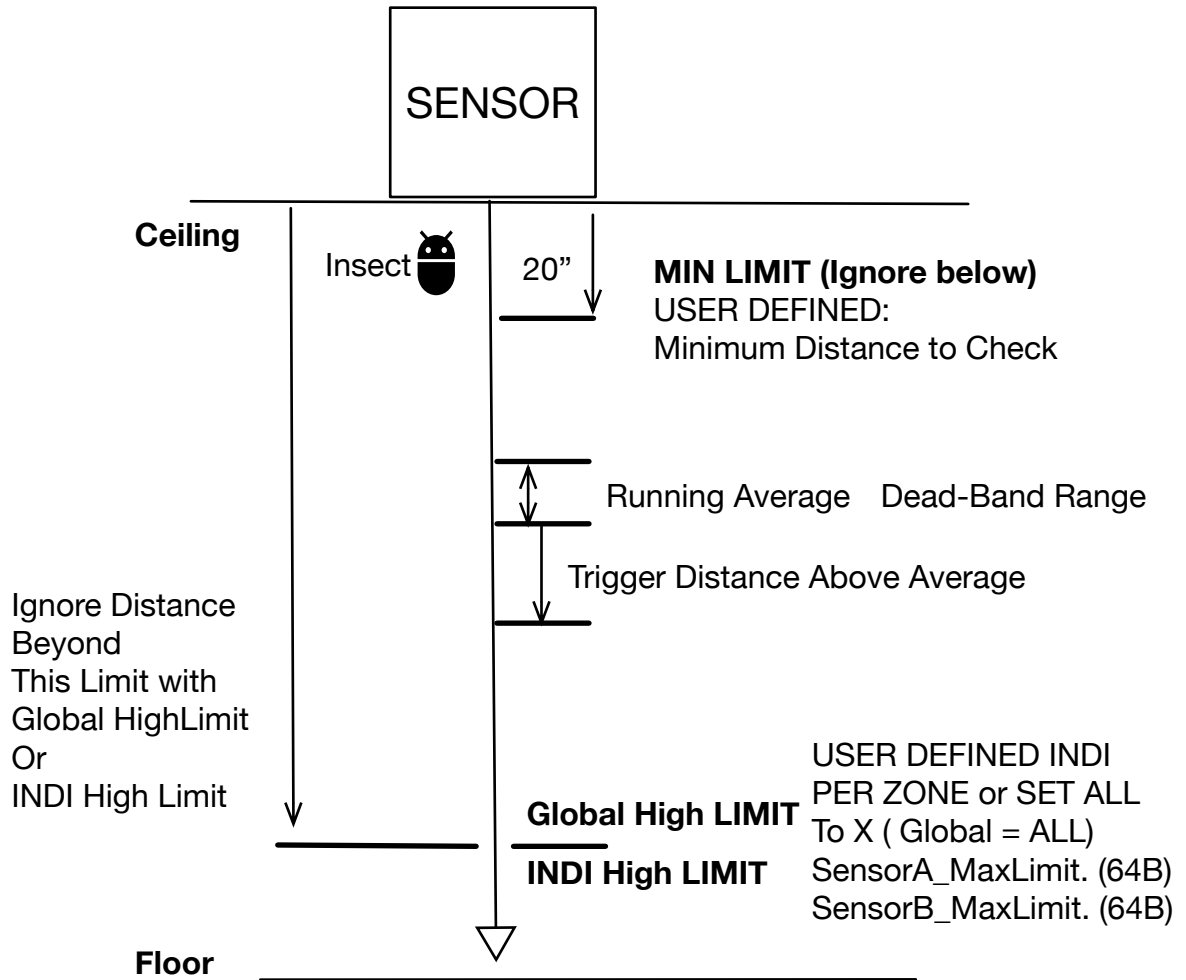# Dado Door
LIDAR MOTION and Safety Sensor

Preliminary Guide V1
(Very early stages work in progress PDF)
Consult Dado Door before trying to understand this guide!

SENSOR

Ceiling

Insect

20"

MIN LIMIT (Ignore below)
USER DEFINED:
Minimum Distance to Check

Running Average   Dead-Band Range

Trigger Distance Above Average

Ignore Distance
Beyond
This Limit with
Global HighLimit
Or
INDI High Limit

Global High LIMIT

INDI High LIMIT

USER DEFINED INDI
PER ZONE or SET ALL
To X (Global = ALL)
SensorA_MaxLimit. (64B)
SensorB_MaxLimit. (64B)

Floor

The different between Global High Limit and INDI(Independent) Hi Limit is that if
Global High Limit is set to > 0 it will override all INDI values. IF you want to use
Specific ranges per zone you must set Global HI to 0.

