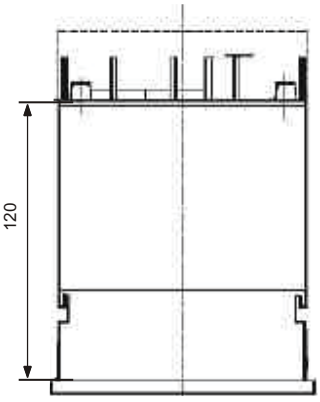


Connections

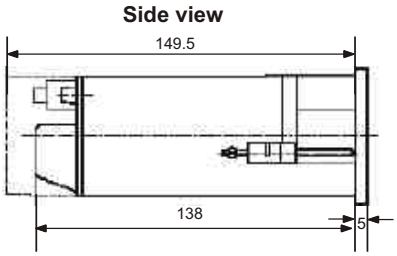


RISH DPM **F48x96 AK**

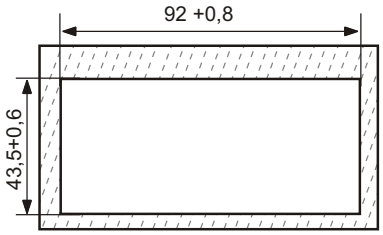
Front view



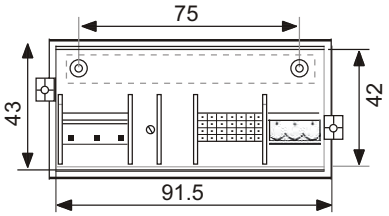
Side view

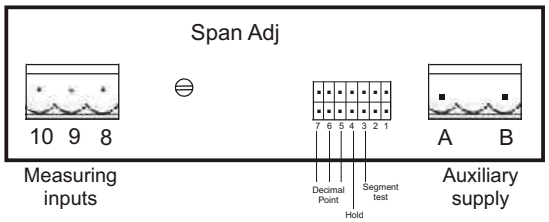


Installation Cut-out



Connections





Order Details :

RISH DPM **196 Hz**

	Example1	**Example2**
Type	RISH DPM 196 Hz	RISH DPM 196 Hz
Measuring input	12...199.9 Hz	12 ... 500 Hz
Input Voltage	(80…500V)	(80…500V)
Display	0…+1999	0…+500
Display caption	Hz	Hz
Supply voltage	230VAC, 50HZ	110VAC, 50HZ

RISH DPM **F48x96 AK**

	Example1	**Example2**
Type	RISH DPM F48x96 AK	RISH DPM F48x96 AK
Measuring input	12...199.9 Hz	12 ... 500 Hz
Input Voltage	(80…700V)	(80…700V)
Display	0…+1999	0…+500
Display caption	Ak	Ak
Supply voltage	230VAC, 50HZ	110VAC, 50HZ

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RISH DPM - Power / Power Factor (size: 96/96)

Data Sheet

Application :

RISH DPM Power 96x96 series measures system active Power (Import / Export),Reactive Power (Import / Export), Apparent Power & Power Factor of Three phase and Single phase Network. It has 4 digit single line auto ranging LED display with polarity indication.

Product Range :

- **Active Power (kW) DPM.**
- **Reactive Power (kVAr) DPM.**
- **Apparent Power (kVA) DPM.**
- **Power Factor (PF) meter.**

Product Features :

*** On Site Programmable PT/CT Ratios :**
It is possible to program primary of external Potential Transformer (PT) & primary of external Current Transformer (CT) on site via front panel keys by entering into programming mode.

*** User Selectable CT Secondary 5A/1A :**
The secondary of external Current Transformer (CT) can be programmed on site to either 5A or 1A using front panel keys.

*** User Selectable 3 Phase 3W or 4W :**
User can program on site the network connection as either 3 Phase 3 Wire or 4 Wire using front panel keys.

* Note: For Power Factor DPM, customer need to specify CT ratio, PT ratio & network type 3 phase (3 or 4 wire) / single phase (1P2W) requirement while ordering.

