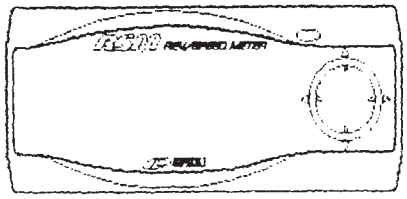
A 'PEX REV SPEED METER

RSM REV SPEED METER

Instruction Manual

Thank you for purchasing this unit. Please read this manual to ensure proper use of this product. Also, be sure to keep this manual in a safe place for future reference. Be sure to include this instruction manual when transferring ownership of this product.



Product Name	Rev Speed Meter
Product Code	405-A012
Applications	Only for Vehicles listed in the Wiring Diagram Booklet
Features	Engine Speed and RPM, Travel Distance Battery Voltage 0-100,200,400m Acceleration 0-100,200,300 km/h Acceleration Preset 0-250 km/h Mid– Range Accel., etc.

APEXi®

A PEX Chasing Our Dreams - A complete line of customized car and automotive parts developed with state of the art technology and new ideas. Our company is A'PEX which means the highest in quality.

Table of Contents

Chapter 1 To Begin

Safety Precautions

For safe use of this product, be sure to read the Safety Precautions. Keep the manual in a safe place after use for future reference. We have included these warnings to protect the user and dealer from unnecessary harm. These points have been marked throughout this manual by SIGNAL WORDS. Please refer to the table on the left for a glossary of terms meanings.

■Glossary

Display	Meanings
⚠ WARNING	Failure to do so may result in death or severe injury to the user and others.
⚠ CAUTION	Failure to do so may result in light injury to the user and others or product and engine damage.
PLEASE	Failure to do so may result in product malfunction and damage.

⚠ WARNING

- Never use this product on a vehicle that is NOT listed in the manual.
  We cannot and will not guarantee proper operation of the unit and vehicle. Also, this may lead to severe accidents and should be avoided.

- Discontinue use of this product immediately if any unusual odor or smoke comes from the unit.
  Failure to do so may result in electrical shorts and potential engine fire. Kindly repack ALL the components of this unit in its original packaging and return to your dealer of purchase with the original receipt.

- Do not use this product for any other purpose than the one listed in this manual.
  We are not responsible for any damages or injuries incurred from improper usage of this product.

- Do not rapidly turn the Ignition key ON and OFF.
  This may erase the data and settings in the unit.

⚠ WARNING

- Never operate this unit while driving
  This may lead to accidents.

- Always remove the negative terminal of the battery before attempting installation.
  Failure to do so may result in electrical fires and engine fire.

- Never pull hard on the coupler, be sure to correctly unclip the coupler.
  Failure to do so may result in loose wire electrical shorts and electrical fire.

- Always wire the unit up according to the instruction manual.
  Failure to do so may result in electrical fire, improper unit / vehicle operation.

- If adjustments are necessary during driving, be sure to slow down and abide by all the rules and regulations of the highway before adjusting.
  Failure to do so may result in accidents.

- Never use the speed limiter function on public highways
  Release the speed limiter on closed race tracks only
  Be sure to slow down and abide by all the rules and regulations of the highway.

⚠ CAUTION

- This product should ONLY be installed by a trained professional installer.
  Installation requires past experience to prevent damage to the unit and vehicle. We will not honor any claims arising from improper installation of this unit.

- Never disassemble or tamper with this unit.
  This could lead to serious injury.

- Do not expose this unit to excessive shock.
  This could lead to unit malfunction.

- Do not use this unit under extremely high temperatures or under direct sunlight.
  Failure to do so may lead to improper unit operation and vehicle damage.

- Keep this unit away from direct sunlight and direct water.
  Failure to do so may lead to electrical shorts and unit damage.

FUNCTIONS

The RSM (Rev Speed Meter) is a multi function measuring device designed to measure and monitor vehicle speed, RPM, 0-400m time, mid range acceleration, estimated horsepower, as well as acceleration G. (Using optional G Sensor)

▪Easy to Read VFD (Vacuum Fluorescent Display)

The RSM utilizes and easy to read VFD screen in a highly stylish case which also complements the cockpit interior.
Due to the 3 row 7 segment LED screen used on the previous model, we were only able to display a limited amount of information on screen. Now with the new dot matrix VFD screen, we are able to display multiple types of data in multiple formats. In addition, we are also able to display the data in graph mode, and analog modes to ensure that the driver is properly informed.

▪Thin Case/ Single Button Design

Circuit board and case design have been engineered to fit into a highly compact 52mmx126mmx18mm space. This allows easy mounting on the steering column and dashboard. Since the unit is self contained, there is no need to search for room to mount a control box. By using a single button design, we have also maximized efficiency when navigating through the menus.

▪Allows Speed Limiter Cut for a variety of Applications

Works with the complicated TOYOTA speed limiter system. Also, compatible with new style HONDA speed limiters.

▪Retains MEMORY settings even with the battery disconnected

By utilizing an EEPROM, the unit will not lose its memory settings even if the battery is disconnected, or the power is turned OFF. Of course, the best 5 Time Measurements are also constantly stored. This eliminates the necessity of reprogramming the unit every time after routine services.

▪Various Measurements/ Display Parameters and Best Time Recording

Please

- The wiring harness of this unit may cause some electrical noise for some TV and radio applications. Please avoid passing the wiring harness near these products.
- The heat generated by this unit is normal.

Engine RPM, Speed, Travel Distance, and Battery Voltage can be displayed in real time Graph Mode. Numerical Mode and Meter Mode allows Peak Hold function while the Graph Mode allows for Replay. In addition, the unit can measure Travel Distances, 0-100m/200m/400m times and 0-100km/h/200km/h/300km/h times. Also, in the Mid Range Acceleration Mode, the user can preset any range of speed to measure. The Top 5 times will be stored in the memory until initialized. (The stop-watch function will reset when the power is turned OFF)

▪Outputs for Engine RPM and Vehicle Speed to Activate External Relays

This unit has outputs for engine RPM and vehicle speed that are activated when the vehicle exceeds the preset values. For example, a separate radar detector can be made to turn ON at a certain speed, or an external shift light can be made to turn ON after a certain RPM. Also, a scramble boost switch can be connected to the output to activate it at a certain RPM. The possibilities are limitless.

▪Using the Optional G Sensor allows measurement of Front/Rear/Left/Right Acceleration

Using the separately sold G Sensor allows the unit to measure G's in 4-way front/rear/left/right directions. This data can also be plot onto a graph display. Replay function is standard. This feature can be used to map acceleration characteristics on the race track.

▪Using the Optional G Sensor allows Horsepower Calculation

The Highly popular Apex Power Meter is integrated into this unit. By inputting total vehicle weight and resistance during actual driving (Lost HP is measured at certain speed increments) the unit can measure HP through the speed sensor signal.

▪Using the Optional G Sensor : 0-400m Wheel-spin correction

The unit calculates and compensates the distance of wheel-spin for accurate measurements.

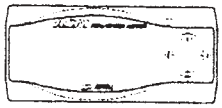
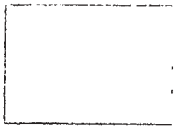
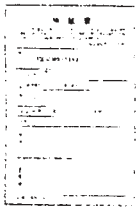
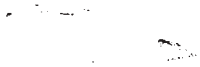
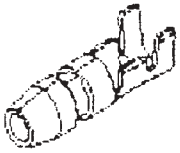
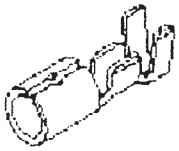
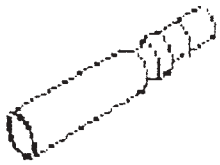
⚠CAUTION

- Never use the speed limiter function on public highways
  Release the speed limiter on closed race tracks only
  Be sure to slow down and abide by all the rules and regulations of the highway.

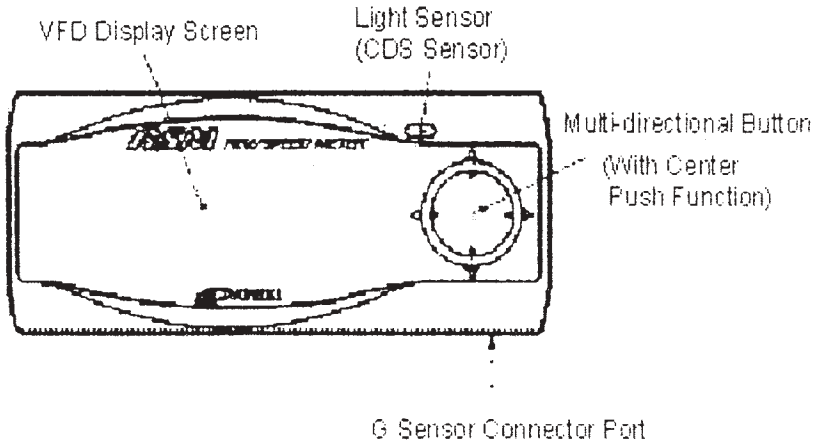
Part Names and Functions

■Parts List

Be sure to check the contents before attempting installation. Please notify your dealer of purchase for any missing or broken parts BEFORE attempting installation.

1. Control Unit	2. Instruction Manual	3. Wiring Manual	4. Diagram
			
1	1	1	1
5. Warranty Card	6. Signal Harness	7. Male Fitting	8. Male Sleeve
			
1	1	4	4
9. Female Fitting	10. Female Sleeve	11. Splice	
			
4	4	4	

■Part Names



■How to Operate Main Button Switch

Push UP

Press DOWN

Push LEFT

Press RIGHT

Press CENTER

●About the Pop-Up Menus

When the Center Button is depressed, the Pop Up Menus to the right will appear on screen. Use the button to illuminate the desired parameter and push the Center Button to select.

Ex) 

Press the Center Button, and select Nx from the Pop Up Menu.

GLOSSARY

Tp [TOP] ..... Return to the Main Menu
Nx [NEXT] ..... Proceed to Next
Pr [PREVIOUS] ... Return to Previous
Cn [CANCEL] .... Cancel Pop Up Menu
Rc [RECORD] .... Record

Optional Parts necessary to remove Speed Limiter Cut on some vehicles

Some vehicles require optional parts (refer to chart below) to remove the Speed Limiter Cut

※ Tested until Jan 2001

■Limiter Cut Option 1 (Product Code 430-A003)

Name	Type	Engine	Year	Notes
Aristo	JZS160	2JZ-GE	97.8~00.6	

■Limiter Cut Option 2 (Product Code 430-A004)

Name	Type	Engine	Year	Notes
Celsior	UCF2#	1UZ-FE	94.10~97.6	
Crown	JZS143	2JZ-GE	91.10~95.7	
Crown Majesta	UZS15#	1UZ-FE	95.8~97.6	
Soarer	JZZ30	1JZ-GTE	96.8~※	A/T
Mark II/ Cresta Chaser	JZX100	1JZ-GTE	96.9~00.9	A/T
	JZX90	1JZ-GTE	94.9~96.8	A/T

■Limiter Cut Option 3 (Product Code 430-A005)

Name	Type	Engine	Year	Notes
Aristo	JZS161	2JZ-GTE	97.8~00.6	
Crown Athlete	JZS171	1JZ-GTE	99.9~※	
Crown Estate	JZS17#	1JZ-GTE	99.9~※	

■Limiter Cut Option 4 (Product Code 430-A007)

Name	Type	Engine	Year	Notes
Aristo	JZS147	2JZ-GTE 2JZ-GE	91.10~97.7	W/TRC

CAUTION

- The optional parts list above are meant to work with the Vehicle Speed output. Vehicles using the optional parts listed above may NOT use the Vehicle Speed output for any other purpose.

About the Optional Parts

▪G Sensor for Accurate Power Readings

By utilizing the optional G Sensor, the user can monitor 4-way G movement as well as highly accurate power measurements. Usually, when measuring 0-400m times through the speed sensor signal alone, the meter will end measurement too early (shorter distance) due to wheel-spin. Using the G Sensor will compensate for the wheel-spin and give an accurate reading of acceleration times.

G-SENSOR
Product Code
430-A013

▪Convenient Mounting Bracket

Many dashboards these days have curved surfaces making mounting a problem. This bracket allows the unit to be mounted securely almost anywhere on the dash. Flexible angle adjustment allows maximum visibility.

Mounting Bracket
Product Code
430-A006

⚠WARNING

- Never use the speed limiter function on public highways
  Release the speed limiter on closed race tracks only
  Be sure to slow down and abide by all the rules and regulations of the highway.

Chapter 2 Initial Settings

Before Using this Product

1 Install the unit

Please refer to the separate Vehicle Specific Wiring Diagram Booklet for proper installation on the vehicle.

- Be sure that your vehicle is listed in the wiring diagrams. Do NOT install on any vehicle not listed in the wiring diagram booklet.
- Some vehicles require optional parts to disable the speed limiter.

■Vehicles Requiring Optional Parts for Speed Limiter Cut

Name	Type	Engine	Year	Note
Aristo	JZS161	2JZ-GTE	97.8~00.6	
	JZS160	2JZ-GE		
	JZS147	2JZ-GTE 2JZ-GE	91.10~97.7	w/TRC
Celsior	UCF2#	1UZ-FE	94.10~97.6	
Crown	JZS143	2JZ-GE	91.10~95.7	
Crown Majesta	UZS15#	1UZ-FE	95.8~97.6	
Crown Athlete	JZS171	1JZ-GTE	99.9~※	
Crown Estate	JZS17#	1JZ-GTE	99.9~※	
Soarer	JZZ30	1JZ-GTE	96.8~※	A/T
MarkII/ Cresta Chaser	JZX100	1JZ-GTE	96.9~00.9	A/T
	JZX90	1JZ-GTE	94.9~96.8	A/T

※tested until Jan 2001

CAUTION

- The optional parts list above are meant to work with the Vehicle Speed output. Vehicles using the optional parts listed above may NOT use the Vehicle Speed output for any other purpose.

Perform Initial Setting

In order to properly use this unit, a few initial parameters must set.

①Initial Settings

Initial Setting Table

②Other Settings that may be Necessary

When changing Tire diameter

Using Ouputs

Using the Warning Display

When using the Optional G Sensor (sold separately)

⚠WARNING

- Never use the speed limiter function on public highways
  Release the speed limiter on closed race tracks only
  Be sure to slow down and abide by all the rules and regulations of the highway.

