Digital Gateway - DG-1200

INSTALLATION & INSTRUCTIONS

BTR Controls, Inc.
1570 Todd Farm Dr.
Elgin, Illinois 60123
847.608.9500


DIGITAL GATEWAY
POWER
1 24 VAC
2 24 VAC NEUTRAL
3 CHASSIS GROUND
OUTPUT
4 INTERNAL CONNECTION TO 1
5 OPEN
6 CLOSE
7 PROGRAM 1
INPUT
8 LSO
9 LSC
10
11 PB1
12 ALT/ACT
13
14 AUTO
15 PHOTOEYE-DC
16
17 REV. EDGE
18 OLR
19
20 OPEN
21 CLOSE
22
23 STOP/RESET
24 PROGRAM 2
25
26 PROGRAM 3
27 LSB
28
DC
29 +12 VDC
30 LOOP-DC
31 12 VDC GND
COUNTER
1674
OPEN JOG
RESET
A/A CLOSE DELAY OPTION
OPEN BACKUP TIME
CLOSE BACKUP TIME
CLOSE JOG
A/A CLOSE DELAY
SET
AUTO CLOSE DELAY
SELECT
ALWAYS INSPECT DOOR FOR PROPER OPERATION AFTER RESETTING ANY ALARM CONDITION
Refer to Owner's Manual for further details
DISPLAY | ALARM CONDITION | ACTION
CONnECt | Required input not connected | Connect indicated input
OP 0 | Open backup time exceeded | Push RESET
CL 0 | Close backup time exceeded | Push RESET
AJAr | Bottom bar broken away | Assemble bottom bar - Push RESET
OLr | Overload relay tripped | Reset overload relay - Push RESET
EdGE | Reversing edge input not present | Check reversing edge - Push RESET
Display and related LED will blink during alarm condition
DISPLAY | CONDITION | ACTION
HELLO | Ready for operation |
EdGE | Reversing edge activated | Push OPEN/CLOSE button on control box
LOC | Controller in idle condition | See Owner's Manual
DG 1200

Power

Terminals 1, 2, & 3
24 vac is required from a local control transformer of sufficient capacity for all loads connected or from a remote source. In either case, a properly sized fuse must be provided.

24 vac (high side) -terminal 1
24 vac (neutral) -terminal 2
Ground -terminal 3

Outputs

Terminals 4, 5 & 6
Three output triacs are provided for:

VAC in -terminal 4 (connected internally)
Open -terminal 5
Close -terminal 6
Program 1 -terminal 7

All outputs share a common power source, terminal 4, which may be from 24 to 120 vac. Terminal 4 is connected internally to the 24 vac supply. To change the output voltage, remove jumper J1 and connect the proper voltage, no more than 120 volt, to terminal 4. The maximum rating for each output is 1 amp inductive continuous. An RC network and MOV are connected across each output for noise suppression. An **external MOV is recommended** across any heavy duty contactor or solenoid coil.

The Digital Gateway is designed to operate a reversing or multispeed motor starter. It is recommended that the open and close contactors be mechanically and electrically interlocked.

NOTE ON PLUG REVERSING

The Digital Gateway is programmed to immediately reverse for activation or safety door reversals. A programmed delay for non-safety reversals is available. See the Programming Section.

Inputs (AC)

Terminals 7 through 14 & 17 through 27
All inputs to be contact closure or solid state connection. RC networks, MOV's or noise suppression devices connected across an input contact should be removed.

24 vac or 24 vdc external voltage is required to operate any input terminal. The inputs normally operate on 24 vac which is supplied by the panel control transformer. A normally open (NO) contact is required for all inputs except for 8-LSO, 9-LSC, 17-RE, 23-Stop, 26-Program 3 and 27-LSB, which require a normally closed (NC) contact for normal operation. The opposite side of each input contact should be connected to the hot side of the 24 vac transformer. The inputs initially listed as normally closed (NC) may be converted to normally open (NO), see Programming Section.

LED's are provided to indicate when each input is triggered or active. The **LED** for the normally open (NO) inputs will illuminate when the input is triggered by applying 24 vac to its terminal. The **LED** for the normally closed (NC) inputs will illuminate when the input is triggered by removing 24 vac from its terminal.

LSO - terminal 8
This input is for a normally closed (NC) connection. A loss of connection indicates the door has reached the full open position and will cause the Open output to turn off and the **LED** to illuminate.

LSC - terminal 9
This input is for a normally closed (NC) connection. A loss of connection indicates the door has reached the full closed position and will cause the Close output to turn off and the **LED** to illuminate.

