

Wide bandwidth / High voltage differential probe



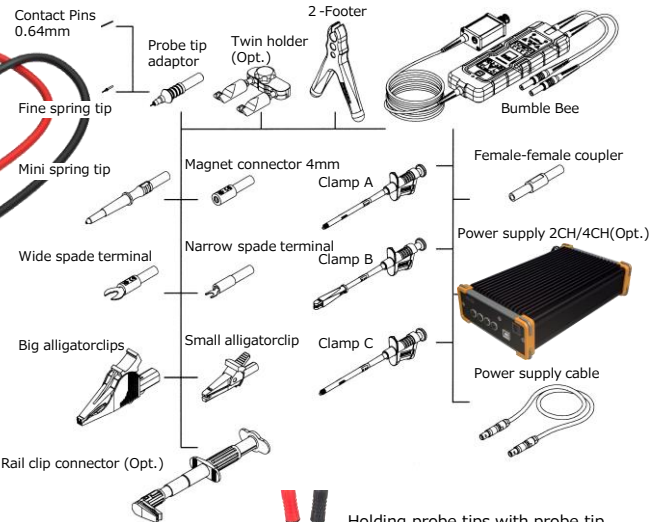
NEW Wide bandwidth DC~400MHz

BumbleBee



Accessories

Option : (OPT.)



Holding probe tips with probe tip adaptor soldering on PCB directly enables to eliminate affection by Probing and keep signal integrity.

Attenuation ratio	Input voltage	50:1	100:1	250:1	500:1
Frequency bandwidth (~3dB) Tr (10%-90%)	50V	300MHz 1.2ns	300MHz 1.2ns	400MHz 875ps	400MHz 875ps
	500V	—	—	300MHz 1.2ns	300MHz 1.2ns
	1,000V	—	—	—	300MHz 1.2ns
Typical noise level(rms)		55mV	55mV	75mV	75mV
Maximum differential input voltage		±200V DC	±400V DC	±1kV DC	±2kV DC

Common mode voltage : ±2,000V pk (± 1,400V rms)

Max. input voltage(measurement category)

(I) : 2,000V rms (6,000V transient overvoltage)

(III) : 1,000V rms CAT III

Offset range : ±4V (Resolution 15Bit/minimum Step<125µV)

Input impedance : 5MΩ // 4pF(GND), 10MΩ // 2pF(Differential)

Input coupling of instruments : 50Ω

Typical CMRR :

>80dB(DC), >70dB(100kHz), >62dB(1MHz), >50dB(3.2MHz)

Cable length : 2m(Output), 25cm(Input leads)

Weight (Probe only) : 370g

Operating temperature range :

0°C ~ 50°C(Probe), -40°C ~ 85°C(Input leads)

Probe power supply : PS-02(2CH), PS-03(4CH)

Probe power supplies provides PC remote control on Bumble Bee via USB or Ethernet(Optional) with PC-software "PMK Probe Control(64bit-Win7 or above version)" with USB memory.

BumbleBee® is manufactured by PMK Mess- und Kommunikationstechnik GmbH - Germany

High voltage differential probe

SS-320 DC~100MHz

Frequency Bandwidth : DC~100MHz
 Max. differential voltage(DC+ACpeak) :
 ±140V(50:1), ±1.4kV(500:1)
 CMRR:70dB(500VDC)/80dB(50/60Hz)/50dB(1MHz)
 Input impedance of instruments : 1MΩ
 Input impedance(vs GND) : 4MΩ//7.0pF
 Input impedance(differential) : 8MΩ//3.5pF
 Cable length : 1.5m
 Power supply : PS-25(AC100V), DS-579(DS-5600A/DS-5400A)



Isolation Probe system – For High voltage, High magnetic field strength environment, floating measurement and long distance test points -

NEW



Transmitter Isolation Unit SE-6010

Operation Temperature : -15°C~50°C
 Operation Humidity : 5%~80%RH(no condensation)
 Continuous operation hours : 30hours(twin batteries at full charge)
 Size : 90W×203H×298D(mm)
 Weight : Approx. 2.4kg(without battery packs)

Description	Model
Receiver Isolation Amp	SE-6000
Transmitter Isolation Unit	SE-6010
Battery charger(twin bay)	SE-603
Battery(1pc. for SE-6010 as a standard, twin-pack available for each SE-6010)	SE-601

Description	Model
Optical fiber cable (also for field use)	
3m	SE-605
10m	SE-606
50m	SE-607
200m	Made to order

Receiver Isolation Amp SE-6000

To : Oscilloscope
 Logger
 Specter analyzer
 DMM, etc.

