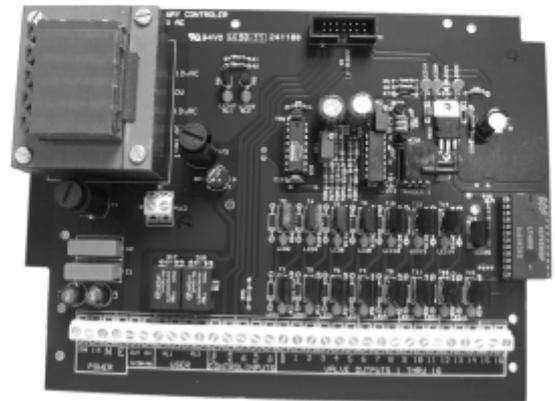




dust filter controls

# Product Data Sheet **KX74161**

Up To 16-way Valve Controller



## OVERVIEW

- *The **KX** range is designed to serve reverse jet dust extraction systems and formulated specifically to address their needs. The **KX74161 Valve Controller** is a fully self-contained solution to multi-valve control incorporating differential pressure sensing. This unit offers the latest in Microprocessor technology in a compact enclosure, affording unparalleled levels of user friendliness, system flexibility and tamper-proof operation.*
- *The **KX74161 Valve Controller** takes care of system control. Using just four pushbuttons and the high resolution LCD Display, all aspects of system operation can easily be programmed for optimum performance. A tamper-proof version of the Controller is available. The **KX74161** is offered in a polycarbonate IP65 enclosure.*



# Features

## ADVANCED MICRO-PROCESSOR CONTROL .

- Operating at over a million instructions per second the onboard micro-processor provides ease of use and a level of control which was virtually impossible with old plc or Cmos systems.

## ONBOARD EPROM MEMORY

- Ensures system settings are retained during power failure or whilst power is turned off.

## EASY TO USE 4 BUTTON CONTROL

- **MODE:** Move forward through options
- **UP:** Increases values selected by mode
- **DOWN:** Decreases values selected by mode
- **START/STOP:** Run or halt the system

## HIGH RESOLUTION LCD DISPLAY

- Easily view and adjust system setup.
- Displays pressure readings in real time.
- Monitor system status

## BUILT-IN DIFFERENTIAL PRESSURE SENSOR

- The KX74161 has it's own internal differential pressure sensor which allows the unit to clean only when needed. This also dispenses with the need for additional external devices.

## REAL TIME SYSTEM MONITORING

- While the system is running, Differential Pressure and system status can be monitored in real time. Differential pressure is displayed constantly whenever the Controller is running along with the number of the current valve to be fired during the cleaning sequence.

One quick glance at the display will tell the operator the current state of the system and the current position in the cleaning sequence.

## REAL TIME SYSTEM MONITORING

## BUILT-IN OUTPUT AMPLIFIERS AND POWER SUPPLY

- The unit has it's own internal power supply. Power output to solenoid valves is provided directly from the controller using the internal power amplifiers .

## HIGH/LOW PRESSURE ALARMS

- The KX74161 has two relay outputs. These are activated when the differential pressure in the system reaches the user defined settings for a high alarm or low alarm situation.
- The relay outputs may be used to trigger any amount of external events and allow the system malfunction to be handled immediately and effectively. The dual relay system means that high and low pressure events may be handled differently and trigger a separate chain of events to warn of, and handle the situation.
- The units LCD display will carry a warning message if high or low pressure alarm levels are reached.

## SEPARATE CLEANING CYCLE FOR SYSTEM FAN STOP

- A seperately programmable cleaning cycle is provided for optimum filter performance. This operates whilst the main system fan is not running and can be set to operate for a set number of cycles. It can also be disabled by setting the number of cycles to 0.

## ***Features - contd.***

### **4-20 MILLIAMP OUTPUT**

- The unit features a 4-20mA output which may be used to send pressure information to other devices or system controllers. This feature enables the KX74161 to communicate with any device that will accept this type of input and allow integration into virtually any application.

### **REMOTE CONTROL**

- The KX74161 has the facility for remote start/stop. It can be remotely started/stopped via the 5v and REM terminals. The unit is arranged so that the pulsing will start as soon as an open circuit is established across 5v and REM. If the controller is in DP Sensor mode, the remote start/stop facility still functions in conjunction with the Differential Pressure (DP) set points.



**dust filter controls**

# Technical Specifications - KX74161-G10

<b>CONTROLLER:</b>	Part Number KX74161-G10-E20
<b>INPUT SUPPLY:</b>	24 VDC $\pm$ 10%.
<b>INPUT FUSE:</b>	F3 Axial 2 Amp (T) Time Lag.
<b>INPUT CONNECTIONS:</b>	3-Way 1.5mm 10 Amp side entry plug and socket insulated terminal block which is marked: 0V, 24 VDC.
<b>MAINS FAILURE:</b>	In the event of mains failure, the unit will operate to specification as soon as the voltage level comes within the above limits.
<b>OUTPUT VOLTAGE:</b>	24V DC, regulation as input.
<b>OUTPUT LOAD PER OUTLET:</b>	36W continuous, 44W pulsed into solenoid valves.
<b>I.O. CONNECTIONS:</b>	1.5mm 10 Amp side entry plug and socket insulated terminal block which is marked: out 0v, 4-20ma, <i>alarms</i> : marked: alarms r11, r12 <i>control inputs</i> : marked: control inputs fan, rem, 5v, flow, 5v, <i>valve outputs</i> : marked: valve outputs 1-16 and common.
<b>DP PRESSURE CONNECTIONS:</b>	2 x 5mm (outside diam) pneumatic compression connectors suitable to accept nylon hose.
<b>START UP SEQUENCE:</b>	The unit is arranged so that it will always start at output 1.
<b>PRESSURE SCALE:</b>	0 - 700mmWG.
<b>CONSTRUCTION:</b>	Solid state microprocessor components mounted onto a double-sided glass fibre P.C.B. with component mask.
<b>INDICATION:</b>	Valve Numbers 1- 16 will be displayed as each output is energised in sequence.
<b>AMBIENT TEMPERATURE AT BOARD SURFACE:</b>	0 to +45 deg.C. Storage Temperature: -10 to +60 deg.C.
<b>VIBRATION SPEC:</b>	Not greater than BEAMA Group 2.
<b>CONDUCTING MATERIALS:</b>	Standard P.C.B's can be supplied with their surfaces coated with a layer of Parylene C, a material that is to MOD standard 59-47/4, and MIL-1-460C. This treatment reduces the risk of damage through moisture.
<b>MICRO-PRO SEQUENCER:</b>	Hinge opening Polycarbonate box with clear LCD window. Lower panel with 2 retaining screws houses terminals. Size 195 x 94 x 160mm.

