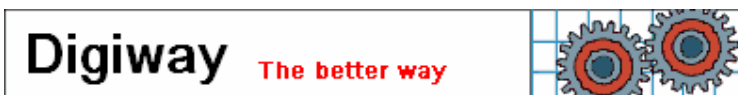# SL1000-2000 SLIDER GATE MOTOR

INSTRUCTION MANUAL

1. General Descriptions and features

1.1 General descriptions
It is recommended reading and understanding this manual before start to install the control board. Some features and idea are new. So take some time to read through the manual to get better understanding of the board. That will save your time during installation.

Electricity and power motors associated accessories could be fatal or at least cause seriously injury. Digiway suggested some safety device to be used so as to prevent personnel from being injured by motorized device being controlled. ***All main voltage wiring must be installed by a licensed electrician.***

1.2 General features
- The SL1000 is a heavy duty gate motor controlled by AC6 dual motor controller, which able to control two motors at same time with variety of settings.

2. Description of standard operations

2.1 View of Control board
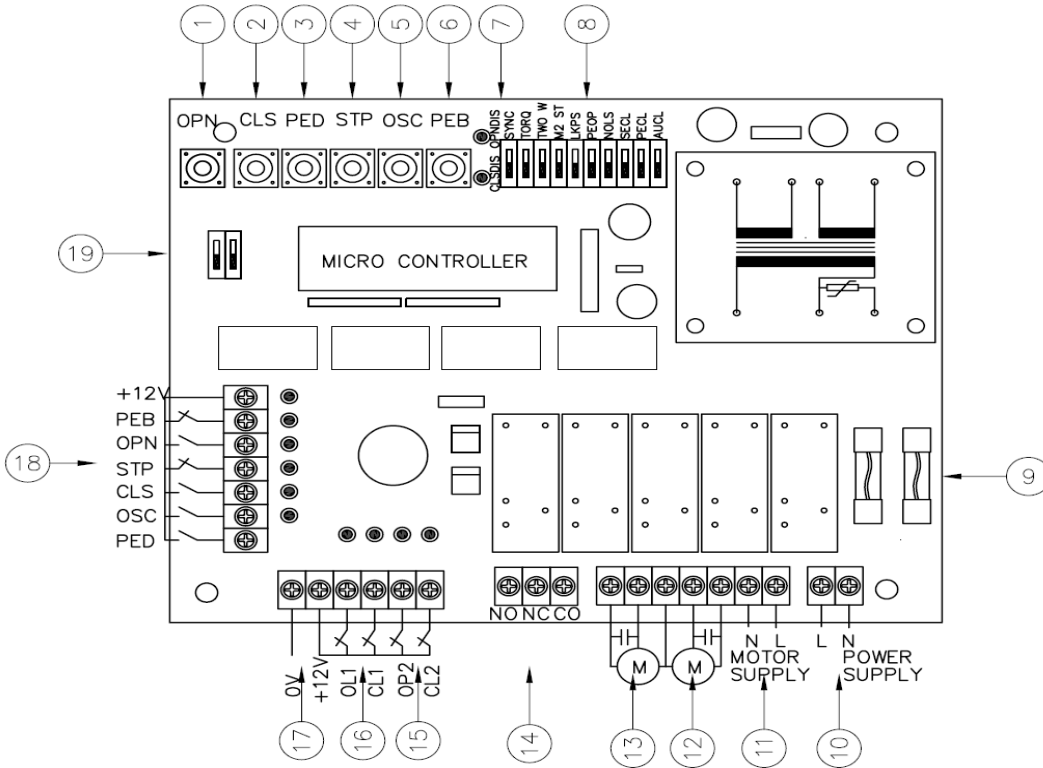
3. PED pedestrian open push button
4. STP stop push button
5. OSC open/stop/close push button
6. PEB photo electrical beams
7. Gate status display, open green, close red
8. Mode selection DIP switch
9. Motor protect fuse 5A and Transformer fuse 0.5A
10. Main inputs 240VAC.
11. Motor power input/inverter COM. input
12. Motor2 open and close outputs
13. Motor1 open and close outputs

14. Lock output
15. Motor2 limit switches
16. Motor1 limit switches
17. Limit switch input common +12VDC@300MA output for the sensor
18. Control inputs
19. Set1 and Set2 DIP switch

2.2 Control inputs

2.2.1 Open (OPN) input & OPN push button
The OPN inputs are Push Button OPN and Terminal OPN input. Push OPN button and activating (connect OPN terminal to the +12V) the OPN input will start to open the gate. When gate opened, if OPN is keep activating, the gate will stay open. This is mostly controlled by access control system.

