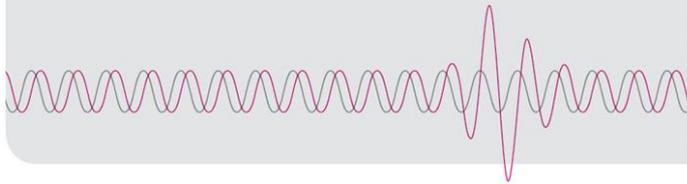


# SHERLOG CRX

## SPECIFICATIONS



### General description

SHERLOG CRX is a modular and multi-functional measurement and analysis system for comprehensively monitoring and assessing equipment in electricity supply systems. It combines the monitoring functions of high-resolution digital fault recorders, power quality analysers, phasor measurement units, continuous data recorders and event recorders in one device.

Individual devices can be networked via an Interlink interface to monitor extensive installations.

Multi-processor system	Digital signal processor (DSP), 32 bit, 330 MHz for processing signals and processes in real time Communication processor, 32 bit, 624 MHz for mass data storage, simultaneous data communication using different interfaces and protocols, web server functionality and stand-alone operation
User controls and displays	8 status LEDs for alarm, trigger and status display 3.5" colour graphical display with touch screen and 4 function keys
Number of measurement inputs	Max. 32 analog inputs Max. 128 binary inputs
Data memory	2 GB flash RAM for reliable data storage 128 MB flash RAM for firmware
Quality system	Developed and manufactured to DIN ISO 9001:2000
Calibration	Software-controlled calibration Calibration data is saved on the individual measurement modules No calibration required after module replacement or upgrade (plug & play) Recommended calibration cycle: check every 5 years
Operating software	SHERLOG operating software for Windows XP, Windows 7 (32 and 64 bit), Windows Server 2008 R2, Windows Server 2012 R2

### Function overview

Recording functions	Digital fault recorder, 2 sampling rates from 100 Hz...30 kHz Dynamic disturbance recorder, sampling rate from 1 Hz...120 Hz Continuous data recording Event data recording Power quality analyser, class A (optional) Phasor measurement unit (optional)
Standards for measurement and analysis	IEC 61000-4-30 class A IEC 61000-4-7 harmonics and interharmonics IEC 61000-4-15 flicker EN 50160, IEEE 519, IEEE 1159 IEEE C37.118

<b>Analog inputs</b>	General information	Resolution	16 bit, S/N:92dB typical
		Sampling frequency	200 kHz per channel
		Accuracy	0.05% of range
		Protection	Galvanic isolation Channel-channel: 2.5 kV; channel-device: 2.5 kV
		Safety class	300 V CAT III; 150 V CAT IV
	Input module Type 1	Number of measurement inputs	8 separate inputs with selectable measuring ranges for: voltage measurement current measurement with external sensors (e.g. shunts) measurement of low-level signals
		Measuring ranges	Each measurement input has 4 selectable measuring ranges:  Meas. range 1: 300 VAC / $\pm 424$ VDC; impedance 6.6 M $\Omega$ Meas. range 2: 700 mVAC / $\pm 1000$ mVDC; impedance 14.7 k $\Omega$ Meas. range 3: 200 mVAC / $\pm 282$ mVDC; impedance 14.7 k $\Omega$ Meas. range 4: $\pm 20$ mA / 4...20 mA; impedance 10 $\Omega$
		Overload	1000 VAC sustained@300 V
		Frequency range	DC...15 kHz
	Input module Type 2	Number of measurement inputs	4 separate high-current inputs for connection to protection or instrument transformers
Measuring ranges		Each measurement input has 3 selectable measuring ranges:  Measuring range 1: 10 AAC; impedance 0.002 $\Omega$ Measuring range 2: 40 AAC; impedance 0.002 $\Omega$ Measuring range 3: 200 AAC; impedance 0.002 $\Omega$	
Overload		40 AAC sustained 200 AAC for 5 seconds 500 AAC for 1 second	
Frequency range		10 Hz...15 kHz	
<b>Binary inputs</b>	Input module	Number of measurement inputs	16 inputs per module Galvanically isolated in 4 groups of 4 inputs Max. 8 input modules (128 inputs)
		Activation range	24...300 VDC (wide-range inputs)
		Resolution	0.1 ms
		Protection	Transient protection Polarity protection Galvanic isolation up to 2.5 kV
<b>Binary outputs</b>	Electronic relays	Number	2, freely configurable for status and alarm signals
		Switching capacity	Max. 60 VAC/DC, 400 mA
	Mechanical relays	Number	8, freely configurable for status and alarm signals
		Contact type	Potential-free relay contact Configurable as NC or NO contact
		Switching capacity	Max. 220 VDC, 8 AAC, max. 60 W

