IX.NET |

INTEGRATED PROCESS CONTROL

USER MANUAL

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SCOPE OF DELIVERY

+ ix.net with 1 MBit EEPROM
+ 12-24V power supply unit
+ ix.pixel modules, left version and right version (number depending on order)
+ Connecting cable of different length
+ LED mounting channels of different lengths
+ Serial hand scanner MS5145 Eclipse from Honeywell
+ 2 push-buttons incl. connecting cable
+ This manual with control barcodes

OVERVIEW

The ix.net's integrated process control allows a user to be guided sequentially through a recipe in assembly or similar scenarios with the help of multi-coloured LEDs. A recipe consists of several work steps, each of which contains a number of activated LEDs. Recipes can be programmed via a teach-in process. The ix.net offers the following additional functions:

+ Teach-in and subsequent sequential processing of recipes
+ Individually adjustable colour/quantity/blinking speed for each LED
+ Refilling of items
+ Exchange of storage locations
+ Management/synchronisation of recipes via the network connection
+ Updating firmware via the network connection
+ Optional intervention control/confirmation

INSTALLATION

Connection overview ix.net

Hand scanner (Serial connection) — 1
Button (OK) — 2B
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Extension connection — 2C

10 Mbit network — 5
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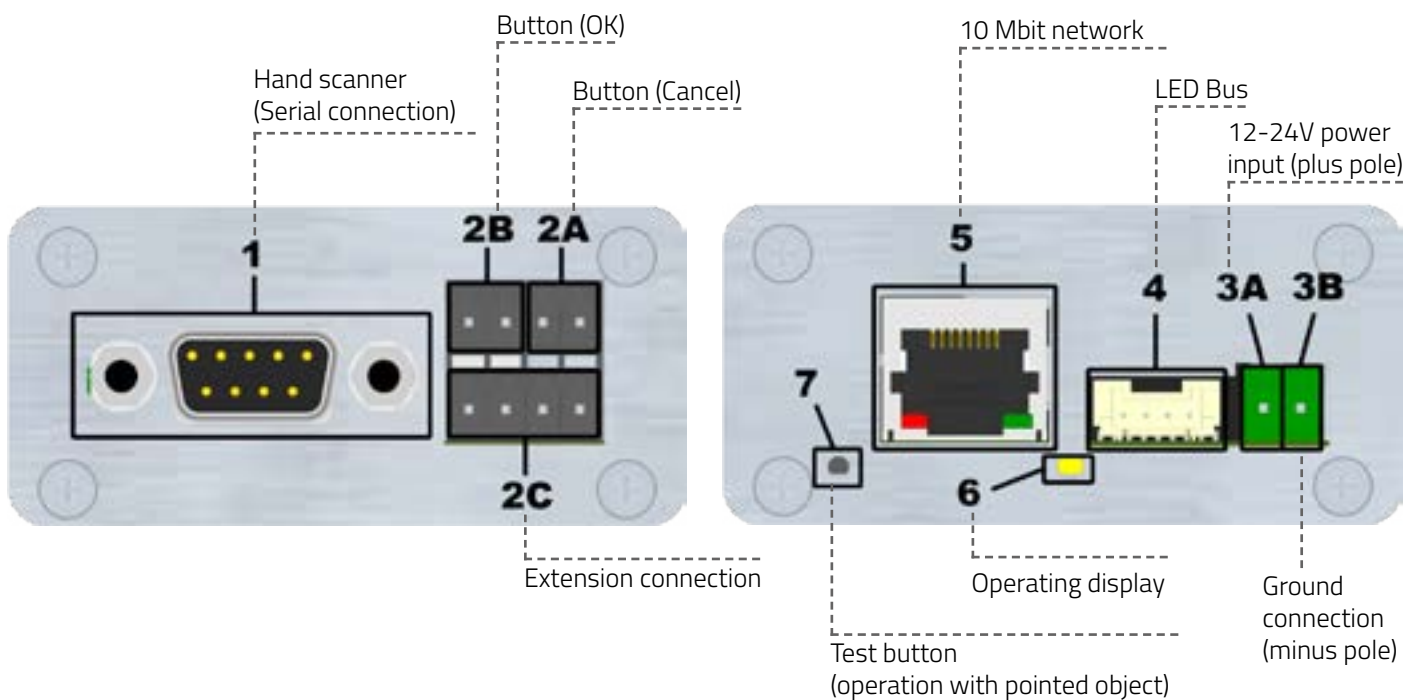
ASSEMBLY

Assembly LED-Bus

The installation of the ix.net system with integrated process control begins with the installation of the LED bus for displaying the storage locations. The LED bus consists of individual ix.pixel modules (LED modules) that are connected with cables. The cable length depends on the distances between the storage locations, but must not exceed an individual length of 2 metres.

ATTENTION: When installing the ix.pixel modules, make sure that the inputs and outputs are not reversed (short circuit).

The circuit board of the ix.pixel is coloured white at one socket. This socket is the input. There is a left and a right version of the ix.pixel module, with either the input on the left or on the right.

