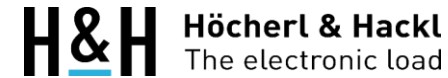


High Power Electronic Loads PLI vs. HES

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This document shows functional and SCPI command differences between PLI production series B and HES electronic loads. Refer to user manuals and technical datasheets for detailed analysis.

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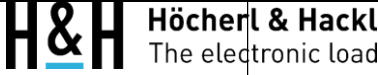
				
Manufacturer	H&H	H&H	H&H	H&H
Series	PLI	PLIxxxMR Multirange Variant	HES	HESxxxMR Multirange Variant
	Production Series B	Production Series B		
Continuous power max.	28,800 W	1,500 W	14,400 W	1,500 W (2U), 28,800 W (>5U)
Voltage classes	60 V, 120 V, 300 V, 600 V, 800 V, 1200 V	80 V, 120 V, 300 V, 800 V	60 V, 120 V, 300 V, 600 V, 800 V, 1200 V	80 V, 120 V, 300 V, 800 V
Current ranges	1	3/4	1	2/3/4
Autorangeing	--	no	--	no
Basic operating modes	CC, CV, CR, CP	CC, CV, CR, CP	CC, CV, CR, CP	CC, CV, CR, CP
Combined operating modes	CC+CV, CR+CC+CV, CP+CC+CV, CV+CC by overcurrent and undervoltage protection, IUa mode at discharge function	CC+CV, CR+CC+CV, CP+CC+CV, CV+CC by overcurrent and undervoltage protection, IUa mode at discharge function	CC+CV, CR+CC+CV, CP+CC+CV, CV+CC by overcurrent and undervoltage protection, IUa mode at discharge function	CC+CV, CR+CC+CV, CP+CC+CV, CV+CC by overcurrent and undervoltage protection, IUa mode at discharge function
Min. input voltage Umin for Imax	1.2 V (60 V and 120 V models) 2 V (>=300 V models) 5 V (PLIxxxEC models)	1.2 V (80 V and 120 V models) 2 V (>=300 V models)	1.0 V (60 V models) 1.2 V (120 V models) 2 V (>=300 V models)	Always less than 3V. Values are model and range specific.
Input capacity	ca. 2 µF/600 W	ca. 2 µF/600 W	model specific	model specific
Operating temperature	5 ... 40 °C	5 ... 40 °C	5 ... 40 °C	5 ... 40 °C
Power derating	-1.2 %/°C for Ta > 21 °C	-1.6 %/°C for Ta > 21 °C	-1.2 %/°C for Ta > 21 °C	-1.6 %/°C for Ta > 21 °C
Voltage setting				
Accuracy	0.2 % of setting 0.05 % of range	0.2 % of setting 0.05 % of range	0.05 % of setting 0.05 % of range	0.05 % of setting 0.05 % of range
Resolution	14 bits	14 bits	14 bits	14 bits
Current setting				
Accuracy	0.2 % of setting 0.05 % of range	0.2 % of setting 0.05 % of range	0.2 % of setting 0.05 % of range	0.2 % of setting 0.1 % of range
Resolution	14 bits	14 bits	14 bits	14 bits
Resistance setting (local)				
Accuracy	1.4 % of setting 0.3 % of current range at V > 5 % of voltage range	1.4 % of setting 0.3 % of current range at V > 5 % of voltage range	1.4 % of setting 0.3 % of current range at V > 5 % of voltage range	1.4 % of setting 0.3 % of current range at V > 5 % of voltage range
Resistance setting (remote)				
Accuracy	1.4 % of setting 0.3 % of current range at V > 5 % of voltage range	1.4 % of setting 0.3 % of current range at V > 5 % of voltage range	1.4 % of setting 0.3 % of current range at V > 5 % of voltage range	1.4 % of setting 0.3 % of current range at V > 5 % of voltage range
Resolution	14 bits	14 bits	14 bits	14 bits
Power setting (local)				
Accuracy	0.35 % of setting, 0.1 % of range (V and I > 30 % of range) 0.7 % of setting, 0.25 % of range (V or I < 30 % of range)	0.35 % of setting, 0.1 % of range (V and I > 30 % of range) 0.7 % of setting, 0.25 % of range (V or I < 30 % of range)	0.35 % of setting, 0.1 % of range (V and I > 30 % of range) 0.7 % of setting, 0.25 % of range (V or I < 30 % of range)	0.35 % of setting, 0.1 % of range (V and I > 30 % of range) 0.7 % of setting, 0.25 % of range (V or I < 30 % of range)
Resolution	14 bits	14 bits	14 bits	14 bits

				
Manufacturer	H&H	H&H	H&H	H&H
Series	PLI	PLIxxxMR Multirange Variant	HES	HESxxxMR Multirange Variant
	Production Series B	Production Series B		
Protections				
Hardware protections and warnings	OCp, OPp, OTp protection UV, RV, OV warning	OCp, OPp, OTp protection UV, RV, OV warning	OCp, OPp, OTp protection UV, RV, OV warning	OCp, OPp, OTp protection UV, RV, OV warning
Accuracy variable undervoltage protection	1.4 % of setting 0.3 % of range 12 bits resolution	1.4 % of setting 0.3 % of range 12 bits resolution	0.5 % of setting 0.3 % of range 12 bits resolution	0.5 % of setting 0.3 % of range 12 bits resolution
Accuracy variable overcurrent protection	1.4 % of setting 0.3 % of range 12 bits resolution	1.4 % of setting 0.3 % of range 12 bits resolution	1.4 % of setting 0.3 % of range 12 bits resolution	1.4 % of setting 0.3 % of range 12 bits resolution
Reset state of voltage protection	switching	switching	switching	switching
Rise/fall time	model-specific	model-specific	model-specific similar to PLI production series B	model-specific similar to PLI production series B
Display measurement (Slow ADC)				
Display	Graphical User Interface	Graphical User Interface	Graphical 4.3" Touch User Interface	Graphical 4.3" Touch User Interface
Voltage measurement accuracy	0.01% of meas. value 0.005 % of range 23 bits	0.01% of meas. value 0.005 % of range 23 bits	0.02% of meas. value 0.01 % of range 23 bits	0.02% of meas. value 0.01 % of range 23 bits
Current measurement accuracy	0.2 % of meas. value 0.05 % of range 23 bits	0.2 % of meas. value 0.05 % of active range 23 bits	0.2 % of meas. value 0.05 % of range 23 bits	0.2 % of meas. value 0.05 % of range 23 bits
Resistance measurement accuracy	calculated of voltage and current measurement	calculated of voltage and current measurement	calculated of voltage and current measurement	calculated of voltage and current measurement
Power measurement accuracy	calculated of voltage and current measurement	calculated of voltage and current measurement	calculated of voltage and current measurement	calculated of voltage and current measurement
Remote measurement (Fast ADC)				
Voltage measurement accuracy	0.1 % of meas. value 0.05 % of range	0.1 % of meas. value 0.05 % of range	0.2% of meas. value 0.1 % of range	0.2% of meas. value 0.1 % of range
Current measurement accuracy	0.2 % of meas. value 0.1 % of range	0.2 % of meas. value 0.1 % of active range	0.2 % of meas. value 0.1 % of range	0.2 % of meas. value 0.2 % of range
