

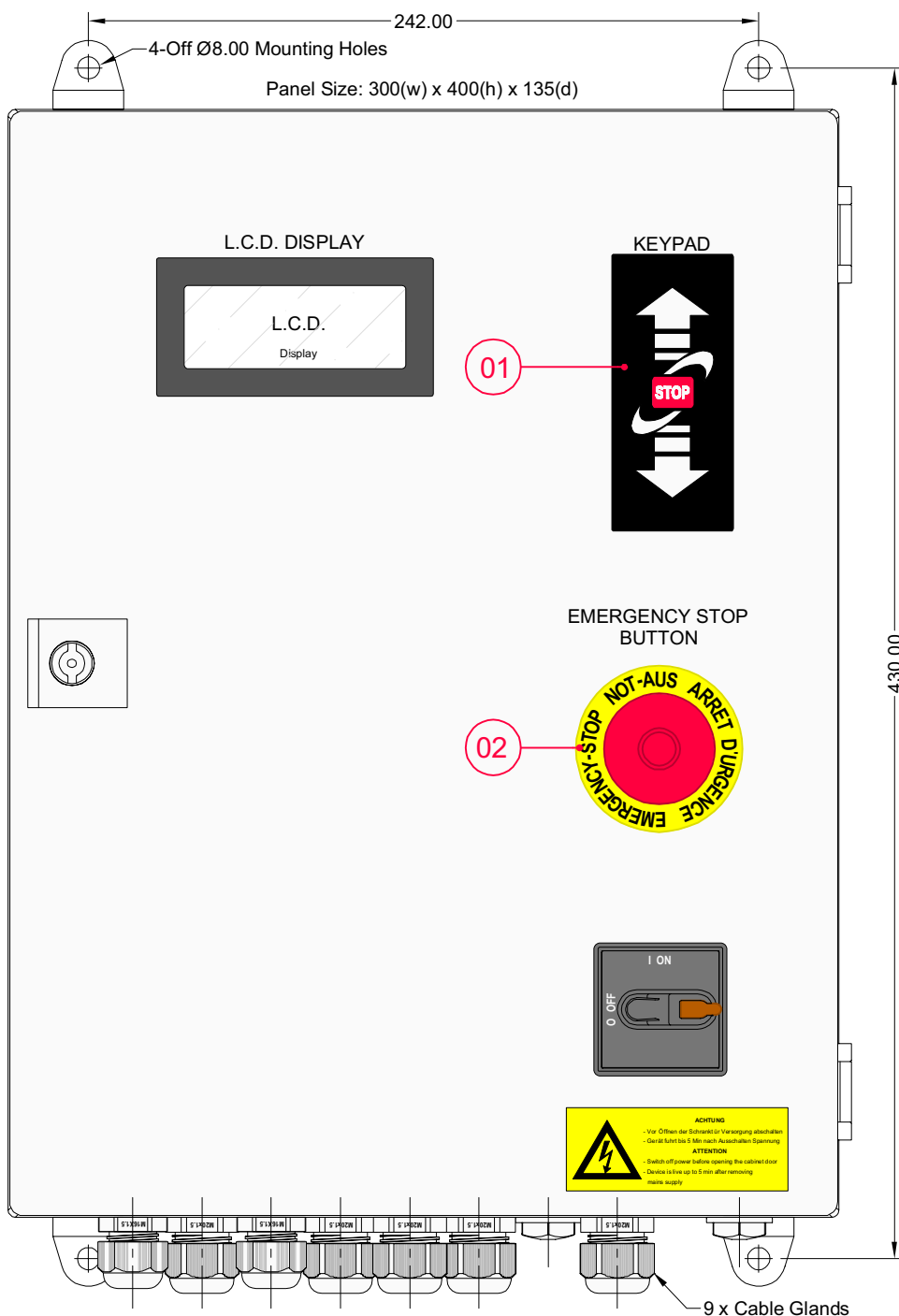
Speed Link Inverter Control Panel User Guide

Model: VST-150 / TST-FUE-2**Stock Code: 40-1142**

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

Note:- Software V4.05

Key:
Please see page 2



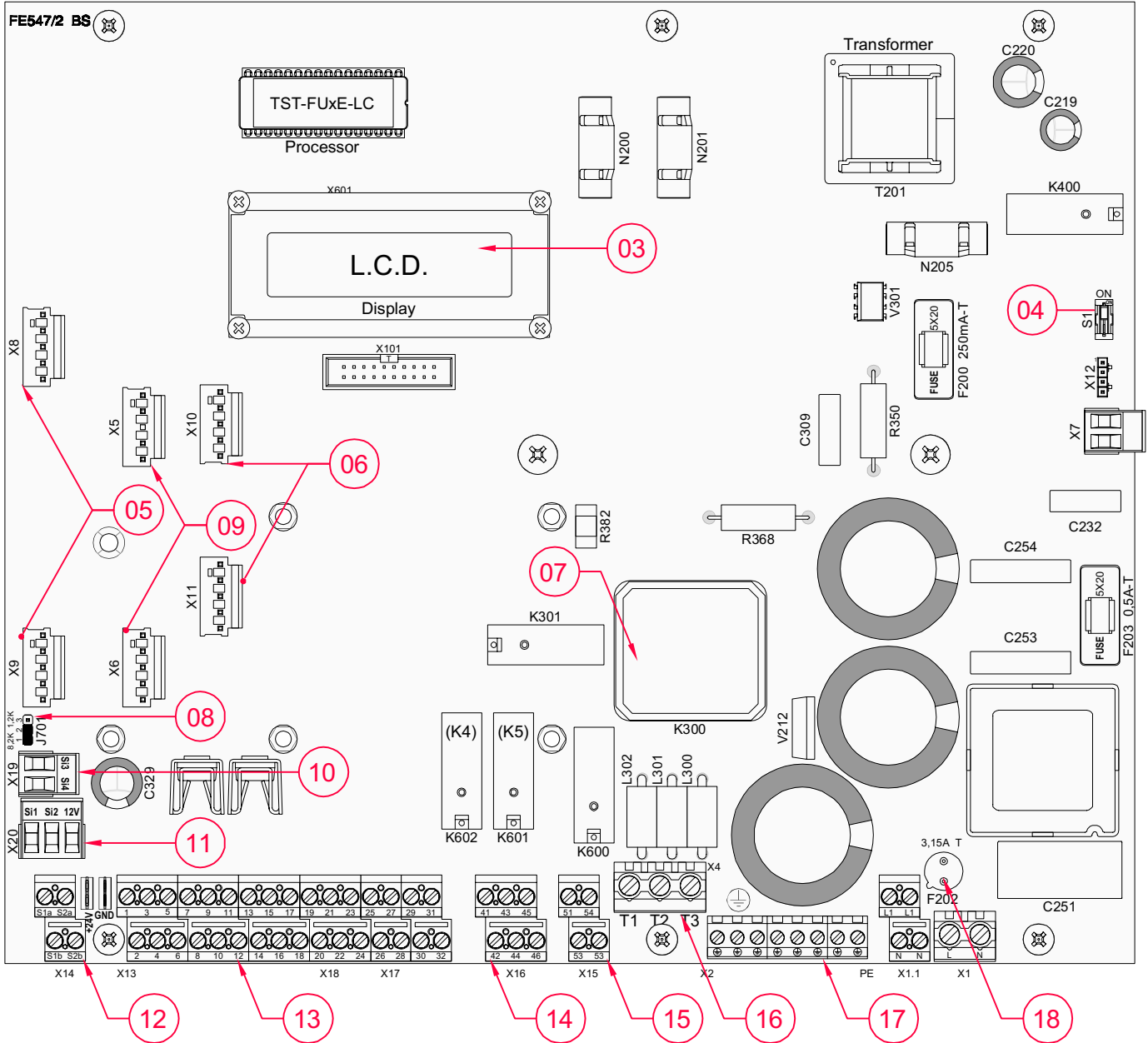
DISCLAIMER: Link Controls Ltd. constantly strives to improve the quality of its goods and as such reserves the right to replace/modify products without prior notification. Any examples given are intended for guidance only.

