

AMPtronic GX1/GX2

<u>Table of contents</u>	<u>Pages</u>
Description of features	2.
The system contents	2.
Installation	3.
System turn on	5.
Changing units system	5.
Changing alarm thresholds from the factory settings	6.
Trouble shooting	7.
Specifications	7.
Engine management switches setup	8.
Connection Schematic	8.
Examples of configuration	9.
Guarantee	11.

AMPtronic GX1/GX2

<u>Table of contents</u>	<u>Pages</u>
Description of features	2.
The system contents	2.
Installation	3.
System turn on	5.
Changing units system	5.
Changing alarm thresholds from the factory settings	6.
Trouble shooting	7.
Specifications	7.
Engine management switches setup	8.
Connection Schematic	8.
Examples of configuration	9.
Guarantee	11.

Description of features

The GX1 or GX2 is a combined avionic instrument incorporating

- The navigation information in an analog and digital displayed format:
 - ASI (air speed indicator) in km/h, mi/h or knots
 - Altitude, in meters or feet
 - VSI (vertical speed indicator) in m/s or ft/min
 - Flight duration, in hours; minutes; seconds
 - Air temperature in degree Celsius or Fahrenheit
 - Glide ratio
- The display of the essential engine information:
 - Engine RPM
 - Engine Hours, in hours, minutes
- Depending on the type of engine or configuration selected, the following indications are also displayed:
 - 2X CHT (cylinder head temperature) Celsius or Fahrenheit
 - 2X EGT (exhaust gas temperature) Celsius or Fahrenheit
 - Water Temperature, Celsius or Fahrenheit
 - Oil Temperature, Celsius or Fahrenheit
 - Oil Pressure, bars or PSI
 - Battery Voltage
- These above indications trigger an alarm if the user adjustable alarm threshold is exceeded.
- Facility to connect an external relay that will turn on when the air temperature drops below 8°C (45°F).
- Also in option:
 - Fuel consumption instantaneous and accumulated in liters/hour or gal (us)/hour, or rotor RPM for helicopters/gyros.
 - Fuel level in %
- Dimensions

GX1	GX2
➤ Face: 183 x 111mm	192 x 124mm
➤ Box: 168 x 100 x 48mm	181 x 113 x 48mm
➤ Screen: 100 x 80mm	122 x 92mm

The system consists of two parts:

1. The display module normally installed in a dashboard or a pod.
2. The engines capture module onto which all the engine probes are connected. All the information captured by this module are processed internally and sent serially via two wires to the display. The capture module is powered from the display through one of these two wires and will therefore turn on /off with the display.

Description of features

The GX1 or GX2 is a combined avionic instrument incorporating

- The navigation information displayed in analog and digital
 - ASI (air speed indicator) in km/h, mi/h or knots
 - Altitude, in meters or feet
 - VSI (vertical speed indicator) in m/s or ft/min
 - Flight Duration, in hours; minutes; seconds
 - Air Temperature, in degree Celsius or Fahrenheit
 - Glide Ratio
- The display of the essential engine information:
 - Engine RPM
 - Engine Hours, in hours, minutes
- Depending on the type of engine or configuration selected, the following indications are also displayed:
 - 2X CHT (cylinder head temperature) Celsius or Fahrenheit
 - 2X EGT (exhaust gas temperature) Celsius or Fahrenheit
 - Water Temperature, Celsius or Fahrenheit
 - Oil Temperature, Celsius or Fahrenheit
 - Oil Pressure, bars or PSI
 - Battery Voltage
- These above indications trigger an alarm if the user adjustable alarm threshold is exceeded.
- Facility to connect an external relay that will turn on when the air temperature drops below 8°C (45°F).
- Also in option:
 - Fuel consumption instantaneous and accumulated in liters/hour or gal (us)/hour, or rotor RPM for helicopters/gyros.
 - Fuel level in %
- Dimensions

GX1	GX2
➤ Face: 183 x 111mm	192 x 124mm
➤ Box: 168 x 100 x 48mm	181 x 113 x 48mm
➤ Screen: 100 x 80mm	122 x 92mm

The system consists of two parts:

1. The display module normally installed in a dashboard or a pod.
2. The engines capture module onto which all the engine probes are connected. All the information captured by this module are processed internally and sent serially via two wires to the display. The capture module is powered from the display through one of these two wires and will therefore turn on /off with the display.