2.2.2 Pedestrian Access (PED) input and Pedestrian (PED) push button
The pedestrian input partly opens the gate leaf driven by motor1 in the case of single speed mode, or partly opens gate in the case of sliding gate mode. How far the gate will open depending on the Pedestrian Open Time, this can be changed by user. If P.E input is activated during the gate is closing, the gate will reopen for another Pedestrian Open Time. P.E Close setting and Auto Close setting will also apply to pedestrian cycle.

2.2.3 Close Terminals input (CLS) and Close (CLS) Push button

The CLS terminals input is used to close the gate. Push button on control board is mainly used to test when finished the installation. Pushing it will cause gate to close if the gate in the opened position or in the opening cycle. If gate is in the closed or closing, the gate situation is not change.

2.2.4 STP stops input and stop button

STP input and STP button is used for stop the gate and settings

2.2.5 OSC (open/stop/close) input

OSC input and OSC button is used for manual operation. Push to open the gate, push again stop gate, another push close the gate.

2.2.6 Photoelectric safety beam (PE) input (N/C type)

If the P.E input is activated while gate is closing, the controller will stop the gate or reopen the gate depending on the DIP setting. If the gate in the opened position and P.E beam is activated, the gate will stay in opened.

2.4 Model Select Switch (8)

2.4.1 SYNC Delay (DIP1)   ON= Delay   OFF= No Delay

DIP1 is on: Motor 2 delay open and motor 1 delay close. DIP1 is off, there is no delay. Not apply to Torque motor.

2.4.2 TORQUE Motor (DIP2)   ON=TORQUE   OFF= 240VAC Motors

DIP2 is ON, control two boom gate torque motors. OPN open both boom gates, while PED only open boom gate driven by motor1. DIP2 is OFF, it control standard 240V AC motors.

2.4.3 WARN (DIP3)   ON= Warn   OFF= No Warn

DIP3 is ON, about 3 seconds audio warning before gate starts. DIP3 is off, no this function.

2.4.4 M2ST (DIP4)   ON= M2 LGT out   OFF= Motor out

DIP4 is on, Motor 2's out changes to light out. OP2 out is continually, CL2 out is flash at about 1Hz either open or close cycle.

2.4.5 LOCK (DIP5)   ON= presence   OFF= pulse

DIP5 on, the lock output is presence. The lock relay will be on if the gate is in opening, closing cycle. DIP5 is off; lock output is 0.8 seconds pulse at the start of each open and close cycle.

2.4.4 PEOP (DIP6)   ON= PEOP   OFF=Close only

DIP6 is ON, the PE beam will work on the open cycle and close cycle. DIP6 is off, the PE beam will work only in close cycle.

2.3.6 NOLS (DIP7)   ON= N/O limit   OFF=N/C limit

DIP7 is ON, the limit inputs change to N/O, and DIP7 is off, the limit inputs are N/C

2.3.8 Security close (DIP8)   ON=SEC CLS   OFF=NO SEC CLS

DIP8 is on and P.E input is active while the gate is opening, if the PE clear, the gate controller stops gate and begin to close the gate even the gate is not fully opened. If the PE active again, gate will just stop, but not reopen. If DIP8 is set to off, there is no this function.

2.3.9 PE trig close (DIP9)   ON=PE CLS   OFF=NO PE CLS (2.0sec)

If DIP9 is set to ON, after gate opened, the gate will auto close after P.E beams trigged and clear. If the P.E beams trig again, the gate will reopen as long as the P.E input is keep active until gate fully opened. If the PE is clear, the gate will only open another 2 seconds, then after PE close delay time will close again. DIP8 is prior to DIP9.

