



Product Information

SRF-FAN

CompactPCI[®] Serial Board Mount Fan Unit

Document No. 8784 • 2 August 2018



General

The SRF-FAN is a CompactPCI® Serial peripheral card, equipped with an 80x80x25mm long life fan, positioned for lateral airflow.

Developed for demanding applications, the SRF-FAN can be inserted into the adjacent backplane slot e.g. of a CPU card or GPU board, in order to improve the overall heat dissipation.

The provided fan has been chosen for extreme expected life (180,000h @60°C) and high airflow. It can be operated either permanently at maximum airflow, or pulse width modulated, controlled via I2C.

The fan is mounted to the PCB by special brackets for variable height positioning, thus minimizing the SRF-FAN board profile, and allowing optimized cooling of the targeted components.

The SRF-FAN is scalable with respect to the maximum forced airflow, and for this purpose available with three different fans, from 1 to 2m³/min. The on-board PWM controller allows flexible configuration via the backplane I2C. The fan can be operated between 25-100% duty cycle, and its speed is permanently monitored, suitable also for critical applications.



Feature Summary

General

- ▶ Single Size Eurocard 3U, 100x160mm²
- ▶ Front panel width 4HP/8HP (total card space required will exceed 4HP with 25mm fan)
- ▶ CompactPCI® Serial peripheral slot backplane connector P1 (+12V, I2C)

Fan

- ▶ Long life, high airflow, aluminium frame
- ▶ Dimensions 80mm x 80mm x 25mm
- ▶ Rated voltage 12V, PWM input, tachometer output
- ▶ Operating temperature -20°C to +70°C
- ▶ Expected life (L10) 180,000h @60°C
- ▶ PWM duty cycle 25% to 100%
- ▶ Three fan models available (1.03/1.54/2.07m³/min maximum airflow)
- ▶ Fan mounting adjustable (variable depth/height below/between/above PCB)
- ▶ Normal airflow direction from right to left side (board front view)
- ▶ Fan can be reverse mounted for airflow direction from left to right
- ▶ Custom specific fans 12V 80x80mm (height variable) on request

Special Features

- ▶ On-board PWM controller ON Semi NCT7491
- ▶ Integrated temperature sensor, overtemperature detection
- ▶ Tachometer monitoring
- ▶ PWM automatic fan speed control
- ▶ Option I2C control via backplane by CPU board
- ▶ Front panel LEDs for status control