PB1 - terminal 11
A momentary connection while the door is closed, closing or stopped between limits will open the door to the full open position or until the Open Backup timer goes to zero. A momentary connection while the door is in the full open position will close the door to the full closed position or until the Close Backup timer goes to zero. Activation of this input while the door is in the process of opening will be ignored.

The PB1 input can be converted to automatic closing once the door has reached the full open position, see the A/A Close Delay timer section.

Alternate Action (A/A) - terminal 12
Identical operation to PB1 - terminal 11.

Auto - terminal 14
A momentary or maintained connection while the door is closed, closing or stopped between limits will open the door to the full open position or until the Open Backup timer goes to zero. The door will stay open as long as the Auto input is triggered. When the connection is removed, the Auto Close Delay **dEL** timer will start counting down from the customer selected preset value. When the timer reaches zero, the door will close to the full closed position or until the Close Backup timer goes to zero.

If any other input is triggered while in the process of opening by the Auto input, the new input will be ignored. If the Auto input comes on while the door is opening by the A/A, PB1 or Open input, the Auto function will become the prime activation. If the RE, Close, Stop or Program 2 inputs are triggered while the Auto Close Delay timer is counting down, the new input will be ignored. If any other input listed below is triggered while the Auto Close Delay timer is counting down, the door will respond as follows:

PB1, A/A or Open
The Auto Close Delay timer will be aborted and the new input function will take over.

*PB1 or A/A - A/A Close Delay timer activated (**LED** on)*
The Auto Close Delay timer will be aborted and the A/A Close delay timer will take over.

Auto, Photo DC or Prog 3 (Photo AC)
The Auto close delay timer will reset and start over when the input is removed.

If the door is at the full open position for any reason and in a normal condition (display in the count screen) when the Auto input comes on, the door will remain at the open position and prohibit any activator from closing the door as long as the Auto input is present.

If the Auto Close timer is set to zero, the door will close with no time delay.

Reversing Edge - terminal 17
This input is for a normally closed (NC) connection and will be inactive and ignored while the door is opening or fully closed (LSC-on). A momentary loss of this connection while the door is closing will immediately reverse the door motion and open the door to the full open position or until the Open Backup timer goes to zero. The door will remain at the full open position (or at the position where the Open Backup timer stopped the door) and the message **EdGE** will appear in the display until the system is reset as follows:

To reset and close the door, activate the PB1, A/A or Close inputs.
To just reset the system, activate the Stop input or the Open Jog/Reset button on the DG.

During this condition the system will remain inactive, but this is not considered an alarm condition.

A loss of this connection for two seconds while the door is at the full open position (LSO-on) will keep the door from closing and the RE input **LED** and the message **EdGE** will blink. This is considered an alarm condition. Once the connection is again made, the system can be reset by the Open Jog/Reset button or the Stop input.

OLR- terminal 18
When this input is triggered, the Open and Close outputs will turn off, the OLR input **LED** and the message **Olr** will blink until the system is reset. The system will remain inactive during this condition. Once the OLR input becomes normal the system can be reset by activating the Stop input or pressing the Open Jog/Reset button on the DG.

Open - terminal 20
A momentary signal while the door is closed, closing or between limits will open the door to the full open position (LSO-on) or until the Open Backup timer goes to zero. This input will be ignored during the opening cycle

Close - terminal 21
A momentary signal while the door is at the full open position (LSC-on) or between limits will close the door to the full closed position or until the Close Backup timer goes to zero. This input will be ignored while the door is closed or in the opening cycle.

Stop - terminal 23
A loss of signal while the door is opening or closing, but only when started by the Open or Close input will turn off the Open or Close output.

This input can also be used as a remote reset, same as the Open Jog/Reset button.

Program 2 - terminal 24
This input can have various functions as defined in the Program Section. The default function will be **LOC** command. When a signal is present and the door is at the full closed position (LSC-on), the controller will go into an idle condition where no inputs are active and the message **LOC** will appear in the display.

Program 3 - terminal 26
This input is for a normally closed (NC) connection and can have various functions as defined in the Program Section. The default function will be Photo AC. The input is inactive and ignored while the door is in the full closed position (LSC-on) or while the door is opening. A momentary loss of connection while the door is closing will immediately reverse the door motion and open the door to the full open position or until the Open Backup timer goes to zero. The door will remain open as long as the photoeye detects an obstruction. After the obstruction is removed, the door will remain open if it was initially activated by a non-automatic input (PB1, A/A & Close) or close after the appropriate time delay if it was initially activated by an automatic input (A/A-Close Delay on or Auto).

