For detailed instructions see UDC3500 Controller Product Manual 51-52-25-120.

Step 1. Model Number Interpretation

Write your controller model number in the boxes. Then refer to Tables I, II, III, IV, and V . Circle the corresponding options to identify your controller's features. A dot indicates the feature is available.

| Key Number | - | Table I | - | Table II | - | Table III | - | Table IV | - | Table V |
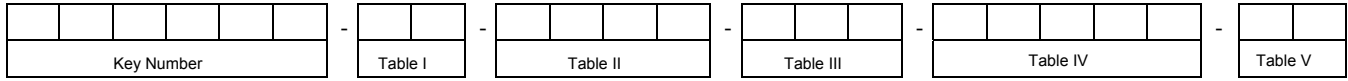
Instructions

- Select the desired key number. The arrow to the right marks the selection available.
- Make the desired selections from Tables I through VI using the column below the proper arrow. A dot (•) denotes availability.

Key Number | I | II | III | IV | V | VI
_ _ _ _ _ _ - _ _ - _ _ _ - _ _ _ - _ _ _ _ _ - _ _ | _
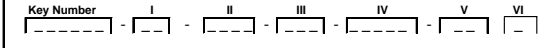
KEY NUMBER - UDC3500 Single & Dual Loop Controller

Description	Selection	Availability	
Digital Controller for use with 90 to 264Vac Power + Current Output #1	DC3500	↓	
Digital Controller for use with 24Vac/dc Power + Current Output #1	DC3501		↓

TABLE I - Specify optional Output and/or Alarms

	Description	Selection	Availability	
Output #2	None	0 _	•	•
	Current Output (4 to 20mA, 0 to 20 mA) (Current Output #3)	C _	•	•
	Electro Mechanical Relay (5 Amp Form C)	E _	•	•
	Solid State 1 Amp (Zero-Crossing Type)	A _	•	•
	Open Collector transistor output	T _	•	•
	Dual 2 Amp Relays (Form A) (Heat/Cool, Pos Prop, TPSC, Relays 1 & 2)	R _	•	•
Relay Outputs #3, #4 and #5	None	_ 0	•	•
	Three (3) E-M Relay (5 Amp Form C)	_ E	•	•

TABLE II - Communications and Software Selections

	Description	Selection	Availability	
Communications	None	0 _ _ _	•	•
	Current Output #2 + (4) Digital Inputs	1 _ _ _	•	•
	Current Output #2 + (4) Digital Inputs + Modbus RS-485	2 _ _ _	•	•
	10 Base-T Ethernet (Modbus RTU) + (4) Digital Inputs	3 _ _ _	•	•
Software Selections	Standard Functions, Includes Accutune	_ 0 _ _	•	•
	Math Option	_ A _ _	•	•
	Set Point Programming (1 Program, 20 Segments)	_ B _ _	•	•
	Set Point Programming Plus Math	_ C _ _	•	•
	HealthWatch	_ D _ _	•	•
	SPP + HealthWatch	_ E _ _	•	•
	Math + HealthWatch	_ F _ _	•	•
	SPP + Math + HealthWatch	_ G _ _	•	•
Enhanced	Enhanced SPP (4 Programs, 20 Segments Each)	_ H _ _		•
	Enhanced SPP + Math	_ J _ _		•
	Enhanced SPP + HealthWatch	_ K _ _		•
	Enhanced SPP + Math + HealthWatch	_ L _ _		•
Loops of Control	Single Loop	_ _ 0 _	•	•
	2 Loops + Internal Cascade	_ _ 2 _	•	•
Real-Time Clock	None	_ _ _ 0	•	•
	Real-Time Clock (RTC)	_ _ _ C	•	•

