BTB COMPACT

## Controller for bus tie-breaker applications

BTB COMPACT is one controller of a complete range for energy sources and power plant management: generators, mains, PV/wind, batteries storage, tie breakers. This controller is made to manage bus tie-breaker applications up to 32 bus tie-breaker. It operates in combination with GENSYS COMPACT PRIME (for generators) and MASTER COMPACT/MASTER COMPACT 1B (for mains) modules. It offers flexibility and time saving thanks to its simple wiring and easy programming.
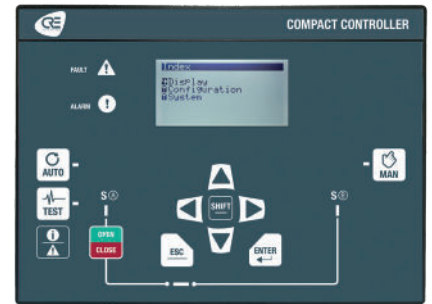
Hardware display

The controller is available in both switchboard panel mounted version with display, or core base mounted version and compatible with i4Gen touchscreen color display range.

Software

The controller is configurable from its front panel display, from i4Gen HMI, or through the free i4Gen Suite software.
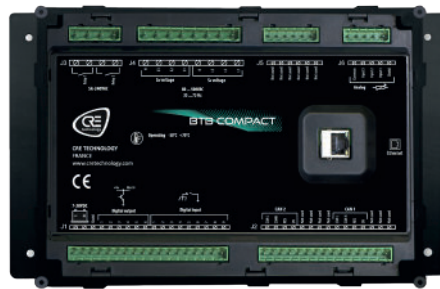
CORE BASE DIN RAIL MOUNTED VERSION

SWITCHBOARD MOUNTED VERSION WITH DISPLAY

Part numbers:

A56-BTB-00 Switchboard mounted version with display
A56-BTB-10 Core base mounted version

KEY FEATURES

Single line power plant overview
An interactive and adaptative single-line diagram is generated automatically from the configuration. It provides a global view of the power plant and the possibility to switch between controllers in one click.

Easy connection to controllers
Automatic detection of controllers on the Ethernet network for fast and easy connection.

Compatibility with generator and grid controllers
Compability with PRIME, HYBRID, BAT and MASTER 1B controllers of the COMPACT range to manage complete hybrid power plants.

Guided experience
- Only parameters and measurements relevant to the user are accessible
- 2 operating modes available: standard and advanced, to suit the skill level of the user
- Built-in documentation in i4Gen
- Dynamic display of the mimic diagram and the control buttons.

Enchanced graphical display
Important information are displayed on easy-to-read graphical widgets: numerical values, bar graphs, gauges, curves, animated synchroscope….

User friendly equations programming
Easily program your own equations using the drag & drop Easyflex feature.

Remote access (optional)
- Supervise, configure and control your power plant from anywhere through a reliable and secured remote communication provided by Zoho Assist
- Receive E-mails from i4Gen when an event, an alarm or a fault is triggered.

On-board modbus TCP client and server for integration with other devices
- Client (master): create custom frames in reception or transmission to read or write datas
- Server (slave): allow other devices to read/write the controller registers (with 300 registers available for custom mapping).

Automatic versions update
Automatic update of controller firmware and PC software versions.

OTHER FEATURES

Power control and management

- Datas shared between the controllers through CANbus for optimised control of the power plant: load sharing, clock synchronization, generator start/stop, sharing of electrical measures…
- Optimized PID loop with exceptional performance for synchronization and active/reactive power control & Dynamic curves to make PID configuration easier.
- Synchronization management of frequency, phase, voltage and phase sequence (dynamic or static).
- Adjustable kW ramp and kVAR ramp after synchronization.
- Automatic or manual control of circuit breakers with malfunction alarms management.
- Management of complex power plants with multiple generators, grids, BESS, PV/wind systems, tie breakers (up to 40 of them in one power plant).

