



- **BOTH AMF AND SYNCHRONIZING**
- **SAME UNIT FOR ALL FUNCTIONS**
- **INTERNET BASED**
- **MULTI-PROTOCOL**
- **FLEXIBLE WITH PLUG-IN MODULES**
- **AUTO LEARNING**

## FEATURES

- Diesel and gas genset support
- 400Hz operation support
- 400 event logs, full snapshot
- All parameters front panel editable
- 3 level configuration password
- 128x64 graphical LCD display
- Downloadable languages
- Waveform display of V & I
- Harmonic analysis of V & I
- Synchroscope & check synch
- Allows closed transfers
- 16Amp MCB & GCB outputs
- 8 configurable digital inputs
- Inputs expandable to 40
- 8 configurable digital outputs
- Outputs expandable to 40
- 7 configurable analog inputs
- Both CANBUS-J1939 & MPU
- 3 configurable service alarms
- Multiple topologies
- 6xCT, true mains metering
- Supports up to 48 gensets
- Automatic learning/self adjust
- Direct governor & AVR control
- Voltage and phase matching
- kW & kVAR load sharing
- True soft transfer in both ways
- PLC functions
- Peak Lopping / peak shaving
- Mains de-coupling protection
- R.O.C.O.F protection
- Vector shift protection
- Reverse power protection
- Over/under freq. Protection
- Over/under voltage protection
- Smart load management
- Smart genset sequencing
- Run/stop priority support
- Equal aging of gensets
- Base load (power export)
- Unmanaged distributed power export support
- AVR & GOV droop support
- Dead bus sensing
- Multiple automatic exerciser
- Weekly operation schedule
- Dual mutual standby with equal aging of gensets
- Manual "speed fine adjust" on selected ECUs
- Automatic fuel pump control
- Disable protections feature
- Excess power protection
- Reverse power protection
- Overload IDMT protection
- Load shedding, dummy load
- Multiple load management
- Current unbalance protection
- Voltage unbalance protection
- Fuel filling & fuel theft alarms
- Contactor & MCB drive
- Battery back-up real time clock
- Idle speed control
- Battery charge run enabled
- Combat mode support
- Multiple nominal conditions
- 4 quadrant genset power counters
- Mains power counters
- Fuel filling counter
- Fuel consumption counter
- Modem & ethernet diagnostics
- Configurable through USB, RS-485, Ethernet and GPRS
- Free configuration program
- Allows SMS controls
- Ready for central monitoring ethernet & GPRS
- Mobile genset support
- Automatic GSM geo-location
- GPS connectivity (USB&RS232)
- Dynamic DNS support
- Easy USB firmware upgrade
- IP65 rating with standard gasket



## PLUG-IN MODULES

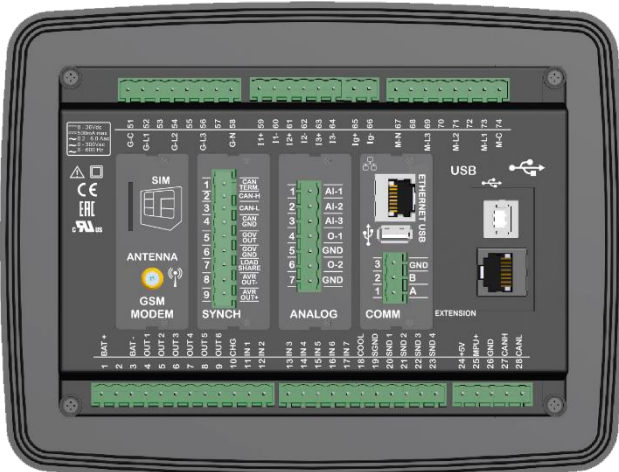
- 2G GSM Modem
- 3G GSM Modem
- 4G GSM Mode
- Wi-Fi (802.11 b/g/n)
- Ethernet 10/100 Mbits
- USB Host
- RS-232 (isolated)
- RS-485 (isolated)
- Synchro/LoadShare Module
- 3x AC Current Inputs
- 3x Analog Inputs

## FUNCTIONALITIES

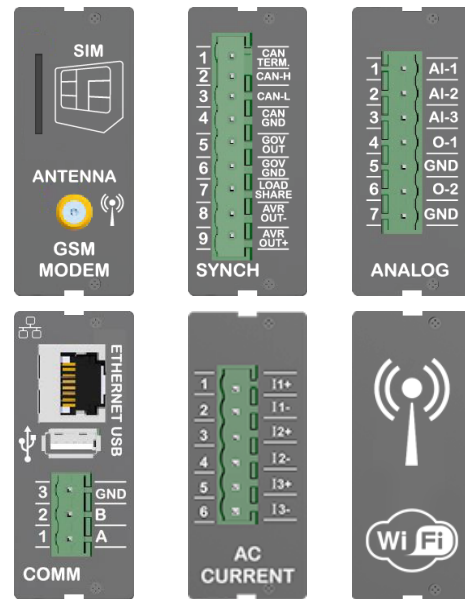
- Multi genset synch & load share
- Mains synchronization
- Single genset parallel with mains
- AMF unit (uninterrupted transfer)
- ATS unit (uninterrupted transfer)
- Remote start controller
- Manual start controller
- Engine controller
- Remote display panel