Settings Menu List

On the Programmer board, the user can enter Programming Mode by moving the Up Down buttons. Pressing UP and DOWN at the same time exits the menu and puts back at MENU OFF. This is a shortcut to exit without having to scroll all the way back down from a higher menu.

Software Indexes
DisplayMode == 0   No Operation
DisplayMode == 1   ' VIEW ACTIVITY A Mot+Saf
DisplayMode == 2   ' VIEW ACTIVITY B Mot+Saf
DisplayMode == 3-10   ' SELECT ACTIVE ZONES MOTION A (64B array)
DisplayMode == 11-18   ' SELECT ACTIVE ZONES MOTION B (64B array)
DisplayMode == 19-26   ' SELECT ACTIVE ZONES SAFETY A (64B array)
DisplayMode == 27-34   ' SELECT ACTIVE ZONES SAFETY B (64B array)
DisplayMode == 35   ' Select Zone A, View Raw A, Set Hi Limit A
DisplayMode == 36   ' Select Zone B, View Raw B, Set Hi Limit B
DisplayMode == 37   ' Set GLOBAL Master Hi Limit A (1 WORD)
DisplayMode == 38   ' Set GLOBAL Master Hi Limit B (1 WORD)
DisplayMode == 39   ' Set Master LOW Limit A (1 WORD)
DisplayMode == 40   ' Set Master LOW Limit B (1 WORD)
DisplayMode == 41   ' Set Trigger Level A
DisplayMode == 42   ' Set Trigger Level B
DisplayMode == 43   ' Set Deadband(Noise Level) A
DisplayMode == 44   ' Set Deadband(Noise Level) B
DisplayMode == 45   ' Enable Motion AB. Enable Safety AB
DisplayMode == 46   ' Noise Immunity A
DisplayMode == 47   ' Noise Immunity B
DisplayMode == 48   ' Scale Hi Limits A
DisplayMode == 49   ' Scale Hi Limits B
DisplayMode == 50   ' Set Absorb Time A
DisplayMode == 51   ' Set Absorb Time B
DisplayMode == 52   ' AVG Update Rate A
DisplayMode == 53   ' AVG Update Rate B
DisplayMode == 54   ' Set ALL Hi Limit Indi levels A to X
DisplayMode == 55   ' Set ALL Hi Limit Indi levels B to X
DisplayMode == 56   ' Assign Safety Output   A B
DisplayMode == 57   ' Assign Motion Output A B

CHANGE THE ORDER FOR V3

LED MENU LIST:
NORMAL LED PATTERN (ALL LEDS OFF, ON is the current menu)

ALL OFF = No Operation
☐ 1 = View Activity A/B
☐ 2 = SELECT ACTIVE ZONES for MOTION A/B
☐ 3 = SELECT ACTIVE ZONES for SAFETY A/B
☐ 4 = Select Zone1-64 A/B, View Raw Distances A, CaptureRaw,Set Distance Hi Limit A/B
☐ 5 = Set Master Global Distance Hi Limit A/B
☐ 6 = Set Master Global LOW Limit A/B
☐ 7 = Set Trigger Level Distance A/B
☐ 8 = Set Deadband(Noise Level) A/B
☐ 9 = Enable Motion Sensor A/B. Enable Safety Sensor A/B
☐ 10 = Set Noise Immunity A/B
☐ 11 = Show Valid Zones with good reflections   RED = No Reflection. Green = Good

INVERSE LED PATTERN (ALL LEDS ON, OFF is the current menu)

🟩 1 = Set Absorb Time A/B. How long before absorbing an object in view
🟩 2 = Set AVG Update Rate A/B
🟩 3 = Set ALL Hi Limit Indi levels A/B to X. ???? DONE?
🟩 4 = Assign Motion Outputs A/B. ???? DONE??
🟩 5 = Assign Safety Outputs A/B. ???? DONE??
🟩 6 =
🟩 7 =
🟩 8 =
🟩 9 =
🟩 10 =
🟩 11 =

Rules for Global Hi Limit and HiLimitIndi
Set Max Range in low level object to 0 to force assembly code to use Indecent Hi Level
Values. If Set Max Range (Global Hi Limit) is > then the Global Hi Limit is used.

