Automatic Barrier Operation and Maintenance Manual

Revision 10.5 2019

THIS DOCUMENT CONTAINS IMPORTANT INFORMATION. IT MUST BE KEPT WITH THE BARRIER AT ALL TIMES.

Safety Features

Thank you for purchasing one of our perimeter security products.

Your barrier will provide safe and reliable service and peace of mind provided that the following instructions and guidance is followed.

Your barrier is fitted with a range of safety devices designed to prevent accidents or injury, none the less the area in the immediate vicinity of the barrier should be treated as potentially hazardous and avoided whenever the barrier is moving (shown below).

Explanation of safety features and barrier reaction:

Dual Height Photocells – (either side of moving barrier leaf) stops barrier closing and reverses to the fully open position. (IF FITTED)

CAT 3 Safety Edges – Safety edges are direction dependant and will stop barrier and reverse in the opposite direction to which the barrier was moving. (FITTED ON PLAIN POLE ARMS)

Emergency Stop Button – located on the front of the barrier cabinet this can be used before an incident happens (IF FITTED)

Please Note:

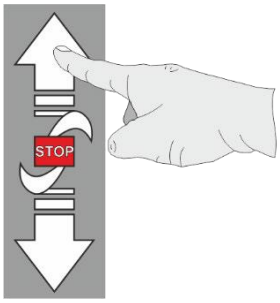
Inductive safety edges are fitted as standard to meet the force limitation as required and specified in BS EN12978:2000, unfortunately this cannot be achieved when under lattice or security hi-bar lattice is installed / retro-fitted to the barrier beam. It is the responsibility of the installer to carry out the necessary risk assessment and install the appropriate safety devices to make the barrier meet the current standards such as light curtains, laser safety sensors or photo electric cells.

Safe use warnings:

1. Do not allow children/people with physical or mental impairment to play on or near the barrier. Barriers are **designed for vehicular use only**
2. Keep remote control devices away from children.
3. Do not try to pass through/over/under the moving barrier.
4. Do not stop unnecessarily when passing through the barrier.
5. Only operate the barrier controls when in view of the barrier.
6. Do not attempt to interfere or modify the barrier from the factory setup.
7. Make sure the barrier is maintained by a trained and qualified powered barrier specialist at the prescribed 6 monthly intervals and that services are recorded in this manual's log.
8. If any sign of malfunction occurs switch off the barrier, manually release it and contact a trained and qualified powered barrier specialist immediately.

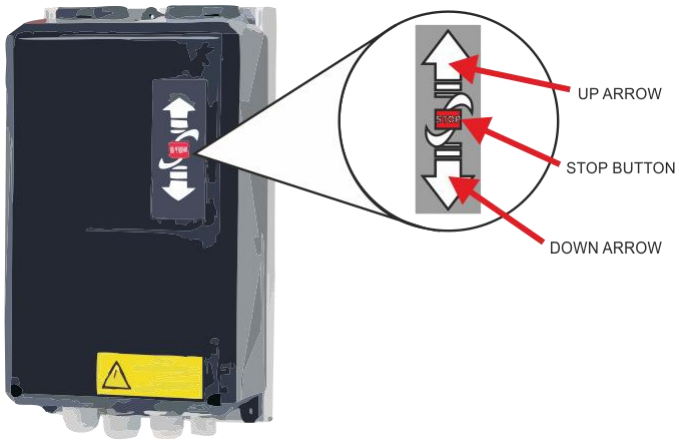
Safe Use Instructions

To open the barrier:



Drawing showing the “UP” arrow being pressed

figure.1A



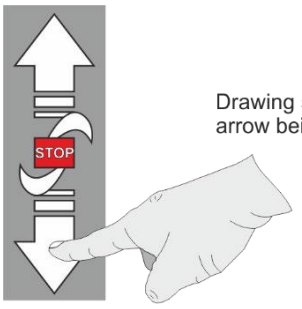
The barrier may be opened using the Open push button input, panel mounted keypad button, exit loop or radio fob (if fitted). The barrier will smoothly accelerate to fast speed until the intermediate limit is reached, at which point the barrier will smoothly decelerate for the remainder of the travel distance. The barrier may be closed using the Auto-Close function, the Close button input, panel mounted keypad button or radio fob. The barrier will smoothly accelerate to full speed until the intermediate limit is reached, at which point the barrier will decelerate for the remainder of the travel distance.

If a safety device is activated (i.e. safety edge or photocell) during the closing cycle the barrier will stop & return to the fully open position. The barrier may only be closed once the obstruction has been removed.

To close the barrier:

If a safety device is activated (i.e. safety edge or photocell) during the closing cycle the barrier will stop & return to the fully open position. The barrier may only be closed once the obstruction has been removed.

The barrier can also be closed by external devices but also using the down arrow on the front of the control panel.



Drawing showing the “DOWN” arrow being pressed

figure.1B

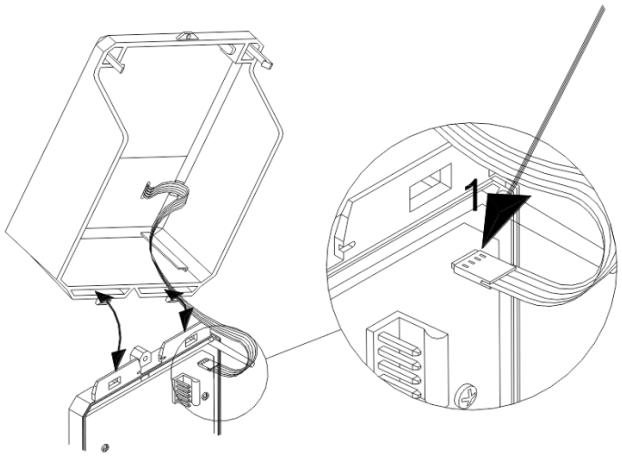


Figure 3: Installation position of the cover

Manual operation: WARNING SWITCH POWER OFF FIRST!

In the event of a power cut or other fault it will be necessary to move your barrier in manual mode. Manual operation should only be attempted by a responsible adult. Before doing this always switch the system off at the main isolator, your installer will have shown you where this is on yoursystem.

One the HD barrier due to the different mounting you have a cover plate that has thumb screw Allen key bolts that need removing and then this allows access to the manual release. This is located on the side panel of the barrier. Please note! On removal of the correct screw this will activate a safety switch which will stop the barrier moving automatically. THE POWER MUST ALSO BE TURNED OFF at the isolator as a failsafe BEFORE! this is attempted.

Fig 1 **HD Model**

Fig 2

You can now move the barrier manually. Only move the barrier very slowly, no faster than it moves in normal use. Your installer will have demonstrated this at handover.

To return the barrier to automatic operation (when the power is restored) simply follow the steps above in reverse order: Fig 3 Shown below where the manual release is underneath the barrier lid.

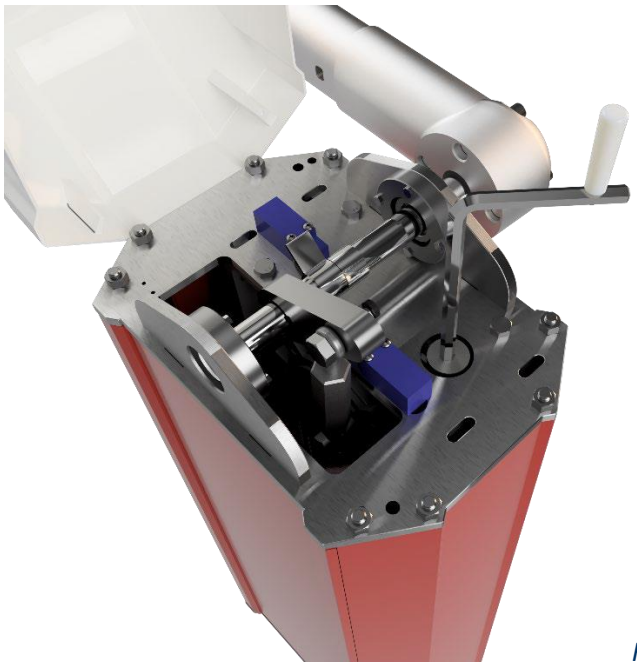


Fig 3 **Lux/S/B Model**

End User Regular Safety Checks

General:

Keep the areas around the barrier clear of obstructions at all times, cut back plants and weeds that might interfere with the barrier safety devices and its safety sensors. Keep the photo electric beam covers clean. Make sure pedestrian routes which are Cleary marked are always accessible.

Safety checks:

These user safety checks should be conducted every [few weeks] by a responsible adult who has been shown how to do the checks by a trained and qualified powered barrier specialist. We will demonstrate the user checks to you as part of the handover process.