<b>Time synchronisation</b>	Standard equipment	Internal real-time clock	Accuracy 2.5 ppm without external time synchronisation
		NTP/SNTP	Synchronisation over Ethernet network
		Interlink interface	Master-slave time synchronisation between several SHERLOG CRX devices
	Synchronisation module (optional)	GPS receiver	Internal GPS receiver with SMA antenna connection Accuracy of internal seconds pulse: <60 ns
		Optical GPS input	For connection to external GPS systems over optical fibre (2 x ST II) Time telegram: NMEA-0183-RMC, 4800 baud Pulse input: seconds or minutes pulses
		DCF 77 input	DCF 77 pulse telegram input for connection to external clock systems or to the KoCoS DCF antenna module
		Pulse input for seconds or minutes pulses	PPS/PPM impulse input 5...12 V / 24...80 V, min. pulse width 5 ms
IRIG-B signal input		Coaxial connection for B001, B002 and B003 telegrams	
<b>Interfaces</b>	Standard equipment	Data communication	2 x RS232, 1 x RS485 2 x USB-A, 1 x USB-B 1 x 10/100 Mbit Ethernet (RJ 45)
		Interlink interface	Electric 2-wire interface for networking a number of SHERLOG CRX devices Enables cross-triggering and master-slave time synchronisation over distances of up to 500 m
	Interface module (optional)	Data communication	1 x 10/100 Mbit optical Ethernet (ST II) 1 x 10/100 Mbit Ethernet (RJ 45)
		Interlink interface	Optical Interlink interface for networking a number of SHERLOG CRX devices Enables cross-triggering and master-slave time synchronisation by means of a fibre optic loop Maximum distance between 2 devices is 2 km
	Protocols	Standard: TCP/IP, Modbus TCP, GSM, GPRS Optional: IEC 61850, DNP 3.0, Profibus, IEEE C37.118 (PMU)	
	<b>Power supply</b>	Operating voltage	Type 1: 90...365 VDC and 85...265 VAC; 47...63 Hz Type 2: 9...18 VDC Type 3: 18...36 VDC Type 4: 36...72 VDC
Power consumption		Max. 30 VA with maximum configuration (32 analog and 128 binary inputs)	
Redundancy		Power supply unit and power supply redundancy provided by accommodation of up to 2 independent power supply modules of either the same or different types	

<b>Complete system</b>	Mechanical properties	Weight	2.9 kg
		Housing	19" housing for rack mounting, 84 HP/3 U
		Protection class	IP 52 (front panel)
		Dimensions	483 mm x 132.5 mm x 263 mm
	Environment	Storage temperature	-30...70 °C
		Operating temperature	-5...55 °C, minimum switch-on temperature 0 °C
		Relative humidity	5...95%, non-condensing
		Other	RoHS-compliant
	Generic standards	Safety	EN 61010-1, 300 V CAT III
		EMC emissions	EN 61000-6-4 (replaces EN 50081-2)
Susceptibility		EN 61000-6-2 (replaces EN 50082-2)	
<b>EMC standards</b>	IEC 60255-5	IEEE C37.90	Dielectric test, 2.5 kV, 50 Hz Insulation test, 500 V, 50 Hz Impulse voltage test, 5 kV, 0.5 Joule
	EN55011	CISPR 11 CISPR 16 CISPR 22	Radiated radio disturbances 30...230 MHz at 10 m, 40 dB (µV/m) 230...1000 MHz at 10 m, 47 dB (µV/m)
	EN55011	CISPR 11 CISPR 16 CISPR 22	Conducted radio disturbances 0.15...0.5 MHz, 79 dB (µV) Q, 66 dB (µV) A 0.5...5 MHz, 73 dB (µV) Q, 60 dB (µV) A 5...30 MHz, 73 dB (µV) Q, 60 dB (µV) A
	IEC 61000-4-6	IEC 60255-22-6	Conducted susceptibility 10 V, 150 kHz...80 MHz
	IEC 61000-4-12	IEC 60255-22-1 IEEE C37.90.1	Damped oscillatory waves 2.5 kV, 1 MHz common mode 1.0 kV, 1 MHz differential mode
	IEC 61000-4-2	IEC 60255-22-2	Electro-static discharge test, class 4 8 kV contact, 15 kV air
	IEC 61000-4-3	IEC 60255-22-3	Radiated susceptibility 10 V/m, 80...1000 MHz, AM 10 V/m, 900 MHz, PM
	IEC 61000-4-4	IEC 60255-22-4 IEEE C37.90.1	Electrical fast transient burst 4 kV, 2.5 kHz, 5 kHz, 100 kHz
	IEC 61000-4-8	IEC 60255-6	Power frequency magnetic field 30 A/m, 50 Hz, x, y, z axis
	IEC 61000-4-12		Ring wave test, level 3 ±2 kV, 100 kHz common mode ±1 kV, 100 kHz differential mode
	IEC 61000-4-5		Surge test, class 4 4 kV common mode 2 kV differential mode
	IEC 61000-4-11		Supply voltage dips and interruptions, class 3
	<b>Vibration standards</b>	IEC 60068-2-6	IEC 60255-21-1
IEC 60068-2-27		IEC 60255-21-2	Vibration test 5 g, x, y, z axis
<b>Climatic standards</b>	IEC 60068-2-1		Cold storage test Storage at -45 °C for 96 hours Operation at -5 °C for 16 hours
	IEC 60068-2		Cyclic temperature test 3 hours 70 °C and 3 hours -5 °C (power off condition)
	IEC 60255-1		Replaces IEC 60255-6