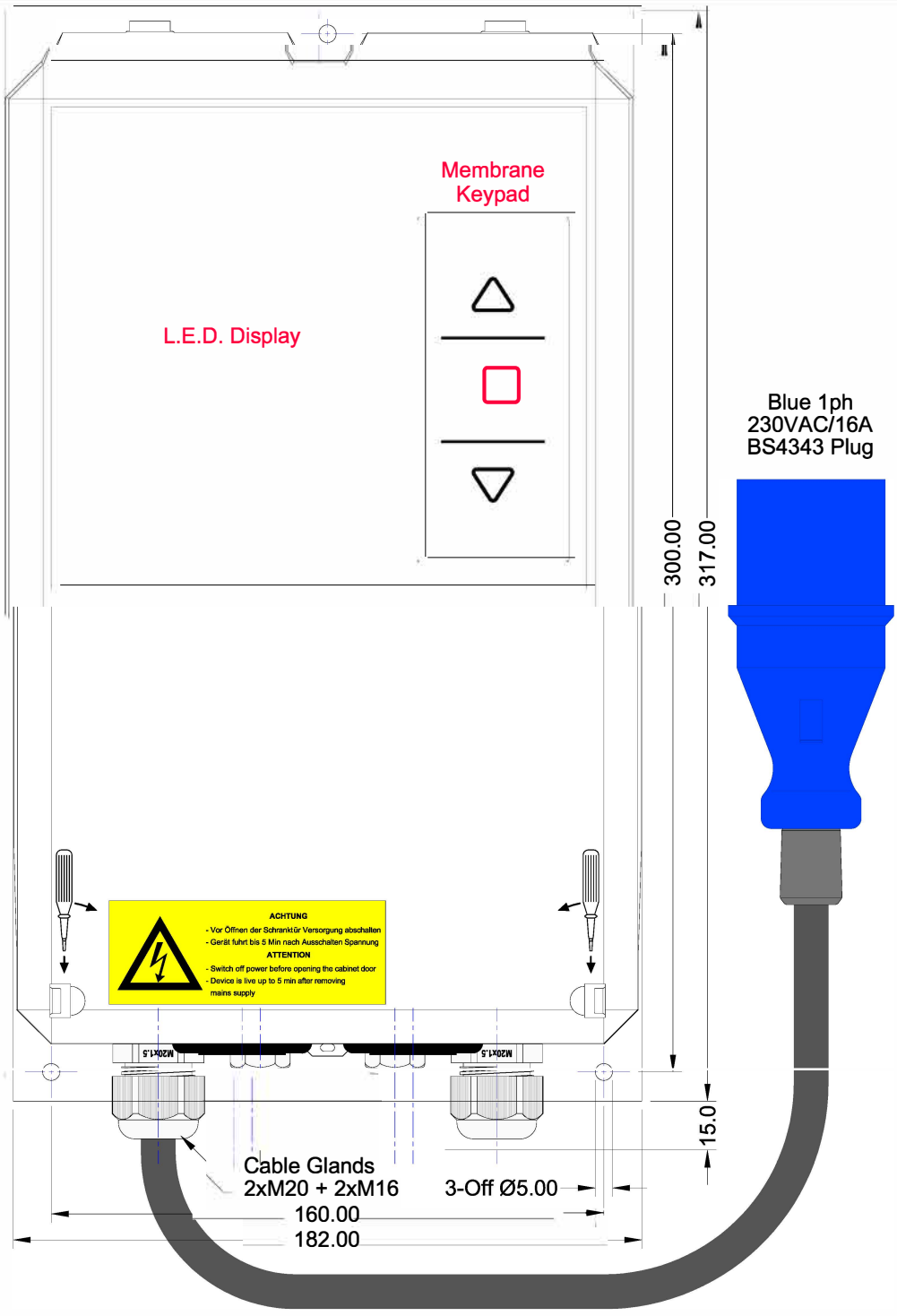
Speed Link Inverter Control Panel User Guide

Model: VST-75 / TST-FUZ-2-C **Stock Code:** 40-1130

WARNING! Read these instructions **FULLY** before use.
Installation should only be carried out by a **COMPETENT** installer.