Initial Setting Table

Selected TOYOTA Automatic Transmission Vehicles

For TOYOTA automatic transmission vehicles listed below, follow the setup procedures on the right page. For all other TOYOTA automatic vehicles, please follow the directions on P.19

■ Selected TOYOTA Automatic Transmission Vehicles

Name	Type	Engine	Year	ADJ	SpO	OPT	Notes
Celsior	UCF2#	1UZ-FE	'97.7～'00.7	44	-	-	
			94.10～'97.6	108	174	430-A004	
	UCF1#		'92.9～'94.9	108	-	-	
Crown	JZS155	2JZ-GE	'95.8～'97.6	34	-	-	
	JZS15#	1JZ-GE	'96.9～'99.8	30	-	-	
	JZS143	2JZ-GE	'91.10～'95.7	-	174	430-A004	
Crown Majesta	UZS15#	1UZ-FE	'95.8～'97.6	106	174	430-A004	
	UZS141		'91.10～'95.7	106	-	-	
Crown Athlete	JZS171	1JZ-GTE	'99.9～※	36	210	430-A005	
Crown Estate	JZS17#	1JZ-GTE	'99.9～※	36	210	430-A005	
Aristo	JZS161	2JZ-GTE	'97.8～'00.6	34	190	430-A005	
	JZS160	2JZ-GE		34	172	430-A003	
	JZS147	2JZ-GTE	'91.10～'97.7	-	150	430-A007	
		2JZ-GE		-	150	430-A007	
Soarer	JZZ30	1JZ-GTE	'96.8～※	34	204	430-A004	A/T
	UZZ31	1UZ-FE	'91.5～'93.12	108	-	-	
Mark II /Cresta /Chaser	JZX100	1JZ-GTE	'96.9～'00.9	34	204	430-A004	A/T
		1JZ-GE		33	-	-	2WD
	JZX90	1JZ-GTE	'94.9～'96.8	-	186	430-A004	A/T
Altezza	GXE10	1G-FE	98.10～※	100	-	-	w/o TRC

※Part numbers listed under the OPT column require the Optional Parts

CAUTION

- The optional parts list above are meant to work with the Vehicle Speed output. Vehicles using the optional parts listed above may NOT use the Vehicle Speed output for any other purpose.

1 Cylinder Number Setting

P 54 【etc.】 → 【Car Select】 Cyl

TOYOTA V8 Engine	4
Other Vehicles	Cylinder Number

RPM numbers may be displayed 1/2, and 1/3 depending upon the ignition firing types. In these, In those cases, set the cylinder setting to 1/2 or 1/3 and match the display to the actual RPM.

2 Speed Signal Pulse Setting

P 54 【etc.】 → 【Car Select】 SP1

(Altezza models not listed on left)	4P
(Altezza listed on left)	40P

3 Speed Pulse Adjust Setting

P 54 【etc.】 → 【Car Select】 ADJ

Refer to Left Table [ADJ]

4 Speed Limiter Cut Setting

P 52 【etc.】 → 【Output set】 SLC

(When cutting Speed Limiter)	170km/h
(When retaining Speed Limiter)	OFF

5 Vehicle Speed Output

P 52 【etc.】 → 【Output set】 SpO

Only for vehicles using Optional Parts for speed limiter cut. (Refer to OPT column on left)

(When cutting Speed Limiter)	Refer to [SpO]
(When retaining Speed Limiter)	OFF

If the Speed Limit Cut function is not being used, then the optional parts and use of the Speed Output is not necessary.

⚠ WARNING

- Never use the speed limiter function on public highways
  Release the speed limiter on closed race tracks only
  Be sure to slow down and abide by all the rules and regulations of the highway.

Cont'd from previous page

HONDA

Follow the setup procedures below for the HONDA vehicles listed on the right. For all other HONDA vehicles, refer to P.19.

■HONDA

Name	Type	E/G Type	Year	Adj Setting	Notes
S2000	AP1	F20C	99.4～※	106	
Torneo	CF3	F18B	97.9～※	91	A/T
	CF4	F20B		80	A/T
Accord	CF3	F18B	97.9～※	91	A/T
	CF4	F20B		80	A/T
Accord Wagon	CF6	F20B	97.10～※	93	
	CF7			96	
Odyssey	RA6	F23A	98.10～※	89	
	RA7			86	
	RA3		97.8～99.11	87	
	RA4			87	

1 Cylinder Setting — P54 【etc.】→【Car Select】Cyl

↓ Number of Cylinders

2 Speed Pulse Signal Setting — P54 【etc.】→【Car Select】SP1

↓ Refer to P160

Speed Pulse Adjust Setting — P54 【etc.】→【Car Select】ADJ

3 ↓ Refer to table above

Speed Limiter Cut Setting — P52 【etc.】→【Output set】SLC

4 (When setting speed limiter) 170km/h

(When deactivating speed limiter) OFF

⚠WARNING

- Never use the speed limiter function on public highways
  Release the speed limiter on closed race tracks only
  Be sure to slow down and abide by all the rules and regulations of the highway.

Other

For all other applications, please follow the setup instructions below.

1 Cylinder Number Setting — P54 【etc.】 → 【Car Select】 Cyl

Rotary Engine	# of Rotors×2
TOYOTA V8 Engines	4
Other	Cylinder Number

Some TOYOTA engine RPM numbers may be displayed 1/2. and 1/3 depending upon the ignition firing types. In these. In those cases, set the cylinder setting to 1/2 or 1/3 and match the display to the actual RPM.

2 Speed Signal Pulse Setting — P54 【etc.】 → 【Car Select】 SP1

Y32 Cedric/Gloria	16P
Y32 Cima	16P
Y34 Cedric/Gloria(VQ30VET)	8P
Other NISSAN models	2P
Other Japanese models	4P

Speed Limiter Cut Setting — P52 【etc.】 → 【Output set】 SLC

3

(When cutting Speed Limiter)	Standard Vehicles 170km/h Light Vehicles 130km/h
(When retaining Speed Limiter)	OFF

⚠WARNING

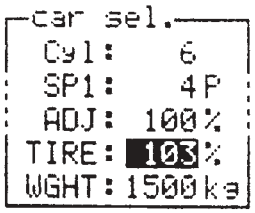
- Never use the speed limiter function on public highways
  Release the speed limiter on closed race tracks only
  Be sure to slow down and abide by all the rules and regulations of the highway.

Other Initial Settings

For use when the factory tire sizes are changed.

Tire Size Diameter Corr.

P54 【etc.】 → 【Car Select】 TIRE



Formula

$$\text{Corr. Value} = \frac{\text{New Tire Diameter}}{\text{Factory Tire Diameter}} \times 100$$

Please refer to tire manufacturer data for diameter specs, or measure the tire

Ex) Skyline GT-R(BNR32)

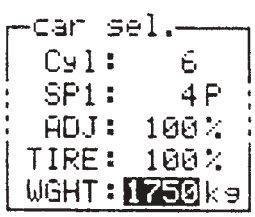
Factory Tire	225/50	R16	Diameter	632mm
New Tire	245/45	R17	Diameter	652mm

Correction Value= 652mm / 632mm x 100= 103 **Input 103 (%) Correction Value**

When measuring Power and Loss Power using the G Sensor (separately sold)

Vehicle Weight Input

P54 【etc.】 → 【Car Select】 WGHT



Formula

Vehicle Weight=Manufacturer claimed weight+ Driver weight+ cargo weight+(20~30)

The 20~30kg compensates for various weight differences due to optional equipment or accessories. Please account for other items in the vehicle that could affect vehicle weight.

Ex)

If the Manufacturer claimed weight is 1600kg,Driver is 60kg,and Gasoline is 70L with no extra cargo, then

$$1600 + 60 + 70 + (20 \sim 30) \fallingdotseq 1750\text{kg}$$

Input 1750 (kg)

When using the Optional G Sensor (Separately Sold)

G Sensor Calibration

P56 【etc.】 → 【Gsnsr Corr】

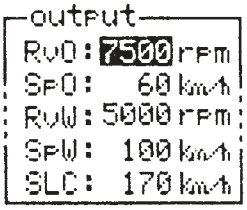
Always calibrate the G Sensor when installing or relocating

Using Outputs

Activate Outputs at Desired RPM Levels

RPM Output

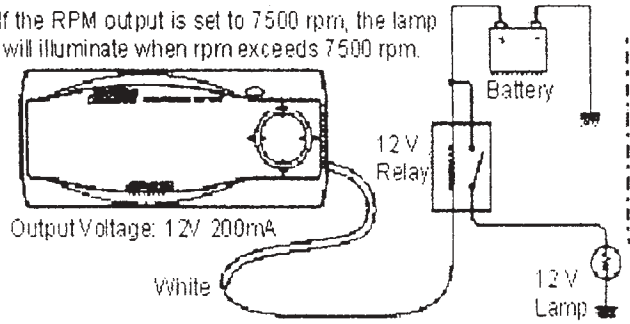
P52 【etc.】 → 【Output set】 RvO



This function allows an open collector transistor to turn ON when RPM exceeds a preset value.

【Default Value】 3000rpm (Voltage 12V, 200mA)

Ex) If the RPM output is set to 7500 rpm, the lamp will illuminate when rpm exceeds 7500 rpm.

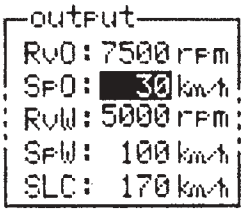


(Caution!!)
The RPM output wire is a switching ground. The relay must have a separate 12V power source.

Activate Outputs at Desired Vehicle Speed

Speed output

P52 【etc.】 → 【Output set】 SpO

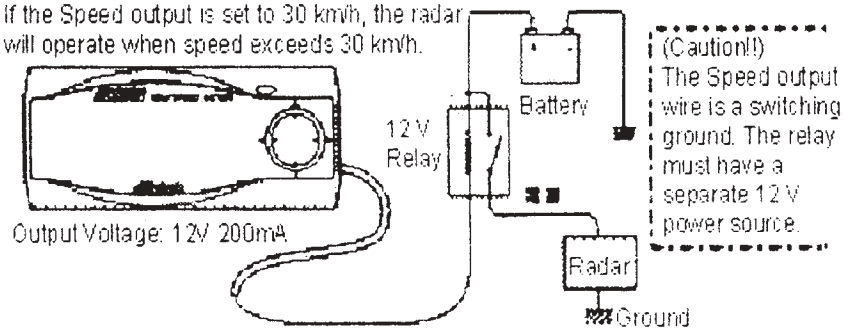


This function allows an open collector transistor to turn ON when SPEED exceeds a preset value.

【Default Value】 60km/h (Voltage 12V, 200mA)

Setup is required when the optional speed limiter cut parts are used. Also, the Speed output function must be connected to the optional parts.

Ex) If the Speed output is set to 30 km/h, the radar will operate when speed exceeds 30 km/h.



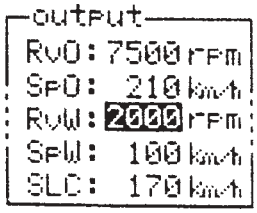
(Caution!!)
The Speed output wire is a switching ground. The relay must have a separate 12V power source.

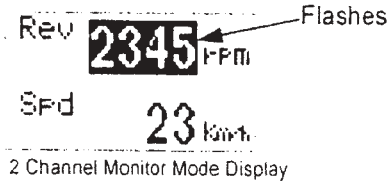
Using the Warning Display

Numerical Values will flash when HIGHER than the preset engine RPM (Monitor Mode)

RPM Warning Display

P52 【etc.】 → 【Output set】 RvW





2 Channel Monitor Mode Display

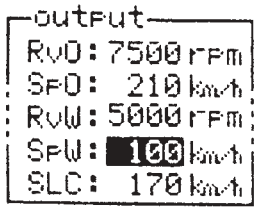
The Numerical value will flash when HIGHER than the preset level during Monitor Mode, and 1 Channel Analog+ Numerical Display

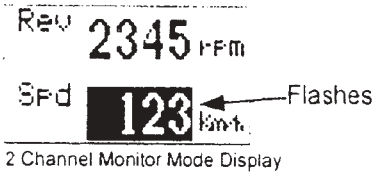
【Default】 5000rpm

Numerical Values will flash when HIGHER than the preset speed (Monitor Mode)

Speed Warning Display

P52 【etc.】 → 【Output set】 SpW





2 Channel Monitor Mode Display

The Numerical value will flash when HIGHER than the preset level during Monitor Mode, and 1 Channel Analog+ Numerical Display

【Default】 100km/h

Chapter 3 Operation

Function and Operation

Main Menu

The RSM utilizes 3 Main Menus for easy navigation.

main
1.Monitor
2.Measure
3. etc.

Monitor Mode

Displays Sensor Data

monitor
1.1channel
2.2channel
3.3channel
4.4channel
5.Rev.-[Y]
6.G-FR/RL

Engine RPM, Speed, Battery Voltage, Travel Distance, and 4-way Acceleration Measurement (When using optional G Sensor)

Measure Mode

Measure Various Parameters

measure
1. 0-%00m
2. 0-%00k
3. %%-%%k
4. STOP-W
5. POWER
6. LOSS-P

0-100,200,400m acceleration
0-100,200,300km/h acceleration
Preset Mid-Range acceleration
Stop-watch,
Power,
Loss Power

Etc. Mode

Used for Initial Setting Procedures

etc.
1.Output set
2.Grph Scale
3.Car Select
4.VFD Bright
5.Gsnsr Corr
6.Initialize

Allows initial setup of :
Vehicle settings,
Output settings,
Initialize Functions.

■ [1Channel~4Channel] Display Parameters

1. Rev ..... Engine RPM
2. Spd ..... Vehicle Speed
3. Trp ..... Travel Distance
4. F/R ..... Front /Rear Acceleration Measurement
5. R/L ..... Left/ Right Acceleration Measurement
6. Bat ..... Battery Voltage

■ Rev.-[Y] Display Parameter

Displays a plotted graph with Engine RPM as the horizontal axis.