CCT reserve the right to change product specifications at any time with out prior notification and as a consequence of on-going product development.

# Technical Specifications - KX74161-G15

<b>CONTROLLER:</b>	Part Number KX74161-G15-E20
<b>INPUT SUPPLY:</b>	115 - 230 V +10% -15% @ 50/60HZ.
<b>INPUT FUSE:</b>	Fuse 1: 1 Amp 230 V HBC 20mm .
<b>VALVE OUTPUT FUSE:</b>	Fuse 2: 2 Amp 24 V (T) Time Lag.
<b>INPUT CONNECTIONS:</b>	3-Way 1.5mm 10 Amp side entry plug and socket insulated terminal block which is marked: 230, 115, Neut .
<b>MAINS FAILURE:</b>	In the event of mains failure, the unit will operate to specification as soon as the voltage level comes within the above limits.
<b>OUTPUT VOLTAGE:</b>	24V DC, regulated.
<b>OUTPUT LOAD PER OUTLET:</b>	36W continuous, 44W pulsed into solenoid valves.
<b>I.O. CONNECTIONS:</b>	1.5mm 10 Amp side entry plug and socket insulated terminal block which is marked: out 0v, 4-20ma, <i>alarms</i> : marked: alarms r11, r12 <i>control inputs</i> : marked: control inputs fan, rem, 5v, flow, 5v, <i>valve outputs</i> : marked: valve outputs 1-16 and common.
<b>DP PRESSURE CONNECTIONS:</b>	2 x 5mm (outside diam) pneumatic compression connectors suitable to accept nylon hose.
<b>START UP SEQUENCE:</b>	The unit is arranged so that it will always start at output 1.
<b>PRESSURE SCALE:</b>	0 - 700mmWG.
<b>CONSTRUCTION:</b>	Solid state microprocessor components mounted onto a double-sided glass fibre P.C.B. with component mask.
<b>INDICATION:</b>	Valve Numbers 1- 16 will be displayed as each output is energised in sequence.
<b>AMBIENT TEMPERATURE AT BOARD SURFACE:</b>	0 to +45 deg.C. Storage Temperature: -10 to +60 deg.C.
<b>VIBRATION SPEC:</b>	Not greater than BEAMA Group 2.
<b>CONDUCTING MATERIALS:</b>	Standard P.C.B's can be supplied with their surfaces coated with a layer of Parylene C, a material that is to MOD standard 59-47/4, and MIL-1-460C. This treatment reduces the risk of damage through moisture.
<b>MICRO-PRO SEQUENCER:</b>	Hinge opening Polycarbonate box with clear LCD window. Lower panel with 2 retaining screws houses terminals. Size 195 x 94 x 160mm.

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# Technical Specifications - KX74161-G4

<b>CONTROLLER:</b>	Part Number KX74161-G4-E20
<b>INPUT SUPPLY:</b>	115 - 230 V +10% -15% @ 50/60HZ.
<b>INPUT FUSES:</b>	Fuse 1: 1 Amp 230 V HBC 20mm . Fuse 2: 1 Amp 230 V HBC 20mm .
<b>INPUT CONNECTIONS:</b>	3-Way 1.5mm 10 Amp side entry plug and socket insulated terminal block which is marked: 230, 115, Neut .
<b>MAINS FAILURE:</b>	In the event of mains failure, the unit will operate to specification as soon as the voltage level comes within the above limits.
<b>OUTPUT VOLTAGE:</b>	110Vac.
<b>OUTPUT LOAD PER OUTLET:</b>	24VA continuous, 40VA pulsed into solenoid valves.
<b>I.O. CONNECTIONS:</b>	1.5mm 10 Amp side entry plug and socket insulated terminal block which is marked: out 0v, 4-20ma, <i>alarms:</i> marked: alarms r11, r12 <i>control inputs:</i> marked: control inputs fan, rem, 5v, flow, 5v, <i>valve outputs:</i> marked: valve outputs 1-16 and common.
<b>DP PRESSURE CONNECTIONS:</b>	2 x 5mm (outside diam) pneumatic compression connectors suitable to accept nylon hose.
<b>START UP SEQUENCE:</b>	The unit is arranged so that it will always start at output 1.
<b>PRESSURE SCALE:</b>	0 - 700mmWG.
<b>CONSTRUCTION:</b>	Solid state microprocessor components mounted onto a double-sided glass fibre P.C.B. with component mask. Valve Numbers 1- 16 will be displayed as each output is energised in sequence.
<b>INDICATION:</b>	
<b>AMBIENT TEMPERATURE AT BOARD SURFACE:</b>	0 to +45 deg.C. Storage Temperature: -10 to +60 deg.C.
<b>VIBRATION SPEC:</b>	Not greater than BEAMA Group 2.
<b>CONDUCTING MATERIALS:</b>	Standard P.C.B's can be supplied with their surfaces coated with a layer of Parylene C, a material that is to MOD standard 59-47/4, and MIL-1-460C. This treatment reduces the risk of damage through moisture.
<b>MICRO-PRO SEQUENCER:</b>	Hinge opening Polycarbonate box with clear LCD window. Lower panel with 2 retaining screws houses terminals. Size 195 x 94 x 160mm.

CCT reserve the right to change product specifications at any time with out prior notification and as a consequence of on-going product development.

# Technical Specifications - KX74161-G31

**CONTROLLER:**

Part Number KX74161-G31-E20

**INPUT SUPPLY:**

115 - 230 V +10% -15% @ 50/60HZ.

**INPUT FUSES:**

Fuse 1: 1 Amp 230 V HBC 20mm .  
Fuse 2: 1 Amp 230 V HBC 20mm .

**INPUT CONNECTIONS:**

3-Way 1.5mm 10 Amp side entry plug and socket insulated terminal block which is marked: 230, 115, Neut .