The LED bus is a serial connection and starts at the ix.net module. When mounting on a work table or shelf, the following LED bus routing can be selected (the arrows represent the cables with signal routing):
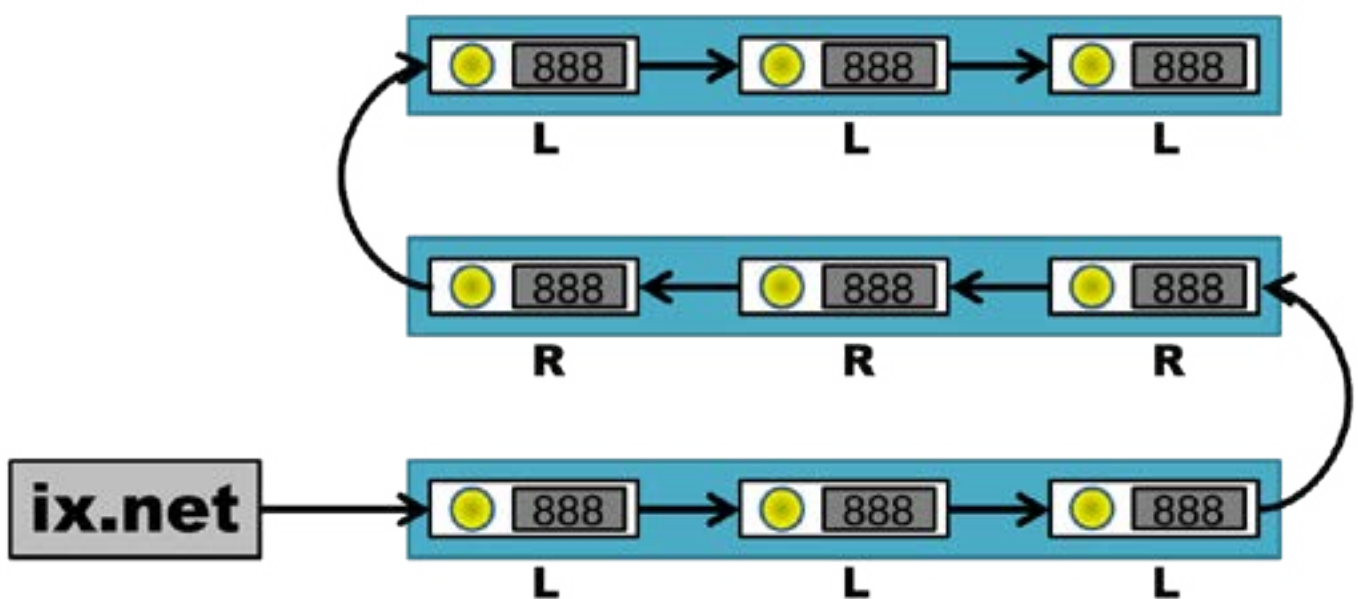
The LED bus passes through one level and then changes to the next level, whereby the LED bus direction changes. According to the direction of the LED bus, the left or right version of the ix.pixel module must be used. This is marked with L and R in the drawing.

If only one version of the ix.pixel module is available (e.g. the left version), the LED bus can be constructed as follows:
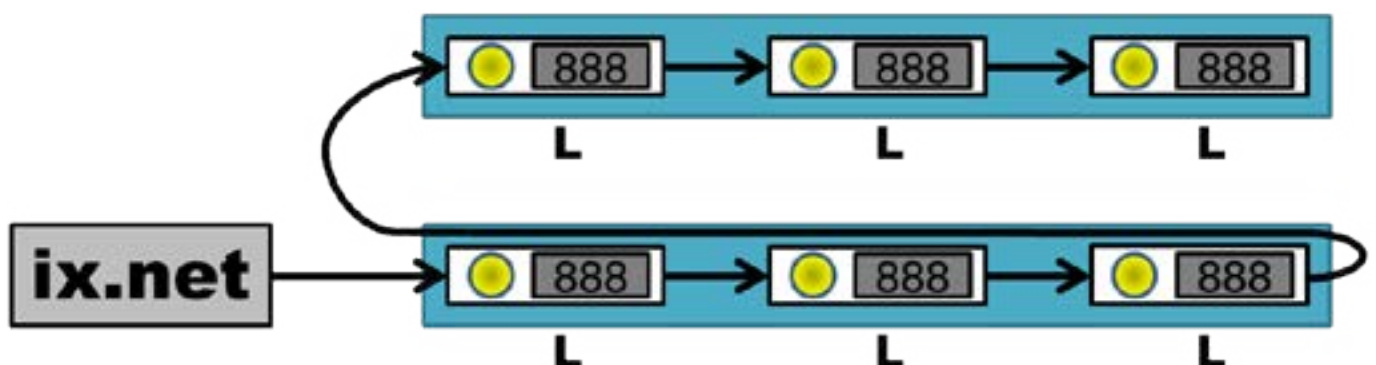
With this type of set-up, the cable at the end of the level within the LED channel is returned to the start of the level and from there is led to the next level. It should be noted here that a cable between two modules must not exceed the length of 2 metres.

This variant can also be used if the individual levels only have a suspension on one side. If such a level exceeds the maximum individual cable length of 2 metres, an ix.pixel module of the other version must be installed at this point in order to extend the cable with it. This could be the case, for example, if in a long row of left modules a left module is taken out and its two neighbours are connected accordingly. Then a right-hand module is mounted at the place of the removed module and connected to the feedback cable. A new feedback cable can now be continued from this right-hand module.