Installation

Important

Do not power the unit before the unit is completely installed to reduce the risk of accidental short. Handle the display with caution as it could easily be scratched if mishandled.

Position and secure the display on the dashboard or on a pod so as to obtain its maximum visibility for the pilot.

Link the Pitot tube and the nipple at the back of the display panel with the provided air pipe, the wire fitted inside the air pipe is important to prevent the total obstruction of the air pipe in the case of a kink.

Ensure that the configuration of the engine capture module matches the engine used. If not, this can be done by opening the module by removing the four screws on its back and setting the dip switches according to the table. Seal the module cover with a thin layer of silicone to make it resistant to water splash. Secure the module neatly in the vicinity of the engine away from strong vibrations and in such a way that all the engine probes can be directly connected (no intermediate plugs/sockets or extensions needed).

Connect the engine RPM wire (gray wire from magneto for the Rotax dual ignition) and the engine ground (brown wire).

In the case of a water-cooled engine connect the water temperature sender provided to the input "WT"

Connect the EGT/CHT probes as required in such a way that the color of the wires matches the indications on the module.

For four stroke engines: connect the oil pressure probe to OP and the oil temperature sender to OT.

The 0V (GND) of the coil of a relay can be connected on the RL output; the other side of the coil should be connected to the Batt+ (12V). This relay will then be activated when the air temperature drops below 8°C (45°F) and can be used to heat up the inlet manifold and prevent icing.

Installation

Important

Do not power the unit before the unit is completely installed to reduce the risk of accidental short. Handle the display with caution as it could easily be scratched if mishandled.

Position and secure the display on the dashboard or on a pod so as to obtain its maximum visibility for the pilot.

Link the Pitot tube and the nipple at the back of the display panel with the provided air pipe, the wire fitted inside the air pipe is important to prevent the total obstruction of the air pipe in the case of a kink.

Ensure that the configuration of the engine capture module matches the engine used. If not, this can be done by opening the module by removing the four screws on its back and setting the dipswitches according to the table. Seal the module cover with a thin layer of silicone to make it resistant to water splash. Secure the module neatly in the vicinity of the engine away from strong vibrations and in such a way that all the engine probes can be directly connected (no intermediate plugs/sockets or extensions needed).

Connect the engine RPM wire (gray wire from magneto for the Rotax dual ignition) and the engine ground (brown wire).

In the case of a water-cooled engine connect the water temperature sender provided to the input "WT"

Connect the EGT/CHT probes as required in such a way that the color of the wires matches the indications on the module.

For four stroke engines: connect the oil pressure probe to OP and the oil temperature sender to OT.

The 0V (GND) of the coil of a relay can be connected on the RL output; the other side of the coil should be connected to the Batt+ (12V). This relay will then be activated when the air temperature drops below 8°C (45°F) and can be used to heat up the inlet manifold and prevent icing.

Fuel flow option installation

The fuel flow sender from RS (RS 256-225) must have the supplied plastic jet fully inserted as per attached manufacturer instruction. The cable of the sender has three wires (RED, BLUE, BRAID) that must be connected to the respective color (BRAID to GND) indicated on the engine management module. In order to achieve the optimum resolution it is advisable to mount the sender with the paddle wheel axes in a vertical position to minimize the rotational friction.

Fuel level option installation

For two stroke engines the centre terminal of the sender unit must be connected to the OT (oil temperature) input. The mounting plate of the sender should be connected to ground (BATT-). For four stroke engines (912/914) the centre terminal should be connected to the WT (water temperature) input.

Important: Properly mounted the circuit is intrinsically safe, if under no circumstance the wire to the sender unit can make contact with the +12V battery supply.

Notes:

1. The battery negative must be connected to the engine ground.
2. All the GND (ground) indicated on the module are internally linked together
3. For the Rotax single ignition, connect the green wire to RPM and the green/black wire to GND.
4. For the Rotax 912/914 engine, a modification is implemented at the factory in order to render the unit compatible with the Rotax CHT senders. In the case of a Rotax 912/914 the single wire of each CHT sender is connected to either the YEL or RED input of the respective CHT input.

