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## Inverter control panels – 3 phase output



The variable speed motor control panel offers a neat motor control solution whilst utilising the energy saving facilities of a variable speed drive. This range of panels uses the Mitsubishi FR-D720S range of inverters to allow speed control to the motor output.

The panels can be installed easily with just the supply and output cables required for the installation, as the control panel offers complete speed and rotation control without any other constraints.

Each variable speed drive motor control panel uses an IP54 Rittal enclosure with thermal cooling, panel isolation facility and overload protection, whilst having the control facilities located on the front of the door. Located on the front of the panel are isolation, start/stop control, forward and reverse control and a 3 position speed selector switch or alternatively a dial option is available.

Frequency speeds can be pre-programmed on ordering to allow this product to be a complete 'plug and play' solution.

### Features

- Enclosure rated to IP54 with cooling of components for longer life expectancy
- Mitsubishi FR-D720S variable speed drive and EMC filter
- Interlocked isolator
- Start/stop switch
- Forward/reverse selector switch
- 3 position speed selector switch or variable speed dial on request
- Inverter run indication
- Complete panel and connection diagrams supplied
- Pre-programmed speeds requested on ordering
- Technical support and after sales assistance

## 230V a.c./50Hz single phase input

### Technical information

Output range . . . . . 0.1 to 2.2kW  
 Frequency range . . . . . 0.2 to 400Hz  
 Power supply requirements . . . . . 230V a.c./50Hz live, neutral and earth  
 Protection . . . . . IP54  
 Safety . . . . . Stop category 0 to BS EN 60204 (run down uncontrolled stop via disconnection of supply)

Description	Order Code	List Price
0.1kW inverter control panel	D0014	£941.44
0.2kW inverter control panel	D0015	£951.61
0.4kW inverter control panel	D0016	£961.76
0.75kW inverter control panel	D0017	£982.09
1.5kW inverter control panel	D0018	£1,060.86
2.2kW inverter control panel	D0019	£1,205.71

## 415V a.c./50Hz three phase input

### Technical information

Output range . . . . . 0.4 to 7.5kW  
 Frequency range . . . . . 0.2 to 400Hz  
 Power supply requirements . . . . . 415V a.c./50Hz live, neutral and earth  
 Protection . . . . . IP54  
 Safety . . . . . Stop category 0 to BS EN 60204 (run down uncontrolled stop via disconnection of supply)

Description	Order Code	List Price
0.4kW inverter control panel	D0032	£1,091.42
0.75kW inverter control panel	D0033	£1,110.78
1.5kW inverter control panel	D0034	£1,134.98
2.2kW inverter control panel	D0035	£1,275.34
3.7kW inverter control panel	D0036	£1,421.75
5.5kW inverter control panel	D0037	£1,673.43
7.5kW inverter control panel	D0038	£1,887.60

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## Inverter control panels – 3 phase output with safety, wiring integrity 2



The variable speed motor control panel offers a neat motor control solution whilst utilising the energy saving facilities of a variable speed drive. This range of panels uses the Mitsubishi FR-D720S range of inverters to allow speed control to the motor output.

The panels incorporate safety systems wired to category 2 wiring integrity to BS EN 13849-1 and stop category of BS EN 60204. They can be installed easily with just the supply and output cables required for the installation, as the control panel offers complete speed and rotation control without any other constraints.

Each variable speed drive motor control panel uses an IP54 Rittal enclosure with thermal cooling, panel isolation facility and overload protection, whilst having the control facilities located on the front of the door. Located on the front of the panel are isolation, start/stop control, forward and reverse control and a 3 position speed selector switch or alternatively a dial option is available.

Frequency speeds can be pre-programmed on ordering to allow this product to be a complete 'plug and play' solution.