Feature Summary

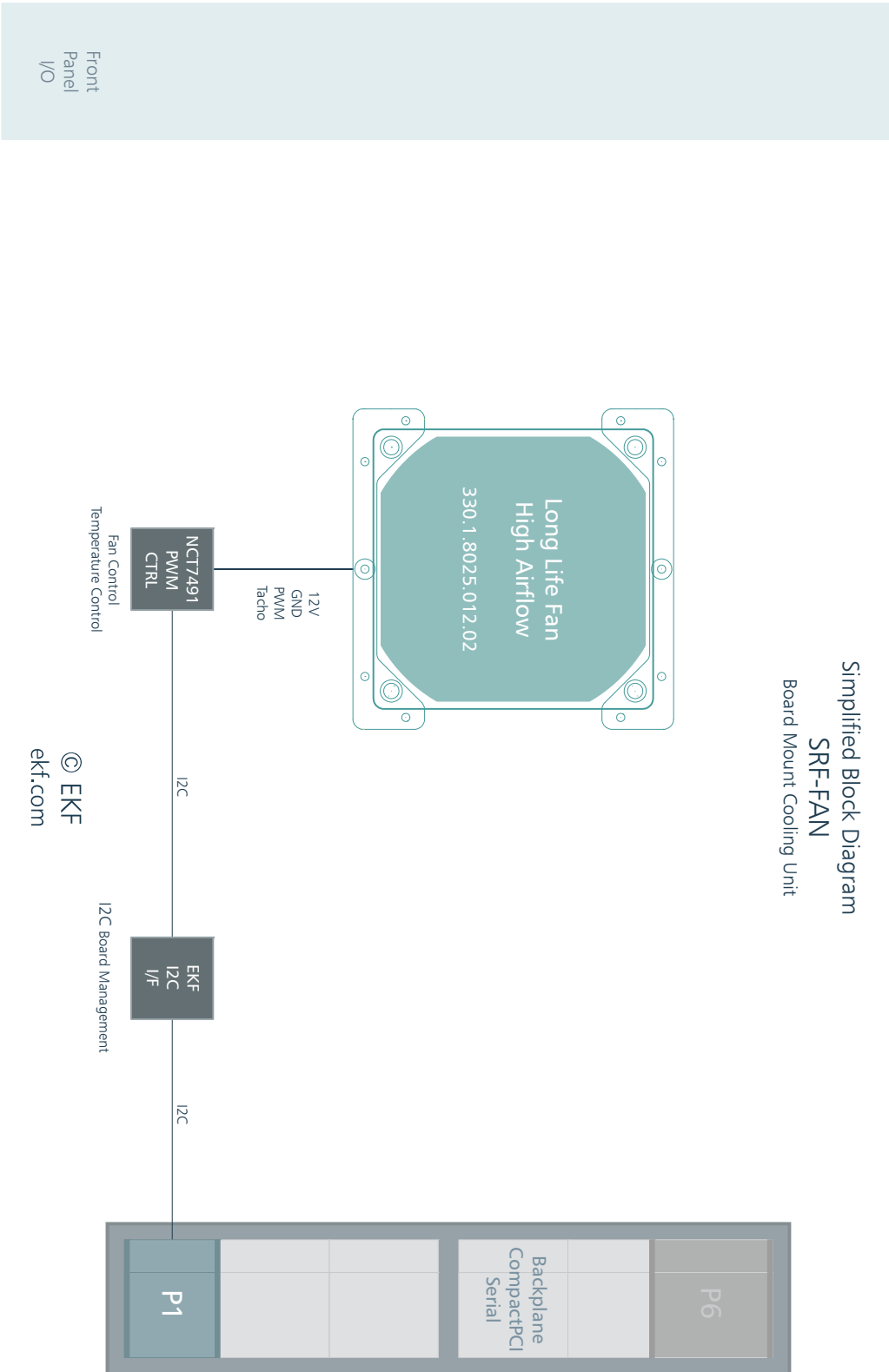
Applications

- ▶ Selective hot spot prevention
- ▶ System reliability enhancement
- ▶ Heat dissipation improvement of adjacent high power cards e.g. CPU/GPU/FPGA
- ▶ Upgrade of existing systems with respect to rugged environment

Regulatory

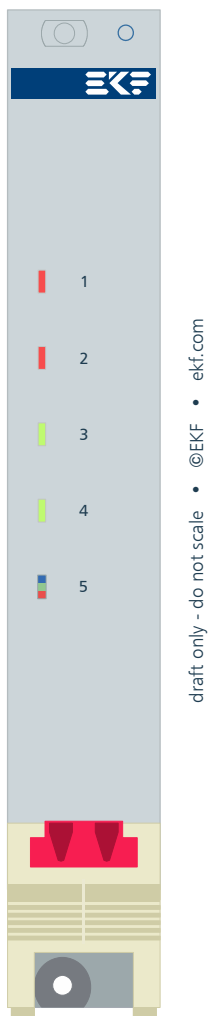
- ▶ Long term availability
- ▶ Designed & manufactured in Germany
- ▶ ISO 9001 certified quality management
- ▶ Rugged solution (coating, sealing, underfilling on request)
- ▶ RoHS compliant
- ▶ Operating temperature -20°C to +70°C
- ▶ Storage temperature -40°C to +85°C
- ▶ Humidity 5% ... 95% RH non condensing
- ▶ Altitude -300m ... +3000m
- ▶ Shock 15g 0.33ms, 6g 6ms
- ▶ Vibration 1g 5-2000Hz
- ▶ MTBF 86.9 years
- ▶ EC Regulations EN55022, EN55024, EN60950-1 (UL60950-1/IEC60950-1)

