Korad KAxxxxP series

From sigrok

The **Korad KAxxxxP** series are 1 channel switch-mode programmable power supplies with both USB/serial and RS232 connectivity.

The devices are also sold as rebranded versions by e.g. Velleman, Tenma/Farnell, Stamos, or RND.

Korad KAxxxxP	
	
Status	supported
Source code	korad-kaxxxxp (http://sigrok.org/gitweb/?p=libsigrok.git;a=tree;f=src/hardware/korad-kaxxxxp)
Channels	1
Voltage/current (CH1)	various
Connectivity	USB/serial, RS232
Features	programmable presets, over voltage protection, over current protection, output on/off
Website	koradtechnology.com (http://koradtechnology.com/en/cp3-1.html)

Devices

Device	OEM/Rebranded	Voltage range	Current range	Power
Korad KA3003P (http://koradtechnology.com/en/cp-10.html)	Tenma 72-2535 (http://uk.farnell.com/tenma/72-2535/power-supply-1ch-30v-3a-prog/dp/2445411)	0-30 V	0-3 A	90 W
Korad KA3005P	Velleman PS3005D, Velleman LABPS3005D, Tenma 72-2540 (http://uk.farnell.com/tenma/72-2540/power-supply-1ch-30v-5a-prog/dp/2445412), RND 320-KA3005P (https://www.distrelec.de/en/bench-top-power-supply-30-programmable-rnd-lab-rnd-320-ka3005p/p/30061864)	0-30 V	0-5 A	150 W
Korad KD3005P (http://www.koradtechnology.com/product/16.html)	—	0-30 V	0-5 A	150 W
Korad KA3010P (http://koradtechnology.com/en/cp-12.html)	—	0-30 V	0-10 A	300 W
Korad KA6002P (http://koradtechnology.com/en/cp-13.html)	Tenma 72-2545 (http://uk.farnell.com/tenma/72-2545/power-supply-1ch-60v-2a-prog/dp/2445413)	0-60 V	0-2 A	120 W
Korad KA6003P (http://koradtechnology.com/en/cp-14.html)	Tenma 72-2550 (http://uk.farnell.com/tenma/72-2550/power-supply-1ch-60v-3a-prog/dp/2445414)	0-60 V	0-3 A	180 W
Korad KA6005P (http://koradtechnology.com/en/cp-15.html)	—	0-60 V	0-5 A	300 W
Korad KD6005P (http://www.koradtechnology.com/product/16.html)	—	0-60 V	0-5 A	300 W
Stamos S-LS-31 (http://www.stamos-welding.com/mains-adapter-s-ls-31)	—	0-30 V	0-5 A	250 W

Note: The libsigrok korad-kaxxxxp (http://sigrok.org/gitweb/?p=libsigrok.git;a=tree;f=src/hardware/korad-kaxxxxp) driver needs to know about the device's ID (the response to the ***IDN?** command, see below). If you have a device which is not yet listed in the driver, please let us know.

Protocol

The protocol is serial (actual RS232 and serial-over-USB is supported by the devices), 9600/8N1, (almost fully) ASCII based. No line termination, CRC or checksum characters are used. The PC sends a request string which the power supply then responds to.

During a PC connection, the front control buttons and the scrollwheel are blocked.

Request	Example output	Remarks
*IDN?	KORADKA3005PV2.0	Request identification from device. See also the full list of recognized IDs in libsigrok (https://sigrok.org/gitweb/?p=libsigrok.git;a=blob;f=src/hardware/korad-kaxxxxp/api.c) in the models[] array.
STATUS?	(byte)	Request the actual status. The output is a single byte with the actual status encoded in bits. At least the Velleman PS3005D V2.0 is a bit buggy here. The only reliable bits are: 0x40 (Output mode: 1:on, 0:off), 0x20 (OVP and/or OCP mode: 1:on, 0:off) and 0x01 (CV/CC mode: 1:CV, 0:CC).
VSET1?	12.34	Request the voltage as set by the user.
VSET1:12.34	(none)	Set the maximum output voltage.
VOUT1?	12.34	Request the actual voltage output.
ISET1?	0.125	Request the current as set by the user. See notes below for a firmware bug related to this command.
ISET1:0.125	(none)	Set the maximum output current.
IOUT1?	0.125	Request the actual output current.
OUT1	(none)	Enable the power output.
OUT0	(none)	Disable the power output.
OVP1	(none)	Enable the "Over Voltage Protection", the PS will switch off the output when the voltage rises above the actual level.
OVP0	(none)	Disable the "Over Voltage Protection".
OCP1	(none)	Enable the "Over Current Protection", the PS will switch off the output when the current rises above the actual level.
OCP0	(none)	Disable the "Over Current Protection".
TRACK0	(none)	Set multichannel mode, 0 independent, 1 series, 2 parallel (from Velleman protocol v1.3 documentation).
RCL1	(none)	Recalls voltage and current limits from memory, 1 to 5 (from Velleman protocol v2.0 documentation).
SAV1	(none)	Saves voltage and current limits to memory, 1 to 5 (from Velleman protocol v2.0 documentation).

Remarks:

1. The digit 1 in the V... and I... requests indicates the values are meant for channel one. In future (or "higher"?) models this may be two for a second channel and so on.
2. Voltage ("00.00" to "31.00" V) and current ("0.000" to "5.100" A) output values have a fixed length with fixed dot position. The values won't become negative.
3. ISET1? replies with a sixth byte on many models (all?) which is the sixth character from *IDN? reply if *IDN? was queried before (during same power cycle). This byte is read and discarded by sigrok. As reported by Jordi Castells / kxtells (https://github.com/kxtells/tenma-serial/issues/2) this behaviour seems to happen only on protocol version 2.0, but not in 2.1.

Resources

- Korad digital control DC power supplies (KAxxxxD) (http://koradtechnology.com/en/cp2-1.html)
- Korad programmable DC power supplies (KAxxxxP) (http://koradtechnology.com/en/cp3-1.html)
- Korad digital control DC electronic loads (http://koradtechnology.com/en/cp4-1.html)
- Korad programmable DC electronic loads (http://koradtechnology.com/en/cp5-1.html)
- Korad encoder control DC power supplies (KDxxxxP) (http://koradtechnology.com/en/Products.html)