T: +44 (0)1928 579050
F: +44 (0)1928 579259
www.linkcontrols.co.uk
sales@linkcontrols.co.uk

Link Controls
Marantec

Stuart Rd, Manor Park, Runcorn, Cheshire, WA7 1TS

Drawing No:- LC-1721	Page No:- 1 of 16
Revision No:- P	Rev Date:- 10/06/13
Drawn By:- S.B.P.	Date:- 16/12/99
Checked By:- A.M.	Appr' By:- F.T.



Key	Description
01	Membrane Keypad (See Page 1) - Provides Open/Close & Stop pushbutton operation for personnel
02	Emergency Stop (See Page 1) - Stops the door in an emergency and prevents operation until reset
03	Function/Error Display (L.C.D.)
04	Service Mode Dip Switch 1 (S1) - Allows access to the user selectable parameters
05	Connectors for Plug-in Radio Receiver, via Interface PCB
06	Connectors for Additional Plug-in Conductive Safety Edge
07	Watchdog Relay - Isolates motor terminals under Fail/Emergency Stop conditions
08	End of Line Resistor Selector (for Conductive Edge)
09	Connectors for Plug-in Loop Detector
10	Additional Conductive Edge Terminals (if fitted)
11	Safety Edge Terminals
12	Safety Edge/Loop Detector Terminals
13	Control Terminals
14	Function Relay Terminals
15	Brake Terminals
16	Motor Terminals
17	Earth Terminals
18	Brake Fuse

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; loop detectors and safety edge (conductive, pneumatic or optical); volt-free outputs are also available for signalling purposes.

Installation

Ensure that the panel is mounted on a secure structure adjacent to the door, that will not be affected by vibration of the door and that there is at least 100mm clear space around the enclosure. Consideration should be given to the fact that earth leakage currents may exceed 30mA.

Operation

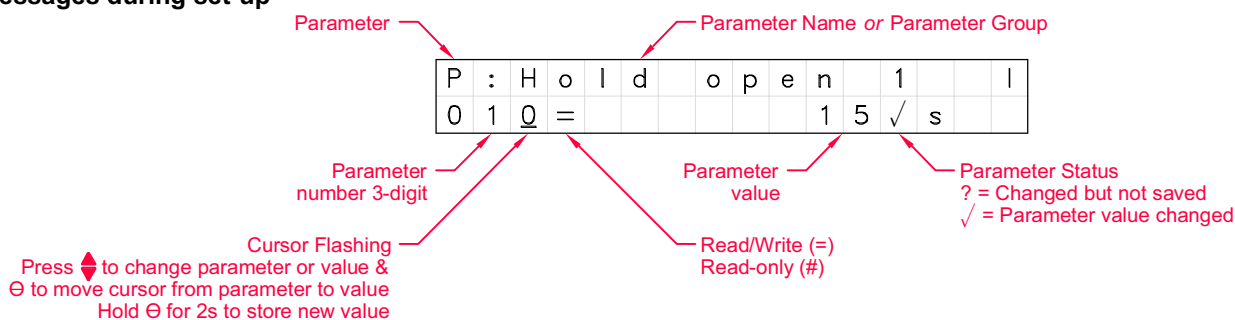
The door may be opened using the Go input, Open pushbutton input, panel mounted keypad button, exit loop or radio (if fitted). The door will open at a slow speed and then smoothly accelerate to fast speed until the intermediate limit is reached, at which point the door will smoothly decelerate for the 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 (if fitted). The door will close at a slow speed and then smoothly accelerate to half speed until the intermediate limit is reached, at which point the door will smoothly 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.

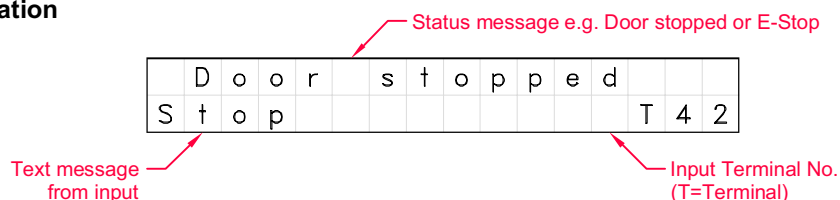
Liquid Crystal Display (L.C.D.)

The L.C.D. is used to display door controller messages in plain text. The basic display structure is explained below.