### Features

- Enclosure rated to IP54 with cooling of components for longer life expectancy
- Mitsubishi FR-D720S variable speed drive and EMC filter
- Interlocked isolator
- Start/stop switch
- Forward/reverse selector switch
- 3 position speed selector switch or variable speed dial on request
- Inverter run indication
- Emergency stop facility and reset facility
- Complete panel and connection diagrams supplied
- Pre-programmed speeds requested on ordering
- Technical support and after sales assistance

## 230V a.c./50Hz single phase input

### Technical information

Output range . . . . . 0.1 to 2.2kW  
 Frequency range . . . . . 0.2 to 400Hz  
 Power supply requirements . . . . . 230V a.c./50Hz live, neutral and earth  
 Protection . . . . . IP54  
 Safety . . . . . Stop category 1 to BS EN 60204 (controlled stop via inverter and then disconnection of supply)

Description	Order Code	List Price
0.1kW inverter control panel	D0020	£1,275.34
0.2kW inverter control panel	D0021	£1,286.23
0.4kW inverter control panel	D0022	£1,294.70
0.75kW inverter control panel	D0023	£1,316.48
1.5kW inverter control panel	D0024	£1,395.13
2.2kW inverter control panel	D0025	£1,541.54

## 415V a.c./50Hz three phase input

### Technical information

Output range . . . . . 0.4 to 7.5kW  
 Frequency range . . . . . 0.2 to 400Hz  
 Power supply requirements . . . . . 415V a.c./50Hz live, neutral and earth  
 Protection . . . . . IP54  
 Safety . . . . . Stop category 1 to BS EN 60204 (controlled stop via inverter and then disconnection of supply)

Description	Order Code	List Price
0.4kW inverter control panel	D0039	£1,896.07
0.75kW inverter control panel	D0040	£1,915.43
1.5kW inverter control panel	D0041	£1,939.63
2.2kW inverter control panel	D0042	£2,040.06
3.7kW inverter control panel	D0043	£2,152.59
5.5kW inverter control panel	D0044	£2,474.45
7.5kW inverter control panel	D0045	£2,694.67

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## Inverter control panels – 3 phase output with safety, wiring integrity 4



The variable speed motor control panel offers a neat motor control solution whilst utilising the energy saving facilities of a variable speed drive. This range of panels uses the Mitsubishi FR-D720S range of inverters to allow speed control to the motor output.

The panels incorporate safety systems wired to category 4 wiring integrity to

BS EN 13849-1 and stop category of BS EN 60204. They can be installed easily with just the supply and output cables required for the installation, as the control panel offers complete speed and rotation control without any other constraints.

Each variable speed drive motor control panel uses an IP54 Rittal enclosure with thermal cooling, panel isolation facility and overload protection, whilst having the control facilities located on the front of the door. Located on the front of the panel are isolation, start/stop control, forward and reverse control and a 3 position speed selector switch or alternatively a dial option is available.

Frequency speeds can be pre-programmed on ordering to allow this product to be a complete 'plug and play' solution.

### Features

- Enclosure rated to IP54 with cooling of components for longer life expectancy
- Mitsubishi FR-D720S variable speed drive and EMC filter
- Interlocked isolator
- Start/stop switch
- Forward/reverse selector switch
- 3 position speed selector switch or variable speed dial on request
- Inverter run indication
- Emergency stop facility and reset facility
- Complete panel and connection diagrams supplied
- Pre-programmed speeds requested on ordering
- Technical support and after sales assistance

## 230V a.c./50Hz single phase input

### Technical information

Output range . . . . . 0.1 to 2.2kW  
 Frequency range . . . . . 0.2 to 400Hz  
 Power supply requirements . . . . . 230V a.c./50Hz live, neutral and earth  
 Protection . . . . . IP54  
 Safety . . . . . Stop category I to BS EN 60204 (controlled stop via inverter and then disconnection of supply)

Description	Order Code	List Price
0.1kW inverter control panel	D0026	£1,308.01
0.2kW inverter control panel	D0027	£1,317.69
0.4kW inverter control panel	D0028	£1,329.79
0.75kW inverter control panel	D0029	£1,349.15
1.5kW inverter control panel	D0030	£1,468.94
2.2kW inverter control panel	D0031	£1,615.35

## 415V a.c./50Hz three phase input

### Technical information

Output range . . . . . 0.4 to 7.5kW  
 Frequency range . . . . . 0.2 to 400Hz  
 Power supply requirements . . . . . 415V a.c./50Hz 3 phase and earth  
 Protection . . . . . IP54  
 Safety . . . . . Stop category I to BS EN 60204 (controlled stop via inverter and then disconnection of supply)