Note:- Software LC_V05-01.03

Membrane Keypad
Provides Open/Close & Stop pushbutton operation



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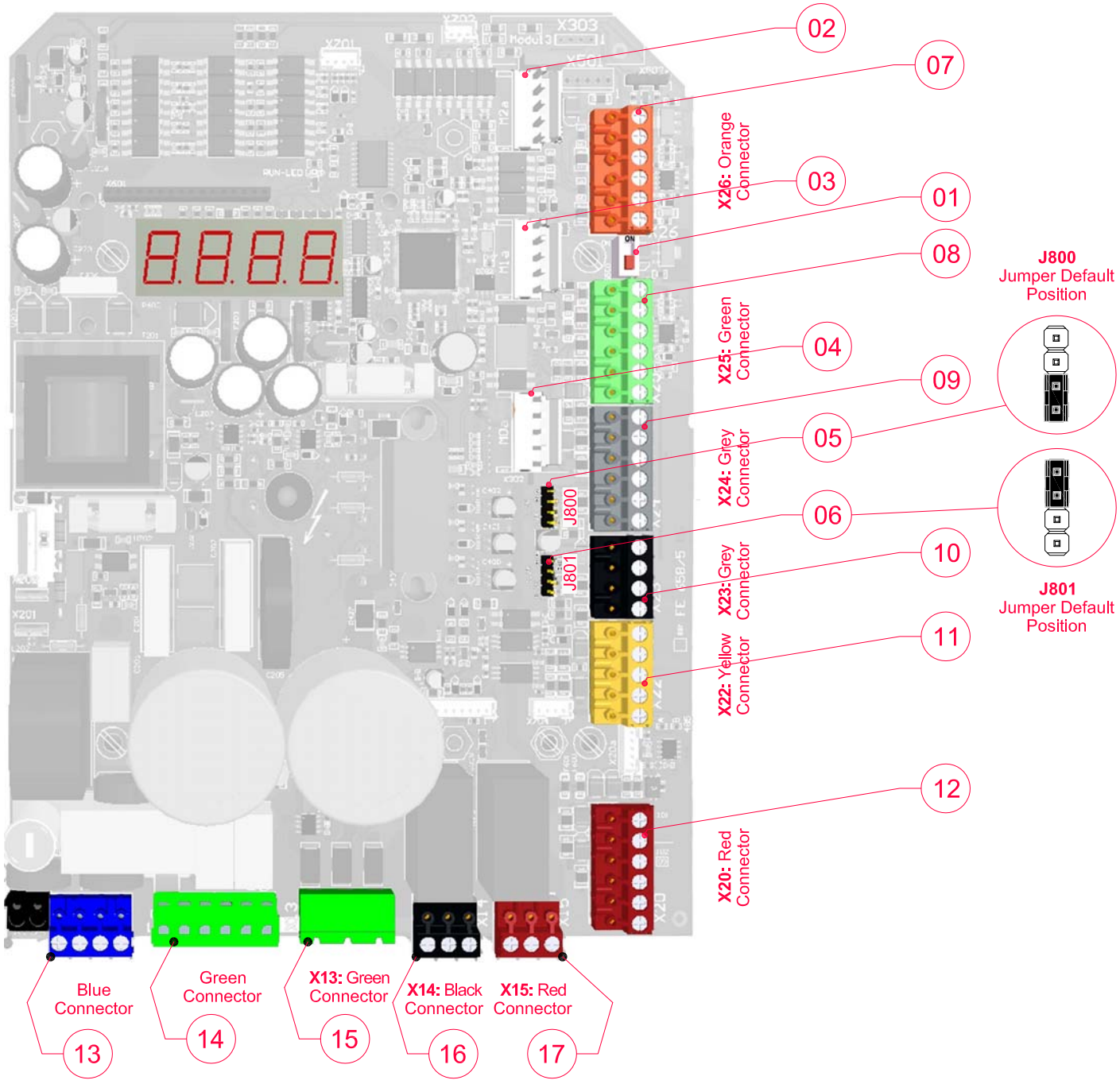
Drawing No:- LC-2539	Page No:- 1 of 16
Revision No:- M	Rev Date:- 22/05/18
Drawn By:- R.A.H.	Date:- 03/04/09
Checked By:- J.C.	Appr' By:- S.L.

Internal View



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 / E-Stop 1 connector**
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 - suitable for brake)**
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 - Aux limits / Aux input connector**	16	**X14 - Programmable Relay K1**
08	**X25 - Photocell / Impulse connector**	17	**X15 - Programmable Relay K2**
09	**X24 - Mechanical Limits / Aux inputs**		

Control System

The system has been specifically designed for high-speed doors and gates. It combines door control features and a variable speed inverter to provide a smooth operating door. Many of the door control features can be adjusted to provide customised operation. In addition, the panel has provision for plug-in modules for radio and loop detectors. Volt-free outputs are also available for signalling purposes.

Installation

Ensure that the panel is mounted adjacent to the door, on a secure structure that is unaffected by vibration & with at least 100mm clear space around the enclosure. Consideration should be given to the fact that earth leakage currents may exceed 30mA.

Operation

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

***CAUTION!**
Once power is removed from the Control Panel, wait approximately 5 mins for panel to discharge.

Remove Power from the Control Panel* and
Ensure that DIP Switch `S500` is in the ON position (Service Mode)
Re-apply Mains Power

Press & hold the membrane Up and Stop buttons together for over 2s

(Inverter Paramater No.) P.000

(Scroll through Parameters) △ □ ▽

(Motor Frequency) P.100 → □ Press stop button briefly to read the parameter value

△ □ ▽ Press up & down buttons to increase or decrease the value as required
`0.0.5.0.` decimal points will flash to indicate value has changed.

