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TR100 User Manual



TOUGHSeries
Digital Generator Controllers



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Table of Contents

TR100 User Guide

1 Introduction	3
1.1 Limitations	3
2 Wiring and Setup	4
2.1 Typical Wiring Diagram	5
3 Using the Remote	6
3.1 Power Up	6
3.2 Failure Shutdown	7
3.3 Front Panel Menu	8
3.3.1 Operator Setup	8
3.3.2 Device Info	9
3.3.3 Adjusting Settings.....	9
3.4 Starting and Stopping	10
3.5 Parameter Display	11

TR100 User Guide

This is the user manual for the TR100, the Dynagen remote panel that works with the TG350 or TG410 controllers.

1 Introduction

The TR100 is a J1939 remote panel for use with the TG350 and TG410. In a J1939 network there can be one local engine controller (TG350 or TG410) paired with an unlimited number of remotes (recommend limiting to five remotes).

The remote mimics what is displayed on the controller (see [limitations](#) below).

1.1 Limitations

The remote panel cannot communicate with more than one local controller and there can only be one local controller on a single J1939 network.

There are restrictions the remote panel has compared to what can be done locally on the controller:

1. Speed control of the engine cannot be done from the remote. You must use the local controller.
2. The countdown timers (e.g. delay to start, preheat, cranking, crank rest, warm-up, ...) are not displayed on the remote.
3. The log cannot be accessed from the remote panel.
4. The aftertreatment (e.g. DPF) menu is not displayed on the remote panel. A DPF/DEF cannot be initiated from the remote panel.
5. No I/O on the remote panel is supported such as switched inputs, switched outputs, analog inputs, or modbus (RS485) communications.
6. The date and time on the remote must be programmed manually. It is not updated over J1939. All custom text (if applicable) must be programmed to the remote using the RapidCore Configuration software.

2 Wiring and Setup

Please follow the below guidelines when installing the remote panel.

Wiring

1. The maximum J1939 (CAN) cable distance is 40m (131.2ft). Twisted pair or shielded twisted pair cable must be used. See J1939 standards J1939-11 for twisted shield pair requirements or J1939-15 for twisted pair (unshielded) requirements. In brief, the cable must have a characteristic impedance of 120Ohms terminated at each end by 120Ohm resistors. Note: cable impedance is not the same as the resistance of the cable.
2. The remote panel must be provided with power and ground connections.