**MAINS FAILURE:**

In the event of mains failure, the unit will operate to specification as soon as the voltage level comes within the above limits.

**OUTPUT VOLTAGE:**

24Vac.

**OUTPUT LOAD PER OUTLET:**

24VA continuous, 40VA pulsed into solenoid valves.

**I.O. CONNECTIONS:**

1.5mm 10 Amp side entry plug and socket insulated terminal block which is marked: out 0v, 4-20ma, *alarms*: marked: alarms r11, r12  
*control inputs*: marked: control inputs fan, rem, 5v, flow, 5v,  
*valve outputs*: marked: valve outputs 1-16 and common.

**DP PRESSURE CONNECTIONS:**

2 x 5mm (outside diam) pneumatic compression connectors suitable to accept nylon hose.

**START UP SEQUENCE:**

The unit is arranged so that it will always start at output 1.

**PRESSURE SCALE:**

0 - 700mmWG.

**CONSTRUCTION:**

Solid state microprocessor components mounted onto a double-sided glass fibre P.C.B. with component mask.

**INDICATION:**

Valve Numbers 1- 16 will be displayed as each output is energised in sequence.

**AMBIENT TEMPERATURE AT BOARD SURFACE:**

0 to +45 deg.C. Storage Temperature: -10 to +60 deg.C.

**VIBRATION SPEC:**

Not greater than BEAMA Group 2.

**CONDUCTING MATERIALS:**

Standard P.C.B's can be supplied with their surfaces coated with a layer of Parylene C, a material that is to MOD standard 59-47/4, and MIL-1-460C. This treatment reduces the risk of damage through moisture.

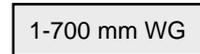
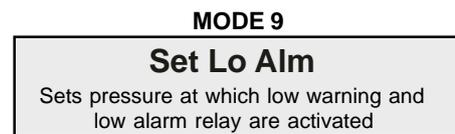
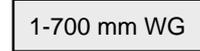
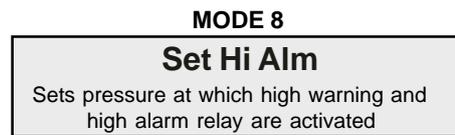
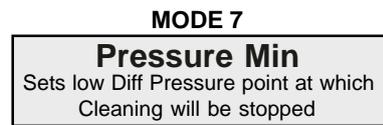
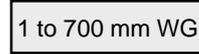
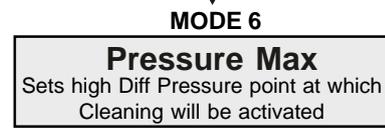
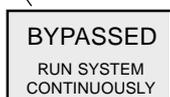
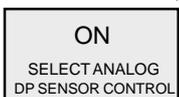
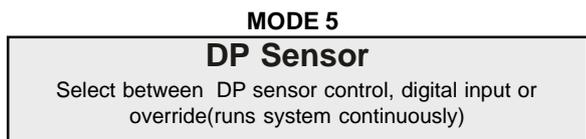
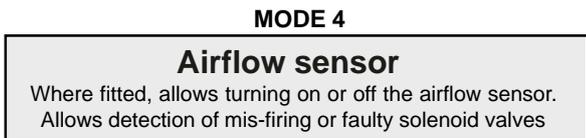
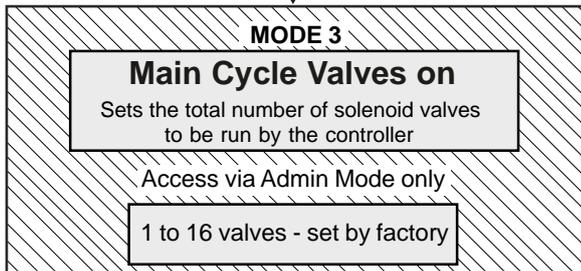
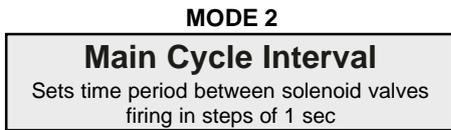
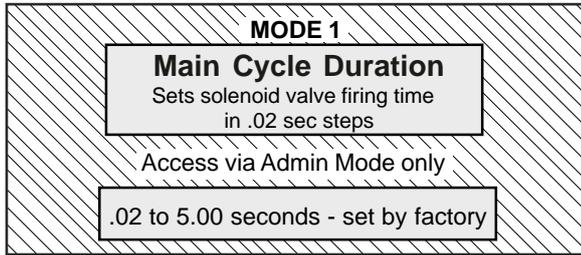
**MICRO-PRO SEQUENCER:**

Hinge opening Polycarbonate box with clear LCD window.  
Lower panel with 2 retaining screws houses terminals.  
Size 195 x 94 x 160mm.

CCT reserve the right to change product specifications at any time with out prior notification and as a consequence of on-going product development.

# Programmable features

The following is a flow chart of the programmable settings available on the KX74161 Valve Controller. The options available in each mode are explained in an easy to follow format.