Input/Output : 4CH
 LAN(control), USB memory
 Operation temperature : 0°C~40°C

Item	Specification
CMRR	100dB (80Hz)
Frequency BW/Tr	DC~30MHz(-3dB) Tr=13.3ns(typ.)
Input channel of SE-6010	1CH/unit
BW limiter(-6dB/oct)	10MHz, 1MHz, 100KHz
Probe sense	Automatic detection, Manual
Input impedance	1MΩ ± 1%/20pF ± 2pF
Input range (Full scale)	±50mV ~ ±50V ±40mV ~ ±40V(for Oscilloscope at 8div.) Auto range function Over range detection
Input coupling	DC, AC(Lower limit<10Hz), GND
Max. output voltage	±1V(50Ω) ± 2V(1MΩ)
DC gain accuracy	±1%(after self calibration : ±0.3%) at 1MΩ termination
Offset voltage range	±1V(upto 500mV), ±10V, ±100V(8V or more)
Offset accuracy	±0.5% ± 5%FS ± 1mV(input)
Max. input voltage	400Vpeak
Power supply of transmitter	Li-Ion(1pc./unit as a standard) 2-battery(30H), 1-battery(15H)
Receiver input channels	4CH(simultaneous operation available)
Self calibration	Enable for each channel independently
Propagation delay	1.089µs ± 0.015µs ± 5ns/m
CH Skew	20ns or less (probe delay exclusive)



PHT312-RO

Operation temperature range : -55°C~155°C

Model	Attn. ratio	Max. input voltage		Cable length	BW (-3dB)	Input		Capacitance range[pF]
		rms	Peak			R [MΩ]	C [pF]	
PHT312-RO	10:1	400V	1.25kV	2.0m	350MHz	4.4	20	10-25

PMK passive probes



PMM

PHV1000
PHVS1000
PHV6xx
PHVS6xx

PHV4002

Model	Attn. ratio	Max. input voltage		Cable length	BW (-3dB)	Input		Capacitance range[pF]
PMM517A-RO	10:1	400V	1.25kV	7.0m	100MHz	10	23	7-25
PHV1000-RO	100:1	1.0kV	6.0kV	2.0m	400MHz	50	7.5	10-50
PHV1000-3-RO				3.0m	250MHz			
PHVS1000-RO	1000:1	1.0kV	6.0kV	2.0m	400MHz	50	7.5	10-50
PHVS1000-3-RO				3.0m	250MHz			

Model	Attn. ratio	Max. input voltage			Cable length	BW (-3dB)	Input		Capacitance [pF]
		CAT II AC rms	VDC Incl.pkAC	Impulse Peak			R [MΩ]	C [pF]	
PHV641-LRO	100:1	2.0kV	3.0kV	4.0kV	1.2m	400MHz	50	6	10-50
PHV642-LRO					2.0m	300MHz		6.5	
PHV643-LRO					3.0m	150MHz		7	
PHV661-LRO	100:1	2.8kV	4.0kV	6.0kV	1.2m	400MHz	50	6	10-50
PHV662-LRO					2.0m	300MHz		6.5	
PHV663-LRO					3.0m	150MHz		7	
PHVS662-LRO	1000:1	2.8kV	4.0kV	6.0kV	2.0m	400MHz	50	6.5	10-50
PHVS663-LRO					3.0m	250MHz		7	
PHVS667-LRO					7.0m	150MHz		7.5	
PHV4002-3-RO	1000:1	14kV	20kV	40kV	3.0m	100MHz	100	3	10-50
PHV4002-10-RO					10m	10MHz		3	

Readout detection pin

(Automatic attenuation ratio detection for oscilloscope input)

Suffix "RO" means readout detection pin. It is also available without readout pin.

Options for High voltage passive probes

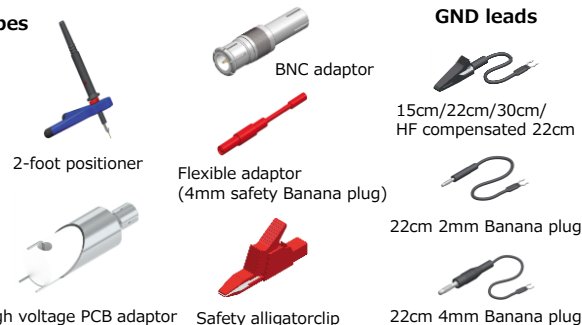
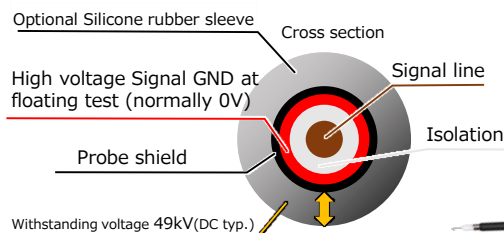


