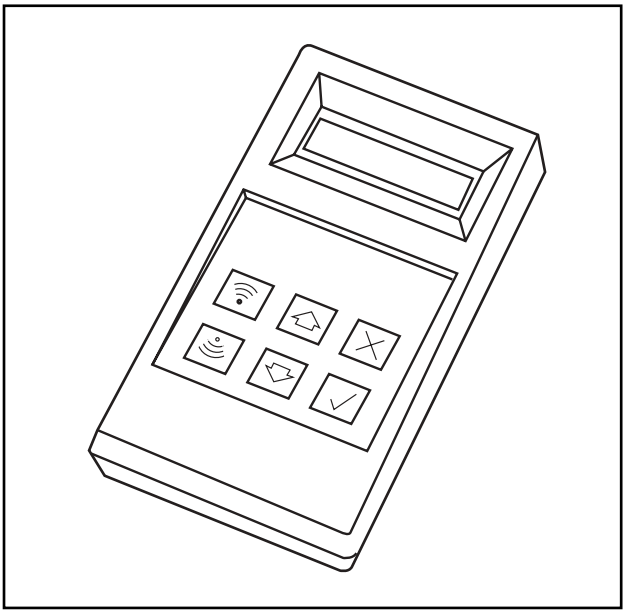
Intellect Programming Manual



Crompton LIGHTING

Master Programmer

Incorporating Software Version 1.41

Introduction

Crompton Lighting's Intellect system consists of luminaires that have the ability to communicate with each other along a dedicated 2 wire bus system.

Each luminaire incorporates a microprocessor and software giving a level of intelligence, that is housed within a small cuboid.

This level of intelligence allows the luminaire to sense occupancy patterns and react to varying levels of ambient light by controlling the output of its lamps.

The master programmer is a hand held unit which transmits and receives information to and from the luminaire by infra-red communications.

The programming of each luminaire and hence the commissioning of the system is straight forward, however this task should only be undertaken after the instructions that follow have been read and fully understood.

Contents

1. Push button keypad

The Intellect digital programmer (ILD IR PR) has six ‘touch pad’ buttons on the unit’s upper face. These buttons are used sequentially to switch the unit on and off and to further scroll through the options available. Once selected, the parameter can then be set to the desired level, the keys then being used to initiate the communication to and from the individual luminaires being commissioned.

2. Switching the programmer on & off

The master programmer can be switched on by depressing the ‘Esc On/Off’ button for 2 seconds. By depressing the same button again for 2 seconds, the programmer can be switched off.

3. Push button functions

PREVIOUS & NEXT	Used to scroll through the menus or functions available. Once a function is selected, the same buttons then allow you to scroll through the range of values allocated to it.
SELECT	Used to select the sub-routine or function indicated at any time in the display window. Once a function is selected, this will be indicated with an asterisk (*) on the display.
ESC ON/OFF	The only dual function button, used either to switch the master programmer on and off as described previously, or to escape from one of the sub-routines or after the required value has been selected.
SEND	Used to transmit data from the master programmer to the luminaire (see ‘Transmitting’).
READ	Used to extract data from the luminaire back to the master programmer (see ‘Receiving’).

4. Guidance notes on Intellect’s operational capabilities

The master programmer enables each luminaire to be indefinitely configured and re-configured across a wide range of parameters, most of which are more or less self-explanatory. However Intellect luminaires incorporate some very powerful features which require a little further explanation. They can communicate with each other and have the ability to be configured in groups in order to enhance the presence detection capabilities of the system (see section 5). Intellect luminaires can also respond individually to changes in light level and operate in several modes, reacting to changes in occupancy to suit the users requirements, section 7 lists the functions and their effects.

5. Intellect communication facilities

Before an installation is commissioned, each luminaire's presence detection system acts individually, obeying the factory set parameters.

Put simply, with default settings, only after each luminaire has detected movement, will it switch itself on.