Resistance measurement accuracy	calculated of voltage and current measurement	calculated of voltage and current measurement	calculated of voltage and current measurement	calculated of voltage and current measurement
Power measurement accuracy	calculated of voltage and current measurement	calculated of voltage and current measurement	calculated of voltage and current measurement	calculated of voltage and current measurement
ADC resolution	16 bits	16 bits	16 bits	16 bits
Functions				
Acquisition				
Sample time	200 µs ... 1000 s	200 µs ... 1000 s	200 µs ... 1000 s	200 µs ... 1000 s
Number of measurement points	40,000	40,000	40,000	40,000
List function				
Number of dynamic settings	300 list points with ramp and dwell times (LIST)	300 list points with ramp and dwell times (LIST)	300 list points with ramp and dwell times (LIST)	300 list points with ramp and dwell times (LIST)
Time resolution	200 µs	200 µs	200 µs	200 µs
Rectangle function	by LIST or RECTangle function with amplitude and offset	by LIST or RECTangle function with amplitude and offset	dedicated fast HW-controlled RECT function	dedicated fast HW-controlled RECT function

				
Manufacturer	H&H	H&H	H&H	H&H
Series	PLI	PLIxxxMR Multirange Variant	HES	HESxxxMR Multirange Variant
	Production Series B	Production Series B		
Modes	entry of ton, toff and amplitude	entry of ton, toff and amplitude	normal mode: entry of ton, toff and amplitude PWM mode: entry of frequency, duty cycle and amplitude	normal mode: entry of ton, toff and amplitude PWM mode: entry of frequency, duty cycle and amplitude
Frequency	0.05 Hz ... 2.5 kHz	0.05 Hz ... 2.5 kHz	0.1 Hz ... 10 kHz	0.1 Hz ... 10 kHz
MPP tracking function	optional, configurable sweep functionality to find global MPP, readable and displayable U/I characteristic	optional, configurable sweep functionality to find global MPP, readable and displayable U/I characteristic	configurable sweep functionality to find global MPP, readable and displayable U/I characteristic	configurable sweep functionality to find global MPP, readable and displayable U/I characteristic
Sweep data points	250	250	250	250
Battery test function	IUA mode, data logging with follow-up time	IUA mode, data logging with follow-up time	IUA mode, data logging with follow-up time	IUA mode, data logging with follow-up time
Stop criteria	charge, energy, time, current, voltage	charge, energy, time, current, voltage	charge, energy, time, current, voltage	charge, energy, time, current, voltage
Dynamic discharge in combination with List function	yes	yes	yes	yes
Internal resistance measurement function	like specified e.g. in DIN EN 61951, DIN EN 61960	like specified e.g. in DIN EN 61951, DIN EN 61960	like specified e.g. in DIN EN 61951, DIN EN 61960	like specified e.g. in DIN EN 61951, DIN EN 61960
Time range	0.1 s ... 100.0 s	0.1 s ... 100.0 s	0.1 s ... 100.0 s	0.1 s ... 100.0 s
Modulator function				
Waveforms	n.a.	n.a.	sine, square, triangle	sine, square, triangle
Frequency	n.a.	n.a.	0.1 Hz ... 10 kHz	0.1 Hz ... 10 kHz
Frequency sweep function				
Frequency range	n.a.	n.a.	0.1 Hz ... 10 kHz	0.1 Hz ... 10 kHz
Frequency resolution	n.a.	n.a.	0.1 Hz ... 10 kHz	0.1 Hz ... 10 kHz
Dwell time	n.a.	n.a.	0.001 s ... 1000 s	0.001 s ... 1000 s
Voltage sweep function (only in manual operation)				
Time range	n.a.	n.a.	1.0 s ... 1000.0 s	1.0 s ... 1000.0 s
Watchdog for digital communication	yes	yes	yes	yes
Save/recall settings	9 memories + 1 for power off settings	9 memories + 1 for power off settings	9 memories + 1 for power off settings	9 memories + 1 for power off settings
Charger starter interface	optional	optional	n.a.	n.a.
Data logging to USB MSD	sample rate 0.5 ... 30 s with 0.1 s resolution	sample rate 0.5 ... 30 s with 0.1 s resolution	sample rate 0.1 ... 30 s with 0.1 s resolution	sample rate 0.1 ... 30 s with 0.1 s resolution
Trigger system	yes (extern, bus, manual, voltage, current)	yes (extern, bus, manual, voltage, current)	yes (extern, bus, manual, voltage, current)	yes (extern, bus, manual, voltage, current)
Keylock function	yes	yes	yes	yes
Preset function	yes	yes	yes	yes
I/V graph, I/I graph	yes	yes	yes	yes
Screenshot function	yes	yes	yes	yes
Toggling between to settings	yes	yes	yes	yes
Permissible potentials of neg. load input	±125 V (DC or AC) to PE ±800 V (DC or AC) to PE with PLI06 option	±125 V (DC or AC) to PE ±800 V (DC or AC) to PE with PLI06 option	±125 V DC to PE ±800 V DC to PE with HES06 option (applies not to ZV devices)	±125 V DC to PE ±800 V DC to PE with HES06 option (applies not to ZV devices)

				
Manufacturer	H&H	H&H	H&H	H&H
Series	PLI	PLIxxxxMR Multirange Variant	HES	HESxxxxMR Multirange Variant
	Production Series B	Production Series B		
I/O port	standard, not isolated isolated version PLI06 optional	standard, not isolated isolated version PLI06 optional	standard, not isolated isolated version HES06 optional	standard, not isolated isolated version HES06 optional
Analog control	0 ... 10 V	0 ... 10 V	0 ... 10 V	0 ... 10 V
Analog control sampling rate	analog/real time	analog/real time	analog/real time	analog/real time
Ext. setting control	0 ... I _{max} 0 ... U _{max} 0 ... I _{protmax} 0 ... U _{protmax}	0 ... I _{max} 0 ... U _{max} 0 ... I _{protmax} 0 ... U _{protmax}	0 ... I _{max} 0 ... U _{max} 0 ... I _{protmax} 0 ... U _{protmax}	0 ... I _{max} 0 ... U _{max} 0 ... I _{protmax} 0 ... U _{protmax}
Monitor signals	I, U	I, U	I, U	I, U
Monitor sampling rate	analog/real time	analog/real time	analog/real time	analog/real time
Digital control signals (inputs)	load on-off remote shut-down control input for ext. control activation operating mode control trigger input readable logic input	load on-off remote shut-down control input for ext. control activation operating mode control trigger input readable logic input	load on-off remote shut-down control input for ext. control activation operating mode control trigger input readable logic input regulation speed	load on-off remote shut-down control input for ext. control activation operating mode control trigger input readable logic input regulation speed