[*Insert instructions*]

Engineer Planned Preventative Maintenance Schedule

Your barrier will need to receive regular planned preventative maintenance in order to remain in safe and reliable service. The maintenance outlined below should only be conducted by a trained and qualified powered barrier specialist who is familiar with 6000 automation equipment and has the necessary test equipment. [*insert company*] can provide this service and you will have been offered a maintenance contract as part of the supply process. If the maintenance outlined below is not completed, [*insert company*] cannot accept responsibility for injuries, accidents or breakdowns caused by lack of maintenance.

You are reminded that, as the person in control of the barrier, you have a legal duty of care to users and to visitors to the premises (including trespassers). If the barrier is not kept safe, any party whose property is damaged or who is injured by the barrier is likely to be able to sue for damages.

If the barrier is part of an undertaking (such as at rented property), the person in control of it will have additional duties under section 3 of the Health and Safety at Work Act 1974 to keep the barrier maintained in a safe condition.

If the premises are also a workplace, there are specific duties under regulation 5 and 18 of the Workplace (Health and Safety and Welfare) Regulations 1992.

Failure to meet duties imposed by health and safety legislation can result in criminal proceedings.

A maintenance log is provided at the end of this book to record completed maintenance. Please make sure the maintenance log is completed and signed on completion of any maintenance work.

At 6 month **intervals:**

Inspections:

Check that all gearbox and motor mountings are tight and secure

Check that the barrier manual release is still functioning

Check that the barrier is stable and moves freely when the manual release is engaged and power is switched off!

Check flashing beacon is working (if fitted)

Check that the emergency door switch button works

Check that the manual release emergency switch button works (HD Model)

Check all safety edges work and are working for the correct direction of travel

Check the photocells are working and in the correct direction of travel

Check that no one has made the barrier unsafe by speeding it up past the factory settings

Check that the control program has not been modified such as to make the barrier unsafe. Please consult the manufacturer if in doubt. Call the manufacturer to talk this through if in doubt, use common sense and it is better to check everything twice!

Lubrication:

Any grease nipple (All other items are “sealed for life” and require no lubrication)

Function checks:

- Overall barrier structure is plumb
- Lubricate any parts that need lubricating see section “Lubrication” above
- Gearbox oil level
- Function of manual release
- Torque setting on control unit (If obstacle detection has been used)
- Obstacle detection effectiveness (measure forces: not a legal requirement)
- Overall function/condition of motor/gearbox
- Function and condition of safe edges
- Photocells internal and external
- Sealing of photocell covers and cable entry
- Wire terminations in control panel
- Sealing of control unit cover and cable entries
- Condition of all wiring and junction boxes
- Function of all controls – transmitters, loop and intercoms
- Security and effectiveness of all earth connections
- Test earth fault loop resistance and RCD function (MCB is preferred)
- Reassess and check the ongoing validity of the hazard assessment

Performance tests:

Force Test (Not a legal requirement but advisory)

Check that the manual release is working

Ensure that the barrier is running smoothly

Check Flashing Beacon is working (If fitted)

Check any safety devices fitted are working as designed (Loops/Photocells/Light Curtains etc.)

Handover Check list

The following items have been explained to the client: [tick] ✓

- ☐ How to operate the barrier.
- ☐ How to isolate the power to the barrier.
- ☐ How to manually release the barrier.
- ☐ How the safety features of the barrier work.
- ☐ How to avoid any residual hazards associated with the barrier.
- ☐ How to use the activation devices.
- ☐ How to change the batteries on remotes etc.
- ☐ How to change the keypad pin code.
- ☐ How and when to perform the required safety checks.
- ☐ Other [insert]

The following items have been passed to the client.

- ☐ Manual release instructions.
- ☐ Intercom user manual.
- ☐ Declaration of Conformity.
- ☐ User warnings and residual hazard identification.
- ☐ Planned Preventative Maintenance instructions.
- ☐ Maintenance log.
- ☐ Other [*insert*]

Installer Name: Date:

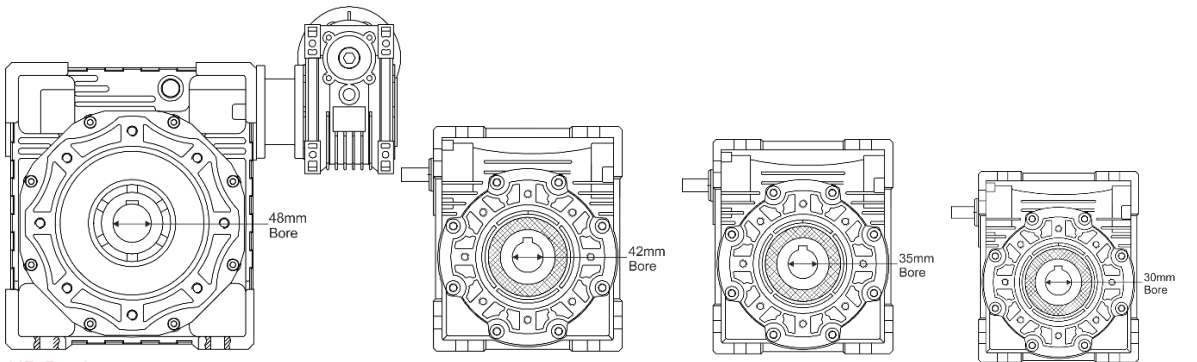
Signature:

Client Name: Date:

Signature:

Component list

Drive unit:



HD Barrier
Gearbox: RV130 1/80 B14
Motor: .55Kw 6 Pole B14 80

LUX Barrier
Gearbox: RV110 1/80 B14
Motor: .75Kw 6 Pole B14 80

S Barrier
Gearbox: RV90 1/80 B14
Motor: .55Kw 6 Pole B14 80

B Barrier
Gearbox: RV75 1/80 B14
Motor: .37Kw 6 Pole B14 80

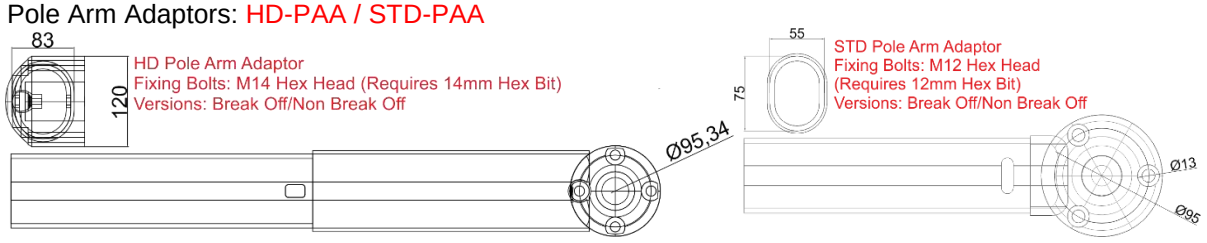
Control panel: Feig TST FUZ PFL2 B

Limit Switches: Schneider XCKN2118P20 Limit Switch

Door/Manual Release Safety Switch: Schneider XCMN21FOL2 Safety Door Switch

Loop Detector: Feig SUVEK1A (Single) SUVEK2A (Dual)

Pole Arm Adaptors: HD-PAA / STD-PAA



Maintenance log

Date		Work done	Company
PPM			Name
Reactive			Signature

Date		Work done	Company
PPM			Name
Reactive			Signature

Date		Work done	Company
PPM			Name
Reactive			Signature

Date		Work done	Company
PPM			Name
Reactive			Signature

Date		Work done	Company
PPM			Name
Reactive			Signature

Date		Work done	Company
PPM			Name
Reactive			Signature

Date		Work done	Company
PPM			Name
Reactive			Signature

Address: Tel: Email: Web:

EC Declaration of Incorporation

Manufacturer / Authorised Representative:

[Insert Trade Partner Name Here]

We hereby declare that the products described below:

6000 Automatic Barrier

are in conformity with the essential requirements of the Machinery Directive 2006/42/EC.

In addition, the partly completed machinery is in conformity with the Construction Products Directive 89/106/EC, the Electromagnetic Compatibility Directive 2004/108/EC and the Low Voltage Directive 2006/95/EC.