1. Speed ..... Vehicle Speed
2. Gs F/R ..... Front /Rear Acceleration Measurement
3. Gs R/L ..... Left/ Right Acceleration Measurement

■ G-FR/RL Display

Displays acceleration. Using the center of the graph as the starting point, the unit measures front and rear G's on the vertical axis and left and right G's on the horizontal axis

■ Measuring Parameters

1. 0-*00m ..... 0-100,200,400m Measurement
2. 0-*00k ..... 0-100,200,300km/h Measurement
3. **-**k ..... User Preset Mid-Range Acceleration
4. STOP-W ..... Stop Watch (Lap/Split)
5. POWER ..... Power Measurement
6. Loss-P ..... Loss Power Measurement

■ Setting Parameter

1. Output set ..... RPM/ Speed Output Setting
   RPM/Speed Warning Display
   Speed Limiter Cut Setting
2. Grph Scale ..... Graph Scale Setting
3. Car Select ..... Cylinder Number Setting, Speed Pulse Setting
   Speed Pulse Adjust Setting, Tire Size Setting
   Vehicle Weight Setting
4. VFD Bright ..... VFD Adjustment
5. Gsnsr Corr ..... G Sensor Calibration
6. Initialize ..... Initialize All Data

Main Menu【Monitor】

Monitor Mode Overview

【Displays between1~4 parameters】

P30【Monitor】→【1 Channel】~【4 Channel】

[Parameter Glossary]

1. Rev .....Engine RPM
2. Spd .....Vehicle Speed
3. Trp .....Travel Distance
4. F/R.....Front /Rear Acceleration Measurement(Using G Sensor)
5. R/L .....Right/ Left Acceleration Measurement (Using G Sensor)
6. Bat.....Battery Voltage

[Display Method]

Numerical, Analog Display... Real Time, Peak Hold, Pause
Graph Display .....Real Time, Replay, Pause

【Plots engine RPM on the horizontal axis】

P34【Monitor】→【Rev.-[Y]】
[Vertical Contents Axis] Selects and displays 1 parameter out of 3

1. Speed .....Vehicle Speed
2. Gs F/R .....Front /Rear Acceleration Measurement(Using G Sensor)
3. Gs R/L.....Right/ Left Acceleration Measurement (Using G Sensor)

[Display Method]

1 point display,10 point display、Ghost Map Trace
..... Real Time Display, Replay Display, Pause

【Plot and display 4 way acceleration】

P35【Monitor】→【G-FR/RL】 (Using optional G Sensor only)

[Display Method]

1 point display,10 point display、Ghost Map Trace
..... Real Time Display, Replay Display, Pause

Main Menu【Measure】

Measure Mode Overview

Main Menu【etc.】

Etc. Mode Settings

Chapter 4 Monitor Mode

【monitor】→【1 Channel】~【4 Channel】

Choosing Between 1~4 Channels

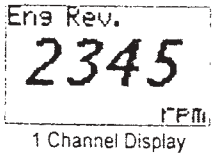
1~4 Channels can be selected from the 6 parameters below. The data can be displayed in Numerical, Analog, and Graph Modes. Each mode allows a Pause function. Also, Numerical and Analog modes have Peak Hold, while the Graph Mode has Replay.

【CAUTION】Replay Mode will replay the most recent memorized data. Despite changing any of the parameters, Replay Mode will continue to replay the same data.

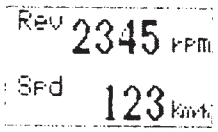
■Display Parameters

1. Rev.....Engine RPM	2. Spd.....Speed	3. Trp .....Travel Distance
4. F/R.....Fr/Rr Accel.	5. R/L.....Lt/Rt Accel.	6. Bat.....Battery Voltage

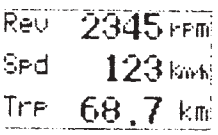
•Numerical Display Example



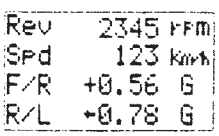
1 Channel Display



2 Channel Display

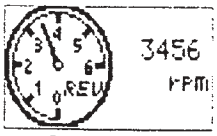


3 Channel Display

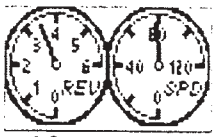


4 Channel Display

•Analog Display Example
【Function】Pause, Peak Hold

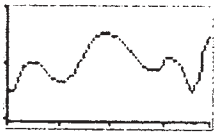


1 Channel Display



2 Channel Display

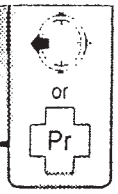
•Graph Display Example
【Function】Pause, Replay

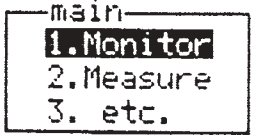

1 Channel Display

1. In the Main Menu, select 【Monitor】

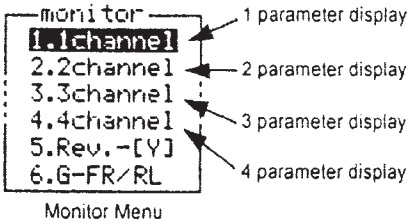
2. In Monitor Menu, select 【1~4 Channel】

Return

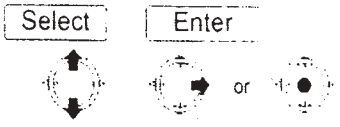


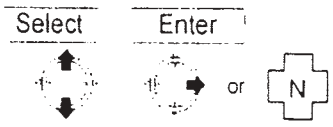


Main Menu



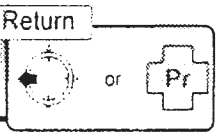
Monitor Menu



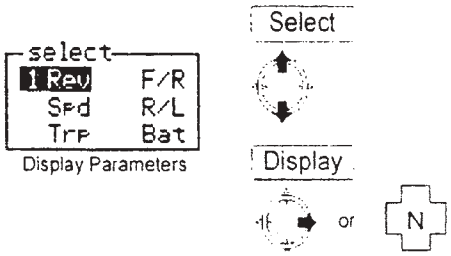


To next page

3. Select data from parameter screen



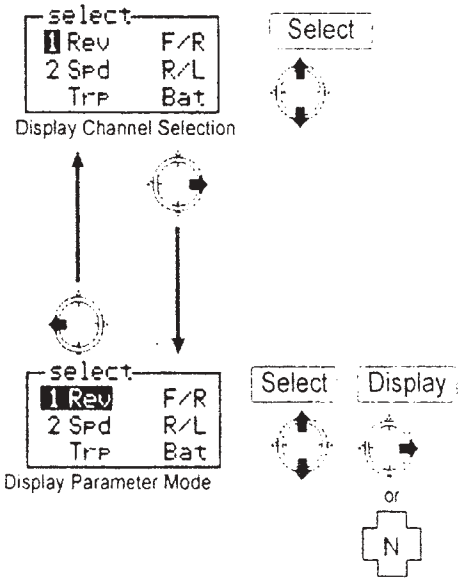
■When selecting 【1 Channel】



(1) Selecting Parameter
In the Display Parameter Mode, press the button up or down. Selected parameter will illuminate.

(2) Display Parameter
Press the button to the right, or push the center of the button and select 【Nx】 from the Pop Up Menu

■When selecting 【2~4 Channel】



(1) Selecting Channel
In the Display Channel Mode, press the button up or down. Selected parameter will illuminate.

(2) Selecting Parameter
Choose the Display Channel, push the button to the right for Display Parameter Mode. Channel number and Parameter will illuminate. Push the button up or down to select.

(3) Selecting a Display Parameter for another channel
In the Display Parameter Mode, press the button to the left and return to the channel mode. Repeat steps (1) and (2) till complete.

(4) Display Parameter
Press the button to the right, or push the center of the button and select 【Nx】 from the Pop Up Menu

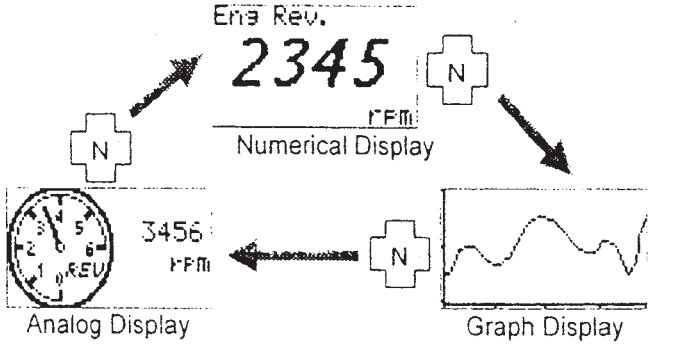
The example above is for 【2 channel】

Cont'd from prev. page

4. Selected Parameters will Display

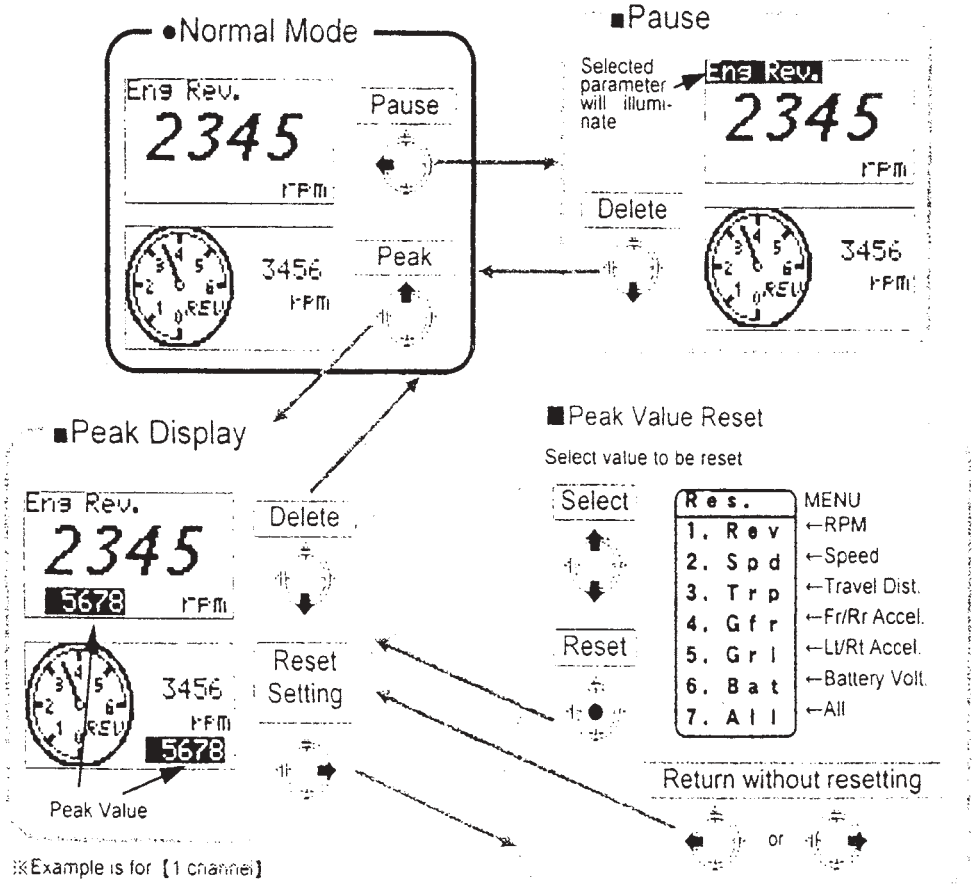
Return

Choosing 【Nx】 on the Pop Up Menu will toggle between (Numerical Display)→ (Graph Display)→ (Analog Display)→ (Numerical Display) etc...



•Numerical /Analog Display Functions

Meter Mode can display up to 2 parameters. When selecting 3, only the first 2 will display.

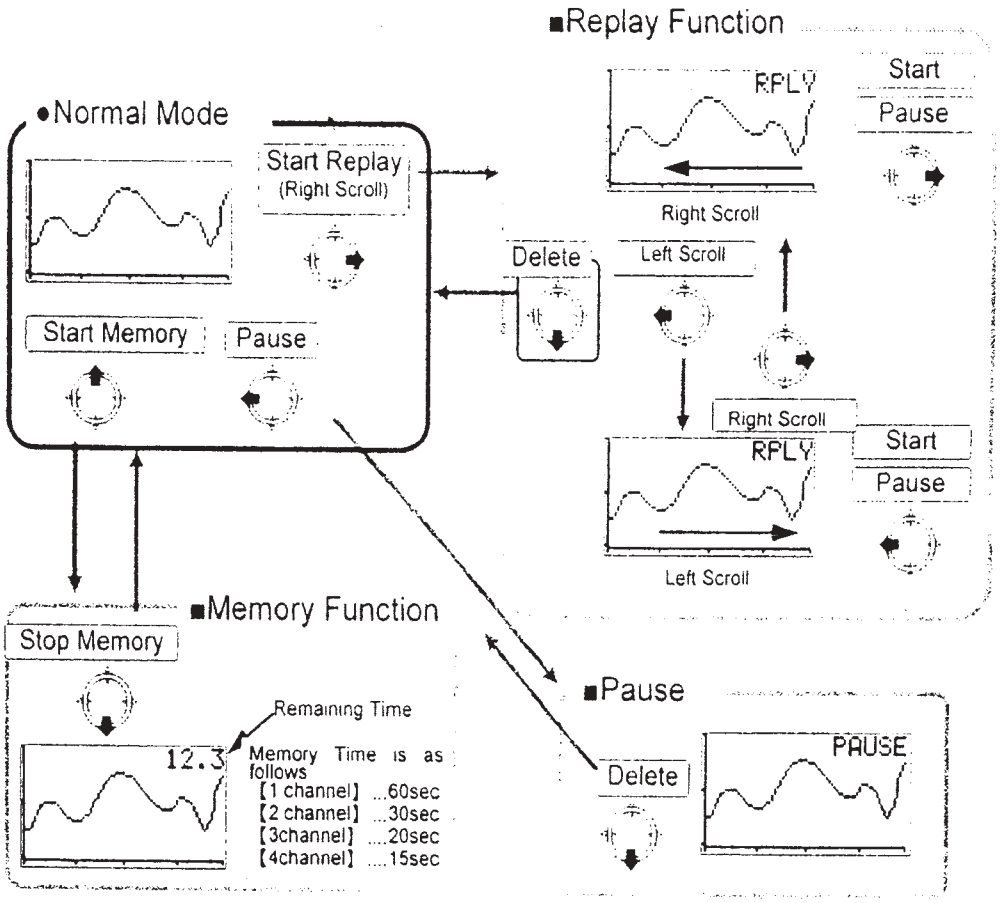


【monitor】→【1 channel】～【4 channel】

Choosing Between 1~4 Channels

●Graph Display Functions

※Example is for【1 channel】



■Numerical Display Flashes?!

