



GEN-XFER and GEN-XFER ND Low Profile Automatic Generator Transfer Switch Controllers with Metering

The GEN-XFER series offers automatic engine starting, stopping, transfer switching, protection, control and metering of generator sets. In the event of a mains supply failure the unit automatically transfers the load from the mains to the generator, and co-ordinates return to mains and controlled generator shutdown when the mains supply is restored. The product is fully programmable from the front panel via an easy to use password protected menu, removing the need for special cables or computer equipment at remote locations, however, the RS232 communications port allows remote monitoring and programming with PC based software.

Features

- Protection, control and metering
- Automatic engine start/stop and transfer
- Automatic shutdown on fault condition
- LED status and fault indication
- Simple push-button controlled operation
- Manual, automatic and test mode control
- Two user-definable inputs
- One user-definable output
- Fully programmable
- RS232 communication port

Monitors

- 3-phase mains supply voltage
- Alternator voltage
- Alternator frequency
- High engine temperature
- Low oil pressure
- Battery voltage
- Charge generator
- Engine running time

Controls

- Engine fuel supply
- Starter motor
- Alarm horn
- Automatic generator start
- Load transfer on mains failure
- Return to mains
- Mains contactor
- Generator contactor

Operation

The GEN-XFER generator transfer switch controller unit provides integrated generator set control, protection, metering and automatic load transfer. The unit detects failure of any phase of the mains supply and is able to start the generator and transfer the load. When the mains supply is restored within the pre-set limits, the load is transferred back to the mains supply, and the generator is shut down in a controlled manner. The unit has two dedicated control output signals to co-ordinate the Mains or Generator contactors or breakers.

GEN-XFER offers manual, fully automatic and test mode operation which allows the generator to be run without taking the mains supply load. The mode of operation can be changed at any time without affecting the operational status of the generator or load connection.

GEN-XFER ND has no metering display, but offers identical functionality and programming via RS232, and can be used in applications where electrical and engine metering is already in place.

Automatic Mode

The AUTO push button selects fully automatic operation, and the three-phase mains voltage is continuously measured and compared with programmable upper and lower voltage limits. In the event of a mains failure for longer than a programmable time period, the generator is automatically started, the MAINS contactor opens and the GENERATOR contactor is closed when the generator output has stabilized. In the absence of mains voltage, the generator will continue to run unless an engine or alternator problem is detected, causing a shutdown. When the mains supply is restored, the generator will continue to run for a programmable time, after which the unit will switch the load back to the mains supply, and shut down the generator. A remote inhibit input signal can prevent the generator set from starting up.

Manual Mode

The MAN push button sets the unit to manual mode, whereby the generator set can be started or stopped by pressing the START or STOP push buttons. The starter motor will start the engine and will disengage once the engine is running.

The mains and generator contactors or breakers can be opened or closed using the respective buttons to affect a load transfer. The control of the generator contactor output is inhibited if the generating set is not running.

Test Mode

Selection of the TEST mode allows off-load testing of the generator from the mains supply. As with automatic and manual modes, all fault indication circuits and alarms are operational. If a mains failure occurs whilst the unit is in test mode, the unit will automatically revert to AUTO operation and switch the load to the generator. An internal exercise timer permits automatic regular testing to exercise the generator and re-charge the batteries, and can be programmed to operate at time intervals to suit the user and application.

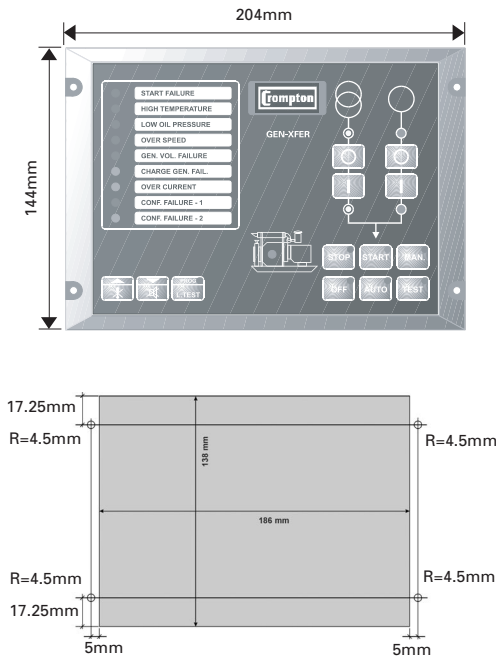
Off Mode

When OFF mode is selected, Mains power will supply the load, and the generator will not start up or run.

GEN-XFER Generator Set Controllers



Dimensions



LED Indicators and Alarms

The GEN-XFER unit monitors generator operation and provides indication of faults via a four digit seven segment display, LED indicators and alarms. If a fault is detected, the engine will automatically shut down and the failure will be indicated by a relevant fault LED and alarm horn. For certain fault conditions the ALARM LED will also flash, advising specific LED fault messages, or information alarms can be read from the front panel 4 digit display.