Block Diagram



Simplified Block Diagram
SRF-FAN
Board Mount Cooling Unit

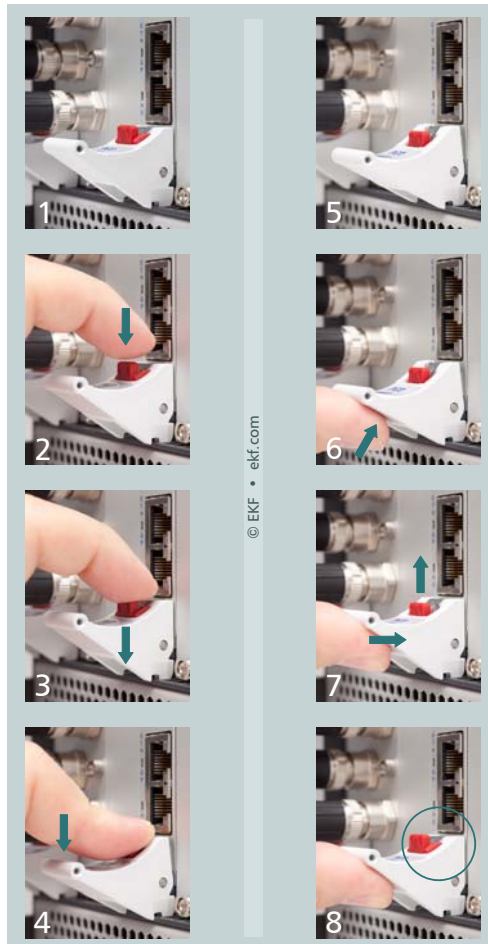
Front Panel



SRF-FAN

LED Indicators	
1	Fan inoperative alert
2	Overtemperature detected
3	Fan +12V power good
4	PWM controller active
5	Fan speed (PWM duty cycle) bicolor indicator blue/red

Please note: The front handle is provided with a built-in microswitch, which is used to disable the on-board power circuit when released. Vice versa, the *on-board devices are enabled not before the handle gets locked*. Please refer to the illustration below and make sure that the eject lever has reached its final position for proper board operation, as shown in picture 8. A gentle click should be audible, when the red actuator pin moves into its raised position, indicating that the board is locked and ready for use.