Silicon rubber sleeved option

Option HV-S* for withstanding voltage at 49kV(DC, typical) for standard probes

* Option HV-S is factory option at ordering point

Ex. PHV1000-RO with Option HV-S



High voltage passive probes



SS-0171R



HV-P30A



HV-P60A



Stand : SK-301 for HV-P30A/HV-P60A

Model	Attn. ratio	Input		BW (-3dB)	Cable length [m]	Capacitance range [pF]	Max. input voltage DC+ACpeak
		R [MΩ]	C [pF]				
SS-0171R	100:1	66.7	≤4	400MHz	2m	6-18	4.0kV(CAT I), 1.0kV(CAT II)
SS-0170R	100:1	66.7	≤4	400MHz	2m	6-18	6.0kV(CAT I), 1.0kV(CAT II)
HV-P30A	1000:1	100	≤7	50MHz	3m	10-40	30kV (Single pulse : 40kV)
HV-P60A	2000:1	1,000	5±2	50MHz	4m	10-40	60kV (Single pulse : 80kV)

Passive Probes



SS-101R

Model	Attn. ratio	Input RC	BW(-3dB)	Cable length	Capacitance range
SS-101R	10:1	10MΩ//12pF	500MHz	1.2m	12-23pF
SS-0130R	10:1	10MΩ//12.5pF	200MHz	1.2m	18-35pF
SS-0122	10:1	10MΩ//14pF	100MHz	1.5m	10-32pF
	1:1	1M//<150pF	6MHz		—
SS-0112	10:1	10MΩ//22pF	60MHz	1.5m	10-45pF
	1:1	1M//<200pF	6MHz		—
SS-0004	1:1	44pF	30MHz	1.1m	—

Paired probes - Suitable for differential input probe pair -



PDD4002-3

Model	Attn. ratio	Input RC		BW [MHz] (-3dB)	Cable length [m]	Capacitance range [pF]	Max. input voltage [kV]		
		R [MΩ]	C [pF]				CAT II AC rms	VDC Incl.pkAC	Impulse Peak
PDD4161-L	100:1	50	<6	380	1.2	10~50	2.8	4.0	6.0
PDD4162-L	100:1	50	<6.5	300	2.0	10~50	2.8	4.0	6.0
PDD4163-L	100:1	50	<7	150	3.0	15~55	2.8	4.0	6.0
PDDS4962-L	1000:1	50	<6	400	2.0	10~50	2.0	3.0	4.0
PDDS4963-L	1000:1	50	<6.5	250	3.0	10~50	2.0	3.0	4.0
PDD4002-3	1000:1	100	<2.5	100	3.0	10~50	14	20	40

Probe calibrators



KHT1000C
High voltage probe calibrator



KSZ10B
Current probe calibrator

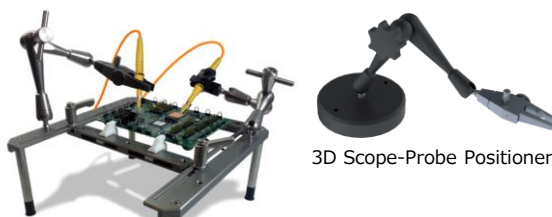


Interlock casing for disabling output when opening cover (factory option at ordering point)
※Contact our sales representative

Model	Output	DC accuracy	Tr	Over-shoot	Repetition Period	Pulse width	Trigger output
TK100C	100V	±0.5%	<6ns	<3%	100Hz	-	-
KHT1000C	±100/200/500/1kV switchable (Continuous variable 100-1000V*)	±1%/0.5% /0.25%	<14ns	<2%	50Hz (Continuous variable 1-100Hz*)	5ms (Continuous variable 1-100ms)	10V,1μS
KHT6000C	1k~6kV	±0.5%	<40ns	<2%	1Hz	1ms	15V,10μS
KSZ10B	0.1/0.2/0.5/1/2/5/10A	-	16-34ns	<2%	1Hz	1ms	10V
KSZ100B	20/50/100A	-	40-120ns	<2%	0.5Hz	1ms	10V

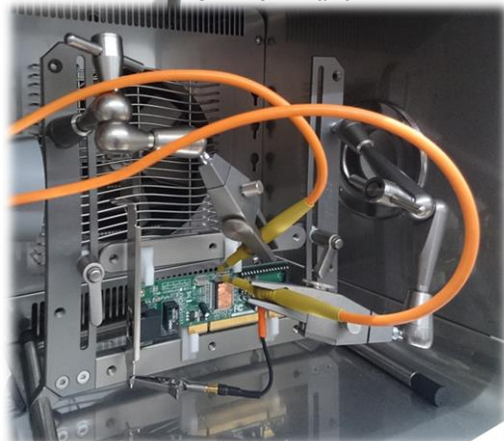
*Continuous variable available at remote control mode