MODES CONTINUE  
ON PAGE 9



**dust filter controls**

# Programmable features - contd.

## MODE 10

### Fan Rundown Cycle Num Cycles

Sets the total number of cleaning cycles initiated by a fan stop period

0 to 15 cycles

## MODE 11

### Fan Rundown Cycle Interval

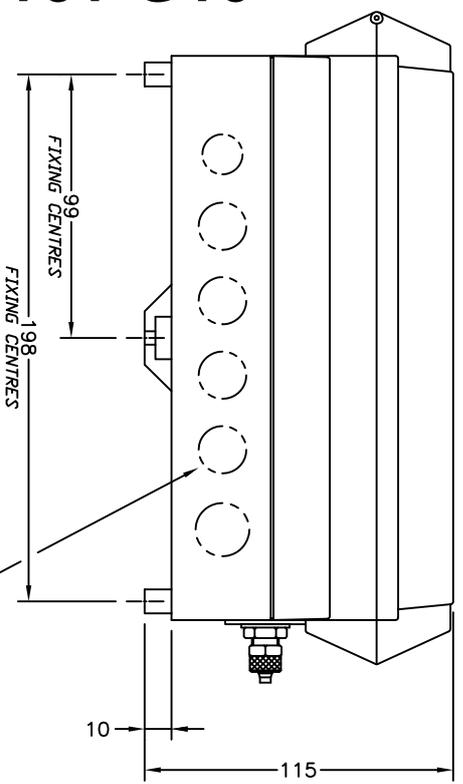
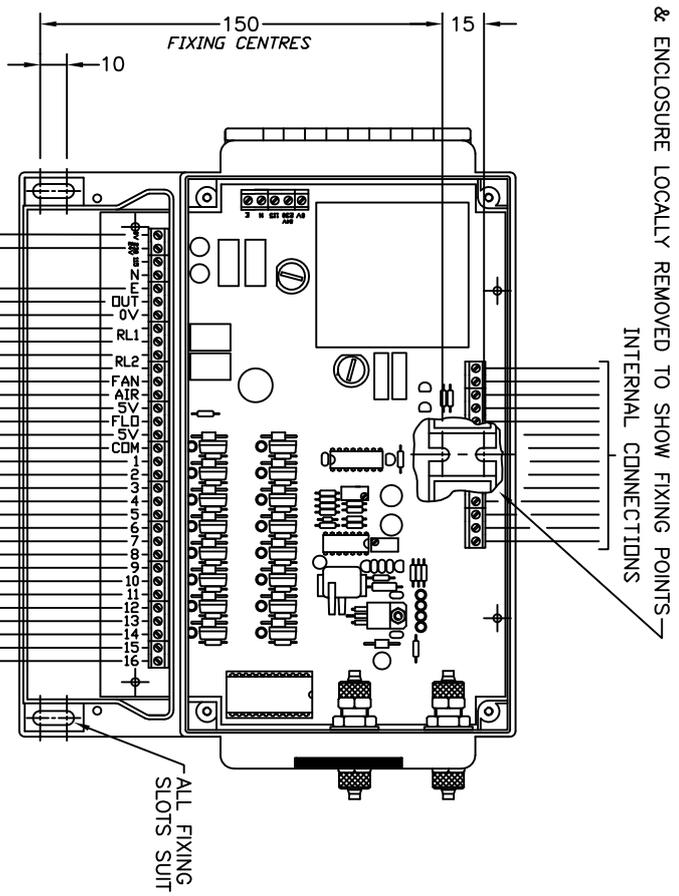
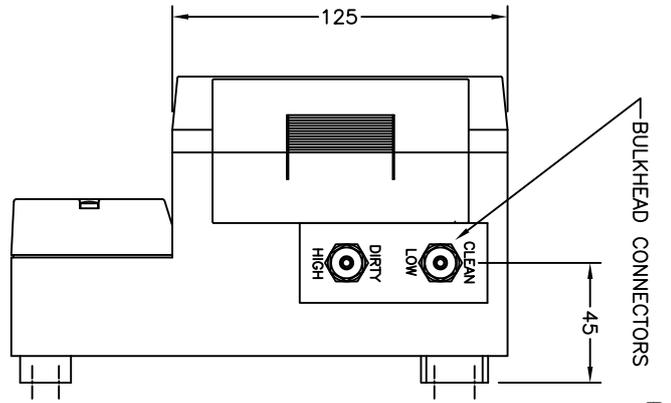
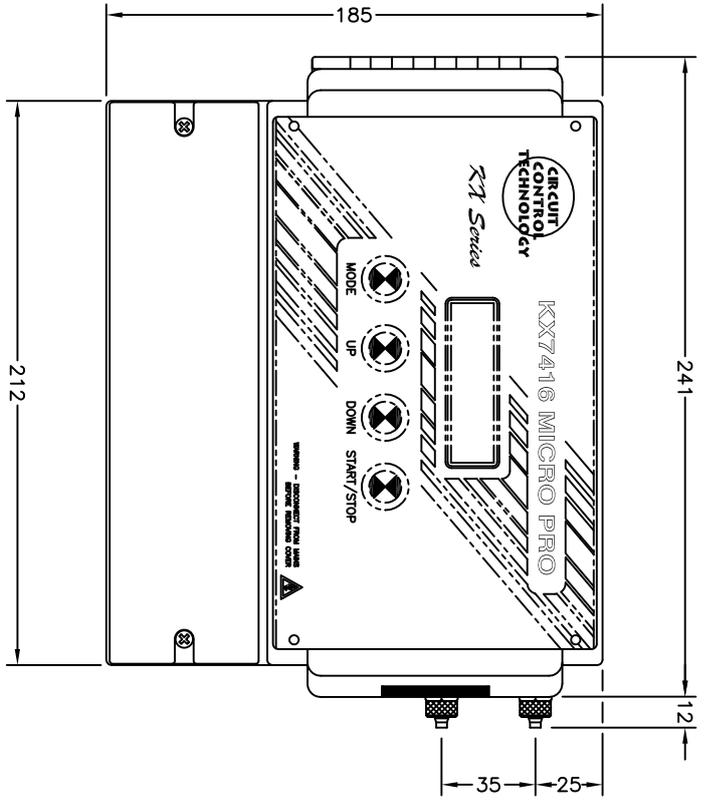
Sets time period between solenoid valves firing in steps of 1 sec

1 to 600 seconds



**dust filter controls**

# KX74161-G10



TO N/C VOLT FREE CONTACTS  
ON FAN CONTACTORS  
FOR FAN RUN/STOP  
REMOTE START/STOP  
FOR REMOTE CONTROL

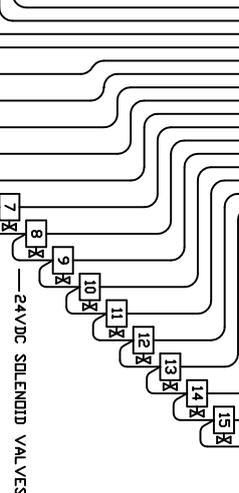
FAN  
RPM  
-5V

TO N/O VOLT FREE CONTACTS  
ON AIR FLOW SWITCH  
FOR VALVE FUNCTION FEEDBACK FACILITY

FLO  
-5V  
FACTORY LINK FITTED

RELAYS [ RELAY 1 HIGH DP ALARM  
RELAY 2 LOW DP ALARM

0V  
-24V  
-0V  
-0V



VIEW WITH COVERS & DISPLAY PANEL OMITTED  
TO SHOW FIXINGS & FIELD CONNECTIONS

## Circuit Control Technology

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GORSE HILL INDUSTRIAL ESTATE  
BEAUMONT LEYS, LEICESTER, LE4 1AA  
Tel: +44 (0) 116 2998000 Fax: +44 (0) 116 2998001