## COMMUNICATIONS

- Central Monitoring
- Embedded Web Server
- USB
- GPS (geo-location)
- SMS
- E-mail
- Modbus
- Modbus TCP/IP
- SNMP 1.0 with trap
- HTML
- UDP
- SNTP



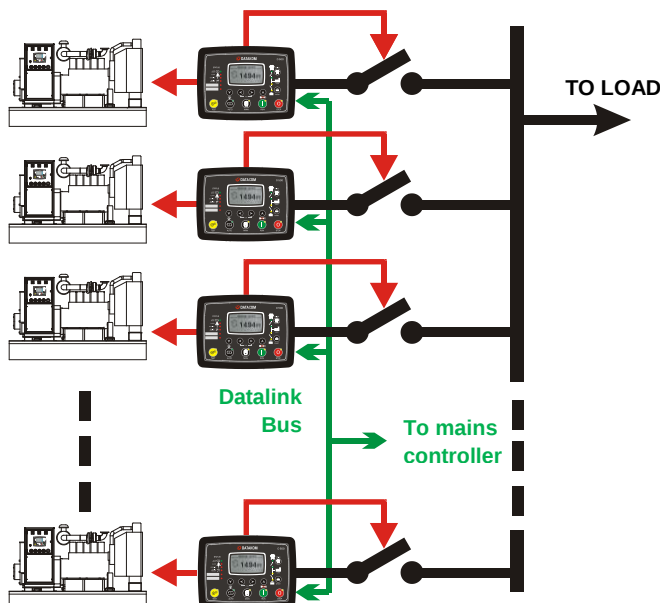
Backpanel view



Plug-in modules

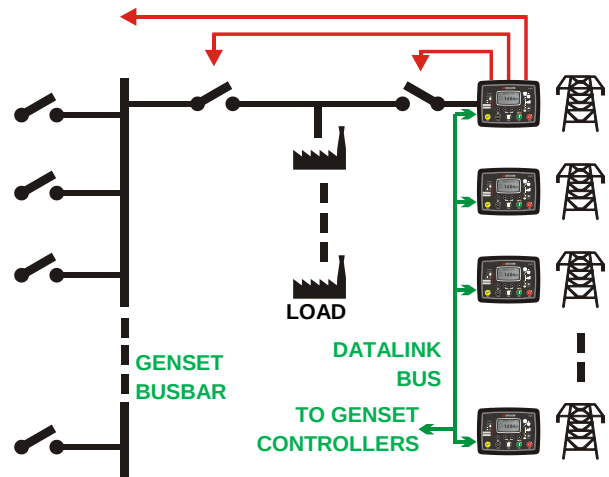
## MULTI GENSET SYNCHRONIZATION

Up to 48 gensets may be paralleled on the same busbar. Smart load management is a standard feature.

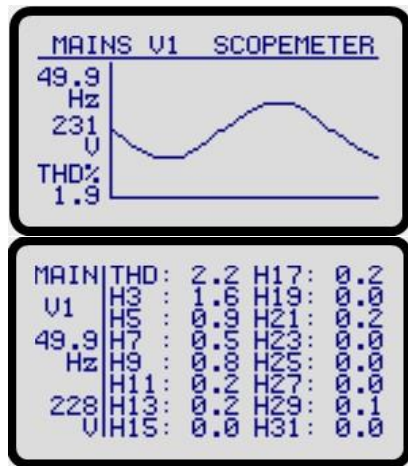


## MAINS SYNCHRONIZATION

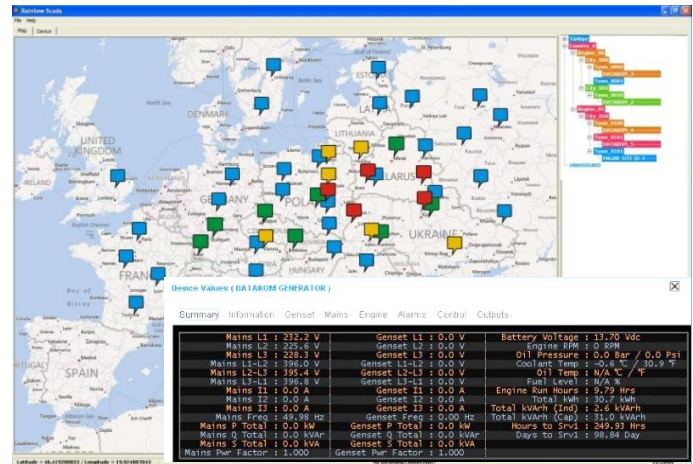
Up to 16 mains controller per system are supported. Mains controllers provide the REMOTE START signal and handle synchronization of the complete genset system with mains.