Digital outputs	overload load on-off trigger output programmable logic output	overload load on-off trigger output programmable logic output	overload load on-off trigger output programmable logic output	overload load on-off trigger output programmable logic output
Digital outputs' voltage levels	3.3 V, 5 V, 12 V, externally programmable up to 24 V	3.3 V, 5 V, 12 V, externally programmable up to 24 V	low 0 ... 0.8 V high: 5 V/24 V selectable max 10 mA (push-pull)	low 0 ... 0.8 V high: 5V/24 V selectable max 10 mA (push-pull)
Permissible potential of GNDs at standard I/O port	max. ±2 V (DC or AC) to Input- max. ±125 V (DC or AC) to PE	max. ±2 V (DC or AC) to Input- max. ±125 V (DC or AC) to PE	max. ±2 V DC to Input- max. ±125 V DC to PE	max. ±2 V DC to Input- max. ±125 V D to PE
Permissible potential of GNDs at isolated I/O port	max. ±800 V (DC or AC) to Input- max. ±125 V (DC or AC) to PE	max. ±800 V (DC or AC) to Input- max. ±125 V (DC or AC) to PE	max. ±800 V DC to Input- max. ±50 V DC to PE	max. ±800 V DC to Input- max. ±50 V DC to PE
Pinning	Pin_Name 1 GNDA 2 IMON 3 LEVEL- 4 PROT C- 5 PROT V- 6 /STAT-ON 7 /STAT-OL 8 /STAT-TRG 9 STAT-PROG 10 PROG-INP 11 /RSD 12 /CNTR 13 GND 14 VMON 15 LEVEL+ 16 PROT C+ 17 PROT V+ 18 /INP-ON 19 MODE 0 20 MODE 1 21 TRG-INP 22 VLOG-12V 23 VLOG-3.3V 24 VLOG-PROG 25 VLOG-EXT		Pin_Name 1 GNDA 2 n.c. 3 10V_LEVEL- 4 5V_LEVEL- 5 /STAT_INP_ON 6 PROT_C+ 7 PROG_IN 8 MODE_CURR 9 /INP_ON 10 SPEED_FAST 11 RSD 12 /TRIG_OUT 13 /STAT_OL 14 VMON 15 IMON 16 10V_LEVEL+ 17 5V_LEVEL+ 18 PROT_C- 19 PROT_V- 20 n.c. 21 PROT_V+ 22 /CTRL_EXT 23 PROG_OUT 24 GND 25 TRIG_IN	
Sense terminals	PH2/7.62-ST16	PH2/7.62-ST16	PH2/7.62-BU16	PH2/7.62-BU16

				
Manufacturer	H&H	H&H	H&H	H&H
Series	PLI	PLIxxxxMR Multirange Variant	HES	HESxxxxMR Multirange Variant
	Production Series B	Production Series B		
Data interfaces				
	USB VCP	USB VCP	USB VCP (faster implementation)	USB VCP (faster implementation)
	RS-232 standard	RS-232	RS-232 / SyncroLink	RS-232 / SyncroLink
	CAN, can be internally terminated	CAN, can be internally terminated	CAN, can be internally terminated	CAN, can be internally terminated
	Ethernet	Ethernet	Ethernet	Ethernet
	GPIO optional	GPIO optional	GPIO optional	GPIO optional
SCPI syntax	yes	yes	yes	yes
LabVIEW drivers	yes, NI certified	yes, NI certified	yes, NI certified	yes, NI certified
Software tools	yes	yes	yes	yes
Firmware update	via USB MSD (front)	via USB MSD (front)	via USB MSD (front)	via USB MSD (front)
Master-Slave operation in system connection	yes	yes	yes	yes
Safety compliance	DIN EN 61010-1 DIN EN 61010-2-030	DIN EN 61010-1 DIN EN 61010-2-030	DIN EN 61010-1:2011-07 DIN EN 61010-2-30:2011-07	DIN EN 61010-1:2011-07 DIN EN 61010-2-30:2011-07
EMC compliance	DIN EN 61326-1 DIN EN 55011 DIN EN 61000-3-2 DIN EN 61000-3-3	DIN EN 61326-1 DIN EN 55011 DIN EN 61000-3-2 DIN EN 61000-3-3	Emission: EN 61326-1 (class B equipment, for use in domestic establishment) Immunity: EN 55011:2011-04 Group 1 Class B (for use in industrial and domestic establishment) DIN EN 61000-3-2:2015-03 DIN EN 61000-3-3:2014-03	Emission: EN 61326-1 (class B equipment, for use in domestic establishment) Immunity: EN 55011:2011-04 Group 1 Class B (for use in industrial and domestic establishment) DIN EN 61000-3-2:2015-03 DIN EN 61000-3-3:2014-03
Front panel color	RAL 7035	RAL 7035	RAL 7035	RAL 7035
Calibration	Free H&H calibration service for new device, another free calibration within warranty period	Free H&H calibration service for new device, another free calibration within warranty period	Free H&H calibration service for new device	Free H&H calibration service for new device

SCPI Commands Use the user manuals to analyze the detailed differences between the PLI and HES series commands/queries. <i>n. a.</i> = not available				
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	PLI	PLI MR Multirange Variant	HES and HES MR	Remark
	Production Series B FW 4.6.x	Production Series B FW 1.3.x	FW 1.0.x	
Common Commands				
	*CLS	*CLS	*CLS	
	*ESE	*ESE	*ESE	
	*ESE?	*ESE?	*ESE?	
	*ESR?	*ESR?	*ESR?	
	*IDN?	*IDN?	*IDN?	
	*OPC	*OPC	*OPC	
	*OPC?	*OPC?	*OPC?	
	*OPT?	*OPT?	*OPT?	
	*RCL	*RCL	*RCL	
	*RST	*RST	*RST	
	*SAV	*SAV	*SAV	
	*SRE	*SRE	*SRE	
	*SRE?	*SRE?	*SRE?	
	*STB?	*STB?	*STB?	
	*TRG	*TRG	*TRG	
	*TST?	*TST?	*TST?	
	*WAI	*WAI	*WAI	
Device-dependent Commands				
Subsystem ACQuisition				
	ACQuisition[:STATe]	ACQuisition[:STATe]	ACQuisition[:STATe]	
	ACQuisition[:STATe]?	ACQuisition[:STATe]?	ACQuisition[:STATe]?	
	ACQuisition:STIme	ACQuisition:STIme	ACQuisition:STIme	
	ACQuisition:STIme?	ACQuisition:STIme?	ACQuisition:STIme?	
	ACQuisition:TRIGger	ACQuisition:TRIGger	ACQuisition:TRIGger	
	ACQuisition:TRIGger?	ACQuisition:TRIGger?	ACQuisition:TRIGger?	
Subsystem CURRent				
	CURRent[:LEVel][:IMMediate]	CURRent[:LEVel][:IMMediate]	CURRent[:LEVel][:IMMediate]	
	CURRent[:LEVel][:IMMediate]?	CURRent[:LEVel][:IMMediate]?	CURRent[:LEVel][:IMMediate]?	
	<i>n. a.</i>	CURRent[:LEVel]:RANGe?	CURRent[:LEVel]:RANGe?	
	CURRent[:LEVel]:TRIGgered	CURRent[:LEVel]:TRIGgered	CURRent[:LEVel]:TRIGgered	
	CURRent[:LEVel]:TRIGgered?	CURRent[:LEVel]:TRIGgered?	CURRent[:LEVel]:TRIGgered?	
	CURRent:PROTection[:LEVel]	CURRent:PROTection[:LEVel]	CURRent:PROTection[:LEVel]	
	CURRent:PROTection[:LEVel]?	CURRent:PROTection[:LEVel]?	CURRent:PROTection[:LEVel]?	
	<i>n. a.</i>	CURRent:PROTection:RANGe?	CURRent:PROTection:RANGe?	
Subsystem DATA				
	DATA:DELeTe	DATA:DELeTe	DATA:DELeTe	
	DATA:LAST?	DATA:LAST?	DATA:LAST?	
	DATA:POINts?	DATA:POINts?	DATA:POINts?	
	DATA:REMOve?	DATA:REMOve?	DATA:REMOve?	
Subsystem DISPlay				
	DISPlay:TEXT[:DATA]	DISPlay:TEXT[:DATA]	DISPlay:TEXT[:DATA]	
	DISPlay:TEXT[:DATA]?	DISPlay:TEXT[:DATA]?	DISPlay:TEXT[:DATA]?	
Subsystem FORMat				
	FORMat[:DATA]	FORMat[:DATA]	FORMat[:DATA]	
	FORMat[:DATA]?	FORMat[:DATA]?	FORMat[:DATA]?	
