



GTR-310

Generator controller

User Manual



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1. Introduction

- GTR 310 is a new, multi-functional and cost-effective generator controller. The LCD information display includes operating status and various fault signals in color icons. The readings from the Genset include AC voltage, AC current, frequency, battery voltage, water temperature, oil pressure, oil temperature, and hour meter are displayed on the large LCD screen. The friendly design allows users to make simple and quick adjustments through the DIP switch, including system frequency, voltage, protections, current ratio, and battery voltage. The built-in Modbus communication can be used with the central monitoring system for remote monitoring. Please refer to Modbus table.

2. Features

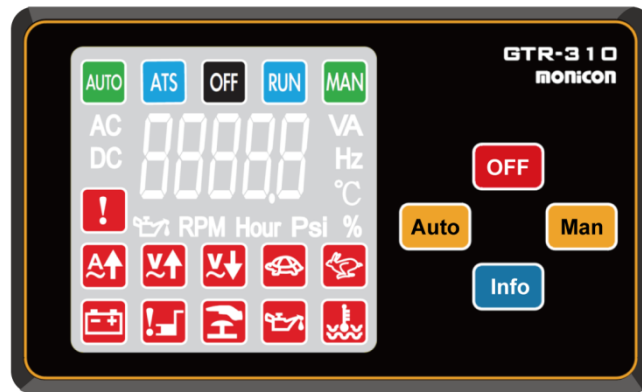
- Large color LCD screen, readings include battery voltage, water temperature, oil pressure, oil temperature, hour meter, engine RPM, AC voltage, AC current, frequency, etc.
- Operation keypads include manual mode, OFF, Auto mode, and information display.
- Protections include emergency stop, over speed, high water temperature, low oil pressure, AC high/low voltage, overload, start failure, and low battery.
- DIP switches can be set according to the system requirements.
- Built-in Modbus provides remote monitoring, parameter adjustment, etc.

3. Specifications






















- | | |
|------------------------------------------------------------------------------------|-------------------------------------------|
| ■ Working voltage
8~36 V (DC) | ■ Working temperature
-30 °C ~70 °C |
| ■ Power consumption
Max. 6.5 W, 460 mA @ 12 V;
270mA @ 24 V | ■ Dimensions
176 mm × 113 mm × 56.5 mm |
| ■ Frequency measurement
Minimum detection voltage : 5 V (AC)
range : 0~75 Hz | ■ Opening
157 mm × 96 mm |
| ■ DC voltmeter
range : 10~31 V | ■ Weight
345g |
| ■ Relay output
5 A / 30V | |

4. Panel Description

- Front control panel



- LCD icons

Icon	Description	Icon	Description
	AUX		Automatic mode
	Over current		Genset is running in ATS Mode
	AC high voltage		Off mode
	AC low voltage		Genset is Running
	Low speed		Manual Mode
	Over speed	AC	AC current/voltage
	Low battery voltage	DC	DC voltage
	Failed to start		Oil pressure / temperature
	emergency stop	RPM	Engine speed
	Low oil pressure	Hour	Operating hours
	High water temperature	V	Voltage
	Generator OFF/ fault reset button	A	Ampere
	Manual start button	Hz	Frequency
	ATS automatic mode button	°C	Temperture unit
	Switch generator information button	Psi	Oil pressure unit

5. Instructions



◆ Automatic mode (ATS)

Press AUTO, the controller enters the standby mode and detect the ATS signal to automatically start and stop the generator. If the preheating function is on, the Genset preheats before crank. If the engine fails to start, it returns to the rest cycle and then start for the second attempt. The interval for rest cycle is preset to 10 seconds (Dip PIN3 setting). If the engine fails to start after three attempts, the controller display failed to start icon.



◆ Manual mode (Manual)

Press Manual to start the engine. The preheating function and cranking timer are the same as the automatic mode.



◆ Engine stop mode (Off)

Press OFF to stop the engine or reset faults.



◆ Information(Info)

This button scrolls the readings from generator. The LCD display sequence is: battery voltage → frequency → AC voltage → AC current → water temperature → oil pressure → oil temperature → RPM → hour meter.