1. Display messages during set-up

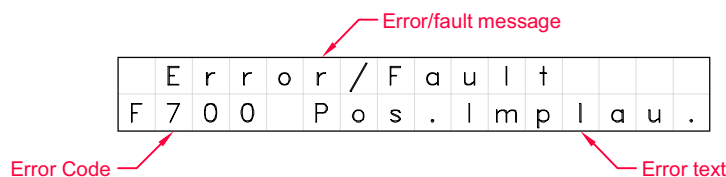


2. Display messages in normal operation



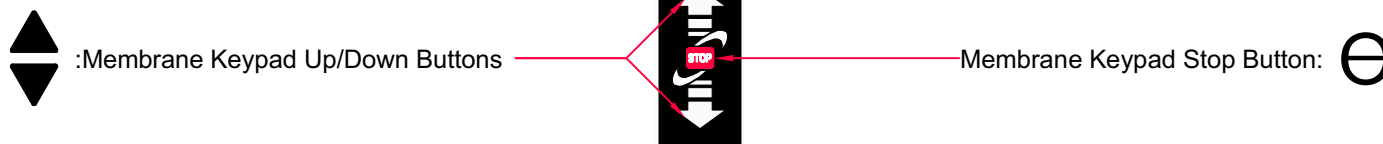
If more than one input is active, these are displayed in sequence

3. Error messages



If more than one input is active, these are displayed in sequence
Relevant inputs are also displayed

Symbol Key:

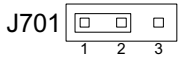


Basic Setup Connections for Electronic Limits

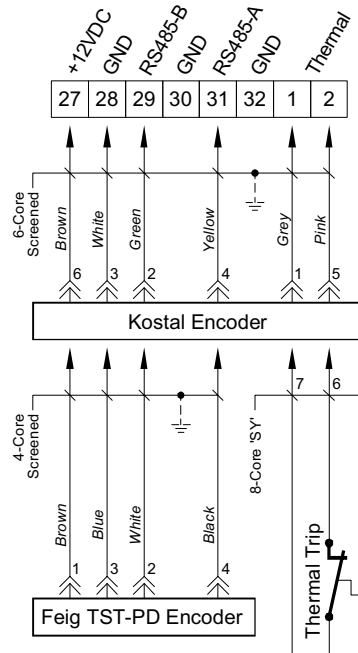
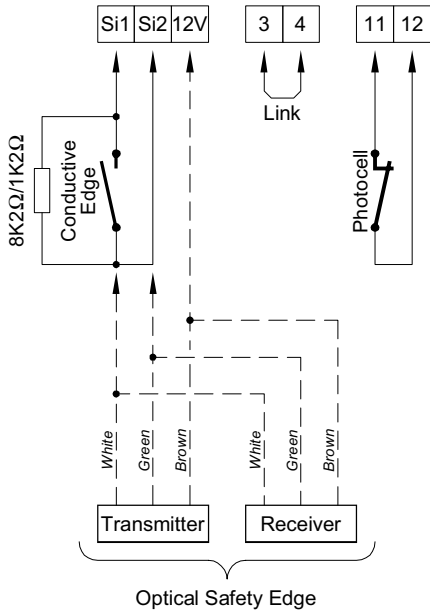
Table 1.2:
P.991 - Door Profiles

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

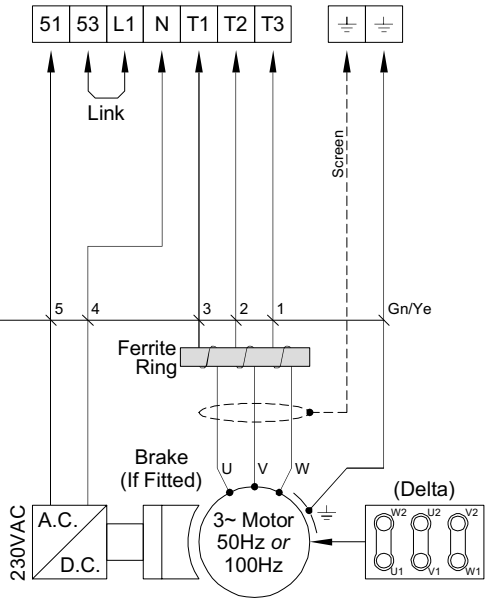
Jumper Settings: Set the position of `J701' to the value of the Conductive Edge resistor



1 & 2: 8K2Ω Resistor
2 & 3: 1K2Ω Resistor

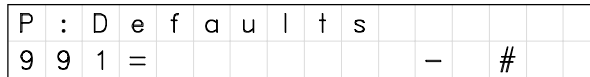


Note:- If the motor travels in the wrong direction, swap `T1` & `T2`

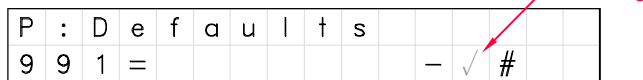


Initial System Setup Profile for Electronic Limits

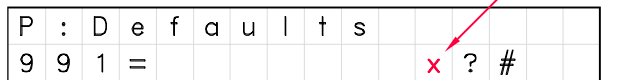
01. Switch off mains power to the panel & wait approximately 5 minutes for the unit to discharge
02. Put D.I.L. Switch 1 into Service Mode (ON position)
03. Operate the panel mounted Emergency Stop latching pushbutton and reapply mains supply
The display will read:-



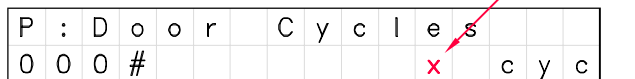
04. Press the membrane keypad Stop button
The display will read:-



05. Use the membrane keypad Up/Down buttons to set P.991 - Door Profiles from Table 1.2 shown above
Note:- Always select a profile suitable to your motor & limit arrangement, before proceeding.
The display will read:-



06. Hold the membrane keypad Stop button until 'X' (factory default) appears on the display
The display will read:-



Note:- Use the membrane keypad Up/Down buttons to scroll through following parameters

07. Select P.100 (Motor Frequency) - Check motor frequency against motor rating plate
08. Select P.101 (Motor Current) - Check motor current against motor rating plate
09. Select P.102 (Power Factor) - Check motor power factor $\cos \phi$ against motor rating plate
10. Select P.103 (Nominal Motor Voltage) - Check Star/Delta (Y/ Δ) configuration against motor rating plate