The following standards were applied:

EN 12453:2001	**Safety in use of power operated gates - Requirements**
EN 12445:2001	**Safety in use of power operated gates - Test methods**
EN 60335-1:2012	**Household and similar electrical appliances – Safety**
EN 60335-2-103:2003	**Household and similar electrical appliances – Safety**
EN 61000-6-1:2007	**Electromagnetic compatibility (EMC) - Part 6-1**
EN 61000-6-2:2006	**Electromagnetic compatibility (EMC) - Part 6-2**
EN 61000-6-3:2011	**Electromagnetic compatibility (EMC) - Part 6-3**
EN 61000-6-4:2011	**Electromagnetic compatibility (EMC) - Part 6-4**

The relevant technical documentation is compiled in accordance with Annex VII(B) of the Machinery Directive 2006/42/EC. We undertake to transmit, in response to a reasoned request by the market surveillance authorities, this documentation in electronic form within a reasonable period of time.
Person authorised to compile the relevant technical documentation:

PFL, Unit One, Kingsbury Link, Tamworth, Staffs, B78 2EX

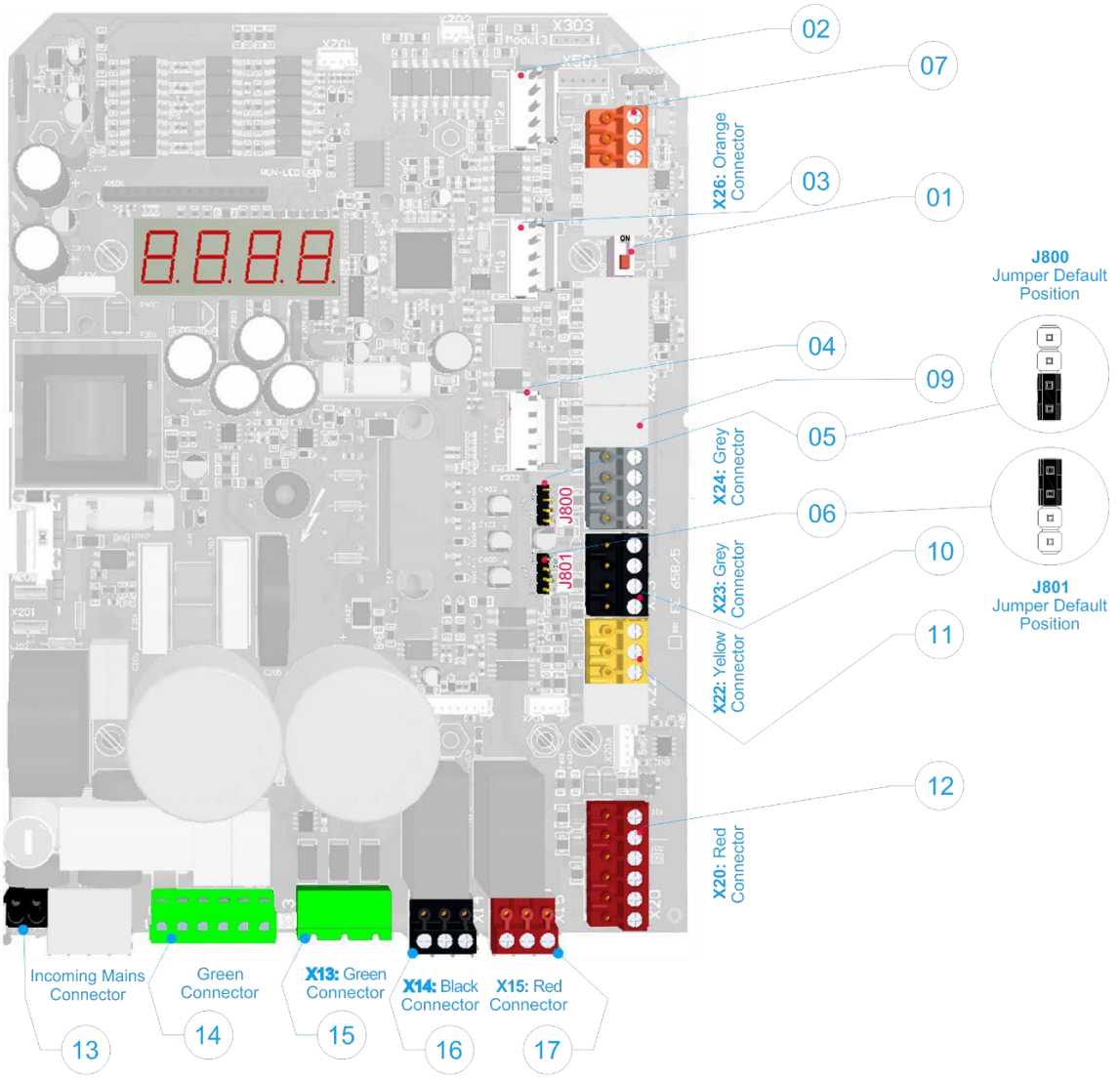
The machinery is incomplete and must not be put into service until the machinery into which the partly completed machinery is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC.

Place / Date:
Tamworth, 10/09/2018
Manufacturer's signature: *Damian Speer*
Position of signatory: **Technical Manager**

CE

Engineers Section (Not For End Users)

Control Panel Overview



WARNING!
Ensure power to the control panel is removed &
power fully discharged, prior to maintenance.

Key	Description	Key	Description
01	S500 - Turn on to access parameters	10	X23 - External pushbutton station connector
02	M2a - Radio card / aux relay plug	11	X22 - Safety Edge
03	M1a - Loop card / aux safety card plug	12	X20 - Electronic limits / E-Stop 2 connector
04	M0a - Common plug for radio/loop/safety	13	Aux 230Vac connector Fused
05	J800 - 8.2K / 1.2K safety edge selector	14	PE / Earth connector
06	J801 - Input mode select (default dig)	15	X13 - 3ph Motor connector
07	X26 - Photocell/Safety Devices	16	X14 - Programmable Relay K1
09	X24 - Mechanical Limits / Aux inputs	17	X15 - Programmable Relay K2

Standard Parameters

Parameter Display	Adj. Range	Parameter Function	Factory Setting
Barrier Functions			
P.000		Cycle Counter Counts Full Open & Close cycles	0000
P.005		Cycle Maintenance Counter Displays number of barrier cycles before maintenance is required (If set)	0000
P.010	[S] 0..200	Auto Close Time (Full Open) 0 :Switched Off **Note:** Check position of J801 input selector, wrong position may disable the auto close.	10
P.011	[S] 0..200	Auto Close Time (Part Open) 0 :Switched Off	10
Motor Parameters			
P.100	[Hz] 30..200	Motor Frequency Ensure this is set to same value as stated on the Operator Rating Plate (Normally 50Hz)	50/87
P.101	[A] 0..9,9	Motor Current Set this to the value stated on the Operator Rating Plate for a 230VAC Delta connection	5.0
P.102	[%] 40..100	Power Factor Ensure this is set to same value as stated on the Operator Rating Plate	70/74
P.103	[V] 100..500	Motor Rated Voltage ***Caution!*** Check Star/Delta Configuration! Ensure this is set to same value as stated on the Operator Rating Plate	230
Torque Parameters			
P.140	[%] 0..30	Torque Boost when Opening Voltage increase in the lower speed range (Set to 15 max.)	10
P.142	0..15 Hz	Sets the amount of I x R compensation for the Open direction	1.5
P.145	[%] 0..30	Torque Boost when Closing Voltage increase in the lower speed range (Set to 15 max.)	5
P.147	0..15 Hz	Sets the amount of I x R compensation for the Close direction	0
Brake Parameters			
P.180	[Hz] 0..20	Frequency below which the brake is de-energised when reducing speed ***Parameter P.999 must be set to 3 to access this parameter***	1.0
P.185	[Hz] 0..20	Frequency, which has to be exceeded, in order to energise the brake ***Parameter P.999 must be set to 3 to access this parameter***	2
P.189	[Hz] 0..50	Torque Boost that is active only below the frequency set by P.185 (Start Boost) ***Parameter P.999 must be set to 3 to access this parameter***	1.5
Limit Switch Selection			
P.200	0..8	0 :Mechanical limit switches 3 :Absolute encoder DES-A using 19200 baud communication speed 4 :Absolute encoder DES-A using 9600 baud communication speed 7 :Absolute encoder DES-B (Kostal) 8 :TST-PD (***Parameter P.205 must be set first***) ***Parameter P.999 must be set to 3 to access this parameter***	0/7/8
P.205	0..8	Sets the type of limits:- 0000 :Mechanical limit switches - End of travel limits are N/C, Intermediate limits are N/O 0001 :Mechanical limit switches - All limits are processed as N/C 0300 : Absolute encoder DES-A using 19200 baud communication speed 0700 : Absolute encoder DES-B (Kostal) 0800 : Feig TST-PD Encoder 0900 : Feig VIRTUAL Encoder using MECHANICAL limits	0/7/8
Programming the End Positions with Electronic Limit Switches			
P.210	0..5	Selecting the position to be calibrated in Deadman/Jog mode operation ("Teach In"):- 0 :no None/Abort 5 :Eu Close & Fully Open limit switch positions ***Note:-*** All limits are taught	0
Correcting the End Positions with Electronic Limit Switches			
P.221	[Ink] ±125	Correction value for the Close end position Reduce value to increase travel (Set to 0 in case of new calibration!)	0
P.231	[Ink] ±60	Correction value for the Open end position Reduce value to increase travel (Set to 0 in case of new calibration!)	0