1 - 4: remove board

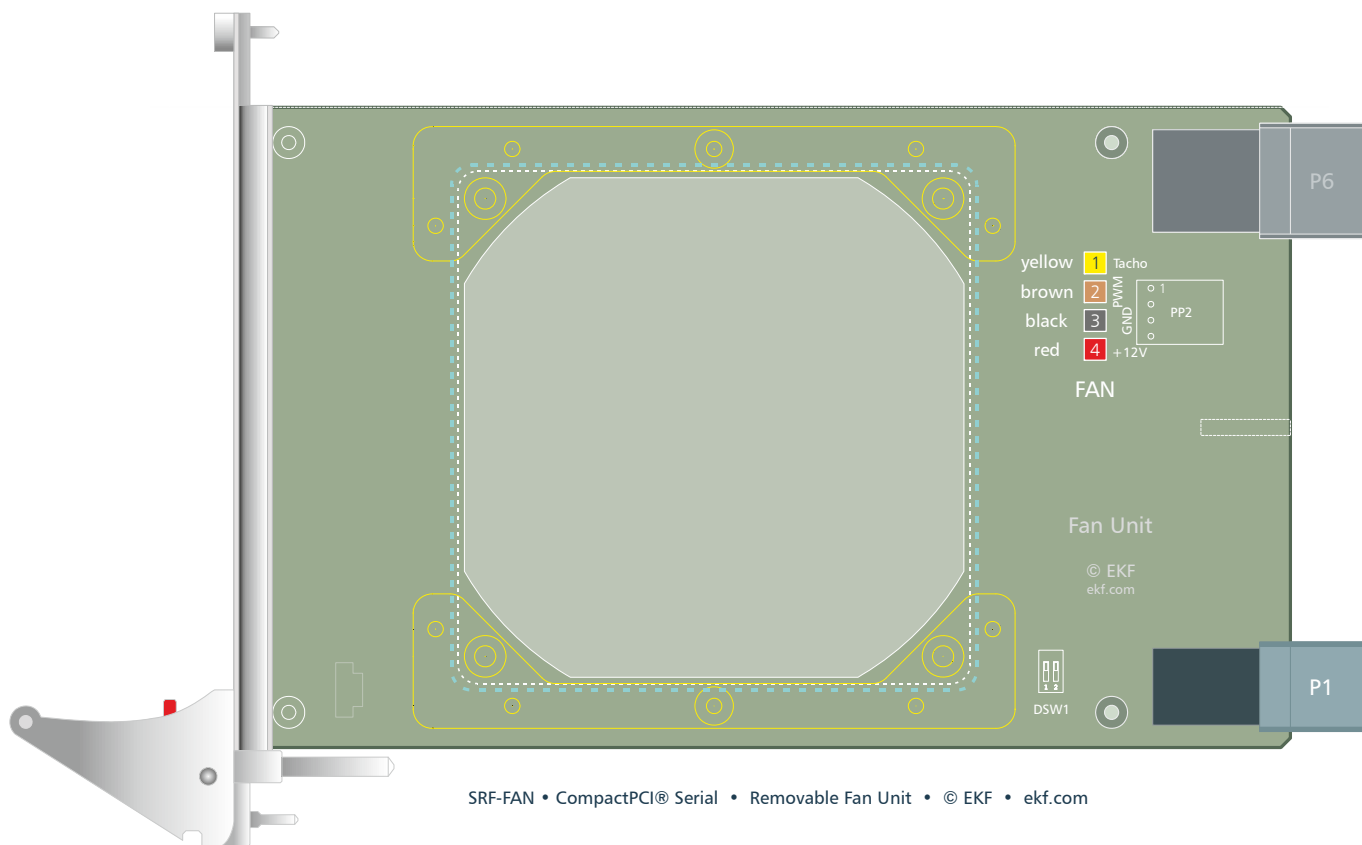
5 - 8: install board

1 & 8: on-board power enabled

2-7: on-board power disabled

The handle microswitch function is only available, when the board is 12V powered via the backplane connector P1 (SRF-0100-FAN). If power is supplied by the cable connector PP2 (SRF-0200-FAN), the handle microswitch has no function.

Component Assembly



The four fan wires are directly soldered to associated pads on the SRF-FAN PCB. If a fan has to be exchanged by the customer, be sure to preserve the assignment as illustrated. The fan itself is fixed by two brackets to the PCB. Its height position can be varied and thus optimized by exchanging the spacer elements, and/or swapping the brackets to the opposite PCB side. The airflow direction by default is from right to left (view to the front panel). For left to right airflow the fan must be turned - please specify on order.





SRF-0100-FAN



SRF-0200-FAN

P1 CompactPCI® Serial Backplane Connector

P1 CompactPCI® Serial Peripheral Slot Backplane Connector												
EKF Part #250.3.1206.20.02 • 72 pos. 12x6, 14mm Width												
P1	A	B	C	D	E	F	G	H	I	J	K	L
6	GND	1 <i>PE</i> <i>TX02+</i>	1 <i>PE</i> <i>TX02-</i>	GND	1 <i>PE</i> <i>RX02+</i>	1 <i>PE</i> <i>RX02-</i>	GND	1 <i>PE</i> <i>TX03+</i>	1 <i>PE</i> <i>TX03-</i>	GND	1 <i>PE</i> <i>RX03+</i>	1 <i>PE</i> <i>RX03-</i>
5	1 <i>PE</i> <i>TX00+</i>	1 <i>PE</i> <i>TX00-</i>	GND	1 <i>PE</i> <i>RX00+</i>	1 <i>PE</i> <i>RX00-</i>	GND	1 <i>PE</i> <i>TX01+</i>	1 <i>PE</i> <i>TX01-</i>	GND	1 <i>PE</i> <i>RX01+</i>	1 <i>PE</i> <i>RX01-</i>	GND
4	GND	1_ <i>USB2+</i>	1_ <i>USB2-</i>	GND	<i>PE_CLK</i> <i>IN+</i>	<i>PE_CLK</i> <i>IN-</i>	GND	1 <i>SATA</i> <i>TX+</i>	1 <i>SATA</i> <i>TX-</i>	GND	1 <i>SATA</i> <i>RX+</i>	1 <i>SATA</i> <i>RX-</i>
3	1 <i>USB3</i> <i>TX+</i>	1 <i>USB3</i> <i>TX-</i>	GA0	1 <i>USB3</i> <i>RX+</i>	1 <i>USB3</i> <i>RX-</i>	GA1	<i>SATA</i> <i>SDI</i>	<i>SATA</i> <i>SDO</i>	GA2	<i>SATA</i> <i>SCL</i>	<i>SATA</i> <i>SL</i>	GA3
2	GND	I2C <i>SCL</i>	I2C <i>SDA</i>	GND	<i>RSV</i>	<i>RSV</i>	GND	<i>RST#</i>	<i>WAKE#</i>	GND	<i>PE_</i> <i>EN#</i>	<i>SYS</i> <i>EN#</i>
1	+12V	STBY	GND	+12V	+12V	GND	+12V	+12V	GND	+12V	+12V	GND

pin positions printed white/italic: not connected

For signal descriptions please refer to PICMG CPCI-S.0 R1.0 CompactPCI® Serial Specification

Fan Specifications

Standard Fans 80x80x25mm Available
 Operating Temperature -20°C to +70°C
 Expected Life 180,000h @60°C