If the photoeye is activated while either delay timer is timing down, the timer will stop, reset and resume timing after the photoeye is cleared.

If the photoeye is activated while the door is in the full open position (LSO-on), the door will be inhibited from closing until the photoeye is cleared. The door will be unable to close as long as the photoeye is activated.

LSB - terminal 15

This input is for a normally closed (NC) connection. A loss of this connection will turn off the Open and Close outputs and put the controller into an inactive state until the connection is again made and the system reset. The LSB input **LED** and the message **AJAr** will blink. To reset the system, press the Open Jog/Reset button or activate the Stop input.

Inputs (DC)

Terminals 15 & Loop

These inputs should be contact closure or NPN open collector only. RC networks, MOV's or noise suppression devices connected across an input contact, should be removed.

The inputs normally operate on 12 vdc which is supplied internally. A normally open (NO) contact is required for the Loop input and a normally closed (NC) input is required for the Photo DC input The opposite side of each input contact should be connected to the ground side of the 12 vdc power supply.

Loop - terminal 29, three terminal plug
This input will operate the same as the Auto input.

Photo DC - terminal 15
This input will operate the same as Photo AC - terminal 26.

Start-up Sequence

When power is applied to the Digital Gateway, the door will not move regardless of the status of any activator input. The display will read **HELLO** until the system becomes functional with the change in status of any activator input or reset by the Stop input or the Open Jog/Reset button. If the system is reset only, the display will go to the normal or count display.

If any input requiring a normally closed contact is not connected, the associated **LED** and the message **COnnECt** will blink. For the LSO and LSC inputs, at least one of the two must show a normally closed (NC) connection at the input. If none is present, both LSO and LSC input **LED**'s and the message **COnnECt** will blink. Once the proper connection is made the **LED** will go off, the display will return to the normal condition and the system will be ready for operation. Inputs requiring a normally closed (NC) contact are: LSO, LSC, Photoeye DC, RE, Stop, Program 3 & LSB. During this condition, access to the program section will be possible. The logic for these inputs can be converted to normally open (NC), see Programming Section.

Buttons

There are nine buttons on the face of the controller.

Open Jog/Reset
Pressing this button while the controller is in a normal condition (display on count) will open the door until the button is released or the door reaches the full open position (LSO-0n). The Open Backup timer is not functional.

This button also acts as a Reset for the following alarm conditions: Open or Close Backup timer goes to zero, OLR tripped or LSB activated.

This button will be active while in the **EdGE** or **AJAr** alarm conditions.

Close Jog
Pressing this button while the controller is in a normal condition (display on count) will close the door until the button is released or the door reaches the full closed position (LSC-0n). The Close Backup timer is not functional.

This button will be active while in the **EdGE** or **AJAr** alarm conditions.

A/A Close Delay Option
A momentary operation of this button will put the PB1 & A/A inputs into an automatic close sequence. The A/A Close Delay Option **LED** will illuminate. Another momentary operation of this button will turn off the **LED** and the automatic close sequence.

With this option invoked, when the door reaches the full open position (LSO-on), the A/A Close Delay timer **ACL** will begin to count down from the customer selected preset to zero, at which time the door will close to the full closed position (LSC-0n) or until the Close Backup timer goes to zero.

Open Backup Time
Pressing this button will display the Open Backup timer with its present preset time. The up and down buttons will raise or lower the preset. When released, the selected value will be put into memory as the preset. The display will remain on for four seconds if no button is pressed or after the button is released.

Close Backup Time
Pressing this button will display the Close Backup timer with its present preset time. The up and down buttons will raise or lower the preset. When released, the selected value will be put into memory as the preset. The display will remain on for four seconds if no button is pressed or after the button is released.

A/A Close Delay Time
Pressing this button will display the A/A Close Delay timer **ACL** with its present preset time. The up and down buttons will raise or lower the preset. When released, the selected value will be put into memory as the preset. The display will remain on for four seconds if no button is pressed or after the button is released.

This button is also used as the Set button in the program mode.

Auto Close Delay Time
Pressing this button will display the Auto Close Delay timer **dEL** with its present preset time. The up and down buttons will raise or lower the preset. When released, the selected value will be put into memory as the preset. The display will remain on for four seconds if no button is pressed or after the button is released.

This button is also used as the Select button in the program mode.

UP and Down Arrow
Pressing the Up arrow will raise the display value when in the timer mode. Pressing the Down arrow will lower the display value when in the timer mode. In the Program mode, the Up arrow will raise the display value for a timer and select the On value for options. In the Program mode, the Down arrow will lower the display value for a timer and select the Off value for options.