User Selectable Power Parameter :
User can select any one of the power parameter (Active / Reactive / Apparent) on site as per its requirement, reducing inventory cost.

True RMS Measurement :
The instrument measures distorted waveform up to 15th harmonic.

High Brightness LED Display :
Single line four digit. Digit heights 11 mm or 20 mm.

Enclosure Protection for Dust and Water :
Conforms to IP 54 (front face) as per IEC60529

Compliance to International Safety Standards :
Compliance to International Safety standard IEC 61010-1 - 2001

EMC Compatibility :
Compliance to International standard IEC 61326

Low Back Depth :
The instrument has very low back depth (behind the panel) of less than 80 mm.

Technical Specifications :

Input Voltage :

Nominal Input Voltage (AC RMS)	Phase-Neutral 57.7 - 277V L-N (Line-Line 100 - 480V L-L)
Max Continuous Input Voltage	120% of rated value

Input Current :

Nominal Input Current	1 or 5A AC RMS (programmable on site)
System CT Primary Values	Std. values up to 9999A
Max Continuous Input Current	120% of rated value

Auxiliary Supply :

AC Auxiliary Supply	110V AC -15%/+20% / 230V AC -15%/+20% / 380V AC-15%/+20
AC / DC Auxiliary Supply	100 to 250V AC/DC ± 10%
AC Auxiliary Supply Frequency Range	45 to 66 Hz
DC Auxiliary Supply	12 to 48V DC ± 10%

VA Burden :

Nominal Input Voltage Burden	< 0.2 VA approx. per phase
Nominal Input Current Burden	< 0.6 VA approx. per phase
AC Supply Burden	Approx. 4 VA

Overload Withstand :

Voltage	2 x rated value for 1 sec, repeated 10 times at 10 sec intervals
Current	20 x rated value for 1 sec, repeated 5 times at 5 min intervals

Operating Measuring Ranges :

Voltage	5…120% of rated value
Current	5…120% of rated value
Frequency	40…70 Hz
Power Factor	0.5 Lag...1...0.5 lead for kW,kVAr DPM / 0.1 Lag...1...0.1 lead for PF DPM

Reference Condition For Accuracy:

Reference Temperature	23°C +/- 2°C
Input Waveform	Sinusoidal (distortion factor 0.005)
Input Frequency	50 or 60 Hz ±2%
Auxiliary Supply Voltage	Rated Value ±1%
Auxiliary Supply Frequency	Rated Value ±1%

Accuracy :

Active Power, Apparent Power	±0.5% of range(50...100% of rated value) (0.5 Lag...1...0.5 Lead)
Reactive Power	±1% of range(50...100% of rated value) (0.5 Lag...1...0.5 Lead)
Power Factor	±2° (0.1 Lag...1...0.1 Lead)

Influence of Variations :

Temperature Coefficient : (for rated value range of use (0...50°C))	0.025% / °C for Voltage (50... 20% of rated value) and 0.05% / °C for Current (10... 120% of rated value)

Display

Response time to step input	min 1 sec approx.
Resolution	0.001 (4 digit)

Applicable Standards :

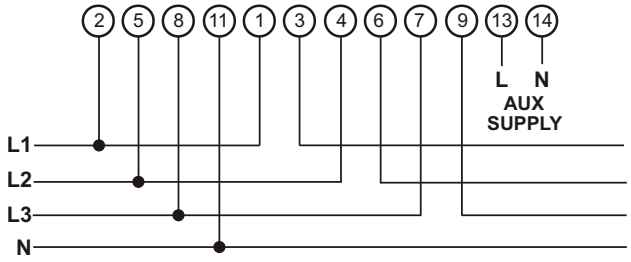
EMC	IEC 61326
Immunity	IEC 61000-4-3. 10V/m min - Level 3 industrial low level

Safety :	IEC 61010-1- 2001 , Permanently connected use
IP for Water and Dust	IEC60529
Pollution Degree	2
Installation Category	III
High Voltage Test	2.2 kV AC, 50Hz for 1 minute between all electrical circuits