Initial System Setup Profile for Electronic Limits *(Continued from page 4)*

11. Pull to release the panel mounted Emergency Stop latching pushbutton & operate the door in Deadman
The display will read:-

!	S	e	t	L	i	m	i	t	s	!		
∅	→	∅		T	o	b	e	g	i	n		

12. Press and hold the membrane keypad Stop to begin setting the limits.
The display will read:-

→	◆	T	o	c	l	o	s	e	p	o	s	
		∅		H	o	l	d	∅	i	f	o	k

13. Operate the door to the Closed position then press and hold the membrane keypad Stop button, if okay.
Note:- If the door opens instead of closing, interchange the wires in terminals 'T1' & 'T2'
The display will read:-

→	▲	T	o	o	p	e	n	p	o	s		
		∅		H	o	l	d	∅	i	f	o	k

14. Operate the door to the Open position then press and hold the membrane keypad Stop button, if okay.
15. System setup is complete
The display will read:-

L	i	n	k	C	o	n	t	r	o	l	s		
---	---	---	---	---	---	---	---	---	---	---	---	--	--

Press the Down button to start the limit calibration run. This will close the door at a reduced rate to allow the panel to configure the intermediate limit positions and the optimum acceleration/deceleration ramps.
Once the door has closed the display will indicate several informational messages, reporting the adjustment of the limit positions. The door will now take upto 6 operations to fully calibrate the limits.
Limit calibration is complete when no messages are reported at the limit positions.

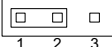
- If the Close Limit needs raising, increase P.221 (125 maximum)
- If the Close Limit needs lowering, decrease P.221 (-125 maximum)
- If the Open Limit needs raising, increase P.231 (60 maximum)
- If the Open Limit needs lowering, decrease P.231 (-60 Maximum)
- If the Intermediate Limits require recalibrating then set P.215 to '1'
- If the Main Limits require resetting then set P.210 to '1'

Basic Setup Connections for Mechanical/Standard Limits

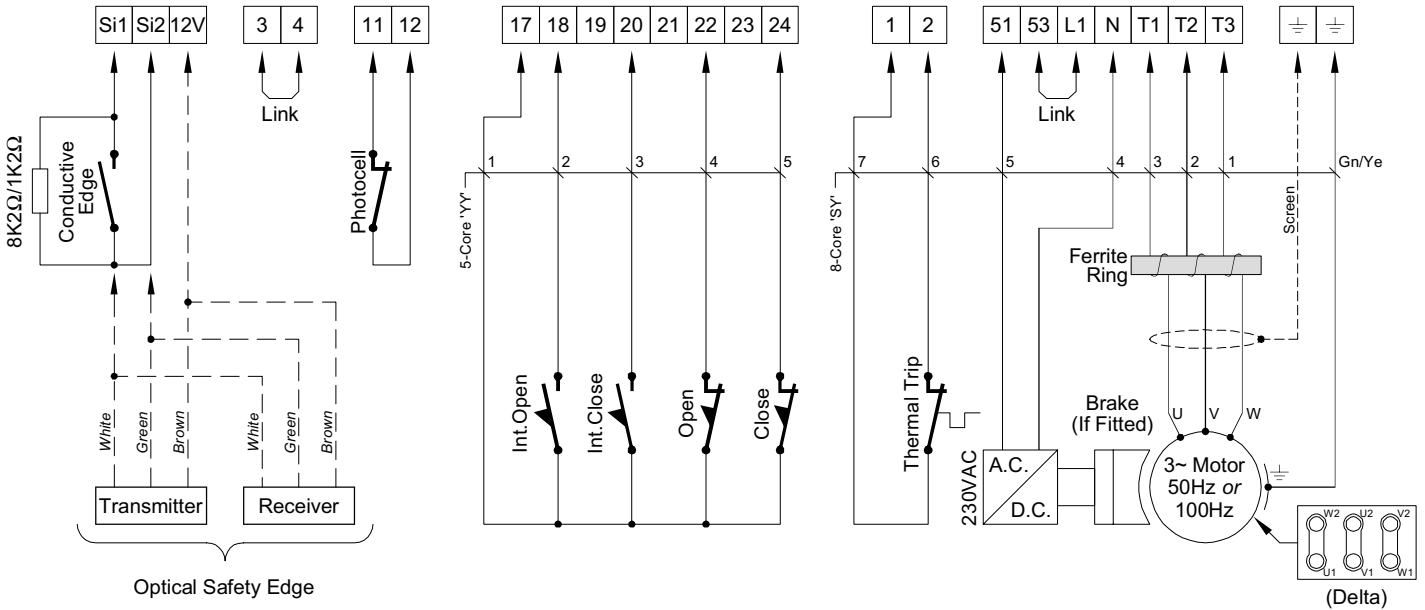
Table 1.1:
P.991 - Door Profiles

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

Jumper Settings: Set the position of `J701` to the value of the Conductive Edge resistor

J701  1 & 2: 8K2Ω Resistor
2 & 3: 1K2Ω Resistor

Note:- If the motor travels in the wrong direction, swap `T1` & `T2`



Initial System Setup Profile for Mechanical Limits

01. Switch off mains power to the panel & wait approximately 5 minutes for the unit to discharge
02. Put D.I.L. Switch 1 into Service Mode (ON position)
03. Operate the panel mounted Emergency Stop latching pushbutton and reapply mains supply
The display will read:-

P	:	D	e	f	a	u	l	t	s				
9	9	1	=							-		#	

04. Press the membrane keypad Stop button
The display will read:-

P	:	D	e	f	a	u	l	t	s				
9	9	1	=							-	✓	#	

Flashing

05. Use membrane keypad Up/Down buttons to set P.991 - Door Profiles from Table 1.1 shown above
Note:- Always select a profile suitable to your motor & limit arrangement, before proceeding.
The display will read:-

P	:	D	e	f	a	u	l	t	s				
9	9	1	=							x	?	#	

Profile No.