This system of operating individually has many drawbacks, for instance, the work area can appear 'patchy' if inadequately lit from a number of luminaires, and, in the event of building occupants working late and alone, they will be surrounded by darkness.

Furthermore, PIR technology is comparatively insensitive, so luminaires towards the edge of an occupied area will tend to switch off during periods of relative inactivity, only to switch back on as soon as a large movement is made.

These drawbacks can be eliminated by Intellect's unique grouping capabilities as described below.

Each Intellect luminaire has the capability of being programmed with up to four 'address' numbers. Every luminaire that is programmed with the same address number will turn itself on if any of the luminaires with that address detect movement. To allow maximum flexibility, each luminaire can be programmed with up to 4 of the 50 available addresses. This feature prevents an individual sitting alone at night in a pool of light surrounded by darkness.

Each Intellect luminaire also has the capability of being programmed with up to 3 'common' zones (in addition to the conventional addresses). Common zones are used for core areas like corridors, toilets and entrances. A luminaire programmed with any common zone will automatically turn on if any other luminaire in the installation (which has any address programmed) is turned on by the presence of a person. This feature ensures that designated common luminaires are lit if anyone is present in the building. In order to give maximum flexibility, three common channels are available. If a person comes into a corridor from outside the building and activates a common channel corridor luminaire, all luminaires with the same common channel will turn on. The three available common channels give the user the option of which corridor luminaires he wishes to come on under these circumstances, all of which will respond to any addressed luminaire.

Communication grouping is just one of the many facilities available to the commissioning person, all of which are described in section 7.