Link the display panel to the engine capture module with the cable provided. The thin cable must be connected to “DATA” of the capture module. The black/white wire to “OUT” and the black wire to “V+”. Finally the cable indicated “BATT+” and “BATT-” should be connected to the battery.

This completes the electrical installation of the unit.

Fuel flow option installation

The fuel flow sender from RS (RS 256-225) must have the supplied plastic jet fully inserted as per attached manufacturer instruction. The cable of the sender has three wires (RED, BLUE, BRAID) that must be connected to the respective color (BRAID to GND) indicated on the engine management module. In order to achieve the optimum resolution it is advisable to mount the sender with the paddle wheel axes in a vertical position to minimize the rotational friction.

Fuel level option installation

For two stroke engines the centre terminal of the sender unit must be connected to the OT (oil temperature) input. The mounting plate of the sender should be connected to ground (BATT-). For four stroke engines (912/914) the centre terminal should be connected to the WT (water temperature) input.

Important: Properly mounted the circuit is intrinsically safe, if under no circumstance the wire to the sender unit can make contact with the +12V battery supply.

Notes:

1. The battery negative must be connected to the engine ground.
2. All the GND (ground) indicated on the module are internally linked together
3. For the Rotax single ignition, connect the green wire to RPM and the green/black wire to GND.
4. For the Rotax 912/914 engine, a modification is implemented at the factory in order to render the unit compatible with the Rotax CHT senders. In the case of a Rotax 912/914 the single wire of each CHT sender is connected to either the YEL or RED input of the respective CHT input.

Link the display panel to the engine capture module with the cable provided. The thin cable must be connected to “DATA” of the capture module. The black/white wire to “OUT” and the black wire to “V+”. Finally the cable indicated “BATT+” and “BATT-” should be connected to the battery.

This completes the electrical installation of the unit

System turn on

Press the “ON/OFF” push button of the panel. The alarm lamp will flash briefly. The display will light up prompting you to reset the flight duration to zero by pressing “QNH+” and if the fuel flow option is installed, to reset the accumulated fuel consumed press “QNH-“. After a few seconds the different engine measurement indications will be displayed depending on the configuration selected in the capture module. The green LED on the capture module should also be flashing.

Changing units system

At any time with the instrument turned on press and hold simultaneously the two QNH push buttons. After a few seconds the displayed units system will change and be memorized.

One of these unit systems can be changed from:

1. Metric:

- ⇒ Altitude in meters with QNH in mbar
- ⇒ ASI in km/h
- ⇒ VSI in m/s
- ⇒ Temperatures in Celsius
- ⇒ Oil pressure in bar
- ⇒ Fuel consumption in liters/h

2. Imperial (US)

- ⇒ Altitude in ft with QNH in inches of Hg
- ⇒ ASI in mi/h (Statute)
- ⇒ VSI in ft/min
- ⇒ Temperatures in Fahrenheit
- ⇒ Oil pressure in PSI
- ⇒ Fuel consumption in gal (US)/h

3. Imperial (UK)

- ⇒ Altitude in ft with QNH in mbar
- ⇒ ASI in mi/h (statute) or knots
- ⇒ VSI in ft/min
- ⇒ Temperatures in Celsius
- ⇒ Oil pressure in bar
- ⇒ Fuel consumption in liters/hour

The sequence of change is:

Metric
Imperial (UK)
Imperial (US)
Imperial (UK) ASI in knots



System turn on

Press the “ON/OFF” push button of the panel. The alarm lamp will flash briefly. The display will light up prompting you to reset the flight duration to zero by pressing “QNH+” and if the fuel flow option is installed, to reset the accumulated fuel consumed press “QNH-“. After a few seconds the different engine measurement indications will be displayed depending on the configuration selected in the capture module. The green LED on the capture module should also be flashing.

Changing units system

At any time with the instrument turned on press and hold simultaneously the two QNH push buttons. After a few seconds the displayed units system will change and be memorized.

