

ECPU-PLUS

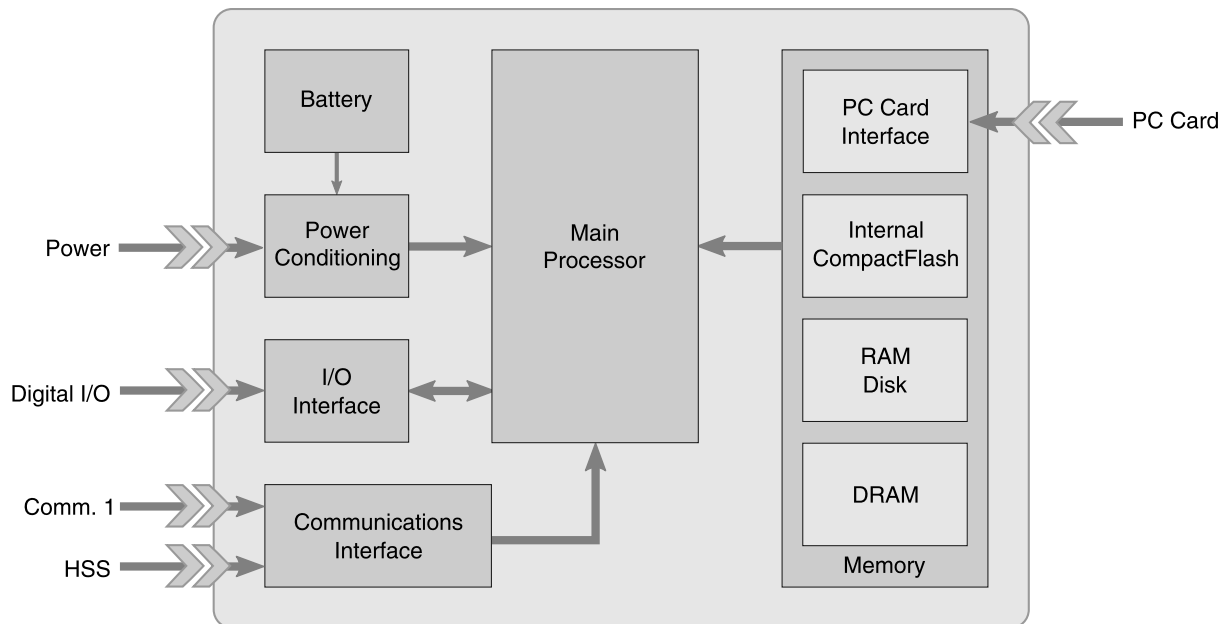
eDAQ Main Processor



Special Features

- 10 to 55 V wide range input power
- Internal backup battery to protect against unplanned power losses or low voltage events
- Ethernet communications with a configurable IP address
- Internal CompactFlash memory (up to 128 GB)
- PC Card slot for additional external memory of 4 GB
- 10 digital inputs/outputs, 8 configurable pulse counters and optional ECOM functionality
- High speed serial (HSS) connection compatible with the Somat eDISPLAY for real-time information

Block diagram



Detailed Description

The Somat ECPU-PLUS Base Processor is the foundation for the eDAQ system, specifically designed for rugged, mobile applications. The input power for the system operates in a wide range, from 10 to 55 volts DC. Connect the power supply through the 15-pin D-sub connector on the back panel. Internal backup batteries protect the eDAQ from unplanned power losses or low voltage events. The ECPU-PLUS also includes replaceable ten-amp, 42-volt rated automotive miniblade fuses.

The ECPU-PLUS communicates through standard 10/100 BASE-T Ethernet communications protocols and hosts its own web server with a configurable IP address. This combination allows the eDAQ to effortlessly communicate wirelessly through WWAN modems, 802.11 devices or point-to-point wireless bridges. The eDAQ also provides the capability for RS232 serial communication. Ethernet, serial and eDAQ to eDAQ networking communication all connects to the eDAQ through the 26-pin high density D-sub connector on the back panel. A high speed serial (HSS) communications port, through a Somat M8 bulkhead connector, in combination with a rugged Somat eDISPLAY LCD display provides realtime channel and test information.