(Motor Current) P.101 □ Press & hold the stop button until decimal points stop flashing

△ □ ▽ □ Press the stop button briefly to reject new value
`0 0 5 0` decimal points will stop flashing to indicate that the new value has been stored.

□ Press the stop button briefly to exit parameter change →

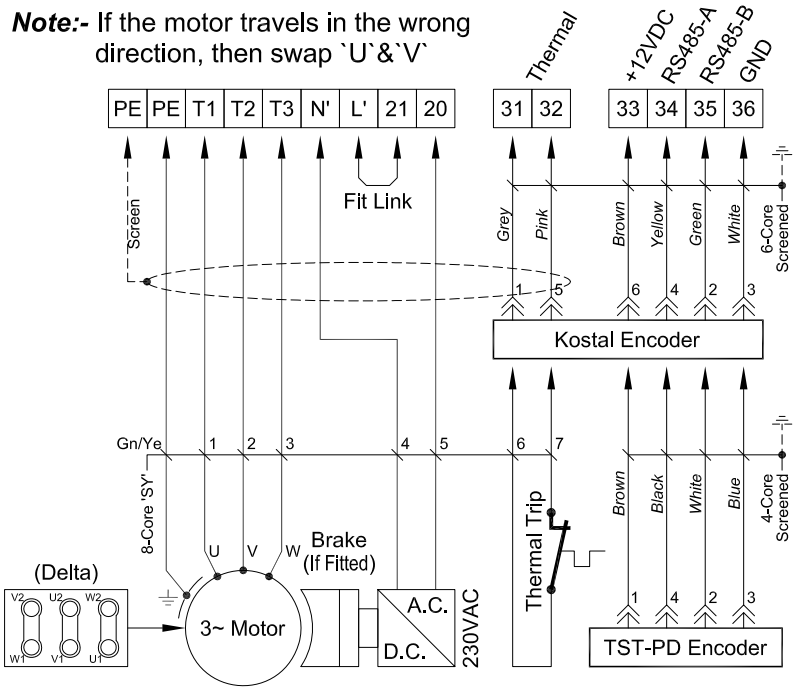
(Power Factor) P.102 If the new value is rejected, the original value will be shown again

To exit the programming mode, Press & hold the stop button for more than 2s

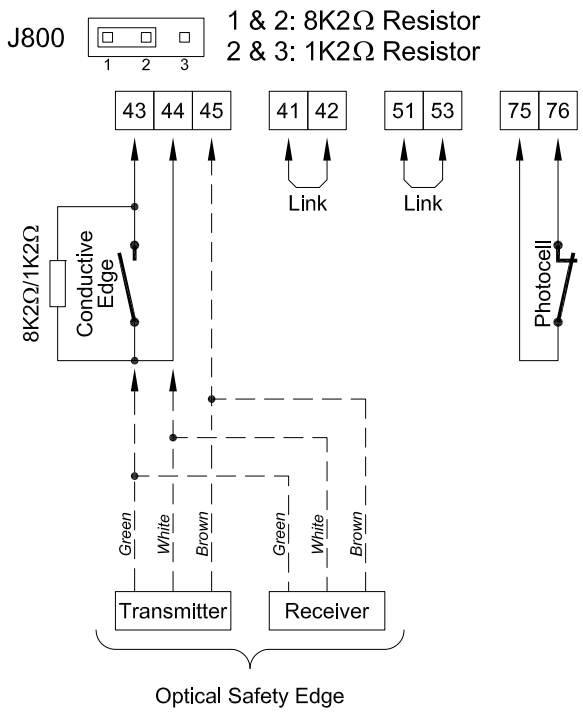
If the door set-up is complete, remove the Power from the Control Panel* and
ensure that DIP Switch `S500` is in the OFF position (Automatic Mode)
Re-apply Mains Power

Basic Setup Connections for Electronic Limits

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

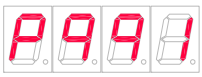


Jumper Settings:
Set the position of `J800' to suit safety edge fitted



Initial System Setup Profile for Electronic Limits

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:-

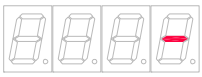
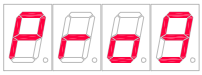


Table 4.1:
P.991 - Door Profiles

Motor Frequency / Limit Type	50Hz	100Hz
Kostal Encoder	1	2
TST-PD Encoder	3	4

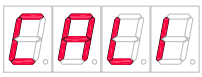
04. Use the membrane Up / Down buttons to set a value for P.991 - Door Profiles from Table 4.1 above
    Note:- Always select a profile suitable to your motor & limit arrangement, before proceeding
05. Press & hold the membrane Stop button until the decimal points stop flashing
    Display will read:-



- PROGRAM PANEL DEFAULTS

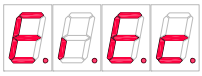
After a few seconds, the display will return to normal (or show any faults, i.e. F.211 if no link is fitted in terminals 41 & 42)

06. Display will read:-



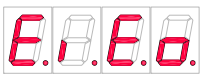
- CALIBRATE / SET DOOR POSITIONS

To begin setting of the limits, press & hold the membrane Stop button until the display reads :-



- SET CLOSE LIMIT

07. Run the door to the Close limit position.
    Press & hold the membrane Stop button to store the Close limit position.
    Display will read:-



- SET OPEN LIMIT

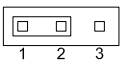
08. Run the door to the Open limit position.
    Press & hold the membrane Stop button to store the Open limit position.

Door limits are now programmed. The control panel will calibrate the required accel / decel ramps and slow down positions (indicated by I.XXX messages) when the door is driven open & close for the first few times.

Calibration is complete when no more I.XXX messages are seen.

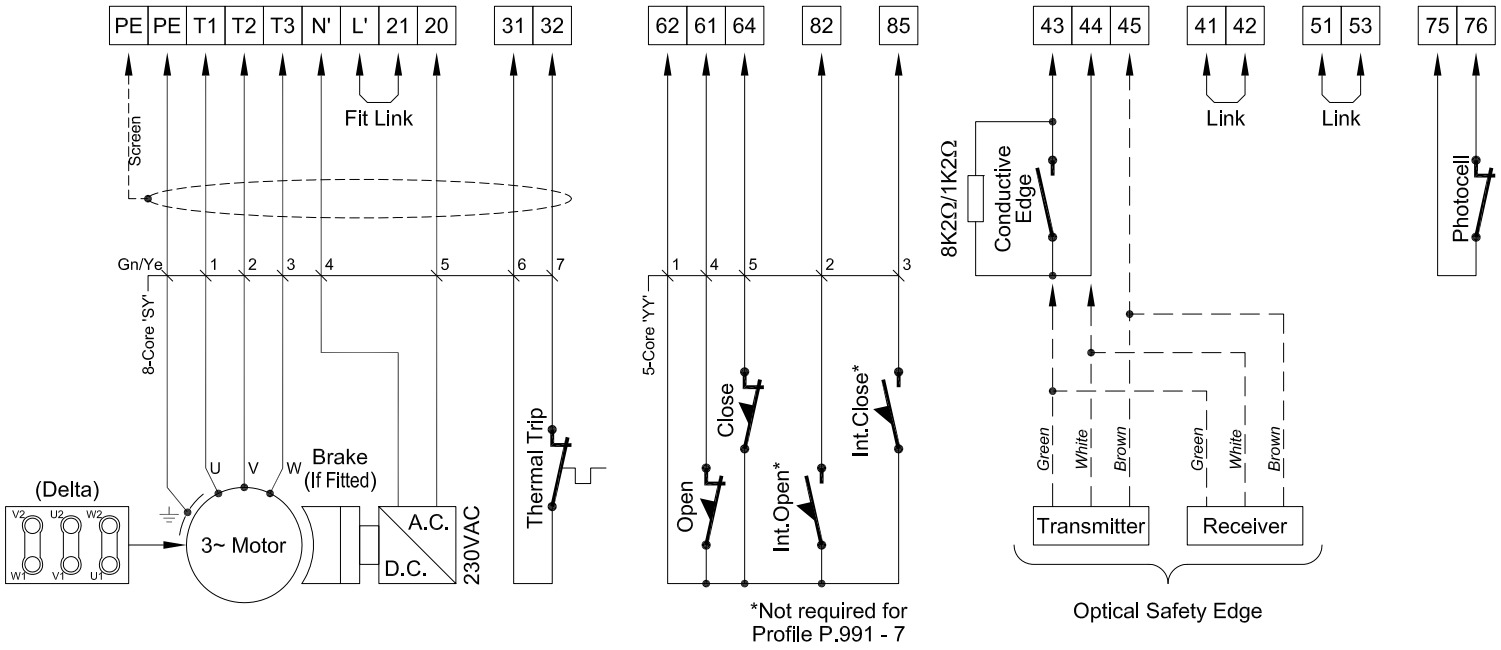
Basic Setup Connections for Mechanical/Standard Limits

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

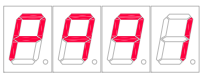
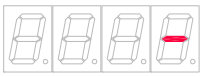
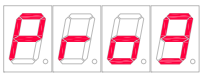
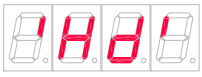
01. Ensure that the power is OFF & switch S500 to the ON position (Up position)
02. Turn the power ON
    Display will read:- 
03. Press the membrane Stop button briefly
    Display will read:- 

Table 5.1:
P.991 - Door Profiles

Motor Frequency / Limit Type	50Hz	100Hz
4 Mechanical	5	6
2 Mechanical (Single Speed)	7	N/A

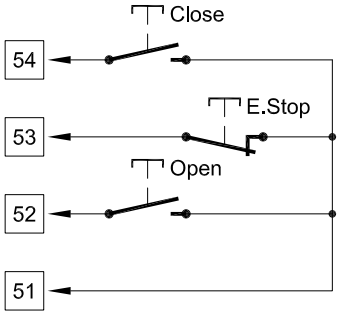
04. Use the membrane Up / Down buttons to set a value for P.991 - Door Profiles from Table 5.1 above
    Note:- Always select a profile suitable to your motor & limit arrangement, before proceeding
05. Press & hold the membrane Stop button until the decimal points stop flashing
    Display will read:-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

    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

Remote Pushbutton Station

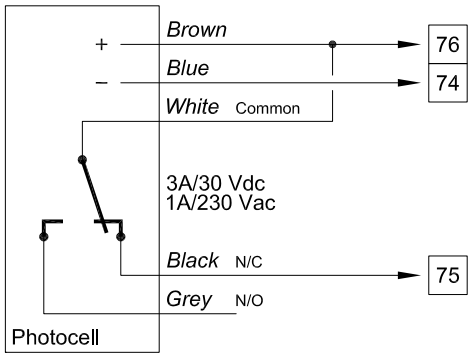


Note:- These connections are isolated when the panel is in `Deadman` mode (i.e. During setup or under fail conditions)

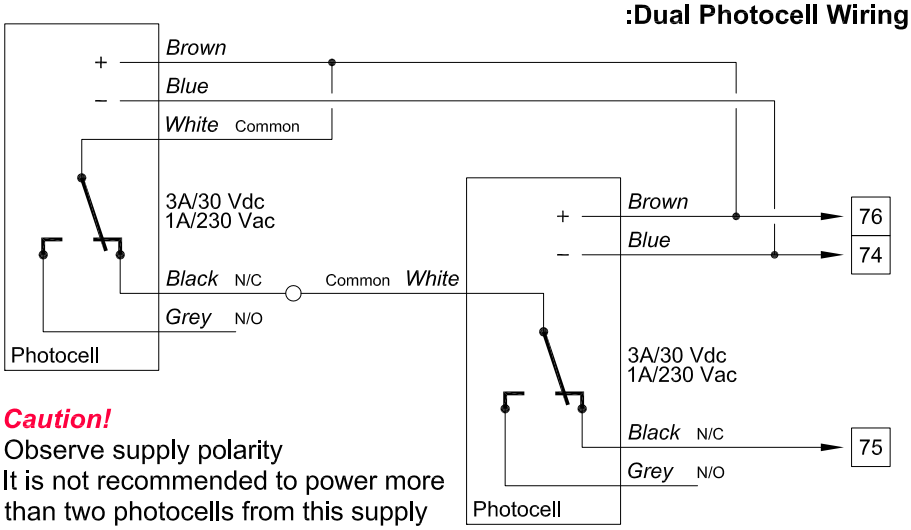
Photocell Connections

Retro-Reflective Photocell
Stock Code: 33-1005
Operating Range: 0.3-10m

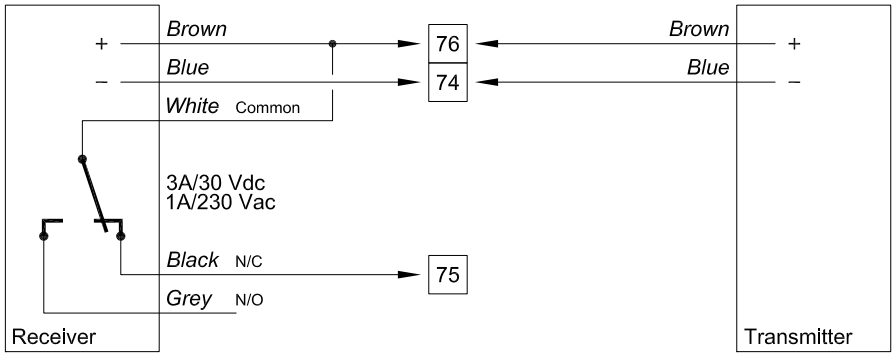
Single Photocell Wiring:



:Dual Photocell Wiring



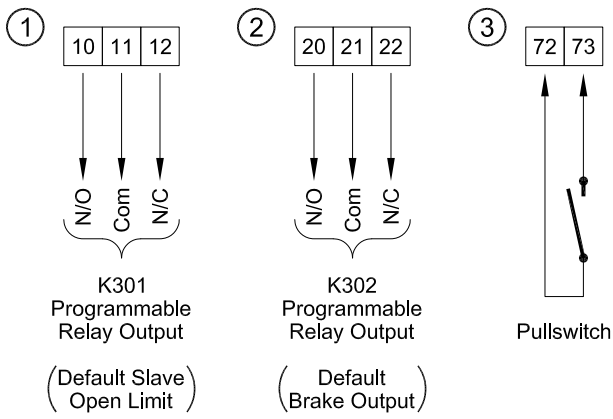
Caution!
Observe supply polarity
It is not recommended to power more than two photocells from this supply



Through-Beam Photocell
Stock Code: 33-0991
Operating Range: 1-20m

Caution!
Observe supply polarity

Other Connections



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

Standard Parameters

Parameter Display	Adj. Range	Parameter Function	Factory Setting
Gate Functions			
P.000		Cycle Counter Counts Full Open & Close cycles	0000
P.005		Cycle Maintenance Counter Displays number of gate 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	50
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	15
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***	10
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***	7
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***	15
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	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 (*Continued from page 9*)

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	87
P.350	[Hz] 6..200	Frequency for automatic closing speed Operating frequency until Close pre-limit switch position - Adjust pre-limit switch, if necessary	30/50
P.390	[Hz] 6..100	Frequency for Deadman/Jog mode Opening speed ***Parameter P.999 must be set to 3 to access this parameter***	30
P.395	[Hz] 6..100	Frequency for Deadman/Jog mode Closing speed ***Parameter P.999 must be set to 3 to access this parameter***	30
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***	15/60
P.415	[s] 0..9900	Closing Run Timer 0 :Switched Off ***Parameter P.999 must be set to 3 to access this parameter***	15/60
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.4b1	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.4b3	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.501 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 door closed (N/O) - lock the door fully closed, no deadman 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 (*Continued from page 10*)

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 :Door is in the upper end position (Open) 0201 :Door 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 door 1221 :Flasing red traffic light on outside of door 1210 :Green traffic light on outside of door 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)	0202
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	Eb 1 Eb 2 Eb 3 Eb 4 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 - Eb4** :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)	02
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	Door Profile Settings:- **Profile No.** 1 | 2 | 3 | 4 | 5 | 6 | 7 **Frequency** 50Hz | 100Hz | 50Hz | 100Hz | 50Hz | 100Hz | 50Hz **Limit Type** Kostal Encoder | Kostal Encoder | TST-PD Encoder | TST-PD Encoder | Mechanical Limit Sw. | Mechanical Limit Sw. | Mechanical Limit Sw. ***Note:-*** Profile 7 is designed for single speed doors 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	Door cycle counter is not plausible (Re-Initialise d 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 (*Continued from page 11*)

General Door Status	
F.000	Door position is too high (above open limit)
F.005	Door 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 (door 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 door 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 (*Continued from page 12*)

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: Open command	P.501 (0101 / 0101)
E.102	Input 2: Stop command	P.502 (0401 / 0401)
E.103	Input 3: Close command	P.503 (0701 / 0701)
E.104	Input 4: Impulse input (single 'GO' command)	P.504 (0201 / 0201)
E.105	Input 5: Photocell	P.505 (0501 / 0501)
E.106	Input 6: Open pre-limit switch / Permanent open command	P.506 (1106 / 0301)
E.107	Input 7: Close pre-limit switch / Auto-Manual select	P.507 (1108 / 0601)
E.108	Input 8: Open limit switch / Lock closed	P.508 (1110 / 0802)
E.109	Input 9: Close limit switch / Cross traffic supression	P.509 (1111 / 0903)
E.110	Input 10: Auto-close ON/OFF	P.50A (1001 / 1001)

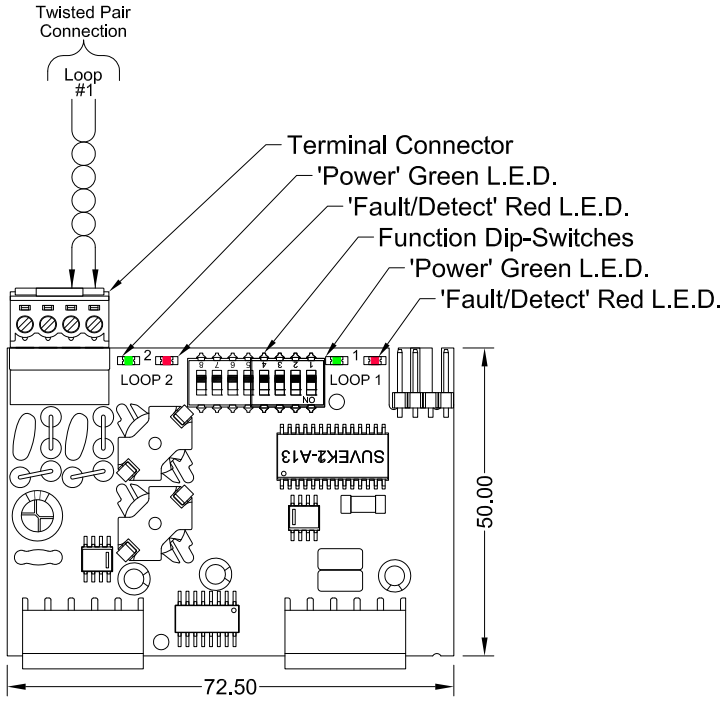
Wireless Plug-in Module	
E.401	Radio Channel 1
E.402	Radio Channel 2