	FORMat:BORDer	FORMat:BORDer	FORMat:BORDer	
	FORMat:BORDer?	FORMat:BORDer?	FORMat:BORDer?	
	FORMat:SREGister	FORMat:SREGister	FORMat:SREGister	
	FORMat:SREGister?	FORMat:SREGister?	FORMat:SREGister?	
Subsystem FUNCTION				
	FUNCTION:DISChargE[:STATe]	FUNCTION:DISChargE[:STATe]	FUNCTION:DISChargE[:STATe]	
	FUNCTION:DISChargE[:STATe]?	FUNCTION:DISChargE[:STATe]?	FUNCTION:DISChargE[:STATe]?	
	FUNCTION:DISChargE:CHARGe?	FUNCTION:DISChargE:CHARGe?	FUNCTION:DISChargE:CHARGe?	
	FUNCTION:DISChargE:ENERgy?	FUNCTION:DISChargE:ENERgy?	FUNCTION:DISChargE:ENERgy?	
	FUNCTION:DISChargE:STOP:CHARGe	FUNCTION:DISChargE:STOP:CHARGe	FUNCTION:DISChargE:STOP:CHARGe	
	FUNCTION:DISChargE:STOP:CHARGe?	FUNCTION:DISChargE:STOP:CHARGe?	FUNCTION:DISChargE:STOP:CHARGe?	
	FUNCTION:DISChargE:STOP:CURRent	FUNCTION:DISChargE:STOP:CURRent	FUNCTION:DISChargE:STOP:CURRent	
	FUNCTION:DISChargE:STOP:CURRent?	FUNCTION:DISChargE:STOP:CURRent?	FUNCTION:DISChargE:STOP:CURRent?	
	FUNCTION:DISChargE:STOP:ENABle	FUNCTION:DISChargE:STOP:ENABle	FUNCTION:DISChargE:STOP:ENABle	
	FUNCTION:DISChargE:STOP:ENABle?	FUNCTION:DISChargE:STOP:ENABle?	FUNCTION:DISChargE:STOP:ENABle?	
	FUNCTION:DISChargE:STOP:ENERgy	FUNCTION:DISChargE:STOP:ENERgy	FUNCTION:DISChargE:STOP:ENERgy	
	FUNCTION:DISChargE:STOP:ENERgy?	FUNCTION:DISChargE:STOP:ENERgy?	FUNCTION:DISChargE:STOP:ENERgy?	
	FUNCTION:DISChargE:STOP:EVENT?	FUNCTION:DISChargE:STOP:EVENT?	FUNCTION:DISChargE:STOP:EVENT?	
	FUNCTION:DISChargE:STOP:TIME	FUNCTION:DISChargE:STOP:TIME	FUNCTION:DISChargE:STOP:TIME	
	FUNCTION:DISChargE:STOP:TIME?	FUNCTION:DISChargE:STOP:TIME?	FUNCTION:DISChargE:STOP:TIME?	
	FUNCTION:DISChargE:STOP:VOLTage	FUNCTION:DISChargE:STOP:VOLTage	FUNCTION:DISChargE:STOP:VOLTage	
	FUNCTION:DISChargE:STOP:VOLTage?	FUNCTION:DISChargE:STOP:VOLTage?	FUNCTION:DISChargE:STOP:VOLTage?	
	FUNCTION:DISChargE:TIME?	FUNCTION:DISChargE:TIME?	FUNCTION:DISChargE:TIME?	
	FUNCTION:MEASure:IReSistance[:STATe]	FUNCTION:MEASure:IReSistance[:STATe]	FUNCTION:MEASure:IReSistance[:STATe]	
	FUNCTION:MEASure:IReSistance[:STATe]?	FUNCTION:MEASure:IReSistance[:STATe]?	FUNCTION:MEASure:IReSistance[:STATe]?	
	FUNCTION:MEASure:IReSistance:CURRent[:LEVel]	FUNCTION:MEASure:IReSistance:CURRent[:LEVel]	FUNCTION:MEASure:IReSistance:CURRent[:LEVel]	
	FUNCTION:MEASure:IReSistance:CURRent[:LEVel]?	FUNCTION:MEASure:IReSistance:CURRent[:LEVel]?	FUNCTION:MEASure:IReSistance:CURRent[:LEVel]?	
	FUNCTION:MEASure:IReSistance:DWELL	FUNCTION:MEASure:IReSistance:DWELL	FUNCTION:MEASure:IReSistance:DWELL	
	FUNCTION:MEASure:IReSistance:DWELL?	FUNCTION:MEASure:IReSistance:DWELL?	FUNCTION:MEASure:IReSistance:DWELL?	
	FUNCTION:MEASure:IReSistance:RESistance?	FUNCTION:MEASure:IReSistance:RESistance?	FUNCTION:MEASure:IReSistance:RESistance?	
	FUNCTION:MEASure:IReSistance:TIME?	FUNCTION:MEASure:IReSistance:TIME?	FUNCTION:MEASure:IReSistance:TIME?	
	FUNCTION:MODE	FUNCTION:MODE	FUNCTION:MODE	
	<i>n. a.</i>	<i>n. a.</i>	FUNCTION:MODulate[:STATe]	
	<i>n. a.</i>	<i>n. a.</i>	FUNCTION:MODulate[:STATe]?	
	<i>n. a.</i>	<i>n. a.</i>	FUNCTION:MODulate:MODE	
	<i>n. a.</i>	<i>n. a.</i>	FUNCTION:MODulate:MODE?	
	<i>n. a.</i>	<i>n. a.</i>	FUNCTION:MODulate:WAVEform:AMPLitude	
	<i>n. a.</i>	<i>n. a.</i>	FUNCTION:MODulate:WAVEform:AMPLitude?	
	<i>n. a.</i>	<i>n. a.</i>	FUNCTION:MODulate:WAVEform:FREqency	
	<i>n. a.</i>	<i>n. a.</i>	FUNCTION:MODulate:WAVEform:FREqency?	
	<i>n. a.</i>	<i>n. a.</i>	FUNCTION:MODulate:WAVEform:TYPE	
	<i>n. a.</i>	<i>n. a.</i>	FUNCTION:MODulate:WAVEform:TYPE?	

	PLI	PLI MR Multirange Variant	HES and HES MR	Remark
	Production Series B FW 4.6.x	Production Series B FW 1.3.x	FW 1.0.x	
	FUNCTION:MPPT[:STATe]	FUNCTION:MPPT[:STATe]	FUNCTION:MPPT[:STATe]	
	FUNCTION:MPPT[:STATe]?	FUNCTION:MPPT[:STATe]?	FUNCTION:MPPT[:STATe]?	
	FUNCTION:MPPT:ENERgy?	FUNCTION:MPPT:ENERgy?	FUNCTION:MPPT:ENERgy?	
	FUNCTION:MPPT:MPP?	FUNCTION:MPPT:MPP?	FUNCTION:MPPT:MPP?	
	FUNCTION:MPPT:SWEEP[:IMMEDIATE]	FUNCTION:MPPT:SWEEP[:IMMEDIATE]	FUNCTION:MPPT:SWEEP[:IMMEDIATE]	
	FUNCTION:MPPT:SWEEP:DATA?	FUNCTION:MPPT:SWEEP:DATA?	FUNCTION:MPPT:SWEEP:DATA?	
	FUNCTION:MPPT:SWEEP:DATA:POINTS?	FUNCTION:MPPT:SWEEP:DATA:POINTS?	FUNCTION:MPPT:SWEEP:DATA:POINTS?	
