





## imc CRONOScompact


### General technical specs

“√”: standard-equipped; “O”: optional; “-”: not available

Datasheet Version 3.5

<b>Housing</b>				
<b>imc CRONOS compact (CRC-)</b>	<b>400-08</b>	<b>400-11</b>	<b>400-13</b>	<b>400-17</b>
Max. Aggregate sampling rate	400 kS/s			
Modular expansion	√			
Housing type	portable housing			
Ingress Protection Rating	IP20			
Order code	1170001	1170073	1170027	1170002
Extended Temp. range	CRC-400-8-ET article # 1171001	CRC-400-11-ET article # 1171004	CRC-400-13-ET article # 1171003	CRC-400-17-ET article # 1171002
Dimension in mm (W x H x D)	291 x 155 x 264	353 x 155 x 264	393 x 155 x 264	474 x 155 x 264
Weight (kg)	approx. 9 kg	approx. 10.5 kg	approx. 12.5 kg	approx. 14.5 kg
Max. module slots	8	11	13	17 <sup>1</sup>
Max. fieldbus slots	7			
Video-or Simulink Interface	-		O	

<sup>1</sup> The module slots can be occupied with analog, digital and fieldbus modules (see page #3) and combined freely. The number of used analog respectively digital modules may not exceed 16.

		
<b>imc CRONOS compact (CRC-)</b>	<b>400-ACRACK</b>	<b>400-DC-RACK</b>
Max. Aggregate sampling rate	400 kS/s	
Modular expansion	√	
Housing type	module rack 19"	
Dimension (W x H x D)	426.7 x 133.35 x 310 mm	
Weight (kg)	typ. 9 / max. 12 kg	
Order code	1170031	1170013
Max. module slots <sup>1</sup>	17	17
Max. fieldbus slots	7	7
Video-or Simulink Interface	O	

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The imc CRONOScompact modules are not compatible with an imc CRONOS-PL measurement system.



Order Code CRC/	Slots needed	Channels per module	Band width	Remarks
<b>Analog modules:</b>				
AUDIO-4	1	4	48 kHz	ICP, voltage
AUDIO-4/MIC	2	4	48 kHz	ICP, microphone, voltage
BR2-4	1	4	10 kHz	strain gauges, voltage
B(C)-8	2	8	48 kHz	strain gauges, voltage
C-8	1	8	20 Hz	temperature, voltage
DCB(C)2-8	2	8	5 kHz	strain gauges, voltage
HISO-8	1	8	11 kHz	voltage, current, temp. (high isolated)
HV-2U2I / HV-4U	2	4	24 kHz	high voltage, current probe (isolated)
ICPU2-8	2	8	48 kHz	voltage, ICP
ICPU-16	4	16	6.6 kHz	voltage, ICP
ISO2-8	1	8	8 kHz	voltage, current, temperature (isolated)
LV-16	2	16	6.6 kHz	voltage, current, ICP
LV3-8	1	8	48 kHz	voltage, current, ICP
OSC-16	2	16	1 Hz	voltage, current, temperature (isolated)
SC2-32	4	32	20 kHz	voltage, current, ICP
UNI2-8	2	8	48 kHz	voltage, current, temp., strain gauges, ICP
FRQ-4	1	4	500 kHz	frequency modulated signals
HRENC-4	1	4	500 kHz	incremental count
<b>Analog out:</b>				
SYNTH-8	1	8	50 kHz	synthesizer
DAC-8	1	8	50 kHz	analog outputs
<b>Digital modules:</b>				
DI2-16	1	16	30 kHz	digital inputs
DO-16	1	16	10 kHz	digital outputs
DI16-DO8-ENC4	2	16 / 8 / 4	10 kHz / 500 kHz	digital in / out + inc.
DI8-DO8-ENC4-DAC4	2	8 / 8 / 4 / 4	10 kHz / 500 kHz	digital in / out + inc. + analog out
DIO-HV-4	1	4		high voltage digital in / out
Simulink interface	2			integrating HIL solutions
Video interface <sup>3</sup>	4			video recording
<b>Fieldbus modules: CAN Bus, LIN Bus, XCPoE, FlexRay, EtherCAT, PROFIBUS, ARINC, J1587 (one slot each)</b>				

imc CRONOScompact-	400-X
<b>Terminal connections</b> - compact housing with all terminal connections at the front	
PC connection: Ethernet TCP/IP	approvable cable length for 100 MBit Ethernet max. 100 m according IEEE 802
EtherCAT Interface	O
EtherCAT Master	-
Removable storage	CF-card slot
Modem connection	DSUB
Display / GPS connection	DSUB
Synchronization of multiple devices	BNC
Measurement signal terminals	appropriately equipped with signal conditioning, typically imc DSUB connectors

Power - imc CRONOScompact	CRC-400-X	CRC-400-ACRACK
Power supply	10 V to 32 V DC	110 V / 230 V AC
DC-input isolated	✓	-
Power adapter	110 V / 230 V	-
Battery buffering / UPS (Lead-gel battery)	✓	
UPS buffer time/ power outage	30 s	
Automatic charge control	✓	
Automatic measurement operation with autostart – no PC necessary	✓	
Auto-data saving upon power outage	✓	
Power consumption (with UPS fully charged)	<130 W	

