

EYE System for warping creels Users Guide





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System description and technical data









EYE sensors

Master Control Unit (MCU)

Operator Terminal

Modular Cables

Number of inputs on the MCU	8
Number of outputs on the MCU	6
Number of LIN-bus connections on the MCU	6
Maximum sensors to be connected to one LIN-Bus	

EYE sensors for multiple yarns 12* EYE sensors single yarns 16

Power dissipation

Operator terminal 600 mA
EYE MCU (and Slave Control units (SCU) 100 mA
EYE sensors for multiple yarns 35 mA

Introduction Eltex EYE-System

Eltex EYE system detects the movement of the yarns. At the installation and whenever the quantity of yarns or their positions are changed, a learn command is made. All yarn positions where the yarns are moving will then be active. Thereafter if any of the active yarn positions does not have a moving yarn when the machine is operating the EYE system will stop the machine.

Sensor models



EYE sensor for 8 yarns



EYE sensor for 10 yarns



EYE sensor for 12 yarns



EYE sensor single end



EYE sensors special models

Passwords

Password might be required to change some settings.

The passwords mentioned in this guide are valid if they have not been changed during the installation.

The different passwords used are:

User: "responsible" Password: r (Can be set to be required for parameter adjustments.)

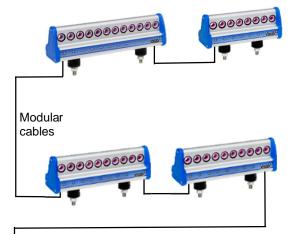
User: "service" Password: s (Is required for Service and Installation menu.)

^{*} Under specific circumstances up to 16. Check with Eltex service station.



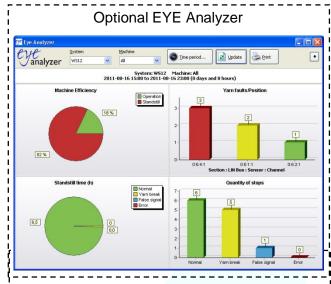
Yarn sensors



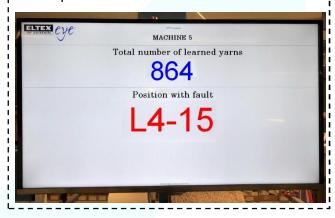


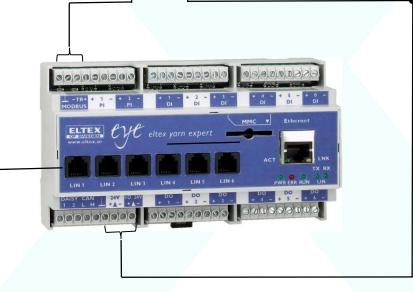
Operator terminal





Optional External information screen





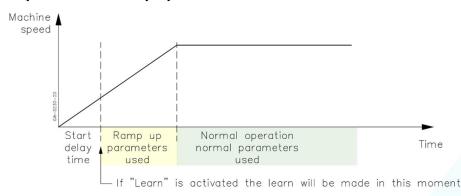


Navigating in the operator terminal



This manual refers to "pages" in the operator terminal. Page numbers can be found in the upper left corner on each "page".

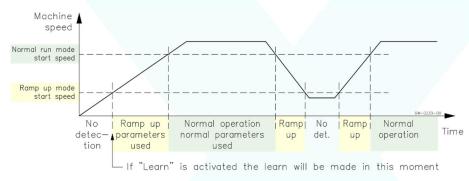
Explanation of Ramp up



Before the machine has reached the normal operating speed, it is possible to start the monitoring of the yarns using special Ramp up parameters. This is called the Ramp up time.

If this is not necessary set Ramp up time to "0" in the installation procedure. Page 17. (In the operator terminal page 1:834).

Tachometer function



If the machine is running with different speed it is possible to install a proximity switch as Tachometer. This can then control the monitoring mode of the yarns.

The EYE system is set so that the detection is off when the machine speed is below "Ramp up start speed". When the speed is above this value the detection is on using the "Ramp up parameters". When the machine is running at normal speed above the "Normal run start speed" the normal parameters is used.

Installation procedure for the settings can be found on page 16 in this manual. (In the operator terminal page 1:824).