Description	Order Code	List Price
0.4kW inverter control panel	D0046	£1,928.74
0.75kW inverter control panel	D0047	£1,948.10
1.5kW inverter control panel	D0048	£1,973.51
2.2kW inverter control panel	D0049	£2,073.94
3.7kW inverter control panel	D0050	£2,186.47
5.5kW inverter control panel	D0051	£2,547.05
7.5kW inverter control panel	D0052	£2,769.69

# Complete control panel for level control



The D0060 control panel provides quick, simple installation with effective results for a wide range of level control applications. The control panel is supplied with a Pepperl+Fuchs level probe for high or low level monitoring and is pre-configured to your specific requirements.

The D0060 control panel can be used for automatic or manual level control, with a warning alarm beacon to provide additional safety functionality.

### Features

- Full isolation of control panel, local isolator
- Emergency stop of output motor safety relay to stop category 0 (wired to BS EN 13849-1 Category 2 wiring integrity)
- Automatic or manual level control using a Pepperl+Fuchs 3 probe level sensor for non-hazardous areas
- High and low level monitoring with warning alarm beacon and muting feature
- Includes all installation drawings and functionality/application notes

### Technical information

#### Control panel

Supply . . . . . 415V a.c., 3 phase and earth  
 Control voltage . . . . . 24V d.c.  
 Dimensions . . . . . h380 x w380 x d210  
 Enclosure protection . . . . . IP 44  
 Output power . . . . . Power output rating to be determined by size of required output pump motor

Safety stop category to BS EN 60204: . . . . . 0  
 Safety wiring integrity to BS EN 13849-1: . . . . . Category 2  
 Performance level to BS EN 13849-1: . . . . . C

#### Level probe

Part no . . . . . LKL-PI-1-GS3C-PINAN-NA  
 Type . . . . . 3 pin conductive level probe  
 Standard length . . . . . 1000mm  
 Process connection . . . . . G1½" DIN 228/1 PPS (complete with locking nut)  
 Housing . . . . . Plastic with M20 gland for non-hazardous environments  
 Protection rating . . . . . IP66

*To be used in conjunction with level control panel. Level of high or low limit is determined by the customer, with the level probe cut to suit.*

The control panels are built using high quality components from the following suppliers:



Description	Order Code	List Price
Basic level control panel	D0060	£1,397.55

*Custom configurations are available on request. Technical support and advice is available, please call 01254 685900 and ask to speak to one of our technical support engineers.*

## Application example

Level control for filling or emptying a tank

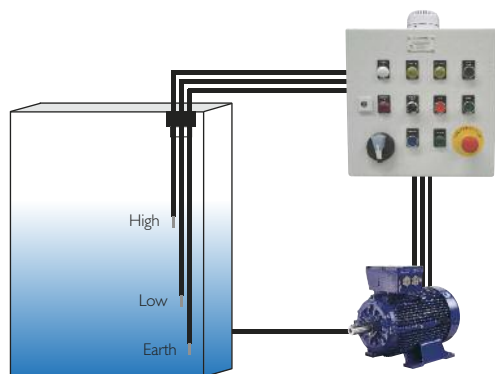
### Filling the tank

Low level probe in the ON position and the high level control probe in the off position. When the liquid reaches the lower probe the level controller will switch the pump motor on, filling the tank until the high level probe is reached.

### Emptying the tank

High level probe in the on position and the low level probe in the ON position. This will switch the pump motor on, emptying the tank until the low level probe contact is broken.

*For high or low level control, the mains 415V supply, pump motor and level probe are wired into the control panel.*



# Complete temperature control panel with safety, wiring integrity 2



Whatever your temperature control application, the D006 I control panel provides an easy-to-install and easy-to-use solution.

Built using high quality components, each control panel is pre-configured and supplied with pre-set temperature and alarm set points for your specific requirements.

The D006 I control panel can be used for high or low temperature control, with a warning alarm beacon to provide additional safety functionality.