	FUNCTION:MPPT:SWEEP:DIRectIon	FUNCTION:MPPT:SWEEP:DIRectIon	FUNCTION:MPPT:SWEEP:DIRectIon	
	FUNCTION:MPPT:SWEEP:DIRectIon?	FUNCTION:MPPT:SWEEP:DIRectIon?	FUNCTION:MPPT:SWEEP:DIRectIon?	
	FUNCTION:MPPT:SWEEP:PERiod	FUNCTION:MPPT:SWEEP:PERiod	FUNCTION:MPPT:SWEEP:PERiod	
	FUNCTION:MPPT:SWEEP:PERiod?	FUNCTION:MPPT:SWEEP:PERiod?	FUNCTION:MPPT:SWEEP:PERiod?	
	FUNCTION:MPPT:SWEEP:TIME	FUNCTION:MPPT:SWEEP:TIME	FUNCTION:MPPT:SWEEP:TIME	
	FUNCTION:MPPT:SWEEP:TIME?	FUNCTION:MPPT:SWEEP:TIME?	FUNCTION:MPPT:SWEEP:TIME?	
	FUNCTION:MPPT:TIME?	FUNCTION:MPPT:TIME?	FUNCTION:MPPT:TIME?	
	FUNCTION:SPEed	FUNCTION:SPEed	FUNCTION:SPEed	
	FUNCTION:SPEed?	FUNCTION:SPEed?	FUNCTION:SPEed?	
	FUNCTION:ZVOLTage[:ENABLE]	FUNCTION:ZVOLTage[:ENABLE]	FUNCTION:ZVOLTage[:ENABLE]	
	FUNCTION:ZVOLTage[:ENABLE]?	FUNCTION:ZVOLTage[:ENABLE]?	FUNCTION:ZVOLTage[:ENABLE]?	
Subsystem INPUT				
	INPUT[:STATe]	INPUT[:STATe]	INPUT[:STATe]	
	INPUT[:STATe]?	INPUT[:STATe]?	INPUT[:STATe]?	
	INPUT[:STATe]:TRIGgered	INPUT[:STATe]:TRIGgered	INPUT[:STATe]:TRIGgered	
	INPUT[:STATe]:TRIGgered?	INPUT[:STATe]:TRIGgered?	INPUT[:STATe]:TRIGgered?	
	INPUT:WDOG[:STATe]	INPUT:WDOG[:STATe]	INPUT:WDOG[:STATe]	
	INPUT:WDOG[:STATe]?	INPUT:WDOG[:STATe]?	INPUT:WDOG[:STATe]?	
	INPUT:WDOG:DELay	INPUT:WDOG:DELay	INPUT:WDOG:DELay	
	INPUT:WDOG:DELay?	INPUT:WDOG:DELay?	INPUT:WDOG:DELay?	
	INPUT:WDOG:RESet	INPUT:WDOG:RESet	INPUT:WDOG:RESet	
Subsystem LIST				
	LIST[:STATe]	LIST[:STATe]	LIST[:STATe]	
	LIST[:STATe]?	LIST[:STATe]?	LIST[:STATe]?	
	LIST:ACQuisition[:ENABLE]	LIST:ACQuisition[:ENABLE]	LIST:ACQuisition[:ENABLE]	
	LIST:ACQuisition[:ENABLE]?	LIST:ACQuisition[:ENABLE]?	LIST:ACQuisition[:ENABLE]?	
	LIST:COUnT	LIST:COUnT	LIST:COUnT	
	LIST:COUnT?	LIST:COUnT?	LIST:COUnT?	
	LIST:CURRent[:LEVeL]	LIST:CURRent[:LEVeL]	LIST:CURRent[:LEVeL]	
	LIST:CURRent[:LEVeL]?	LIST:CURRent[:LEVeL]?	LIST:CURRent[:LEVeL]?	
	LIST:CURRent[:LEVeL]:POInTs?	LIST:CURRent[:LEVeL]:POInTs?	LIST:CURRent[:LEVeL]:POInTs?	
	LIST:DWELl	LIST:DWELl	LIST:DWELl	
	LIST:DWELl?	LIST:DWELl?	LIST:DWELl?	
	LIST:DWELl:POInTs?	LIST:DWELl:POInTs?	LIST:DWELl:POInTs?	
	LIST:MODE	LIST:MODE	LIST:MODE	
	LIST:MODE?	LIST:MODE?	LIST:MODE?	
	LIST:POInTs?	LIST:POInTs?	LIST:POInTs?	
	LIST:POWer[:LEVeL]	LIST:POWer[:LEVeL]	LIST:POWer[:LEVeL]	
	LIST:POWer[:LEVeL]?	LIST:POWer[:LEVeL]?	LIST:POWer[:LEVeL]?	
	LIST:POWer[:LEVeL]:POInTs?	LIST:POWer[:LEVeL]:POInTs?	LIST:POWer[:LEVeL]:POInTs?	
	LIST:RESistance[:LEVeL]	LIST:RESistance[:LEVeL]	LIST:RESistance[:LEVeL]	
	LIST:RESistance[:LEVeL]?	LIST:RESistance[:LEVeL]?	LIST:RESistance[:LEVeL]?	
	LIST:RESistance[:LEVeL]:POInTs?	LIST:RESistance[:LEVeL]:POInTs?	LIST:RESistance[:LEVeL]:POInTs?	
	LIST:RTIME	LIST:RTIME	LIST:RTIME	
	LIST:RTIME?	LIST:RTIME?	LIST:RTIME?	
	LIST:RTIME:POInTs?	LIST:RTIME:POInTs?	LIST:RTIME:POInTs?	
	LIST:STIME:DWELl	LIST:STIME:DWELl	LIST:STIME:DWELl	
	LIST:STIME:DWELl?	LIST:STIME:DWELl?	LIST:STIME:DWELl?	
	LIST:STIME:DWELl:POInTs?	LIST:STIME:DWELl:POInTs?	LIST:STIME:DWELl:POInTs?	
	LIST:STIME:RTIME	LIST:STIME:RTIME	LIST:STIME:RTIME	
	LIST:STIME:RTIME?	LIST:STIME:RTIME?	LIST:STIME:RTIME?	
	LIST:STIME:RTIME:POInTs?	LIST:STIME:RTIME:POInTs?	LIST:STIME:RTIME:POInTs?	
	LIST:TIME?	LIST:TIME?	LIST:TIME?	
	LIST:TRIGger[:ENABLE]	LIST:TRIGger[:ENABLE]	LIST:TRIGger[:ENABLE]	
	LIST:VOLTage[:LEVeL]	LIST:VOLTage[:LEVeL]	LIST:VOLTage[:LEVeL]	
	LIST:VOLTage[:LEVeL]?	LIST:VOLTage[:LEVeL]?	LIST:VOLTage[:LEVeL]?	
	LIST:VOLTage[:LEVeL]:POInTs?	LIST:VOLTage[:LEVeL]:POInTs?	LIST:VOLTage[:LEVeL]:POInTs?	
Subsystem MEASure				
	MEASure:CURRent? [SLOW FAST]	MEASure:CURRent? [SLOW FAST]	MEASure:CURRent? [SLOW FAST]	
	MEASure:POWer? [SLOW FAST]	MEASure:POWer? [SLOW FAST]	MEASure:POWer? [SLOW FAST]	
	MEASure:RESistance? [SLOW FAST]	MEASure:RESistance? [SLOW FAST]	MEASure:RESistance? [SLOW FAST]	
	MEASure:TEMPerature?	MEASure:TEMPerature?	MEASure:TEMPerature? [PSTage CPU]	
	MEASure:VOLTage? [SLOW FAST]	MEASure:VOLTage? [SLOW FAST]	MEASure:VOLTage? [SLOW FAST]	
	MEASure:VOLTage:EXternal?	MEASure:VOLTage:EXternal?	MEASure:VOLTage:EXternal?	
	n. a.	n. a.	MEASure:VOLTage:FET?	