06. Hold the membrane keypad Stop until 'X' (factory default) appears on the display
The display will read:-

P	:	D	o	o	r	C	y	c	l	e	s			
0	0	0	#							x		c	y	c

No. of Runs

Note:- Use membrane keypad's Up/Down buttons to scroll through following parameters

07. Select P.100 (Motor Frequency) - Check motor frequency against motor rating plate
08. Select P.101 (Motor Current) - Check motor current against motor rating plate
09. Select P.102 (Power Factor) - Check motor power factor $\cos \phi$ against motor rating plate
10. Select P.103 (Nominal Motor Voltage) - Check Star/Delta (Y/ Δ) configuration against motor rating plate

Initial System Setup Profile for Mechanical Limits *(Continued from page 6)*

11. Pull to release the panel mounted Emergency Stop latching pushbutton & operate the door in Deadman
Display will read:-

J	o	g		M	o	d	e												
								◆											

12. Using the membrane keypad Close button, operate the door until it is approx. 50cm from the fully closed position
Note:- If the door opens instead of closing, interchange the wires in terminals 'T1' & 'T2'

13. Adjust the Intermediate Close limit to actuate at this point
Display will read:-

J	o	g		M	o	d	e												
P	r	e	L	i	m	i	t	C	l	o	s	e	T	2	0				

14. Using the membrane keypad Close button operate the door until it reaches the fully closed position.

15. Adjust the Fully Closed limit switch to actuate at this point
Display will read:-

J	o	g		M	o	d	e												
D	o	o	r		i	s		C	l	o	s	e	d						

16. Using the membrane keypad Open button, operate the door until it is approx. 50cm from the fully open position

17. Adjust the Intermediate Open limit to actuate at this point
Display will read:-

J	o	g		M	o	d	e												
P	r	e	L	i	m	i	t	O	p	e	n	T	1	8					

18. Using the membrane keypad Open button operate the door until it reaches the fully open position

19. Adjust the Fully Open limit switch to actuate at this point
Display will read:-

J	o	g		M	o	d	e												
D	o	o	r		i	s		O	p	e	n								

20. If required adjust the safety Fully Open & Close limits

21. Activate the panel mounted Emergency Stop latching pushbutton

22. Select parameter P.980 and change its value from `2' to `0' (Automatic mode)

23. Pull to release the panel mounted Emergency Stop latching pushbutton

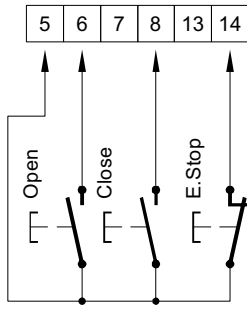
24. Switch off mains power to the panel and wait approximately 5 minutes for the unit to discharge

25. Put D.I.L. Switch 1 out of Service Mode (OFF position)

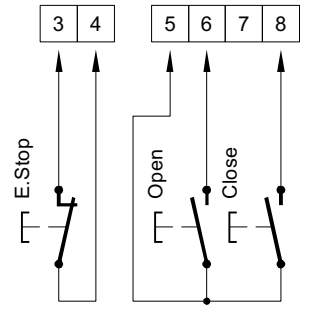
26. Reapply power

27. System Setup is now complete

4-Wire:



5-Wire:



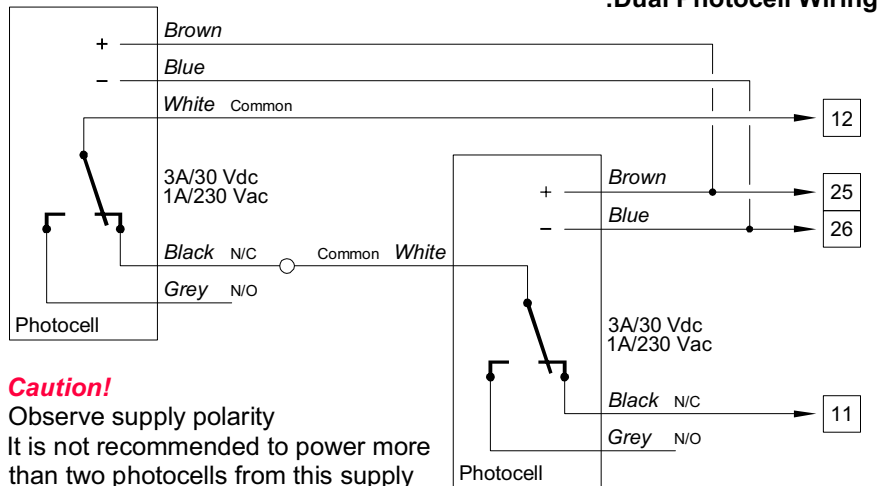
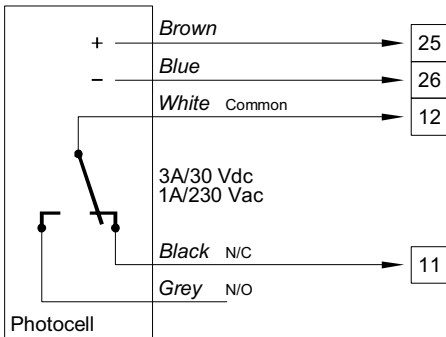
Note:-

By default, Terminals 13 & 14 (i.e. Input 5) are configured as a N/O contact.
Set **Parameter P.552** to 1 to configure input to N/C.

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

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

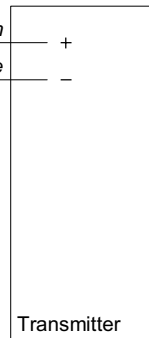
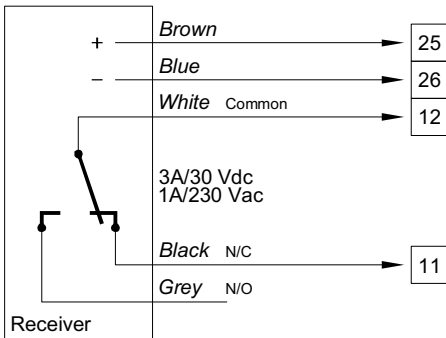
Single Photocell Wiring:



Caution!