## Features

- Full isolation of control panel with local isolator
- Emergency stop/disconnection of output heating element via safety relay (wired to BS EN 13849-1 Category 2 wiring integrity)
- Automatic temperature control with pre-defined set points and alarms
- High/over temperature monitoring with warning alarm beacon and muting feature
- Includes all installation drawings and functionality/application notes

The control panels are built using high quality components from the following suppliers:










## Technical information

### Control panel

Power supply	230V a.c. single phase and earth @ 50Hz
Control voltage	24V d.c.
Dimensions	h380 x w380 x d210
Enclosure protection	IP 44
Temperature range	0 to +1800°C
Sensor types	Thermo-couples B, J, K, L, N, R, S, T, RTD
Inputs	PT 100
Output power	Power output rating to be determined by size of required output heating element

### Safety information

Safety wiring integrity to	BS EN 13849-1: Category 2
Performance level to	BS EN 13849-1: C

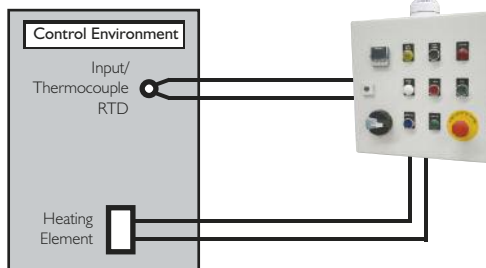
Description	Order Code	List Price
Basic temperature control panel	D0061	£1,113.20

Custom configurations are available on request. Technical support and advice is available, please call 01254 685900 and ask to speak to one of our technical support engineers.

## Application example

### Temperature controller functionality

The temperature controller has pre-defined temperature set points to enable and disable the output heating element. When the temperature drops below the pre-defined set point, the heating element is enabled which heats the specified area. An additional sensor in the controlled heating area will enable the temperature controller to disable the heating element when the upper temperature point has been reached. This closed loop control method accurately maintains the temperature and the alarm function provides additional safety. The high temperature alarm function ensures that if the controlled area is becoming too hot, there will be a visual and audible alarm and the heating element will be disconnected automatically. The controller will need to be reset, when the temperature has returned to its specified range.



For instant temperature control the mains 230V supply, output heating element and temperature sensing device are wired into the control panel.

# Safety edge/mat control panel with emergency stop feature



The D0062 ready built safety edge/mat control panel offers the end user quick, simple machine integration with effective results.

### Features

- Full isolation of control panel, local isolator
- 2 safe input channels
- Emergency stop/disconnection of output switching device via emergency stop or depression of mat or safety edge (wired to BS EN 13849-1 Category 3 wiring integrity)
- One emergency stop as standard (expandable to suit machine needs)
- Will control one safety edge or mat (more can be configured, with the same functionality)
- Includes all installation drawings and functionality/application notes

### Technical information

- Supply ..... 230V a.c.  
single phase and earth @ 50Hz
- Control voltage ..... 24V d.c.
- Dimensions ..... h300 x w300 x d210
- Enclosure protection ..... IP 44
- Safety outputs ..... 2 controlled from the main safety controller (6A max)
- Output power ..... Power output rating to be determined by size of required output pump motor
- Safety wiring integrity to BS EN 13849-1: ..... Category 3
- Volt free dual channel safety device for emergency stopping of machine ..... 1 or more
- Dual channel safety edge/mat wired in series ..... 1 or more (on request)

The control panels are built using high quality components from the following suppliers:



Description	Order Code	List Price
Basic safety edge/mat control panel	D0062	£1,028.50

Custom configurations are available on request. Technical support and advice is available, please call 01254 685900 and ask to speak to one of our technical support engineers.

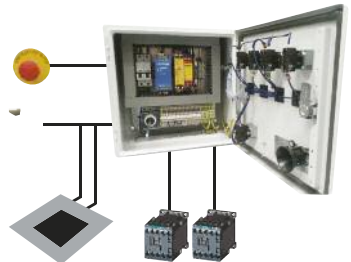
## Application example

### Safety controller functionality

The safety controller connects at least one safety edge or mat, at least one emergency stop and two output switching devices, isolating the machine output supply when the machine is in an unsafe state. By pressing the emergency stop or activating the safety edge/mat, the output supply will be disabled.

The system will only reset when the output switching device has been disabled and the reset push button has been depressed. Controller status is shown on the front of the control panel for quick machine diagnostics.

For quick machine safety control the mains 230V supply, safety edge/mat, additional emergency stops (if required) and the output switching device are wired into the safety control panel.