Part No: KX47161-G10E20

Title: 16 WAY MICROPRO SEQUENCE CONTROLLER  
GENERAL ARRANGEMENT

Issue	Description	Date
B	ALARM RELAYS ALTERED	15.10.14
A	REDRAWN FROM KX74160A	11.07.10

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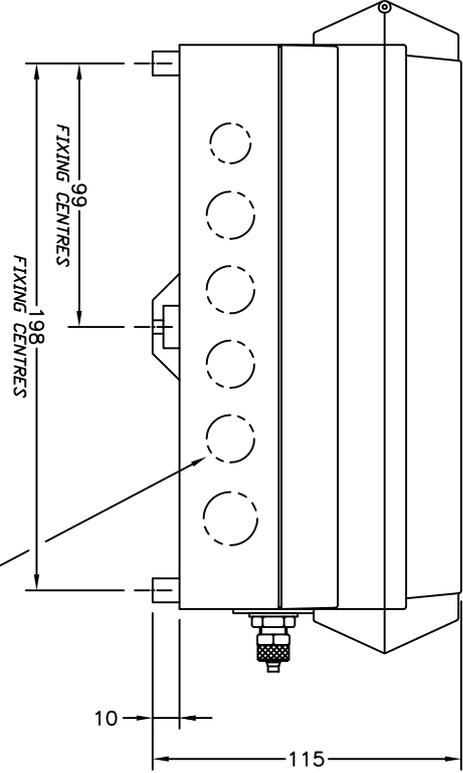
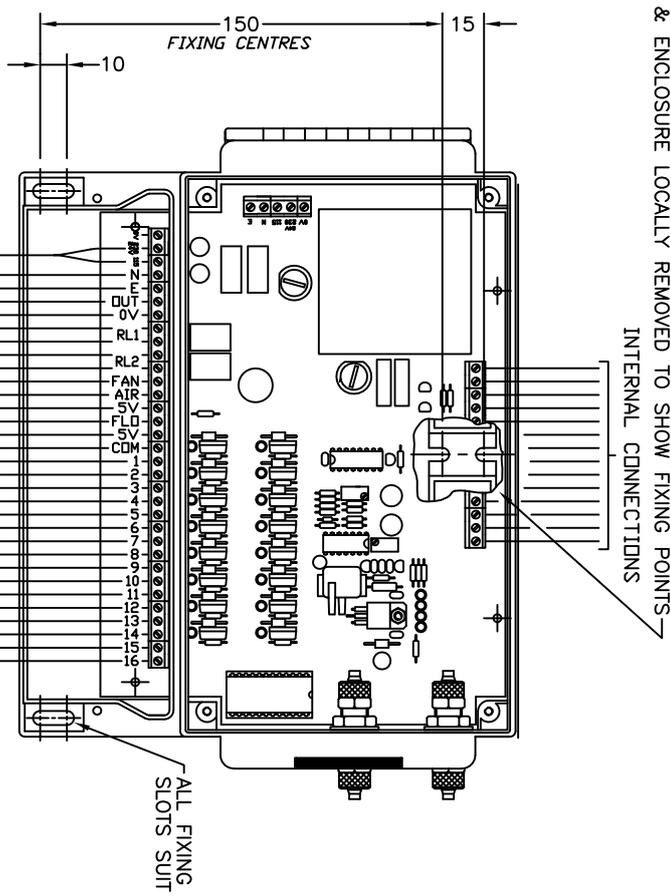
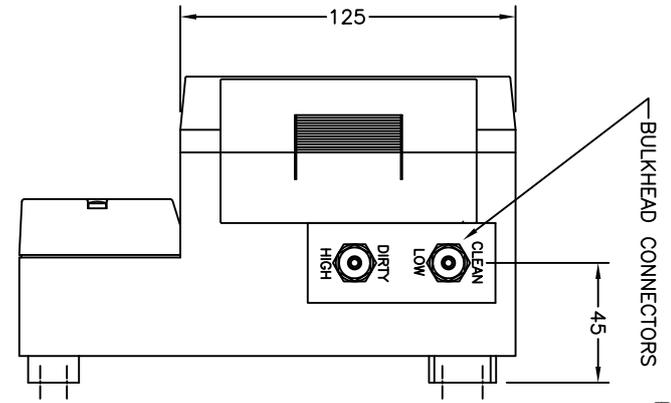
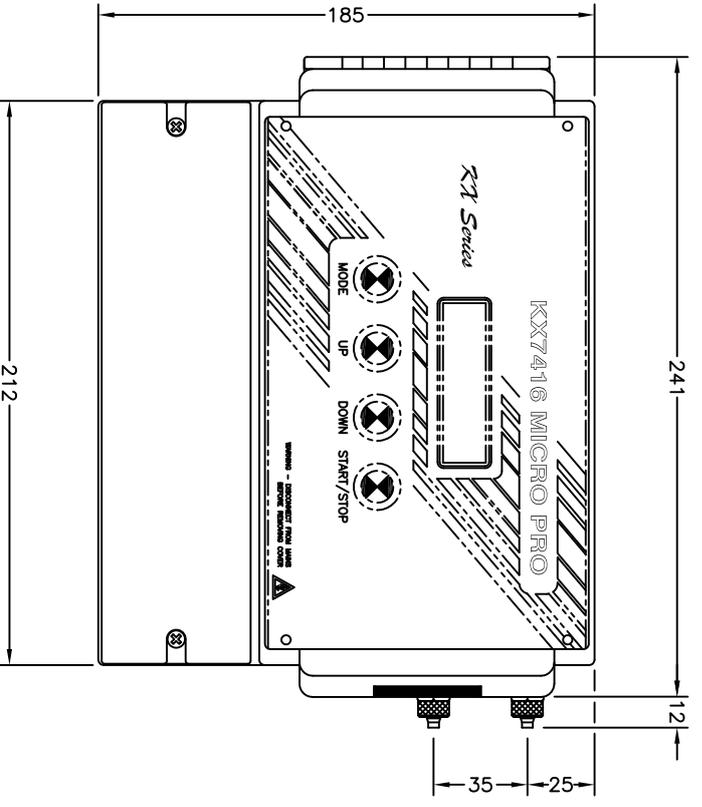
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Dwg. No. SC741611016E20 Rev. B