One of these unit systems can be changed from:

1. Metric:

- ⇒ Altitude in meters with QNH in mbar
- ⇒ ASI in km/h
- ⇒ VSI in m/s
- ⇒ Temperatures in Celsius
- ⇒ Oil pressure in bar
- ⇒ Fuel consumption in liters/h

2. Imperial (US)

- ⇒ Altitude in ft with QNH in inches of Hg
- ⇒ ASI in mi/h (Statute)
- ⇒ VSI in ft/min
- ⇒ Temperatures in Fahrenheit
- ⇒ Oil pressure in PSI
- ⇒ Fuel consumption in gal (US)/h

3. Imperial (UK)

- ⇒ Altitude in ft with QNH in mbar
- ⇒ ASI in mi/h (statute) or knots
- ⇒ VSI in ft/min
- ⇒ Temperatures in Celsius
- ⇒ Oil pressure in bar
- ⇒ Fuel consumption in liters/hour

The sequence of change is:

Metric
Imperial (UK)
Imperial (US)
Imperial (UK) ASI in knots



Changing alarm thresholds from the factory settings

With the instrument turned off, press and hold down the QNH down (↓) push-button, turn on the instrument and release the QNH down (↓) only when the display has turned on.

The instrument will indicate “**VIEW LIMITS**” while displaying the present engine limits settings and the alarm will flash.

To access the different alarm limits change screen, simply press and hold the QNH down (↓) push-button until the required alarm is displayed.

To increase or decrease the limit accessed, press and release (± 1 second) the QNH up or down until the desired alarm threshold is obtained.

To access the next limit, again press and hold the QNH.

After you are satisfied with the setting of the different limits, the next screen gives you the option of reloading the factory limits (load defaults)

The last screen (save limits) enables you to effectively save all the changes by pressing the QNH push-button for ± 1 second. A message “DONE” will be briefly displayed.

To confirm that the new limit thresholds have been memorized, simply turn off the instrument and turn it on while holding QNH down to access again “**VIEW LIMITS**” as explained above.

Alternatively the approximated limit settings is indicated in the normal operation mode by the position of a small dedicated square cursor on the side of the respective bar graph.

Changing alarm thresholds from the factory settings

With the instrument turned off, press and hold down the QNH down (↓) push-button, turn on the instrument and release the QNH down (↓) only when the display has turned on.

The instrument will indicate “**VIEW LIMITS**” while displaying the present engine limits settings and the alarm will flash.

To access the different alarm limits change screen, simply press and hold the QNH down (↓) push-button until the required alarm is displayed.

To increase or decrease the limit accessed, press and release (± 1 second) the QNH up or down until the desired alarm threshold is obtained.

To access the next limit, again press and hold the QNH.

After you are satisfied with the setting of the different limits, the next screen gives you the option of reloading the factory limits (load defaults)

The last screen (save limits) enables you too effectively save all the changes by pressing the QNH push-button for ± 1 second. A message “DONE” will be briefly displayed.

To confirm that the new limit thresholds have been memorized, simply turn off the instrument and turn it on while holding QNH down to access again “**VIEW LIMITS**” as explained above.

Alternatively the approximated limit settings is indicated in the normal operation mode by the position of a small dedicated square cursor on the side of the respective bar graph.

Trouble shooting

- Display stays blank and the alarm is flashing continuously.
Cause: battery deeply discharged.
- No engine management displayed.
Check that the green LED on the engine management is flashing.
If not: check the “**V+ and GND**” connection on the engine management module. Also check the contact of pin 4 on the circular connector.
If so: check the “**OUT**” connection on the engine management module and pin 3 on the circular connector.
- Instrument turns off.
Cause: bad contact in the battery supply or over voltage >17V detected.
An over voltage message will briefly appear on the next turn on of the instrument.

Specifications:

Operating voltage: 10.5V to 16V
Operating current: 150mA
ASI (air speed) from 20 mph to 192 mph or 30km/h to 305km/h
The air speed is measured with a Pitot tube
Altimeter –320ft to 16000ft or –80m to 5000m (20ft or 10m resolution)
Barometric pressure (QNH) compensation in mbar.
VSI (vertical speed indicator) from –1500ft/min to 1500ft/min or –7.5m/s to 7.5m/s.
Engine RPM from 500 to 7000 RPM with a 10RPM resolution.
EGT (exhaust gas temperature) from 0 to 990°C or 1800°F at 5°C resolution.
CHT (cylinder head temperature) from 0 to 270°C or 518°F at 2°C
Water temperature from 0 to 125°C or 257°F at 1°C
Oil temperature from 0 to 150°C or 300°F at 1°C resolution.
Oil pressure from 0 to 10 bar at 0.1 bar resolution.
Engine hours to 999hours with 1.min resolution.
Battery voltage from 10.8 to 16v at 0.1V resolution.
Flight duration at 1s resolution.
Fuel flow in 0.1 L/hour resolution.
Fuel level in %