Availability
DC 3500 3501

TABLE III - Input types can be changed in the field

		Selection	DC 3500	3501
Input 1	TC, RTD, mV, 0-5V, 1-5V	1 _ _	•	•
	TC, RTD, mV, 0-5V, 1-5V, 0-20mA, 4-20mA	2 _ _	•	•
	TC, RTD, mV, 0-5V, 1-5V, 0-20mA, 4-20mA, -1-1V, 0-10V	3 _ _	•	•
	Relative Humidity (Requires Input 2)	1 5 _	•	•
	Carbon, Oxygen or Dewpoint (Requires Input 2)	1 6 _	•	•
Input 2	None	_ 0 _	•	•
	TC, RTD, mV, 0-5V, 1-5V, 0-20mA, 4-20mA	_ 1 _	•	•
	TC, RTD, mV, 0-5V, 1-5V, 0-20mA, 4-20mA, -1-1V, 0-10V	_ 2 _	•	•
	Two HLAI instead of 1 LLAI	_ 3 _	•	•
Input 3	None	_ _ 0	•	•
	TC, RTD, mV, 0-5V, 1-5V, 0-20mA, 4-20mA	_ _ 1	•	•
	TC, RTD, mV, 0-5V, 1-5V, 0-20mA, 4-20mA, -1-1V, 0-10V	_ _ 2	•	•
	Two HLAI instead of 1 LLAI	_ _ 3	•	•
	Slidewire Input for Position Prop. (Requires Dual Relay Output)	_ _ 4	a	a

TABLE IV - Options

		Selection		
Approvals	CE (Standard)	0 _ _ _ _	•	•
	CE, UL and CSA	1 _ _ _ _	•	•
Tags	None	_ 0 _ _ _	•	•
	Stainless Steel Customer ID Tag - 3 lines w/22 characters/line	_ T _ _ _	•	•
Special Options	None	_ _ 0 _ _	•	•
	Custom Calibration (0.05%) For one Range Type Only (Note 1)	_ _ 1 _ _	•	•
Future Options	None	_ _ _ 0 _	•	•
	None	_ _ _ _ 0	•	•

TABLE V - Product Manuals

		Selection		
Manuals	Product Information on CD - (English)	0 _	•	•
	English Manual (Hard Copy)	E _	•	•
	French Manual (Hard Copy)	F _		
	German Manual (Hard Copy)	G _		
	Italian Manual (Hard Copy)	I _		
	Spanish Manual (Hard Copy)	S _		
Certificate	None	_ 0	•	•
	Certificate of Conformance (F3391)	_ C	•	•

TABLE VI

	Selection		
None	0	•	•

Step 2. Dimensions and mounting
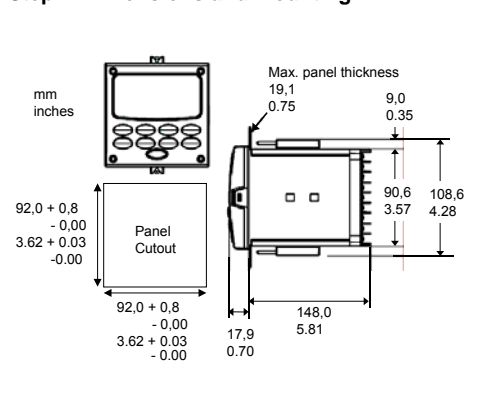
Step 3. Wiring
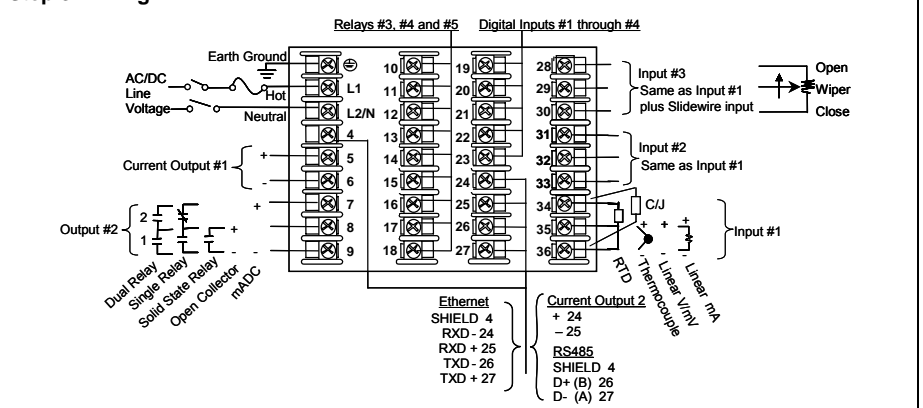
Step 4. Configuration Procedure