Displayed information

- Alarms and events logging: Detailed history log with timestamps of the 500 last events, alarms and faults for easy and fast troubleshooting.
- Electrical measures supervision.
- Synchronization measures supervision.
- Inputs/Outputs status.

Programming

- Scheduler: Periodic or one-off execution of specific functions and modes can be scheduled.
- Alternative parameters values configurable and switchable using digital inputs or through modbus TCP.
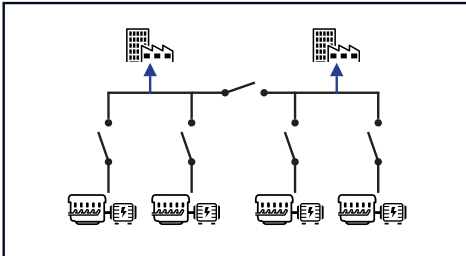
Options

- Phase offset for D/Y transformers.

APPLICATION EXAMPLES

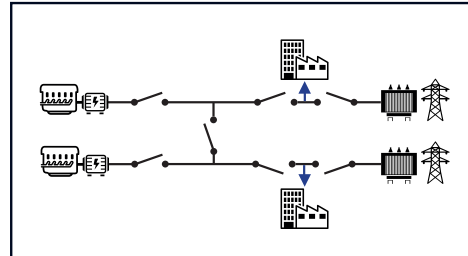### ❯ MULTIPLE GENSETS PARALLELED WITH 1 TIE BREAKER

FEATURES
- Tie breaker synchronization
- kW equalization with ramp
- kVAR equalization with ramp
- Segment management

PRODUCTS REQUIRED
- 4 GENSYS COMPACT PRIME
- 1 BTB COMPACT

❯ H CONFIGURATION WITH BUS TIE BREAKER AND 2 MAINS BREAKERS

FEATURES
- Start/Stop control
- Genset mechanical & electrical protections
- Breakers management
- Synchronization
- Generator load sharing
- Mains power management
- Load shedding
- Mains paralleling
- Bus & Tie breaker management

PRODUCTS REQUIRED
- 2 GENSYS COMPACT PRIME
- 2 MASTER COMPACT + 1 BTB COMPACT

❯ H CONFIGURATION WITH BUS TIE BREAKER AND 1 MAINS BREAKER

FEATURES
- Start/Stop control
- Genset mechanical & electrical protections
- Breakers management
- Synchronization
- Generator load sharing
- Mains power management
- Load shedding
- Mains paralleling
- Bus & Tie breaker management

PRODUCTS REQUIRED
- 2 GENSYS COMPACT PRIME
- 2 MASTER COMPACT 1B + 1 BTB COMPACT

❯ COMPLEX APPLICATION WITH MULTIPLE GENSETS, MAINS, BUS TIE BREAKERS
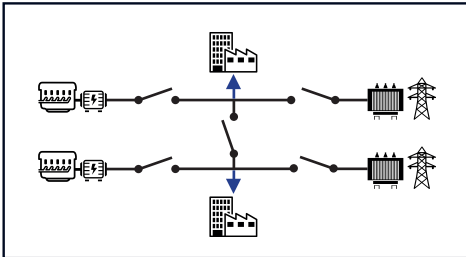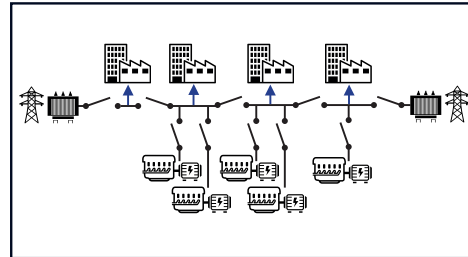

FEATURES
- Start/Stop control
- Genset mechanical & electrical protections
- Breakers management
- Synchronization
- Generator load sharing
- Mains power management
- Load shedding
- Mains paralleling
- Bus & Tie breaker management

