HySecurity
a company of TheNiceGroup

MX3037, MX3037R, MX001457

Smart DC Controller Installation Instructions

The following instructions are intended to assist the user in replacing the Smart DC Controller (SDC) in HySecurity electromechanical gate operators. Please read all assembly instructions before installing the kit.

REQUIRED TOOLS

- Phillips head screwdriver
- Needle nose pliers

Always ensure operator firmware is updated to latest available version. The latest available version is at **www.hysecurity.com/contact-us/technical-support/operator-software/** or by naviagting the HySecurity website by clicking:

TechSupport Resources → Operator Software → Current Operator Software Versions

UL 325 - 2018 requires that gate operators monitor external entrapment protection sensors. Affects all HySecurity gate operators manufactured beginning in 2016.

⚠ CAUTION

Remember the operator may have unique user & installer menu settings on the existing board. Prior to replacing the SDC board, compare the programmed settings that appear in the existing board's display to the default settings shown in the "Smart DC Controller Worksheet" on page 2 and note any changes. If you have a bi-parting gate system, be sure the software version in both operators is identical.

TECHNICAL SUPPORT

For technical support, call us at (800) 878-7829. Please obtain the serial number of your operator before calling.

COPY USER & INSTALLER MENU SETTINGS

Examples of the settings that need to be reprogrammed when you replace an SDC board include: Build Year, Operator Type, Usage Class, Gate Handing and Learn Limits. Other settings may include Gate Weight, Close Timer, and accessory configurations. The operator can be reprogrammed on site by entering the User or Installer Menu via the Menu buttons or using S.T.A.R.T. software and a laptop PC to save/load existing settings. If you need more information, see "Technical Support" on page 1.

Create a backup copy of the gate operator configurations, using one of two methods:

- Use a PC laptop and S.T.A.R.T. with a USB cable (Type A to Type B).
- Use the "Smart DC Controller Worksheet" on page 2. Go through each menu item and write the number that appears in the display into the chart's column titled, "Display Setting."

TWO METHODS TO RECORD USER & INSTALLER MENU SETTINGS

Figure 1. S.T.A.R.T. Display

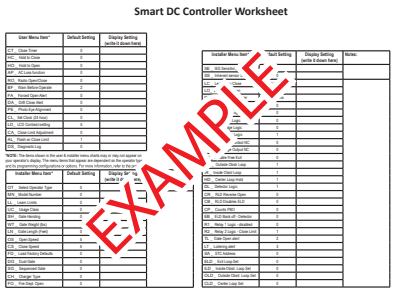

Figure 2. SDC Programmable Menu Items Settings

SMART DC CONTROLLER WORKSHEET

Table 1. User Menu		
User Menu Item*	**Default Setting**	**Display Setting**
CT _ Close Timer	0	
HC _ Hold to Close	0	
HO _ Hold to Open	0	
AP _ AC Loss function	0	
RO_ Radio Open/Close	0	
BF _ Warn Before Operate	2	
FA _ Forced Open Alert	0	
DA _ Drift Close Alert	0	
PE _ Photo Eye Alignment	0	
CL_ Set Clock (24 hour)	0	
LD_ LCD Contrast setting	5	
US_ Clear count	0	
CA_ Close Limit Adjustment	0	
AL_ Flash on Close Limit	1	
DS_ Diagnostic Log	0	
PD_ Set password	0	
NOTE: Available menu items are dependent on operator type and programming configurations or options.		

Table 2. Installer Menu		
Installer Menu Item*	**Default Setting**	**Display Setting**
BY _ Build Year[1]	0	
OT _ Select Operator Type	0	
MN _ Model Number	0	
S1_ Sensor 1 Type[1]	0	
S2_ Sensor 2 Type[1]	0	
S3_ Sensor 3 Type[1]	0	
LL _ Learn Limits	0	
UC _ Usage Class	0	
SH _ Gate Handing	0	
WT _ Gate Weight (lbs)	0	
LN _ Gate Length (Feet)	0	
OS _ Open Speed	5	
CS _ Close Speed	5	
FD _ Load Factory Defaults	0	
DG _ Dual Gate	0	
[1]See "Setting the Build Year" and Table 3 on page 5 [2]Setting dependent on BY. S1, S2, S3 appear if BY is set to 2 or higher. **NOTE:** Available menu items are dependent on operator type and programming configurations or options.		