Subsystem PORT				
	PORT:IO:IPIN?	PORT:IO:IPIN?	PORT:IO:IPIN?	
	PORT:IO:OPIN	PORT:IO:OPIN	PORT:IO:OPIN	
	PORT:IO:OPIN?	PORT:IO:OPIN?	PORT:IO:OPIN?	
Subsystem POWer				
	POWer[:LEVeL][:IMMEDIATE]	POWer[:LEVeL][:IMMEDIATE]	POWer[:LEVeL][:IMMEDIATE]	
	POWer[:LEVeL][:IMMEDIATE]?	POWer[:LEVeL][:IMMEDIATE]?	POWer[:LEVeL][:IMMEDIATE]?	
	POWer[:LEVeL]:TRIGgered	POWer[:LEVeL]:TRIGgered	POWer[:LEVeL]:TRIGgered	
	POWer[:LEVeL]:TRIGgered?	POWer[:LEVeL]:TRIGgered?	POWer[:LEVeL]:TRIGgered?	
	POWer:PEAK?	POWer:PEAK?	POWer:PEAK?	
	POWer:RANGe?	POWer:RANGe?	POWer:RANGe?	
Subsystem RANGe				
	n. a.	RANGe	RANGe x[1]	second parameter 1 corrects all settings during range change
	n. a.	RANGe?	RANGe?	
Subsystem RECTangle				
	n. a.	n. a.	RECTangle[:STATe]	
	n. a.	n. a.	RECTangle[:STATe]?	
	n. a.	n. a.	RECTangle:CURRent[:LEVeL]	
	n. a.	n. a.	RECTangle:CURRent[:LEVeL]?	
	n. a.	n. a.	RECTangle:DWELl	
	n. a.	n. a.	RECTangle:DWELl?	
	n. a.	n. a.	RECTangle:MODE	
	n. a.	n. a.	RECTangle:MODE?	

	PLI	PLI MR Multirange Variant	HES and HES MR	Remark
	Production Series B FW 4.6.x	Production Series B FW 1.3.x	FW 1.0.x	
	n. a.	n. a.	RECTangle:RESistance[:LEVEL]	
	n. a.	n. a.	RECTangle:RESistance[:LEVEL]?	
	n. a.	n. a.	RECTangle:VOLTage[:LEVEL]	
	n. a.	n. a.	RECTangle:VOLTage[:LEVEL]?	
Subsystem RESistance				
	RESistance[:LEVEL][:IMMediate]	RESistance[:LEVEL][:IMMediate]	RESistance[:LEVEL][:IMMediate]	
	RESistance[:LEVEL][:IMMediate]?	RESistance[:LEVEL][:IMMediate]?	RESistance[:LEVEL][:IMMediate]?	
	RESistance[:LEVEL]:TRIGgered	RESistance[:LEVEL]:TRIGgered	RESistance[:LEVEL]:TRIGgered	
	RESistance[:LEVEL]:TRIGgered?	RESistance[:LEVEL]:TRIGgered?	RESistance[:LEVEL]:TRIGgered?	
	n. a.	RESistance:RANGe?	RESistance:RANGe?	
Subsystem SERVICE				
	SERVICE:CALibration[:STATe]	SERVICE:CALibration[:STATe]	SERVICE:CALibration[:STATe]	
	SERVICE:CALibration[:STATe]?	SERVICE:CALibration[:STATe]?	SERVICE:CALibration[:STATe]?	
	SERVICE:CALibration:EXTErnal:HIGH	SERVICE:CALibration:EXTErnal:HIGH	SERVICE:CALibration:EXTErnal[:REFerence]:HIGH	
	SERVICE:CALibration:EXTErnal:LOW	SERVICE:CALibration:EXTErnal:LOW	SERVICE:CALibration:EXTErnal[:REFerence]:LOW	
	SERVICE:CALibration:LEVeL:HIGH	SERVICE:CALibration:LEVeL:HIGH	SERVICE:CALibration:LEVeL[:REFerence]:HIGH	
	SERVICE:CALibration:LEVeL:LOW	SERVICE:CALibration:LEVeL:LOW	SERVICE:CALibration:LEVeL[:REFerence]:LOW	
	n. a.	n. a.	SERVICE:CALibration:LEVeL:SElect	
	SERVICE:CALibration:MEASure:HIGH	SERVICE:CALibration:MEASure:HIGH	SERVICE:CALibration:MEASure[:REFerence]:HIGH	
	SERVICE:CALibration:MEASure:LOW	SERVICE:CALibration:MEASure:LOW	SERVICE:CALibration:MEASure[:REFerence]:LOW	
	SERVICE:CALibration:PROTEction:HIGH	SERVICE:CALibration:PROTEction:HIGH	SERVICE:CALibration:PROTEction[:REFerence]:HIGH	
	SERVICE:CALibration:PROTEction:LOW	SERVICE:CALibration:PROTEction:LOW	SERVICE:CALibration:PROTEction[:REFerence]:LOW	
	SERVICE[:PARAmeter]:STRing	SERVICE[:PARAmeter]:STRing	SERVICE[:PARAmeter]:STRing	
	SERVICE[:PARAmeter]:STRing?	SERVICE[:PARAmeter]:STRing?	SERVICE[:PARAmeter]:STRing?	
	SERVICE[:PARAmeter]:VALue	SERVICE[:PARAmeter]:VALue	SERVICE[:PARAmeter]:VALue	
	SERVICE[:PARAmeter]:VALue?	SERVICE[:PARAmeter]:VALue?	SERVICE[:PARAmeter]:VALue?	
	SERVICE:PRODUction[:STATe]	SERVICE:PRODUction[:STATe]	SERVICE:PRODUction[:STATe]	
	SERVICE:PRODUction[:STATe]?	SERVICE:PRODUction[:STATe]?	SERVICE:PRODUction[:STATe]?	
Subsystem SETTING				
	SETTING:EXTErnal[:STATe]	SETTING:EXTErnal[:STATe]	SETTING:EXTErnal[:STATe]	
	SETTING:EXTErnal[:STATe]?	SETTING:EXTErnal[:STATe]?	SETTING:EXTErnal[:STATe]?	
	SETTING:EXTErnal:ENABle	SETTING:EXTErnal:ENABle	SETTING:EXTErnal:ENABle	
	SETTING:EXTErnal:ENABle?	SETTING:EXTErnal:ENABle?	SETTING:EXTErnal:ENABle?	
Subsystem STATUS				
	STATUS:OPERation[:EVENT]?	STATUS:OPERation[:EVENT]?	STATUS:OPERation[:EVENT]?	
	STATUS:OPERation:CONDition?	STATUS:OPERation:CONDition?	STATUS:OPERation:CONDition?	
	STATUS:OPERation:ENABle	STATUS:OPERation:ENABle	STATUS:OPERation:ENABle	
	STATUS:OPERation:ENABle?	STATUS:OPERation:ENABle?	STATUS:OPERation:ENABle?	
	STATUS:PRESet	STATUS:PRESet	STATUS:PRESet	
	STATUS:QUEStionable[:EVENT]?	STATUS:QUEStionable[:EVENT]?	STATUS:QUEStionable[:EVENT]?	