PRODUCTS REQUIRED
- 5 GENSYS COMPACT PRIME
- 1 MASTER COMPACT + 1 MASTER COMPACT 1B + 1 BTB COMPACT

WIRING DIAGRAM

CRE TECHNOLOGY - 130, allée Charles-Victor Naudin - Zone des Templiers - SOPHIA ANTIPOLIS - 06410 BIOT - FRANCE
Phone : + 33 (0)4 .92.38.86.82 - www.cretechnology.com - info@cretechnology.com

DOCUMENT INDEX: F2023
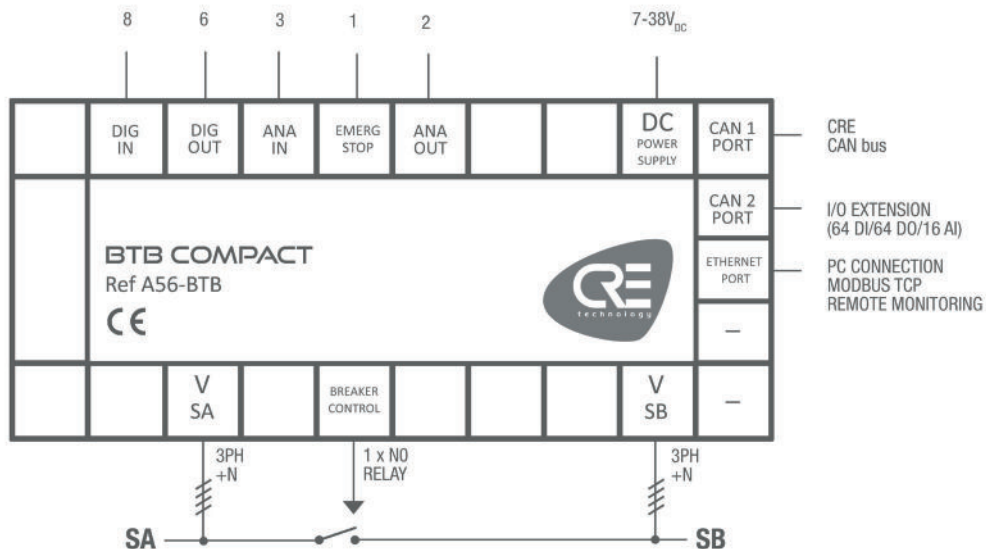
SPECIFICATIONS

ELECTRICAL SYSTEM

Electrical system	Compatible with 3 or 4 wires three-phase, or two-phase or single phase systems

DC POWER SUPPLY

Power supply range	7...38 VDC
Maximum voltage	45 VDC during 15mn
Current consumption (at 24 VDC)	130 mA + the sum of maximum consumption of each digital ouput

AC VOLTAGE MEASUREMENT

Source A measurement inputs	3ph + N (Neutral optional)
Source B measurement inputs	3ph + N (Neutral optional)
Measurement range	80...500VAC
Current consumption	100 mA max
Accuracy	1%
Frequency range	35...75 Hz, 15VAC minimum between phase and neutral

INPUTS

Digital inputs	9 : NO or NC to ground. Adjustable timer On and Off
Digital inputs expansion	64 : via CANopen
Analog inputs	3 : Resistive (0...500Ω) or 0...20mA (with external resistor). Could be used as digital input. Library of sensors available. Configuration curve with up to 31 points
Analog inputs expansion	16 : via CANopen (0-20mA, 0-10VDC, PT100, Thermocouple, …)

OUTPUTS

Digital outputs	6 : NE or ND. 1.8A, over-current protected. Adjustable timer.
Digital outputs expansion	64 : via CANopen
Relay outputs (breaker control)	2 : 5A, 240VAC
Analog outputs	2 : +/-10VDC: isolated output with adjustable gain and offset

COMMUNICATION PORTS

CAN	2 isolated port: - CAN 1: CRE protocol for communication between all COMPACT controllers - CAN 2: I/O extensions
Ethernet	Isolated port: PC communication/ModBus TCP

