

## Barrier Gate Controller (BGC)



A Barrier Gate Controller is a device that was designed to control a gate style barrier for use in tidal demand contraflow road traffic applications. The BGC can control the position of the gate as well as reporting any faults, such as a broken gate, lamp failure, or power failure. A Barrier Gate Controller card is to be located within a barrier mechanism enclosure. BGC control cards can be multi-dropped on a RS422 network as the card has a facility for a unique address. The control card enables the interpretation of a serial communication message from the local TMSO (Traffic Management System Outstation) to provide a signal output which controls the position of the barrier mechanism.



The Barrier Gate represents a physical barrier rather than a purely visual one like lane use traffic signals or pavement lights. The BGC card includes input from a vehicle detector in order to over-ride a command to extend if there is a vehicle in the movement zone of the barrier. The BGC card has a dither function which overcomes vibration in long arms which can actuate failsafe procedures due to false detection of the arm position. ETG Barrier Gate Controller cards have been used in tidal flow systems in South Australia, New South Wales and Queensland.

### Feature Attributes:

- Barrier Gate controller cards are available in a number of physical forms catering for variations in command interface structure, output control and monitoring capability.
- Barrier Gate controller cards provide a means for a remote system to control a barrier gate via cable or wireless connection.
- Barrier Gate Controller card controls and monitors the position of the gate or barrier and activates the hazard lamps
- The Barrier Gate Controller card automatically reports any faults, such as a broken gate, lamp failure, or power failure.
- The Barrier Gate Controller card enables the interpretation of a serial communication message from the local TMSO (Traffic Management System Outstation).
- The Barrier Gate Controller card has provision for an input from a vehicle detector to avoid swinging the gate into oncoming traffic within the lane or onto a vehicle waiting to proceed.
- The BGC control card maybe configured into a multi-drop wiring topography as each card may be configured with a unique address.



## General Specification:

### Physical:

- Weight: <0.28 Kg
- Operational Temperature: 65 degrees 90% humidity
- Circuit card size: Typical 210mm x 170mm x 30mm
- Circuit cards are conformal coated and will operate within Australian Standard Guidelines for Traffic Control Devices as per TSC/3 and TSC/4.
  - The conformal coating material has a dielectric strength of 90KV/mm and an operational temperature range of -70degC to +200degC and is self-extinguishing when exposed to a flame.

### Power Supply:

- Current Consumption: < 0.5amps (dependent on flashers etc)
- Operational Voltage: The circuit card requires a single 12VAC connection from the 240VAC/12VAC transformer supplied
- Voltage regulation and control is provided by IC2 and SWREG1.
- Includes automatic overcurrent protection and shutdown

### Connector Specification:

- Easy to connect through PCB Modular Terminal 'Phoenix style' connectors, 10Amp Rated Voltage 300VAC

### Digital I/O:

- Output Devices: PVAZ172 MOSFET Photovoltaic Relay 60volt 500 milliamp S/capability
- Relay control – Contacts 6A/250VAC rating with Max Volts 400V
- Inputs are optically isolated by PC844 Opto-isolator 5000V rms Isolation devices, Input 20milliamps @ 1.2volts.
- The operation of the circuit is provided by IC1 – Microprocessor PIC 17C756

## Typical Communication Protocol (exert from manual)

All command messages, so long as they are not broadcast, cause the device being addressed to respond. If a SET command is received correctly, an ACK message is replied. If the message was invalid a NACK message will be returned instead. No reply is sent for a broadcast message. For request messages, no ACK is set. Rather, the requested data is returned instead.

### Typical Command Message Types:

#### Set State – Barrier Control:

Device Type - 'B' (0x42h)

Message Type - 'S' (0x53h)

*This command orders the barriers to raise or lower. It can also enable or disable the flashing beacons.*

Data - 1 byte

7: X	6: X	5: X	4: X	3: X	2: X	1: CLOSE	0: OPEN
------	------	------	------	------	------	----------	---------

If a message is received with the CLOSE bit set, a 300ms pulse is sent to relay 2 to close the barrier.

If a message is received with the OPEN bit set, a 300ms pulse is sent to relay 1 to open the barrier.

If a message is received with both bits either set or cleared, it is rejected. Otherwise an ACK message is returned.

#### Request Status:

Device Type(s) - 'B'(0x42h)

Message Type - 'R'(0x52h)

Data - 0 bytes

*This command requests the status of the particular device. The broadcast address is not valid for this command.*