Sensor parameters:

How to check/set the parameters of the sensors:

Sensitivity and reaction time must be set correctly.

(If different groups have been set up the parameters can be set differently for each group).

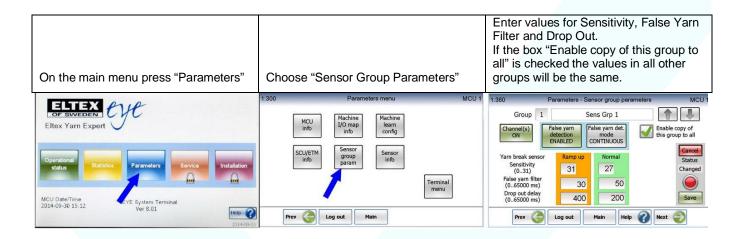
Sensitivity (Gain) determines how easy the sensor can detect the yarn movement.

There are two different reaction times, "False Yarn Filter" and "Drop Out Delay".

"False Yarn Filter" time determines how long time the sensor must sense a yarn movement before it is considered to be valid. This is used to remove the influence of short false yarn movements.

"Drop Out Delay" time determines how long time the yarn movement signal must disappear before it is considered as a stop of the movement of the yarn.

To set the sensor parameters:



If you are unsure about how to make the parameter settings, you can start trying with the figures below.

Sensitivity Ramp up = 30 Normal = 20 False yarn filter Ramp up = 15 Normal = 30 Drop out delay Ramp up = 300 Normal = 100

When any field is selected for update you will be asked to enter password if "Password protection" was selected during the installation. If so, select user "responsible" and enter "r" as password.

If anything has been changed, press the save button to save the new settings.

Return to main menu by pressing the "Main" button at the bottom.

Logged stop events.

From the main menu it is possible to select:

"Operational status" and then "Logged stop events".

Then the positions of the 10 last stop events will be displayed.

With the optional EYE Analyzer software, a lot more information can be displayed on an external PC.



Service / Fault finding

General for the EYE system



Indicator LEDs on the EYE sensors:

Common LED on sensor	Channel LED on sensor	Machine status	Description
Green on	Off	Machine is not operating	Power on, yarn detection off, no stop detected.
Green flashing	Off	Machine is operating	Yarn detection on.
Green on	Red flashing on in one position	Machine is stopped	The EYE-system has detected a yarn brake or end out in this position.
Green on	Red steady on in one position	Machine is stopped	The EYE-system has detected a "False Yarn position". A yarn movement in a position not learned.

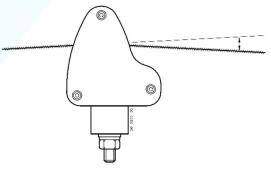
Checking the status of the inputs and output on the MCU

- Inside the Master Control Unit just beside each input and output terminal there is a LED which indicates the status of each Input/Output (shown here in this photo).
- It is also possible to see the status of each Input/Output on the Operator Terminal.
 From the Main Menu select "Operational status" then "MCU I/O status". Page 1:120.



The EYE system stops and shows "Sens-Yarn fault" even if the yarn is correct

- Locate the position where the yarn fault is indicated.
 If the yarn is not making any deviation when it is passing through the sensor eyelet, try to increase the yarn angle.
- Check if the Sensitivity Setting is set too low.*
- Check if the Drop Out Delay is set too low.*
- Check if the "False Yarn Filter" is set too high.*
 * See "How to set parameters" on Page 6.



Then yarn must make a small deviation when passing the sensor.

The EYE system stops and show "False yarn position"

- Cleaning the Sensors or the machine with compressed air or using air splicers nearby when the machine is operating can cause this fault indication.
- On the Operator Terminal and on the sensors, it is indicated which eyelet position is causing the false yarn movement. Try to find the reason. For example, is there a yarn moving in an eyelet that is not learned?
- Check if the sensitivity setting is set to high.*
- Check if the "False Yarn Filter" is set too low.*
 - * See "How to set parameters" on Page 6.
- Under "Parameters" it is possible to change the False Yarn Detection function. It can be set to "ENABLED" at "START UP" then this check is done only once just after start up. It can also be "DISABLED", however it is recommended that this function is enabled (at least at start up) to ensure the correct number of yarns are always in use.