# Safety light curtain control panel with emergency stop feature



The D0063 ready built safety light curtain control panel offers the end user a quick simple machine integration with effective results.

### Features

- Full isolation of control panel, local isolator
- 2 safety input channels - one e-stop channel and 1 light curtain channel
- 1 dual channel safe output
- Configured with one emergency stop (expandable to suit machine needs)
- Includes all installation drawings and functionality/application notes

### Technical information

- Supply ..... 230V a.c.  
single phase and earth @ 50Hz
- Control voltage ..... 24V d.c.
- Dimensions ..... h300 x w300 x d110
- Enclosure protection ..... IP 44
- Safety outputs .....  
2 controlled from the main safety controller (6A max)  
1 controlled from the safety light curtain controller (6A max)
- Safety wiring integrity to BS EN 13849-1: ..... Category 3
- Volt free dual channel safety device for emergency stopping of machine ..... one or more

The control panels are built using high quality components from the following suppliers:

Description	Order Code	List Price
Basic safety light curtain control panel	D0063	£1,028.50

Custom configurations are available on request. Technical support and advice is available, please call 01254 685900 and ask to speak to one of our technical support engineers.

## Application example

### Safety controller functionality

The safety controller connects one safety light curtain, one or more emergency stops and two output switching devices, isolating the machine output supply when the machine is in an unsafe state. Pressing the emergency stop or breaking the safety light curtain beams will disable the output supply. The system will only reset when the output switching device has been disabled, the machine is in its safe state and reset push button has been depressed. Status of the controller is shown on the front of the control panel for quick machine diagnostics.

For instant machine safety control the mains 230V supply, safety light curtain, additional emergency stops if required and the output switching device are wired into the safety control panel.



# Do you sub-contract your panel builds?

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# MC 100 series muting controllers



The MC 100 series of muting controllers provide flexible and cost effective muting functionality.

Muting is the temporary automatic suspension of a safety function by the safety related parts of the control system. This allows products or pallets to pass into, or out of, a dangerous part of a machine, while preventing personnel from entering the dangerous zone.

A safety light curtain across the access point prevents personnel access while photoelectric sensors are positioned to detect the product or pallet approaching the light curtain. When the position of the product or pallet prevents personnel access, the controller can safely mute the curtain to allow it to pass into, or out of, the dangerous area.

### Manual override (as standard)

Allows any items which are blocking the light curtain in a non-muted condition, to be removed. This is easily activated by a spring return actuator switch on the control panel. The integral mute lamp flashes when manual override is required.

### Mute lamp (as standard)

The integral mute lamp gives a visual indication (constantly illuminated), when the controller is in a muted condition.

### Directional muting (option only)

For cross beam muting, a third optical sensor is mounted in such a way that the product or pallet must break that

The MC 100 is ideal for use with Guardscan GSI 40 series safety light curtains – see pages 473-474 for details

beam, before the mute sensors will initiate the mute setting. This ensures that the mute sequence will only operate when the product is moving in the specified direction. Directional muting can be used with either sequential or parallel muting simply by reprogramming the software (it does not require additional physical equipment).

### Enable input (option only)

An external signal can be sent from the control PLC or conveyor control to enable when a mute condition can occur. It also suspends any time related functions of the mute controller when the conveyor is stopped.

### Features

- Cross beam, sequential and parallel beam blanking available
- Manual override
- Mute lamp
- Can improve your production speed without risking injury to employees

### Technical specification

Enclosure size	.. h300 x w300 x d200mm
Material	..... Painted mild steel
Supply voltage	... 24V d.c. (18-30V d.c.) or 100-240V a.c.
Power consumption	..... <50W
Connections	
Signal	.. Dual level spring clamp terminals
Power	..... Screw terminal
Switch on time	..... 18 seconds
Response time	..... <40mS

## Ordering your muting controller

MC 100 muting controllers are available in different variants. This order code generator should help you to select and order the correct unit for your specific requirements.

This example shows a cross beam muting controller with 110V a.c. power supply, directional muting and no enable input.

**MC 100 order code:**      **MC 100 / CB / AC / DM / 0    £1,538.90**

### Muting option

CB=Cross beam, SQ=Sequential, PL=Parallel

### Power supply

AC= 110-230V a.c., d.c.= 24V d.c.