TR100 Setup

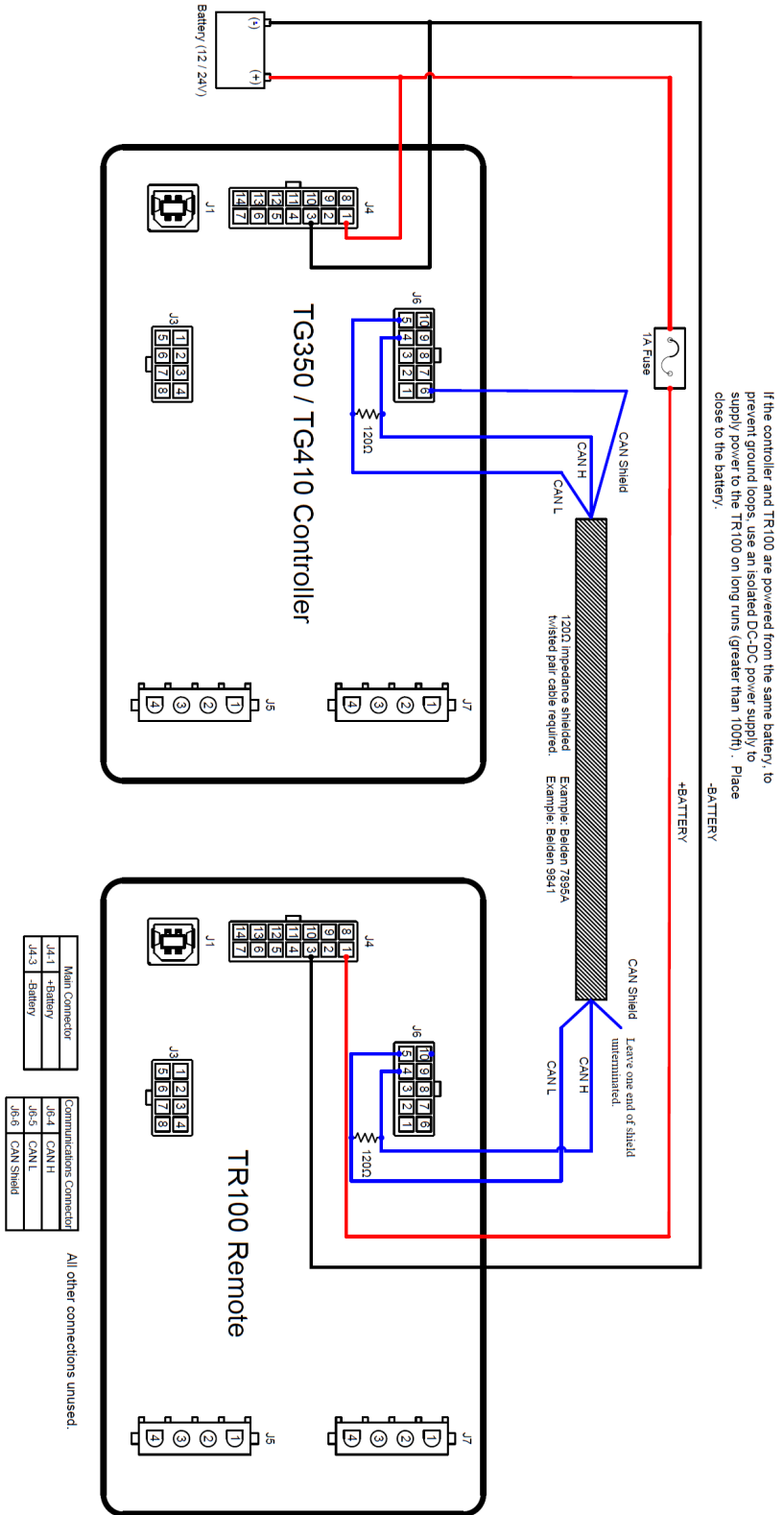
1. Download the TR100 firmware from www.dynagen.com/support and unzip it to the desktop.
2. Using RapidCore program this firmware into a TG350 or TG410 to convert it into a TR100.

Local TG350 / TG410 Setup

The remote needs access to certain parameters over the CAN J1939 bus. To do this follow these steps:

1. Using RapidCore read the settings from the local controller. A new settings tab will open. Go to that settings tab.
2. Under Communications > J1939 Bus > Broadcast Over J1939:
 - a. In the case of a mechanical engine these must be broadcasted by the local controller. Enable Engine Speed, Engine Temperature, Oil Pressure, and Engine Hours.
 - b. In the case of an electronic engine some parameters are already broadcasted by the ECM and should not be sent by the controller. Disable Engine Speed, Engine Temperature, Oil Pressure, or Engine Hours as these parameters are sent by the engine ECM. They should be hidden by default by RapidCore.
3. It is recommended to set "DTC Warning Broadcast Mode" to "Multiple Warning".
4. Enable Battery Voltage.
5. Enable AC Sensing and Fuel Level if applicable to your application.

2.1 Typical Wiring Diagram



TG350/TG410 to TR100 connection.
DWG1546R1.0








3 Using the Remote

This section discusses how to use the remote.