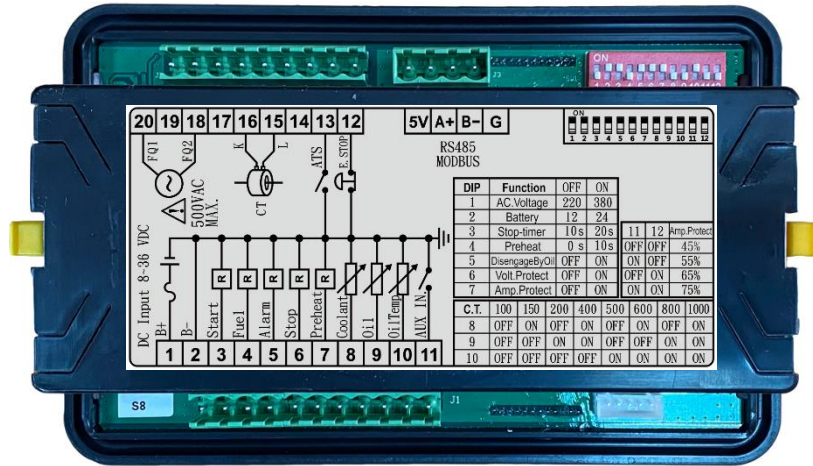
6. System parameters

■ Emergency stop	: 1S.stop	■ AC low voltage	: 5S. stop
■ Over speed	: 2S. stop	■ AC overcurrent	: 10S. stop
■ Low frequency	: 6S. stop	■ Low battery	: 5S. alarm
■ High water temperature	: 2S. stop	■ Disengage starter motor	: 20Hz
■ Low oil pressure	: 2S. stop	■ Crank cycle	: 3 Attempts
■ AC high voltage	: 2S. stop	■ Safety on timer	: 10S

※ During safety on timer, the emergency stop, overspeed and AC high voltage function are excluded. .

7. Back Panel Description

1. Back panel appearance



2. Dip switch settings



■ Pin 1 ~Pin7 Dip settings :

Foot position	Features	OFF	ON	<p>Note 1: When Pin6 is set to disable, the AC voltage protection turns off. The voltage spike caused by faulty AVR is not protected</p> <p>Note 2: Set Pin7 to disable the overcurrent protection.</p> <p>Note 3: The voltage and current protection settings can be set from dip switch or software, whichever comes first triggers the alarm.</p>
Pin 1	Voltage selection	220V	380V	
Pin 2	Battery voltage	12V	24V	
Pin 3	Stop timer	10S	20S	
Pin 4	Preheat timer	0S	10S	
Pin 5	Disengage starter motor by oil switch	Disabling	Enable	
Pin 6	AC voltage protection	Disabling	Enable	
Pin 7	AC current protection	Disabling	Enable	

■ Current ratio setting

Current ratio Dip position	100:5	150:5	200:5	400:5	500:5	600:5	800:5	1000:5	Note: Current ratio affects the current readings and over current settings.
	Pin 8	OFF	ON	OFF	ON	OFF	ON	OFF	
Pin 9	OFF	OFF	ON	ON	OFF	OFF	ON	ON	
Pin 10	OFF	OFF	OFF	OFF	ON	ON	ON	ON	

■ Overcurrent setting

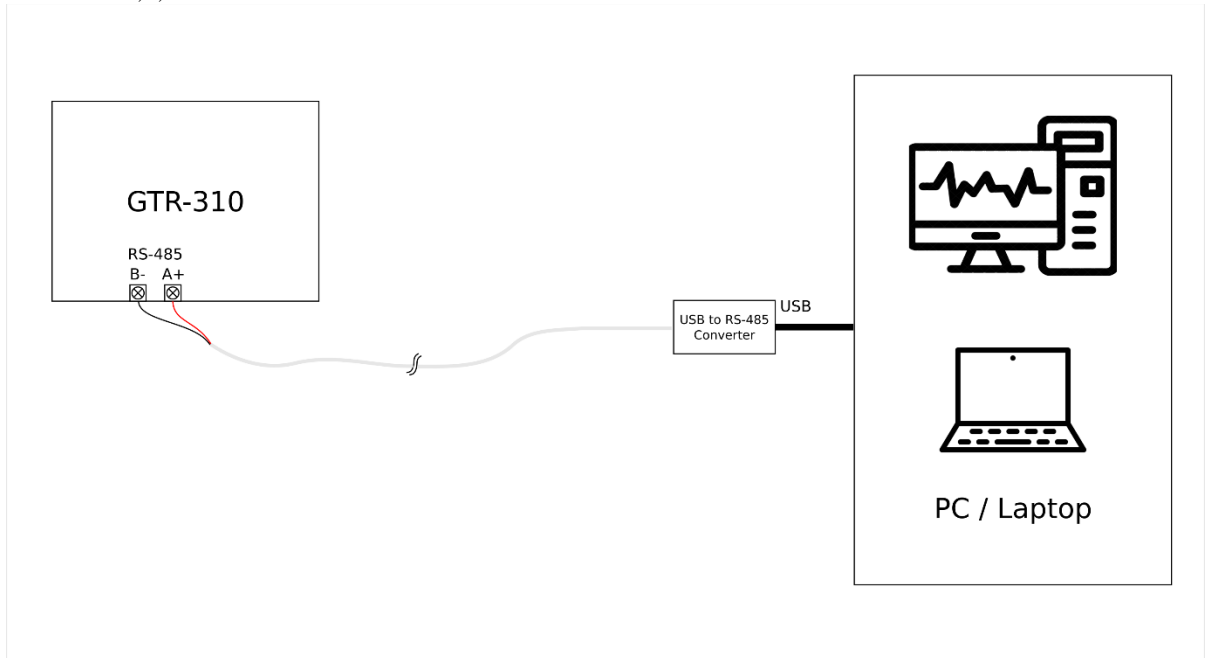
Current protection	45%	55%	65%	75%	Example: The ratio is set to 500:5, P11 and P12 are set to ON and OFF, the overcurrent is $500 \times 55\% = 275A$.
Pin 11	OFF	ON	OFF	ON	
Pin 12	OFF	OFF	ON	ON	