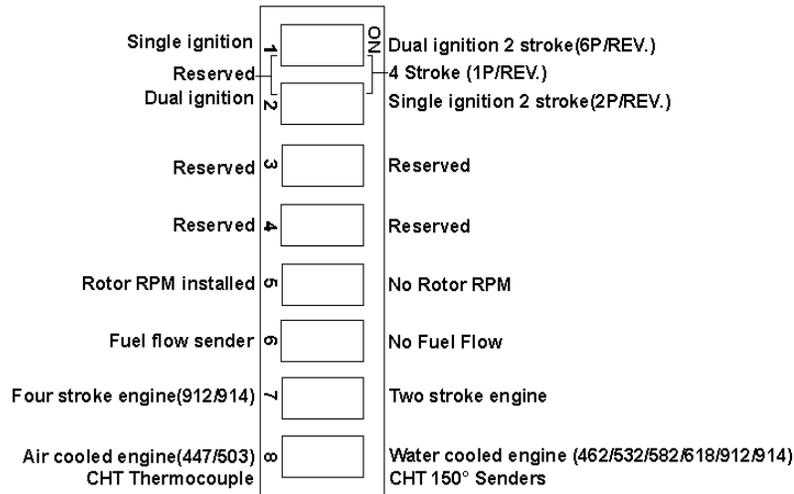
Trouble shooting

- Display stays blank and the alarm is flashing continuously.
Cause: battery deeply discharged.
- No engine management displayed.
Check that the green LED on the engine management is flashing.
If not: check the “**V+ and GND**” connection on the engine management module. Also check the contact of pin 4 on the circular connector.
If so: check the “**OUT**” connection on the engine management module and pin 3 on the circular connector.
- Instrument turns off.
Cause: bad contact in the battery supply or over voltage >17V detected. An over voltage message will briefly appear on the next turn on of the instrument.

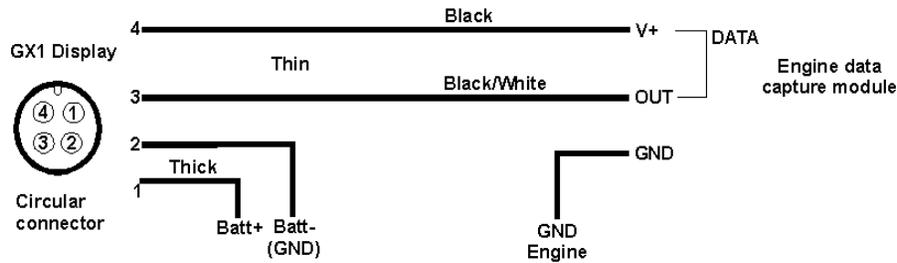
Specifications:

Operating voltage: 10.5V to 16V
Operating current: 150mA
ASI (air speed) from 20 mph to 192 mph or 30km/h to 305km/h
The air speed is measured with a Pitot tube
Altimeter –320ft to 16000ft or –80m to 5000m (20ft or 10m resolution)
Barometric pressure (QNH) compensation in mbar.
VSI (vertical speed indicator) from –1500ft/min to 1500ft/min or –7.5m/s to 7.5m/s.
Engine RPM from 500 to 7000 RPM with a 10RPM resolution.
EGT (exhaust gas temperature) from 0 to 990°C or 1800°F at 5°C resolution.
CHT (cylinder head temperature) from 0 to 270°C or 518°F at 2°C
Water temperature from 0 to 125°C or 257°F at 1°C
Oil temperature from 0 to 150°C or 300°F at 1°C resolution.
Oil pressure from 0 to 10 bar at 0.1 bar resolution.
Engine hours to 999hours with 1.min resolution.
Battery voltage from 10.8 to 16v at 0.1V resolution.
Flight duration at 1s resolution.
Fuel flow in 0.1 L/hour resolution.
Fuel level in %

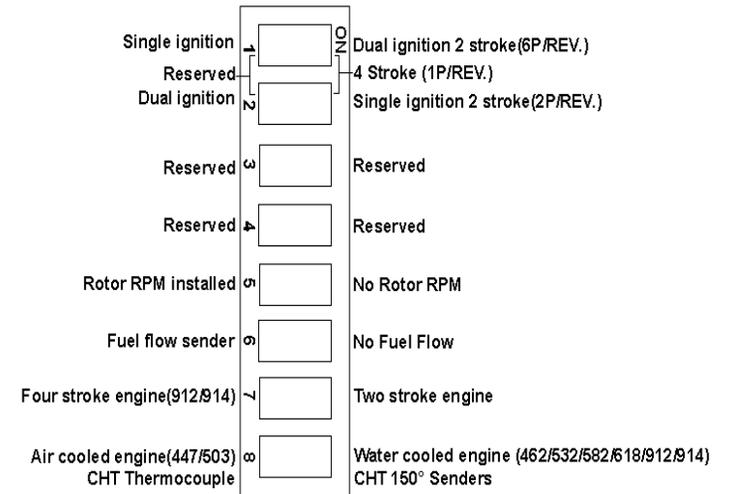
Engine management switches setup



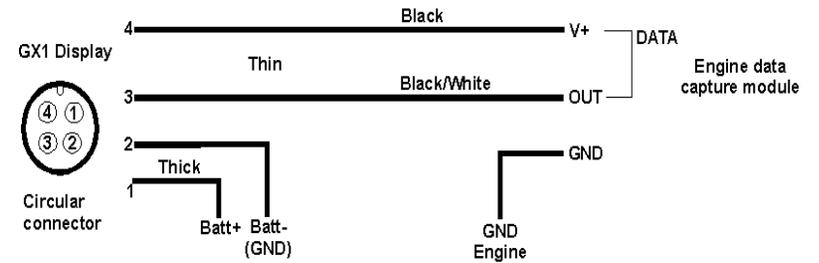
Connection Schematic



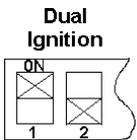
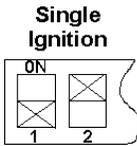
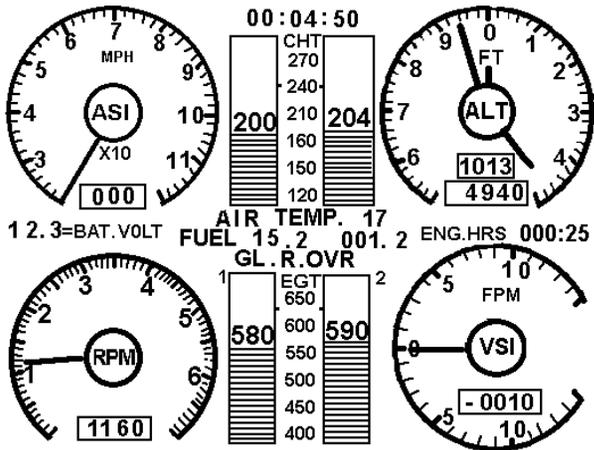
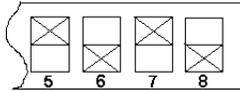
Engine management switches setup



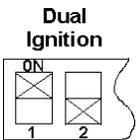
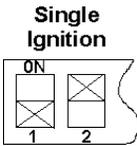
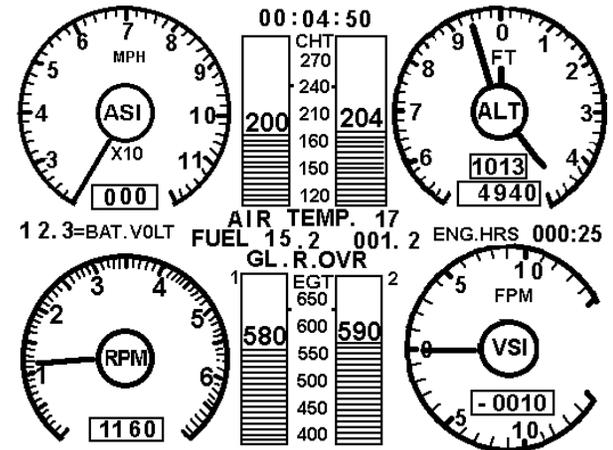
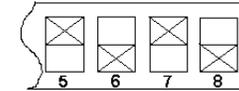
Connection Schematic