Is the RPM/Speed Warning Output activated?
When Rev [Engine RPM] and Speed [SpD] is displayed and the value exceeds the preset Warning Setting, the number will flash. P52.

■Analog Display will not Function?!

Is the Pause function ON?
The Analog Display will not operate if it is Paused. Release the Pause and try again.

【Caution】Travel distances may be recorded up to 3000km. After 3000km, the meter will return to 0km and the【1~4channel】,【Rev.-[Y]】,【G-FR/RL】memory will be cleared. Also, in some instances, turning the power OFF immediately after or during movement may erase the travel distance.

【monitor】→【Rev.- [Y] 】

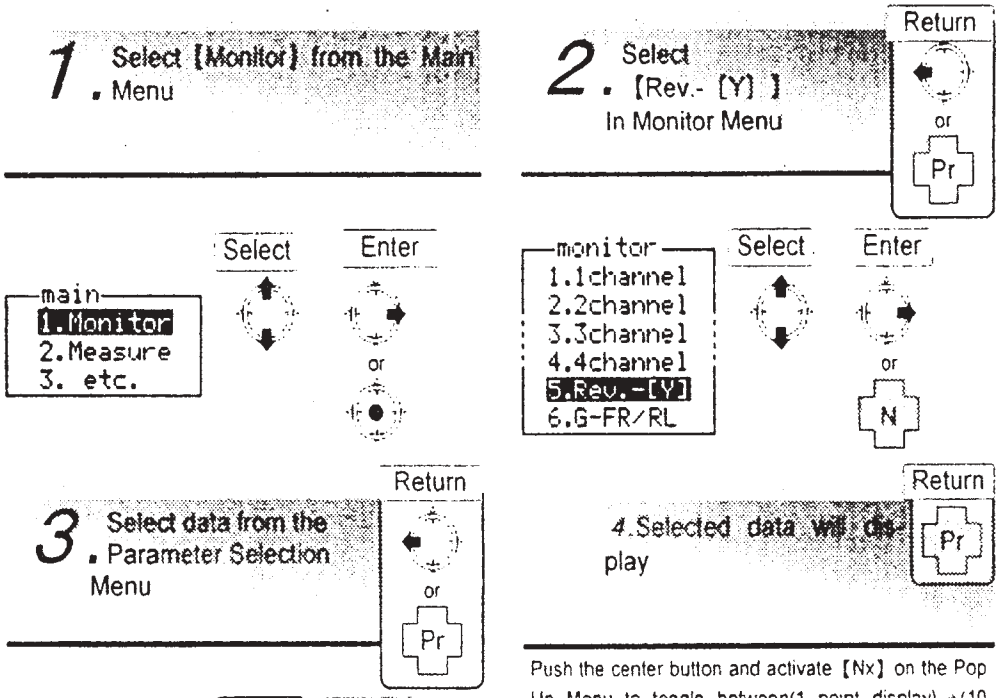
Graph Mode plotting RPM as Horizontal Axis

1. Select 【Monitor】 from the Main Menu

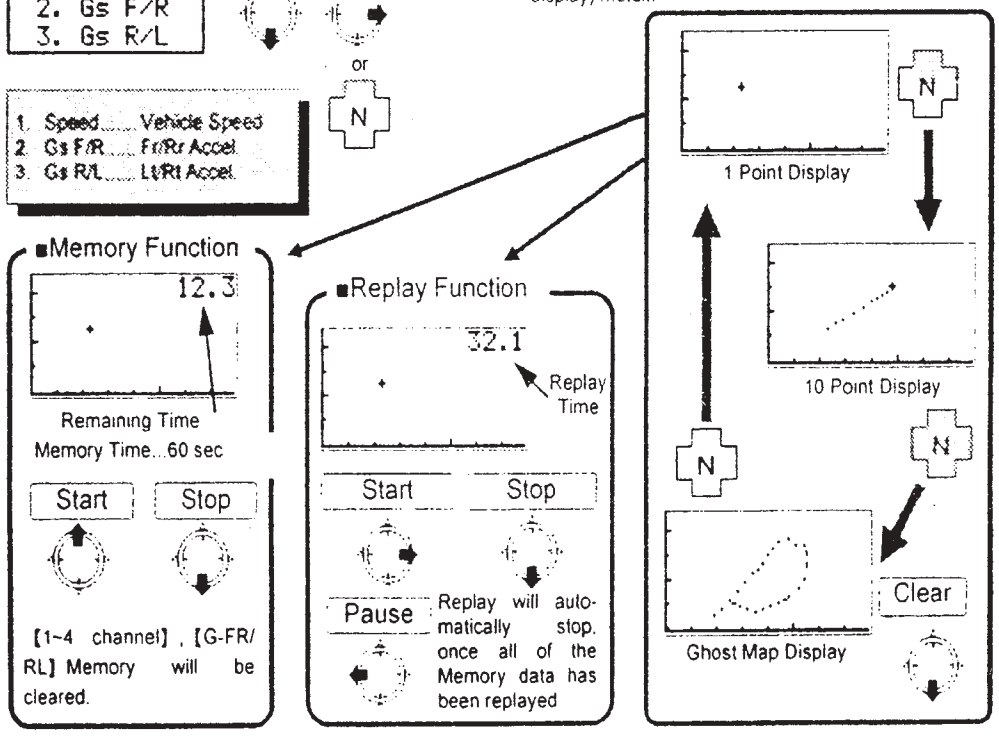
2. Select 【Rev.- [Y] 】 In Monitor Menu

3. Select data from the Parameter Selection Menu

4. Selected data will display



Push the center button and activate 【Nx】 on the Pop Up Menu to toggle between(1 point display)→(10 point display))→(Ghost Map Trace)→((1 point display)...etc...

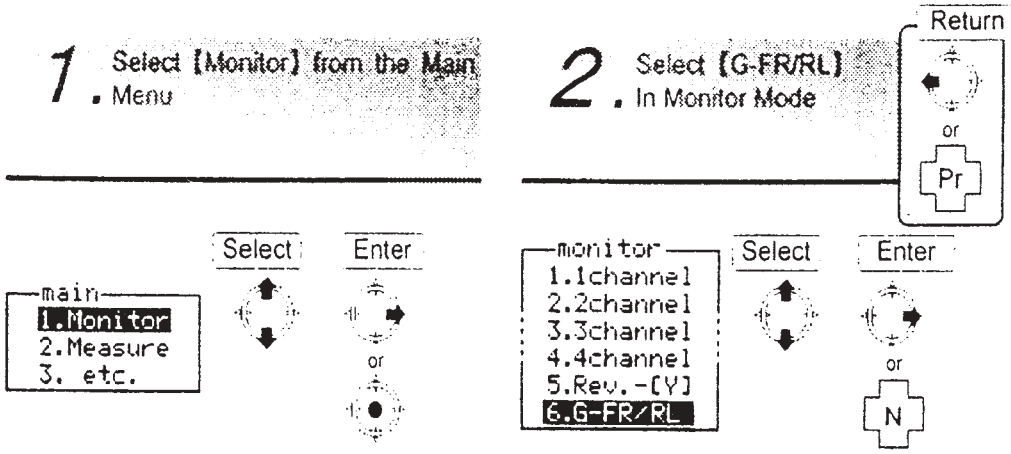


【monitor】→【G-FR/RL】

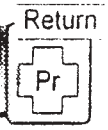
Graph Mode plotting Fr/Rr/Lt/Rt Acceleration

1. Select【Monitor】from the Main Menu

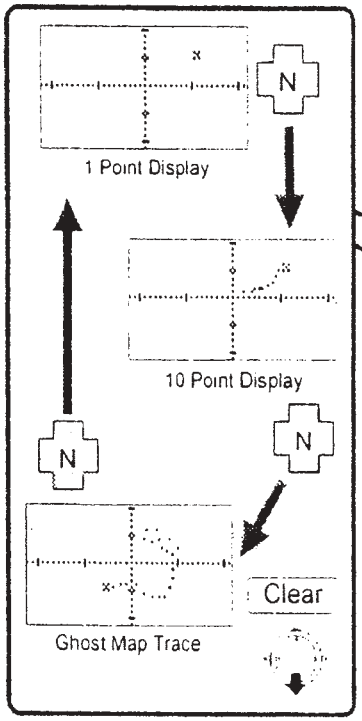
2. Select【G-FR/RL】In Monitor Mode



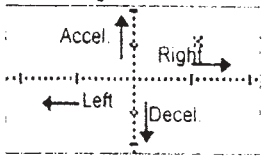
3. Items will display



Push the center button and activate【Nx】on the Pop Up Menu to toggle between (1 point display)→(10 point display)→(Ghost Map Trace)→(1 point display)...etc...

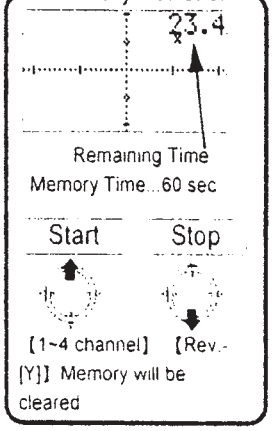


■Plotting Direction

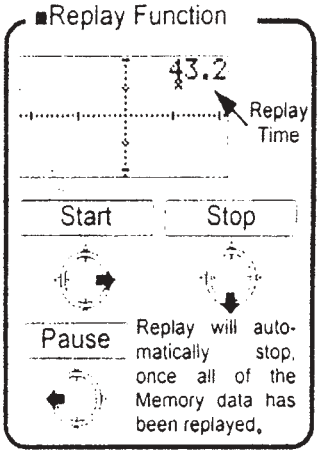


Using the optional G Sensor allows acceleration to be plot graphically. The center of the graph denotes 0 G. Acceleration moves the pointer UP, while deceleration moves the pointer DOWN. Cornering G's can also be plotted left and right.

■Memory Function



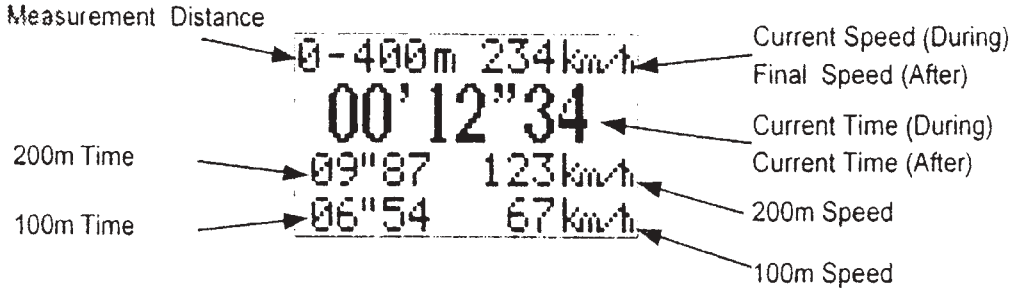
■Replay Function



Chapter 5 Measure Mode

【measure】 → 【0-＊00m】

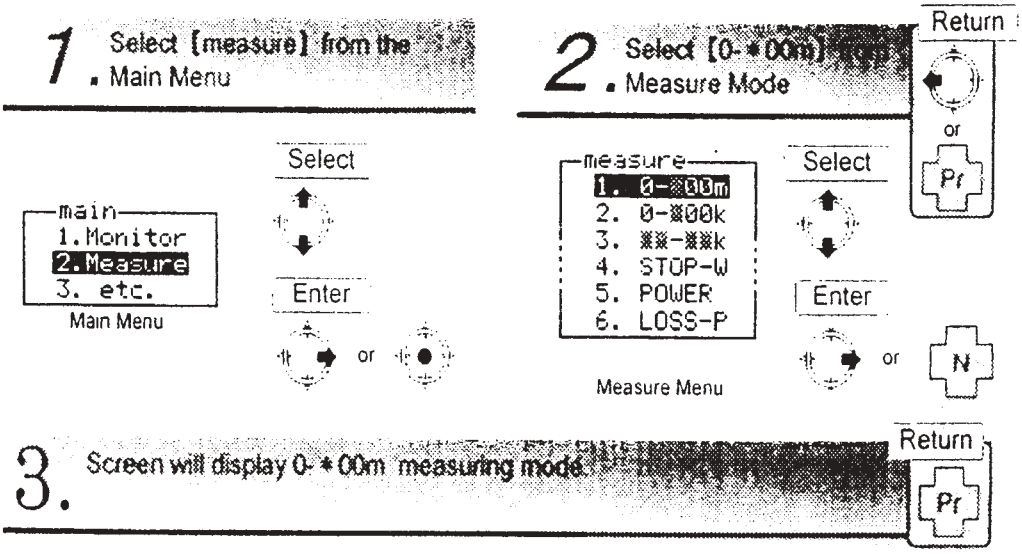
0-100,200,400m Acceleration



1. Select 【measure】 from the Main Menu

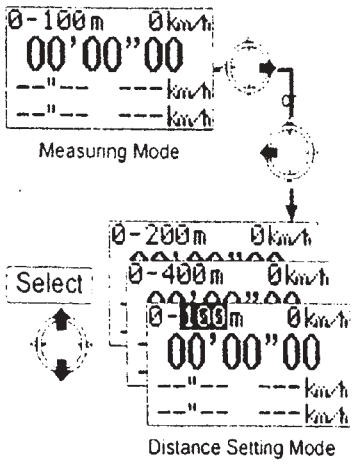
2. Select 【0-＊00m】 from the Measure Mode

3. Screen will display 0-＊00m measuring mode



Choose from 0-100,200,400m distances to measure.

①Choose a measuring distance

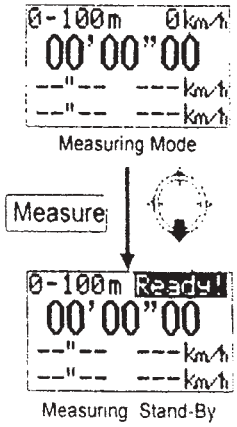


(1) Enter Distance Setting Mode
In Measuring Mode, pressing the Left or Right button will cause the Distance setting portion of the screen to illuminate, allowing the measurement distance to be selected.

(2) Select a Distance
Push the button UP or DOWN to change the Distance values. User can select between 0-100m, 0-200m, 0-400m.