Sheet 1 of 1

ALL DIMENSIONS IN MILLIMETRES

# KX74161-G15



TO N/C VOLT FREE CONTACTS  
DN FAN CONTACTOR  
REMOTE START/STOP  
FOR REMOTE CONTROL

FAN  
REM  
5V

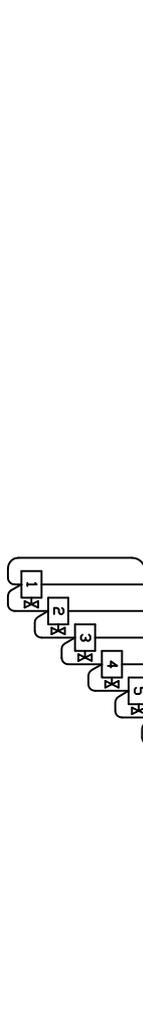
RELAYS [ RELAY 1 HIGH DP ALARM  
RELAY 2 LOW DP ALARM

TO N/O VOLT FREE CONTACTS  
DN AIR FLOW SWITCH  
FOR VALVE FUNCTION FEEDBACK FACILITY

FLO  
5V

FACTORY LINK FITTED

24VDC SOLENOID VALVES



VIEW WITH COVERS & DISPLAY PANEL OMITTED  
TO SHOW FIXINGS & FIELD CONNECTIONS

## Circuit Control Technology

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Tel: +44 (0) 116 2998000 Fax: +44 (0) 116 2998001

Part No: KX47161-G15E20

Title: 16 WAY  
MICROPRO SEQUENCE CONTROLLER  
GENERAL ARRANGEMENT

Issue	Description	Date
B	ALARM RELAYS ALTERED	15.10.15
A	REDRAWN FROM KX74160A	06.07.12

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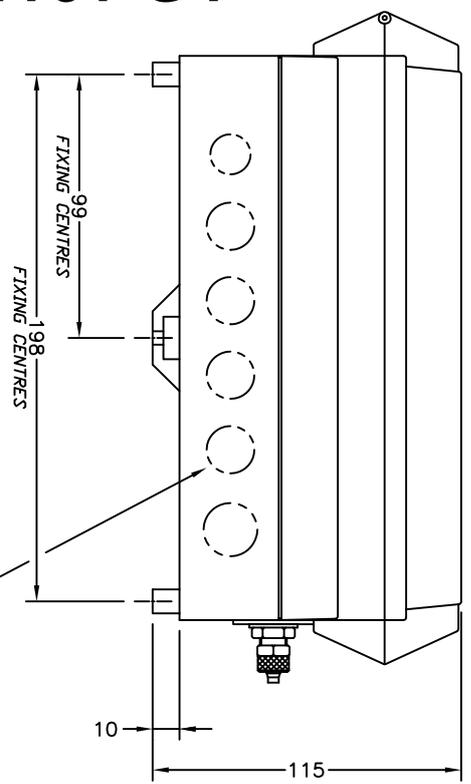
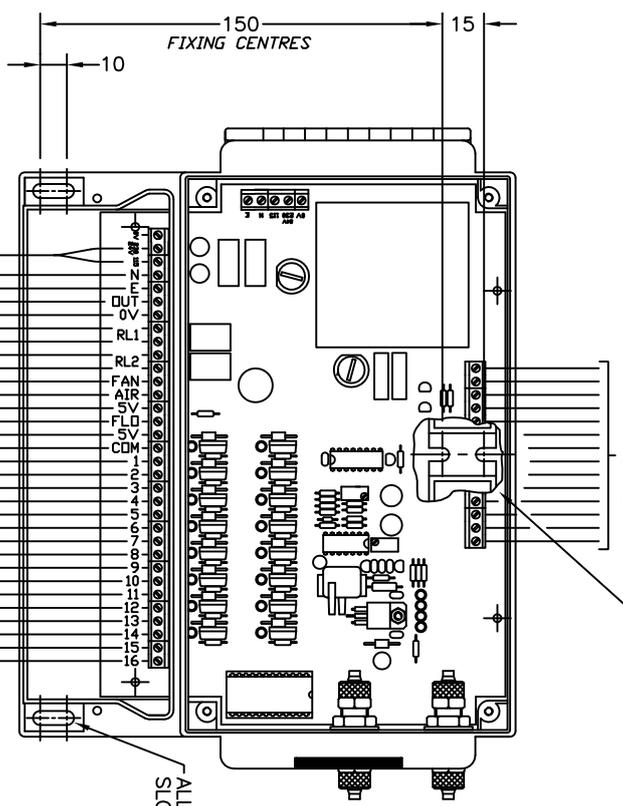
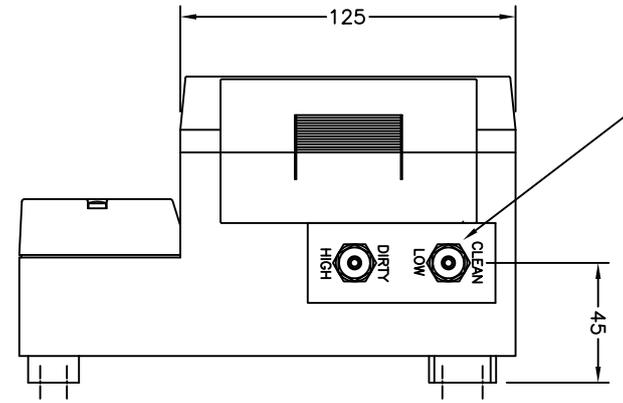
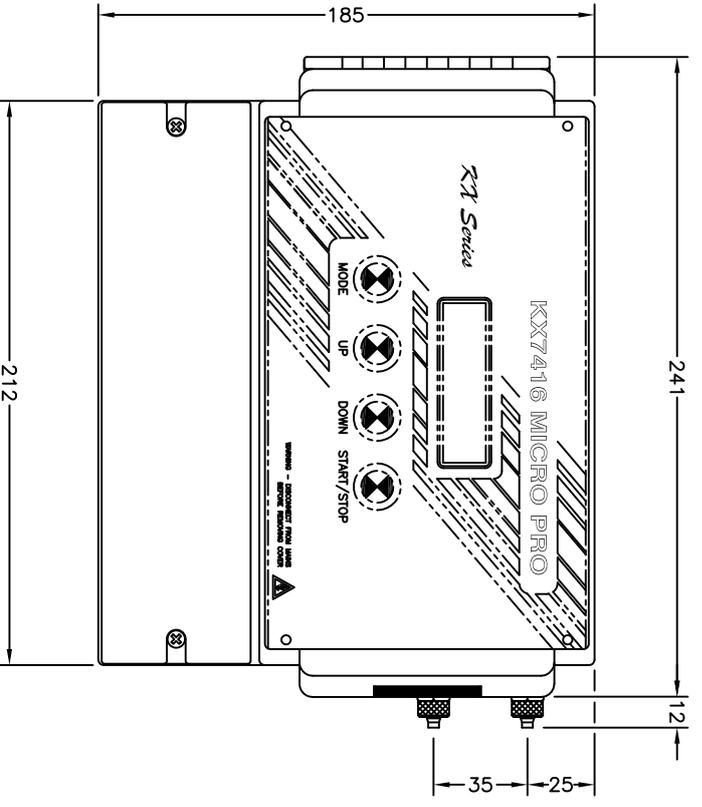
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Dwg. No. SC741611516E20 Rev. B