Mounting status indicator

The status display is any LED module of the LED bus. In the delivery state, the first LED module after the control module is programmed as the status indicator. However, it is possible to reprogram this to another LED module during commissioning. The LED module that serves as the status indicator should be mounted so that it is easily visible from the operator's position.

Mounting push button

The push buttons are connected to the terminals 2A and 2B according to the pin assignment of the ix.net control module. It does not matter how the two wires of the button are connected to the two-pole connection of the control module. The button on 2A has the cancel function, the button on 2B has the OK function.

Mounting hand scanner

The hand scanner is connected to the serial port (1) of the ix.net module. The power supply unit, which is supplied with the hand-held scanner, does not need to be connected. The hand-held scanner is supplied with power via the ix.net control module.

Mounting light grid

The ix.net control module can optionally be equipped with a light grid for intervention control / confirmation. The instructions for mounting the light curtain can be found in the manual of the light curtain system. Once the light grid is mounted, it is connected to the ix.net's port 2C via its serial interface using the serial connection cable supplied by us.

Montage ix.net Steuermodul

The ix.net control module is linked to the rest of the system (LED bus and power source) according to the pin assignment. The ix.net housing can then be mounted on a suitable surface at the beginning of the LED bus. As soon as the control module is connected to the 24V power supply, the module starts. It is therefore advisable to wait with this connection until the end of the installation. The power supply should always be disconnected before the regulated 24V power supply unit so that there are no uncontrolled voltage peaks on the LED bus. If a connection on the LED bus is plugged in or disconnected while the 24V power source is in operation, damage to the LED bus may occur.

Commissioning ix.net

After the ix.net system has been set up according to the installation instructions, it can now be switched on by plugging in the power supply of the regulated power supply unit. The operating LED (6) should then light up yellow. If this is not the case, the polarity of the power connection and the functionality of the power supply must be checked.

The next step is to commission all LED modules. The LED modules with actuation sensor must be programmed and calibrated once so that they function properly. To do this, first press the button (7) until the operation LED (6) flashes twice in quick succession (approx. 6 seconds). Releasing the button (7) starts the programming process of the LED modules. For this purpose, the LEDs light up one after the other, first blue, then green. If an LED lights up alternately blue and red and is not the last module in the bus, the following LED module cannot be programmed.
In this case, the plug connection to this module must be checked and the successor module replaced if necessary. If this does not help, there is also the possibility of a defect in the blue-red flashing LED.

None of the LED modules should display an error code in the form of EX. If this is nevertheless the case, further information and instructions on how to eliminate the error can be found on page 26 in the section **Error codes.**

If none of the LED modules show an error, it must be checked whether the entire LED bus can be reached by the ix.net control module, i.e. whether all cable connections are correctly plugged in. To do this, press the button (7) on the ix.net control module for less than 2 seconds. Press this button several times to test all basic colours and segment displays of the LED modules on the entire LED bus. All LED modules should always light up in the same way, e.g. all reds, all greens, etc. If this is not the case, the cable connection must be checked after the last functioning LED module. If the cable connection is correct, the last functioning or first non-functioning LED module should be replaced. If one of the three basic colours of an LED module does not light up or if a spot in the segment display is missing, this LED module is defective and must be replaced.

Now the position of the status display is defined. When delivered, the first LED module on the LED bus is the status indicator. If the first LED module has been installed as the status indicator, this step is completed. In order to program the status indication to another LED module, the function „Swap storage location" must be used, because the status indication corresponds to storage location 0.
For more information and the barcode for **„swap storage location"**, see page 15.
The next step is to press the LED of the status indicator. This should change from blue to yellow. Then press the LED module that is to function as the new status indicator. This will now also light up yellow. The function „Swap storage location" is completed by scanning the barcode for „Save".
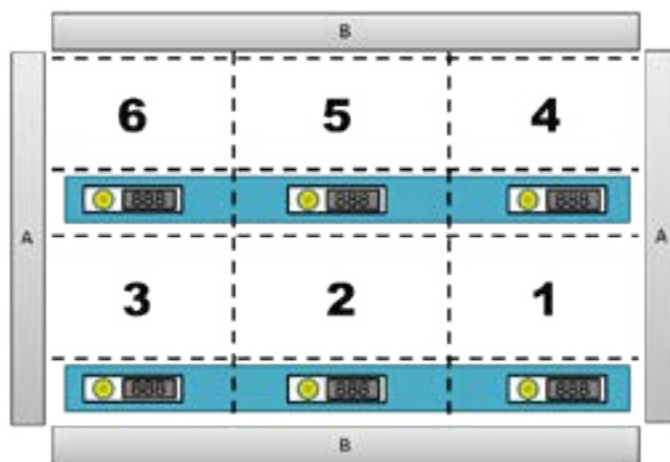for „Save" is scanned. The new status indicator should now light up green.

The commissioning of the ix.net module is now complete and the system can be used.