Standard Parameters

Parameter Display	Adj. Range	Parameter Function	Factory Setting
Speed Parameters			
P.310	[Hz] 6..200	Frequency for automatic opening speed Operating frequency until Open pre-limit switch position - Adjust pre-limit switch, if necessary	45
P.350	[Hz] 6..200	Frequency for automatic closing speed Operating frequency until Close pre-limit switch position - Adjust pre-limit switch, if necessary	45
P.390	[Hz] 6..100	Frequency for Deadman/Jog mode Opening speed ***Parameter P.999 must be set to 3 to access this parameter***	20
P.395	[Hz] 6..100	Frequency for Deadman/Jog mode Closing speed ***Parameter P.999 must be set to 3 to access this parameter***	20
Run Timer Parameters			
P.410	E[s] 0..9900	Opening Run Timer 0 :Switched Off ***Parameter P.999 must be set to 3 to access this parameter***	15/80
P.415	[s] 0..9900	Closing Run Timer 0 :Switched Off ***Parameter P.999 must be set to 3 to access this parameter***	15/80
P.419	[s] 0..9900	Deadman/Jog mode Run Timer 0 :Switched Off ***Parameter P.999 must be set to 3 to access this parameter***	60
Mechanical Limit Switch Parameters Only			
P.430	[s] 0..5.0	Lag error when using mechanical limit switches - Specifies the time for the motor to move off the limit	2
Electronic Limit Switch Parameters Only			
P.440	[Ink] -60..999	Position for safety edge pre-close limit switch position Reduce value to increase travel	10
P.450	[s] 0.25..3.0	Lag error when using electronic limits	2
P.481	0..4	0 :No deactivation of photocell 2 :Deactivation of photocell after reaching pre-limit 3 :Deactivation of photocell after reaching position set below (P.4b3)	0
P.483	0..9999	Position to deactivate photocells ***Note:-*** 0 is fully closed	0
Safety Edge Parameters			
P.460	0..6	Safety Edge Evaluation (SL) - Evaluation must have once recognised correct termination resistance -1 :Automatic recognition of the safety edge 0 :OFF - Only possible when no terminating resistance is fitted 1 :ON - N/O 8K2 system (e.g. Electric Edge) 2 :ON - N/C 8K2 system (e.g. Pneumatic Edge) 3 :ON with self testing - N/O 8K2 system (e.g. Tests edge on each closing) 4 :ON with self testing - N/C 8K2 system (e.g. Tests edge on each closing) 5 :Dynamic Optical System (OSE) 6 :Auto Detect ***Parameter P.999 must be set to 3 to access this parameter***	6
P.461	[cnt] 0..5	Maximum number of activations of the Safety Edge 0 :OFF - Unlimited number of activations allowed (prefered setting if using a light curtain as safety edge) >0 :ON - Inverter will fail into `Deadman` operation mode after a set number of activations ***Parameter P.999 must be set to 3 to access this parameter***	3
P.462	0..2	Function of the Safety Edge 0 :Stop on Safety Edge, Starting from below the Safety Edge Pre-Close Limit (P.440) 1 :Ignore Safety Edge, Starting from below the Safety Edge Pre-Close Limit (P.440) 2 :Ignore Safety Edge, Starting from Lower Limit Switch ***Parameter P.999 must be set to 3 to access this parameter***	0
Input Profiles ('x' refers to input number)			
P.50I to P.50A	0000 to 3201	Function of Input 0101 : Open command (N/O) - open to fully open position with auto-close 0201 : Impulse command (N/O) - open to fully open position with auto-close, close on next command 0301 : Permanent / hold open command (N/O) - open to either open position without auto-close 0401 : Stop command (N/C) - stop in any direction and wait for another command 0501 : Photocell command (N/C) - safety B reversing when closing, to previous open position 0601 : Auto-Manual select (N/O) - change between Auto (impulse) and Manual (deadman) control 0701 : Close command (N/O) 0801 : Lock barrier closed (N/O)leck the barrier fully closed,ndeadman override possible (interlock) 0901 : Cross traffic supression (N/O) - ignore open1 and detector1 commands 1001 : Auto-close ON/OFF (N/O) - disables the auto-close 1101 : Photocell override limit (N/O) - limit switch to disable the photocell Example - To use terminals 72 & 73 (Input 4) as an additional photocell, set P.504 to 0501	

Standard Parameters

Parameter Display	Adj. Range	Parameter Function	Factory Setting
Relay Output Parameters			
P.701 (Relay K1) & P.702 (Relay K2)		Output profile examples:- 0000 :Relay deactivated 0101 :barrier is in the upper end position (Open) 0201 :barrier is in the lower end position (Closed) 0501 :Courtesy Light: On during every Open & Close move with 10 seconds switch off delay 0801 :On during every Open & Close move and clearance time/pre-warning time 1220 :Red traffic light on outside of barrier 1221 :Flasing red traffic light on outside of barrier 1210 :Green traffic light on outside of barrier 3201 :Brake relay	0101 & 3201
TST-RFUxK-A Expansion Board			
P.800	0..5	Activates the TST-RFUxK Expansion Board:- 0 :Board deactivated 5 :Board activated	0
P.802		Plug-In Options 0202 - Radio Receiver 0302 - Loop Detector (TST-SUVEK-1, TST-SUVEK-2) 0101 - 1-Channel Safety Edge Card (TST-SURA-1) 0106 - 6-Channel Safety Edge Card (TST-SURA-6)	0106
Diagnostic Parameters			
P.910	0..13	Selection of Display Mode 0 - Au :Control sequence (Automatic) 1 - F :[Hz] Present motor frequency 2 - i :[A] Present motor current (> 1A) 3 - u :[V] Present motor voltage 4 - i :[A] Intermediate circuit (DC bus) current 5 - U :[V] Intermediate circuit (DC bus) voltage 6 - c :[°C] Temperature of output transformer 7 - C :[°C] Temperature of brake resistor 8 - L :[100ms] Latest running time ***Note:-*** Only useful for electronic limit switch 9 - P :[Ink] Present position course 10 - r :[Ink] Present reference position 11 - K1 :[dig] Present Channel 1 value of PBA absolute encoder 12 - K2 :[dig] Present Channel 2 value of PBA absolute encoder 13 - b :[dig] Present reference Voltage (2.5V)	0
P.920	Eb1 Eb2 Eb3 Eb4 EbCL Eb-	Display of error memory/failures - Access by pressing the Membrane Stop - Change over by pressing Membrane Open & Close - Closing by pressing Membrane Stop - Exit by abortion "Eb-" **Eb1 - Eb8** :Error messages **Ebcl** :Delete the complete Error Memory **Eb-** :Abortion **noEr** :No errors	
P.940	[V]	Displays present supply voltage	-
Operating Modes			
P.980	0..2	Extended Service Mode 0 - Au :Fully automatic (Impulse, Opening & Closing) 1 - Hc :Deadman/Jog mode closing (Manual Closing/Automatic Opening) 2 - Hd :Deadman/Jog mode (Manual Opening & Closing)	0/2
Parameter Adjustment Modes			
P.990	0..1	Factory setting reset: Reset (1)/Abort (0) **!!!!! Warning - Think !!!!!** ***Parameter P.999 must be set to 3 to access this parameter***	0
P.991	0..12	barrier Profile Settings:- **Profile No.** 010A 010B 010C 010D **Frequency** 50Hz 50Hz 50Hz 50Hz **Barrier Type** Heavy Duty / LUX / S / B ***Note:-*** Profile 7 is designed for single speed barriers with just Open & Close mechanical limits. This is suitable when using an inverter for battery back-up, i.e single speed car park shutters	-
P.999	1..3	Selection of Parameterisation Mode (Reset after switching off) You may...1:- Change customer and initiation parameters 2:- Read all parameters and change the initiation parameters only 3:- Read and change all parameters (extended parameterisation mode)	1

Display Messages & Fault Codes

General Messages	
STOP	Stop/Reset condition, wait for the next command
_EU_	Fully closed position
=EU=	Fully closed position has been locked - Opening mode impossible (e.g. air locked)
CLO	Active closing
¯EO¯	Fully open position
=EO=	Fully open position has been locked - Closing mode is impossible (e.g. safety loop)
OOP	Active opening
-E1-	Part open (intermediate stop position)
=E1=	Part open is locked - Closing mode is impossible (e.g. safety loop)
FAIL	Failure - Only Deadman operation is possible, eventually automatic opening
CALI	Calibration - Limit position adjustment during deadman (for TST-PD encoder) - Start operation with stop button
¯¯ES_¯¯	Emergency shutdown - Operation impossible, hardware safety chain is interrupted - check emergency stop circuits
HDSA	Emergency service - Deadman operation without considering safety etc.
`HD`	Manual operation - Deadman operation
PARA	Parameterization
SYNC	Synchronization (incremental position transmitter/limit switch - position unknown)
`AU`	Automatic - Indicates change from "Manual Operation" to "Automatic"
`HC`	Semi-automatic - Indicates change of condition from "Manual Operation" to "Semi-Automatic"
FUS	First display after switch on (Power Up & Self Test)