	STATUS:QUEStionable:CONDition?	STATUS:QUEStionable:CONDition?	STATUS:QUEStionable:CONDition?	
	STATUS:QUEStionable:ENABle	STATUS:QUEStionable:ENABle	STATUS:QUEStionable:ENABle	
	STATUS:QUEStionable:ENABle?	STATUS:QUEStionable:ENABle?	STATUS:QUEStionable:ENABle?	
	n. a.	n. a.	STATUS:QUEStionable:TEMPerature:EVENT?	
	n. a.	n. a.	STATUS:QUEStionable:TEMPerature:CONDition?	
	n. a.	n. a.	STATUS:QUEStionable:TEMPerature:ENABle	
	n. a.	n. a.	STATUS:QUEStionable:TEMPerature:ENABle?	
Subsystem SYSTEM				
	SYSTEM:BEEP	SYSTEM:BEEP	SYSTEM:BEEP	
	SYSTEM:COMMUnicate:CAN:ADDReSS	SYSTEM:COMMUnicate:CAN:ADDReSS	SYSTEM:COMMUnicate:CAN:ADDReSS	
	SYSTEM:COMMUnicate:CAN:ADDReSS?	SYSTEM:COMMUnicate:CAN:ADDReSS?	SYSTEM:COMMUnicate:CAN:ADDReSS?	
	SYSTEM:COMMUnicate:CAN:BAUD	SYSTEM:COMMUnicate:CAN:BAUD	SYSTEM:COMMUnicate:CAN:BAUD	
	SYSTEM:COMMUnicate:CAN:BAUD?	SYSTEM:COMMUnicate:CAN:BAUD?	SYSTEM:COMMUnicate:CAN:BAUD?	
	SYSTEM:COMMUnicate:CAN:TERMination	SYSTEM:COMMUnicate:CAN:TERMination	SYSTEM:COMMUnicate:CAN:TERMination	
	SYSTEM:COMMUnicate:CAN:TERMination?	SYSTEM:COMMUnicate:CAN:TERMination?	SYSTEM:COMMUnicate:CAN:TERMination?	
	SYSTEM:COMMUnicate:GPIB:ADDReSS	SYSTEM:COMMUnicate:GPIB:ADDReSS	SYSTEM:COMMUnicate:GPIB:ADDReSS	
	SYSTEM:COMMUnicate:GPIB:ADDReSS?	SYSTEM:COMMUnicate:GPIB:ADDReSS?	SYSTEM:COMMUnicate:GPIB:ADDReSS?	
	SYSTEM:COMMUnicate:LAN:DHCP[:STATe]	SYSTEM:COMMUnicate:LAN:DHCP[:STATe]	SYSTEM:COMMUnicate:LAN:DHCP[:STATe]	
	SYSTEM:COMMUnicate:LAN:DHCP[:STATe]?	SYSTEM:COMMUnicate:LAN:DHCP[:STATe]?	SYSTEM:COMMUnicate:LAN:DHCP[:STATe]?	
	SYSTEM:COMMUnicate:LAN:DNS[:ADDReSS]	SYSTEM:COMMUnicate:LAN:DNS[:ADDReSS]	SYSTEM:COMMUnicate:LAN:DNS[:ADDReSS]	
	SYSTEM:COMMUnicate:LAN:DNS[:ADDReSS]?	SYSTEM:COMMUnicate:LAN:DNS[:ADDReSS]?	SYSTEM:COMMUnicate:LAN:DNS[:ADDReSS]?	
	SYSTEM:COMMUnicate:LAN:GATeway[:ADDReSS]	SYSTEM:COMMUnicate:LAN:GATeway[:ADDReSS]	SYSTEM:COMMUnicate:LAN:GATeway[:ADDReSS]	
	SYSTEM:COMMUnicate:LAN:GATeway[:ADDReSS]?	SYSTEM:COMMUnicate:LAN:GATeway[:ADDReSS]?	SYSTEM:COMMUnicate:LAN:GATeway[:ADDReSS]?	
	SYSTEM:COMMUnicate:LAN:HOSTName?	SYSTEM:COMMUnicate:LAN:HOSTName?	SYSTEM:COMMUnicate:LAN:HOSTName?	
	SYSTEM:COMMUnicate:LAN:IP[:ADDReSS]	SYSTEM:COMMUnicate:LAN:IP[:ADDReSS]	SYSTEM:COMMUnicate:LAN:IP[:ADDReSS]	
	SYSTEM:COMMUnicate:LAN:IP[:ADDReSS]?	SYSTEM:COMMUnicate:LAN:IP[:ADDReSS]?	SYSTEM:COMMUnicate:LAN:IP[:ADDReSS]?	
	SYSTEM:COMMUnicate:LAN:MAC[:ADDReSS]?	SYSTEM:COMMUnicate:LAN:MAC[:ADDReSS]?	SYSTEM:COMMUnicate:LAN:MAC[:ADDReSS]?	
	SYSTEM:COMMUnicate:LAN:PORT	SYSTEM:COMMUnicate:LAN:PORT	SYSTEM:COMMUnicate:LAN:PORT	
	SYSTEM:COMMUnicate:LAN:PORT?	SYSTEM:COMMUnicate:LAN:PORT?	SYSTEM:COMMUnicate:LAN:PORT?	
	SYSTEM:COMMUnicate:LAN:SUBNet[:MASK]	SYSTEM:COMMUnicate:LAN:SUBNet[:MASK]	SYSTEM:COMMUnicate:LAN:SUBNet[:MASK]	
	SYSTEM:COMMUnicate:LAN:SUBNet[:MASK]?	SYSTEM:COMMUnicate:LAN:SUBNet[:MASK]?	SYSTEM:COMMUnicate:LAN:SUBNet[:MASK]?	
	SYSTEM:COMMUnicate:SERIal:BAUD	SYSTEM:COMMUnicate:SERIal:BAUD	SYSTEM:COMMUnicate:SERIal:BAUD	
	SYSTEM:COMMUnicate:SERIal:BAUD?	SYSTEM:COMMUnicate:SERIal:BAUD?	SYSTEM:COMMUnicate:SERIal:BAUD?	
	SYSTEM:COMMUnicate:SERIal:BITS?	SYSTEM:COMMUnicate:SERIal:BITS?	SYSTEM:COMMUnicate:SERIal:BITS?	
	SYSTEM:COMMUnicate:SERIal:MODE	SYSTEM:COMMUnicate:SERIal:MODE	SYSTEM:COMMUnicate:SERIal:MODE	
	SYSTEM:COMMUnicate:SERIal:MODE?	SYSTEM:COMMUnicate:SERIal:MODE?	SYSTEM:COMMUnicate:SERIal:MODE?	
	SYSTEM:COMMUnicate:SERIal:PARity	SYSTEM:COMMUnicate:SERIal:PARity	SYSTEM:COMMUnicate:SERIal:PARity	
	SYSTEM:COMMUnicate:SERIal:PARity?	SYSTEM:COMMUnicate:SERIal:PARity?	SYSTEM:COMMUnicate:SERIal:PARity?	
	SYSTEM:COMMUnicate:SERIal:SBITS	SYSTEM:COMMUnicate:SERIal:SBITS	SYSTEM:COMMUnicate:SERIal:SBITS	
	SYSTEM:COMMUnicate:SERIal:SBITS?	SYSTEM:COMMUnicate:SERIal:SBITS?	SYSTEM:COMMUnicate:SERIal:SBITS?	
	SYSTEM:COMMUnicate:VCP:BAUD	SYSTEM:COMMUnicate:VCP:BAUD	n. a.	