The EYE system learns too many yarns

- Make sure that too many yarns are not actually threaded by mistake.
- The LED for each yarn position can be used to show learned positions. Under the Service Page
 press "Show learned sensors". Select the actual group. The LEDs will then show all learned
 positions so you can find the eyelet(s) that is learned but has no yarn moving.
- If possible, try to find a reason that position without moving yarns has been learned.
- Check if the Sensitivity Setting is set to high.*
- Check if the "False Yarn Filter" is set too low.*
 - * See "How to set parameters" on Page 6.

The EYE system does not change to "Monitoring" after start of the machine

- Run mode signal is missing from the machine. Check the LED for run signal input.
 See above "General for the EYE system". (For run mode signal see Page 13 Hardware installation.)
- Connection settings between the "machine" and inputs have been changed.
 See under installation page 16. (In the operator terminal page 1:830).
- There can also be another connection assigned as a running mode input. If there is more than one running mode input, all of them must be on to turn the system into Monitoring mode.

The EYE system does not learn any yarns or does not relearn

Check the run, enable (synchronization) and learn input:

- If the system does not change to run mode when the machine starts, see the point under the heading "The EYE system does not change to "Monitoring" after start of the machine" above.
- Press the learn button. Does the mode change to "Learn"?
 If not the Learn signal is missing from the push button. Check the LED for this input.
 See above "General for the EYE system".
- Connection settings between the "machine" and input have been changed. See under installation page 16. (In the operator terminal page 1:830).

Check the sensor addressing:

Go to installation menu, select "Sensor adr setup".
 Does it show correct number of sensors?

Check that the sensors in the group is connected to the machine:

• Go to installation menu, select "Sensor group-mach".

On page 1:860, check that "Group 1" is linked with "Machine 1. The box must be checked.

The Operator Terminal show "LIN com error"

If there is a fault with the modular cables connecting the sensors, the LIN com error will appear on the Operator Terminal. Also, the "ERR" Led on the Master Control Unit will flash. The message on the Operator Terminal is indicating in which LIN-bus and on which sensor "B pos" it has detected the fault.

How to run "Sensor addr setup" command

From the main menu, press "Service". You will then be asked to enter a password.

Enter "s" and press Enter. Note that it should be a lower-case s.

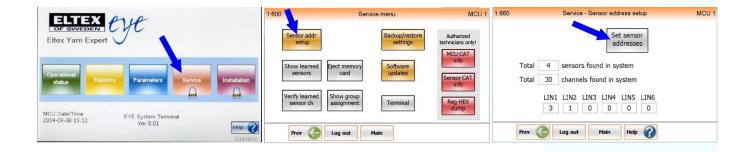
Press the button "Sensor addr setup.

Make sure all sensors are connected to the master control unit.

Press "Set sensor addresses".

The sensors will now be automatically detected in the system.

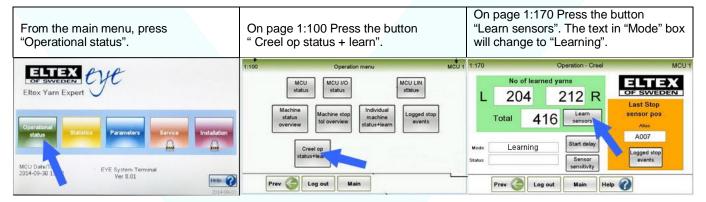
Check that the correct number of sensors are displayed for each LIN-bus.



How to enter the "Learn" command

When all desired yarn has been threaded the EYE system has to learn in which positions yarns will be moving

If "Learn" push button has been installed on the machine just press that one. Otherwise enter on the Operator terminal as below:



Start the machine.

If the EYE system has been configured to stop after learning, the machine will stop and on the Operator terminal page 1:170 will appear.



If the number of yarns are correct, then start the machine again to continue.

If not check if the machine has been threaded up with wrong number of yarns.

If not check possible faults on page 8 in this manual.

How to replace a sensor

- Switch the power off.
- Disconnect the modular cables.
- Dismount the old sensor and fit the new one.
- Connect the modular cables.
- Switch the power on.
- Run Sensor addr setup" command.