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

TST-SUVEK Plug-In Loop Detector Installation Instructions

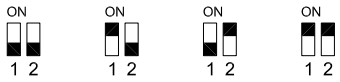
1 Channel Loop Detector Layout
(Stock Code: 37-4051)



DIP-Switch Function Settings
Loop 1:

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

MIN. MAX.



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 3:- Holding Time (5 mins - Infinity)

3 = 5mins 3 = INFINITE

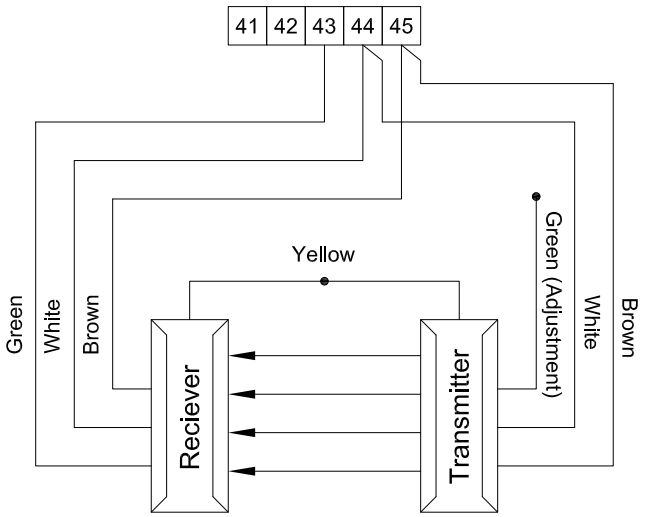
Note:- Loop will recalibrate after 5 minutes constant detection

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

4 = HIGH 4 = LOW

Light Curtain Connections

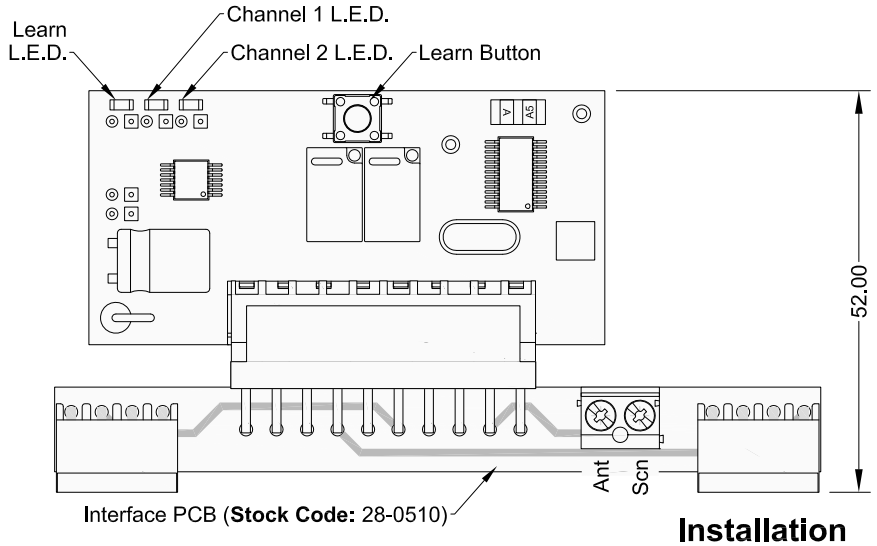
1.6 - 10m Range
X22: (Yellow)



Plug-in 1/2-Channel Radio Card (Stock Code: RR.1(2)WIP(V)) Instructions

Note:- Parameter P.802 must be set to 0202 to enable the Radio Receiver

Circuit Board Layout



Models Covered

Model	Channels	Code
RR.2WIPA	2	Fixed
RR.2WIVA	2	Rolling

Technical Data

Frequency	433.92 MHz
Antenna	Tuned
Power Supply	24VDC
No. of Tx. Codes (Fixed/Rolling)	16/32
Range	30-100m
Channels	2
Relay Contact	1A, 24VDC

Installation

To optimise reception, install the antenna far from obstacles & metal structures. Avoid positioning several receivers together.
Note:- If no antenna is used, reception will be considerably reduced.