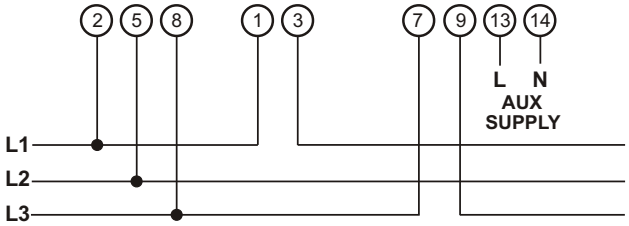
Environmental	
Operating temperature	-10 to + 55°C
Storage temperature	-20 to + 65°C
Relative humidity	0...90% non condensing
Warm up time	Minimum 3 minute
Shock	15g in 3 planes
Vibration	10...55 Hz, 0.15mm amplitude
Enclosure	IP54 (front face only)

Electrical Connection :

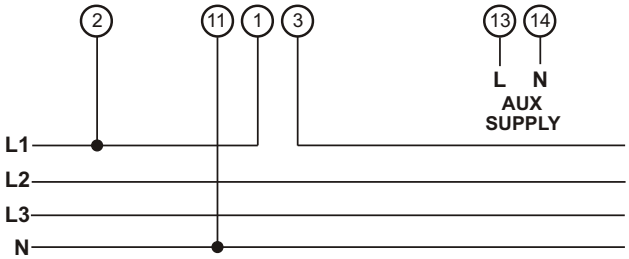
For 3 Phase 4 Wire Unbalanced Load



For 3 Phase 3 Wire Unbalanced Load



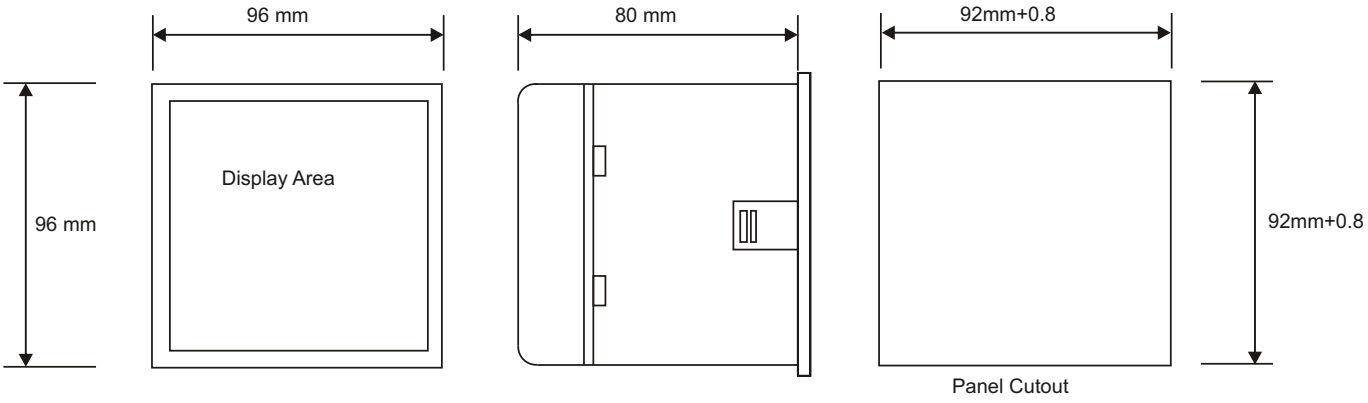
For Single Phase



It is recommended that the wires used for connection to the instrument should have lugs soldered at the end. That is, the connection should be with lugged wires for secure connections. The maximum diameter of the made lug should be 7.0mm and maximum thickness 3.5mm. Permissible cross section of the connection wires : <= 4.0 mm^2 single wire or 2 x 2.5 mm^2 fine wire

.