Commissioning light grid

Initial commissioning

The commissioning of the light grid requires a functioning 1D or 2D light grid installation. A typical 2D light grid installation may look as follows:

In front of the storage spaces, the light module pairs A and B each span a light grid. Above each storage location, a rectangle is drawn that defines the space that is considered to be the intervention area for the LED module below. In our example, these rectangles are numbered 1-6. The numbering corresponds to the LED ID and thus to the order in which the LEDs are arranged in the bus. In a 1D light grid configuration, strip pair A is omitted in the above picture. Only single-row interventions can be detected.

There is a special teach-in process for commissioning the light grid. This process requires a properly functioning ix.net, which is located in the main menu (status indicator lights green). The teach-in process is started by scanning the control barcode.

Teach light grid:

is started (complete menu reference on page 20, section „Teaching the light grid"). The status display now lights up blue with the text A11.
The teach-in assumes a 2D light grid installation by default. If it is a 1D light grid installation, the mode for the light grid must be changed by scanning one of the following barcodes:

Light grid mode	Control code	Status colour
1D Multiple		Pink
1D Single		Yellow
2D		Blue

Depending on the mode selected, the status colour changes as indicated in the table above. If the wrong mode was selected, the mode can be changed by scanning another barcode.
To start the teach-in scan the following barcode:

Start Teach-In:

Now the first LED after the status display in the bus (if the status display is the first LED in the bus) lights up blue for 2D mode and green for 1D mode.

In principle, the teach-in works by stretching rectangles in front of the storage locations with interventions in the light grid and later detecting interventions for a storage location. To simplify this process, the height of the intervention area for a shelf level is only defined when the shelf level is changed. In between, the width of the individual storage locations is defined.

If it is a 1D light grid installation, the height of the engagement area is not defined. In the following sections, no steps are therefore required to define the main axis. The first LED therefore lights up green directly and the storage locations can be defined as for a normal row in 2D mode. In 2D mode, the height of the intervention area of the shelf level is first marked, where the blue LED lights up, by moving the finger through the light grid, along one of the two lateral light grid strips. The strip where this step is performed is called the main axis. In the next illustration, this process is marked with the red arrow.
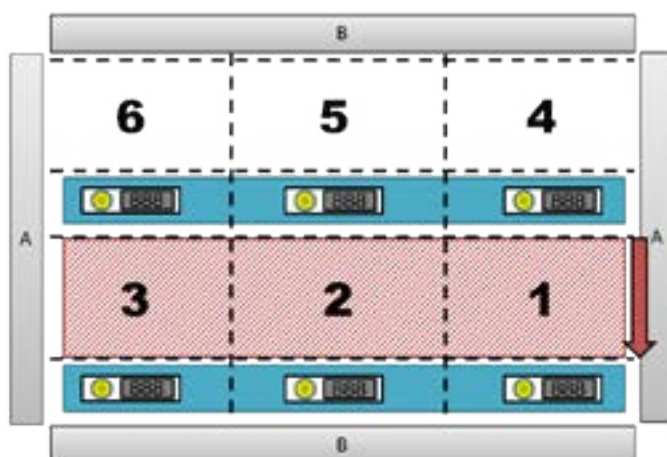
The red shaded area is set as the height for the next LEDs. The LED now changes to flashing green. „Flashing green" always means that the main axis has been changed. The position of the LED has not changed because now the width of the storage location must still be defined. To do this, move through the light grid along the width of the storage location. In the next illustration, this is marked with the green arrow.
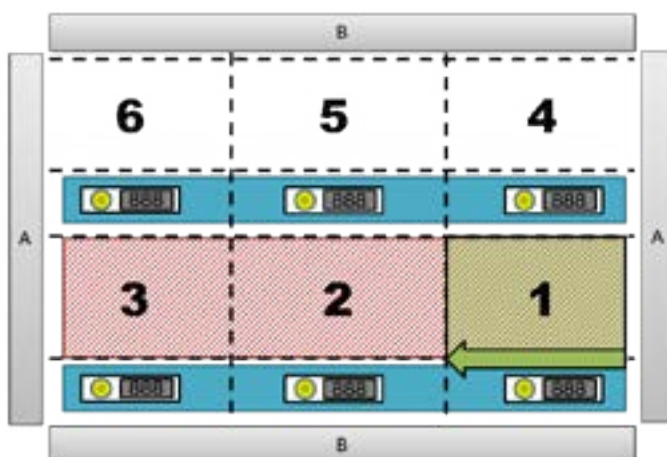
The rectangle with a green background is now the taught-in intervention area for storage location 1. The LED jumps to the next storage location and lights up green. If the main axis does not change, the LED is always permanently green. The last step for storage locations 2 and 3 is now repeated. At storage location 4, the main axis must first be changed by moving along the edge again, as in the first step, and defining the height. The LED of storage location 4 should then flash green and confirm a change of the main axis. Then continue as with storage location 1 by defining the width of the storage location.

If an error was made, it is possible to jump back one step with a diagonal movement from bottom to top (left/right does not matter) or by scanning the following barcode.

Step back:

A diagonal movement from top to bottom or a scan of the following barcode jumps one step forward to skip LEDs, e.g. the status display.