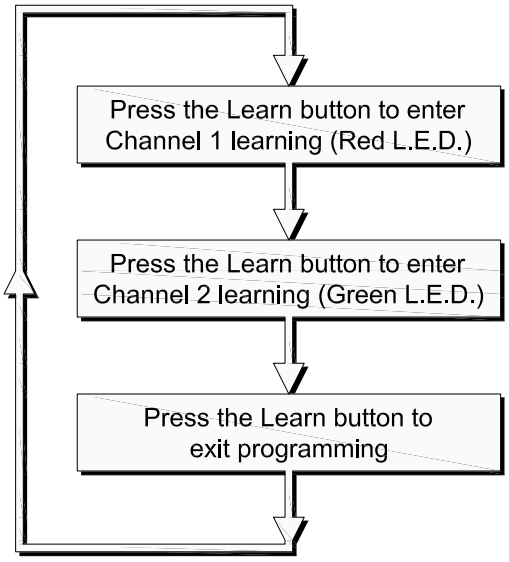
Programming Handsets into the Receiver

Channel 1:
1. Press the 'Learn' button once. The red 'Learn' L.E.D. and red 'Channel 1' L.E.D. will light.
2. Press the transmitter button of the handset to be learnt once.
   The red 'Channel 1' L.E.D. will flash 3 times to confirm that the code learning process was successful.
3. Press the transmitter button of any extra handsets with confirmation as above, or skip to Step 4.
4. Press the 'Learn' button twice to exit Programming mode.

Channel 2:
1. Press the 'Learn' button twice. The red 'Learn' L.E.D. and green 'Channel 2' L.E.D. will light.
2. Press the transmitter button of the handset to be learnt once.
   The green 'Channel 2' L.E.D. will flash 3 times to confirm that the code learning process was successful.
3. Press the transmitter button of any extra handsets with confirmation as above, or skip to Step 4.
4. Press the 'Learn' button twice to exit Programming mode.

Note:- If extra handset DIP codes match those previously learnt then no further programming is required - WIPA version ONLY.

Programming Sequence



Erasing The Memory

1. Remove power to the receiver.
2. Re-apply the power whilst simultaneously depressing the Learn button.
3. Continue to hold the 'Learn' button for 10 seconds. The memory is erased and the Learn L.E.D. will light.

Note:- For full details of the 2-Channel Radio Receiver Card, please request Drawing No. LC-2753.

DECLARATION OF CONFORMITY

Authorised Distributor:
Marantec UK

FEIG ELECTRONIC

FEIG ELECTRONIC GmbH
Lange Straße 4
D- 35781 Weilburg

EC Declaration of conformity

in accordance with the EC Machinery Directive 2006/42/EC, Annexe II A

We declare that the machine

Description	**Gate controller with integrated frequency converter**
Type / trade name	**TST FUZ2**

complies with the relevant provisions of the following directive:

Machinenry Directive	2006/42/EG
EMC Directive	2014/30/EU
Low-Voltage Directive	2014/35/EU

Applicable harmonized standards:

EN ISO 13849-1: 2008	Safety of machinery – safety-related parts of control systems
EN 62061:2005	Safety of machinery – Functional safety of safety-related electrical, electronic and programmable electronic control systems
DIN EN 60335-1:2012	Safety of household and similar electrical appliances
EN 60335-2-103:2003	Safety of household and similar electrical appliances – Special requirements for drives for industrial gates, doors and windows
EN 61000-6-1:2007	EMC: Minimum Technical Standard – immunity to interference (living quarters)
EN 61000-6-2:2006	EMC: Minimum Technical Standard – immunity to interference (industrial sector)
EN 61000-6-3:2011	EMC: Minimum Technical Standard – electromagnetic radiation (living quarters)
EN 61000-6-4:2011	EMC: Minimum Technical Standard – electromagnetic radiation (industrial sector)

Applied national technical standards and specifications:

EN 12453:2001	Safe use of power operated doors - Requirements Chapter 5.2 drive systems and and power supply

Authorized representative for the compilation of the relevant technical documentation:

Weilburg, 19. November 2014

D. Schäfer

Dirk Schäfer, Technical manager VTM

The examination of the type of machine for compliance with the requirements of the EC Machinery Directive was carried out by the

TÜV NORD CERT GmbH
Langemarckstraße 20, D-45141 Essen, Notified Body ID. No.: 0044
Reg.-No.: 44 205 13 132610

This test laboratory is responsible in accordance with Annex XI of the EC Machinery Directive!

This declaration certifies compliance with these regulations, however, it does not entail any warranted qualities. The accompanying product documentation and in particular the safety instructions must be observed.

Commissioning of the gate controller is prohibited until it has been installed on a gate and this gate complies with the provisions of the EC Machinery Directive.

Terminal Connections