ENVIRONMENT

Operating temperature	-30...70°C (-22...158°F)
Storage temperature	-40...70°C (-40...158°F)
Humidity	95% non-condensing
Altitude	Up to 4000m for 480VAC. Up to 5000m for 400VAC
IP Front	IP65/NEMA rating 4 for HMI version IP20/NEMA rating 1 for core version
IP Rear	IP20/NEMA rating 1

DIRECTIVES

EMC Directive 2014/30/UE - EMC General Requirements EN 61326-1	Immunity according with EN 61000-6-2 and Emission according with EN 61000-6-4
Electrical Safety Directive 2014/35/UE	According with EN 60950-1

Vibrations and shocks	According with EN(IEC) 60068-2-6 and IEC 60068-2-27
Temperature	EN (IEC) 60068-2-30; EN (IEC) 60068-2-1; EN (IEC) 60068-2-2; EN 60068-2-78

DIMENSIONS - SWITCHBOARD MOUNTED VERSION WITH DISPLAY

Overall (W x H x D)	245 x 182 x 40mm (9.64 x 7.16 x 1.57in)
Panel cut out (W x H)	220 x 160mm (8.7 x 6.3in)

DIMENSIONS - CORE BASED MOUNTED VERSION

Overall (W x H x D)	260 x 157 x 44mm (10.24 x 6.18 x 1.73in) (depth with connectors)
Fixing dimensions (W x H)	238 x 129mm (9.37 x 5.08in) (4 screws)
Fixing hole	Ø5.24mm (0.21in)
Mounting	DIN rail

WEIGHT

Controller	0.7kg (1.54lb)

LCD DISPLAY CHARACTERISTICS

Size	40x70mm (1.50x2.75in)
Pixels	1024x512. Back light: 50cd/m² typical, configurable
Contrast	Configurable

LANGUAGES

Supported languages	English, French, Spanish in standard. Italian, Portuguese, Russian, German and other custom languages are available on request

CRE TECHNOLOGY - 130, allée Charles-Victor Naudin - Zone des Templiers - SOPHIA ANTIPOLIS - 06410 BIOT - FRANCE
Phone : + 33 (0)4 .92.38.86.82 - www.cretechnology.com - info@cretechnology.com

DOCUMENT INDEX: F2023

PROTECTIONS

SOURCE A ELECTRICAL PROTECTIONS

DESCRIPTION	ANSI CODE
Under frequency	81L
Over frequency	81H
Under voltage	27
Over voltage	59
Unbalance voltage	47

SOURCE B ELECTRICAL PROTECTIONS

DESCRIPTION	ANSI CODE
Under frequency	81L
Over frequency	81H
Under voltage	27
Over voltage	59
Unbalance voltage	47

SYNCHRONIZATION PROTECTIONS

DESCRIPTION	ANSI CODE
Synch check	25
Phase sequence	47

RELATED PRODUCTS

CONTROLLERS	
A56-PRIME	GENSYS COMPACT PRIME
A56-MAST	MASTER COMPACT
A56-MAS1B	MASTER COMPACT 1B
A56-PV	HYBRID COMPACT
A56-BAT	BAT COMPACT
ADDITIONAL INPUTS/OUTPUTS	
BK5150	CANopen bus coupler
KL9010	End connection terminal
KL1488	8 digital inputs - 0 VDC
KL1889	16 digital inputs - 0 VDC
KL2408	8 digital outputs - 24VDC 0.5A
KL2809	16 digital outputs - 24VDC 0.5A
KL3044	4 analog inputs (0-20mA)
REMOTE DISPLAYS	
A60P0	RDM 1.0 alarm reporting module
A56VXX	i4Gen Touchscreen color display range
BATTERY CHARGERS	
BPXX	3A, 5A, 10A, 20A, 40A. 12VDC, 24VDC

CRE TECHNOLOGY - 130, allée Charles-Victor Naudin - Zone des Templiers - SOPHIA ANTIPOLIS - 06410 BIOT - FRANCE
Phone : + 33 (0)4 .92.38.86.82 - www.cretechnology.com - info@cretechnology.com

DOCUMENT INDEX: F2023