1
2
3
4
5
6
7
8
9
10
11

No DISPLAY

A or B

A   B

DisplayMode number

1
2
3
4
5
6
7
8
9
10
11

**VIEW
ACTIVITY**

A or B

A   B

UP

SCROLL

DN

1   2   3   4   5   6   7   8   **1_8 Buttons**
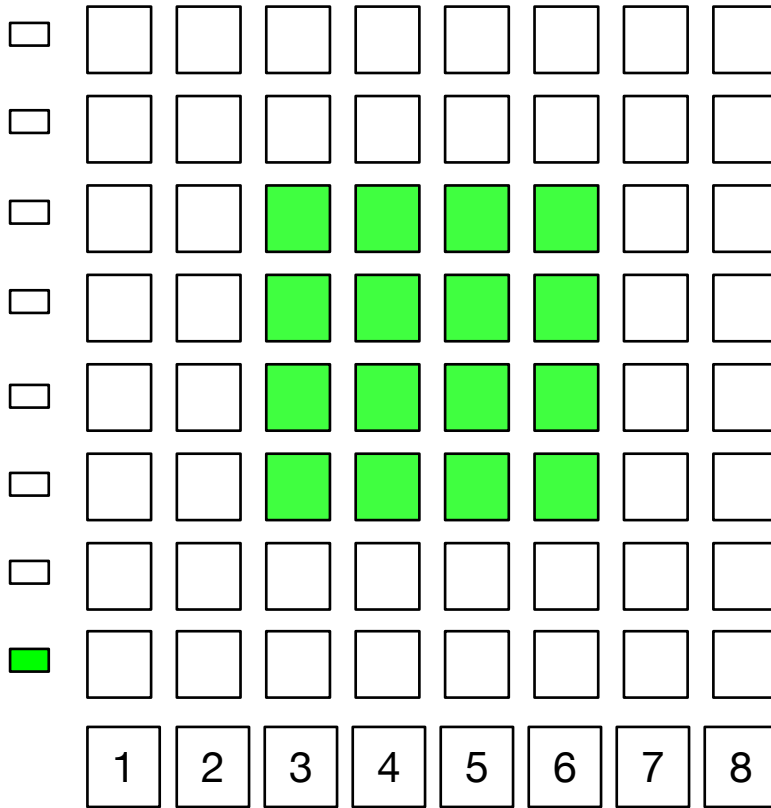
**SHOW All Trigger Activity on Motion
and Safety
A Sensor: Motion = Green Flash
A Sensor Safety = Yellow Flash
B Sensor Motion = Red Flash
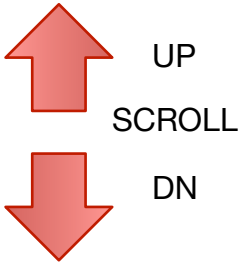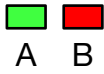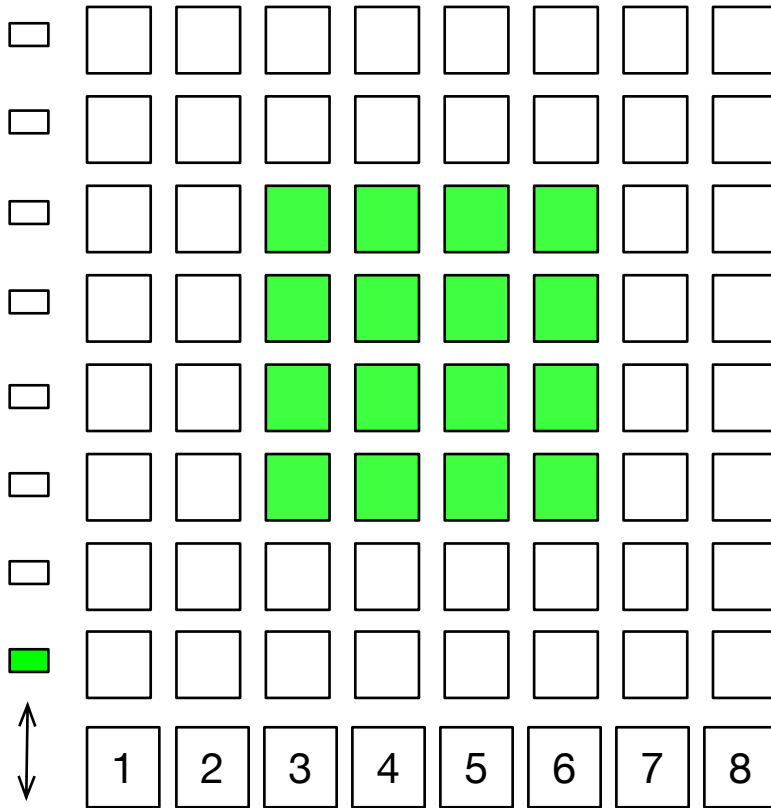B Sensor Safety = Blue Flash LED**