Step	Operation	Press	Result
1	Enter Set Up Mode	Setup	Upper Display = SETUP Lower Display = TUNING (This is the first Set Up Group title)
2	Select any Set Up Group	Setup	Sequentially displays the other Set Up group titles shown in the prompt hierarchy. See User Manual. You can also use the ▲or ▼ keys to scan the Set Up groups in both directions. Stop at the Set Up group title that describes the group of parameters you want to configure. Then proceed to the next step.
3	Select a Function Parameter	Func Loop 1/2	Upper Display = the current value or selection for the first function prompt of the selected Set Up group. Lower Display = the first Function prompt within that Set Up group. Sequentially displays the other function prompts of the Set Up group you have selected. Stop at the function prompt that you want to change, then proceed to the next step.
4	Change the Value or Selection	▲or ▼	Increments or decrements the value or selection that appears for the selected function prompt. If you change the value or selection of a parameter while in Set Up mode but then decide not to enter it, press the MAN/AUTO key once. This will recall the original configuration. This "recall" procedure does not work for a Field Calibration process. Field Calibration is a one-way operation.
5	Enter the Value or Selection	Func Loop 1/2	Enters value or selection made into memory after another key is pressed.
6	Exit Configuration	Lower Display	Exits configuration mode and returns controller to the same state it was in immediately preceding entry into the Set Up mode. It stores any changes you have made. If you do not press any keys for 30 seconds, the controller times out and reverts to the mode and associated display used prior to entry into Set Up mode.

Step 5. Configuration Record Sheet

Enter the value or selection for each prompt on this sheet so you will have a record of how your controller was configured.

Group Prompt	Function Prompt	Value or Selection	Factory Setting
LOOP 1 TUNING	PROP BD or GAIN		1.000
	RATE MIN		0.00
	RSET MIN or RSET RPM		1.00
	MAN RSET		0
	PROP BD2 or GAIN2		1.00
	RATE 2 MIN		0.00
	RSET2MIN or RSET2RPM		1.00
	PROP BD3or GAIN3		1.00
	RATE 3 MIN		0.00
	RSET3MIN or RSET3RPM		1.00
	PROP BD4or GAIN4		1.00
	RATE 4MIN		0.00
	RSET4MIN or RSET4RPM		1.00
	CYC SEC or CYC SX3		20
	CYC2SEC or CYC2SX3		20
	SECURITY		0
	LOCKOUT		CALIB
	AUTO MAN		ENABLE
	RUN HOLD		ENABLE
	SP SEL		ENABLE
LOOP 2 TUNING	PROP BD or GAIN		1.000
	RATE MIN		0.00
	RSET MIN or RSET RPM		1.00
	MAN RSET		0
	PROP BD2 or GAIN2		1.00
	RATE 2 MIN		0.00
	RSET2MIN or RSET2RPM		1.00
	PROP BD3or GAIN3		1.00
	RATE 3 MIN		0.00
	RSET3MIN or RSET3RPM		1.00
	PROP BD4or GAIN4		1.00
	RATE 4MIN		0.00
	RSET4MIN or RSET4RPM		1.00
	CYC SEC or CYC SX3		20
SP RAMP	SP RAMP		DISABLE
	TIME MIN		3
	FINAL SP		1000
	HOT START		DISABLE
	SP RATE		DISABLE
	EU/HR UP		0
	EU/HR DN		0
	SP PROG	For SP Program #1 record sheet – See User Manual	
PROGRAM2	PROGRAM 2		DISABLE
		For SP Program #2 record sheet – See User Manual	
PROGRAM3	PROGRAM 3		DISABLE
		For SP Program #3 record sheet – See User Manual	
PROGRAM4	PROGRAM 4		DISABLE
		For SP Program #4 record sheet – See User Manual	
ACCUTUNE	FUZZY		DISABLE
	ACCUTUNE		DISABLE
	DUPLEX		MANUAL
	SP CHANGE		10