To manage test data, the ECPU-PLUS has the capacity to perform a broad range of on-board data processing. This includes custom computed channels, triggers, gates, boolean expressions and Somat DataModes™. In addition to the standard data acquisition Time History collection, Somat DataModes provides data storage in multiple, easy to manage and analyze formats including Burst History, Time-at-Level, Event Slice, Peak/Valley and Rainflow histograms.

There are three different memory options for an eDAQ system. These include internal CompactFlash (up to 128 GB) and external PCMCIA (4 GB).

Additionally, the ECPU-PLUS contains ten digital I/O channels and eight pulse counter channels through a 44-pin high density D-sub connector on the back panel. Optionally, all the ECPU-PLUS functionality can be integrated with the Somat ECOM layer in the ECPU-PLUS-COM, providing three dedicated CAN network interfaces, one vehicle bus module interface and a GPS communications port all through Somat M8 bulkhead connectors.

Ordering Options

Order No.	Description
1-ECPU-PLUS-2	eDAQ Plus Base Processor Includes: (1) 1-SAC-EPWR15-2 Power Cable, (1) 1-SAC-ESR9/XO-2 Communications Cable and (1) 1-SAC-EDIO-2 Digital I/O Transducer Cable 1-SAC-TRAN-MP-2-2 cables.
1-ECPU-PLUS-COM-2	eDAQ Plus Base Processor with ECOM Layer Includes: (1) 1-SAC-EPWR15-2 Power Cable, (1) 1-SAC-ESR9/XO-2 Communications Cable, (1) 1-SAC-EDIO-2 Digital I/O Transducer Cable and (4) 1-SAC-TRAN-MP-2-2 Transducer Cables Refer to the ECOM data sheet for more information

Memory (Order Separately)

Order No.	Description
1-4096MBFLASH-2	4 GB PCMCIA memory for eDAQ systems (for use in external memory slot)
1-CF32GB-INT-2	32 GB CompactFlash memory for eDAQ systems (internal only)
1-CF64GB-INT-2	64 GB CompactFlash memory for eDAQ systems (internal only)
1-CF128GB-INT-2	128 GB CompactFlash memory for eDAQ systems (internal only)

Accessories (Order Separately)

Order No.	Description
1-E-DISPLAY-2	Rugged LCD display for eDAQ systems
1-E-AC/15-2	AC power supply for eDAQ systems

Cables (Order Separately)

Order No.	Description
1-SAC-EPWR15-2	Power Cable with a 15-pin D-Sub and tinned pigtail wires for main and remote power connections.
1-SAC-EDIO-2	Digital Input/Output Transducer Cable with a 44-pin high-density D-Sub connector and tinned pigtail wires for ECPU-PLUS digital I/O transducer wiring.
1-SAC-ESR9/XO-2	Communications Cable with a crossover RJ-45 connector for direct Ethernet connection to the support PC, a 26-pin D-Sub connector and a 9-pin D-Sub serial connector.
1-E-ETHERNET X/O-2	Communications Cable with a crossover RJ-45 connector for direct connection to the support PC and a 26-pin D-Sub connector.
1-SAC-ESYNCADAPT-2	Networking Adapter Cable with a 26-pin D-Sub connector, a RJ-45 hub connector and (2) female LEMO connectors for sync connections.
1-ESYNCADAPT-SC-2	Networking Cable with a 26-pin D-Sub connector, a RJ-45 hub connector, (2) female LEMO connectors for sync connections and a 9-pin D-Sub serial connector.
1-SAC-ESYNCCABLE-2	Networking Sync Cable with (2) male LEMO connectors for sync connections.
1-SAC-ESYNCTERM-2	Networking Termination Connector with a male LEMO connector for terminating a networking sync connection.