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

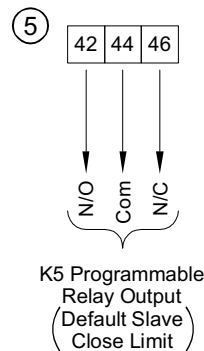
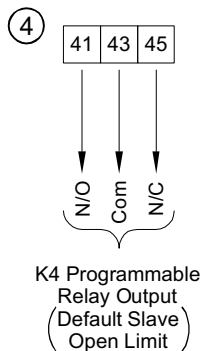
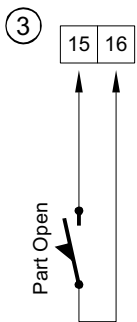
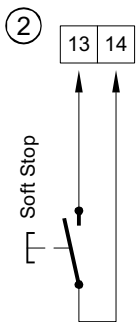
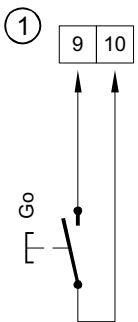
:Dual Photocell Wiring



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

Caution!

Observe supply polarity



1. Provides an Open/Stop/Close function with one input - Suitable for external radio or pullswitch
2. Provides a soft ramp down to a stop position
3. Allows inputs to be programmed to stop at a Part Open position (i.e. Half Open for pedestrians & Full Open for FLT's)
4. Provides a volt-free output suitable for traffic lights, etc.
5. Provides a volt-free output suitable for the interlocking of two doors

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	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	4.8/8.5
P . 102	[%] 40..100	Power Factor Ensure this is set to same value as stated on the Operator Rating Plate	78/85
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 1 :Absolute encoder TST PB-A 2 :Incremental encoders 3 :Absolute encoder DES-A using 19200 baud communication speed 4 :Absolute encoder DES-A using 9600 baud communication speed 5 :SSI encoder (Only with UL version) 6 :Reserved 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:- 0 :Mechanical limit switches - End of travel limits are N/C, Intermediate limits are N/O 1 :Mechanical limit switches - All limits are processed as N/C 8 :Feig TST-PD Encoder	0/7/8

Programming the End Positions with Electronic Limit Switches			
P . 210	0..5	Selecting the position 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 . 3 1 0	[Hz] 6..200	Frequency for automatic opening speed Operating frequency until Open pre-limit switch position - Adjust pre-limit switch, if necessary	50/100
P . 3 5 0	[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 . 3 9 0	[Hz] 6..100	Frequency for Deadman/Jog mode Opening speed Parameter P.999 must be set to 3 to access this parameter	25/30/50
P . 3 9 5	[Hz] 6..100	Frequency for Deadman/Jog mode Closing speed Parameter P.999 must be set to 3 to access this parameter	25/30/50

Run Timer Parameters			
P . 4 1 0	E[s] 0..9900	Opening Run Timer 0 :Switched Off Parameter P.999 must be set to 3 to access this parameter	15
P . 4 1 5	[s] 0..9900	Closing Run Timer 0 :Switched Off Parameter P.999 must be set to 3 to access this parameter	15
P . 4 1 9	[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 . 4 3 0	[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 . 4 4 0	[Ink] -60..999	Position for safety edge pre-close limit switch position Reduce value to increase travel	10
P . 4 5 0	[s] 0.25..3.0	Lag error when using electronic limits	2
P . 4 6 1	0.4	0 :No deactivation 2 :Deactivation after reaching pre-limit 3 :Deactivation after reaching position set below (P.4b3)	0
P . 4 6 3	0..9999	Position to deactivate photocells Note:- 0 is fully closed	0

Safety Edge Parameters			
P . 4 6 0	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 system (e.g. Electric Edge) 2 :ON - N/C system (e.g. Pneumatic Edge) 3 :ON with self testing - N/O system (e.g. Tests edge on each closing) 4 :ON with self testing - N/C system (e.g. Tests edge on each closing) 5 :Dynamic Optical System 6 :Auto Detect Parameter P.999 must be set to 3 to access this parameter	6
P . 4 6 1	[cnt] 0..5	Maximum number of operations of the Safety Edge 0 :OFF - Unlimited number of operations allowed >0 :ON - Inverter will fail into `Deadman` operation mode after a set number of operations Parameter P.999 must be set to 3 to access this parameter	3
P . 4 6 2	0..2	Function of the Safety Edge 0 :Stop on Safety Edge, Starting from Safety Edge Pre-Close Limit (P.440) 1 :Ignore Safety Edge, Starting from 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

Relay Output Parameters			
P . 7 0 4 (Relay K4) & P . 7 0 5 (Relay K5)	0..8	Output profile:- 0000 :Relay deactivated 0101 :Door is in the upper end position (Open) 0201 :Door is in the lower end position (Closed) 0401 :No failure active, automatic mode 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	X

Standard Parameters *(Continued from page 10)*

Parameter Display	Adj. Range	Parameter Function	Factory Setting
TST-RFUxE Expansion Board			
P . 8 0 0	0..1	Activates the TST-RFUxE Expansion Board:- 0 :Board deactivated 1 :Board activated	0

Diagnostic Parameters			
P . 9 1 0	0..13	Selection of Display Mode (by Stop button whilst motor is running) 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 . 9 2 0	E b E b E b E b E b c i E b	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	0
P . 9 4 0	[V]	Displays present supply voltage	-

Operating Modes			
P . 9 8 0	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)	2

Parameter Adjustment Modes																											
P . 9 9 0	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 . 9 9 1	0..12	Door Profile Settings:- <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Profile No.</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> </tr> </thead> <tbody> <tr> <td>Frequency</td> <td>50Hz</td> <td>100Hz</td> <td>50Hz</td> <td>100Hz</td> <td>50Hz</td> <td>100Hz</td> <td>50Hz</td> </tr> <tr> <td>Limit Type</td> <td>Kostal Encoder</td> <td>Kostal Encoder</td> <td>TST-PD Encoder</td> <td>TST-PD Encoder</td> <td>Mechanical Limit Sw.</td> <td>Mechanical Limit Sw.</td> <td>Mechanical Limit Sw.</td> </tr> </tbody> </table> Note:- Profile 7 is designed for single speed doors with just Open & Close mechanical limits. This is suitable when using an inverter with battery back-up	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.	0
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.																				
P . 9 9 9	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

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

General Door Status	
F .0	
F .000	Upper door position is outside of permitted range
F .005	Lower door position is outside of permitted range
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)
F .031	Detected rotation direction deviates from expected direction of rotation
F .043	Failure of pre-limit switch for the photocell
F .050	Reference switch position deviates from the stored range by more than 15 %