DisplayMode number

1
2
3
4
5
6
7
8
9
10
11

A or B

A B

UP

SCROLL

DN

SCROLL
TO ROW
Press 1-8
To enable/
disable

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

1_8 Buttons

**SELECT Active Zones for MOTION
A/B
Motion A = Green LEDs
Motion B = Red LEDs**
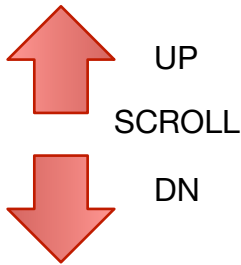
DisplayMode number

1
2
3
4
5
6
7
8
9
10
11

A or B

A B
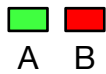
**SELECT Active Zones for SAFETY A/B
SAFETY A = Green LEDs
SAFETY B = Red LEDs**

DisplayMode number

1
2
3
4 🟩
5
6
7
8
9 🟩 🟥
10   A B
11

UP

SCROLL

DN

Should Raw value
Be filtered with
Global Min,Max and
INDI max?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | **1_8 Buttons** |

| ^ | < | > | RAW | | | - | + |

| **Show Zone** | **DN Zone Scroll** | **UP Zone** | **Show Raw Range** | **Show High Limit (Indi)** | **Cap Ture Raw To High** | **SET Hi Limit Value** |

1 Show current selected Zone Button
2/3 Select Zone with buttons (scroll updown)
4 Show Raw Range Value of THIS Zone.
5 Show HiLimit (Individual Hi Limit)
6 Capture RAW and save as Hi Limit INDI HOLD DOWN
7 Adjust Up HiLimit (Individual) +
8 Adjust Down HiLimit (Individual) -

X3

X = FFFF no reflection detected

Default is 0.   0 = NO EFFECT
Any Value over 0 overrides INDI values.
Choose Global High or set INDI values.

High Limit ALL(Global)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

1_8 Buttons

37 38

| -10 | +10 | -1 | +1 |

**View/Adjust/Save High Limit
(Universal OverRide) A/B**

A   B

Default is 20

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

1_8 Buttons

A AND B

MINIMUM LIMIT

| - | + |

39 40

View/Adjust/Save Minimum Limit A/B

A   B

Default is 5

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

1_8 Buttons

41 42

| - | + |

TRIGGER LEVEL

View/Adjust/Save Trigger Level A/B

A   B

Left indicator column (rows 1–11), row 8 highlighted green.

A (green) B (red)

DEADBAND

1	2	3	4	5	6	7	8

1_8 Buttons

43 44

						-	+

View/Adjust/Save Noise Level A/B
AKA DeadBand Range

Left indicator column (rows 1–11), row 9 highlighted green.

A (green) B (red)

BOTH ON

ENABLED

1	2	3	4	5	6	7	8

1_8 Buttons

45

| MOT A | MOT B | SAF A | SAF B |

Enable Motion A/B Safety A/B
(should this be the top item always
on for easy enable disable by client?

Left indicator column (rows 1–11), row 10 highlighted green.

A (green) B (red)

1	2	3	4	5	6	7	8

1_8 Buttons

-	+

46 47

NOISE IMMUNITY

Set Noise Immunity A/B
Default is 1
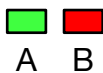
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | **1_8 Buttons** |

48 49

SHOW VALID ZONES

Show Valid Zones. If a zone is returning FFFF it shows RED.

Valid = Green
FFFF = RED

IN PROGRESS

A   B
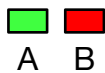
Default is 200

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | **1_8 Buttons** |

50 51

| -1 | +1 |

A   B

SET ABSORB TIME/RATE

Set Absorb Time A/B
How long does it take to absorb a distance that becomes Fixed in the view.

