

Orion Kiln Control Solution – June 2021

FDC - 730 - K6C - -
 1 2
Base Price
\$3,900

1 Optional Analog Input / Output Card (AI)

- 0: None (*base system includes 2 AI-O cards = 4 AI & 2 AO*) **n/c**
- 1: One add'l Analog Input module w/2-analog inputs **\$350**
 and 1 linear 4-20 mA output (*system has 3 AIO cards*)
- 2: Two add'l Analog input modules; each have 2 **\$700**
 analog inputs and 1 linear 4-20 mA output.
- 3: Three add'l Analog input modules; each have 2 **\$1,300**
 analog inputs and one linear 4-20 mA output and includes
 FC6A-EXM2 expansion module when 7+ cards are used.

2 Optional Assembly and telephone support

- 0: None or left blank **n/c**
- 1: Components mounted & wired on DIN Rail **\$250**
- 2: same as #1 and telephone support: **contact factory**

Part Number and Price Examples below - see p. 2 for notes

Kiln Only Systems: FDC-2010-K6C-0 **\$3,900**
 4-temperature inputs: 1-wet bulb, 2-dry bulbs and 1-Core
 temperature sensor and two analog control outputs if required.

Sterilizer Only Systems: FDC-2010-K6C-0 **\$3,900**
 4-temperature inputs: 1-chamber and 3-cores sensors.

Note: Kiln & Sterilizer only control systems (additional sensors):
 Up to three additional temperature input modules (2/module = up
 to 6 may be specified. These additional 2 to 6 inputs are
 configurable for Kiln as core sensors, Sterilizer as "monitor only".

Combination Kiln-Sterilizer: (order code 2)

- Part number with 8 temperature inputs (5 = core temps)
 - FDC-2010-K6C-2 **\$4,600**
- Kiln Function: 1-wet bulb, 2-dry bulbs and 5-Core
 temperature sensors for use in Kiln
 - Kiln action may use Core sensors (5-total) as
 monitor and/or with Core control logic during
 Kiln Drying.
- Sterilize Function: 3-Core sensors for Sterilizer logic
 control and 1 of the 2 remaining core sensors may be
 used as monitor only, allowing system a total of 4-core
 temperature sensors.
 - Sterilize action uses Dry bulb #1 & #2 as
 chamber temperature sensor based upon fan
 direction.

System with Maximum of 10 Temperature Sensors (order code 3)

Order code 3 provides 2-additional temperature inputs for a total
 of 10 temperature inputs & the EXM2 expansion module.

- Part number with 10 temperature inputs:
 - FDC-2010-K6C-3 **\$5,200**
- Kiln Function (not configured as combination unit):
 - The 9th & 10th inputs configurable as monitor
 and/or with Core control logic.
- Sterilizer Control (not configured as combination unit)
 - The 9th & 10th inputs configurable as monitor
 only; total 3-core with logic and 6-monitor only.
- Combination Kiln-Sterilizer; 9th & 10 inputs configurable:
 - Kiln Control as monitor and/or with Core
 control logic providing a total of 7-monitor
 points.

Sterilizer Control the 9th & 10th inputs are monitor only totaling 6-
 monitor only.

Base System Includes:

FDC-730 7" TFT Color Touch Screen (HMI), HMI 8GB SD with
 Kiln runtime, Control Module CPU (K6C), 8GB SD for CPU with
 Kiln runtime and one 8GB USB Memory Stick

- Power Supply 24VDC 60 watt: [PS5R-SD24 24VDC/60Watt]
- K6C CPU Control Module with 6 digital outputs, 8 digital
 inputs and additional components below.
 - CPU Control Module [FC6A-D16R1CEEE v1.5]
 - Analog Input Module (Qty 2) [FC6A-L03CN1]
 - 8-digital 24Input 24VDC Module [FC6A-N08B1]
 - 16-relay output module (2 amps) [FC6A-R161]
 - RS485 Modbus 2-wire connector [FC6A-SIF52]
 - Time Delay Relay & Socket
 [GE1A-C10HA110 / SR2P-06]
 - Connecting Cable - Display to CPU Control Module
 8-foot length [CA-232-8A]
 - Low Frequency Ferrite Beads for Analog Inputs
 4 beads standard, one/ input [LFBead-240-2282-ND]
- Base System Temperature Inputs: [FC6A-L03CN1]
 Two input modules each with 2 RTD or Type J
 inputs and one OEM configurable 4-20mA PID
 output (total 4-inputs & 2-outputs). The input type is
 a global setting for RTD or Type J thermocouple.
- Base System Analog Outputs: Two analog [4-20mA] outputs
 OEM configurable for Heat, Spray, Vent PID control, Fan
 control and/or retransmission of Dry & Wet bulb setpoints or
 temperature values.
 - One linear analog output with each analog RTD
 input card [2 RTD inputs]. [FC6A-L03CN1]
- Relay Outputs: Control, Alarm & Event outputs total 22
 relays. Refer to Manual for control outputs, alarms, etc.
 - 6 Relays on CPU Control Module
 - 16 Relays on Relay Module [FC6A-R161]
 - When linear PID outputs are not used; Heat and
 Spray control have 1 relay each, Vent has 3 relays
 for single to three-stage vent control and Fan has
 two relay outputs [Forward & Reverse].
- Digital Inputs: Quantity 15 24VDC normally open digital
 inputs. [8 on CPU and 7 on FC6A-N08B1 Digital Input Module.]
 - Digital Inputs can be named and a time delay may
 be configured before input is recognized as closed.
 - Up to 5 Digital Inputs may be configured to turn on
 or off any of the up to 25 Events configured for
 each Stage or in Manual Control Mode.
 - An Alarm is logged and Relay Q10 is energized
 anytime a configured digital alarm input is closed or
 temperature sensor failure occurs.