See: "How to run the "Sensor addr setup" command" on page 9.

How to replace the Master Control Unit

If possible, go through the Installation Wizard and make a note (or take a photo) of all setting in the different pages.

It is also possible to make a backup of all setting to a SD-Memory Card.

See "Save a backup of the settings" page 23.

- Switch the power off.
- If it is not already done, mark all cable with identification.

Disconnect the cables and the modular cables.

- Dismount the old Master Control Unit and fit the new one.
- Connect the cables and the modular cables.
- Switch the power on.
- Enter the Installation Wizard and make the setting same as it was on the old unit.
 Also do the parameter settings.

or

Use Backup on SD-Card (contact Eltex for procedure).

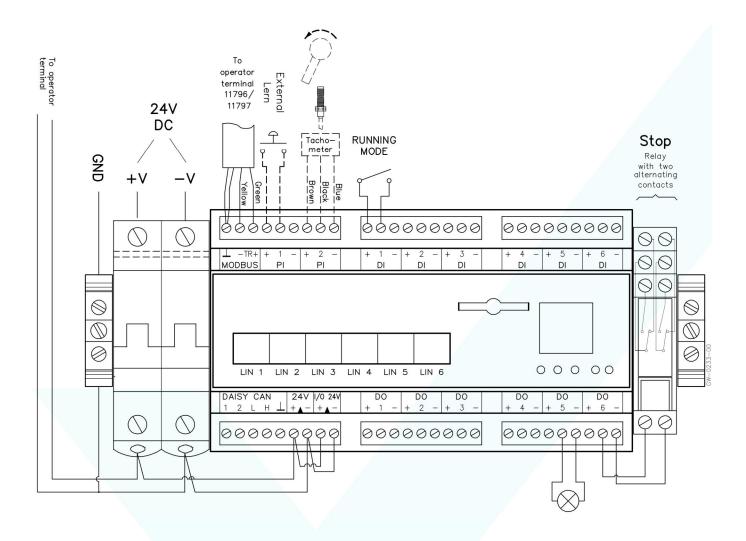
Press Learn button and start the machine.

How to replace the Operator Terminal

- Switch the power off.
- Disconnect the cables.
- Dismount the old terminal and fit the new one.
- Connect the cables.
- Switch the power on.
- The software is updated continuously. In most cases the EYE-system will work as before with a newer software in the Operator Terminal. In case of problems contact Eltex.

Procedure to do a standard installation:

Connection example of MCU



The system configuration described later in this manual refers to a connection made as this example.

The inputs and outputs can however be used in any of the available functions.

The system configuration in the Operator Terminal must then in that case be made accordingly.

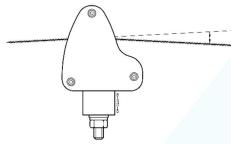
The Master Control Unit (MCU) has 8 inputs and 6 outputs and these are in this example used as follows:

Input no	PI1	PI2	DI1	DI2	DI3		DI4	DI5	DI6
Function	Learn button (or Tacho meter) can be installed here	(Tacho- meter)	Machine run signal						
Modbus for operator terminal	Pulse/syn	c inputs	– 6 Dig	ital inputs —				ľ	
000	000	000	000	000	000		000	000	000
↓ -TR+ MODBUS	+ 1 - PI	+ 2 - PI	+ 1 DI	- + 2 - DI	+ 3 - DI	,	+ 4 - DI	+ 5 - DI	+ 6 - DI
ELTEX OIPSWEDIAN WWW.eltex.se eltex yarn expert ACT LNK TX RX LIN 1 LIN 2 LIN 3 LIN 4 LIN 5 LIN 6 PWR ERR RUN LIN									
DAISY CA	AN _ 24 H _ + A	V I/O 24V - +▲-	DO + 1	DO + 2 -	DO + 3 -		DO + 4 -	DO + 5 -	DO + 6 -
000	000	000	000	000	000		000	000	000
Daisy CAN bus EYE Power bower supply supply for I/O									
		Outpu	it DO1	DO2	DO3		DO4	DO5	DO6
	ı	Functio	Can be used for indication	Can be used for indication lamp right side				General indication	Machine Stop relay

Hardware installation:

1. Mount the Enclosure 10320 containing the Master Control Unit (MCU) 11710 and Operator Terminal 11797, on a suitable position.