Default is 10

1	2	3	4	5	6	7	8	**1_8 Buttons**

52 53

-1	+1

SET AVG UPDATE RATE

Set AVG Update Rate. How many times before updating basic averages

A   B

Default is 0. Use Global High for most uses

1	2	3	4	5	6	7	8	**1_8 Buttons**

54 55

SET HI LIMIT A/B to X

-1	+1

A   B

Set ALL HiLimit INDI values to a set value   0 = NO EFFECT

1	2	3	4	5	6	7	8	**1_8 Buttons**

56 57

ASSIGN MOTION OUTPUT

-1	+1

Assign Motion A and B outputs

A   B

FUTURE USE. NOT DONE YET

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | **1_8 Buttons** |

58 59

| -1 | +1 |

ASSIGN SAFETY OUTPUT

AssignSafety A and B outputs

FUTURE USE. NOT DONE YET

A B

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | **1_8 Buttons** |

| ^ | < | > | RAW |

60 61

Show Zone **DN Zone Scroll** **UP** **Show Raw Range**

A B

VIEW RAW RANGE PER ZONE
No FILTER (NO MIN/MAX LIMITS)

NOTES (Internal Use Only)
Up to V51 outputs are fixed. Motion to Motion Pin. Safety to Safety Pins
So you can route outputs for motion and safety.

Add method to send direct outputs for M1, M2, S1, S2 on future revisions
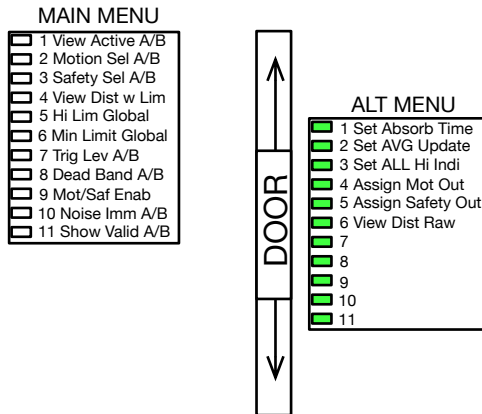For Steve Acree, use only one output for all. \\

Using for prototype P2 for M1/M2 outputs

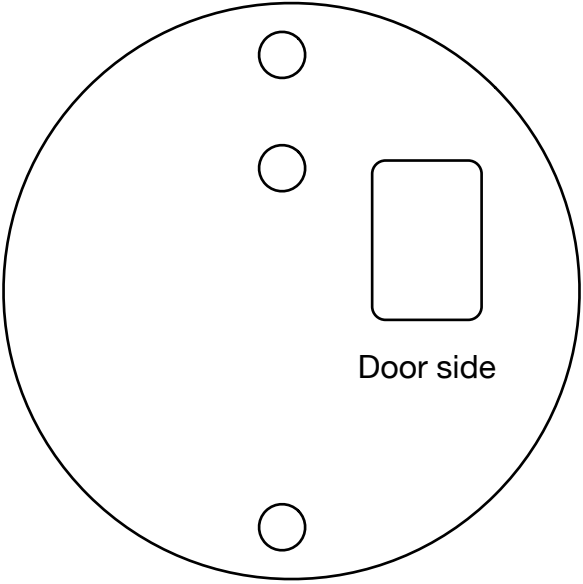Need a binary to set all to factory settings. Used on First Program.

V3 PCB FIXES NEEDED
Labels B1 and B2 are connected to RS485 B1 and B2 and also buttons B1 and B2.
I cut traces on rear of PCB. Needs to be fixed on Eagle.

PCB STICKER

MAIN MENU
- 1 View Active A/B
- 2 Motion Sel A/B
- 3 Safety Sel A/B
- 4 View Dist w Lim
- 5 Hi Lim Global
- 6 Min Limit Global
- 7 Trig Lev A/B
- 8 Dead Band A/B
- 9 Mot/Saf Enab
- 10 Noise Imm A/B
- 11 Show Valid A/B

DOOR

ALT MENU
- 1 Set Absorb Time
- 2 Set AVG Update
- 3 Set ALL Hi Indi
- 4 Assign Mot Out
- 5 Assign Safety Out
- 6 View Dist Raw
- 7
- 8
- 9
- 10
- 11

Ceiling Mount Sensor Plate
Looking at faceplate of sensor

Door side

3"