Hardware Control Options

- Optional Temperature Inputs/Analog Outputs [FC6A-L03CN1]
 - Total of 6 optional temperature inputs maximum;
 [3-modules with 2-inputs and 1-output /module].
 System maximum is 10-temperature inputs and 5-
 analog outputs. (Base system includes 2-modules; 4
 temperature inputs & 2 analog outputs)
- OEM Configuration
 - Analog Outputs configurable for control or
 retransmission of Kiln Dry/Wet bulb or Sterilizer
 chamber setpoint and/or temperature values
- Optional Assembly & Telephone support, when specified ...
 - All components installed on DIN rail with
 appropriate wiring between components
 - System Start up telephone support for OEM and
 end users

Order Matrix Notes

Note – Order Codes 1 through 3:

When specifying order codes 1 through 3, the preceding Temperature Input / Analog Output module must also be specified.

When order code 3 is specified, it will be the 8th module in the K6C system. Anytime more than 7 modules are specified a FC6A-EXM2 expansion module is required. The EXM2 will be included in the pricing shown and in the bill of material of components supplied.

Example: If Order Code 2 for an optional Input / Output module is specified, order Code 1 must also be specified as having an Input / Output module. In this case order codes 1 & 2 must both be “1” totaling 4 analog inputs [4-20mA input] with one analog output per module totaling of 2 Analog [4-20mA] outputs.

Configurable Analog Outputs [4-20mA]: the two analog outputs provided as standard and up to three optional analog outputs [5 maximum] are configurable by the Kiln OEM as one of the following:

- PID Control Output for Heat, Spray and/or Vent
- Fan Control output set as a percent output.
- Retransmission of active Kiln Dry Bulb, Wet Bulb or Sterilizer chamber setpoint and/or temperature values. If the control system is a combination Kiln-Sterilizer while in Sterilize function the Sterilizer’s Chamber and Kiln Dry Bulb #1 are the same sensor.

Options:

Price

KilnView Software:

PC communication to Orion Control System \$2,500

SNA-10A: RS232 to RS485 Converter \$159

PC RS232 Serial connection to Kiln System required RS485

DB9M-DB9F-6ft: \$25

Cable [6ft] 9-pin male/female connect SNA10A to PC serial port

RSC PID mA Splitter / Retransmission (also reverses mA)

FDC-RSC-53010-KL (KL configures unit for I/O below) \$238*

- DIN Rail Mount

- 24 VDC Power (24VDC power from System Power Supply)

- Input: 4-20mA (20mA to 4mA with temp rise)

- Output #1: 4-20mA (reverse 4-20mA)

* Up to 2 additional mA (3-max), add \$33 list each (pt# change)

User Manuals:

FDC-730-K6C_Operators_Manual v1.0 \$50

FDC-730-K6C_OEM_Configuration_Manual \$50

Manuals above are available on our site at the link

<http://www.futuredesigncontrols.com/KilnFDC2010K5C.html>

Information on the FDC-RSC Retrans-Reverse Transmitter may be downloaded from the links below.

- [FDC RSC Brochure v1.1.pdf](#)

- [FDC RSC User Manual 01C12_01-20-21.pdf](#)

High & Low Frequency Ferrite Beads

Low Frequency Ferrite Bead is included for each analog input to provide additional protection for electrical “Noise” typically created by Variable Speed Drives. High Frequency Ferrite beads are optionally available.

LFBead-240-2282-ND: Low Frequency Ferrite Beads \$25

HFBead-240-4279-ND: High Frequency Ferrite Beads \$25

Kiln System Spare Parts

The most common replacement parts are shown below; contact us for other replacement components.

NOTE:

- Obsolete FC5A components: there are no replacements available. If a replacement is required, a complete FC6A system less Color Touch Screen is required.
- Obsolete FDC2107i touch screen are not available. Replacement FDC730 display is a form & functional replacement but requires cutting 2-sides of the panel opening by approx. 1/16” each.

Part Number

Price

Color Touch Display & SD card

FDC-730 7” Color Touch Screen: FDC730-1011-00BN \$1,545

FDC730 SD Card: SD-4GB-730-Kiln \$75

Control Module Components

CPU: FC6A-D16R1CEEE v1.50 \$860

CPU FC6A SD Card: SD Card 8GB Kiln-PLC \$75

Comm Card: FC6A-SIF52 \$225

Analog Input/Output Card: FC6A-LO3CN1 \$350

16-Relay Output Card: FC6A-R161 \$240

8-Digital Input Card: FC6A-NO8B1 \$106

Power Supply: PS5R-VD24 60-Watt \$60

Time Delay Relay Power On: GE1A-C10HA110 w/socket \$25

Cable - Display to Control Module Cable (to #1 on FC6A-SIF52):

CA232-8A \$9

USB Memory Stick:

USD115 (8GB) \$15

PC Communication Accessories for KilnView

- PC USB port to 2-wire RS232 (to SN10A) GUC-232 \$50

Note, this part number & price are subject to change.

- 2-wire RS232 to RS485 converter (to #2 on FC6A-SIF52) SN10A \$145

- Cable [6 ft.] to connect SNA10A to PC’s USB to serial port DB9M-DB9F-6ft: \$25

Software Licensing

Future Design Controls “Software” provided with the Control Module and the Color Touch Screen display is protected by copyright laws, international copyright treaties, intellectual property laws and treaties. For further information, refer to the Kiln Control System manual.

This SOFTWARE is licensed at no charge to the end user as long as all Control Module & Display components are supplied by Future Design Controls whether as a new control system or when replacement parts are required. Software ownership and rights remain with Future Design Controls. Future Design Controls may terminate this License for failure to comply with these terms & conditions.

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