Table 2. Installer Menu		
Installer Menu Item*	**Default Setting**	**Display Setting**
SG _ Sequenced Gate	0	
CH _ Charger Type	0	
OC_Emergency Close	0	
BT_ Battery type	0	
FO _ Fire Dept. Open	0	
DR_ Reversing Sensor	0	
SE _ IES Sensitivity	2	
SS _ Inherent sensor Stop	0	
LC _ Leaf Delay Close	0.0 Secs	
LO_ Leaf Delay Open	0.0 Secs	
RT _ Maximum Run Timer	30 Secs	
PO _ Partial Open distance	0	
EC _ Eye Close Logic	0	
EO _ Eye Open Logic	0	
GR _ Gate Edge Logic	0	
SR _ IES Sensor Logic	1	
PC _ Photo Eye Contact NC[2]	0	
GC _ Gate Edge Output NC[2]	0	
DT _ Disable Free Exit	0	
OR _ Outside Obstr Loop	1	
IR _ Inside Obstr Loop	1	
HD _ Center Loop Hold	1	
DL _ Detector Logic	1	
CR _ RLD Reverse Open	0	
CB _ RLD Disables ELD	0	
CP _ Counts PBO	0	
EB _ ELD Back off - Detector	0	
R1 _ Relay 1 Logic - disabled	0	
R2 _ Relay 2 Logic - Close Limit	1	
R3 -R10 Multiple Relay Logic	0	
TL _ Gate Open alert	2	
LT _ Loitering alert	3	
BA_ Break Away (Arm only)	0	
SA _ SDC Address	0	
NE_ Network Address	0	
ELD _ Exit Loop Set	0	
ILD _ Inside Obstr. Loop Set	0	
OLD _ Outside Obstr. Loop Set	0	
CLD _ Center Loop Set	0	
[1]See "Setting the Build Year" and Table 3 on page 5 [2]Setting dependent on BY. S1, S2, S3 appear if BY is set to 2 or higher. **NOTE:** Available menu items are dependent on operator type and programming configurations or options.		

REPLACING THE SMART DC CONTROLLER

To replace a SDC board, take the following steps:

1. Back up (make a copy) of the existing board's menu settings. See "www.hysecurity.com/gatesafety" on page 1 and "Smart DC Controller Worksheet" on page 2.
2. Turn OFF power to the Control Box (both AC & DC switches).See Figure 3.
3. Use tape to identify the various accessory connections and then disconnect all accessory cables attached to the board. See Figure 4.
4. Disconnect all harness connectors and any HY-5A or HY-5B vehicle loop detectors. Use needle nose pliers to crimp the HY-5A or HY-5B standoffs and then push the standoff through the mounting hole. See Figure 4.
5. Use a Phillips-head screwdriver to remove the seven screws from the board and three screws at the top of the control box. Set the Smart DC Controller board and the ten screws aside. See Figure 4.
6. Note the orientation of the replacement board and align the holes with the mounting standoffs. Secure the board using the screws removed in Step 5.

NOTICE

Tighten the three screws on top of the control box first, then tighten the remaining screws that secure the board.

7. Reattach all accessories, harness connectors, and HY-5A or HY-5B vehicle detectors to their proper locations on the replacement Smart DC Controller board. Make sure all jumpers are wired correctly. See Figure 4.
8. Turn ON the Control Box AC & DC power switches (Figure 3), and then set the operator type and other parameters by following "Setting the Operator Type" on page 4.

DANGER

Failure to select the correct operator type (OT) can result in gate operator malfunction which has the potential to cause serious injury or death due to the improper operation of the gate.