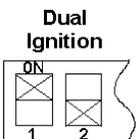
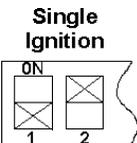
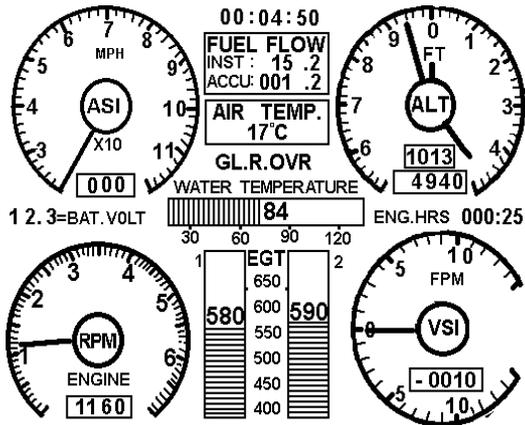
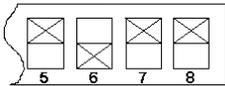
503/447 Configuration



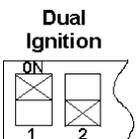
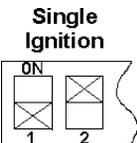
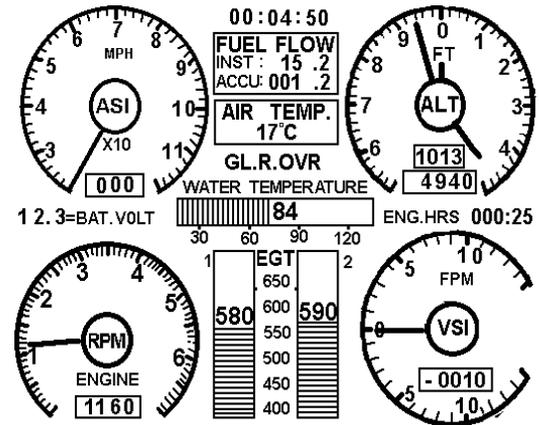
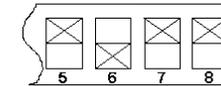
503/447 Configuration