Using the Menu System

Task	Description
Entering Menu	When in the OFF mode, press the enter button to bring up the menu.
Navigating Menu	Once in the menu, use the up and down arrows to navigate. Pressing enter will move you into that menu.
Change a Setting	Scroll to the desired value and press enter to select. A check mark should appear beside that item. Press enter again to save the setting and return to the previous screen.
Scroll Parameters	When in Auto or Running mode, pressing the up and down arrows will scroll through the parameter pages.
Lock Screen	When in Auto or Running mode, the screen can be locked to a certain parameter page by pressing Enter and unlocked by pressing Enter again.
Events History	Once in the menu, select Events History to view the most recent controller event. Use the up and down arrows to navigate to other events. The controller can store up to 150 events. If more than 150 events occur, the oldest event is deleted to make room for the next event.

Front Panel Items

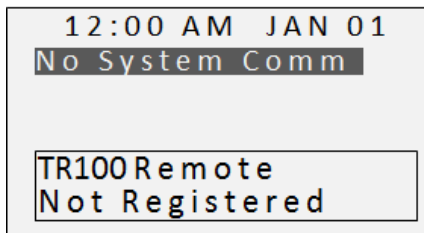
Item	Name	Description
	Off Button	Used for turning off the engine or exiting out of Auto mode. This is not intended to function as an Emergency Stop as there are conditions in which it will not shut down the engine. See the OFF Button Function section for more information.
	Auto Button	Used for placing the controller into AUTO mode. Once in AUTO mode, the controller waits for a start command to be received.
	Run Button	Used to start the engine manually. The Off button must be used to shut down the engine if it has been started using the front panel.
	Up Button	Used for moving around in the menu, changing a setting's value, or changing the currently displayed parameter page.
	Enter Button	Used for entering the menu system, accepting settings, or locking the LCD screen when viewing parameters.
	Down Button	Used for moving around in the menu, changing a setting's value, or changing the currently displayed parameter page.
	Generator LED	Green = Engine running with no issues Amber = Engine running with warnings Red = Engine shut down on failure

3.1 Power Up

Whenever the remote panel is powered up it will attempt to register with the local controller. This happens on every power up.

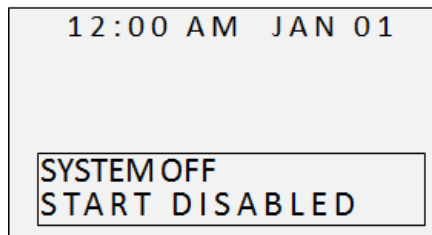
Registration is a pairing process that establishes a communication link. Once established the remote panel and local controller can communicate with each other.

If the remote panel is not registered and also cannot communicate with the local controller it will display the following message.

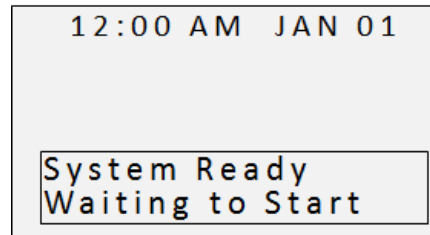


Check the wiring between the local controller and the remote panel.

Once the remote is registered it will display one of the following screens depending on if the controller is in the OFF or AUTO modes.



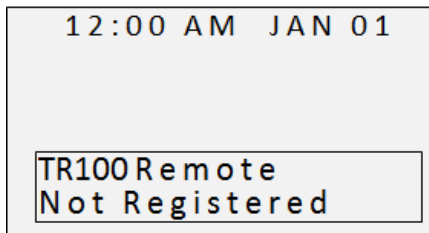
OFF



AUTO

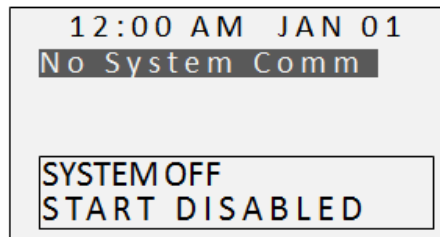
The remote cannot start the controller when it is in the OFF mode. This is to prevent accidental starts when the engine or generator is being worked on. If the controller is in AUTO then starting from the remote is permitted and the screen notifies you of such.

If the remote could not register with the local controller the below screen is displayed.



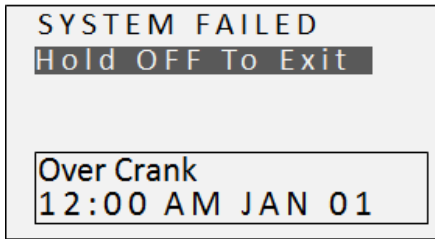
Note that the remote is setup to work with certain systems only. It may not work with every TG350 or TG410 system. Check with your OEM for assistance.

If communication with the controller is lost the remote will display the following screen:



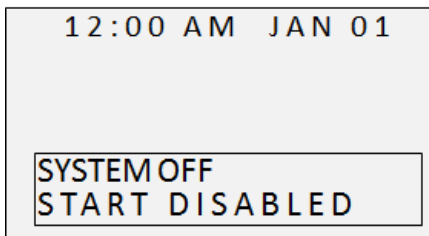
3.2 Failure Shutdown

If the local controller has shutdown due to a failure the following screen will be displayed on the remote panel.



The time, date, and reason for the failure will be displayed on the screen. To reset the failure press and hold off until the controller goes back to the OFF state. Then release the OFF button. The remote will do a reset and the screen will flicker. This is normal.

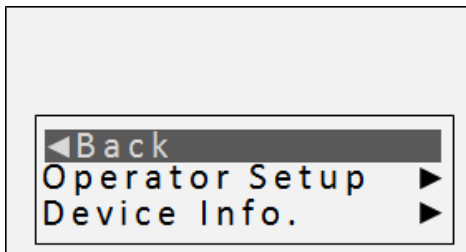
This is the screen that will be displayed when the controller is in the OFF mode after the failure has been reset.



3.3 Front Panel Menu

There are several settings the operator can change in the remote. The menu can only be accessed when the local controller is in the OFF or AUTO modes. By pressing the Enter button the menu can be accessed.

The following screen shows the main menu of the menu system. To exit the menu system at any time press and hold OFF until you exit the menu.



The cursor is the solid bar. Press the up and down keys to move the cursor up and down. Moving the cursor to Back and pressing enter will exit the menu (or take you to the previous menu). "Operator Setup" and "Device Info." are sub-menus as indicated by the right pointing arrows. Scrolling down and pressing enter on one of them will take you to that submenu.

3.3.1 Operator Setup

The Operator Setup menu contains the following items (The items in bold are submenus.)

Name	Range	Description
Lamp Test	Function	Performs a lamp test.
Display	Sub menu	Contains settings that control the screen and parameter display behavior.
Date/Time	Sub menu	Date and time settings.

Operator Setup

The Display menu contains the following items.

Name	Range	Description
LCD Reverse	Function	Reverses the screen. Black Text with white background or white text with black background.
LCD Contrast	5 to 95% in 5% increments (Default: 50%)	Adjusts the screen contrast.
Page Scroll	1 to 10s (Default: 5s)	Adjusts the time each parameter screen is displayed in RUN.
Message Pop-up	1 to 10s (Default: 5s)	Adjusts the amount of time a message (event or warning) is displayed on the second line of the display in RUN.
LCD Backlight	10 to 600s in 1s increments. (Default: 600s)	Adjusts the time the LCD backlighting remains on after no key presses. In RUN mode the back-light is on all the time.

Display

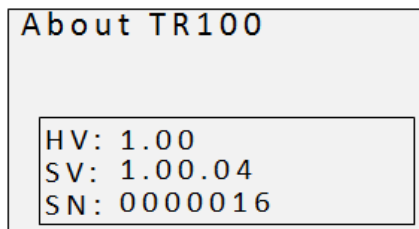
The Date/Time menu contains the following items.

Name	Range	Description
Date Change	Sub menu	Day, month, and year settings.
Time Change	Sub menu	Hour, minute, and second settings
Daylight Savings	Disable/Enable	If enabled automatically adjusts the time for daylight savings. This is valid for North American only.

Date/Time

3.3.2 Device Info

Selecting Device Info displays information about the TR100.



HV is the hardware version. SV is the software version. SN is the serial number.

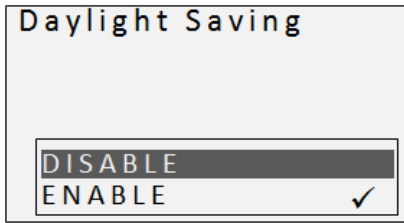
3.3.3 Adjusting Settings

In the menu system there are three types of menu screens used to adjust parameters.

(1) Select from a list of items.

An example of this type of setting is the Daylight Savings parameter in the Operator Setup > Date/Time menu.

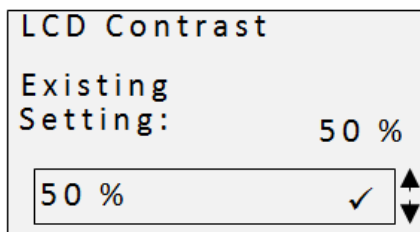
Press up or down to scroll to the desired value. Press enter once to check the value. Press enter again to exit the menu. If you only wanted to see what a setting was set to and not change anything just scroll down to the checkmark and press enter to exit the menu.



(2) Numeric Adjustment.

An example of this type of setting is the LCD Contrast parameter in the Operator Setup > Display menu.

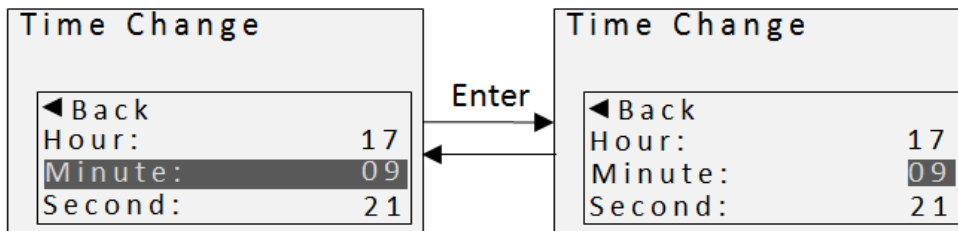
Press up and down to change the setting. Press enter to select the change. A checkmark will be displayed. Pressing enter will checkmark displayed will stored value and exit the menu.



(3) Multiple Numeric Adjustments.

An example of this type of setting is the time parameters in the Operator Setup > Date/Time > Time Change menu.

Press up and down to scroll to the desired parameter you wish to change and press enter. The parameter value will be selected. Press up and down to change the parameter. When finished press enter. The whole parameter will be selected. As before press up or down to scroll to the next parameter or back to exit the menu.



3.4 Starting and Stopping

The remote panel cannot start the generator if the local controller is in the OFF mode. This is a safety feature. When the local controller is in the OFF mode the remote controller will display "System Off, Start Disabled".

Starting with the remote panel can only be accomplished when the local controller is in the AUTO mode; you must go to the local controller and put it in AUTO if the local controller is in the OFF mode. When in AUTO mode the remote will display "System Ready, Waiting to Start". Pressing the Run button on the remote panel will start the controller.

When in RUN mode pressing the Off button on the remote will shutdown the controller. If the local controller was started via its front panel Run button then you must hold down the Off button on the remote panel for at least 3s -- this is referred to as the forced off feature. It is to discourage remote users from overriding users that started the controller locally.

For installations with cooldown delay, the remote panel cannot be used to cancel cooldown and reenter the RUN mode.

3.5 Parameter Display

The remote panel does not display parameters that are disabled or that are set to a switch. If you don't see a particular parameter on the remote panel display check if it is enabled on the local controller.