

— KONreg S1000, digital voltage regulator

Powerful “ALL IN ONE” solution for regulation and control of synchronous machines

KONreg S1000 is KONČAR's state-of-the-art digital voltage regulator intended for generator power management. With its superior characteristics, KONreg S1000 can satisfy even the most demanding regulation and control demands. Small and robust design, enclosure with cooling flanges in IP20 protection, allows rack, wall and cabinet mounting. This type of design means there is no need for forced air cooling, since natural air cooling is more than enough. KONreg S1000 can be used in dual channel configuration for 100% redundancy.

AREA OF APPLICATION:

KONreg S1000 is an automatic digital voltage regulator, designed for voltage regulation of synchronous machines with AC rotating exciters and synchronous machines with DC rotating exciters. The KONreg S1000 digital voltage regulator has a wide range of applications, but it is specialized for use as an:

- **“All in one solution”** for small hydro power plants:
 - Voltage regulator,
 - Turbine controller,
 - Synchronization,
 - Protection & measurement,
 - Communication;
- Static excitation system,
- Static excitation system for wind power,
- Diesel aggregates automation control, and
- Voltage regulation.

“ALL IN ONE” solution includes following features:

- Measuring, supervision, diagnostic and control of all process in real-time,
- System is based on DSP,
- I/O units,
- Available communication interfaces: ETHERNET, GPRS, UMTS, Wi-Fi, OPTIC,
- Available communication protocols: PROFIBUS, MODBUS, CAN,
- Software development and design based on graphical editor.

BASIC FUNCTIONS:

- Automatic voltage regulation,
- Field current regulation,
- Underfrequency compensation or volts per hertz ratio limiter,
- Overexcitation limiter,
- Underexcitation limiter,
- Stator current limiter,
- Soft start build-up with an adjustable ramp,
- Generator paralleling with reactive droop compensation,
- Protective functions.



Main characteristics of KONreg S1000:

- *Small and robust design,*
- *Wide area of application,*
- *User friendly interface,*
- *Control via PC or LCD panel.*

POWER CONVERTER UNIT:

- Thyristor rectifier
- IGBT Chopper + diode rectifier

Optional functions:

- Power System Stabilizer, acc. to IEEE 2A/2B
- Voltage matching prior to synchronizing
- Automatic synchronizing
- Synchrocheck function
- Monitoring of rotating diodes

GRAPHIC EDITOR FOR APPLICATION SOFTWARE:

User friendly graphical design software is used for programming of software. More than 600 blocks, tested through other applications, ensure easy and stable programming of application software. Conversion from graphical design to source code and variables is made automatically by additional programs.

SYSTEM TESTING TOOLS “KONREG VIEW”:

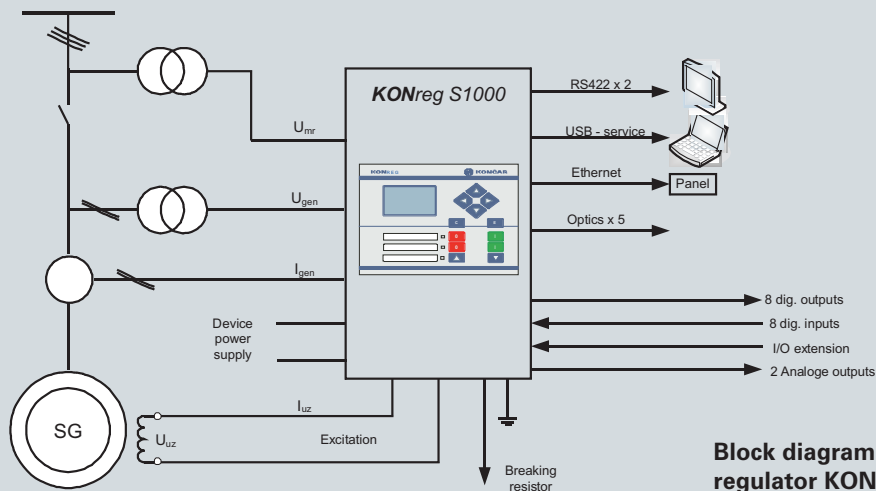
Parameter setting and optimisation is made using “KONreg VIEW”.

PARNAD functions:

- Configuration of inputs and outputs,
- Parameter setting,
- Trending function for optimisation of the controller (Oscilloscope, Power chart),
- Display of important measuring values,
- Parameter file upload or download.

Technical specification

Control power		Analog input (2):	
AC supply	85 - 264 VAC	Current range	4 - 20mA
DC supply	100 - 375 VDC	Binary/Analog I/O's	All potential free
DC supply	24 VDC		
Operating power		Communication:	
AC supply	0 - 300 VAC	Interfaces	ETHERNET, GPRS, UMTS, Wi-Fi, OPTIC
Generator voltage and current sensing		Protocols	PROFIBUS, MODBUS, CAN, IEC 60870-5-104
Generator voltage, 2-phase	100 V or max 450 V		
Generator current, 2- phase	1/5 A		
Frequency range	30 - 120 Hz		
Field output		Permissible ambient conditions:	
Nominal current	25 A	Operation temperature:	-25 to 65°C
Max. Output current, 10s	40 A	Storage temperature:	-25 to 65°C
Digital inputs (8):	Dry contacts, three different voltage levels (24V, 110 ÷ 125V and 220 ÷ 250V)	Max. operation height:	1000 m
		Max. relative humidity:	95%, at 40°C
Electrical data		Mechanical data	
Auxiliary supply		Weight	19 kg
• Maximum power consumption	25 W	Protection class	IP 20
Excitation output		Dimensions (LxWxH)	334 x 295 x 278 mm
• Maximum continuous current	25 A DC		
• Overload (maximum 10s)	40 A DC		
• Overload (maximum 4 min)	30 A DC		
Frequency range of measuring values	30 - 120 Hz		
Accuracy			
• Voltage regulation	<0,1%		
EMC standards			
EN 61000-4-2 / IEC 1000-4-2, EN 61000-4-3 / IEC 1000-4-3, EN 61000-4-4 / IEC 1000-4-4, EN 61000-4-5 / IEC 6000-4-5, EN 61000-4-6, level A / IEC 1000-4-6, EN 61000-4-8, level A / IEC 1000-4-8, EN 55011			
Certification			
Bureau VERITAS Marine division	"NR 467.C2 DT R03 E - Classification of Steel Ships" certified for use on Steel Ships, Offshore units and Yachts		
Test methods			
DET NORSKE VERITAS: Standards for certification - No. 2.4, April 2006			
GERMANISCHER LLOYD EDITION 2003			
RINA RULES 2007			
LLOYD'S REGISTER TEST SPECIFICATION No.1, 2002			
Bureau VERITAS April 2007			



Block diagram of the digital voltage regulator KONreg S1000



KONČAR

Electronics and Informatics Inc.

Fallerovo šetalšte 22, 10000 Zagreb, Croatia
 Phone: +385 1 3655 768, Fax: +385 1 3655 550
 E-mail: uzbude@koncar-inem.hr
 www.koncar-inem.hr