Specifications

Parameter	Units	Value
Layer dimensions	-	-
width	cm	23.0
length	cm	27.6
height	cm	6.6
Layer weight	kg	3.78
Temperature range	°C	-20 ... 65
Relative humidity range, non-condensing	%	0 ... 90
Power supply input range	V _{DC}	10 ... 55
Power consumption ¹	-	-
no PC Card	W	3.45
with PC Card	W	3.49
Data acquisition sample rates	-	-
minimum	Hz	0.1
maximum (100-kHz MSR)	kHz	100
maximum (98.3-kHz MSR)	kHz	98.304
Digital Inputs		
Steady-state input voltage (V _{in}) limits	-	-
minimum	%	-0.3
maximum	%	5.5
Transient input voltage (V _{in}) limits	-	-
minimum	%	-0.3
maximum	%	5.5
Input current per input channel	-	-
all inputs high	µA	110
input low (V _{in} ≤ 2.7 V)	µA	110
input high (V _{in} > 2.7 V) ²	mA	V _{in} /20
Threshold voltage	-	-
upper threshold (V _{th, upper})	V	2.1
lower threshold (V _{th, lower})	V	0.5
Hysteresis voltage	-	-
minimum	V	0.7
maximum	V	1.4
Pulse Counters		
Pulse rate mode	-	-
maximum input frequency	MHz	1
maximum counts per sample period	counts	>4 billion
Pulse time period mode	-	-
resolution	nsec	200
accuracy	%	±0.01
minimum input frequency	Hz	0.0012

¹ Power consumption measurements include the efficiency of the power supply.

² The low inputs must be able to sink the high inputs.

Specifications (Continued)

Parameter	Units	Value
Digital Outputs		
Logic 0 provided current sink to ground (at 100 mA)	-	-
maximum	V	1.1
typical	V	0.9
Maximum allowable output current sink (single output) ¹	mA	400
Logic 1 output voltage (with no pull-up)	V	2.4
Maximum allowable output pull-up voltage	V	5.5

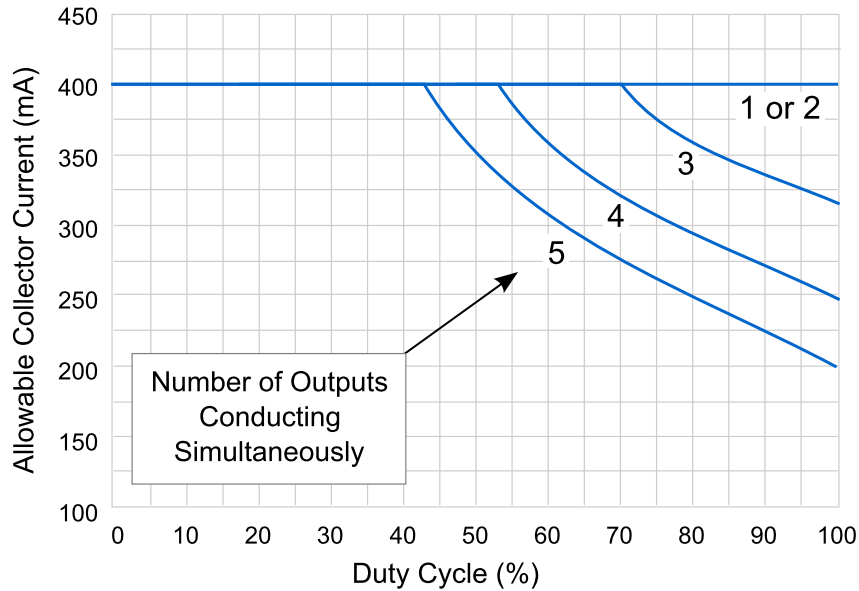
¹ For multiple outputs, see allowable output sink current plot below.

Standards

Category	Standard	Description
Shock	MIL-STD-810F	Method 516.5, Section 2.2.2 Functional Shock - ground vehicle
Vibration	MIL-STD-202G	Method 204D, Test condition C (10 g swept sine tested from 5 Hz to 2000 Hz)
Radiated emissions and susceptibility	EN 61326-1:2006	-
Ingress Protection	ANSI/IEC 60529-2004	IP54 water and dust intrusion