8. Terminal description

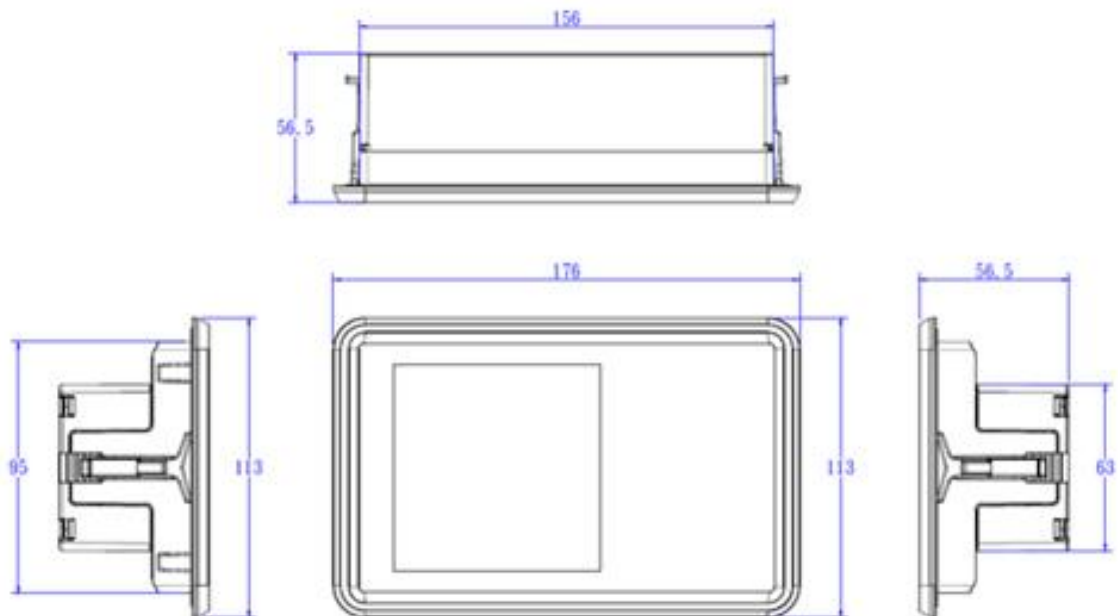
GTR-310 terminal block pin description			
Number	Description	Code	Remarks
1	Battery +	B+	
2	Battery -	B-	
3	Starter output	Motor	
4	Fuel valve output	Valve	
5	Alarm output	Alarm	
6	Engine stop output	Stop	
7	Preheat output	PreHeat	
8	Water temperature switch/sensor	WTS	
9	Oil pressure switch/sensor	OPS	
10	Oil temperature sensor input	OTS	
11	AUX input (B-)	AUX	
12	Emergency stop input (B-)	EMS	
13	ATS input (B-)	ATS	
14	NA		
15	L-side of current transformer	CT-L	
16	K-side of current transformer	CT-K	
17	NA		
18	Frequency input	FQ2	
19	NA		
20	Frequency input	FQ1	

9. Communication

- RS-485- Modbus RTU
- Baud Rate 19200 or 9600
- Format N,8,1



10. Dimensions



11. Wiring Diagram