Safety/Emergency Stop Chain			
F .2			
F .201	Internal Emergency Stop "Mushroom Key" or Watchdog (μ Processor safety check) is triggered		
F .211	External Emergency Stop 1 is triggered (Terminals 1 & 2)		
F .212	External Emergency Stop 2 is triggered (Terminals 3 & 4)		
F .3	Internal Evaluator	F .3	Additional Plug-in Evaluator
F .360	Short circuit at strip input	F .371	Number of trips exceeded
F .361	Number of trips exceeded	F .372	Redundancy error trip
F .362	Error - Safety edge is short circuit	F .373	Malfunction of plug-in module
F .363	Error - Safety edge is open circuit	F .374	Testing in end position failed
F .364	Testing in end position failed	F .379	Module recognition faulty
F .365	Redundancy error open circuit	F .385	Pre-limit safety switch unavailable (Remains off in Eo)

General Hardware	
F .4	
F .400	Hardware reset of control system has been recognized
F .410	Excess current (motor current or FU- overall current)
F .420	Excess voltage in DC-bus circuit
F .425	Excess line voltage
F .430	Excess temperature of heatsink
F .440	Excess DC current

General Hardware Failures/Errors	
F .5	
F .510	Over current
F .515	Motor protection has detected excess current
F .519	IGBT driver component has detected excess current
F .520	Excess voltage in intermediate circuit
F .521	Under voltage in intermediate circuit
F .524	External 24V supply is missing (possibly short circuit)
F .525	Excess line voltage
F .530	Over temperature of heat sink
F .540	Over temperature of brake resistor

General Positioning	
F .7	
F .700	Position indication error (e.g. Upper & Lower limits switch simultaneously or internal limits are wired N/C)
F .720	Synchronization of position indication by incremental detection
F .750	Data transmission error
F .751	Synchronization FUE <_> Absolute encoders
F .752	Time out during data transmission
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

Display Messages & Fault Codes *(Continued from page 12)*

F . 9	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	Check sum via calibration values
F . 922	Incomplete emergency stop chain	F . 962	Converter parameter not plausible
F . 930	External watchdog is defective	F . 963	Ramp parameter not plausible
F . 931	ROM error	F . 964	New program version
F . 932	RAM error	F . 970	Parameter processing is disturbed

Information Messages during Automatic Operation	
I . 100	Too much speed when upper end of travel is reached
I . 150	Too much speed when lower end of travel is reached
I . 160	Permanent open is still active
I . 199	Door cycle counter is not plausible (Re-Initialize → parameters)
I . 200	Reference position has been recognized & taken over (for the first time)
I . 201	Reference position is deleted, ready for new take over
I . 205	Synchronization of present end of travel

E . 0	General Inputs	
E . 000	Open key on keypad	
E . 050	Stop key on keypad	
E . 090	Close key on keypad	
E . 1	Standard Configuration (See also P.5xxx)	Configuration Parameter
E . 101	Input 1: Open command	P.51x
E . 102	Input 2: Close command	P.52x
E . 103	Input 3: Single channel command (Impulse)	P.53x
E . 104	Input 4: Light barrier/photocell	P.54x
E . 105	Input 5: External soft stop	P.55x
E . 106	Input 6: Part open limit/Reference switch	P.56x
E . 107	Input 7: Internal open limit switch	P.57x
E . 108	Input 8: Internal close limit switch	P.58x
E . 109	Input 9: Full open limit/Incremental	P.59x
E . 110	Input 10: Full close limit/Incremental	P.60x

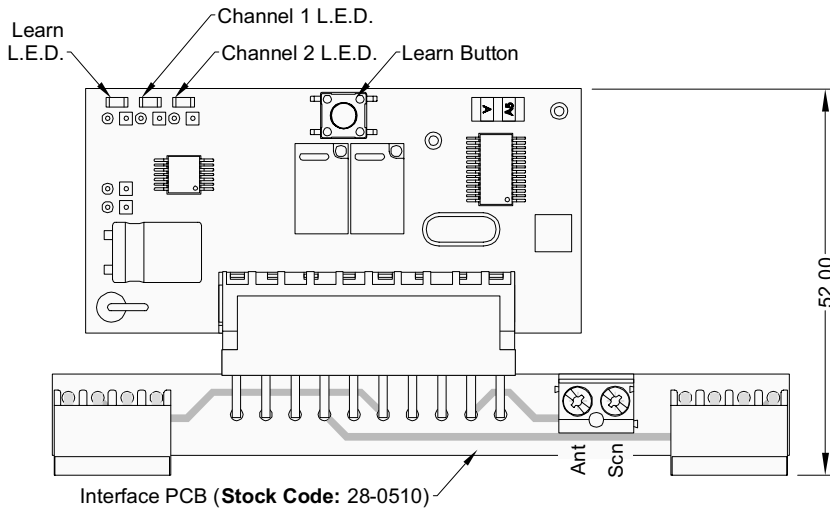
E . 4	Wireless Plug-in Module	
E . 401	Radio Channel 1	
E . 402	Radio Channel 2	

E . 5	Induction Loop Evaluation Device - Plug-in Module	
E . 501	Detector Channel 1	
E . 502	Detector Channel 2	

E . 9	Internal Inputs	
E . 900	Fault signal of triggering component	

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

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:

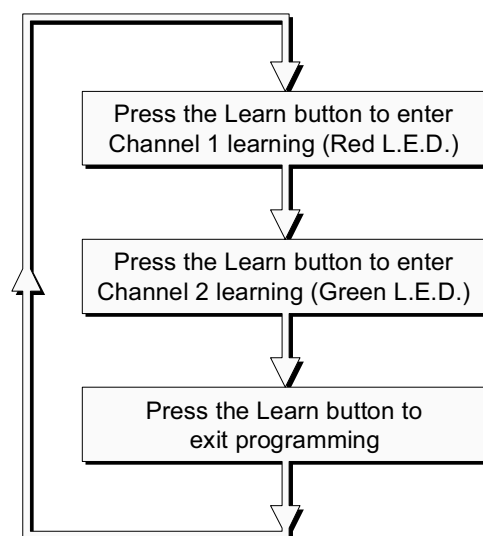
1. Press the 'Learn' button once. The red 'Learn' L.E.D. and red 'Channel 1' L.E.D. will light.
2. Press the transmitter button of the handset to be learnt once.
The red 'Channel 1' L.E.D. will flash 3 times to confirm that the code learning process was successful.
3. Press the transmitter button of 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.