2. Mount the EYE sensors. Be sure that the yarns are touching the ceramic eyelet and are making a small deviation when passing the sensor.



Then yarn must make a small deviation when passing the sensor.

- 3. Connect cables 65300 between the sensors and to the LIN1 LIN6 connections on the MCU 11710. If EYE sensors are used, maximum 12 sensor can be connected to each LIN-bus.
- 4. Connect a machine run signal (running mode) to the DI1 input on the MCU 11720. This is to tell EYE system if the machine is running or not.

The run signal should be a relay signal which changes state when the machine start and stop. Connect the relay contact between terminals + and 1 on DI1.

The relay contact can either be closed or open when the machine is running.

The function of the DI1 can be set on the Operator Terminal.

For testing this signal can be done with a switch and controlled manually.

- 5. Connect the stop output to the machine. The relay has two alternating contacts available. Normally the output is set so that the relay switches 1 second at a stop. This can be set in the Operator Terminal.
- Fit the Power Supply in the control box of the machine.
 (It is possible to have the power supply also be fitted in the Enclosure 10320, if so, it should be specified on the order)
- 7. Connect the 24V DC voltage from the power supply to the ON/OFF switch in the 10320 Enclosure.
- 8. Turn the power on to the system.

System configuration in Operator Terminal: Phrases: Channels = Yarn positions. B Pos = Sensor position in the LIN bus. B Pos 1 is the first sensor. On the following installation procedure there are on each page a "Help" button which will show additional information.

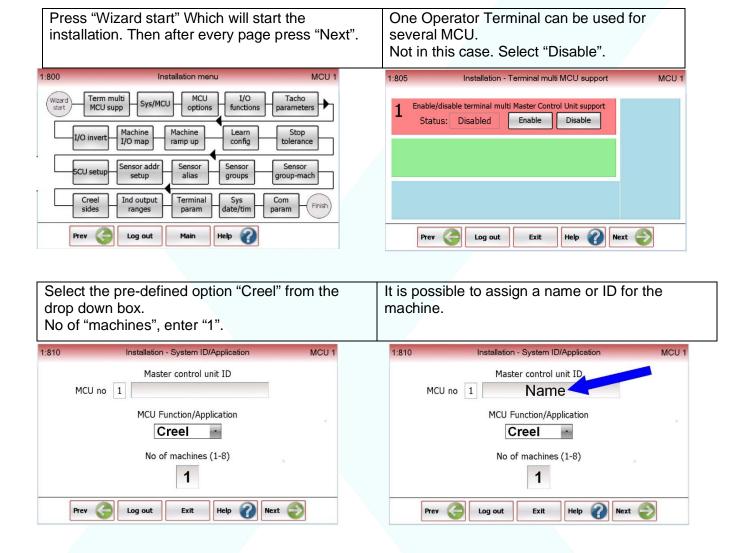
In the main menu select "Installation".



User: Service.

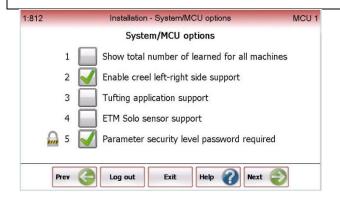
Password: s, Select "Installation" again.

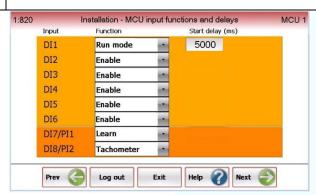
Basic settings Inputs and outputs



How to configurate Inputs and Outputs

General preferences for the installation. With this setting a password will be required to change sensor parameters. Configuration of the standard inputs. If DI1 is used for "Run mode" Enter like this.
DI7/PI1 can be used for external learn button.
You can start with the value on Run mode 5000 = 5 sec.





Configuration of the outputs.

DO5 will function as indication for total machine with the setting "Alarm" and "Alarm delay" = "0".

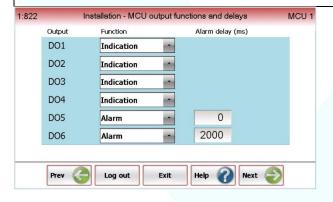
DO6 is used for the relay. With this setting the relay will switch for 2 seconds at a stop signal from the EYE system

The Tacho fuction is normally not used when the EYE system is installed on a creel.

Configuration of Tacho input.

Enter at which speed the EYE system should start to monitor the yarns with "Ramp up" settings* and at which speed with "Normal" settings.

Select "Next".



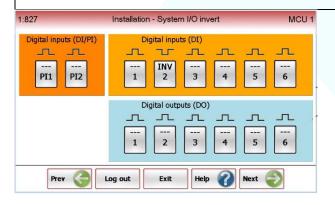


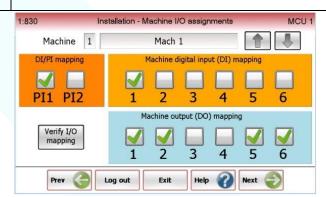
There is the possibility to invert the inputs or outputs for test proposes or for real needs.

In this installation only one machine is used. At least the boxes as below has to be checked.

If the outputs 1 and 2 should be used for indication lamps, left and right, then these two boxes must be checked.

If tachometer is used and connected to input PI2, then the box PI2 must be checked.

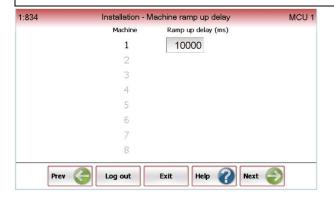


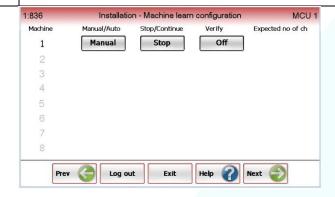


It is possible to have special "Ramp up" parameter settings during start before the machine has reached full speed You can start with the value 10 000 = 10 sec. ("Ramp up" is explanied on page 5).

If the Tacho input is used this page has no function, you can set to 0 (zero).

The Learn process is here configured to start by selecting "Learn" on the Operator Terminal (or pressing the Learn button if this has been installed). The machine will with this settings stop when the learn is finished.

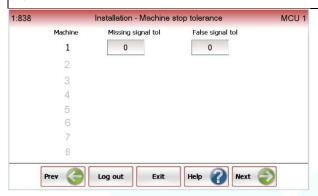




It is possible to set the EYE to allow some yarn to be missing without stopping the machine.

This function is normally not used when the EYE - system is installed on a creel. Set to zero.

On an EYE-System with more than 72 EYE sensors, a Slave Contro Unit (SCU) must be added. Then it is necessary to press the button "Set Slave Control Unit/ETM addresses".

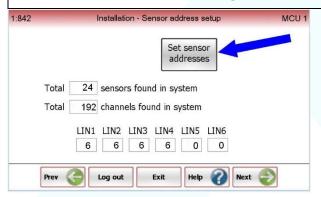




Press the "Set Sensor addresses". The system will detect all connected sensors and positions (channels) in each LIN bus.

(The figures will be like this if it is only as few sensors as in the example on next page)

If any sensor is replaced in the system, it is needed to run this command again.



Setting up Alias

It is possible to give a name (Alias) for each yarn/position. This will be displayed on the Operator terminal at any kind of yarn fault.

If you wish, you can leave the alias part for now and continue on "Setting up groups" to have the system started up sooner.

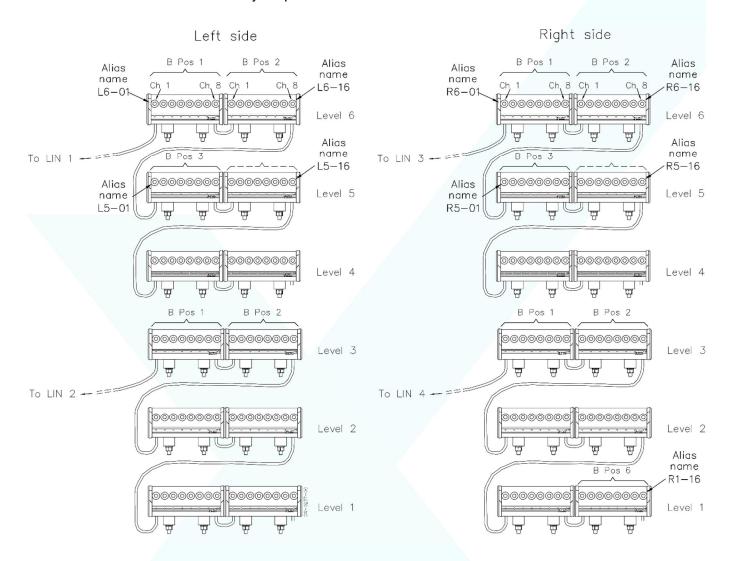
However be sure to make it later because alias name are a big advantage fo the operator.

Depending on the creel configuration and how you like to identify the yarn positions the data to be entered in Operator terminal will be different.

Below we describe one example which is intended to be a help to enter your specific data.

If a creel has one left and a right side and has 6 vertical levels and has 16 yarns in each level each side, the EYE sensors can be fitted as in the drawing below.

The alias name can have maximum 6 characters and it can be like this: **L5-07**. "L" is for left side, 5 is for the fifth vertical level and 07 is the yarn position in that level.



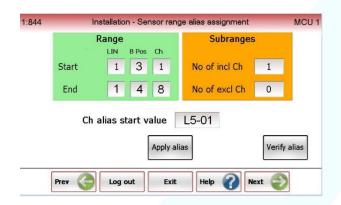
Example: . With this setting the yarn positions in the upper left level will be numbered from L6-01 to L6-16.

Please remember: When the Alias has been entered, then press "enter" on the KEYPAD and after that press "Apply alias" each time a new section has been entered.

With this setting the yarn positions in the left 5th level will be numbered from L5-01 to L5-16.

Do not forget: press "Apply alias" before entering the next section

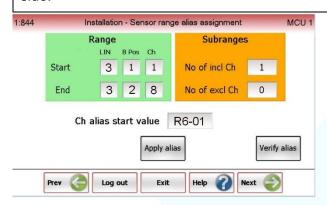


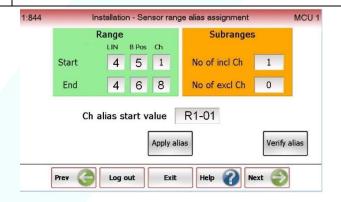


With this setting the yarn positions in the upper right level will be numbered from R6-01 to R6-16. **Press "Apply alias"**

Repeat to enter alias like this for each level each side.

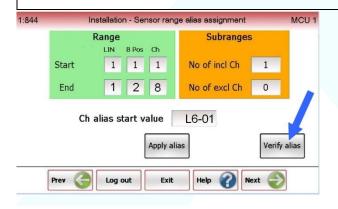
With this setting the yarn positions in the lowest right level will be numbered from R1-01 to R1-16. **Press "Apply alias"**

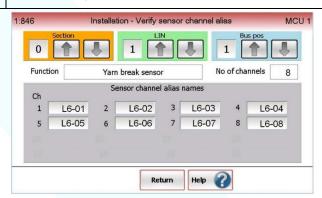




It is possible to verify the ALIAS by pressing the "Verify alias" button.

When selecting "Verify Alias" this page 1:846 will appear. Use the up/down arrows to shift between the LIN buses and the sensors (B Pos). Here it is also possible to edit alias of individual channels/eyelets.



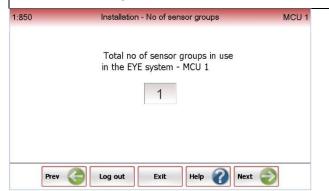


Setting up Groups

It is possible to divide the yarn positions in different groups. For example if the yarns has different yarn counts, different parameters can be set for the groups.

Or if sometimes the whole creel is used and sometimes only a part of the creel. Then the yarns which are only sometimes used can be group 2

During operation it is then very easy to enable or disable desired groups.

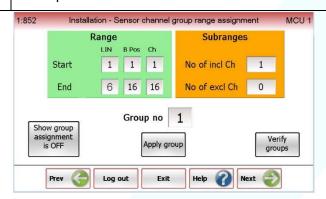


With this setting and by pressing "Apply group" all sensors will be connected to group 1.