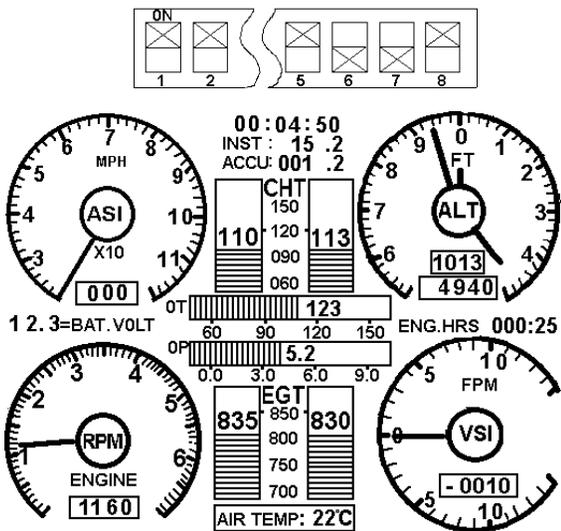
462/532/582/618 Configuration



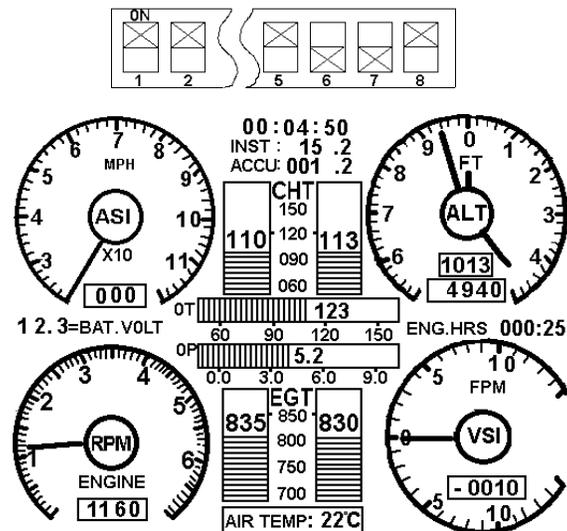
462/532/582/618 Configuration



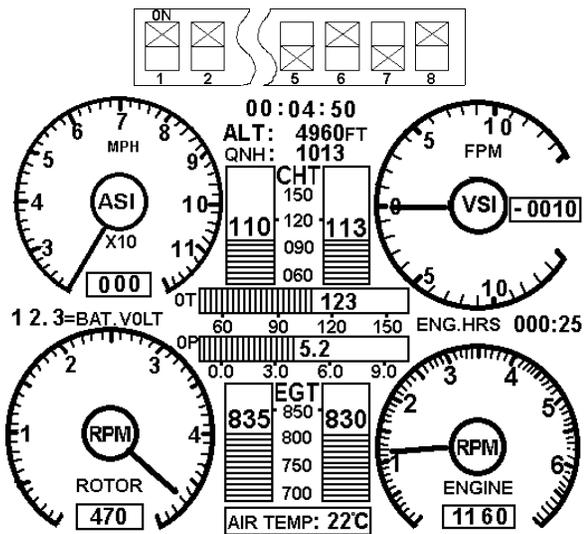
912/914 Configuration
with Rotax CHT probes



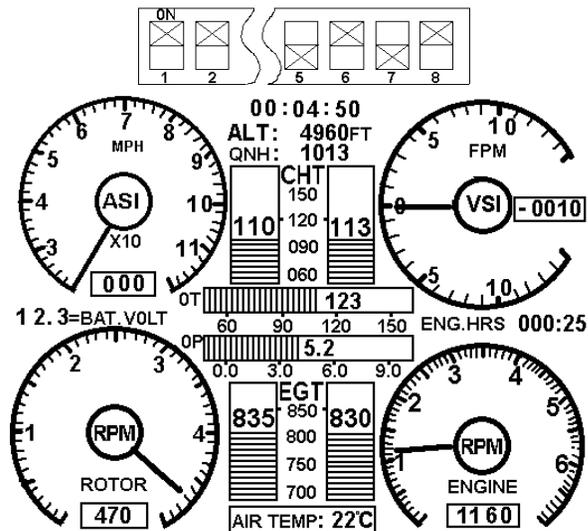
912/914 Configuration
with Rotax CHT probes



912/914 Gyro configuration
with Rotax CHT probes



912/914 Gyro configuration
with Rotax CHT probes



AMPtronic

GUARANTEE

The electronic components are guaranteed against faulty workmanship/defects for a period of twelve- (12) months/one year from the date of purchase.

Should a problem or defect arise it will be at the manufacturers discretion to replace the necessary parts.

ANY ACCIDENT RESULTING DUE TO INCORRECT COMMANDS/DISPLAY OR READOUTS FROM THE INSTRUMENT, OF WHATEVER NATURE, IS NOT COVERED IN THIS GUARANTEE. THE OPERATOR/ INTERPRETER/ OWNER OF THE INSTRUMENT SHALL FAMILIARISE HIMSELF / HERSELF WITH THE RELATIONSHIP BETWEEN THE AIRCRAFT AND THE DISPLAYS ON THE INSTRUMENT.

THIS INSTRUMENT HAS NO TYPE CERTIFICATION OF ANY NATURE FROM ANY DEPARTMENT OF DCA. IN THE REP.OF S.A.

AMPtronic

GUARANTEE

The electronic components are guaranteed against faulty workmanship/defects for a period of twelve- (12) months/one year from the date of purchase.

Should a problem or defect arise it will be at the manufacturers discretion to replace the necessary parts.

ANY ACCIDENT RESULTING DUE TO INCORRECT COMMANDS/DISPLAY OR READOUTS FROM THE INSTRUMENT, OF WHATEVER NATURE, IS NOT COVERED IN THIS GUARANTEE. THE OPERATOR/ INTERPRETER/ OWNER OF THE INSTRUMENT SHALL FAMILIARISE HIMSELF / HERSELF WITH THE RELATIONSHIP BETWEEN THE AIRCRAFT AND THE DISPLAYS ON THE INSTRUMENT.

THIS INSTRUMENT HAS NO TYPE CERTIFICATION OF ANY NATURE FROM ANY DEPARTMENT OF DCA. IN THE REP.OF S.A.