(3) Return to Measuring Mode
Once desired Distance is set, pushing the button to the Left or Right will return to Measuring Mode.

②Measure

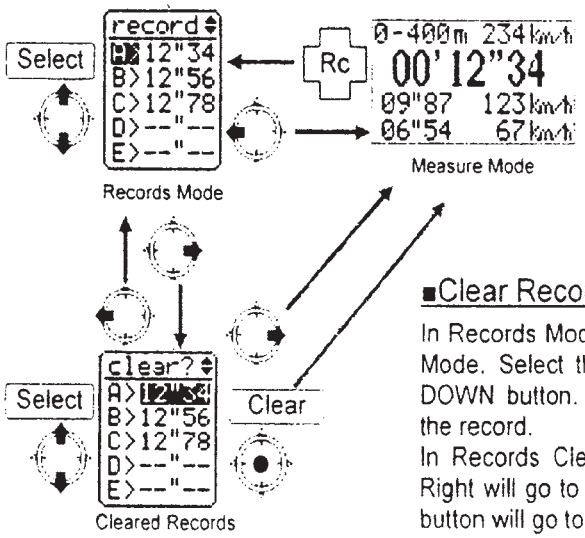


(1) Prepare
Pressing the button DOWN will show [Ready!] to flash on screen placing the unit in stand-by mode. (If pressed during driving, [Ready!] will appear after the car has stopped. Real Time display of speed will occur during driving.)

(2) Measure
During Stand-By, when the unit receives an input signal from the vehicle speed signal (when the tires start to spin), measurement will begin.

(3) Finish Measurement
Measurement will stop once the specified Distance has been reached.

View the Best 5 Records, Clear the Records



■View the Best 5 Records

In Measuring Mode, pushing the center button and selecting Rc will activate the Records Mode. Press UP or DOWN to view desired record.

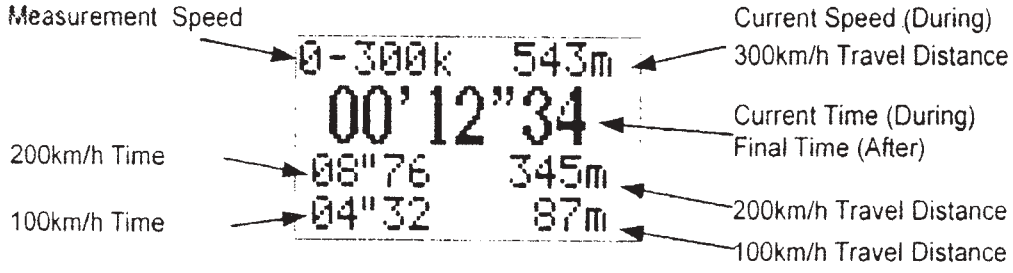
■Clear Records

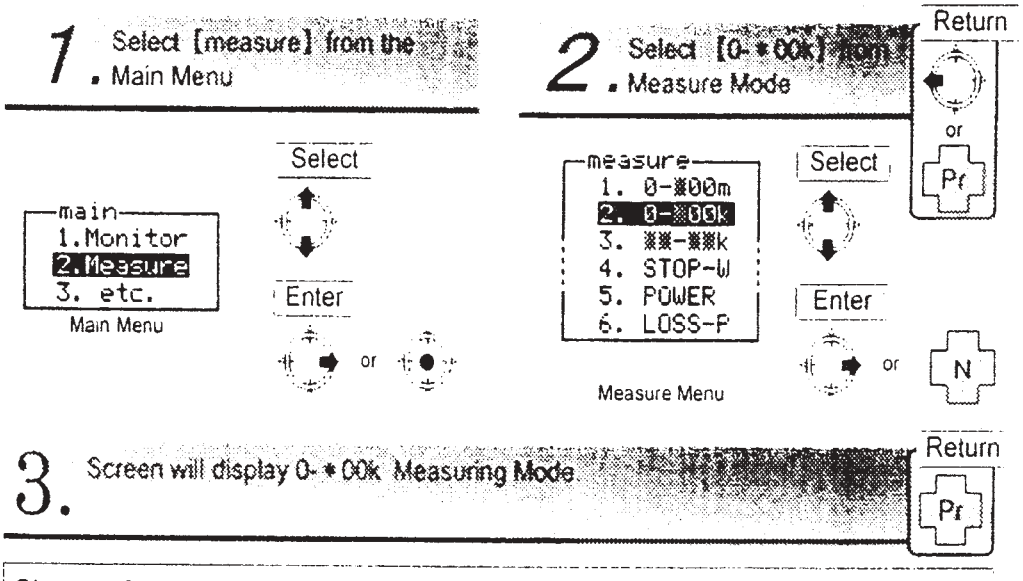
In Records Mode, push Right to enter Records Clear Mode. Select the record to clear using the UP and DOWN button. Pushing the Center button will clear the record.
In Records Clear Mode, pushing the button to the Right will go to Measure Mode, and pushing the Left button will go to Records Mode.

- Caution when installing the optional G Sensor (separately sold)
  The G Sensor corrects the vehicle speed signal. Incorrect installation and calibration of the G Sensor will cause incorrect readings.⇒G Sensor Calibration (P56)

【measure】 → 【0-＊00k】

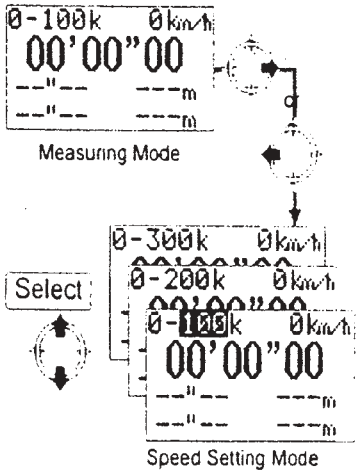
0-100,200,300km/h Acceleration





Choose from 0-100,200,300km/h speeds to measure.

①Choose a measuring speed

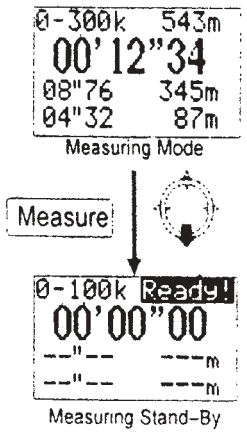


(1) Enter Speed Setting Mode
In Measuring Mode, pressing the Left or Right button will cause the Speed setting portion of the screen to illuminate, allowing the measurement speed to be selected.。

(2) Select a Speed
Push the button UP or DOWN to change the Speed values. User can select between 0-100km/h, 0-200km/h, 0-300km/h.

(3) Return to Measuring Mode
Once desired Speed is set, pushing the button to the Left or Right will return to Measuring Mode.。

②Measure

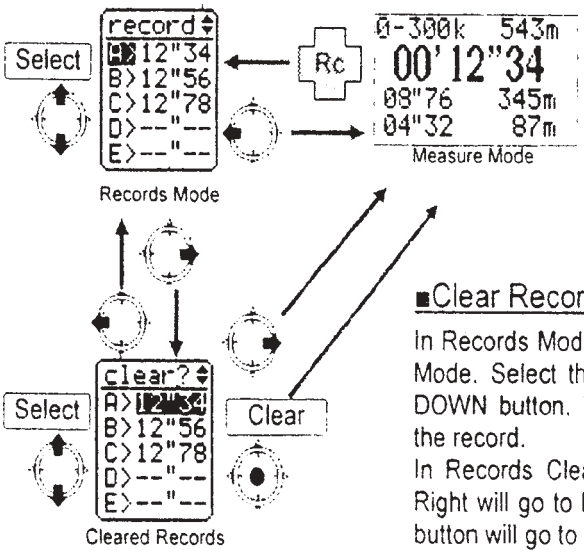


(1) Prepare
Pressing the button DOWN will show [Ready!] to flash on screen placing the unit in stand-by mode. (If pressed during driving, [Ready!] will appear after the car has stopped. Real Time display of speed will occur during driving.)

(2) Measure
During Stand-By, when the unit receives an input signal from the vehicle speed signal (when the tires start to spin), measurement will begin.

(3) Finish Measurement
Measurement will stop once the specified Speed has been reached.

View the Best 5 Records, Clear the Records



■View the Best 5 Records

In Measuring Mode, pushing the center button and selecting Rc will activate the Records Mode. Press UP or DOWN to view desired record.

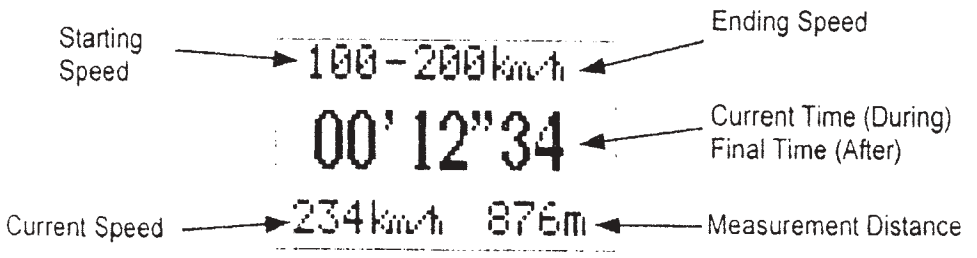
■Clear Records

In Records Mode, push Right to enter Records Clear Mode. Select the record to clear using the UP and DOWN button. Pushing the Center button will clear the record.
In Records Clear Mode, pushing the button to the Right will go to Measure Mode, and pushing the Left button will go to Records Mode.

- Caution when installing the optional G Sensor (separately sold)
  The G Sensor corrects the vehicle speed signal. Incorrect installation and calibration of the G Sensor will cause incorrect readings.⇒G Sensor Calibration (P56)

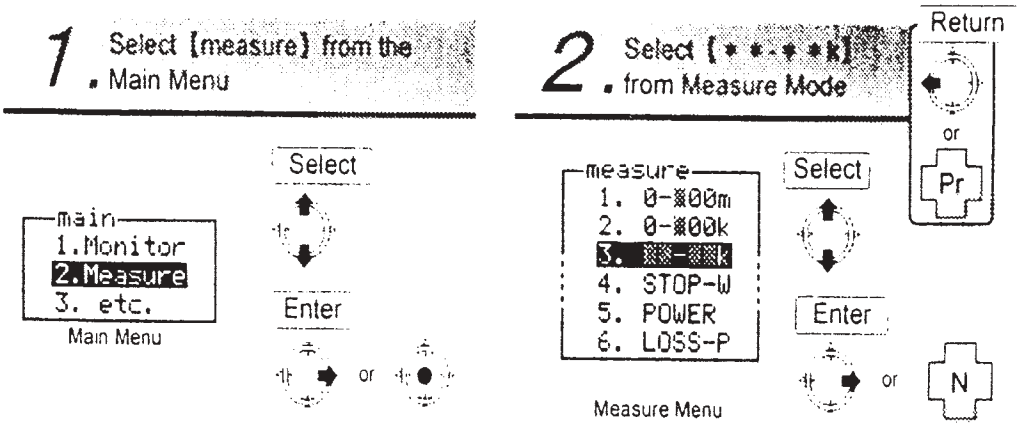
【measure】→【＊＊-＊＊k】

Preset Mid Range Acceleration



1. Select【measure】from the Main Menu

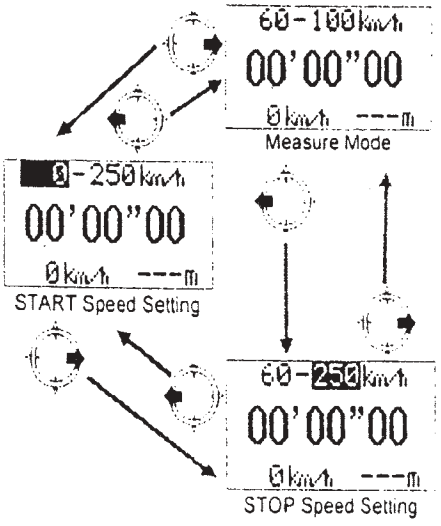
2. Select【＊＊-＊＊k】from Measure Mode



3. Screen will display ＊＊-＊＊k Measuring Mode.

Choose any range of speed between 0-250 km/h to measure.

①Set Measuring Speed

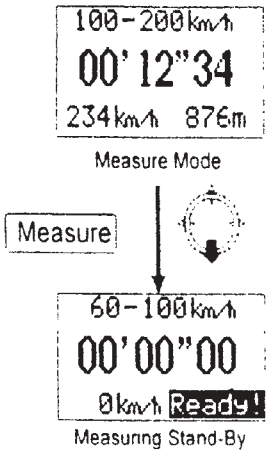


(1) Enter Speed Setting Mode
In Measure Mode, push the button to the Left to illuminate the STOP Speed Display, and to the Right to illuminate the START Speed Display.

(2) Set Desired Speed
Push the button UP or DOWN to change Speed values. Speed range is to be selected between 0-250km/h. Push the button to the Left to set START, and to the Right to set STOP.

(3) Exit Speed Setting Mode
Set parameters to desired settings and press Left or Right to return to Measure Mode.

②Measure

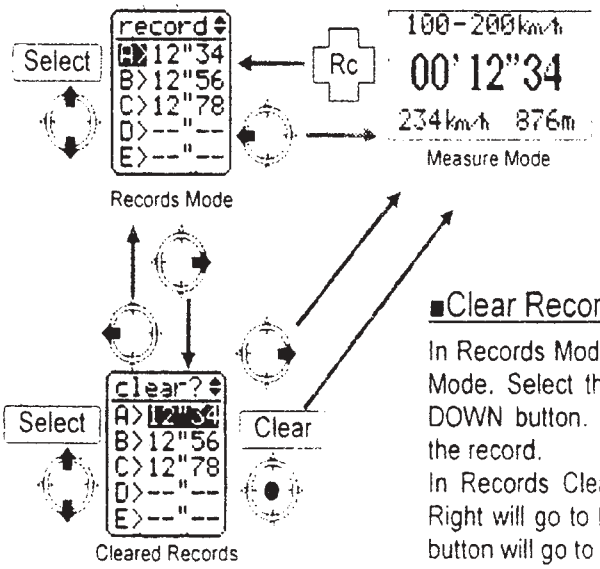


(1) Prepare
Pressing the button DOWN will show [Ready!] to flash on screen placing the unit in stand-by mode. (If pushed when above START speed, [Ready!] will flash when speed falls under START speed.)