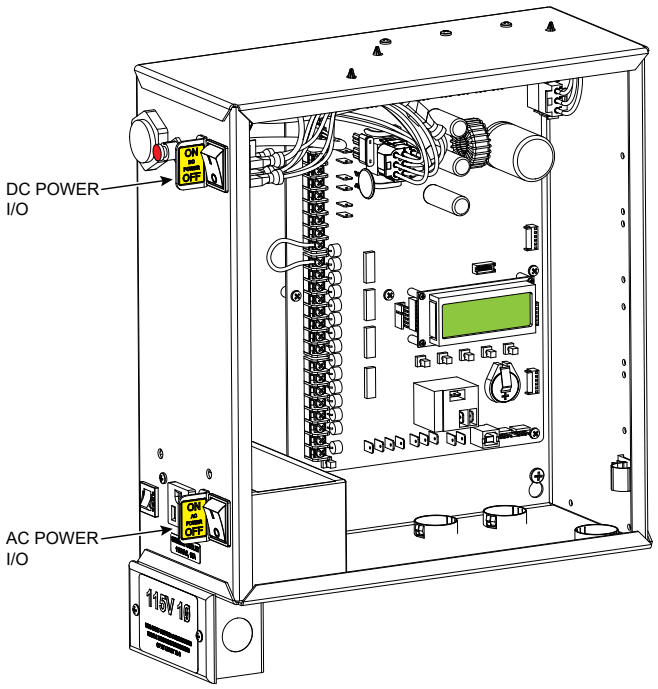

Figure 3. Turn AC and DC Power On

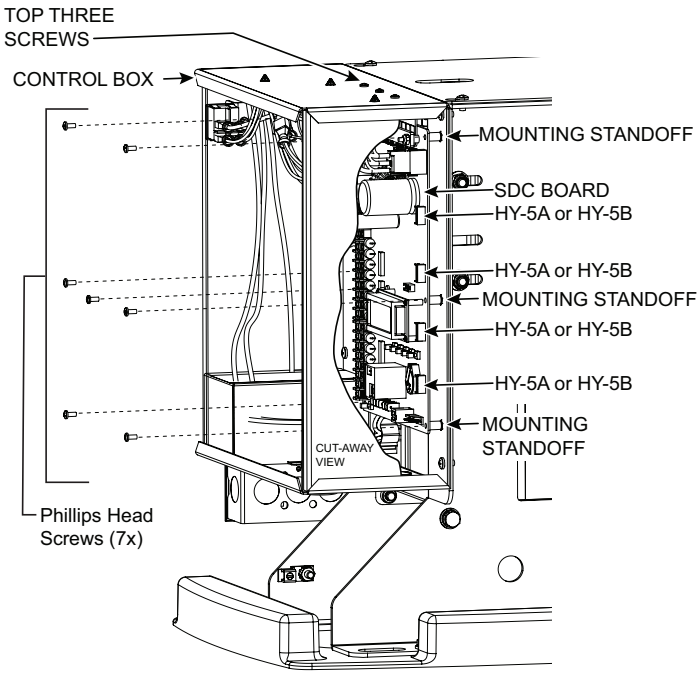

Figure 4. Control Box - Cut-away view of the SDC Board in a SwingSmart DC Operator

SETTING THE OPERATOR TYPE

After replacing an SDC board and supplying power, the display prompts you to address the operator type. Depending on what operator type you have, several other prompts need to be addressed before the operator will enter Run Mode.

1. Press SELECT. Display characters blink which indicates that the menu item can be addressed.
2. Use the NEXT and PREV buttons to scroll through the options and display the appropriate data for entry before pressing Select again to lock-in the selection.

> ***NOTICE***
>
> Make sure you designate the correct operator type! Refer to Table 3.

3. The display prompts you to complete the standard setup. A sequence of menus, such as build year, usage class, gate handing, or model number need to be addressed before the operator will work properly. Pressing NEXT allows you to flow through the set up. If necessary, review the operator's product manual.
4. When the last menu item in the series is addressed, the operator enters Run Mode and a gate status appears on the display.

> ***NOTICE***
>
> If you make a mistake and need to redefine the operator type, use a PC and S.T.A.R.T. software version 3.00 or higher to reset the operator type. If necessary, contact HySecurity Technical Support at 800-321-9947.

Load operator's custom settings that you saved in the S.T.A.R.T. backup copy or wrote on the worksheet on "Smart DC Controller Worksheet" on page 2. This reprograms the replacement SDC board with the same settings and operator functionality as the old board.

1 ASSESS YOUR GATE SITE. UL 325-2016 COMPLIANCE

Review your gate installation. Entrapment zones should be kept to a minimum. Three inputs are available on the Controller for monitoring external entrapment protection sensors. Set Build Year according to your gate manufacturing date. See "Setting the Build Year" on page 6.

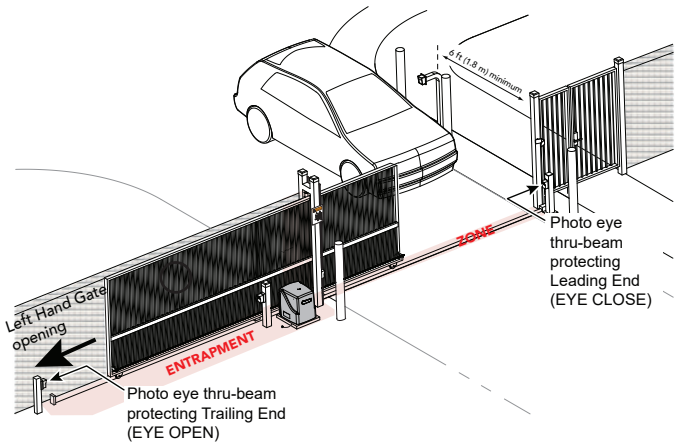

Figure 5. Site Overview

2 WHEN BY ≥ 2, INSTALL NC SENSORS.

Install contact and/or non-contact sensors (edge sensors and photo eyes) for all entrapment zones. HySecurity gates monitor normally closed (NC) sensors. Wire your NC sensors to SENSOR input terminals (SENSOR 1, SENSOR 2, or SENSOR 3) on Smart DC Controllers.

⚠ CAUTION

All external entrapment protection sensors must be wired to the SENSOR COM terminal for power and monitoring purposes. The three SENSOR inputs are interchangeable and configurable. For example, it doesn't matter whether you wire a normally closed photo eye sensor or edge sensor to the SENSOR 1, 2, or 3 input. However, due to monitoring requirements, each SENSOR input (1, 2, and 3) can only accept one NC sensor output connection.

Table 3. Menu Mode Navigation

Change Displayed Data	Navigate Selections	Choose Displayed Data	Navigate Menu Items
Press **Select**. Two left characters blink.	Press **Next** or **Previous**. Continue pressing Next to view all selections.	Press **Select**. Blinking characters become static.	Press **Next** to Advance Press **Previous** to Previous.

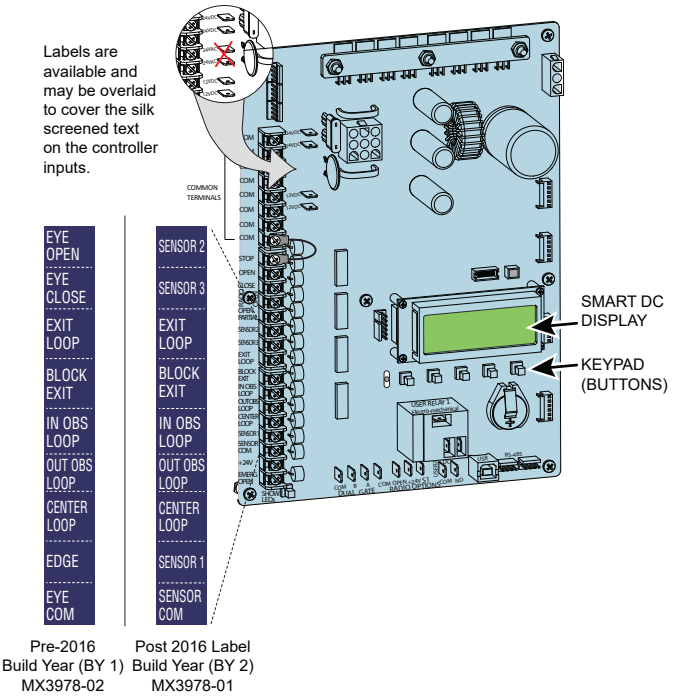

Figure 6. SDC Board BY-Lable Changes

3 TURN POWER ON.

See Figure 3.

4 ANSWER INITIAL SETUP PROMPTS.

Answer the prompts. When you enter Operator Type, access the next prompt by pressing Next. Enter the Build Year based on the date the gate was manufactured. **Each SENSOR input whether or not it has a sensor wired to it, must be programmed before the gate will move.**

SETTING THE BUILD YEAR

Set the Build Year to 1 for HySecurity gate operator's manufactured prior to 2016. Set the Build Year to 2 for gate operators manufacutured between 1/1/2016 and 7/31/2018. Set the Build Year to for gate operators manufactured after 7/31/2018.

⚠ CAUTION

When Build Year is set to 2 or 3, the gate operator will not automatically cycle unless an indication is received that the appropriate number of external entrapment protection sensors are connected and operational. See Table 4 for SENSOR settings. At minimum, external entrapment protection sensors must be used to protect both open and close directions of gate travel. If you choose not to use the monitoring capabilities of the gate operator, your site may not be in compliance with UL 325-2016 Standard of Safety.

Table 4. Installer Menu Settings for SENSOR Inputs

UL 325 HySecurity Gate Operator	Build Year 2018 (BY set)	Installer Menu Options for Sensors 1, 2, or 3							
		#0 DISABLED	#1 NOT USED	#2 EYE CLOSE	#3 EDGE CLOSE	#4 EYE OPEN	#5 EDGE OPEN	#6 EDGE BOTH DIRECTIONS	#7 EYE BOTH DIRECTIONS
SlideDriver (fixed speed)	2 or 3	•	•	•	•	•	•		•
SlideDriver VFD	2 or 3	•	•	•	•	•	•		•
SlideSmart DC 15	2 or 3	•	•	•	•	•	•		•
SlideSmart DC 10	2 or 3	•	•	•	•	•	•		•
SlideSmartDC HD 25	2 or 3	•	•	•	•	•	•		•
SlideSmartDC HD 30	2 or 3	•	•	•	•	•	•		•
SwingRiser	2 or 3	•	•	•	•	•	•	•	
SwingSmart DC	2 or 3	•	•	•	•	•	•	•	
HydraSwing	2 or 3	•	•	•	•	•	•	•	
HydraLift	2 or 3	•	•	•	•				

NOTE: HySecurity does not update software for SlideWinder models.

Table 5. HySecurity Gate Operators requiring External Monitored Entrapment Protection Sensors		
HySecurity Gate Operator (includes Modular, Correctional, and UPS models)	**Build Year post-2016** (set at the factory)	**UL 325 Entrapment Protection Device Monitoring Required** Normally Closed (NC) sensors tested & approved.* Three SENSOR Inputs On Controller. Installer Menu configurable.* Build Year (BY) factory-set to post-2018.
SlideDriver 15, 40, 30F, 80, 200	2 or 3	•
SlideDriver 50VF series	2 or 3	•
SlideSmart DC 15 & DCS 15	2 or 3	•
SlideSmart DC 10F & DCS 10F	2 or 3	•
SlideSmartDC HD 25 & HD 30	2 or 3	•
SwingRiser 14, 14-Twin, 19, 19-Twin, 30, 30-Twin	2 or 3	•
SwingSmart DC 20 & DCS 20	2 or 3	•
HydraSwing	2 or 3	•
HydraLift 10, 10F, 20, 20F	2 or 3	•

Table 6 indicates those HySecurity gate operators that may be within the exception parameters of UL 325 or comply with standards other than UL 325, but continue to maintain object detection capabilities. HySecurity strongly recommends that you assess every site for entrapment zones and provide the necessary protection to guard against entrapment.

