

iReact-3

Intelligent reactive-load compensation controller

The configurable iReact-3 controller is a low-cost automation solution, facilitating compensation of reactive loads in power distribution substations. The unit automatically controls reactive load banks, with up to three compensation elements (e.g. capacitors, reactors). The automation is based on intelligent control algorithms, taking into consideration substations' measured quantities (e.g. reactive power, voltage, active power, etc.), and deciding to attach or detach the compensation elements to the electrical grid. The unit provides all necessary input and output signals and a complete set of functionalities, supporting all application's requirements, design choices and operation possibilities.

An intuitive, menu driven, configuration of operation parameters, makes the unit easy to use. Several different communication interfaces (such as USB, RS-232, Bluetooth and Ethernet) allow interconnection with host computers, either locally or remotely.



Operations & Features

- The iReact 3:
 - Automates insertion/removal of up to three compensation loads (capacitors/reactors), based on Reactive power and Voltage measurements
 - Validates compensation load attachment/detachment according to reactive power drop/increase and status of termination switches
 - Measures seven analog quantities of the substation (Active power, Reactive power, Voltage, three Leakage Currents, compensated Reactive power)
- Provides On-Load Tap Changer (OLTC) position, using iReact-TAP family sensors
- Intervenes in OLTC to achieve joint reactive-load compensation and voltage control
- Supports several different configurable operation modes (Automatic, Time-Schedule, Manual, Logging) and a complex one, using combinations of operational modes
- Provides Alarm outputs (Capacitor Failure, System Failure) to notify operators for system malfunctions
- Provides a Remote Bypass Procedure, to allow immediate disengage of unit's operation by the system supervisor
- Records system events
- Records system instances (measurements, statuses, alarms, etc.), in a circular buffer retaining more than one year instances
- Supports firmware upgrades, either locally or remotely (e.g. via internet)
- Web server for configuring system parameters
- Supports Several Communication Protocols



Conserve Energy &

Reduce Human Surveillance at

Power Distribution Substations

The iReact-3 controller is a critical component of the integrated iReact solution, supported by a centralized remote surveillance, control and management information system - the iReact-Prognosis software suite. The iReact-3 can be tailored according to customer's needs by developing automation processes, application specific operations and hardware features.



Specifications*

User Interface

Display	Dot-Graphic backlight LCD 128 x 64 dots, 71 x 39 mm
Keyboard	6-key compact membrane
keyboard Languages	English, other (customer request)

Analog Inputs

Number	8
Input Signal Range	4-20mA
Load Impedance	135Ω at 10mA, 270Ω at 20mA
Sampling Frequency	max 100 sample/sec
Accuracy	10-bit (16-bit digital processing)
Error	0.1 % Full Scale
Linearity	< 0.01 % Full Scale
Gain temp coefficient	-65ppm/°C
Isolation	Optical Isolation, safety approval: UL 1577 recognized (5kV rms/min) CSA approved, IEC/EN/DIN EN 60747-5-2

Digital Inputs

Number	8
Range	23VDC – 140VDC
Dielectric Insulation	2.5kV peak at 50Hz
Isolation	Optical Isolation

Control Outputs

Number	16
Type	Relay Contacts
Contact Rating	250VAC, 8A
Cycles	100 000
Insulation Coil-Contact	5000Vrms
Insulation Open Contact Cir	1000Vrms
Approval	EN61810-1
Insulation	IEC 60664-1

Communication Interfaces

RS-232 Interface	External Modem (analog,GSM, GPRS, etc.)
USB	USB 2.0 Full Speed Supported drivers for Windows, MAC, Linux OS
Ethernet	Local Area Network interface RJ45 UDP/IP, TCP/IP, ARP, ICMP, SNMP, DHCP, BOOTP, TFTP, Auto IP, HTTP (optional) 10/100Mbit auto sensing
Telnet	encryption Bluetooth
Wireless	

Networking Protocols

iREACT-subnet	Proprietary
Modbus/ModbusTCP	
FIWARE	
Web Server	Easy configuration of system's parameters

Buzzer

Type	Piezoelectric
Sound Pressure Level	75dB

Memory

Type	SD (Non-Volatile)
Size	4GB
Write Cycles	More than 1 year system instances and events
Data Retention	> 100 000 approx. 5-years

Real-Time Clock

Time	Hours, Minutes, Seconds
Date	Day, Month, Year, Day, Name
Battery Retention	10 years

Power Supply

Input Voltage Range	36VDC – 120VDC or 9VDC – 40VDC (optional)
I/O isolation voltage	4000VACrms
Leakage current	2μA (at 240VAC, 60Hz)
Isolation capacity	7pF typ. (at 100kHz, 1V)
Isolation resistance	> 1000MΩhm (at 500VDC)
External Fuse	0.3125A Slow Blow Type

Operating Conditions

Temperature	-20°C to 70°C
Relative Humidity	5 to 90%, non-condensing

Housing

Mounting type	Panel 130x130 or 144x144 mm
Material	Front Panel Polystyrene Back Cover Steel
Color	Light Grey
Protection	IP 50
Connections	Removable Screw Type Terminals
Dimensions	130 x 130 x 100 mm
Weight	<1.5Kg

Approvals

Safety	EN 61010-1
EMC	EN 61326
Impulse Voltage	IEC 60255-5 (5kV crest, 1.2/50μs, 0.5J)
High Frequency	IEC 60255-22-1 (2.5kV, 1MHz)
EFT	EN 61000-4-4, IEC 60255-22-4 (2kV, 5/50ns, 5KHz)
Power Frequency Voltage ESD	2kVrms, 50Hz 8kV contact discharge, 15kV air Discharge
Mechanical Vibration	IEC 60255-21-1, 60068-2-6

* Version 1610. Specifications are subject to change without prior notice

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