Programmable Controller

Encourage your class to become programming and control experts.
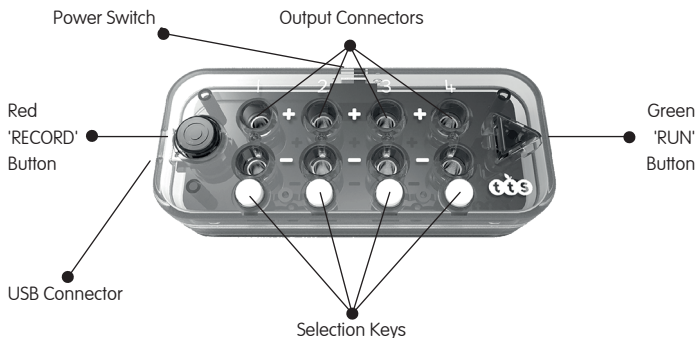

User Guide
www.tts-group.co.uk

Important Information

• Please read all instructions carefully before using.
• Please retain the information in this User Guide for future reference.

Power Supply Precautions

• Please use adequately rated USB power supplies for the electrical loads used. The accessory pack is suitable for any standard USB port rated 0.5A or greater, but using several larger motors for example may need a 1A or even 2A capable supply.

Know Your Programmable Controller

Power Switch   Output Connectors

Red 'RECORD' Button

Green 'RUN' Button

USB Connector

Selection Keys

Powering The Device

• Insert the USB plug (larger end) into a suitable power supply.
• Plug the micro-USB cable (smaller end) into the programmable controller on the left hand side ensuring that it is fully inserted.
• Switch power on using the switch at the back.

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Programming A Sequence
- Press the red Record button ñ it should illuminate indicating that recording has started.
- Press the selection keys corresponding to the outputs required. The selection keys will illuminate indicating that the output is active.
- Press the selection keys again to switch off the output. Any combination of outputs can be active simultaneously.
- When your sequence is complete, press the record button again to end the recording. The red LED will extinguish.
- A maximum of 127 steps, with a maximum of 60 seconds between each step can be recorded.

Replaying A Sequence
- Press the green Run button, it will illuminate indicating that playback has begun.
- The selection keys will illuminate in the sequence you have programmed, and the outputs will become active.
- When the sequence is complete, the Run LED will extinguish.

Technical Specification
- 4 independent channels.
- Each channel can drive up to 700mA (depending upon power supply).
- The + connectors are positive 5V and the - connectors are negative 0V.
- Record 127 steps.
- Connect motors between channels 1 & 2, or channels 3 & 4 for bi-directional operation.
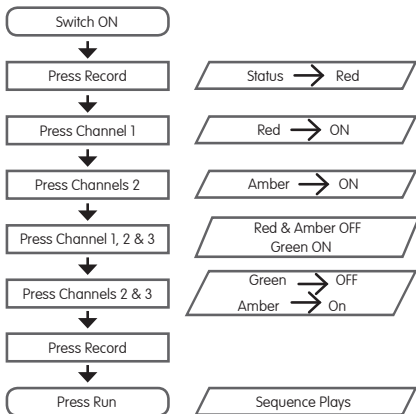- Remembers sequences even when turned off.

Warnings

- The USB connector is only compatible with standard 5V USB supplies. Use of 'fast charger' style USB power supplies supplied with some mobile phones and tablets can apply a higher voltage, potentially damaging the unit.
- Please ensure that any electrical loads connected do not take too much current. Small motors, LEDs and bulbs are generally OK. If in doubt, test for electrical resistance with a multimeter: A value of 10Ω (Ohms) or greater is OK.
- For best results use IT10187 Programmable Controller Accessory as these are fully compatible. This product does not output 5V continuously, therefore any accessory used will work at an average voltage of approximately 2.5V. The system toggles the output from 5V to 0V. Any accessory that is used in this product needs to be rated 5V or more. If any accessory with a rating less than 5V is used this may cause damage to the accessory.
- Adapters and cables used with this product should be regular examined for damage to the cord, plug, enclosure and other parts, and in the event of such damage, they must be repaired or replaced.
- This product is intended to be assembled under the supervision of an adult.
- Any wires or cables that come with this product are not to be inserted into socket-outlets.

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Examples of use

- Use the four channels to drive a set of traffic lights. Use channel 1 for Red, 2 for Amber, 3 for Green and use channel 4 to drive a light or buzzer for a pedestrian signal. See if you can program the lights to turn on in the correct sequence.

```
Switch ON
  ↓
Press Record          Status ──→ Red
  ↓
Press Channel 1       Red ──→ ON
  ↓
Press Channels 2      Amber ──→ ON
  ↓
Press Channel 1, 2 & 3    Red & Amber OFF
  ↓                       Green ON
Press Channels 2 & 3   Green ──→ OFF
  ↓                      Amber ──→ On
Press Record
  ↓
Press Run             Sequence Plays
```

- Build a moving model from wood and dowel, with a motor to drive left wheel and right wheel independently. Fit the Programmable Controller onto two vertical pieces of dowel and use Channel 1 to drive the left motor and channel 2 for the right. You can make the model:
    a. go forwards (1 & 2 ON)
    b. turn right (1 ON)
    c. turn left (2 ON).
  Try to program your moving model to negotiate obstacles!

TIP: You can use a USB battery pack / power bank to provide power for moving models.

Warranty & Support

This product is provided with a one-year warranty for problems found during normal usage. Mistreating the Programmable Controller, using the incorrect supply voltage, or opening the unit will invalidate this warranty.

Technical Support

Please visit www.tts-group.co.uk for the latest product information.

Email feedback@tts-group.co.uk for technical support.

WARNING: Do not dispose of this product in household waste.

WARNING: Hand it over to a collection point for recycling electronic appliances.

Made in China, on behalf of TTS Group Ltd.

TTS Product Code:
IT10096

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