Dimensions



Ordering information	Ordering Code
	DPM
Parameter	
Power Factor	**PF**
Power (Active / Reactive / Apparent)*	**PW**
System Type (Connection network)**	
3 Phase 3 Wire	3
3 Phase 4 Wire	4
1 Phase	1
Input Voltage	
110V L- L (63.5V L - N)	110
230V L- L (133V L - N)	230
415V L- L (239.6V L - N)	415
440V L- L (254V L - N)	440
Input Current	
1 Amps	1
5 Amps	5
AC Auxiliary Supply	
110 V AC -15% / +20%	L
230 V AC -15% / +20%	M
380 V AC - 15% / +20 %	H
100 to 250 V AC/DC ±10%	AD
12 to 48 V DC ±10%	D
Digital Height	Rated Value ±1%
11 mm	11
20 mm	20

* Any one of the parameter can be selected to be displayed on site.
** CT ratio / PT ratio / Network type (3 wire / 4 wire) programmable on site only for power DPM (S / P / Q).

Order Code Example :

DPM – PF – 3 – 415 – 5 – M – 11

DPM, Power factor, 3 phase 3 wire, 415 V AC L-L nominal voltages, 5 Amp, 230 V AC auxiliary supply, 11mm digit height.

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RISH DPM 48/96 AK

RISHABH

Operating Manual

The ***RISH DPM* 48/96 AK** is a digital standard instrument for measurement of frequency of AC voltage up to 199.9/ 500Hz.

Operation:
The decimal point can be set by means of jumpers at the rear side of the DPM. Fine adjustment of full scale value is possible with span adjustment pointer provided at the back side of DPM.

Further ***RISH DPM* 48/96** versions from the series:

RISH*DPM* 48/96 A	Digital panel meter for DC current measurement, 3 ranges.
RISH*DPM* 48/96 B	Digital panel meter for DC current measurement. 2 ranges.
RISH*DPM* 48/96 C	Digital panel meter for DC voltage measurement, 2 ranges.
RISH*DPM* 48/96 F	Digital panel meter for DC voltage measurement, 4 ranges.
RISH*DPM* 48/96 AC	Digital Panel Meter for AC Voltage and AC Current measurement 3 ranges.
RISH*DPM* 48/96 T	Digital panel meter for temperature measurement with PT100,2 ranges.