Failure Indicators:	Status Indicators:	Information Alarms:
Failed to Start	Off Mode	Low Battery Voltage
High Temperature	Automatic Mode	Emergency Stop
Low Oil Pressure	Test Mode	Maintenance Due
Over Speed	Manual Mode	
Generator Voltage Failure	Engine Start	
Charge Failure	Engine Stop	
Over Current	Engine Running	
Configurable Input 1	Mains Voltage Available	
Configurable Input 2	Generator Voltage Available	
Low Battery Voltage (ND only)	Mains Contactor	
Maintenance Time (ND only)	Generator Contactor	
Emergency Stop (ND only)	LED Test	

Configurable Outputs

The GEN-XFER controller offers a configurable output which can be programmed for alarm output, engine running indication, preheat function or as an active output while the unit is in manual, test or automatic mode.

Specification

Measurement Accuracy:	1% of range
Mains Voltage Measurement:	Three phase, 4 wire 35 to 600V AC (phase to phase)
Generator Voltage Measurement:	Single phase, 2 wire 35 to 300V AC (phase to neutral)
Generator Speed Measurement	From alternator frequency or magnetic pickup
DC Supply Range:	8 to 32V DC
Indicator Display:	Four digit, seven segment LED
Cranking Dropouts:	0V for maximum 100ms
Mains Voltage:	60 - 600VL-L AC 3 Phase 4 wire system
Generator Voltage	35 - 300VL-N AC 2 wire connection
Alternator Input Frequency	10 - 110 Hz
Magnetic Pickup Input Range:	3 - 35 volts peak
Magnetic Pickup Input Frequency:	35 Hz - 10 kHz
Start Output:	500mA Transistor Output
Fuel Output:	500mA Transistor Output
Horn Output:	500mA Transistor Output
Configurable Output 1:	500mA Transistor Output
Mains Contactor Output:	500mA Transistor Output
Generator Contactor Output:	500mA Transistor Output
Alarm Duration:	1 - 999 seconds or continuous
Control on Delay:	0 - 99 seconds (selectable)
Oil Bypass Delay:	0 - 99 seconds (selectable)
Generator Voltage Fault Delay	0 - 10 seconds (selectable)
Generator Speed Fault Control Delay:	0 - 10 seconds (selectable)
Number of Starting Attempts:	1 - 10 (selectable)
Starting Sequence:	Pre heating / cranking / control delay / change over
Operating Temperature:	-25 to +70°C
Mounting Installation:	Front panel mounted with 4 screw fixings
Wiring Connections:	Plug and socket connectors
Dimensions:	144mm high x 204mm wide x 37mm deep
Panel Cut Out:	138mm high x 186mm wide
Compliant With:	LVD & EMC
Weight:	0.7kg approx.
IP Protection:	IP65 at front IP20 at rear

Display Mode

GEN-XFER features a four-digit, seven-segment LED display, providing extensive monitoring of mains and generator parameters, and permitting front panel programming.

Mains L1 – L2 Voltage

Mains L1 – N Voltage

Mains L2 – L3 Voltage

Mains L2 – N Voltage

Mains L3 – L1 Voltage

Mains L3 – N Voltage

Generator Voltage

Generator Frequency

Battery voltage

Engine running time

Error indication

Program parameters

GEN-XFER ND has no front of panel display, but metering and programming information is accessible via RS232.

Engine Monitoring

GEN-XFER monitors engine status via oil pressure and engine temperature switches. The controller can be configured for use with normal or fail safe switches. Two configurable inputs can be programmed to perform various functions, including forcing controller into AUTO mode, disabling local control, activating warning alarms, latched and unlatched indication, or shutting down the engine. A third input is pre-defined as an over current alarm input, and can be connected to an external over current relay. This input will disconnect the generator contactor.

Programming

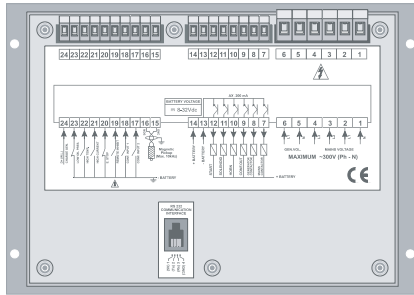
Units are easily programmed and parameters displayed using push buttons on the front panel. Once the unit is in the ENGINE STOP position, all parameters can be reached and their values changed by simply pressing the PROG button. To prevent unauthorized access two levels of password protection can be programmed.

Extensive metering and monitoring data of generator parameters is displayed via the four digit, seven segment LED indication panel. Simply press the DISPLAY >> button to select and view the chosen parameter data.