2.3.10 Auto CLS (DIP10)   ON=AUTO CLS   OFF=NO AUTO CLS (30sec))

If DIP10 is on, the gate will auto close after standard auto closed time (30 seconds). If DIP10 is off, the gate will stay opened if no other input to the controller. DIP9 is prior to DIP10

2.5 Timers setting

Push Buttons functions

Button	**SET1---ON**	**SET2 --- ON**	**Set1 and Set2 both off**---Running
OPN	Open cycle time set	Warning time set	Open gate
CLS	Close cycle time set	Lock time set	Close gate
PED	PED cycle time set	LGT time set	Partial open gate
STP	Sync motor time set	Motor stop time set	Stop gate
OSC	Auto close time set	Two T1 --spare	Open-Stop-Close gate
PEB	PE close time set	Two T2 -- Spare	PE. Input (simulated)

2.5.1 Set1 time settings
Turn SET1 on, red and green LED flashes a little fast alternatively.

Open cycle time
    Push and hold on OPN for the full open run time setting

Close cycle time
    Push and hold on CLS for the full close run time setting

Pedestrian running time
    Push and hold on PED for the pedestrian open run time setting

Sync delay time(Motor2 delay time)
    Push and hold on STP for the sync delay time setting.

Auto close time set
    Push and hold on OSC for the auto close time setting.

PE close time set
    Push and hold on PEB for the PE close time setting.

2.5.2 SET2 time setting

Turn SET1 off and SET2 on

Warn time set
    Push and hold on OPN for Warning time setting.

Lock pulse time set
    Push and hold on CLS for the lock pulse time setting

LGT time
    Push and hold on PED for the PE trig close time setting

Motor Stop time
    Push and hold on STP for the motor stop time setting
    .
Two-T1 time1 (spare for late use)
    Push and hold on OSC for the Two-T1 time setting

Two-T2 time2 (spare for late use
    Push and hold on PEB for the Two-T2 time setting.

    Turn SET2 OFF. The gate controller will back to working mode.

Factory setting

Timer	F/Setting	Step	Setting Method	Range
Open Cycle Time	60sec.	0.1sec	SET1 on + OPN Button	0-6550sec.
Close Cycle Time	60sec.	0.1sec.	SET1 on + CLS Button	0-6550sec.
Ped Cycle Time	10sec.	0.1sec.	SET1 on + PED Button	0-6550sec.
Sync Delay Time	2sec.	0.1sec.	SET1 on + STP Button	0-25sec.
Auto Close Time	30sec.	0.1sec.	SET1 on + OSC Button	0-6550sec.
PE Auto close Time	2sec.	0.1sec.	SET1 on + PEB Button	0-25sec.
Warning time	3sec	0.1sec	SET2 on + OPN Button	0-25sec
Lock Pulse Time	1sec.	0.1sec	SET2 on + CLS Button	0-25sec
Light Time	60sec	0.1sec	SET2 on + PED Button	0-6550sec
Motor Stop Time	0.5sec	0.1sec	SET2 on + PED Button	0-25sec
Two-T1 Time(spare)	60sec	0.1sec	DIP2 on + OSC Button	0-6500sec
Two-T2 Time(spare)	60sec	0.1sec	DIP2 on + PEB Button	0-6500sec

To restore factory setting, turn power off and set SET1 on, push and hold CLS button, then power on. While hold CLS button, set SET1 off and then release the CLS button. Now controller restored factory setting from memory.

3 STD Motors

3.1 240v single phase motor
This is typical application of controlling one or two 240v single phase motor either with limit switch or by timer
3.2 Proximity switch as limit switch
The proximity switch could be three wires PNP type. The advantage is avoiding mechanical limit switch vibrations.

4 Control Torque motors

4.1 About torque motors
The torque motor is used for boom gate. When boom gate is opened or closed, the motor is still powered to build the force to hold boom gate opened or closed. So there is no limit switch is required.
4.2 Connection of torque motors
The motor outputs of control board are directly connected to torque motors. Ignore all limit switch inputs. In this application, OPN open two boom gates while PED open M1 driven boom gate. For the details connect see the diagram.

5 Control inverter drive three phase motor

Motor input should be common from inverter.

6. Light output

With the additional module, which plugs into the control board, the control board will control   light, which will illuminate the driveway etc. The light will automatically turn off after preset time (customer programmable). If DIP4 is set to ON, the M2 output will change to light output.

7. Audio warn output

On Board buzzer can give warn for diagnose. Additional buzzer or relay module, which plugs into the control board, the control board give out audio warning signals before gate moves

If PB beam is blocked or Stop input is not shorted, four short bee will be heard

8. Specifications

8.1 Control Inputs
All the control inputs, PE, limit switches are voltage free input, positive switching. Com is 12VDC.
All inputs are isolated by photo coupler from Microchip circuits.

8.2 Outputs

The motor relay is rated 5A inductive load. 10A resistive load is on the control board. The power transformer protective fuse is 0.5A. On board 12V DC output maximum is 300MA, which can supply PE beams, access control assessors etc. But NEVER drive magnetic locks.

