

Datasheet SCS3000
HW-Revision: B
Document Version: 1.1
DESCRIPTION

The SCS3000 is a slow control system, which can be equipped with 8 slot cards. The slots are compatible with the SCS2000/SCS2001 slot cards.

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	Value			Unit
			Min	Typ	Max	
Power Supply Input (24V Input)						
V_{DD}	Supply Voltage		18	24	30	V
V_{DDRev}	Maximum Reverse Voltage ⁵⁾		31			V
I_{DD}	Supply current	@ 24V, No Cards Equipped		140		mA
I_{Draw}	Current draw	¹⁾			5	A
Power Supply Output 24V						
V_{Out}	Output Voltage			$V_{DD}-0,3$		V
V_{Pin}	Pin Voltage ⁶⁾		-0,3		31	V
I_{Out}	Output Current	¹⁾			5	A
Power Supply Output 5V						
V_{Out}	Output Voltage		4,75	5	5,25	V
V_{Pin}	Pin Voltage ⁶⁾		-0,3		5,25	V
I_{Lim}	Output Current Limit	^{1) 7)}	0,675	0,75	0,825	A
Slot Power Supply						
I_{3V3}	3.3V Supply Current (total or per slot)				0,3	A
I_{5V}	5V Supply Current Per Slot	⁷⁾			1	A
I_{24V}	24V Supply Current Per Slot	¹⁾			4	A
V_{Ext}	External (Output) Slot Voltage				500	VDC
I_{Ext}	External (Output) Slot Current	¹⁾			4	A
Voltage Reference						
V_{Ref}	Reference Voltage	Factory Calibrated ²⁾	2,49988	2,5	2,50012	V
TCV_{Ref}	Temperature Coefficient ³⁾			0,5	1	ppm/°C
$\frac{\Delta V_{Ref}}{\Delta I_{Ref}}$	Load Regulation ³⁾	$I_{out} < \pm 15mA$		1	6	ppm/mA
e_n	Output Voltage Noise ³⁾	0.1Hz < f < 10Hz		1,5		μV_{pp}
		10Hz < f < 1kHz		1,3	2,8	$\mu VRMS$

Symbol	Parameter	Condition	Value			Unit
			Min	Typ	Max	
Battery						
V _{Bat}	Battery voltage		1,65	3	3,6	V
BAT _{Life}	Lifetime ⁴⁾	Power Off, 1% Selfdischarge/Year		12		Years
External Bus						
V _{Bus}	External Bus Input Voltage ⁶⁾		-0,3		5,25	V
R _{Out}	Output Resistance			200		Ω
V _{OL}	Output Low Voltage	No Load		0		V
V _{OH}	Output high voltage	No Load		3,3		V
MSCB / RS485 Interface ⁸⁾						
	Data Rate				500	kbps
V _{iso}	Max. working Isolation voltage	Continious Operation			600	VDC
V _{In}	Input Voltage		-7		12	VDC
V _{TH}	Diff. Input Threshold Voltage ⁶⁾	-7V < V _{CM} < +12V	-200	-125	-30	mV

1) The maximum supply current of 5A on the 24V supply must in sum not exceed

2) Factory calibradion done with Keithley 2001 7 ½ Digit Multimeter, 2 years accuracy

3) Values according datasheet

4) Based on characterization

5) The power input is reverse protected. Exceeding the maximum reverse voltage will trigger the input overvoltage protection an blow the input fuse

6) exceeding the maximum or minimum voltage, will trigger the over voltage protection

7) Total 5V supply current must not exceed 1A

8) Inputs are open and short circuit fail-safe

TIMING SPECIFICATIONS

Symbol	Parameter	Condition	Value			Unit
			Min	Typ	Max	
T _{cycle}	System Cycle Time (Loop Time)			8		ms
T _{Boot}	System Boot Time				8	ms
	External Watchdog Timeout ⁹⁾		16.45	23.98	31.80	ms
	Internal Watchdog Timeout ⁹⁾			2 * T _{cycle}		ms
	Reset Timeout ⁹⁾		611	891	1181	μs
RTC _{Tol}	RTC Tolerance	Synced with NTP-Server		<1		s

9) Guaranteed by desing, not tested in production

GENERAL SPECIFICATIONS

Symbol	Parameter	Condition	Value			Unit
			Min	Typ	Max	
T _A	Ambient Temperature		-40		50	°C
F _D	Display Update Frequency			75		Hz
	Program Verification Rate			30		1/s
T _U	Upgrade Time	Tested With FW Version 1.0		6		s
	Ethernet Speed		Autonegotiation 10Mbit / 100Mbit			

CONFIGURATION**GENERAL CONFIGURATION (SW4)**

Pos	SW-On-State	SW-Off-State
1	Beeper off	Beeper on
2	not used	not used
3	not used	not used
4	not used	not used
5	not used	not used
6	not used	not used

External Watchdog Configuration (SW2)

	Pos 0	Pos 1
Enabled	OFF	OFF
Disabled	ON	ON

Remark: For downloading software via JTAG or while debugging, the external watchdog must be disabled!

HARDWARE COMPATIBILITY WITH SCS2000 / SCS2001

Due to the ethernet functionality and therefore the additional required backplane pins, the SCS3000 **backplane connector is not compatible** with its predecessor. But the compatibility of the slot cards with older versions is guaranteed. The **old submaster** box should **not be used** in conjunction with the SCS3000. Please use the submaster functionality of the SCS3000.

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