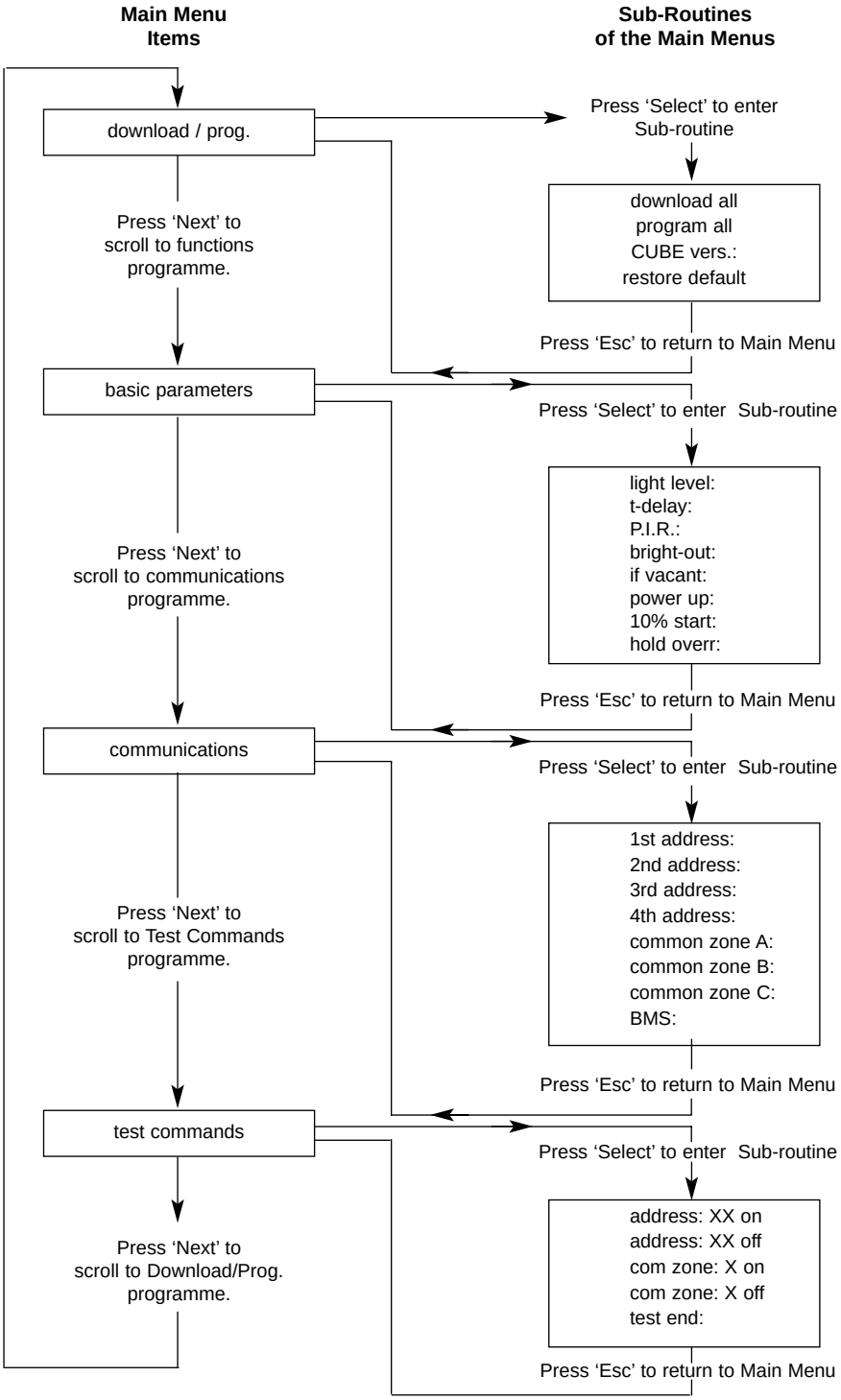
6. Accessing the system parameters

Upon switching the programmer on (as previously described), the display will show the start up screen and, briefly, the programmer's software version. By depressing the 'next' button momentarily, the display will scroll to the first menu item, "download/prog." If required, this sub-routine can be entered by pressing the 'select' button and its parameters viewed or changed.

After selection, the sub-routine can be exited from, at any time, by pressing the 'escape' key, i.e. 'Esc On/Off'.

The remaining 3 main menu items can then be continuously scrolled through by pressing the 'next' button. All sub-routines can be entered from the main menus or exited by pressing either the 'select' or 'escape' keys.

The main menus and their sub-routines are given in the diagram opposite.


Main Menu Items
Sub-Routines of the Main Menus
download / prog.
Press 'Select' to enter Sub-routine
download all
program all
CUBE vers.:
restore default
Press 'Esc' to return to Main Menu
Press 'Next' to scroll to functions programme.
basic parameters
Press 'Select' to enter Sub-routine
light level:
t-delay:
P.I.R.:
bright-out:
if vacant:
power up:
10% start:
hold overr:
Press 'Esc' to return to Main Menu
Press 'Next' to scroll to communications programme.
communications
Press 'Select' to enter Sub-routine
1st address:
2nd address:
3rd address:
4th address:
common zone A:
common zone B:
common zone C:
BMS:
Press 'Esc' to return to Main Menu
Press 'Next' to scroll to Test Commands programme.
test commands
Press 'Select' to enter Sub-routine
address: XX on
address: XX off
com zone: X on
com zone: X off
test end:
Press 'Esc' to return to Main Menu
Press 'Next' to scroll to Download/Prog. programme.

7. Cube functions & their permissible values

The behaviour of each luminaire is determined by 16 parameters, each of which may be assigned specific values by using the Intellect 'master programmer.'

Once set, all values are stored in non-volatile memory and are unaffected by power cuts of any duration or other supply disturbances, they can only be changed by use of the programmer.
The complete list of parameters together with their permitted range of values are listed below.

Download/Prog

Function	Comments	Data Transfer	Note
download all	Downloads all the information stored in the cube to the programmer for viewing	Read (Send key can be used)	
program all	Transmits all the data currently in the programmer to the cube.	Send	
CUBE ver.	Reads and displays the software version of the cube	Read (Send key can be used)	1
restore default	Once transmitted, the cube will revert back to the factory set parameters.	Send	

Note 1 Cube functionality is different on versions prior to ver. 8, earlier versions of programmer should be used in these cases as transfer of data for some functions will show an error and result in incorrect programming.