Timers

The following timers will have a range from zero to 99 in one second increments. They will be countdown operation from the preset to zero. Time selection will be through the Up and Down arrow buttons, with the preset kept in memory without loss.

Open Backup [OP = 00]
This timer will start when the Open output turns on and counts down until the LSO input is activated or the value reaches zero. When the LSO input is triggered, the timer becomes inactive. If the value reaches zero, an alarm condition exists, the Open and Close outputs are turned off and the controller goes into an inactive condition. The LSO input **LED** and the message **OP = 0** will blink until the system is reset by the Stop input or the Open Jog/Reset button. Default = 1.

Close Backup [CL = 00]
This timer will start when the Close output turns on and counts down until the LSC input is activated or the value reaches zero. When the LSC input is triggered, the timer becomes inactive. If the value reaches zero, an alarm condition exists, the Open and Close outputs are turned off and the controller goes into an inactive condition. The LSC input **LED** and the message **CL = 0** will blink until the system is reset by the Stop input or the Open Jog/Reset button. Default = 1

A/A Close Delay [ACL = 00]
This timer will start when the door reaches the full open position (LSO-on) after being opened by the PB1 or A/A input. When the preset value reaches zero, the door will close to the full closed position or the Close Backup timer goes to zero. Default = 1.

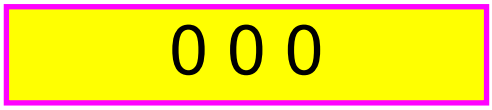
Auto Close Delay [dEL = 00]
This timer will start when the door, opened by the Auto input, reaches the full open position (LSO-on) and the Auto input returns to its normal condition. When the preset value reaches zero, the door will close to the full closed position or the Close Backup timer goes to zero. Default = 1.

Counter

In the normal condition where no activation, motion or timing is occurring, the display will show the total count of door operations. The total number of LSO input operations determines the count. The count is permanent even with the loss of power.

Programming Section

The Digital Gateway has numerous defined options which can be activated through the Programming Menu. Entry into the programming mode requires a three digit security code. To enter the programming section, press and hold both the Open and Close backup timer buttons for three seconds. The display will change as shown below.



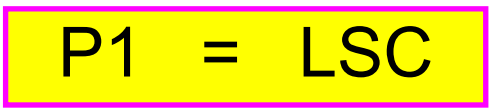
The first (left) digit will blink. Press the up or down arrow key to raise or lower the value to a digit from 0 - 9. After the first digit is set, press the Select button to move to the next digit. Repeat the process to set all three digits to the code __ __ __ . Once the correct code is entered, press the Set button. The display will change as shown below.

The seven menus are:

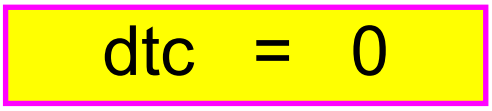
Program 1 - Output 7 (**PrOG-1**) Unavailable when any air lock selected
Program 2 - Input 24 (**PrOG-2**) Unavailable when air lock A or B selected
Program 3 - Input 26 (**PrOG-3**) Not shown on display
Program 4 - Software Options (**PrOG-4**)
Program 5 - Logic reversal. (**PrOG-5**)
Program 6 - Not available at this time
Program 7 - Air Lock sequence **(PrOG-7)**

Press the Select button to scroll through the programs and press the Set button to enter the sub-menu for the selected program.

Sub-Menus
Each Sub-Menu is identified by both the program number (**P1**) and an option code (**LSC)**. Programs 1 & 2 will allow only one option to be selected. With the desired selection visible in the display, press the Set button to choose that option. For the remaining programs, use the Select button to scroll through the options, the up & down arrow keys to set the time or invoke the option and the Set button to save all changes and return to the main menu.



Where a timer is associated with an option, a code for the option and the default time setting will appear in the display. Use the up & down arrow keys to change the time value.



Program 1 - Output 7 (Not available when Air Lock selected)

1-1 Door not closed (default) [P1 = LSC]
The output will turn on when the LSC input is in the normal condition or the door not closed. The output will turn off when the LSC input is triggered or the door is closed.

1-2 Door open [P1 = LSO]
The output will turn on when the LSO input is triggered or the door is open. The output will turn off when the LSO input is in the normal condition or the door not open.

1-3 Delay to close [P1 = dtc] (15 second max.)
When the close cycle begins, this output will turn on, the Delay to Close timer **dtC** will start and count down from the preset value to zero, at which time the Close output 6 will also turn on. Both outputs will remain on until the close cycle is finished. Press the set button and the display will change to allow setting of the preset value. Default = 01.