Group Prompt	Function Prompt	Value or Selection	Factory Setting
	KPG		1.00
	CRITERIA		FAST
	ACCUTUN2		DISABLE
	DUPLEX		MANUAL
	SP CHANG2		10
	KPG2		1.00
	CRITERIA2		FAST
	AT ERROR		READ ONLY
	AT ERR 2		READ ONLY
ALGORITHM	CONT ALG		PID A
	PIDLOOPS		1 or 2
	CONT2ALG		PID A
	OUT OVRD		DISABLE
	TIMER		DISABLE
	PERIOD		0.01
	START		KEY
	LWR DISP		TI REM
	RESET		KEY
	INCREMENT		MINUTE
	INALG1		NONE
	MATH K		- -
	CALC HI		- -
	CALC LO		- -
	ALG1 INA		- -
	ALG 1 INB		- -
	ALG1 INC		- -
	PCO SEL		DISABLE
	PCT CO		0.200
	PCT H2		- -
	ATM PRESS		780.0
	ALG1 BIAS		- -
	INALG2		NONE
	MATH K2		- -
	CALC HI		- -
	CALC LOW		- -
	ALG2 INA		- -
	ALG2 INB		- -
	ALG2 INC		- -
	ALG2 BIAS		- -
MATH	8SEG CH1		DISABLE
	X1 VALUE		0
	X2 VALUE		0
	X3 VALUE		0
	X4 VALUE		0
	X5 VALUE		0
	X6 VALUE		0
	X7 VALUE		0
	X8 VALUE		0
	Y1 VALUE		0
	Y2 VALUE		0
	Y3 VALUE		0
	Y4 VALUE		0
	Y5 VALUE		0
	Y6 VALUE		0
	Y7 VALUE		0
	Y8 VALUE		0
	8 SEG CH2		DISABLE
	X9 VALUE		0
	X10 VALUE		0
	X11 VALUE		0
	X12 VALUE		0
	X13 VALUE		0
	X14 VALUE		0
	X15 VALUE		0
	X16 VALUE		0
	X17 VALUE		0
	Y9 VALUE		0
	Y10 VALUE		0
	Y11 VALUE		0
	Y12 VALUE		0

Group Prompt	Function Prompt	Value or Selection	Factory Setting
	Y13 VALUE		0
	Y14 VALUE		0
	Y15 VALUE		0
	Y16 VALUE		0
	Y17 VALUE		0
	TOTALIZE		DISABLE
	ΣXXXXXXX		- -
	TOT SCALE		E0
	TOT SCR		UNLOCK
	Σ RESET?		NO
	TOT RATE		SECOND
	POLYNOM		DISABLE
	C0 VALUE		0
	C1 VALUE		0
	C2 X 10^{-1}		0
	C2 X 10^{-3}		0
	C2 X 10^{-5}		0
	C2 X 10^{-7}		0
LOGIC	LOG GATE		DISABLE
	GATE1TYP		NOT USED
	GATE1INA		CONST K
	GATE1 K		0
	GATE1INB		FIXED OFF
	GATE1OUT		ANY GATE
	GATE2TYP		NOT USED
	GATE2INA		CONST K
	GATE2 K		0
	GATE2INB		FIXED OFF
	GATE2OUT		ANY GATE
	GATE3TYP		NOT USED
	GATE3INA		CONST K
	GATE3 K		0
	GATE3INB		FIXED OFF
	GATE3OUT		ANY GATE
	GATE4TYP		NOT USED
	GATE4INA		CONST K
	GATE4 K		0
	GATE4INB		FIXED OFF
	GATE4OUT		ANY GATE
	GATE5TYP		NOT USED
	GATE5INA		CONST K
	GATE5 K		0
	GATE5INB		FIXED OFF
	GATE5OUT		ANY GATE
OUTPUT	OUT ALG		CURRENT
	OUT RNG		100PCT
	C1 RANGE		4-20mA
	RLYSTATE		1OF2ON
	RLY TYPE		MECHAN
	MOTOR TI		5
	OUT2 ALG		CURRENT
	OUT2 RNG		100PCT
	C3 RANGE		4-20mA
	RLYSTAT2		1OF2ON
	CUR OUT1		DISABLE
	LOW VAL		0.0
	HIGH VAL		100.0
INPUT 1	IN1 TYPE		0-10mV
	XMITTER1		LINEAR
	IN1 HIGH		1000
	IN1 LOW		0
	RATIO 1		1.00
	BIAS IN1		0
	FILTER 1		0
	BURNOUT1		NONE
	EMISSIV1		0.00
INPUT 2	IN2 TYPE		0-10mV
	XMITTER2		LINEAR
	IN2 HIGH		1000
	IN2 LOW		0
	RATIO 2		1.00
	BIAS IN2		0
	FILTER 2		0
	BURNOUT2		NONE
	EMISSIV2		0.00