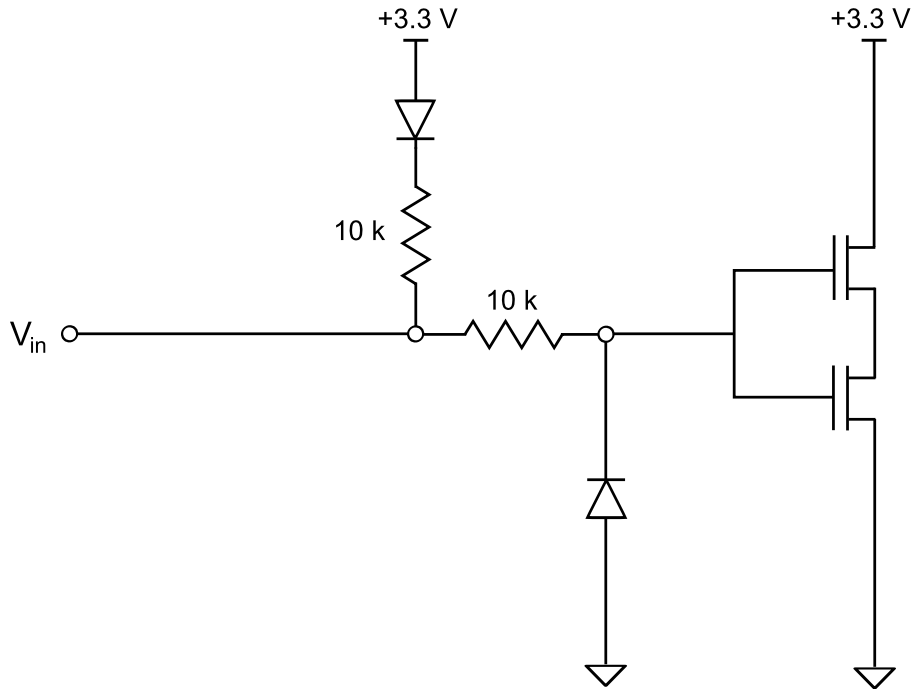
Allowable Output Sink Current

The following graph shows the allowable collector current at 50 °C depending on the number of simultaneous outputs. The data applies to one bank of output channels. The ECPU digital outputs are divided into two banks of five channels (i.e., |1-5| and |6-10|).



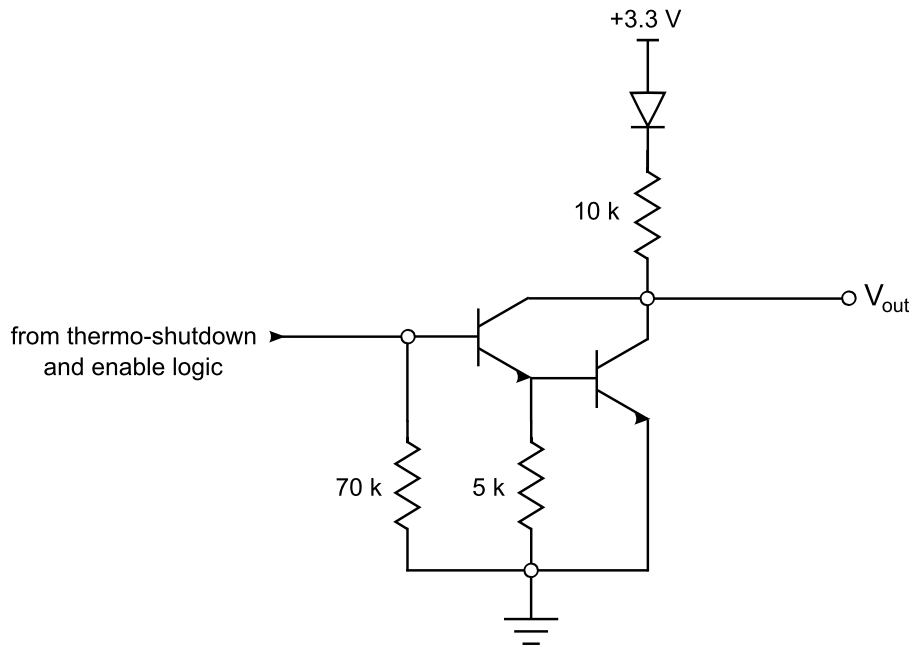
Digital Input Line Equivalent Circuit

The digital input circuitry determines the input as a logic 1 or 0. The input equivalent circuit is the same for all input channels.



Digital Output Line Equivalent Circuit

The output circuitry is applicable to all output channels.



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