Fan Model No.	PWM Duty Cycle %	Rated Current A	Rated Input W	Rated Speed min ⁻¹	Max. Airflow m ³ /min	Max. Pressure Pa	SPL dB(A)
H	100	0.12	1.44	3,700	1.03	44	31
	25	0.04	0.48	1,100	0.30	3.9	13
G	100	0.30	3.60	5,500	1.54	98	43
	25	0.05	0.60	1,400	0.39	6.3	14
J	100	0.6	7.2	7,400	2.07	177	49
	20	0.06	0.72	1,800	0.50	10.4	16


Other fan types on request

Ordering Information

For popular SRF-FAN SKUs please refer to
www.ekf.com/liste/liste_21.html#SRF

External Power Option

For stand-alone use (board not operated in a CompactPCI® Serial backplane slot) the SRF-FAN can be optionally equipped with an AMP EI-Series header (either horizontal or vertical type) for attachment of external auxiliary power +12V. Since this connector type was provided in the past with ATX style power supplies (was frequently in use for floppy disk drives), please remove or cut pins/wires 1 and 2 on the cable connector for such power supplies, in order to avoid +5V and GND present on pins 1/2 which must be left not connected on the SRF-FAN.

PP2 • #264.02.004.02 #264.02.004.03 • EI-Series Header 2.5mm Pitch		
© EKF • ekf.com  264.02.004.03 AMP EI-Series	1	RSVD
	2	RSVD
	3	GND
	4	+12V

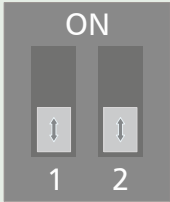
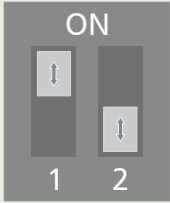
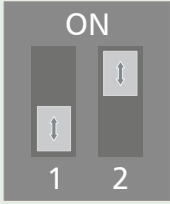
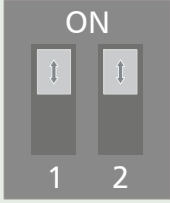
The connector PP2 ist either a TE 171826-4 (horizontal mount) or 171825-4 (vertical type). Please visit the TE (Tyco) website for mating cable connector housings and crimp contacts.



SRF-0200-FAN (AMP Power Connector)

I2C Control

The SRF-FAN can be operated standalone, or controlled via I2C (a backplane connector P1 signal). The on-board DIP-switch DSW1 can be setup by the customer accordingly as shown below:

DSW1 • #160.15.02.0 • 2-Position Switch	
<div style="display: flex; justify-content: space-between;"> <div style="text-align: right;">disable FAN enable</div> <div style="text-align: center;">  </div> <div style="text-align: left;">disable I2C enable</div> </div>	<p>FAN operates permanently at 100% duty cycle (full speed). I2C control is ignored when this switch setting was chosen. This is the factory default setup which results in maximum airflow. If in doubt, chose this setup.</p>
<div style="display: flex; justify-content: space-between;"> <div style="text-align: right;">disable FAN enable</div> <div style="text-align: center;">  </div> <div style="text-align: left;">disable I2C enable</div> </div>	<p>FAN operates in PWM mode controlled by I2C settings. This is the recommended setup for EKF CPU cards with a recent BIOS. Power consumption and noise will be minimized.</p>
<div style="display: flex; justify-content: space-between;"> <div style="text-align: right;">disable FAN enable</div> <div style="text-align: center;">  </div> <div style="text-align: left;">disable I2C enable</div> </div>	<p>FAN operates permanently at 100% duty cycle (full speed). I2C control is ignored when this switch setting was chosen.</p>
<div style="display: flex; justify-content: space-between;"> <div style="text-align: right;">disable FAN enable</div> <div style="text-align: center;">  </div> <div style="text-align: left;">disable I2C enable</div> </div>	<p>FAN operates in standalone PWM mode controlled by the local NCT7491 controller default settings. This is the recommended setup for systems which do not provide suitable I2C support. Power consumption and noise will be reduced.</p>

Please note: As of current I2C control may not be available for any EKF CPU card



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EKF Elektronik GmbH
Philipp-Reis-Str. 4 (Haus 1)
Lilienthalstr. 2 (Haus 2)
59065 HAMM
Germany



Phone +49 (0)2381/6890-0
Fax +49 (0)2381/6890-90
Internet www.ekf.com
E-Mail sales@ekf.com