Group Prompt	Function Prompt	Value or Selection	Factory Setting
INPUT 3	IN3 TYPE		0-10mV
	XMITTER3		LINEAR
	IN3 HIGH		1000
	IN3 LOW		0
	RATIO 3		1.00
	BIAS IN3		0
	FILTER 3		0
	BURNOUT3		NONE
	EMISSIV3		0.00
INPUT 4	IN4 TYPE		0-10mV
	XMITTER4		LINEAR
	IN4 HIGH		1000
	IN4 LOW		0
	RATIO 4		1.00
	BIAS IN4		0
	FILTER 4		0
	BURNOUT4		NONE
INPUT 5	IN5 TYPE		0-10mV
	XMITTER5		LINEAR
	IN5 HIGH		1000
	IN5 LOW		0
	RATIO 5		1.00
	BIAS IN5		0
	FILTER 5		0
	BURNOUT5		NONE
CONTROL	PV SOURC		INPUT 1
	PID SETS		1 ONLY
	SW VAL12		0
	SW VAL23		0
	SW VAL34		0
	LSP'S		1 ONLY
	RSP SRC		NONE
	AUTOBIAS		DISABLE
	SP TRACK		NONE
	PWR MODE		MANUAL
	PWR OUT		LAST
	SP HiLIM		1000
	SP LoLIM		0
	ACTION		REVERSE
	OUT RATE		DISABLE
	PCT/M UP		0
	PCT/M DN		0
	OUTHiLIM		100
	OUTLoLIM		0.0
	I Hi LIM		100
	I Lo LIM		0
	DROPOFF		0
	DEADBAND		1.0
	OUT HYST		0.5
	FAILMODE		NO LATCH
	FAILSAFE		0.0
	SW FAIL		0
	MAN OUT		0
	AUTO OUT		0
	PBorGAIN		GAIN
	MINorRPM		MIN
CONTROL2	PV 2SRC		INPUT 2
	LINK LPS		DISABLE
	PID SETS		1 ONLY
	SW VAL 12		0
	SW VAL23		0
	SW VAL34		0
	LSP'S		1 ONLY
	RSP SRC		NONE
	AUTOBIAS		DISABLE
	SP TRACK		NONE
	PWRMODE		MANUAL
	SP HiLIM		1000
	SP LoLIM		0
	ACTION		REVERSE
	OUT RATE		DISABLE
	PCT/M UP		0
	PCT/M DN		0
	OUTHiLIM		100
	OUTLoLIM		0