Step forward:

If a step has been moved forward or back, the LED from the step that has been skipped is marked red. This only serves as an indication that this LED has not been taught. A diagonal movement should span several storage locations so that it is recognised correctly. Depending on how the light grid strips are mounted, the top/bottom may be reversed and thus also the functions of the diagonal movement. This can be tested without problems by trial and error.

Completed definitions of storage locations are saved directly. The system can therefore be switched off or the teach-in terminated at any time. All intervention areas defined up to that point are retained. The teach-in is completed by scanning the „Exit" barcode:

Exit:

or by restarting the system. Alternatively, it is also possible to switch directly to the test procedure (next section). If the teach-in is restarted, all previously saved intervention areas are deleted.

Test, debug or expand

If the teach-in for a new system has been completed or if storage locations for an existing system are to be checked for functionality and possibly adapted or expanded, there is a test function.
This can be started from the main menu (green status display) by first entering the two barcodes

Teach light grid:

Test:

scanned one after the other.

The system now displays all storage bins in dim white light. By reaching into the light grid, the corresponding storage bin for the intervention is displayed in yellow. In this way, all intervention definitions can be checked for correctness.

ATTENTION: Test mode does not allow multiple access even if 1D multiple access mode is active.

If a storage location is to be corrected, the touch sensor on the storage location LED is pressed or the corresponding storage location barcode (see page 32) is scanned. The system now starts a normal teach-in process from this storage location (recognisable by the blue LED). This and subsequent storage locations can now be redefined or stopped after the first redefined storage location by not making another teach-in entry, but scanning the „Test" barcode again to return to the test view. When testing is finished, it is cancelled by scanning the

Exit:

abgeschlossen.

Command overview

Control barcodes	
Teach light grid	
Activate 1D mode	
Activate 1D single mode	
Activate 2D mode	
Start teach-in	
Step back	
Step forward	
Start test	
Exit	
Debug mode	

LED Zustände	
Blue	No main axis defined, first storage bin
Green flashing	Main axis changed
Green	Next storage place, which is to be trained
Red	Storage place forward/backward, not semi-skilled
Yellow	Recognised storage space for intervention

Lichtgitter Bewegungsfiguren	
Along main axis	Change main axis
Along storage area	Define storage location width
Diagonal bottom/top	Step back
Diagonal top/bottom	Step forward

OPERATION

Input devices

The ix.net is operated via the connected hand scanner and/or the two buttons supplied. In addition to the control barcodes, the storage/article/recipe barcodes are also transmitted via the hand scanner. The button at connection 2B always corresponds to the control barcode „Confirm/OK" and the button at connection 2A always corresponds to the control barcode „Cancel". The LED modules under the storage locations have an integrated touch sensor at the position of the LED. If the optional light grid was also ordered, it acts in the same way as the touch sensor of an LED module.

Operating status after switching on

After switching on, the LED of the status display lights up green. It signals the operating status of the ix.net. If this LED lights up green, the main menu is active, from which all other functions can be accessed. The main menu can be reached at any time by pressing the cancel button or scanning the cancel barcode.

Recipes

A recipe corresponds to instructions that are divided into individual work steps. Each work step can be provided with items from several storage locations. The storage locations are identified by LEDs. The colour, flashing speed and quantity display of the LED can be varied for each storage location.

Teaching a recipe

A recipe is taught in via the „Create recipe" function (control barcodes on page 23). Within the function, a name (barcode) is first defined via which the recipe is to be available later. If the name has already been defined, error E11 occurs. If a new recipe with this name is to be created, the old recipe must first be deleted. Once the recipe teach-in has started, the status display lights up blue. Now the individual work steps are defined one after the other. For each work step, the required storage locations can be selected by tapping the storage location LED (if the storage location barcodes are attached, these can also be scanned). After selecting the storage location, the colour, flashing speed and displayed quantity can be changed. If a storage location is to be removed again, it must be tapped again. If all storage locations are defined for a work step, a new work step is created. Empty work steps are ignored. If a work step was skipped by mistake, there is the function „One step back" so that exactly one step can be gone back. However, executing the function several times does not jump back any further steps.

Once all work steps have been defined, the recipe is saved. It can now be called up in the main menu under its programmed name.

Teaching a recipe with repetitions

There is an option to define a recipe to allow a certain number of repetitions during execution. The number of repetitions is then set at the beginning of the execution. The recipe is then repeated until the number of repetitions reaches 0.
To do this, the recipe is defined as already described. The repeat function is activated with the barcode „Repeats". This can happen at any time during teaching, as it is a global setting for the process. The status display then shows „o1" when the function is activated and „o-1" when the function is deactivated. The function can be switched on and off by scanning the „Repeats" barcode several times.

Working off a recipe

A recipe is started when the barcode under which the recipe was created is scanned in the main menu (status display green). The ix.net then directly displays the first work step. The status display changes to blue and shows the recipe ID. The next work step can be reached by pressing the OK button, by scanning the „Confirm/OK" barcode or by tapping all active LEDs. When the recipe has been completely processed, the ix.net returns to the main menu and the status display changes to green.