PCBA Frame and 3D positioners



3D Scope-Probe Positioner

SKID PCBA Frame



PMK 3D Scope-Probe Positioners

Type	Description	incl. Holder
MSA100	Probe-Positioner with steel base, span width 200mm	HAL512
MSB40	Probe-Positioner with table clamp, span width 200mm	HAL512
MSC85	Probe-Positioner with vacuum clamp, span width 200mm	HAL512
MSM130	Probe-Positioner with magnet foot, span width 130mm	HAL512
MSM200	Probe-Positioner with magnet foot, span width 200mm	HAL512
MSU1500	Probe-Positioner with steel base, span width 200mm	UNIHOLDER

Accessories and Spares for 3D Probe Positioners

Type	Description
STS100	1200g heavy steel base, Φ100mm, Positioner collet M6
TIK40	Table clamp with a clamping range of up to 40mm for table edges and pipes, 2 collets M6
VAS85	Vacuum cup M8 incl. 1x adapter to M6, Φ85mm
TM170	Magnet foot 170N, M6 Φ 30mm
TM300	Magnet foot 300N, M8 incl. 1x adapter to M6, Φ 30mm
STV130	Probe-Positioner span width 130mm, both sided M6
STV200	Probe-Positioner span width 200mm, both sided M6
HAL512	Probe-Holder for PMK probes and other probing devices with Φ 5-12mm, M6
GAD M86	Screw adapter M8/M6 SW 13mm
UNIHOLDER	PMK universal Probe Holder "Uniholder" for PMK probes and other readings recorders with Φ 1.5-17mm, M6

SKID® PCBA Frame

Type	Dimensions	Clamping width
SKID-S	255 x 255 x 100mm	160 x 160mm
SKID-M	305 x 225 x 100mm	240 x 160mm
SKID-L	405 x 365 x 190mm	340 x 300mm

Rogowski coil current probes

**Maximum 12kApk,
High withstanding voltage 10kV with "Zero adjust" function
Various types of sensors cover each test current range**

Operation temperature of sensor : -40°C~125°C

Sensor of SS-280A Series
on TO-220 package lead



SS-280A Series

SS-28xA:80mm
60mm* $\Phi 1.7\text{mm}$

SS-290 Series

SS-29xS:300mm
SS-29xL:700mm $\Phi 8.5\text{mm}$

Model	Peak current	Voltage	BW (-3dB)	Sensor	Cutoff frequency	Sensitivity mV/A	Noise level mV(rms)	di/dt kA/us
SS-281A	30A	1.2kV Peak	30MHz	Circle : 80mm 60mm*	110Hz	200	3.5	2
SS-282A	60A				65Hz	100	2.5	4
SS-283A	120A				32Hz	50	2	8
SS-284A	300A			9Hz	20	1.8	20	
SS-285A	600A			6Hz	10		40	
SS-286A	1.2kA			3Hz	5		80	
SS-287A	3kA			Cable length 1.5m	2Hz	2		1.4
SS-288A*	6kA							
SS-289A*	12kA							
SS-293S	1.2kA			10kV Peak	20MHz	Circle : L:700mm S:300mm	1Hz	5
SS-293L		10MHz						32
SS-294S	3kA	20MHz	Cable diameter 8.5mm		0.8Hz	2	2.0	80
SS-294L		10MHz						
SS-295S	6kA	20MHz	Cable length 3m		0.6Hz	1	1.4	
SS-295L		10MHz						
SS-296S	12kA	20MHz			0.4Hz	0.5	1.2	80
SS-296L		10MHz						
AC adaptor (Optional)								

AC adaptor (Optional)

*Made to order

Rogowski coil current probes are limited distribution for Asian market.

Current probes



SS-240A/250



SS-260/270



External power supply box : PS-26



Built-in power supply : DS-579 for DS-5400/A,5500/A,5600/A

Model	Max. current	Frequency BW	Max. Clamp-on Cable diameter	Power supply
SS-240A	30Arms/ 50Apk	DC~ 50MHz	5mm	PS-26 (External box) DS-579 (built-in power supply for DS-5400/A,5500/A,5600/A)
SS-250	30Arms/ 50Apk	DC~100MHz	5mm	
SS-260	150Arms/300Apk	DC~ 10MHz	20mm	
SS-270	500Arms/700Apk	DC~ 2MHz	20mm	

Products with  mark are manufactured by PMK Mess- und Kommunikationstechnik GmbH – Germany.

Products from PMK GmbH are limited distribution for Asian market.

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