Group Prompt	Function Prompt	Value or Selection	Factory Setting
	I Hi LIM		100.0
	I Lo LIM		0.0
	DROPOFF		0
	DEADBAND		1.0
	FAILMODE		NO LATCH
	FAILSAFE		0
OPTIONS	CUR OUT2		DISABLE
	C2RANGE		4-20mA
	LOW VAL		0
	HIGH VAL		100
	CUR OUT3		DISABLE
	C3RANGE		4-20Ma
	LOW VAL		0
	HIGH VAL		100
	DIG1 INP		NONE
	DIG1 COMB		DISABLE
	DIG INP2		NONE
	DIG2 COMB		DISABLE
	DIG INP3		NONE
	DIG INP4		NONE
	Dion LP2		NONE
COM	Com ADDR		3
	ComSTATE		DISABLE
	IR ENABLE		DISABLE
	BAUD		19200
	TX DELAY		1
	WSFLOAT		FP B
	SHEDENAB		DISABLE
	SHEDTIME		0
	SHEDMODE		LAST
	SHEDSP		TO LSP
	UNITS		PERCENT
	CSP RATO		1.0
	CSP BIAS		0
	CSP2RATO		1.0
	CSP2BIAS		0
	LOOPBACK		DISABLE
ALARMS	A1S1TYPE		NONE
	A1S1 VAL		90
	A1S1 H L		HIGH
	A1S1 EV		- -
	A1S2 TYPE		NONE
	A1S2 VAL		10
	A1S2 H L		LOW
	A1S2 EV		- -
	ALHYST1		0.1
	A2S1TYPE		NONE
	A2S1 VAL		95
	A2S1 H L		HIGH
	A2S1 EV		- -
	A2S2TYPE		NONE
	A2S2 VAL		5
	A2S2 H L		LOW
	A2S2 EV		- -
	ALHYST2		0.1
	A3S1TYPE		NONE
	A3S1 VAL		95
	A3S1 H L		HIGH
	A3S1 EV		- -
	A3S2TYPE		NONE
	A3S2 VAL		5
	A3S2 H L		LOW
	A3S2 EV		- -
	ALHYST3		0.1
	A4S1TYPE		NONE
	A4S1 VAL		95
	A4S1 H L		HIGH
	A4S1 EV		- -
	A4S2TYPE		NONE
	A4S2 VAL		5
	A4S2 H L		LOW
	A4S2 EV		- -
	ALHYST4		0.1
	ALM OUT1		NO LATCH
	BLOCK		DISABLE

Group Prompt	Function Prompt	Value or Selection	Factory Setting
	DIAGNOST		DISABLE
	ALRM MSG		DISABLE
CLOCK	HOURS		SET TO FACTORY TIME
	MINUTES		" " " "
	SECONDS		" " " "
	YEAR		" " " "
	MONTH		" " " "
	DAY		" " " "
	SET CLK?		" " " "
	ADJUST		0
MAINTNCE	TIME 1		DISABLE
	TIME 2		DISABLE
	TIME 3		DISABLE
	COUNT 1		DISABLE
	COUNT 2		DISABLE
	COUNT 3		DISABLE
	PASSWORD		0
	RES TYPE		NONE
DISPLAY	DECIMAL		NONE
	DECIMAL2		NONE
	TEMPUNIT		NONE
	PWR FREQ		60 HZ
	RATIO 2		DISABLE
	LANGUAGE		ENGLISH
	TC DIAGN		ENABLE
	IDNUMBER		0
TIME EVENTS	EVENT 1		NONE
	TIME 1		- -
	HOUR 1		- -
	MINUTE 1		- -
	MONTH 1		- -
	DAY 1		- -
	EVENT 2		NONE
	TIME 2		- -
	HOUR 2		- -
	MINUTE2		- -
	MONTH 2		- -
	DAY 2		- -
ETHERNET AND EMAIL (Accessible via PIE Tool)	MAC Address		(case label on instrument)
	IP Address		10.0.0.2
	Subnet Mask		255.255.255.0
	Default Gateway		0.0.0.0
	SMTP Address (for Outgoing)		0.0.0.0
	To Email 1		- -
	From Email 1		- -
	To Email 2		- -
	From Email 2		- -

Step 6. Start Up Procedure for Operation

Step	Operation	Press	Result
1	Select Manual Mode	**Man Auto**	Until "M" indicator is ON. The controller is in manual mode.
2	Adjust the Output	▲ or ▼	To adjust the output value and ensure that the final control element is functioning correctly. Upper Display = PV Value Lower Display = OUT and the output value in %
3	Enter the Local Setpoint	**Lower Display**	Upper Display = PV Value Lower Display = SP and the Local Setpoint Value
		▲ or ▼	To adjust the local setpoint to the value at which you want the process variable maintained. The local setpoint cannot be changed if the Setpoint Ramp function is running.
4	Select Automatic Mode	**Man Auto**	Until "A" indicator is ON. The controller is in Automatic mode. The controller will automatically adjust the output to maintain the process variable at setpoint.
5	Tune the Controller		Make sure the controller has been configured properly and all the values and selections have been recorded on the Configuration Record Sheet. Refer to Tuning Set Up group to ensure that the selections for Pb or GAIN, RATE T, and I MIN, or I RPM have been entered. Use Accutune to tune the controller; see the procedure in the User Manual.