Basic parameters

Function	Permitted Values	Default	Comments	Note
light level	1-100 / max	max	If set to a value from 1-100, the luminaire maintains a fixed illuminance level corresponding to the setting, by regulating the lamp's output within the system's capabilities. By selecting 'max', the luminaire will operate at its maximum output, irrespective of ambient light levels.	2
t-delay	30s-60m / cont.	20 min.	Sets the time span between the last detected movement and the point at which the luminaire switches off. By selecting 'cont', the luminaire will remain on until otherwise commanded by either communications or the hand controller.	
P.I.R.	active/ inactive/ off only	active	Activates or de-activates the passive infra-red presence detector. If 'off-only' is selected, the luminaire will remain on while ever presence is detected.	3
bright-out	yes / no	yes	Operates when ambient light is more than 150% of the regulated light setting. If set to 'no', the fitting behaves normally, if 'yes', excessive ambient light will turn off a luminaire or prevent it turning on, even if movement is detected.	
if vacant	off / low (1m-cont)	off	Controls the turning off of the luminaire after the normal time delay has expired. When 'off', the luminaire will simply fade to off. If a time is selected, it will fade down and then remain at minimum output for that period before turning off, during which, if movement is detected, the normal light output setting will be resumed. The fitting will stay at minimum if 'cont' is selected.	4
power up	on / off	on	When 'on', the luminaire will turn on when power is first applied, if no movement is detected, it will time out and turn off. If power up is 'off', the fitting will remain off for at least 30 seconds, after which it will turn on as normal once movement is detected, this is used to reduce start-up load.	

Basic parameters (Cont)

Function	Permitted Values	Default	Comments	Note
10% start	on / off	on	If set to 'on', the cube instructs the ballast to switch on the lamps at 10% light output. If 'off', a 1% start level will be selected.	4
hold overr.	yes / no	no	This function relates to operations with the hand controller. With hold override 'no', the fitting can be adjusted with the hand controller to the desired (non-regulating) light output level and will stay at this setting until it times out due to inactivity. Once the fitting is triggered and turns on again, it will resume it's previous regulating level. With hold override 'yes', the luminaire will retain the non-regulating level, preset with the hand controller, when it turns back on. Regulating operation can be resumed by sending an 'automatic' command with the hand controller.	

Note 2 The range of actual light output from a luminaire will vary with a number of external influences, such as ceiling height, reflectivity of surfaces, other light sources etc. and it must be remembered that these settings are reactive , not fixed light output levels. A setting of 100 does not necessarily correspond to maximum light output, most installations will give full outputs at lower level settings.

Note 3 If P.I.R. is set to 'inactive' or 'off only', the luminaire can only be turned on either by using the hand controller, or via communications from another fitting.

Note 4 The minimum light output level is dependent on the type of ballast used in the luminaire. All types will work with 10% start set.

Communication

Function	Permitted Values	Default	Comments	Note
1st address... ....4th address	-- / 1-50	--	Up to 4 addresses can be programmed into each cube to allow intercommunication with similarly numbered individual or groups of luminaires. (See section 5 'Intellect Communication facilities' for more explanation).	5
com zone A... ...com zone C	on / off	off	Three common zones are available in each cube any of which will respond to commands from any addressed luminaires. (See section 5 'Intellect Communication facilities' for more explanation).	5
BMS	on / off	off	If BMS is set to 'on', the luminaire may be switched OFF by a building management system, irrespective of occupancy, for load shedding purposes. (See separate BMS instructions.)	

Note 5 A cube's communication facilities can be turned off by leaving all addresses blank (- -) and common zones A - C off. Only addressed luminaires will cause a common zoned luminaire to respond.