Sheet 1 of 1

ALL DIMENSIONS IN MILLIMETRES

# KX74161-G4



ALL DIMENSIONS IN MILLIMETRES

BULKHEAD CONNECTORS

PCB & ENCLOSURE LOCALLY REMOVED TO SHOW FIXING POINTS  
INTERNAL CONNECTIONS

TO N/C VOLT FREE CONTACTS  
ON FAN CONTACTOR  
RELOCATE START/STOP  
FOR REMOTE CONTROL

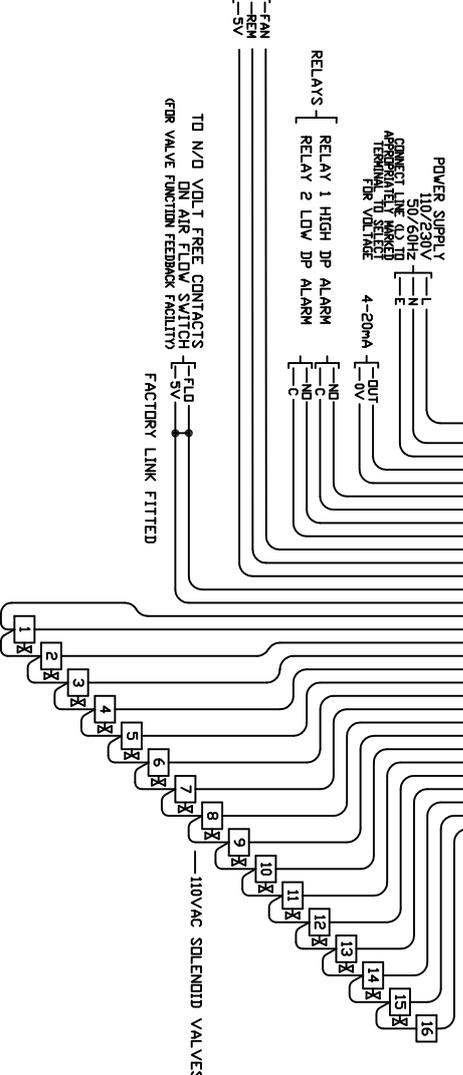
FAN  
-REC  
-SV

RELAYS [ RELAY 1 HIGH DP ALARM  
RELAY 2 LOW DP ALARM

TO N/O VOLT FREE CONTACTS  
ON AIR FLOW SWITCH  
FOR VALVE FUNCTION FEEDBACK FACILITY

FLO  
-SV

FACTORY LINK FITTED



VIEW WITH COVERS & DISPLAY PANEL OMITTED  
TO SHOW FIXINGS & FIELD CONNECTIONS

## Circuit Control Technology

48 BOSTON ROAD,  
GORSE HILL INDUSTRIAL ESTATE,  
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Part No: KX47161-G4E20