	SYSTEM:COMMUnicate:VCP:BAUD?	SYSTEM:COMMUnicate:VCP:BAUD?	n. a.	
	SYSTEM:COMMUnicate:VCP:BITS?	SYSTEM:COMMUnicate:VCP:BITS?	n. a.	
	SYSTEM:COMMUnicate:VCP:PARity	SYSTEM:COMMUnicate:VCP:PARity	n. a.	
	SYSTEM:COMMUnicate:VCP:PARity?	SYSTEM:COMMUnicate:VCP:PARity?	n. a.	
	SYSTEM:COMMUnicate:VCP:SBITS	SYSTEM:COMMUnicate:VCP:SBITS	n. a.	
	SYSTEM:COMMUnicate:VCP:SBITS?	SYSTEM:COMMUnicate:VCP:SBITS?	n. a.	
	SYSTEM:COOLing[:MODE]	SYSTEM:COOLing[:MODE]	SYSTEM:COOLing[:MODE]	
	SYSTEM:COOLing[:MODE]?	SYSTEM:COOLing[:MODE]?	SYSTEM:COOLing[:MODE]?	
	SYSTEM:DATE	SYSTEM:DATE	SYSTEM:DATE	
	SYSTEM:DATE?	SYSTEM:DATE?	SYSTEM:DATE?	
	SYSTEM:ERRor[:NEXT]?	SYSTEM:ERRor[:NEXT]?	SYSTEM:ERRor[:NEXT]?	
	SYSTEM:ERRor:ALL?	SYSTEM:ERRor:ALL?	SYSTEM:ERRor:ALL?	
	SYSTEM:ERRor:COUNt?	SYSTEM:ERRor:COUNt?	SYSTEM:ERRor:COUNt?	
	SYSTEM:HELP:HEADers?	SYSTEM:HELP:HEADers?	SYSTEM:HELP:HEADers?	
	SYSTEM:KLOCK	SYSTEM:KLOCK	SYSTEM:KLOCK	
	SYSTEM:KLOCK?	SYSTEM:KLOCK?	SYSTEM:KLOCK?	

	PLI	PLI MR Multirange Variant	HES and HES MR	Remark
	Production Series B FW 4.6.x	Production Series B FW 1.3.x	FW 1.0.x	
	SYSTem:LOCaI	SYSTem:LOCaI	SYSTem:LOCaI	
	SYSTem:PRESet	SYSTem:PRESet	SYSTem:PRESet	
	SYSTem:REMOte	SYSTem:REMOte	SYSTem:REMOte	
	SYSTem:SLINK[:STAT]	SYSTem:SLINK[:STAT]	SYSTem:SLINK[:STAT]	
	SYSTem:SLINK[:STAT]?	SYSTem:SLINK[:STAT]?	SYSTem:SLINK[:STAT]?	
	SYSTem:TIME	SYSTem:TIME	SYSTem:TIME	
	SYSTem:TIME?	SYSTem:TIME?	SYSTem:TIME?	
	SYSTem:UNIT:CATalog?	SYSTem:UNIT:CATalog?	SYSTem:UNIT:CATalog?	
	SYSTem:UNIT:COUnT?	SYSTem:UNIT:COUnT?	SYSTem:UNIT:COUnT?	
	SYSTem:UNIT:MODE	SYSTem:UNIT:MODE	SYSTem:UNIT:MODE	
	SYSTem:UNIT:MODE?	SYSTem:UNIT:MODE?	SYSTem:UNIT:MODE?	
	SYSTem:UNIT:SLAVE:ADDReSS	SYSTem:UNIT:SLAVE:ADDReSS	SYSTem:UNIT:SLAVE:ADDReSS	
	SYSTem:UNIT:SLAVE:ADDReSS?	SYSTem:UNIT:SLAVE:ADDReSS?	SYSTem:UNIT:SLAVE:ADDReSS?	
	SYSTem:VERSIon?	SYSTem:VERSIon?	SYSTem:VERSIon?	
Subsystem TRIGger				
	ABORt	ABORt	ABORt	
	INITiate[:IMMediate]	INITiate[:IMMediate]	INITiate[:IMMediate]	
	INITiate:CONTInuous	INITiate:CONTInuous	INITiate:CONTInuous	
	INITiate:CONTInuous?	INITiate:CONTInuous?	INITiate:CONTInuous?	
	TRIGger[:SEQuence][:IMMediate]	TRIGger[:SEQuence][:IMMediate]	TRIGger[:IMMediate]	
	TRIGger[:SEQuence]:DELay	TRIGger[:SEQuence]:DELay	TRIGger:DELay	
	TRIGger[:SEQuence]:DELay?	TRIGger[:SEQuence]:DELay?	TRIGger:DELay?	
	TRIGger[:SEQuence]:HOLDoff	TRIGger[:SEQuence]:HOLDoff	TRIGger:HOLDoff	
	TRIGger[:SEQuence]:HOLDoff?	TRIGger[:SEQuence]:HOLDoff?	TRIGger:HOLDoff?	
	TRIGger[:SEQuence]:LEVel:CURRent	TRIGger[:SEQuence]:LEVel:CURRent	TRIGger:LEVel:CURRent	
	TRIGger[:SEQuence]:LEVel:CURRent?	TRIGger[:SEQuence]:LEVel:CURRent?	TRIGger:LEVel:CURRent?	
	TRIGger[:SEQuence]:LEVel:VOLTag	TRIGger[:SEQuence]:LEVel:VOLTag	TRIGger:LEVel:VOLTag	
	TRIGger[:SEQuence]:LEVel:VOLTag?	TRIGger[:SEQuence]:LEVel:VOLTag?	TRIGger:LEVel:VOLTag?	
	TRIGger[:SEQuence]:SLOPe	TRIGger[:SEQuence]:SLOPe	TRIGger:SLOPe	
	TRIGger[:SEQuence]:SLOPe?	TRIGger[:SEQuence]:SLOPe?	TRIGger:SLOPe?	
	TRIGger[:SEQuence]:SOURce	TRIGger[:SEQuence]:SOURce	TRIGger:SOURce	
	TRIGger[:SEQuence]:SOURce?	TRIGger[:SEQuence]:SOURce?	TRIGger:SOURce?	
Subsystem VOLTag				
	VOLTag[:LEVel][:IMMediate]	VOLTag[:LEVel][:IMMediate]	VOLTag[:LEVel][:IMMediate]	
	VOLTag[:LEVel][:IMMediate]?	VOLTag[:LEVel][:IMMediate]?	VOLTag[:LEVel][:IMMediate]?	
	VOLTag[:LEVel]:TRIGgered	VOLTag[:LEVel]:TRIGgered	VOLTag[:LEVel]:TRIGgered	
	VOLTag[:LEVel]:TRIGgered?	VOLTag[:LEVel]:TRIGgered?	VOLTag[:LEVel]:TRIGgered?	
	VOLTag:PROTection[:LEVel]	VOLTag:PROTection[:LEVel]	VOLTag:PROTection[:LEVel]	
	VOLTag:PROTection[:LEVel]?	VOLTag:PROTection[:LEVel]?	VOLTag:PROTection[:LEVel]?	
	VOLTag:PROTection:REGulation[:STATe]	VOLTag:PROTection:REGulation[:STATe]	VOLTag:PROTection:REGulation[:STATe]	
	VOLTag:PROTection:REGulation[:STATe]?	VOLTag:PROTection:REGulation[:STATe]?	VOLTag:PROTection:REGulation[:STATe]?	