Test commands

Function	Permitted Values	Comments	Note
address : XX on	1 - 50	By pressing the send button below any luminaire connected to the communications bus, all luminaires with the selected address will be switched on.	6
address : XX off	1 - 50	By pressing the send button below any luminaire connected to the communications bus, all luminaires with the selected address will be switched off.	6
com zone : X on	A, B or C	By pressing the send button below any luminaire connected to the communications bus, all luminaires with the selected common zone will be switched on.	6
com zone : X off	A, B or C	By pressing the send button below any luminaire connected to the communications bus, all luminaires with the selected common zone will be switched off.	6
test end	N/A	This function cancels any current test command and thus allows all luminaires to revert to normal operation. The system automatically executes this function 1 hour after the last test command was issued. If 'test end' is not sent, other operations cannot be carried out.	

Note 6 When test commands are sent, the programmer will notify the user whether the cube being used holds the address or common zone within its memory with the phrase "found this cube". If the cube does not contain the address or zone, the response "not in this cube" will be shown. The system does not differentiate between remote and non-existent addresses or common zones.

8. Setting the parameters

The full set of parameters can be loaded into the programmer and reviewed before sending to the luminaire. The luminaire may be programmed and re-programmed indefinitely. Two methods of setting data within the programmer exist and are described below.

Method 1- By Direct Key Entry

This method is normally used when programming luminaires for the first time.

Data is selected and entered using the 'previous', 'next' and 'select' buttons.

When all the parameters have been set, they can then be sent to the luminaire (see 'Transmitting').

Method 2 - Directly from a Download

This method is normally used to modify a previously programmed luminaire.

Following a 'download all' command, the programmer's memory will contain all the parameter values for that luminaire.
These values may then be edited as described in Method 1 and sent back to the luminaire or transmitted to a new luminaire. Choosing this option makes it easy to copy a set of parameters from one luminaire to another, particularly if they are in the same group.

9. Transmitting

Data may be sent to the luminaire all at once by using the ‘program all’ function, or parameter by parameter by using the ‘send’ button with the current value displayed on the screen.

In section 7, “Cube functions and their permissible values”, each parameter is tabled along with the permitted values. Individual values can be sent using the ‘send’ button, or a “program all” sequence instigated in the same manner.

When the ‘send’ button is pressed, the data is sent to the luminaire which then checks with the programmer for errors. If the information is acceptable, “data ok” is displayed on the programmer. During data transmission, a red LED within the cube mimics the transfer signal.

10. Receiving

Data may be requested from the luminaire by the programmer in two ways.

With the “download all” function selected, pressing either the ‘send’ or ‘read’ buttons will download all the information contained within the luminaire. This can then be displayed and amended as required.

As described previously, the section titled “Cube functions...” shows permissible values. Data can be extracted individually from the luminaire by pressing the ‘read’ button when below the luminaire in question.

Handshaking and error checking is similar to transmitting.

11. Data transmission error messages

During data transfer, the master programmer displays messages to show communication integrity, below is a list of the more common messages likely to be encountered.

TxD_DATA;XXXX:XXXX relates to the coded reference of the data that is being transmitted. This is a continuous sequence and indicates that transmitting and receiving commands are being carried out.

TxD_DATA OK: Following the successful transmission or reception of data described above, “Data OK” is visual confirmation that the operation has been successfully carried out.

TxD_TIMEOUT: No response from the cube was received, ie, it needs to make a ‘handshake’ prior to transmitting information. If this is indicated try again.
TxD_ERROR: Transmission has been carried out successfully, but the cube has given an unintelligible answer. The chances are that the cube will be programmed, but a second attempt at transmitting the data should be made.

ERROR_FLAG: Transmission was not correct. The information may have been corrupted or the transmission link not retained. Try again.

To ensure effective communication, please follow these simple rules:

1) Stand directly below the luminaire and point the programmer towards the sensor in the middle of the luminaire.

2) During the process of transmitting or receiving information, try to keep as still as possible after pressing the ‘send’ or ‘read’ buttons, until “Data OK” appears on the display.

NOTE: The luminaire will automatically switch itself off when using “program all” and “download all” and switch back on when successfully completed. This reduces the possibility of data corruption by the infra-red radiation from the luminaire’s lamps during data transfer.

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