9. Trouble shotting guide

8.1 General checking

Normally if installation is done properly, there would be trouble free. If in case of malfunction, please checking as following steps.
1) Check the DIP setting motor selection is right.
2) Gate status LED green (open) and red (close), one or both should be flashing depending on the gate position. If not flashing, please check the power supply and 12V DC output circuits if there is a short circuits.

8.2 Gate not open
1) Check the limits switch type selection if it is right.
2) Push button on the control board, if gate status green LED flashing and red LED off, please check motor fuse and motor.

8.3 Gate not close
1) Check the limits switch type selection if it is right
2) Check the DIP switches auto close mode selection if it is right.
3) Check control input. If one or more of OPN, OSC, PED input LED are on, which means access control system hold gate open.
4) If PEB input LED is not on, which means PE beams is faulty or blocked. Meanwhile can hear 4 beeps

Appendix A: AC6 control 240V motor schematic drawing
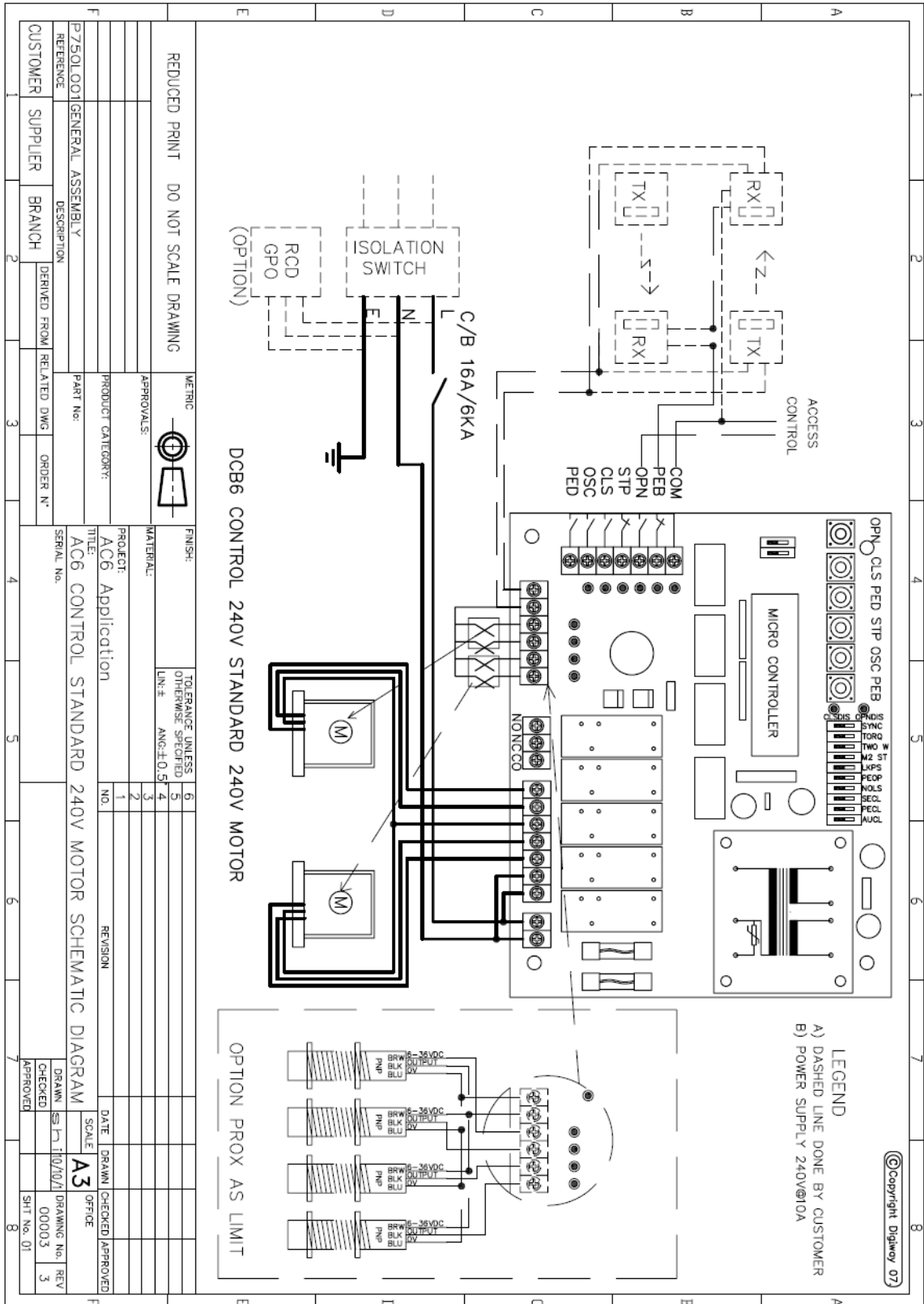
Appendix B: AC6 control inverter schematic drawing
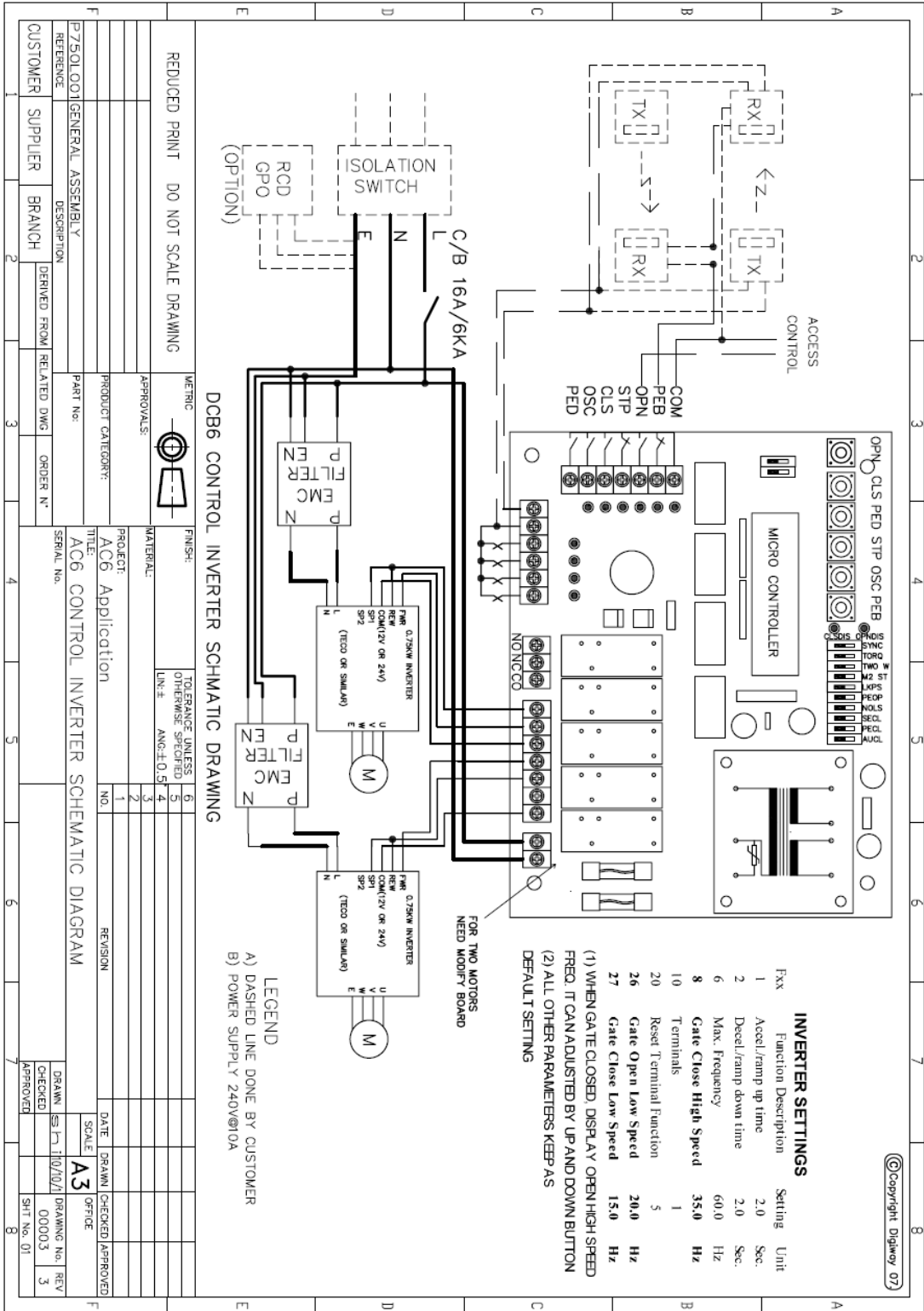
Appendix: AC6 control boom gates schematic drawing