### Directional muting

DM=Directional muting, 0=No directional muting

### Enable input

EI=Enable input required, 0=Enable input not required

### Important safety note – before using this product, ensure that:

- A full risk assessment has been completed
- All relevant safety standards are complied with
- The system is validated prior to use

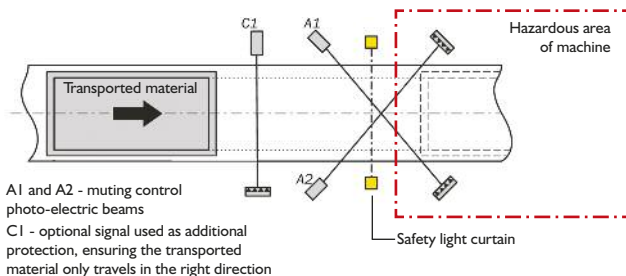
Please contact our technical support department on 01254 685900 for more information or application advice.

continued on next page

## Cross beam 2-sensor muting

The optional signal (C1) gives the muting system additional protection against manipulation and ensures the pallet only travels in the specified direction.

The light curtain is muted when the muting sensors are operated in a defined sequence. The additional muting sensor (C1) must always be activated before both muting sensors A1 and A2 become active.



### Equipment you will need:

- 2 x Optical reflex sensors
- 2 x 4-pin sensor cables
- 2 x 40 x 60mm reflectors
- 4 x Mounting brackets

### For the directional muting you will need:

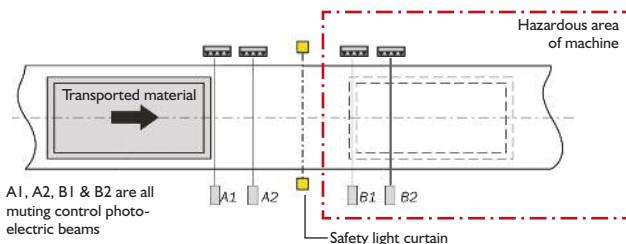
- 3 x Optical reflex sensors
- 3 x 4-pin sensor cables
- 3 x 40 x 60mm reflectors
- 6 x Mounting brackets

Description	Order Code	List Price
Optical reflex sensor	WLI4-2P430	£66.84
Sensor cable (4-pin)	6009866	£6.72
40 x 60mm reflector	PL40A	£10.37
Mounting bracket	2019084	£5.15

## Sequential muting

This diagram shows an example of the sensor layout for muting with a sequential layout of sensor pairs.

The light curtain is muted as the muting sensors A1 and A2 are activated. It then remains muted until a sensor of the muting pair B1 and B2 becomes free.



### Equipment you will need:

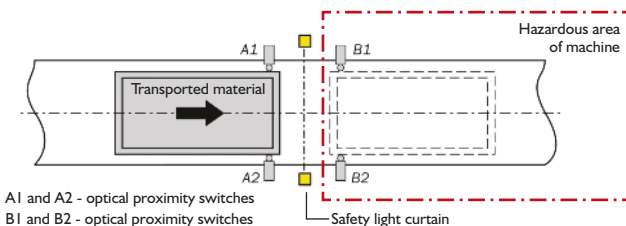
- 4 x Optical reflex sensors
- 4 x 4-pin sensor cables
- 4 x 40 x 60mm reflectors
- 4 x Mounting brackets

Description	Order Code	List Price
Optical reflex sensor	WLI4-2P430	£66.84
Sensor cable (4-pin)	6009866	£6.72
40 x 60mm reflector	PL40A	£10.37
Mounting bracket	2019084	£5.15

## Parallel muting

This diagram shows the sensor layout for muting with 2 parallel muting sensor pairs.

As soon as the muting sensors A1 and A2 are activated the light curtain is muted. The light curtain will remain muted until a sensor of the muting pair B1 and B2 becomes free again.



### Equipment you will need:

- 4 x Optical proximity switch (including mounting brackets)
- 4 x 4-pin sensor cables

Description	Order Code	List Price
Optical proximity switch (including mounting brackets)	WT260-F470	£115.49
Sensor cable (4-pin)	6009866	£6.72