(2) Measure
During Stand-By, measurement will begin once vehicle speed exceeds the START speed.

(3) Finish Measurement
Measurement will stop once the specified Speed has been reached.

View the Best 5 Records, Clear the Records



■View the Best 5 Records

In Measuring Mode, pushing the center button and selecting Rc will activate the Records Mode. Press UP or DOWN to view desired record.

■Clear Records

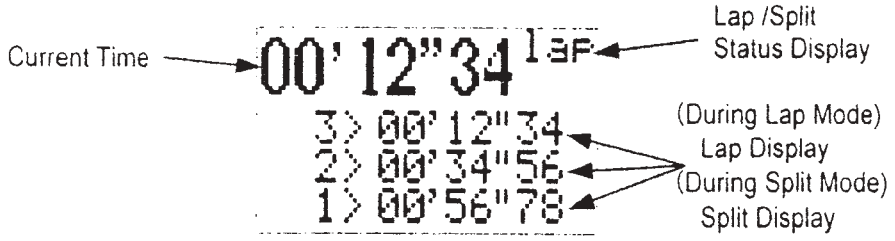
In Records Mode, push Right to enter Records Clear Mode. Select the record to clear using the UP and DOWN button. Pushing the Center button will clear the record.

In Records Clear Mode, pushing the button to the Right will go to Measure Mode, and pushing the Left button will go to Records Mode.

- Caution when installing the optional G Sensor (separately sold)
  The G Sensor corrects the vehicle speed signal. Incorrect installation and calibration of the G Sensor will cause incorrect readings.⇒G Sensor Calibration (P56)

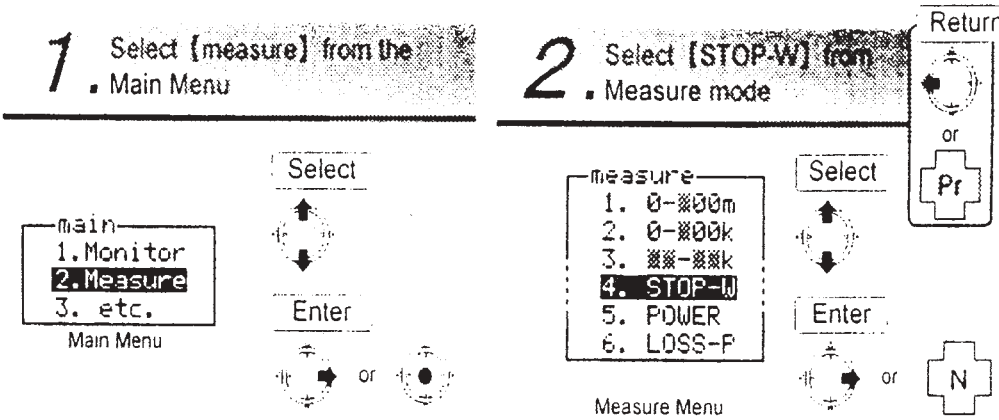
【measure】→【STOP-W】

Stop Watch (Lap / Split) Measurement



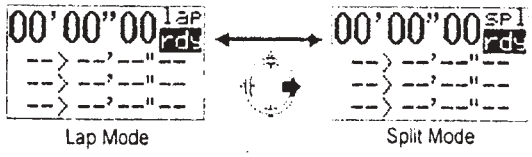
1. Select【measure】from the Main Menu

2. Select【STOP-W】from Measure mode



3. Screen will display Stop Watch Measuring Mode.

①Select between Lap and Split Modes of Measurement.



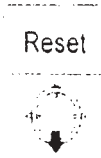
Pressing Right on the button will toggle between Lap and Split Mode. Choose【lap】for Lap Mode and【spl】for Split Modes.

②Operational Procedures

Press the Button UP to start measurement.
Pressing the button UP during measurement will stop this function.

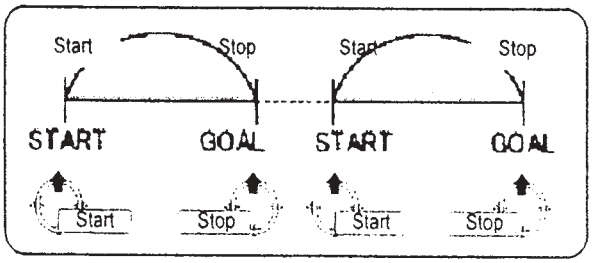
Press the Button to the Left. [rdy] will appear on screen. Once the input vehicle speed signal is received (tires start to spin) measurement will start.)

Press DOWN to measure Lap/ Split. (During Measurement)

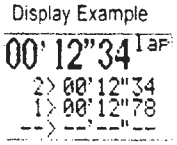


Press DOWN to reset measuring results. (After Measurement)

●Multiple Time Measurement

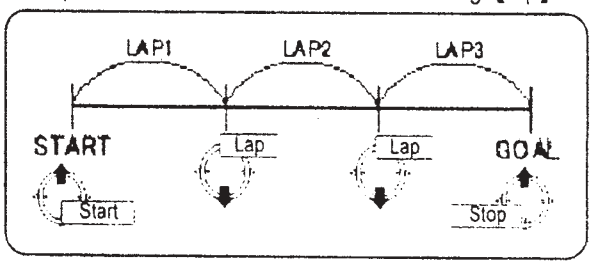


Display Example

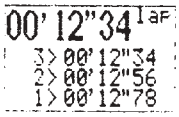


Reset

●Lap Time Measurement When selecting【lap】

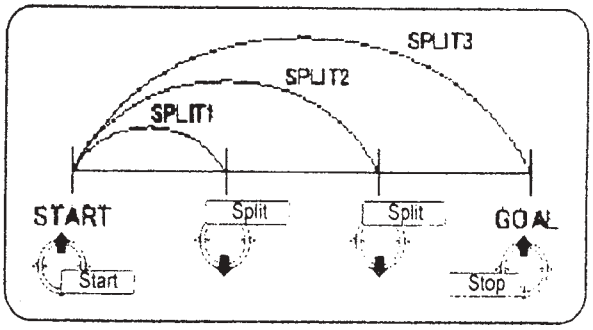


Display Example

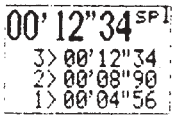


Reset

●Split Time Measurement When selecting【spl】

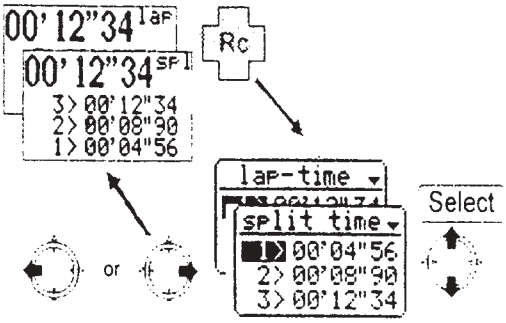


Display Example



Reset

■Check Lap / Split Times



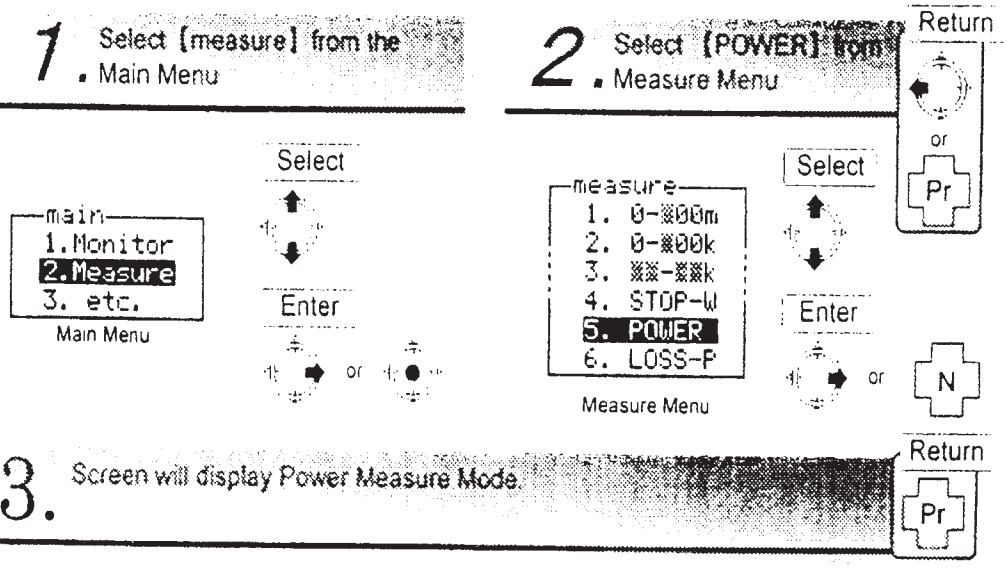
【After Measurement】Press the center button and select Rc to enter Records Mode. Press UP or DOWN to select desired record. The unit can store up to 20 Lap/Split times. These records will be erased when the ignition key is removed.

【measure】→【POWER】

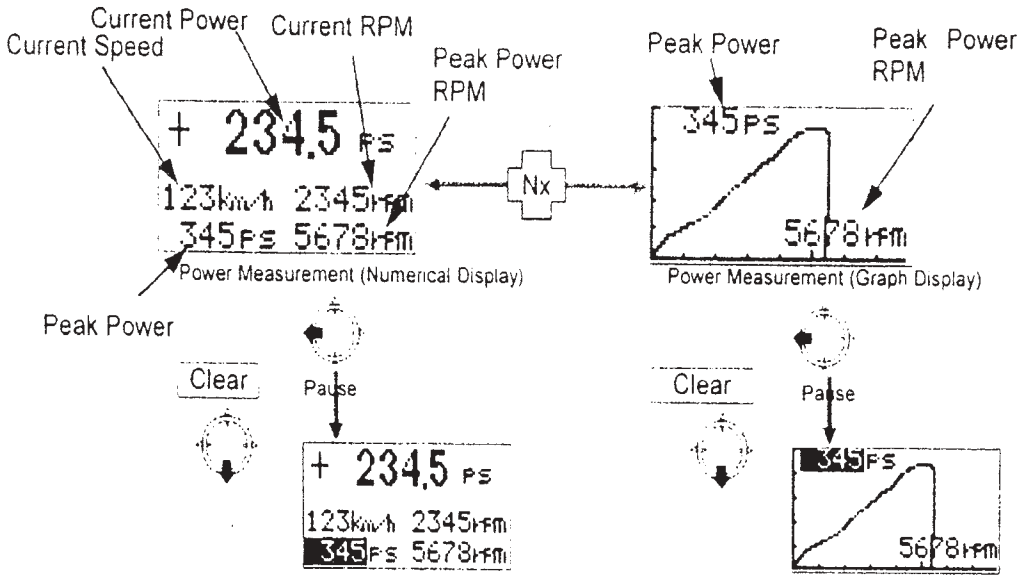
Power Measurement (only available with optional G sensor)

1. Select【measure】from the Main Menu

2. Select【POWER】from Measure Menu



3. Screen will display Power Measure Mode.



- The optional G Sensor (sold separately) must be used for this function.
- Loss Power and vehicle weight must be input for this measurement.
- Measure only on flat surfaces. Uphill measurements will produce higher results, while downhill measurements will produce lower results than actual power.

【measure】 → 【LOSS-P】

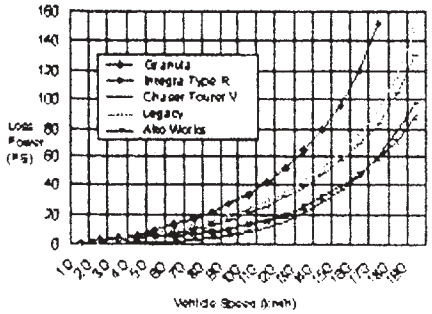
Loss Power Input/ Measure

Cont'd
(only for use with optional G Sensor)

When using the optional G Sensor to measure Power, Loss Power values must be input. The table below lists some typical Loss Power data for vehicle categories. Choose the closest Loss Power data from below taking vehicle type, drive-train, and weight into consideration.

Also, for more accurate Loss Power data, custom values may be input directly. Please refer to the next page for more information.

Table 1 【Ex】 Typical Loss Power Data



Name	Type	Drive-train	Weight
Granvia	Minivan	4WD	2200kg
Legacy	Wagon	4WD	1650kg
Chaser	Sedan	FR	1600kg
Integra	Coupe	FF	1150kg
Alto Work	Kei-Hatch back	FF	800kg

Diagram 1 【Ex】 Typical Loss Power Data

Name	Vehicle Speed (km/h)									
	10	20	30	40	50	60	70	80	90	100
Granvia	1	3	4	6	9	13	17	21	27	33
Integra Type R	1	2	3	4	5	6	7	8	10	13
Chaser Tourer V	1	2	3	4	5	7	10	12	16	21
Legacy	1	2	3	5	7	9	12	15	19	24
Alto Works	0	0	0	1	1	2	3	4	6	8
Name	Vehicle Speed (km/h)									
	110	120	130	140	150	160	170	180	190	
Granvia	42	52	64	79	96	120	152	---	---	
Integra Type R	16	20	25	32	39	48	58	71	87	
Chaser Tourer V	25	31	38	47	57	68	82	103	130	
Legacy	29	35	43	52	62	75	92	116	148	
Alto Works	11	15	21	28	36	46	59	78	96	(PS)

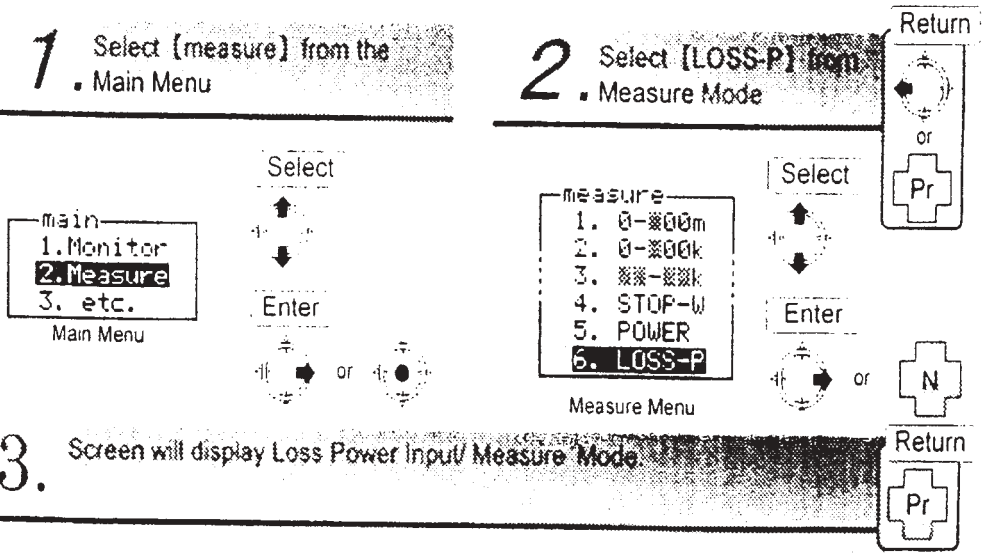
Diagram 2 【Ex】 Typical Loss Power Data

■Loss Power

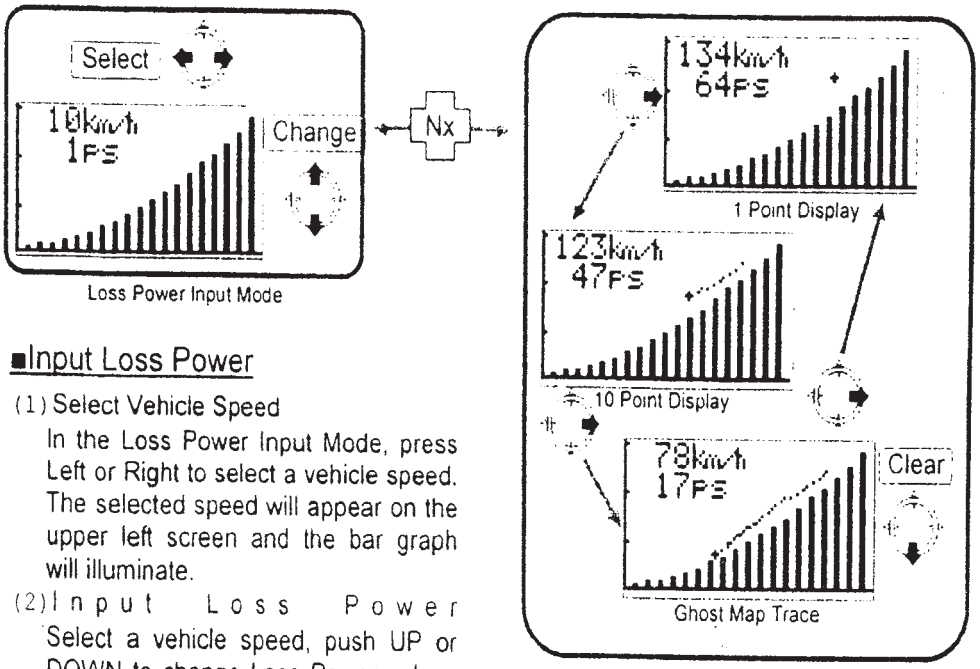
Loss Power is a combination of Wind resistance, Tire friction, Drive-train friction (Engine, Transmission, Differential, etc...) produced by the vehicle during movement. Loss Power values can change constantly due to atmospheric conditions, tire pressure, as well as engine/ drive-train oil temperatures.

1 Select [measure] from the Main Menu

2 Select [LOSS-P] from Measure Mode



3. Screen will display Loss Power Input/ Measure Mode.



■Input Loss Power

(1) Select Vehicle Speed
In the Loss Power Input Mode, press Left or Right to select a vehicle speed. The selected speed will appear on the upper left screen and the bar graph will illuminate.

(2) Input Loss Power
Select a vehicle speed, push UP or DOWN to change Loss Power values on graph.

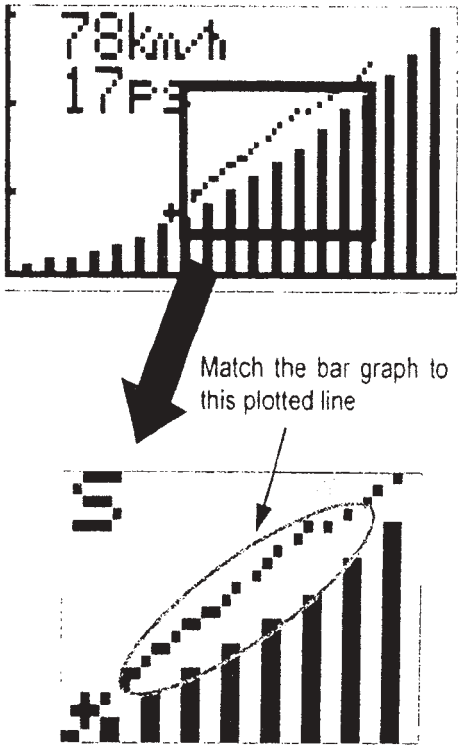
(3) Select Another Vehicle Speed
Repeat steps (1), (2) .

Loss Power Input/ Measure

■Measure Loss Power

- Secure a Safe Testing Road
  Measure on a long, flat road surface. (Avoid public roads when possible.) Any type of hill or curve will increase the resistance placed on the vehicle (ie. through tire friction, engine load) and prevent an accurate calculation.
- Select Ghost Map Trace while in Loss Power Mode
  Switch to Ghost Map Trace while in Loss Power Mode. While decelerating, make sure that the Loss Power is plotted on the graph.

(1) Set Measuring Speed
Set the Measuring Speed 10km/h ABOVE desired speed. For example, if desired measurement speed is 90 km/h, then set the unit to 100 km/h.
(2) Press the Button DOWN
All previously stored Loss Power data will be cleared.
(3) Measure
Once at measuring speed, put the vehicle in neutral and decelerate without using the brake. The Loss Power will be plotted on the graph.
(4) Input Loss Power
Enter Loss Power Input Mode, and match the bar graph to the plotted Ghost Map Trace.



Follow the steps above to input Loss Power. If Loss Power cannot be measured in one run, measure from 100-50km/h, 100-60km/h etc... in multiple runs until all of the Loss Power has been input.

⚠WARNING

- Follow all of the rules and regulations of the public highway at ALL times.

Chapter 6 Etc. Mode

【etc.】 → 【Output Set】

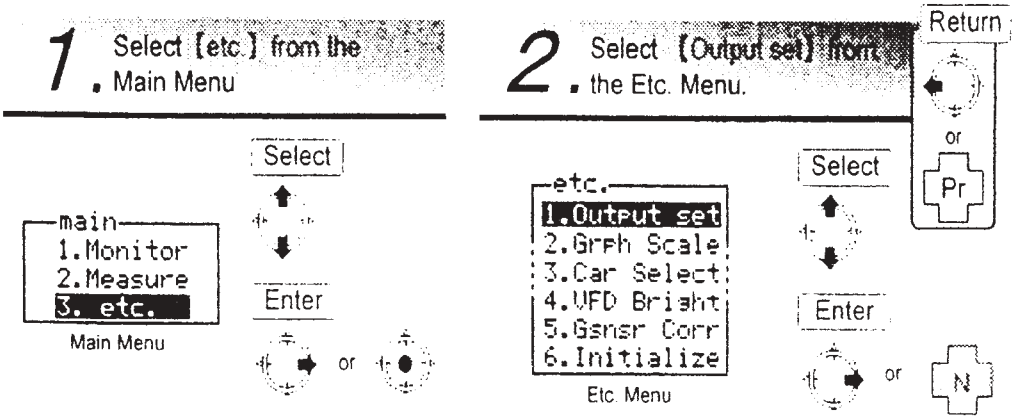
Output Setting

Rpm/Speed Output, RPM/ Speed Warning Output, Speed Limiter Cut Setting

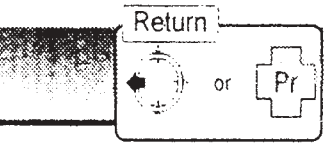
This section will set the RPM/Speed Output, RPM/Speed Warning Output, and Speed Limiter Cut Settings

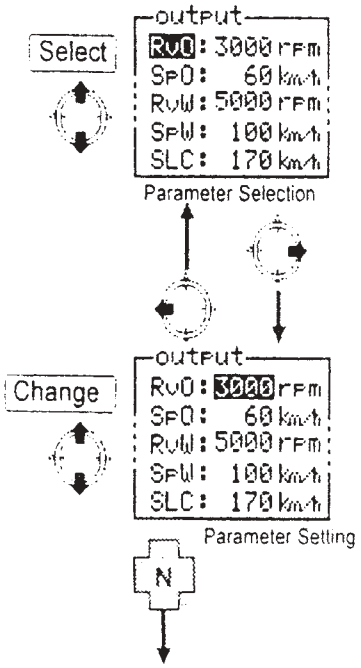
1. Select 【etc.】 from the Main Menu

2. Select 【Output set】 from the Etc. Menu.



3. The screen will display Output Setting Mode.





P53 -3.
To Graph Scale Setting Mode

(1) Select Parameter
In the parameter selection screen, press UP or DOWN to select a desired parameter to change. Selected parameter will illuminate.

(2) Set Values
Press the Right button on the selected parameter. This allows the value to be changed by pressing UP or DOWN.

⇒When changing other parameters
Press the button to the Left, and repeat steps (1) and (2)

(3) Finish Setting
Press the Center button and select 【Pr】 or press Left to return to the previous menu.

■Setting Parameter Listed are default values

ReO	【RPM Output】	100~9900,OFF (3000) [rpm]
SpO	【Speed Output】	1~300,OFF (60) [km/h]
RvW	【RPM Warning Output】	100~9900,OFF (5000) [rpm]
SpW	【Speed Warning Output】	1~300,OFF (100) [km/h]
SLC	【Speed Limiter Setting】	10~200,OFF (170) [km/h]

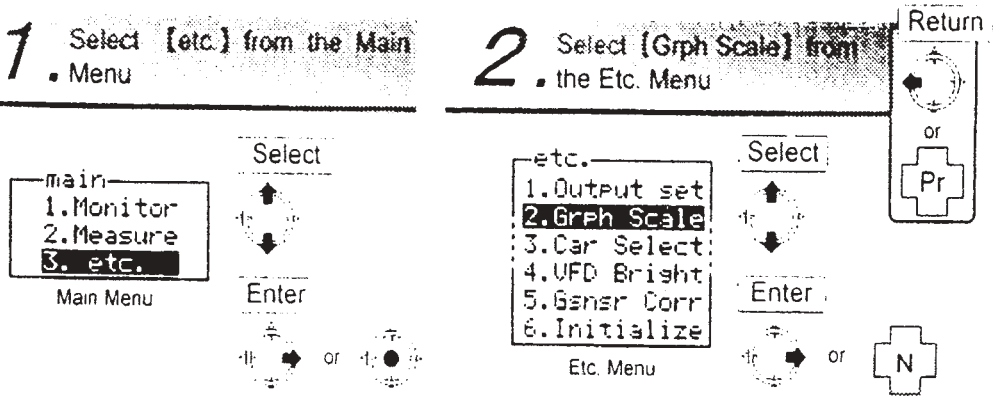
【etc.】 → 【Grph Scale】

Graph Scale Setting

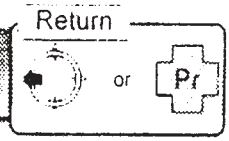
Changes the Analog and Graph Display Scales

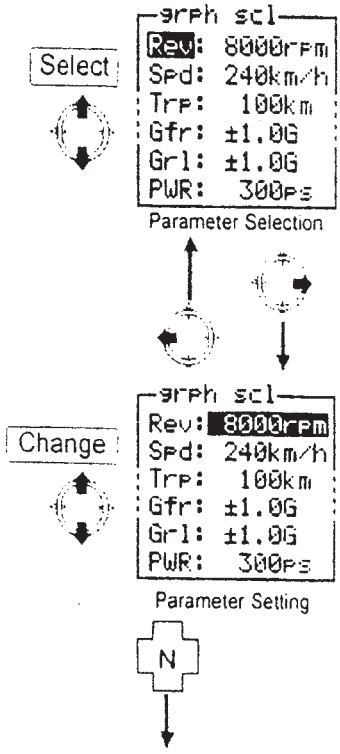
1. Select 【etc.】 from the Main Menu

2. Select 【Grph Scale】 from the Etc. Menu



3. The screen will display Graph Scale Mode.





P54 -3.
To Vehicle Specific Setting Mode

(1) Select Parameter

In the parameter selection screen, press UP or DOWN to select a desired parameter to change. Selected parameter will illuminate.

(2) Set Values

Press the Right button on the selected parameter. This allows the value to be changed by pressing UP or DOWN.

⇒When changing other parameters

Press the button to the Left, and repeat steps (1) and (2)

(3) Finish Setting

Press the Center button and select 【Pr】 or press Left to return to the previous menu.

■Setting Parameter Listed are default values

Rev	【RPM】	10000,9000,(8000),7000,6000 [rpm]
Spd	【SPEED】	360,300,(240),180,120 [km/h]
Trp	【Travel Distance】	1000,300,(100),30,10 [km]
Gfr	【Fr/Rr Accel.】	±2.0,±1.5,(±1.0),±0.6,±0.3 [G]
Grl	【Rt/Lt Accel.】	±2.0,±1.5,(±1.0),±0.6,±0.3 [G]
PWR	【Power】	1000,600,400,200,150,100 [kW]
		1200,800,500,(300),200,150 [ps]

【etc.】 → 【Car Select】

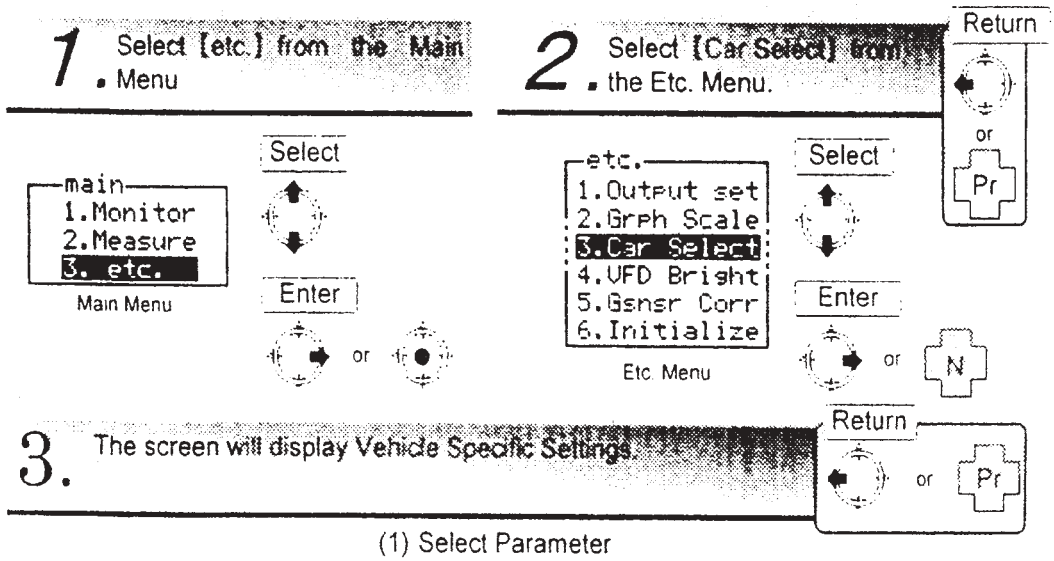
Vehicle Specific Setting

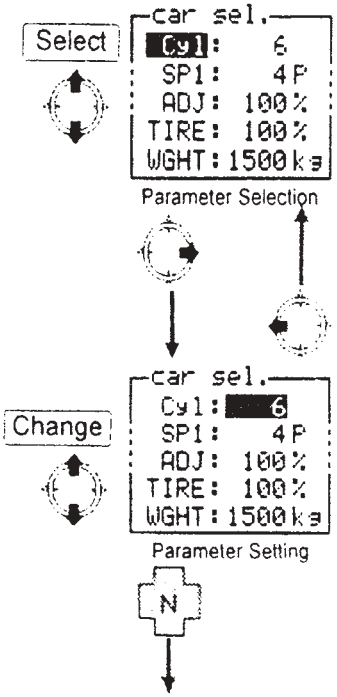
Allows setting of largest value for Analog and Graph Displays.

1. Select 【etc.】 from the Main Menu

2. Select 【Car Select】 from the Etc. Menu.

3. The screen will display Vehicle Specific Settings.





P55 -3.
To VFD Adjustment

(1) Select Parameter
In the parameter selection screen, press UP or DOWN to select a desired parameter to change. Selected parameter will illuminate.

(2) Set Values
Press the Right button on the selected parameter. This allows the value to be changed by pressing UP or DOWN.
⇒When changing other parameters
Press the button to the Left, and repeat steps (1) and (2)

(3) Finish Setting
Press the Center button and select 【Pr】 or press Left to return to the previous menu.

■Setting Parameter Listed are default values

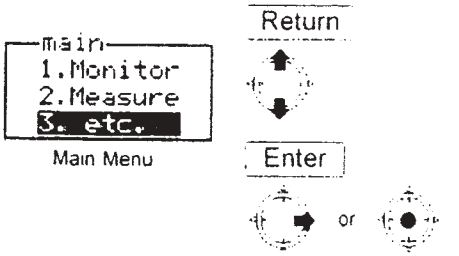
Cyl	[cylinder]	1~16 (6) [cylinder]
SP1	[vehicle pulse]	2,4,8,16,40,80,160 (4) [pulse]
ADJ	[speed pulse adjust]	10~250 (100) [%]
TIRE	[tire correction]	50~150 (100) [%]
WGHT	[weight]	500~2500 (1500) [kg]

【etc.】→【VFD Bright】

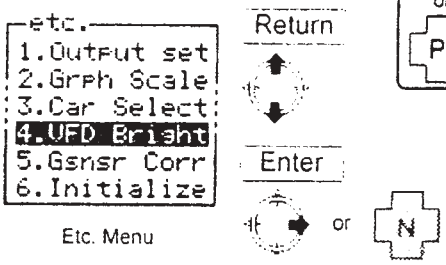
VFD Adjustment

This unit uses an internal light sensor to sense brightness, and adjusts VFD screen brightness automatically. The parameter reading【Day】is meant fro daytime,【Dim】is for dusk,【Nig】is for night time illumination. Adjustment should not be necessary during daytime.

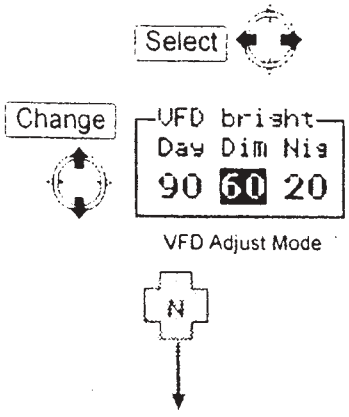
1. Select【etc.】from the Main Menu

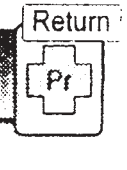


2. Select【VFD Bright】from the Etc. Menu.



3. The screen will display VFD adjust mode.





(1) Select Parameter
IN VFD Adjust Mode, press Left or Right to select the value to be changed.Selected value will illuminate.

(2) Set Value
Press UP or DOWN on selected parameter to change value. Higher values will brighten the screen while lower values will darken the screen.
⇒When setting other parameters
Repeat steps (1) and (2)

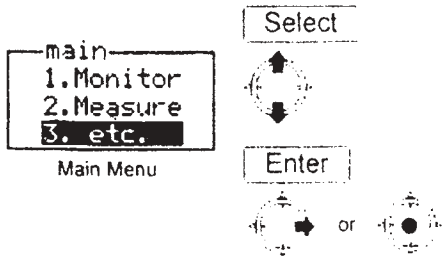
(3) End Setting
Press the center button and select【Pr】from the Pop Up Menu. User can also push Left on [Day] or Right on [Nig] to return to the previous menu.

【etc.】 → 【Gsnsr Corr】

G Sensor Calibration

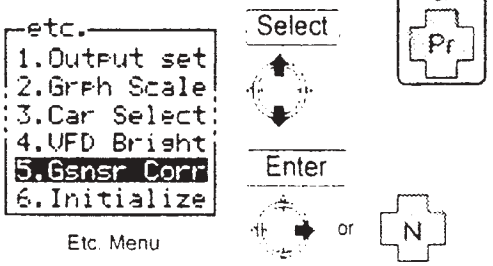
This will calibrate the 0 point of the separately sold G sensor. This process must be performed to ensure accurate acceleration readings. ALWAYS perform this process when installing or moving the G Sensor.

1. Select 【etc.】 from the Main Menu



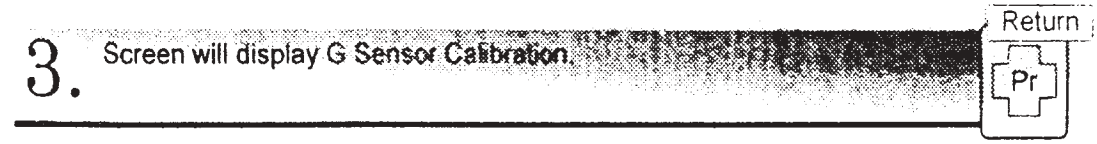
Main Menu

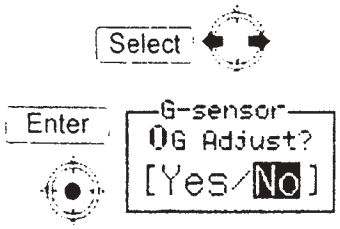
2. Select 【Gsnsr Corr】 from the Etc. Menu.



Etc. Menu

3. Screen will display G Sensor Calibration.





G Sensor Calibration

⇒Calibrate the G Sensor 0 Point

Once the G Sensor has been installed according to the G Sensor instruction manual, push the Left button and select [Yes] while in the G Sensor 0G Adjust Menu. Push the center button to select.

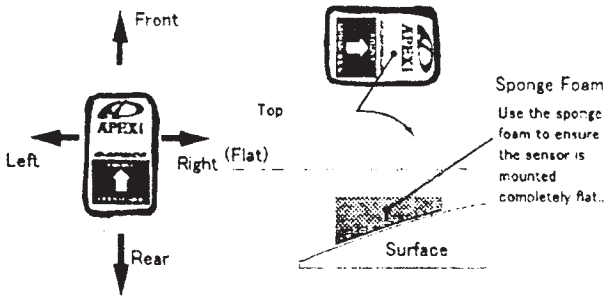
⇒To Exit G Sensor Calibration Mode Without Changes

While in the G Sensor Calibration Mode,

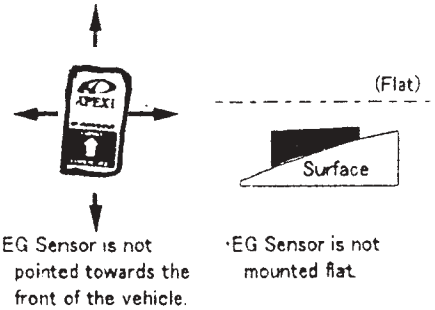
- Select [No] and push center button
- Select [No] and push Right
- Select [Yes] and push Left

This will return the user to the previous menu.

•Correct Installation Position



•Incorrect Installation Position



·EG Sensor is not pointed towards the front of the vehicle.

·EG Sensor is not mounted flat.

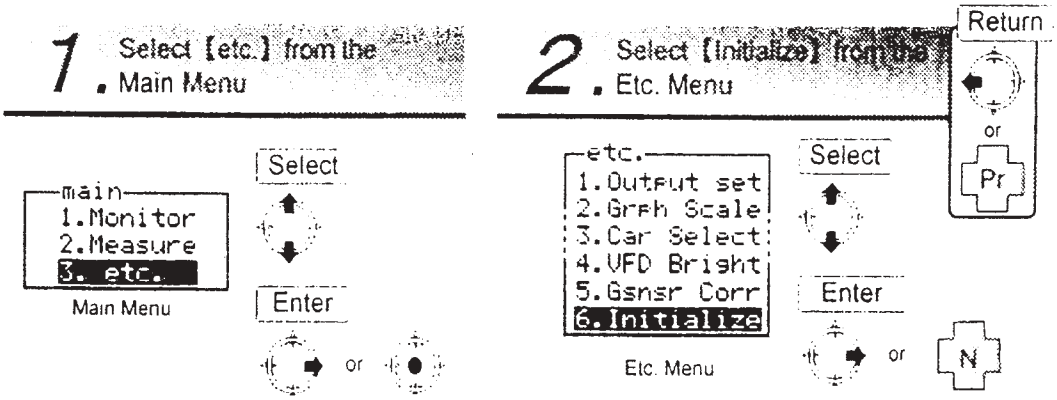
【etc.】 → 【Initialize】

Initialize All Data

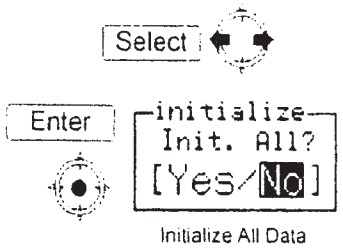
This function will initialize all stored data and return the unit to factory default settings.

1. Select 【etc.】 from the Main Menu

2. Select 【Initialize】 from the Etc. Menu



3. The screen will display Initialize All Data Mode.



⇒Initialize All Data

In Initialize Mode, press Left and then push the center button

⇒Exit Initialize Mode Without Changes

While in Initialize Mode,

- Select [No] and push center button
- Select [No] and push Right
- Select [Yes] and push Left

This will return user to previous menu.

Troubleshooting

Power will not turn ON

- Is the battery connected?
- Are the ECU harness and signal harnesses connected?
- Is the RSM harness and signal harnesses connected?

  Faulty connections can occur even when the harnesses seem to be connected. Double check all connectors, splices, and plugs.

Unit does not display properly

- Speed/RPM does not appear on screen

  Have the two signal wires been properly connected to the ECU? Double check the instruction manual and wiring diagram. Also check for loose connections.

- RPM display is Incorrect
  - Re-check Cylinder Setting(P16)
  - There will be a slight difference in readings from the factory tachometer. It is normal for a 200-300 rpm difference in the higher rpm ranges. This unit will show correct RPM.

- Speed Display is Incorrect
  - Re-check Speed Pulse Setting and Speed Pulse Adjust Setting (not required on some vehicles) (P16)
  - Factory Speedometers have some level of display error. At 100km/h, it is not unusual for there to be over a 10 km/h difference. This unit will display the correct vehicle speed.
  - If the speed does not display above a certain point, there may be another sped limiter device installed on the vehicle already. Be sure to remove that device for proper readings.

- Acceleration and Power will not display
  - Is the G Sensor connected correctly? The G Sensor (separately sold) must be used for these functions.

Unit does not display properly (cont'd)	●Acceleration Display is incorrect · Has the G Sensor been calibrated? · Has the G Sensor been installed correctly? ●Power Measurement is incorrect · Has the vehicle weight been input correctly? (P54) · Has the G Sensor been calibrated?(P56) · Has the G Sensor been installed correctly? · Has Loss Power been input? (P47)
Display is Dark, Bright	· Please adjust VFD screen (P55)
Speed Limiter will not Cut	· Has the speed limiter been cut properly? Settings differ according to vehicle. Re-check settings.(P16) · Some vehicle require optional parts for Speed Limiter Cut.(P16) · Have the optional parts been installed correctly? Is the Speed Output Setting correct?

Caution

1. We reserve the right to change any part of this manual without prior notice.
2. We have made every effort possible to make this manual as accurate as possible. However, we assume no responsibility for any errors resulting from typographical, model changes, regional differences, or other factors that may cause improper function.
3. This manual may not be reproduced in any manner without the expressed written consent of Apex.
4. We assume no responsibility for any loss of data in the unit caused by memory failure, unit damage, or any other cause.
5. Prices are subject to change without prior notification.
6. This product is designed for Japan use only. It must not be used in any country unless endorsed by an authorized Apex Sales office. We assume no responsibility for units purchased outside Apex jurisdiction.

Unit Specifications

- Operating Voltage DC10V～16V
- Operating Temp. -20～+60℃
- Output Voltage 12V200mA

About the Warranty

Please fill out the warranty card and return to your dealer of purchase. For US customers, please return the unit to the dealer of purchase with all packaging intact. Please be prepared to show valid proof of purchase.

Manual Info

No	Print Date	Manual Code	Ver	Notes
1	2-9-2001	7407-0190-00	Init.	

Contact Information
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