Working off a recipe with repetition

If a recipe has been defined with the option of repetitions, the start of the recipe differs in that „C__" is shown on the status display after the recipe barcode has been scanned. This is now the request to define a number of repetitions. The required number can be scanned in directly as a barcode, e.g. „0005" (a barcode must contain at least 4 characters, so the number must be preceded by sufficient zeros), or control barcodes are used to set the number and confirmed with „Ok" (see page 23).
The rest of the procedure is almost analogous to the normal processing of a recipe, with the difference that the status display constantly shows the remaining number of repetitions. If a repetition starts, the status display flashes yellow to indicate that the number of repetitions has been reduced. When the first step is completed, the flashing stops.

Delete recipe

A recipe can be deleted with the „Delete recipe" function (control barcodes on page 23). To do this, after activating the function, the name (barcode) of the recipe to be deleted is scanned. If the recipe does not exist, error E12 is displayed. Now another name can be scanned or the function can be cancelled. If the recipe exists, the status display changes to blue and shows the recipe ID of the recipe to be deleted. The deletion is now confirmed with „Confirm/OK". The ix.net then returns to the main menu.

REFILL ARTICLE

The ix.net has the option to display the storage bins at the assembly station for an item/component that is to be filled with this item. This process, also known as the „refill process", enables the employee to easily refill articles at an assembly station.

Define refill places

In order for the ix.net to know in which storage bins an item can be located, the function „Set refill bin" must be used (control barcodes on page 23). If this function is started, the item barcode for which a storage location is to be set must first be scanned. Then the LEDs of the storage locations that are to be assigned to the item are tapped one after the other. If a storage location is to be removed, it must be tapped again. When all storage locations have been entered, the control barcode „Save" is scanned. The ix.net now switches back to the main menu. To define another item, the function „Define refill location" must be started again.

Start refilling process

To start the refill process, the function „Show refill bin" is activated, causing the status display to change to blue (control barcodes on page 23). By scanning an item barcode, the available storage locations can be displayed. If an unknown item barcode is scanned, no storage location is displayed. The refill process remains active after scanning an item barcode and its storage locations can be displayed by scanning another item barcode. If the refilling process is to be terminated, the cancel button is pressed or the „Cancel" control barcode is scanned.

Delete refill places

There is no explicit function for deleting refill places. They are deleted via the function „Define refill bins". This function is used as described in the section „Defining refill bins", but removes all storage bins for each item to be deleted.

MAINTENANCE

Swap storage locations

If an article is to be placed in a different storage location, all recipes that expect this article in this storage location would have to be reprogrammed. So that this is not necessary, there is the function „Swap storage location" (control barcodes on page 23). This function exchanges the storage locations in ix.net so that the recipes still function correctly afterwards.
If this function has been activated, the LEDs of the two storage locations that are to be swapped are tapped one after the other and the swap is confirmed with the control barcode „Confirm/OK". After that, the two storage locations are swapped and the main menu is active again.

Global options

The behaviour of the ix.net module can be adjusted in various places. From the main menu, the function „Options" can be reached. Here, the barcode of the option to be changed is scanned first. This is followed by the status display of the current value of the option. If the value is to be changed, the new value is scanned as listed on page 21. The value is changed immediately. No confirmation is required. If the value is only to be checked, the process can be cancelled by scanning the „Cancel" barcode and leaving the option. If you want to display or change another option, you must first return to the main menu with „Cancel" and then execute the „Options" function again.

Storage bins to factory settings

If all storage locations that have been swapped are to be reset to the initial state without resetting other settings, the „Reset storage locations" function can be used.

Factory settings

To restore the ix.net to the factory settings, the „Factory settings" function can be used.
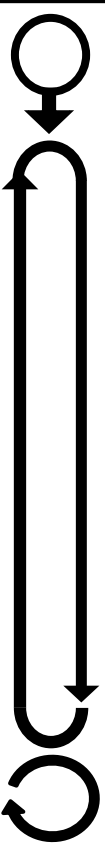
ATTENTION: Afterwards, all settings and recipes are irretrievably deleted.

MENU REFERENCE

Start recipe

Ablauf	Aktion	Barcode		Status
	Start recipe	Recipe barcode	Green	-
	Next step	(barcode)	Blue	Recipe ID

Rezeptur mit Wiederholung starten

Ablauf	Aktion	Barcode		Status
	Start recipe	Recipe barcode	Green	-
	Direct quantity	Item barcode	Yellow	Number of pieces
	Quantity +1	(barcode)		
	Quantity -1	(barcode)		
	Quantity +10	(barcode)		
	Quantity -10	(barcode)		
	Quantity +100	(barcode)		
	Quantity -100	(barcode)		
	Confirm	(barcode)		
	Next step	(barcode)	Yellow	Remaining number of pieces

Rezeptur löschen

Ablauf	Aktion	Barcode		Status
	Delete recipe	(barcode)	Green	–
	Select recipe name	Recipe barcode	Yellow	A3
	Confirm	(barcode)	Blue	Recipe ID

Create recipe

Procedure	Action	Barcode		Status
	Create recipe	(barcode)	Grün	–
	Set recipe name	Recipe barcode	Gelb	A1
	Add/remove storage location remove	Stock barcode	Blau	Recipe ID
	Quantity +1	(barcode)		
	Quantity –1	(barcode)		
	quantity +10	(barcode)		
	Quantity –10	(barcode)		
	Quantity +100	(barcode)		
	Quantity –100	(barcode)		Recipe ID
	Colour red	(barcode)		
	Colour green	(barcode)		
	Colour blue	(barcode)		
	Colour yellow	(barcode)		
	Colour cyan	(barcode)		