1-4 Air Lock (Default when Air Lock selected) [ALI]
This option will automatically be turned ON when Program 7 - A, B or C is ON. The output will operate as described in the Air Lock Section.

Program 2 - Input 24 (Not available when Air Lock A or B selected)

2-1 LOC condition (default) [P2 = LOC]
When this input is triggered and the door is in the full closed position, LSC on, the controller will go into an inactive condition and the message **LOC** will appear in the display.

2-2 MAN-AUTO selector switch [P2 = SSA]
When this input is in the normal condition (MAN), the A/A and Auto Close delay timers will be disabled. The Auto and Loop input will be ignored at the door closed position, LSC on. These inputs will reverse the door if it is closing and will hold the door open if it is at the full open position, LSO on.

When this input is triggered (AUTO), the A/A Close Delay timer will turn on and all inputs will operate as normal.

2-3 MAN-AUTO selector switch/Open & Close not active in Auto [P2 = SSb]
When this input is in the normal condition (MAN), the A/A and Auto Close delay timers will be disabled and the Auto and Loop input will be ignored at the door closed position, LSC on. These inputs will reverse the door if it is closing and will hold the door open if it is at the full open position, LSO on.

When this input is triggered (AUTO), the A/A Close Delay timer will turn on and all inputs will operate as normal except the Open and Close inputs which will become inactive.

2-4 Passage entry - timed [P2 = Pet] (15 second max.) Default = 0
When this input is triggered while the door is at the full closed position (LSC-on), the door will open and the Passage timer **PEt** will begin counting down from the preset value. The door will stop when the timer reaches zero. If this input is triggered again, the door will close to the full closed position (LSC-on). If the Auto Close timer is active, the door will open until **PEt** reaches zero, at which time the Close Delay timer **ACL** will count down and the door will close to the full closed position. This input will operate the same as the A/A input for all other conditions. Press the set button and the display will change to allow setting of the preset value

2-5 Passage entry - position [P2 = PEP]
Invoking this option will also invoke Option 3-2.
When this input is triggered while the door is at the full closed position(LSC-on), the door will open until the Program 3 input 26 (passage limit LSP) is triggered. If this input is triggered again, the door will close to the full closed position or until the Close Backup timer goes to zero. If this input is triggered while the door is closing, it will reverse the door motion and open the door until the LSO input or the Program 3 input is triggered, whichever occurs first. This input will operate the same as the A/A input for all other conditions.

Program 3 - Input 26 (Will not appear in Program Menu)

3-1 Photo AC (Default)
This input will operate as described in the Input Section.

3-2 Passage limit (LSP) (Default when Option 2-5 is ON)
This input will indicate when the door has reached an intermediate position when opened by the Program 2 input (24), and while Option 2-5 is invoked.

Program 4 - Program Options

4-1 Close jog [CLJ = On/CLJ = OFF]
Converts the Close input (21) to constant pressure or jog operation. The door will move only while the input is triggered.

4-2 Open jog [OPJ = On/OPJ = OFF]
Converts the Open input (20) to constant pressure or jog operation. The door will move only while the input is triggered.

4-3 Reverse delay [rdt = 00] (15 second max.) Default = 0
Delays the reversal of the door when the A/A, Auto or Open input is triggered while the door is closing, by the preset time on the Reverse Delay timer **rdt**. Reversals by the RE and Photo inputs will **not** be delayed. A setting of 0 will disable timer

4-4 Loop call delay [LPt = 00] (15 second max.) Default = 0
When the Loop input is triggered while the door is in the full closed position, the opening of the door is delayed by the preset value on the Loop timer, **LPt**. If either input goes to its normal condition while the timer is timing down, the timer will turn off and the system returns to a normal condition. If the Loop input is triggered while the door is closing, the door will immediately reverse and return to the full open position. A setting of 0 will disable timer.

Program 5 - Reverse Input Logic

Change the logic of the Open Limit **LSO**(8), Closed Limit **LSC**(9), Photoeye DC**[Pdc]**(15), Reversing Edge **rE**(17), Stop **[StP]**(23), Program 3 **[PG3]**(26) and Breakaway Limit **LSb**(27) inputs. When this program is selected, an input will appear in the display. Use the arrow keys to select NO or NC condition. The Up arrow will turn on the NO and the Down arrow will select the NC condition. Press the Select button to scroll through the inputs. Press the Set button, after all selections are made, to return to the Main Menu.