EC Declaration of Incorporation

Manufacturer:

Link Controls, Stuart Road, Manor Park, Runcorn, Cheshire, WA71TS

We hereby declare that the products described below:

VST-150 (TST-FUE2)

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	Safety in use of power operated doors - Requirements
EN 12978	Safety devices for power operated doors and gates - requirements
EN 60335-1	Household and similar electrical appliances – Safety
EN 60335-2-103	Household and similar electrical appliances – Safety: particular requirements for drives for gates, doors and windows
EN 61000-6-1	Electromagnetic compatibility (EMC) - Part 6-1
EN 61000-6-2	Electromagnetic compatibility (EMC) - Part 6-2
EN 61000-6-3	Electromagnetic compatibility (EMC) - Part 6-3
EN 61000-6-4	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:

Link Controls, Stuart Road, Manor Park, Runcorn, Cheshire, WA71TS

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:

Runcorn, 02/01/2013

Manufacturer's signature:



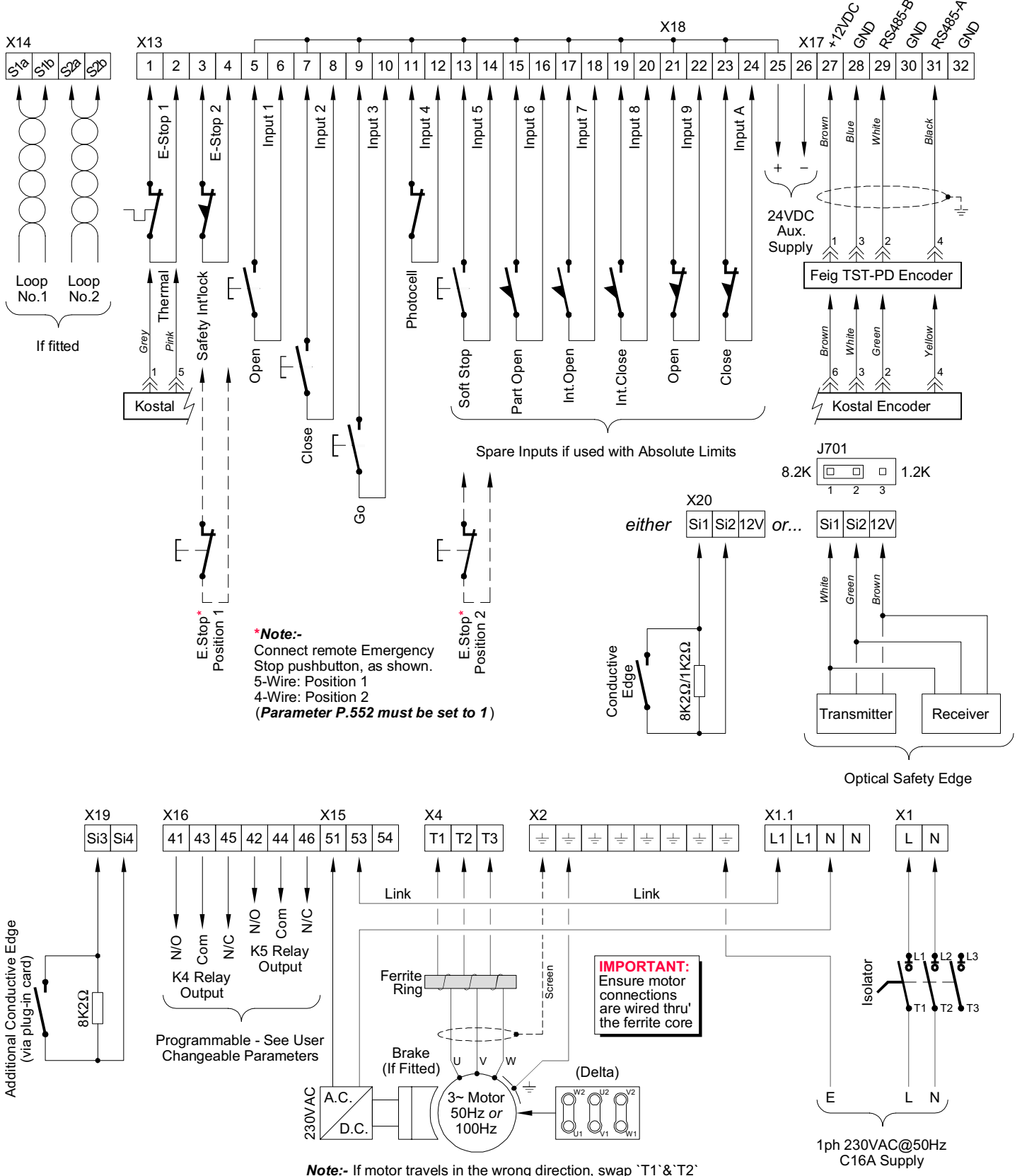
Mr Andrew Molloy

Position of signatory:

Technical Director



Terminal Connections



Note:- If motor travels in the wrong direction, swap 'T1' & 'T2'

Power Connections

- 'X15' Brake:** Connect a 230VAC Brake to terminals '51' & 'N'. **Note:-** Link Terminals '53' & 'L1'.
- 'X4' Motor:** Connect a 3ph Motor to terminals 'T1', 'T2' & 'T3'. Ensure that the motor windings are connected in 'Delta', unless motor is 100Hz type, which can be run in either 'Star' or 'Delta'.
- 'Isolator' Mains Supply:** Connect a 230VAC/1ph/Neutral/Earth supply, protected by a 16A single pole MCB type 'C' or 'D', to the control panel via isolator terminals '2/T1', '4/T2' & 'E'.

Cabling Requirements (Note:-

The following cable specification is for runs of 12m or less)
 Terminals 'T1'(U), 'T2' (V) & 'T3' (W) require screened 1.5mm² cable, with the screen/braid terminated to Earth.
 Terminals '27'-'31' (Encoder) require screened data cable (RS485), with the screen/braid terminated to Earth.
 Terminals '1'-'46' are 24VDC control and may be connected in multicore.

IMPORTANT: The motor cables & control cables **MUST** be in separate multicores.