Procedure	Action	Barcode		Status
	Colour Pink			Recipe ID
	Colour white			
	LED steady on			
	LED flashing			
	Recipe ID +1			
	Recipe ID −1			
	Repeats			o1 (on) o−1 (off)
	Next step			Recipe ID
	One step back			Recipe ID
	Save recipe			Recipe ID

Set refill place

Procedure	Action	Barcode		Status
	Set refill place		Green	–
	Select article	Article barcode	Yellow	A4
	Add/remove storage bin remove	Stock barcode	Blue	A4
	Save		Blue	Recipe ID

Show refill place

Procedure	Action	Barcode		Status
	Show refill place		Green	–
	Select item	Article barcode	Blue	A5
	Cancel		Blue	A5

Swap storage space

Procedure	Action	Barcode		Status
	Swap storage bin	[barcode]	Green	–
	Select storage bin A	Stock barcode	Blue	A6
	Select storage bin B	Stock barcode	Blue	A6
	Save	[barcode]	Blue	A6

Reset storage bins

Procedure	Action	Barcode		Status
	Storage spaces reset	[barcode]	Green	–
	Confirm	[barcode]	Blue	A8

Factory settings

Procedure	Action	Barcode		Status
	Factory settings	[barcode]	Green	–
	Confirm	[barcode]	Blue	A7

Teach light grid

Procedure	Action	Barcode		Status
	Teach light grid		Green	–
	Confirm		Blue	A11
	1D Light grid mode			A11
	1D Multi-Entry Light grid mode			A11
	Step back			
	Step forward			
	Test			
	Exit			

Update Lead Module

ATTENTION
If this function is executed, the LED modules will be provided with a new firmware and a calibration process of the touch sensor will be triggered. This may cause the calibration to fail in invalid lighting conditions and subsequently display an error code E9. This update should only be carried out if it is known how to eliminate an error code E9 (see page 37).
The security code for the following procedure is

Procedure	Action	Barcode		Status
	Update LED modules		Green	–
	Scan security code	Security Code	Yellow	A10
	Confirm		Blue	A10

Options

Procedure	Action	Barcode		Status
	Options	‖‖‖‖‖‖‖‖‖	Green	–
	Option name	Option code	Blue	A9
	Option value	New value	Yellow	Old value
	Cancel / Exit	‖‖‖‖‖‖‖‖‖		

OPTION REFERENCE

Options: ‖‖‖‖‖‖‖‖‖   Cancel/Exit: ‖‖‖‖‖‖‖‖‖

Step confirmation at the storage location

Code: ‖‖‖‖‖‖‖‖‖‖   (nxtstep)

Value: ‖‖‖‖‖‖   (000)   No confirmation at the storage place

‖‖‖‖‖‖   (001)   Each storage place must be confirmed

‖‖‖‖‖‖   (**002**)   Any storage location confirms the step

LED bus function check

Code: ‖‖‖‖‖‖‖‖   (buserr)

Value: ‖‖‖‖‖‖   (000)   Do not check LED bus

‖‖‖‖‖‖   (**001**)   Check LED bus for missing modules

STOCKYARD BARCODES

Campsite name	Barcode	Barcode text
Status display		iXP0
Storage location 1		iXP1
Storage bin 2		iXP2
Storage location 3		iXP3
Storage location 4		iXP4
Storage bin 5		iXP5
Storage location 6		iXP6
Storage location 7		iXP7
Storage bin 8		iXP8
Storage bin 9		iXP9
Storage location 10		iXP10
Storage bin 11		iXP11
Storage bin 12		iXP12
Storage bin 13		iXP13
Storage bin 14		iXP14
Storage bin 15		iXP15
Storage bin 16		iXP16
Storage bin 17		iXP17
Storage bin 18		iXP18
Storage bin 19		iXP19
Storage bin 20		iXP20

According to the iXPXXXX scheme, up to 3000 storage locations are possible (depending on the LED type selected).

CONTROL BARCODES

Global

Campsite name	Barcode	Barcode text
OK / Confirm / Save		iXOK
Cancel		iXStop

Main Menu

Command / Action	Barcode	Barcode text
Create recipe		iXNew
Delete recipe		iXDel
Define refilling station		iXSet
Display refill bin		iXRef
Swap storage bin		iXSwap
Reset storage bins		iXLDef
Factory settings		iXDef
Update Led Modules		iXUpdL
Teach light grid		iXLGTch
Options		iXProp
Version		iXVer

Create recipe

Kommando / Aktion	Barcode	Barcodetext
Next step		iXStep
One step back		iXUndo
Save recipe		iXEnd
Quantity +1		iXAP
Quantity +10		iXAP10

Command / Action	Barcode	Barcode text
Quantity +100		iXAP100
Quantity -1		iXAM
Quantity -10		iXAM10
Quantity -100		iXAM100
Colour red		iXR
Colour green		iXG
Colour blue		iXB
Colour yellow		iXY
Colour Cyan		iXC
Colour Pink		iXP
White colour		iXW
LED steady on		iXAO
LED flashing		iXBL
Recipe ID +1		iXIDP
Recipe ID -1		iXIDM
Repetitions		iXo1