Status Message during Calibration (TST-PD Only)	
E.I.E.C.	Calibration of close limit is requested (in Deadman)
E.I.E.O.	Calibration of open limit is requested (in Deadman)
E.I.E.I.	Calibration of Intermediate Stop position E1 (in Deadman)

Status Message during Synchronization	
S.Y.E.U.	Synchronisation of close limit is requested (Deadman or wait for start conditions)
S.Y.E.O.	Synchronisation of open limit is requested (Deadman or wait for start conditions)
S.Y.E.I.	Synchronisation of intermediate Stop position E1 (in Deadman)
S.Y.OP	Automatic opening up to mechanical limit stop, then auto-synchronisation of open limit
S.Y.CL	Automatic closing down to mechanical limit stop, observing safety devices, then auto-synchronisation of close limit
S.Y.C=	Automatic closing is locked, cause is indicated upon request

Status Message during Deadman Service	
HD.CL	Deadman closing (membrane button: Closed)
HD.OP	Deadman opening (membrane button: Open)
HD.EC	Close limit has been reached, no further Deadman closing possible
HD.EO	Open limit has been reached, no further Deadman opening possible
HD.AO	Has exceeded the permitted Eo- position (Deadman opening impossible)

Information Messages during Automatic Operation	
I.100	Too much speed when open limit is reached
I.150	Too much speed when close limit is reached
I.160	Permanent open is still active
I.199	barrier cycle counter is not plausible (Re-Initialise parameters)
I.200	Reference position has been recognised & taken over (for the first time)
I.201	Reference position is deleted, ready for new take over
I.205	Synchronisation of current limit position

Expiration of Delay Times	
r.xxx	Expiration of clearance phase before automatic closing resp. opening
T.xxx	Expiration of keep open time (auto close)

Display Messages & Fault Codes

General barrier Status	
F.000	barrier position is too high (above open limit)
F.005	barrier position is too low (below close limit)
F.020	Run Timer has been exceeded (during Opening, Closing or Deadman) - see P.410, P.415, P.419
F.030	Lag Error (barrier has not moved off limit - motor stalled)
F.031	Detected rotation direction deviates from expected direction of rotation
F.043	Failure of pre-limit switch for the photocell

Safety/Emergency Stop Chain		
F.201	Internal Emergency Stop or Watchdog (µProcessor safety check) is triggered	
F.211	External Emergency Stop 1 is triggered (Terminals 41 & 42)	
F.212	External Emergency Stop 2 is triggered (Terminals 31 & 32)	
F.360	Short circuit / activation of safety edge	Internal Evaluator
F.361	Number of safety edge activations exceeded - see P.461	
F.362	Redundancy error for safety edge self-check (short circuit)	
F.363	Safety edge is open circuit (broken cable etc)	
F.364	Safety edge testing in closed position failed	
F.365	Redundancy error for safety edge self-check (open circuit)	

General Hardware Failures/Errors	
F.410	Excess current (motor current or FU- overall current) - check motor parameters / mains supply voltage is stable under load
F.420	Excess voltage in DC-bus circuit - check mains supply voltage is not too high / motor is regenerating
F.425	Excess line voltage (mains supply voltage is >256VAC for more than 10 secs)
F.430	Excess temperature of heatsink
F.440	Excess DC current - check mains supply is stable under load / motor is overloaded / mechanical barrier problem
F.510	Over current - check motor parameters
F.515	Motor protection has detected excess current
F.519	IGBT driver component has detected excess current - check for short circuit / earth fault on motor & motor cables
F.520	Excess voltage in intermediate circuit - check mains supply voltage is not too high / motor is regenerating
F.521	Under voltage in intermediate circuit - check mains supply voltage is not too low
F.524	External 24V supply is missing (possibly short circuit)
F.525	Excess line voltage (mains supply voltage is >256VAC for more than 10 secs)
F.530	Over temperature of heat sink
F.540	Over temperature of brake resistor

General Positioning	
F.700	Mechanical limit switch error - e.g. open & close limits activated simultaneously or intermediate limits are wired N/C
F.750	Data transmission error
F.751	Synchronization FUE <_> Absolute encoders
F.752	Time out during data transmission - No communication with encoder - check encoder cables / encoder parameter P.200
F.760	Position out of usable range
F.761	Distance channel <_> channel 2 out of allowed range
F.762	Electronic end switch positions are incorrect

Internal Systematic Errors			
F.920	Internal 2.5V supply is defective	F.960	Parameter check sum
F.921	Internal 15V supply is defective	F.961	Checksum via calibration values
F.922	Incomplete Emergency Stop chain	F.962	Converter parameter not plausible
F.930	External watchdog error / noise satutated enviroment	F.963	Ramp parameter not plausible
F.931	ROM error	F.964	New software fitted / not initialised (factory default P.990 -1)
F.932	RAM error	F.970	Parameter processing is disturbed

Display Messages & Fault Codes

General Inputs		
E.000	Open button on membrane keypad	
E.050	Stop button on membrane keypad	
E.090	Close button on membrane keypad	
	Standard Configuration (Mechanical limits / Encoder)	**Parameter (default Mechanical limits / Encoder)**
E.101	Input 1: Stop command	P.501 (0101 / 0101)
E.102	Input 2: Open command	P.502 (0401 / 0401)
E.103	Input 3: Close command	P.503 (0701 / 0701)
E.104	Input 4: Unused	P.504 (0201 / 0201)
E.105	Input 5: Unused	P.505 (0501 / 0501)
E.106	Input 6: Unused	P.506 (1106 / 0301)
E.107	Input 7: Photocell/Safety Device	P.507 (1108 / 0601)
E.108	Input 8: Open limit switch	P.508 (1110 / 0802)
E.109	Input 9: Close limit switch n	P.509 (1111 / 0903)
E.110	Input 10: Unused	P.50A (1001 / 1001)

Wireless Plug-in Module	
E.401	Radio Channel 1
E.402	Radio Channel 2

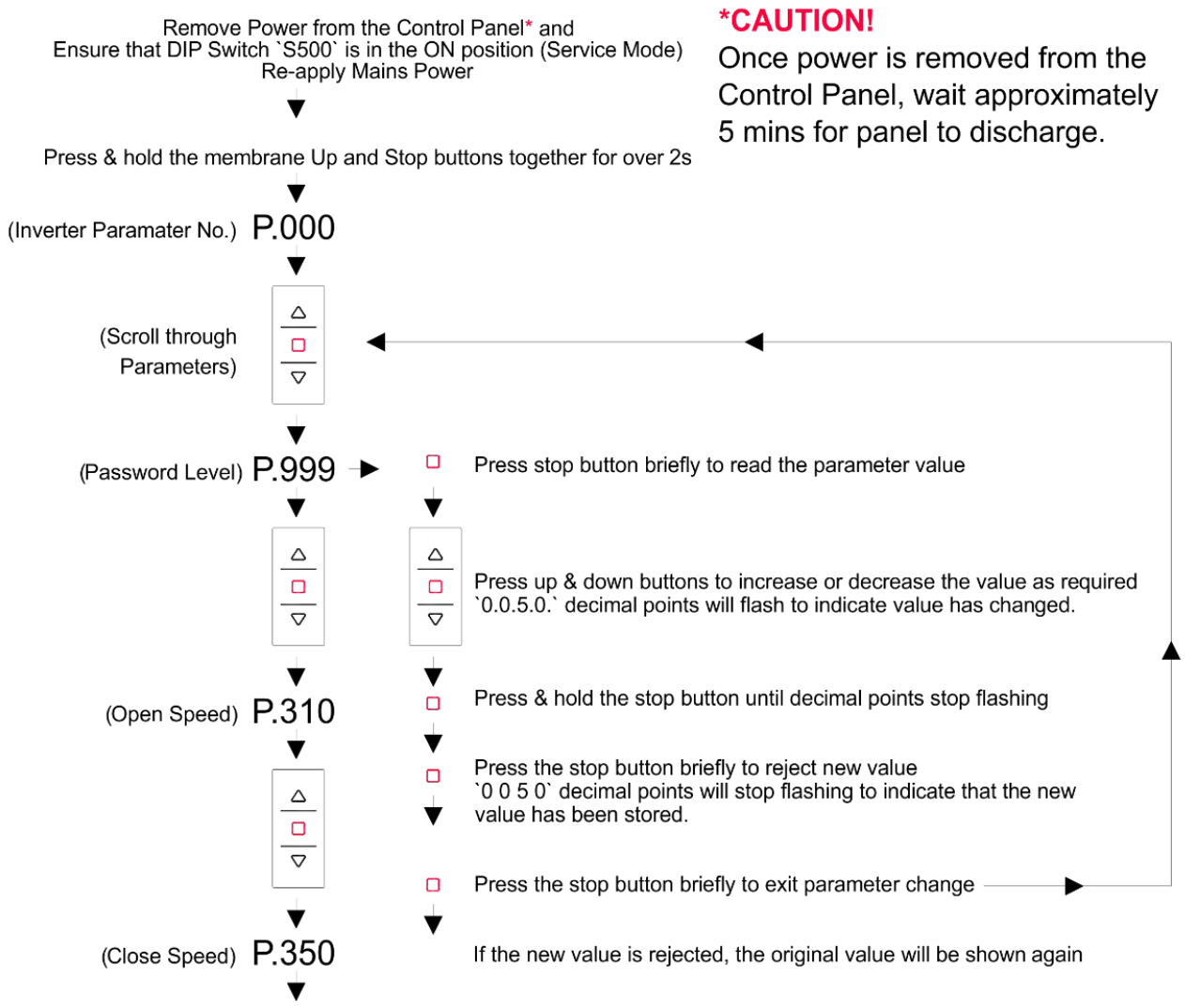
Induction Loop Evaluation Device: Plug-in Module	
E.501	Loop Detector Channel 1
E.502	Loop Detector Channel 2