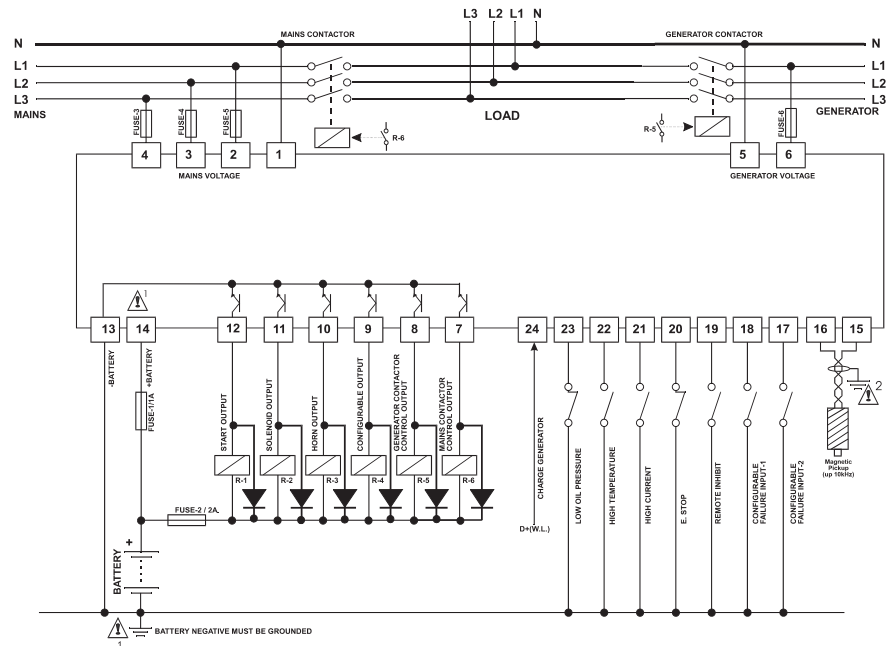
Programmable Functions

PARAMETER	RANGE / OPTIONS
Mains Voltage Connection Level	60 – 600 V AC
Mains Voltage Disconnection Level	60 – 600 V AC
Mains Voltage Upper Limit	60 – 600 V AC
Alternator Voltage Lower Limit	60 – 600 V AC
Alternator Voltage Upper Limit	60 – 600 V AC
Speed Upper Limit	30.0 – 75.0 Hz
Periodic Maintenance Hour Set Value	0 – 9999 Hour
Periodic Maintenance Hour Reset	Press increment button to reset
Number of Starting Attempts	1 – 10 attempts
Engine Cooling Time	1 – 99 minutes
Horn Duration	Continuous or 1-999 seconds
Mains Transition Delay	0 – 30 minutes
Single / Three Phase Selection	1 or 3
Speed Sensing Input Selection	Alternator Frequency or Magnetic Pickup
Nominal Alternator Frequency	30.0 – 75.0 Hz
Nominal Engine Speed	500 – 5000 RPM
Number of Flywheel Teeth	1 – 1000
Battery Voltage Lower Limit	7.2 – 24.0V DC
Mains-generator or Generator-Mains Changeover Delay	0.1 – 25 seconds
Stop Solenoid /Fuel Solenoid Selection	Stop / Fuel
Stop Magnet Energizing Time	0 – 99 seconds
Power-up mode	Off / Auto
Engine Started Signals	Charge Generator, Speed, Alternator Voltage or Oil Pressure
Starting Attempt Duration	5 – 99 seconds
Alternator Volt Limit for Crank Disconnect	40 – 360 V AC
Speed Limit for Crank Disconnection	20.0 – 45.0 Hz
Oil Pressure Bypass Time	0 – 99 second
Control On Delay	0 – 99 second
Voltage Fault Control Delay	0 – 10 second
Speed Fault Control Delay	0 – 10 seconds
Preheating Delay	0 – 99 seconds
User Definable Inputs	Warning LED only, Warning LED and Horn, Warning LED and Horn Relay and Engine Stop
Input signal configuration	Normal / Fail safe
User Definable Input Observation	Continuous / While Engine Running
User Definable Input Delay	0 – 10 seconds
Configurable Output 1	Alarm Output, Engine Running, Load Transfer Permit, Preheat.
Exercise Interval Timer	0 – 999 Hours
Exercise Duration Timer	0 – 999 Minutes
Operator & Technician Passwords	0000 - 9999

GEN-XFER Rear View



Connections
GEN-XFER Three Phase



Product Codes

GEN-XFER	Low Profile automatic generator transfer switch controller with metering
GEN-XFER ND	Low Profile automatic generator transfer switch without metering display
GEN-SOFT	PC communication and programming software