Technical data

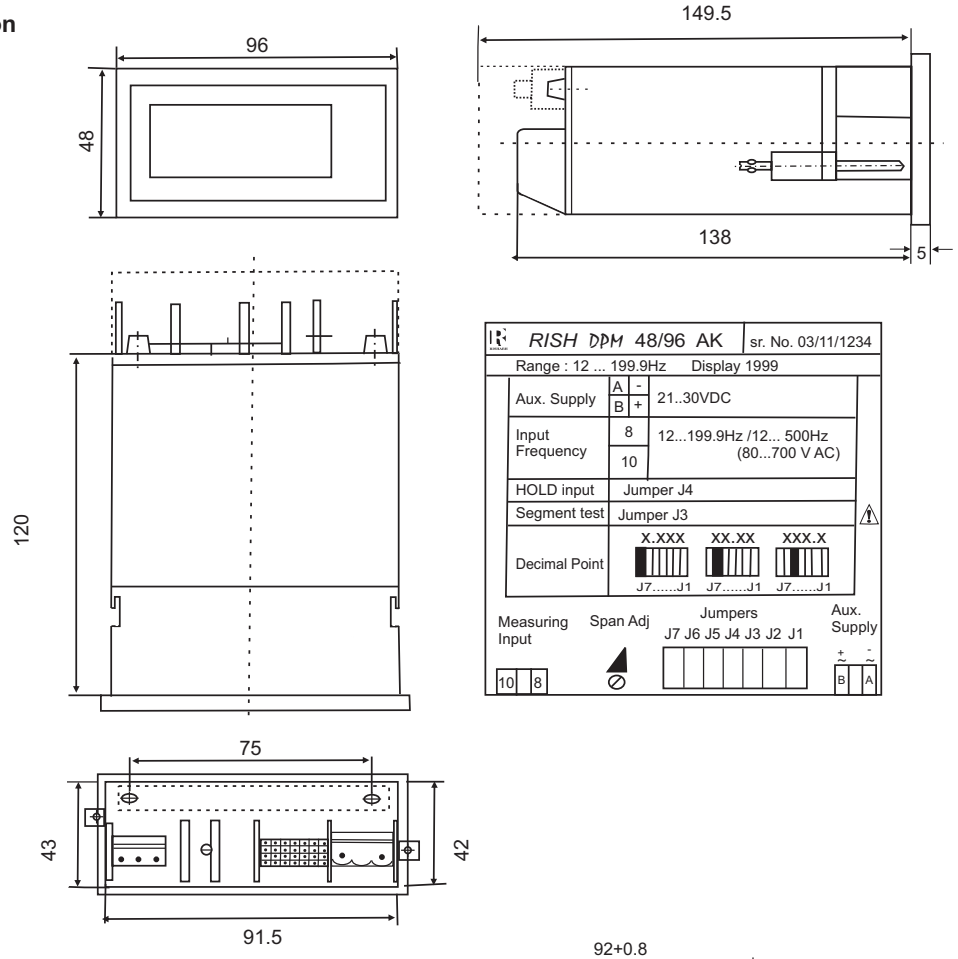
Display	Display range	0....+1999	
	Decimal point position	selectable by rear jumper position	
	Negative display indication	"-"	
	Digit height	14mm / 7-segment digits	
	Overload indication .	"1...", if display > 1999	
For frequency	Input voltage	80.....700V	
	Measuring range	12 ....199.9 Hz	
		12 ....500 Hz	
	Calibration	Meters are precalibrated	
		To a standard value	
Digital Input	Display hold	selectable by rear jumper position	
	Segment test	selectable by rear jumper position	
Accuracy	after exact calibration	±(025 % of max. display + 5 digits)	
Additional error	Temperature drift	<190 ppm / °C	
	Zero drift (only for devices with shift zero point)	<0.2 digits / °C	
Power supply	Direct voltage DC	24V +/-15%	max. 5.5W
	Alternating voltage (50 - 60 Hz)	24V +10%,-15%	max. 5.5W
		115V +10%. -15%	max. 5.5W
		230V + 10%, -15%	max. 5.5W
A/D Converter	System	Dual slope	
	Integration time	approx. 100ms	
	Sampling rate	typ. 3 per sec.	

Test voltages Test duration 2 sec.)	UH (Auxiliary supply)	230 / 115V AC	24V AC / 24V DC
	Supply - input signal	2kV	0.5 kV
	Supply - housing	2kV	0.5 kV
	Input signal - housing	2kV	2 kV

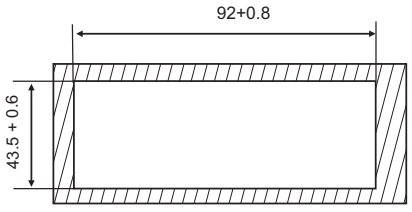
Dimensions and weights	Front bezel size	96 mm x 48 mm (DIN 43 718)
	Panel cut-out	92 +0.8 mm x 43.5 +0.6 mm
	Overall depth	138mm
	Weight	500 g approx.

Environmental conditions	Operating temperature	0... 50 °C
	Storage temperature	-20 °C... +70 °C
	Climatic class	Class 2 to VDE / DIN 3540
	Safety class	II to IEC 348 / VDE 0411
	Protection class	IP 20 to IEC EN 60 529
	front	IP 50
	Overvoltage category	II
	Device safety	According to IEC EN 61 010
	EMC immunity	According to DIN EN 61 000-4-1 to 4
	EMC radiated interference	According to IEC EN 61326 class B

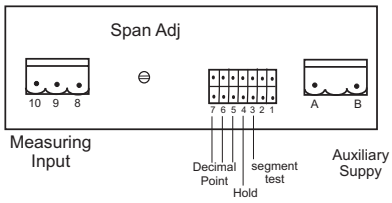
Design and installation



Installation cut-out



Connections



⚠ Caution : Do not change the jumpers when input is applied to the DPM !

Subject to change without notice!

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