Internal Inputs	
E.900	Fault signal of triggering component

Operation

The barrier may be opened using the Open pushbutton input, panel mounted keypad button, exit loop or radio (if fitted). The barrier will smoothly accelerate to fast speed until the intermediate limit is reached, at which point the barrier will smoothly decelerate for the remainder of the travel distance. The barrier may be closed using the Auto-Close function, the Close button input, panel mounted keypad button or radio. The barrier will smoothly accelerate to full speed until the intermediate limit is reached, at which point the barrier will decelerate for the remainder of the travel distance.
If a safety device is activated (i.e. safety edge or photocell) during the closing cycle the barrier will stop & return to the fully open position. The barrier may only be closed once the obstruction has been removed.

Example Programming Method & Usage



To exit the programming mode, Press & hold the stop □ button for more than 4seconds

If the barrier set-up is complete, remove the Power from the Control Panel and
*ensure that DIP Switch `S500` is in the OFF position (Automatic Mode)
Re-apply Mains Power

Basic Setup Connections for Mechanical/Standard Limits

Jumper Settings:

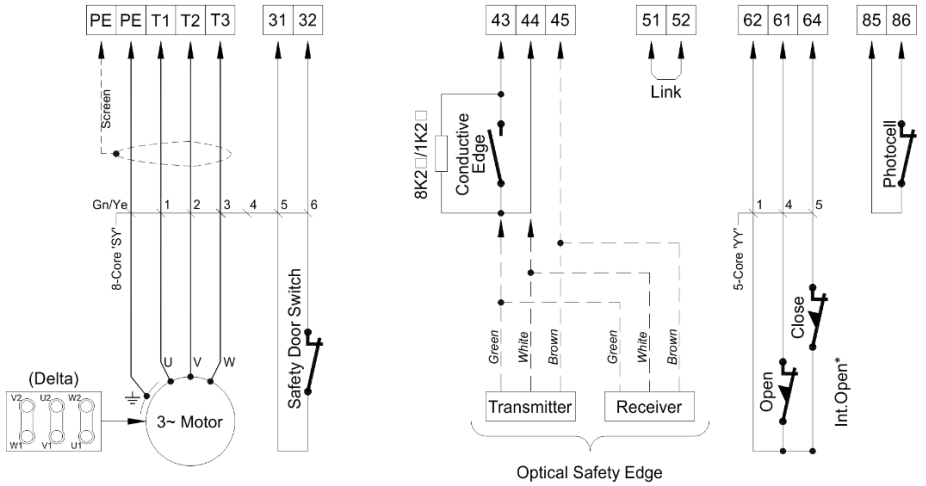
Set the position of `J800' to suit safety edge fitted

J800 

1 & 2: 8K2Ω Resistor

2 & 3: 1K2Ω Resistor

Note:- If the motor travels in the wrong direction, then swap `U`&`V`



Initial System Setup Profile for Mechanical Limits

ONLY USE IF SETTING BARRIER UP WITH A REPLACEMENT PANEL!

01. Ensure that the power is OFF & switch S500 to the ON position (Up position)
02. Turn the power ON
    Display will read:- 
03. Press the membrane Stop button briefly
    Display will read:-

Table 5.1: P.991 - Barrier Profiles

Motor Frequency / Barrier Type	50Hz
6000 B	010B
6000 S	010C
6000 Lux	010D
6000 HD	010A

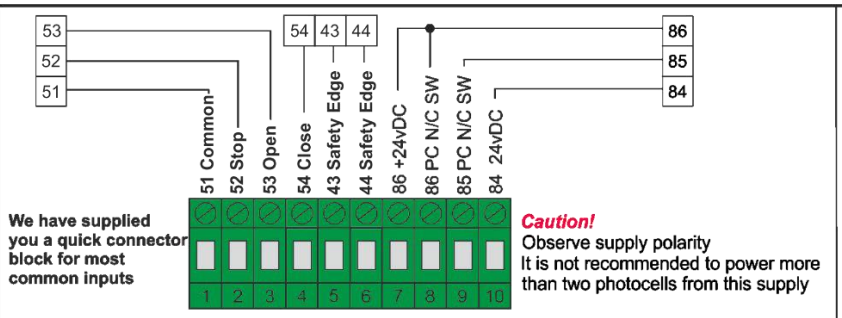
04. Use the membrane Up / Down buttons to set a value for P.991 - gate Profiles from Table 5.1 above
    Note:- Always select a profile suitable to your motor & limit arrangement, before proceeding
05. Press & hold the membrane Stop button until the decimal points stop flashing
    Display will read:-  *- PROGRAM PANEL DEFAULTS*

    After a few seconds, the display will return to normal (or show any faults, i.e. F.211 if no link is fitted in terminals 41 & 42)
06. Display will read:- 

    Use the down arrow to set the CLOSE limit first!. Press the down arrow and then release this will now operate on its own
    Set the mechanical limits as per operator instructions, after which the display will revert to operational display
07. Press & hold the membrane Up and Stop buttons together for over 2s
    Display will read:- 
09. Use the membrane Down button to scroll to parameter P.980 and set this parameter to the running mode required - Impulse Open / Deadman close for example (see page 9)

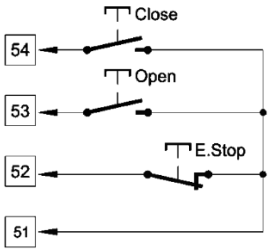
Note:- Any generated Fault Codes (i.e. Display indicates 'F.XXX') MUST be investigated prior to setting limits

Quick Connector Block



We have supplied you a quick connector block for most common inputs

Caution!
Observe supply polarity
It is not recommended to power more than two photocells from this supply

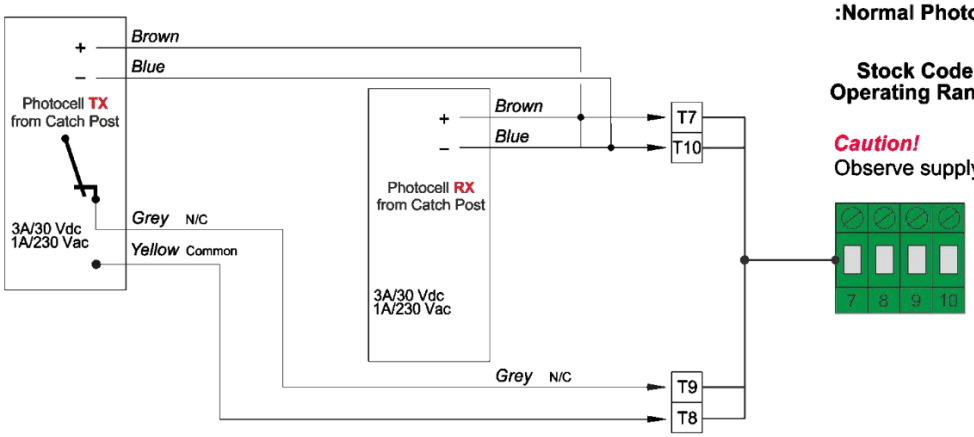


Photocell /Output Connections

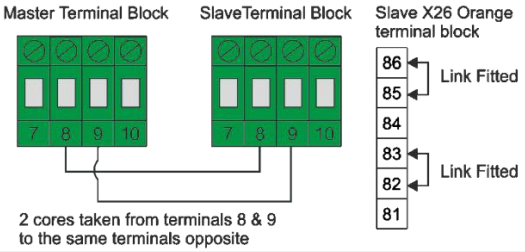
:Normal Photocell Wiring

Stock Code: PF9-PEC
Operating Range: 0.5-20m

Caution!
Observe supply polarity

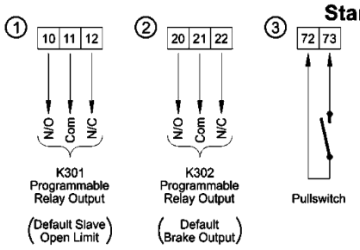


Master/Slave Photocell Wiring:



2 cores taken from terminals 8 & 9 to the same terminals opposite

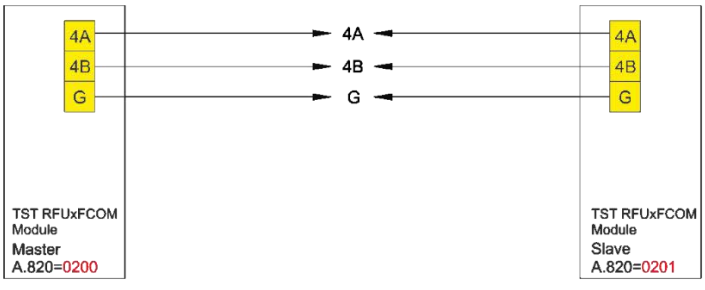
Standard Outputs Setup:



1. Provides a volt-free output suitable for traffic lights, etc.
2. Provides a volt-free output suitable for a brake connection
3. Pullswitch input

Master/Slave Connection Module

Master/Slave Module
Stock Code: TSTRFUxCOM
Operating Voltage: +24vDC



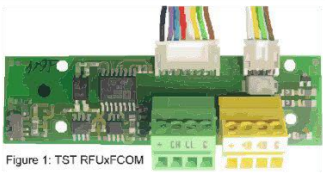
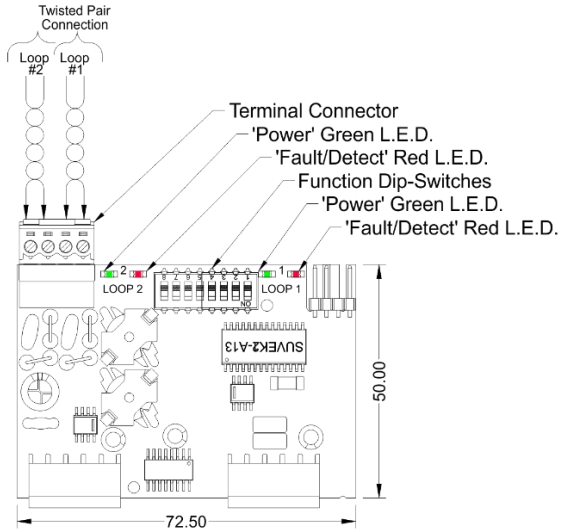


Figure 1: TST RFUxFCOM

The TST RFUxFCOM is an interface expansion board, which provides an additional RS485 and a CAN interface. The expansion board is mounted by different spacers and connected by the X44 and X45 connectors. All functions are unversal programmable by the controller. The interface expansion is required to realize a master / slave operation between two controllers, to operate the I / O expansion TST RFUxK as a remote control unit, or to get access of a computer to the controller.
The manufacturer has carefully checked and inspected the device hardware and software, but no warranty is given for a complete absence of errors.

TST-SUVEK Plug-In Loop Detector Installation Instructions

2 Channel Loop Detector Layout
(Stock Code: SUVEK 2A)



Note:- Parameter P.802 must be put to 0302 to enable the loop detector

Operating Instructions

1. Turn OFF power to the control panel.
2. Plug the loop detector module into the pins provided on the motherboard of the control panel.
3. Adjust the function Dip-Switches on the loop detector card as required. Please refer to Dip-Switch Function Settings.
4. Turn ON power to the control panel.
5. The green `Power` L.E.D. will flash continuously until the loop is tuned. Once tuned, the green `Power` L.E.D. will illuminate constantly.
6. If a loop is faulty or not connected properly the red `Fault/Detect` L.E.D. will illuminate constantly.
7. If a loop is covered the red `Fault/Detect` L.E.D. and the green `Power` L.E.D. will illuminate together.

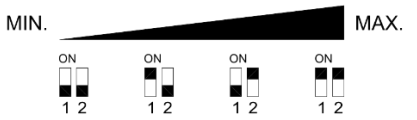
L.E.D. Indications

Green Fast Flashing:-	Detector is Tuning
Green ON Constantly:-	Detector is Ready
Green & Red ON Constantly:-	Loop has Detected
Red ON Constantly:-	Loop is Defective

DIP-SWITCH FUNCTION SETTINGS

Loop 1:

DIP-Switches 1 & 2:- Sensitivity (4 Steps)



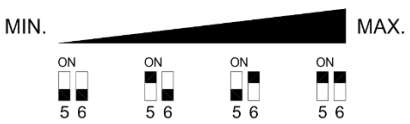
DIP-Switch 3:- Holding Time (5 mins - Infinity)

Note:- Loop will recalibrate after 5 minutes constant detection

DIP-Switch 4:- Frequency (High/Low)

Loop 2:

DIP-Switches 5 & 6:- Sensitivity (4 Steps)

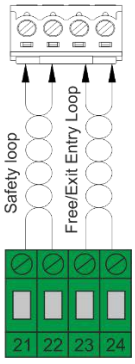


DIP-Switch 7:- Holding Time (5 mins - Infinity)

Note:- Loop will recalibrate after 5 minutes constant detection

DIP-Switch 8:- Frequency (High/Low)

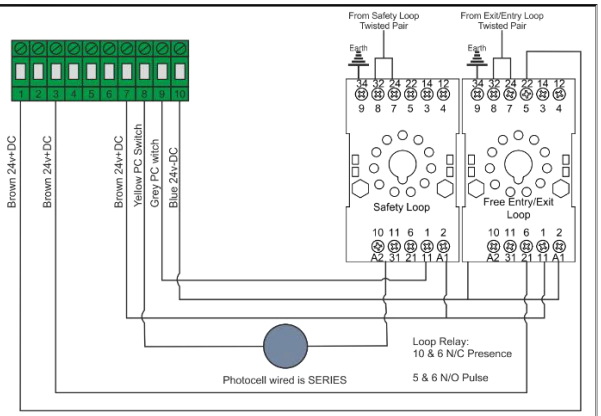
Terminal Block Wiring



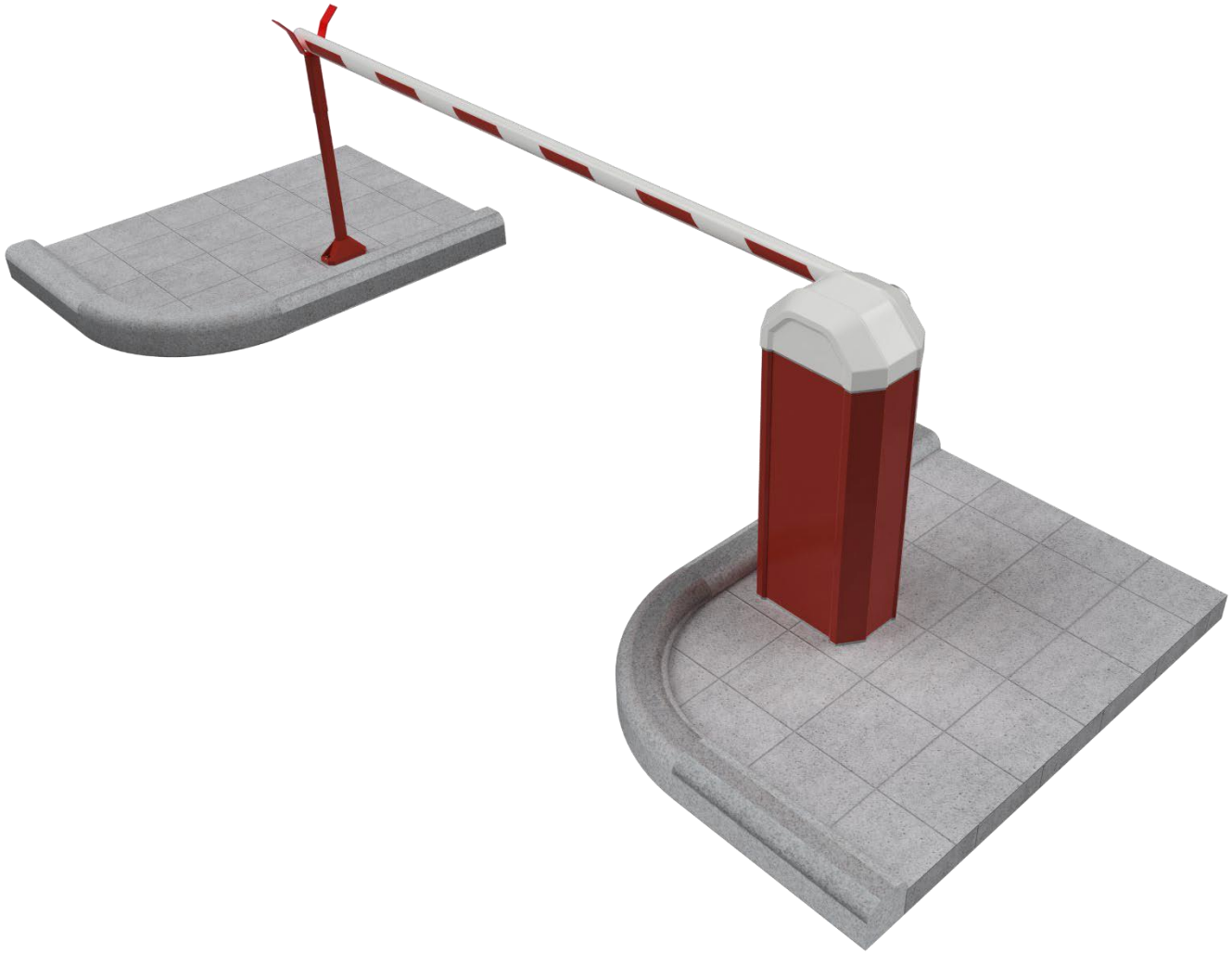
External loop Wiring if needed can be connected as shown on the right for a bigger diagram please contact technical.