Recipe with repetitions

Commando / Action	Barcode	Barcode text
Number of pieces +1		iXAP
Number of pieces +10		iXAP10
Number of pieces +100		iXAP100
Number of pieces -1		iXAM
Number of pieces -10		iXAM10
Number of pieces -100		iXAM100

Lichtgitter anlernen

Command / Action	Barcode	Barcode text
Test		iXTest
1D Single Light Grid Mode		iXSet1D
1D Multi Light Grid Mode		iXSet1DM
2D Single Light Grid Mode		iXSet2D
Step back		iXUndo
Step forward		iXSkip
Debug mode		iXDbg

Update

The system can be provided with new firmware via the network socket. This requires a Windows PC on which the „iXnet Manger" software is installed and the firmware for the update. Please enquire with iX-tech GmbH if you need this.

Recipe management/backup

The recipes can be read out via the network socket with a Windows PC and copied or saved across ix.net. In addition to the PC, the „iXnet Manager" software is also required. This can be obtained from iX-tech GmbH.

ERROR CODES

Error codes of individual LED modules

Code	Description	Correction
E1	Operating voltage too low	Check the voltage supply and, if necessary, make another feed into the LED bus.
E2 - E8, EA	LED module defective	Disconnect the operating voltage once and reconnect it. If the problem persists, the LED module must be replaced.
E9	Touch sensor calibration failed	Disconnect the LED bus from the operating voltage, then make sure that the LED bus is not exposed to direct sunlight and then apply the operating voltage again. If the error cannot be eliminated, the module must be replaced. The ambient lighting should correspond to the normal working conditions under which the system is used.

Error codes from process control

Code	Description	Correction
E11	Name double	Solution depending on use.
E12	Not found	Solution depending on use.
E13	EEPROM full	Delete processes or refill spaces to free up memory.
E14	Invalid name	The name contains invalid characters or is too long.
E15	The LED bus is not complete	Check whether all cable connections on the LED bus are correctly plugged in or whether an LED module is defective. For more information, see the section „Commissioning".
E16	Function not supported	The selected function is not supported by the available hardware.
E17	Update failed	A software update did not work. Solution depends on the use. If it is the update of the LED modules, this should be tried again.

LIMITATIONS

Due to its design, ix.net is subject to the following limitations
+ Maximum number of recipes: approx. 100 (depends on the complexity of the recipes and the size of the free storage space which is also
  storage space, which is also occupied by article storage locations for refilling).
+ Maximum recipe name length: 20 characters
+ Maximum number of LEDs per operation: 255
+ Maximum number of storage locations:
        *3000 for RGB Leds
        * 500 for RGB Leds with 2-digit quantity
        * 1000 for RGB Leds with 3-digit number of pieces and push-buttons
+ Maximum item barcode length (refill): 16 characters
+ Maximum number of articles: approx. 1000 (depends on the size of the free memory space in the EEPROM, this is also used by the recipes).
+ Maximum cable length between two LED modules: 2 metres

FIRMWARE FUNCTION MATRIX

Not all firmware/hardware supports all functions. The matrix below shows the minimum required firmware version and hardware revision for a function. The firmware version of an ix.net module can be retrieved via the version barcode (see page 23 section Main Menu).

Function	FW Ver.	Correction
Teach/recall recipe	3.0.0	1
Recipe with repetitions	3.1.0	1
Set refill places/ show	3.0.0	1
Swap storage bin	3.0.0	1
Reset storage locations	3.0.0	1
Factory settings	3.0.0	1
Update Led modules	3.0.0	1
Light grid	3.1.0	1
2D mode	3.1.0	1
1D Mode	3.1.9	1
1D Multi-Entry Mode	3.1.11	1
Options	3.0.0	1
Step confirmation At the storage place	3.0.0	1
LED bus function check	3.0.0	1

REVISIONS

Rev	Datum	Änderungen
1	12.05.2014	Initial version
2	19.09.2014	New: Light grid installation New: Recipe repetitions New: Version display Fix: Commissioning of LED modules added
3	20.01.2015	New: Separate section for teach-in recipe with repeats New: Function „Toggle Repeat" renamed to „Repeats New: Legal text New: Contact address New: Firmware function matrix Fix: Barcode text for the function Repeats added Fix: States for the function Repeats added to the menu reference Fix: All storage location(s) identifiers renamed to storage bin/ storage bins
4	02.03.2015	New: Warning for LED module update and new procedure for this process. New: Extension of the error code description
5	13.03.2015	New: Colour white in the process
6	11.08.2015	New: 1D light grid mode Fix: Corporate Identity revised
7	03.06.2016	New: 1D Multi-Entry Light Grid Mode New: Single Undo step in New Process Fix: Layout for New Process changed to prevent „Save Process" from being scanned by mistake.
8	17.06.2016	New: Light grid debug mode
9	28.03.2017	Fix: Commissioning 1D light grid
10	01.04.2022	Text and layout adjustments

OWN NOTES