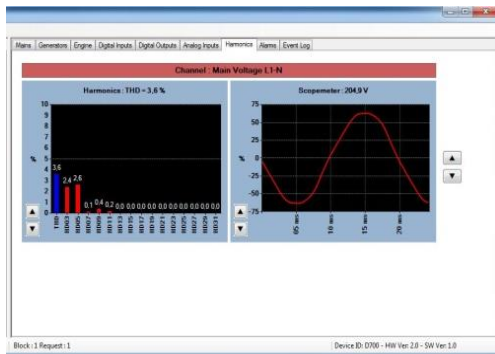
## SCOPEMETER & HARMONICS



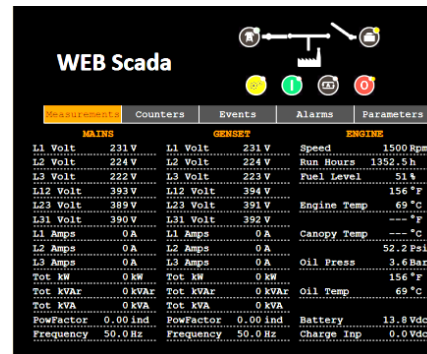
## RAINBOW SCADA CENTRAL MONITORING



## RAINBOW PLUS PROGRAM



## WEB SERVER



## TECHNICAL SPECIFICATIONS

**Alternator voltage:** 0 to 300 V-AC (Ph-N)  
**Alternator frequency:** 0-600 Hz.  
**Mains voltage:** 0 to 300 V-AC (Ph-N)  
**Mains frequency:** 0-600 Hz.  
**Topology:** 1-2-3 phases, with or without neutral  
**DC Supply Range:** 8.0 to 36.0 V-DC.  
**V-A-cos Accuracy:** 0.5% + 1 digit  
**kW-kVA-kVar Accuracy:** 1.0% + 1 digit  
**Current consumption:** 500 mA-DC max.  
**Current inputs:** from current transformers. ../5A or ../1A.  
**Digital inputs:** input voltage 0 to 36 V-DC.  
**Analog input range:** 0-5000 ohms.  
**Mains and genset contactor outputs:** 16Amps@250V  
**DC Outputs:** Protected mosfet semiconductor outputs, rated 1Amp@28V-DC  
**Cranking dropouts:** survives 0V for 100ms.  
**Magnetic pickup voltage:** 0.5 to 50Vpk.  
**Magnetic pickup frequency:** 0 to 20000 Hz.  
**Charge Alternator Excitation:** 2W.  
**Display Screen:** 2.9", 128x64 pixels  
**Ethernet Port:** 10/100 Mb/s  
**USB Device:** USB 2.0 Full speed  
**USB Host:** USB 2.0 Full speed  
**RS-485 Port:** selectable baud rate (2400-115200baud)

**RS-232 Port:** selectable baud rate (2400-115200baud)  
**Operating temperature:** -20°C to 70°C (-4 to +158 °F)  
**Storage temperature:** -40°C to 80°C (-40 to +176°F)  
**Maximum humidity:** 95% non-condensing.  
**IP Protection:** IP65 from front panel, IP30 from the rear (with gasket)  
**Dimensions:** 211 x 162 x 42mm (WxHxD)  
**Panel Cut-out Dimensions:** 176 x 121 mm minimum.  
**Weight:** 500 g (approx.)  
**Case Material:** High Temperature, non-flammable ABS/PC  
**Installation:** Flat surface mounting on a Type 1 enclosure. Rear retaining plastic brackets.

## CONFORMITY

### EU Directives Conformity

- 2014/35/EC (low voltage)
- 2014/30/EC (electro-magnetic compatibility)

### Norms of reference:

- EN 61010 (safety requirements)
- EN 61326 (EMC requirements)

### UL & CSA Compatibility:

- UL 6200, Controls for Stationary Engine Driven Assemblies (File# - 20140725-E314374)
- CAN/CSA C22.2 No. 14-13 – Industrial Control Equipment

## TYPICAL CONNECTIONS