Operating conditions	imc CRONOScompact 400-X
Operating environment (standard)	indoor
Operating temperature (standard)	-10°C to 55°C without condensation
Operating temperature (extended)	-40°C to 85°C with condensation
Operating altitude	up to 2000 m
Relative humidity	80 % for less than 31°C, for more than 31°C linear declining to 50 %, according DIN EN61010-1
Shock resistance	60 g mechanical MIL-STD-810 40 g, 6 ms half sine IEC 60068-2-27, IEC 61373
Vibration resistance	MIL-STD-810 Rail Cargo Vibration Exposure U.S. Highway Truck Vibration Exposure IEC 60068-2-64, IEC 61373

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Device properties and hardware options	imc CRONOScompact-400
Multi-triggered (multi-shot) data acquisition	✓
Extensive intelligent trigger functions	✓
arithmetic mean	✓
extensive real-time calculation and control functions	○ (with Online FAMOS - Personal Analyzer)
Synchronisation via GPS real time or DCF77	✓
External GPS signal receiver	○
WLAN	○

Operating software	imc CRONOScompact-400
Minimum system requirements	imcStudio STD, Version 3.0 R4 imcDevices Version 2.6 R3 SP15

Online-analysis software options	
Online FAMOS	○
Online FAMOS Professional	○
Online Class Counting Kit	○
Online Order-Tracking Kit	○
ECU Protocols for CAN	○

Measurement data analysis	
imc FAMOS Signal analysis software	○
imcSensors sensor data base	○

Development environment	
imc COM basic package	○
LabVIEW™ interface, VI's	✓

Internal data storage	
CF-card	○
Internal hard drive	○
Any memory depth with pre- and post triggering	✓
Circular buffer memory	✓
Synchronous, multi-triggered records	✓

Unless otherwise indicated, the technical specs given are valid for the following ambient conditions:

- temperature 23°C
- air pressure 1013 mbar
- relative humidity 40%

Including accessories:

- power supply up to 150 W: input 100 to 230 V<sub>AC</sub> output 24 V<sub>DC</sub>
- Terminal connection for supply (LEMO connection (big) FGG.2B.302.CLAD62Z)

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## UPS

Parameter	Value (min / max)	Remarks
Input supply	10 V to 32 V <sub>DC</sub>	
Internal battery voltage	24 V	
Max. buffer duration	>8 min	depending on device model (total power ≤110 W)
Buffer time constant	30 sec.1 sec.	at 25°C ambient temp. 5 to 30 sec selectable the duration of a <i>continuous</i> outage which triggers device deactivation. Other configurations upon request
Effective buffer capacity	≥15 Wh	typ. 23°C, battery fully charged
Minimum charging time for 1 min. buffer duration	≤10 min.	for empty battery @ 23°C
Charging time ratio	buffer time * (total power/ 12 W)	
Charging time for empty battery	24 h	device activated!

Battery operation additional to UPS	CRC/400-08	CRC/400-11	CRC/400-13	CRC/400-17
Li-Ionen technology order code: battery: CRC/B-	O		O (integration of two batteries possible)	
	Li-IO-1 95 Wh		Li-IO-2 190 Wh	



Remarks: The extended temperature range is not provided with a Li-Ion battery.

## Synchronization and time base

Parameter	value typical	min. / max.	Remarks
<b>time base per device without external synchronization</b>			
balanced (default)		± 10 ppm	at 25°C (accuracy of internal time base)
Drift	± 20 ppm	±50 ppm	-40 °C to +85 °C operating temp.
Ageing		± 10 ppm	at 25°C, 10 years

<b>time base per device without external synchronization</b>				
Parameter	GPS	DCF77	IRIG-B	NTP
Supported format			B002 B000, B001, B003*	version 4 (downwards compatible)
Precision	±1 µs			<5 ms after ca. 12 h
Jitter (max.)	±8 µs			
Voltage level	TTL	5 V TTL level	5 V TTL level	---
Input resistance	1 kΩ (pull up)	20 kΩ (pull up)		---
Input connector	DSUB-9	BNC connector "SYNC" short circuit proof, not isolated		Ethernet
Shield potential input		system ground		---

\*using BCD information only

<b>Synchronization with DCF77 for several devices (Master/Slave)</b>			
Max. cable length		200 m	SMB cable
Max. number of devices		20	slaves only
Common mode	0 V		theses device must have the same ground voltage level, otherwise signal quality problems (signal edges) may result. Remedy see ISOSYNC
Voltage level	5 V		
DCF input/output	connector "SYNC"		BNC
Shield potential, IRIG-input	system ground		

<b>ISOSYNC with different potentials</b>			
Isolation strength	1000 V		1 minute
Delay	5 µs		@ 25°C
Temperature range		-35°C to +80°C	