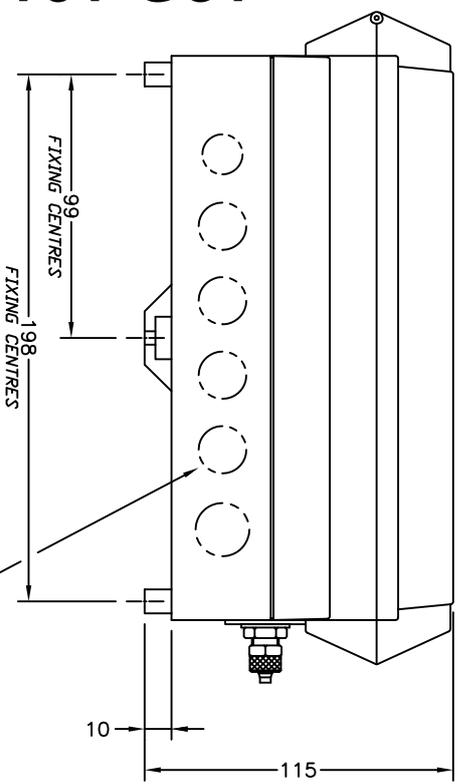
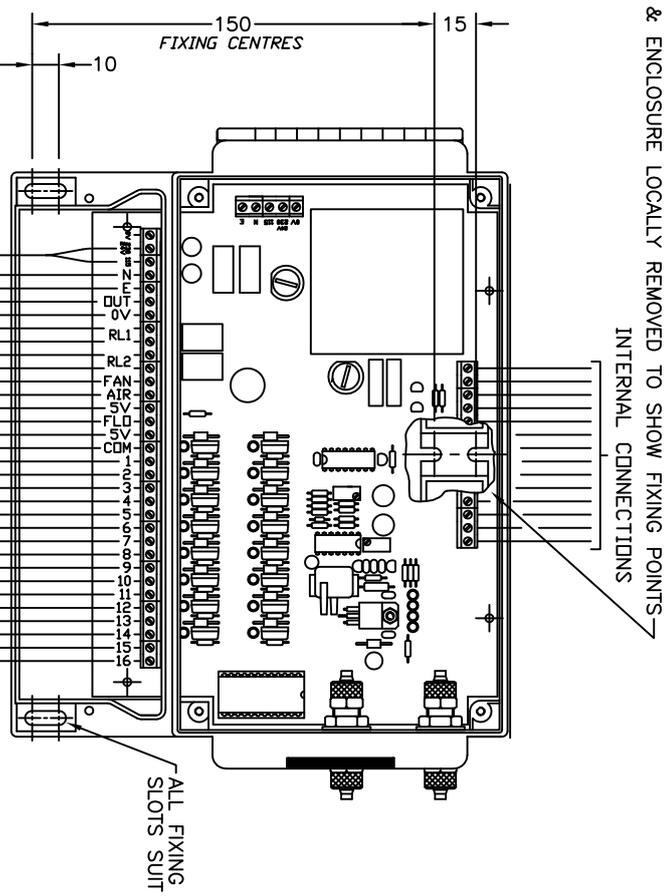
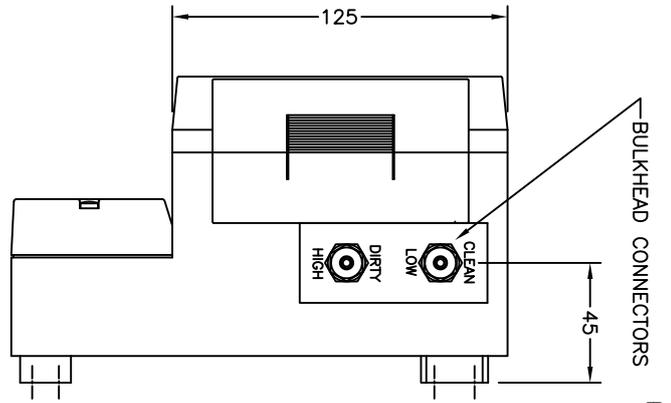
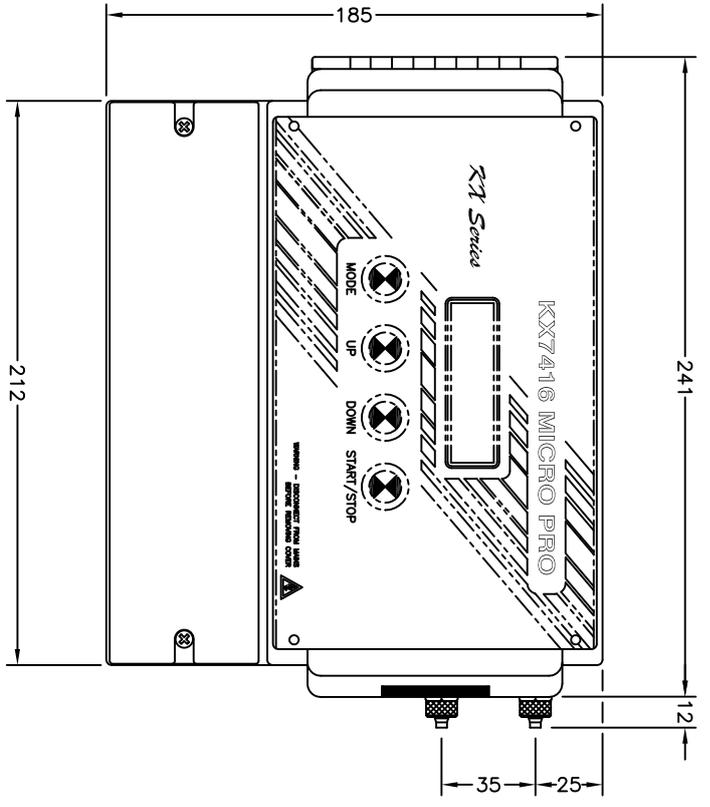
Title: 16 WAY  
MICROPRO SEQUENCE CONTROLLER  
GENERAL ARRANGEMENT

Issue	Description	Date
A	ALARM RELAYS ALTERED	15.10.14
A	REDRAWN FROM KX74160A	08.03.10

Appd.	Plot Date:	Rev.
	23.05.02	B

# KX74161-G31



KNOCK-OUTS  
5 EXTRA KNOCK-OUTS AVAILABLE  
IN BOTTOM FACE OF ENCLOSURE

ALL DIMENSIONS IN MILLIMETRES

VIEW WITH COVERS & DISPLAY PANEL OMITTED  
TO SHOW FIXINGS & FIELD CONNECTIONS

TO N/C VOLT FREE CONTACTS  
ON FAN CONTACTORS  
FOR FAN RUN/STOP  
REMOTE START/STOP  
FOR REMOTE CONTROL

FAN  
SEN  
SV

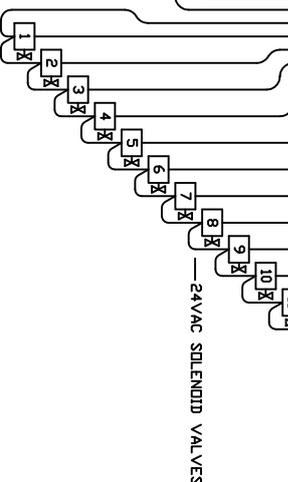
TO N/O VOLT FREE CONTACTS  
ON AIR FLOW SWITCH  
FOR VALVE FUNCTION FEEDBACK FACILITY

FLO  
SV  
FACTORY LINK FITTED

RELAYS  
RELAY 1 HIGH DP ALARM  
RELAY 2 LOW DP ALARM

ND  
NC  
NO

24VAC SOLENOID VALVES



## Circuit Control Technology

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GORSE HILL INDUSTRIAL ESTATE  
BEAUMONT LEYS, LEICESTER, LE4 1AA  
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Part No: KX47161-G31E20

Title: 16 WAY  
MICROPRO SEQUENCE CONTROLLER  
GENERAL ARRANGEMENT

Issue	Description	Date
B	ALARM RELAY ALTERED	15.10.14
A	REDRAWN FROM KX74160A	06.07.12

Appd.	Plot Date:	Rev.
	23.05.02	B