Table 6. HySecurity Gate Operators maintaining Object Detection		
HySecurity Gate Operator with Obstruction Protection (Object Detection)	**Build Year 2018**	Sensor Inputs automatically set to "NOT USED" Installer has option to change settings as site design dictates.
StrongArm (HTG)	2 or 3	•
StrongArmCRASH (M30/M50)	2 or 3	•
StrongArmPark DC 10 & DCS 10 StrongArmPark DC 14 & DCS 14	2 or 3	•
WedgeSmart DC 10 & 10 DCS WedgeSmart DC 14 & 14 DCS	2 or 3	•
HydraWedge SM50	2 or 3	•
NOTE: For more information, refer to the Quick Start Supplement describing changes to HySecurity software due to UL 325 - 2016 Standard of Safety updates. Review the information regarding monitoring of external entrapment protection sensors online at www.hysecurity.com/gatesafety		

Table 7. Reprogramming the SDC Replacement Board (OT_12 - OT_17)							
Operator Model	**SwingSmart DC20 & DCS 20 Solar**	**WedgeSmart DC**		**StrongArmPark DC10 & DC14 DCS 10 Solar & DSC 14 Solar**	**SlideSmart DC 15 & DCS 15 Solar**	**SlideSmart DC 10F & DCS 10F Solar**	**SlideSmart DC HD 25 & 30**
Operator Type (OT)	OT_12	OT_13	OT_13	OT_14	OT_15	OT_16	OT_17
Build Year (BY)**	BY_3 (post-2018 monitored)	BY_3	BY_3	BY_3	BY_3	BY_3	BY_3
User Class (UC)	1 = family dwelling 2 = multi-family 3 = industrial* 4 = guarded location[1]				1 = family dwelling 2 = multi-family 3 = industrial* 4 = guarded location[1]	1 = family dwelling 2 = multi-family 3 = industrial* 4 = guarded location[1]	1 = family dwelling 2 = multi-family 3 = industrial* 4 = guarded location[1]
Model Number (MN)		1 = Arm	2 = Wedge	0 = Gate Disabled 1 = DC10 model or DCS 10 solar 2 = DC 14 model or DCS 14 solar			
Gate Handing (SH)	SH_R = Face Smart DC Controller display. Gate swings right to open SH_L = Face Smart DC Controller display. Gate swings left to open	SH_R = Face Smart DC Controller display. Arm raises right to open. SH_L = Face Smart DC Controller display. Arm raises left to open.		SH_R = Face Smart DC Controller display. Arm raises right to open SH_L = Face Smart DC Controller display. Arm raises left to open.	SH_R = Face Smart DC Controller display. Gate slides right to open. SH_L = Face Smart DC Controller display. Gate slides left to open.	SH_R = Face Smart DC Controller display. Gate slides right to open. SH_L = Face Smart DC Controller display. Gate slides left to open.	SH_R = Face Smart DC Controller display. Gate slides right to open. SH_L = Face Smart DC Controller display. Gate slides left to open.
Gate Weight (WT) (Enter weight in pounds (lbs.))	0 = Gate Disabled 1 = 0 to 300 2 = 301 to 600 3 = 601 to 800 4 = 800 to 1300				0 = Gate Disabled 1 = 0 to 400 2 = 401 to 800 3 = 801 to 1100 4 = 1101 to 1500	0 = Gate Disabled 1 = 0 to 250 2 = 251 to 500 3 = 501 to 750 4 = 751 to 1000	0 = Gate Disabled 1 = 0 to 700 2 = 701 to 1400 3 = 1401 to 2100 4 = >2100
Gate Length (LN) Enter length in feet (ft.))	0 = Gate Disabled 1 = 0 to 8 2 = 8 to 12 3 = 12 to 16 4 = 16 to 20						
SENSOR Type[2]	S1, S2, S3	S1, S2, S3		S1, S2, S3	S1, S2, S3	S1, S2, S3	S1, S2, S3

[1]Not servicing general public.

[2]Only appears when BY is set to 2 or higher.

NOTE: Build Year is an Installer Menu item added in 2016 and defines HySecurity gate operators as having monitoring capabilities for external entrapment protection sensors per UL 325 Standard of Safety. See page 6