For Safety Circuit:
Disconnect Grey wire from terminal 9 and connect to terminal 10 on loop base. Connect new wire from terminal 9 to terminal 6 on loop base.

Caution!
Observe supply voltage!



Address: Tel: Email: Web:



CAD Drawings provided as standard

.dwg

Tech Support provided and FREE mobile APP as standard

-20°C

+60°C

IP56

CE EUROPEAN MARK CERTIFYING CONFORMITY TO THE ESSENTIAL REQUIREMENTS OF THE STANDARDS 2006/42/EC

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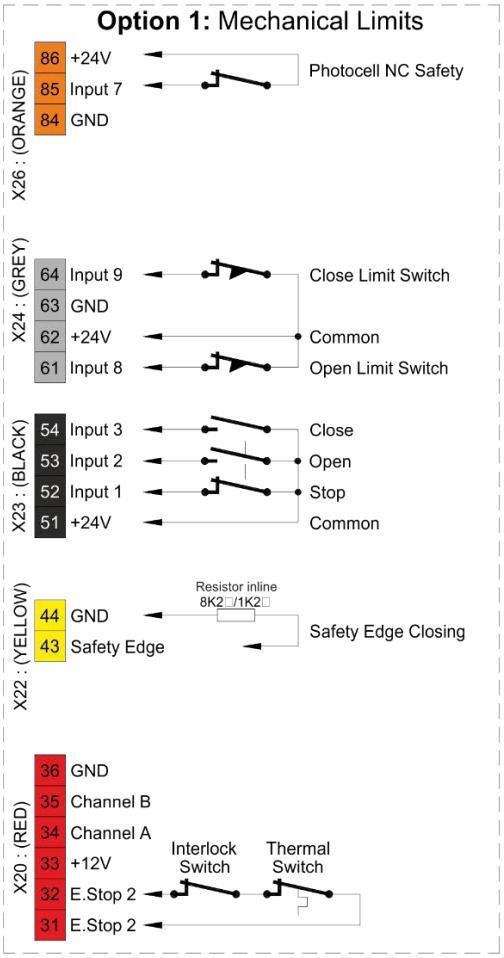
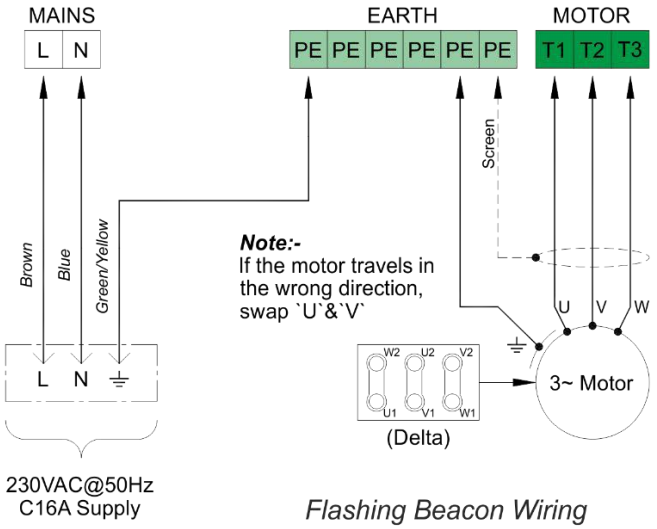
Option **1** is to be used unless custom setup is required

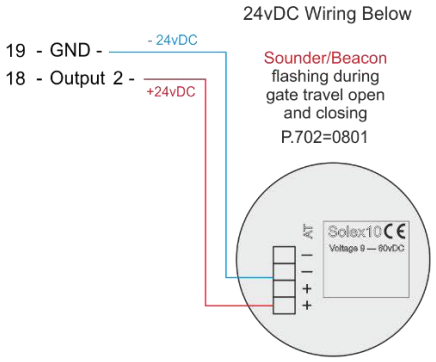


Mains/Motor Wiring

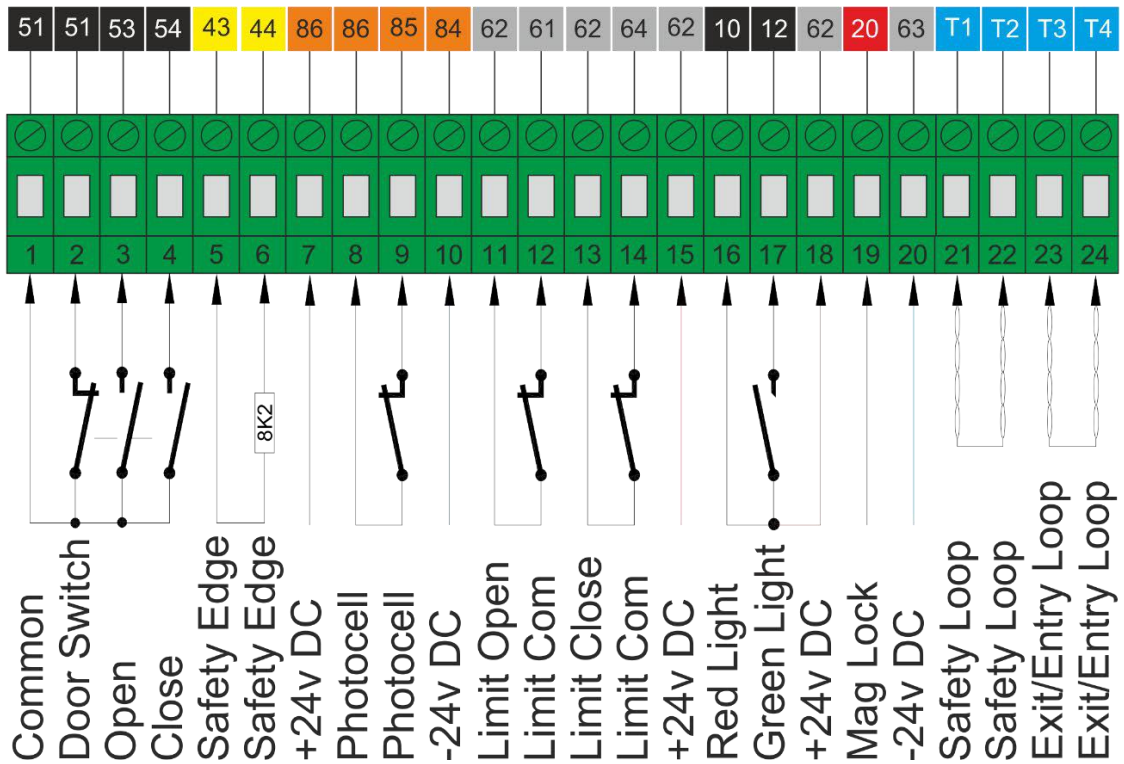


Note:-
If the motor travels in the wrong direction, swap `U`&`V`

Flashing Beacon Wiring



Built in Loop Card



Address: Tel: Email: Web: