PGLSR SPEED SENSOR DRIVEN FROM DDU VER.1

USER MANUAL

RELEASE 1.0

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Submitted By

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INDEX

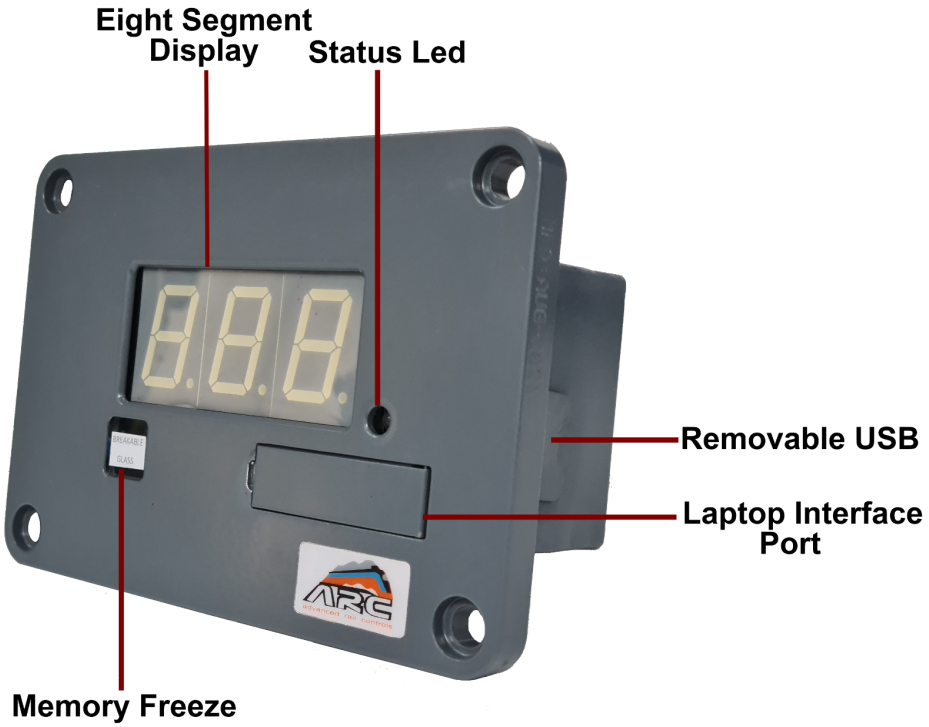
IMPORTANT NOTICE

This is a sophisticated microprocessor based equipment and can be serviced only by trained skilled personnel. Opening the equipment by any unauthorized person will make the warranty null and void.

1. Introduction

Pulse Generator-Less Speed Recorder [PGLSR] is driven from a Driver Display Unit suitable for use in 3 phase locomotives operated in Indian Railways. The PGLSR will act as Slave and DDU act as Master. PGLSR devices will receive data from VCU through DDU.

The PGLSR is designed around an ARM controller, having 7 segment displays for speed indication. Speed is recorded in the internal memory, which can be extracted. PGLSR communicates with DDU over RS-485 physical link with asynchronous serial communication



2. Functional Details

2.1 System Architecture of PGLSR

The scheme of PGLSR driven from DDU, which is suitable for HHP converted Locomotives. The speed input has been taken from the Driver Display Unit through an RS-485 interface already existing and optically isolated and connected to the 32 bit ARM controller used in the PGLSR. There is life sign monitoring between the DDU and the PGLSR. In case the DDU lifesign is missing, PGLSR will announce an Error through LED indication. Similarly, if the

PGLSR lifesign missing occurs, DDU will display a visual sign. Whenever Lifesign resumes, normal function will take place.

The PGLSR uses three seven segment displays of one inch size each to show the speed in digital form. Power supply needed for the PGLSR is derived from the loco battery at 110V DC. Reverse polarity protection and surge protection are implemented.

2.2 Speed Input

The speed input is taken from the Driver Display Unit through an RS-485 interface. The driver display received speed through MVB from VCB. Changing or modifying wheel diameter is not given in PGLSR. This facility is already available in VCU.

2.3 Fault Indication

2.3.1 Fault Indication on PGLSR

The PGLSR is provided with a dual colour Green & Red LED for announcing its different status. The interpretation of its state based on the LED colour is as follows

LED Status	**Details**
Blinking Green colour	Normal function, and PGLSR in the recording state.
Green LED Steady	Lifesign missing from DDU
RED LED Blinking	PGLSR Memory approaching FULL

2.3.2 Fault Indication on DDU

If the Lifesign from PGLSR is missing on any account, a RED LED mimic will appear on the DDU screen

2.4 Signals for Recording

Following signals will be recorded in PGLSR

SL No	Parameter for Recording
1	Loco Number
2	Speed in km/h
3	Odometer Value (Distance travelled) - Calculated by DDU based on Speed
4	Real Time in HH:MM:SS on a 24 hour scale
5	Date in DD:MM:YY
6	OHE Voltage
7	OHE Current
8	TE/BE Reference
9	Auto Brake Pressure (Demand Value by Driver)

2.5 Recording Memory

There is a provision for two USB's. In one USB port (Internal), a USB memory stick can be inserted. It is called a removable USB memory and in another USB port which is available in-front of the unit, users can insert their USB cable to the Laptop loaded with application software and access the internal recorded data. where long term and short term data is recorded which can retrieve in laptop through USB port provided in front of PGLSR unit. The long term and short term data is also recorded in removable USB memory stick provided within PGLSR

2.6 Recording Length & Periodicity

The non-volatile recording is arranged in two parts viz. Short Term Memory for a duration of 10 days with a recording resolution of one second and Long Term Memory for a duration of minimum 90 days with a recording resolution of 20 seconds. When memory becomes full, fresh event data will be recorded based on the first in first out (FIFO) principle. A separate option is provided to the user to select memory erase using application software

2.7 Display & Indications

The PGLSR uses a 3 seven segment display of 1 inch size to show the speed in digital form. Yellow illumination colour in black display background is considered. The PGLSR uses a single dual colour LED [Green & Red] for visualisation

2.8 Power Supply

Power supply needed for the PGLSR is derived from the loco battery at 110V DC

2.9 Access to Short Term & Long Term Memory

Long term and Short term memory in internal flash, can be accessed through a Laptop via USB cable which is loaded with application software and long term and short term memory can be accessed from the removable USB memory stick provided within PGLSR unit. The short and long term memory data can be retrieved in the application software and viewed in table or graphical format.

2.10 Memory Freeze

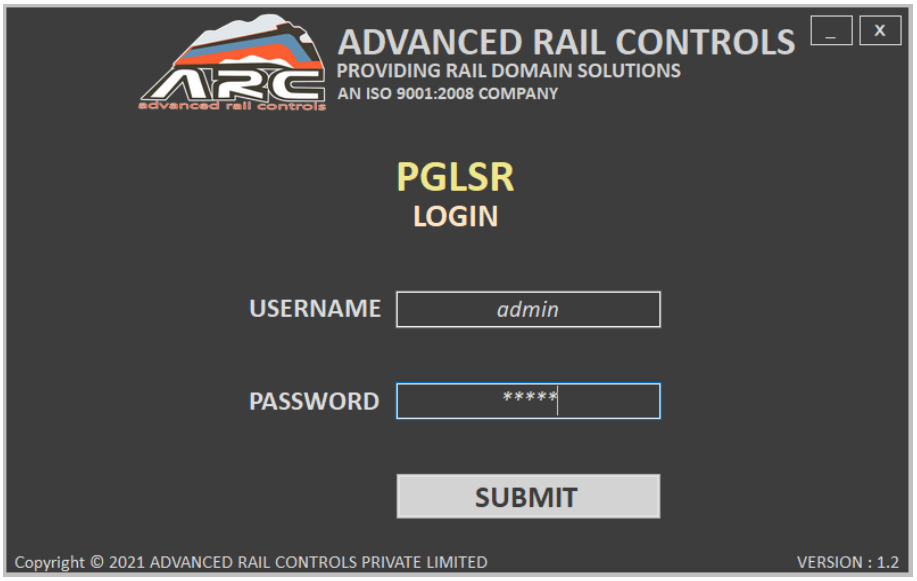
Memory freeze switch is provided within a breakable glass for freezing the memory when needed. Memory can be unfreezed from an application provided in windows.

3. Application in Windows

PGLSR application can be installed in windows 7 and above Operating system.

3.1 Login Screen

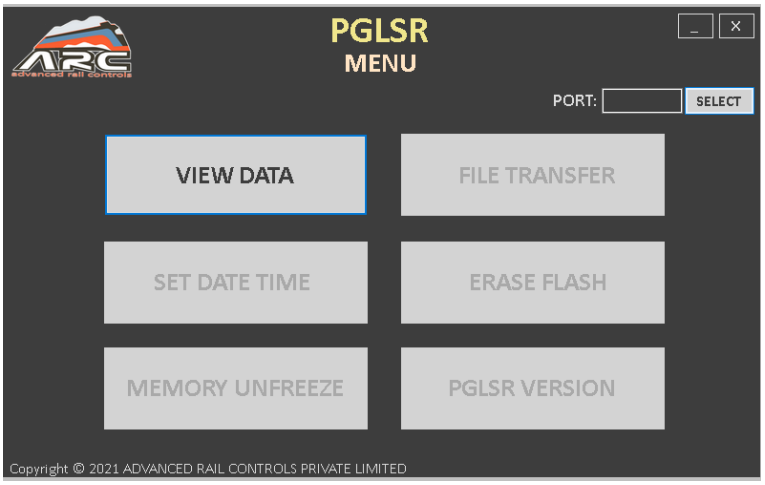
Application is password protected. Username and Password is required to open application



3.2 Menu Screen

Following Menu option are given

1. VIEW DATA
2. FILE TRANSFER
3. SET DATA TIME
4. ERASE FLASH
5. MEMORY UNFREEZE
6. PGLSR VERSION



3.3 VIEW DATA

Files downloaded from Long term and Short term memory or Files inside a removable USB can be viewed in VIEW DATA. Data can be viewed in table and graphical view. The data can be filtered using date and time.

PGLSR
SHORT TERM DATA

C:\Users\My-PC\Desktop\New folder\short | BROWSE

LOCO NO: 31525

TABLE GRAPH

FROM: 31-08-2021 TO: 31-08-2021

START TIME 15 : 44 : 00 END TIME 15 : 45 : 15

BACK FILTER RESET

Sl. No.	Date	Time	Speed(km/h)	Vcat(kV)	Iprim(A)	Te/Be(kN)	Auto Brake(kg/m2)	DDU Lifesign Missing	Memory Freeze
1	31-08-2021	15:45:15	0.1	25	200.2	-2.2	5.38	Ok	Off
2	31-08-2021	15:45:14	0.15	25	200.2	-3.08	5.38	Ok	Off
3	31-08-2021	15:45:13	0.17	25	200.2	-5.22	5.38	Ok	Off
4	31-08-2021	15:45:12	0.22	25	200.2	-6.3	5.38	Ok	Off
5	31-08-2021	15:45:11	0.27	25	200.2	-7.59	5.27	Ok	Off
6	31-08-2021	15:45:10	0.32	25	200.2	-7.81	5.27	Ok	Off
7	31-08-2021	15:45:09	0.37	25	200.2	-9.42	5.38	Ok	Off
8	31-08-2021	15:45:08	0.44	25	200.2	-12.16	5.38	Ok	Off
9	31-08-2021	15:45:07	0.49	25	200.2	-13.82	5.38	Ok	Off
10	31-08-2021	15:45:06	0.59	25	200.2	-16.06	5.27	Ok	Off
11	31-08-2021	15:45:05	0.66	25	200.2	-17.19	5.38	Ok	Off
12	31-08-2021	15:45:04	0.76	25	200.2	-19.97	5.27	Ok	Off
13	31-08-2021	15:45:03	0.88	25	200.2	-23.78	5.38	Ok	Off
14	31-08-2021	15:45:02	1	25	200.2	-27.25	5.38	Ok	Off
15	31-08-2021	15:45:01	1.12	25	200.2	-29.59	5.38	Ok	Off
16	31-08-2021	15:45:00	1.27	25	200.2	-34.77	5.38	Ok	Off
17	31-08-2021	15:44:59	1.42	25	200.2	-37.45	5.38	Ok	Off
18	31-08-2021	15:44:58	1.61	25	200.2	-43.51	5.38	Ok	Off
19	31-08-2021	15:44:57	1.81	25	200.2	-48.88	5.38	Ok	Off
20	31-08-2021	15:44:56	2.03	25	200.2	-54.25	5.27	Ok	Off

POWER ON

EXPORT TO EXCEL PRINT

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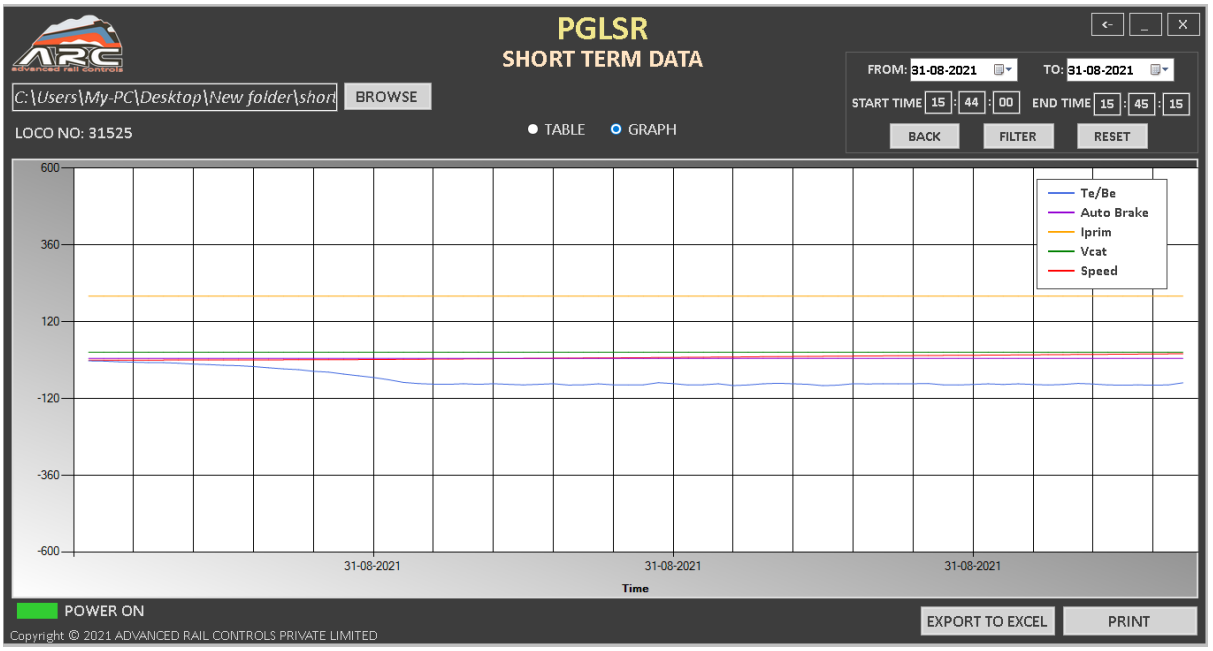
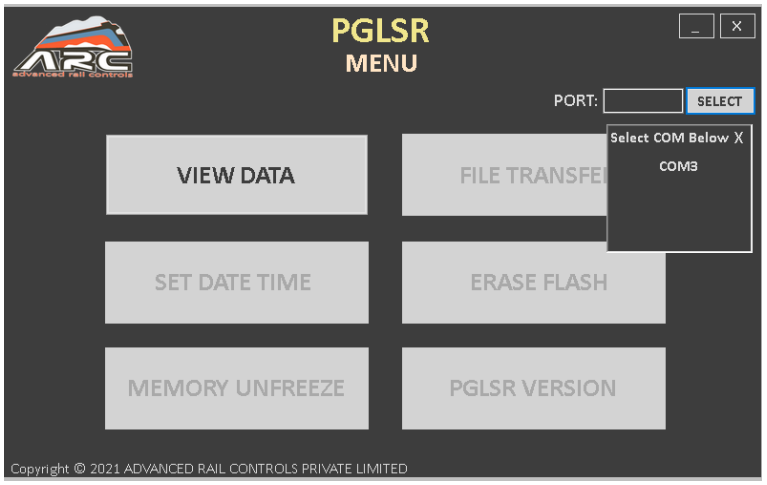
Table View

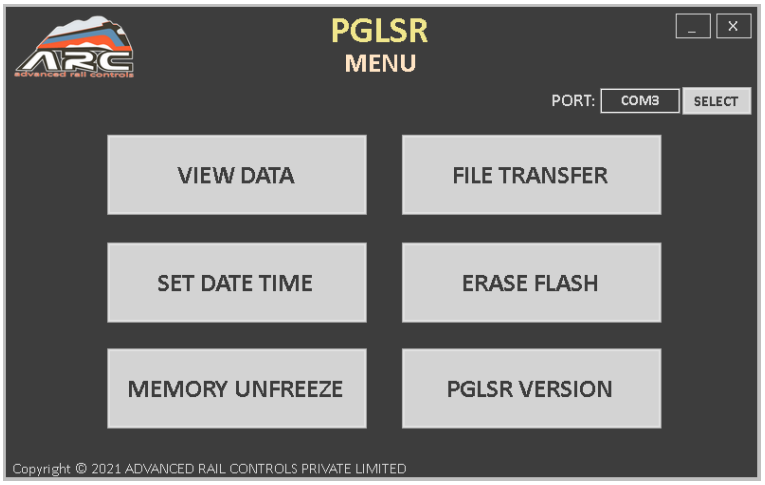


Graphical View

3.4 PGLSR CONNECTION

PGLSR has a USB port which is available in-front of the unit, users can insert their USB cable to the Laptop. Select COM by clicking on the SELECT button, List of available COMs will be displayed. COM can be selected from the list by double clicking on the required COM.

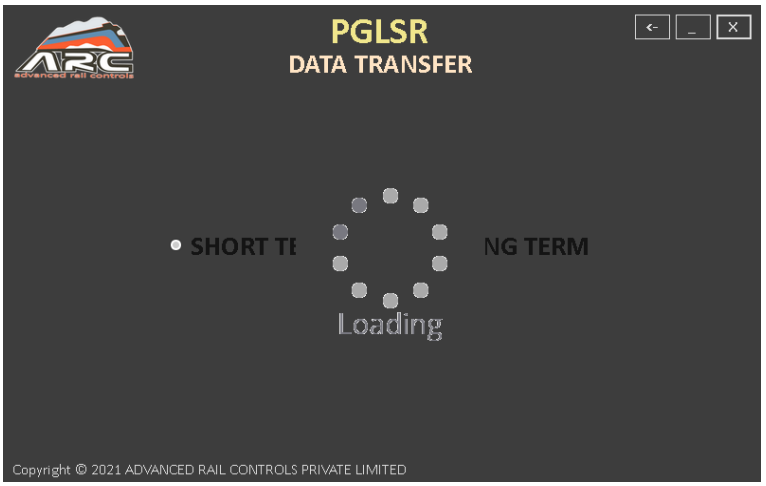




3.5 FILE TRANSFER

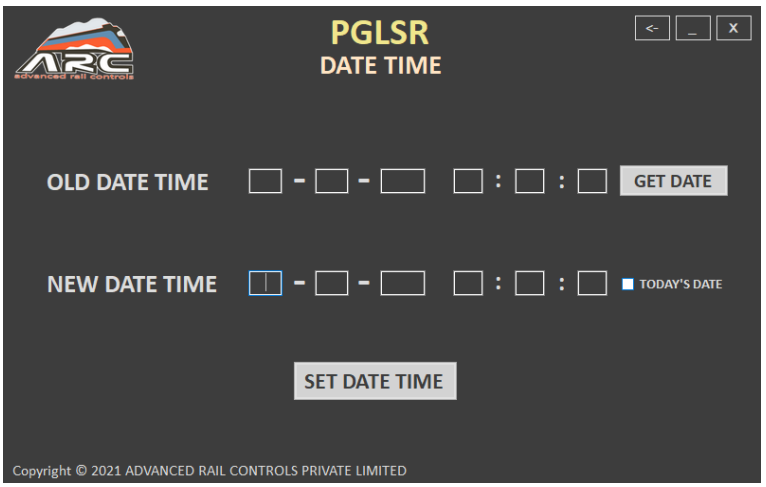
PGLSR has 2 non-volatile flashes to save long term and short term data. Which can be retrieved in laptop through USB port provided in front of PGLSR unit by connecting USB cable between laptop and PGLSR device.

Long and short term data can be retrieved to the laptop using the FILE TRANSFER button. Select long or short term and give the path where the data wants to be saved. These saved files can be viewed using the VIEW DATA option.



3.6 SET DATA TIME

This option is used to view/modify RTC date and time in a PGLSR device. The GET DATA button retrieves the PGLSR date and time to LAPTOP and SET DATA TIME button is used to modify PGLSR device's date and time.



3.7 ERASE FLASH

ERASE FLASH will be used to erase either short or long term non volatile memory. This option is password protected. Once a user erase data it will erase permanently and can`t be retrieved back.

3.10 MEMORY UNFREEZE

Memory freeze switch is provided within a breakable glass for freezing the memory when needed. Memory can be unfreezed from the MEMORY UNFREEZE button. Once memory is unfreeze PGLSR device start recording data.

3.9 PGLSR VERSION

PGLSR VERSION button to retrieve software version of PGLSR controller firmware.

4.0 CONTACT DETAILS

For any warranty/service related queries, please contact:

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