

PDU Communications as of firmware release 2.5.1

RS232 Asynchronous Serial

Baud rate is configurable
Framing is N/8/1
Each frame is:
 Sync byte (0xFF)
 Frame id byte (0..10)
 8 Data bytes
 Checksum byte (mod 256 sum of sync byte through last data byte)

CAN

Baud rate is configurable
Identifiers selectable as 11-bit or 29-bit (single system-wide setting)
Transmitted status frames:
 8 data bytes
 sequential identifiers from a configurable start identifier (default 0x700)
Received soft-input frames
 8 data bytes
 sequential identifiers from a configurable start identifier (default 0x710)
Received fault-reset frame
 0 data bytes
 configurable identifier (default 0x720)

Transmitted Status Frames

These frames are sent simultaneously and idenitcally on RS232 and CAN

Frames are sent at a configurable rate (default 100Hz)

The transmit frame sequence is 0 1 2 3 4 5 6 7 8 9 10

Frame 0	0xFF	0	HARD>	>>>>>	>>>>>	>>>>>	SOFT>	>>>>>	>>>>>	>>>>>	CHECKSUM
Frame 1	0xFF	1	OUT1	OUT2	OUT3	OUT4	OUT5	OUT6	OUT7	OUT8	CHECKSUM
Frame 2	0xFF	2	OUT9	OUT10	OUT11	OUT12	OUT13	OUT14	OUT15	OUT16	CHECKSUM
Frame 3	0xFF	3	OUT17	OUT18	OUT19	OUT20	OUT21	OUT22	OUT23	OUT24	CHECKSUM
Frame 4	0xFF	4	OUT25	OUT26	OUT27	OUT28	OUT29	OUT30	OUT31	OUT32	CHECKSUM
Frame 5	0xFF	5	CUR1	CUR2	CUR3	CUR4	CUR5	CUR6	CUR7	CUR8	CHECKSUM
Frame 6	0xFF	6	CUR9	CUR10	CUR11	CUR12	CUR13	CUR14	CUR15	CUR16	CHECKSUM
Frame 7	0xFF	7	CUR17	CUR18	CUR19	CUR20	CUR21	CUR22	CUR23	CUR24	CHECKSUM
Frame 8	0xFF	8	CUR25	CUR26	CUR27	CUR28	CUR29	CUR30	CUR31	CUR32	CHECKSUM
Frame 9	0xFF	9	BT>>>	>>>>>	VBAT>	>>>>>	TIME>	>>>>>	>>>>>	>>>>>	CHECKSUM
Frame 10	0xFF	10	AN1V	AN2V	AN3V	AN4V	SP1	SP2	SP3	SP4	CHECKSUM

16-bit and 32-bit quantities are high byte first

Channel	Type	Quantity
HARD	U32	Hard Input States (MSB is input 32, LSB is input 1)
SOFT	U32	Soft Input States (MSB is input 32, LSB is input 1)
OUT1..32	U8	Output State (0=OFF 1=ON 2=INRUSH 100=SHORT 101=HIGHTRIP 102=INRUSHTRIP 103=LOWTRIP)
CUR1..32	U8	Output Current (divide by 2 to get amps)
BT	S16	Board Temperature (divide by 10 to get degrees C)
VBAT	U16	Supply Voltage (in mV)
TIME	U32	On time (divide by 100 to get seconds)
ANxV	U8	Input Voltage (divide by 5 to get volts)

Soft Input Frames

The instruction byte for soft input x appears in byte $((x-1) \bmod 8)$ of frame identifier $\text{base} + ((x-1)/8)$. The byte is considered as signed; zero means turn the soft input off, a positive value means turn the soft input on, and a negative value means no change.

Fault Reset Frame

Receipt of any valid frame with the correct identifier is considered identical to a suitable duration short-to-ground of the fault reset input pin.