If 2 groups are selected, the "Range" setting has to be done accordingly.

It is possible to verify the groups by selecting the "Verify goups" button.

By pressing the "Show group assignment" button the LEDs on the sensors will turn on when the corresponing group is selected in the window "Group no".



It is necessary to link each group to correct "machine". In this case Group 1 to Machine 1. It is also needed to select the type of sensors on each group.

In this case the window should read:

Log out

"Yarn break sensor".

Here it is also possible to enter a name of the group.

Group 1 Name of group 1

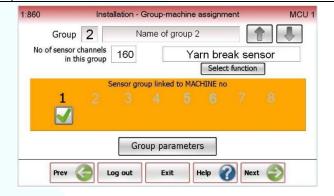
No of sensor channels in this group

Sensor group linked to MACHINE no

1 2 3 4 5 6 7 8

Group parameters

If a Group 2 has been created, also this group has to be linked to machine 1.

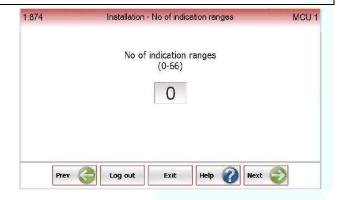


The Left/Right function is normally used when an EYE system is installed on creel. If the sensors on the left side of the creel is connected to LIN bus connections1-3 and the sensors on the right side of the creel is connected to the LIN bus connections 4-6. Then the setting on page 1:870 can be donel like this.

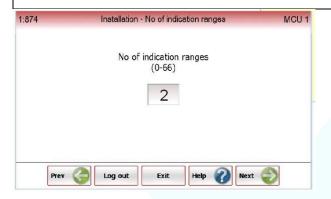
If one indication lamp is used for all positions on the machine, enter "0" on this page. (The output function for the lamp should be

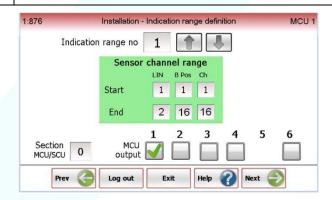
"Alarm" and the Alarm delay "0". Page 1:822).



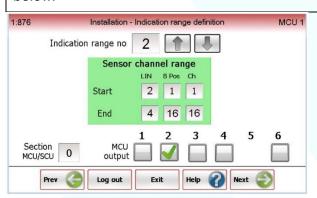


If two indication lamps should be installed, one for the left and one for the right side, then "No of indication ranges" should be 2 The sensors on the left side should then be connencted to for example output 1, where the indication lamp can be connected. If the creel is configured like in the example on page 18, then the settings for range 1, the left side, can be like below.





The settings for range 2, the right side, can be like below.

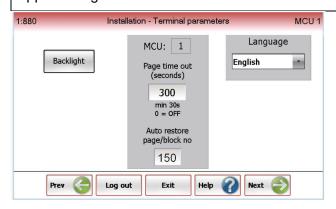


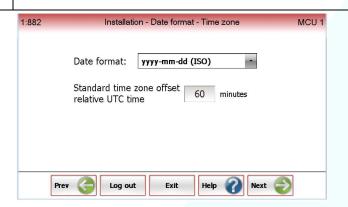
Operator Terminal settings

Set language, English or Chinese.

Set default page (in this application 150) and time of inactivity (300 sec) before the default page will appear. Page no 160 can also be used.

Select date format. Set time zone offset.



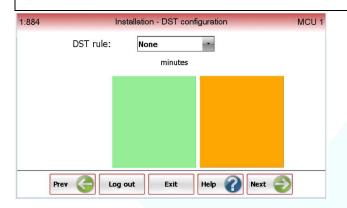


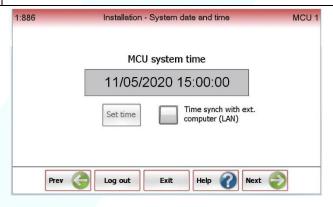
Select rule for Daylight Saving Time.

Uncheck the box "Time sync with"

Make sure to set date and time correct manually.

All events and errors are logged in a memory and can be used for fault finding. If time is not correct the information can be confusing.

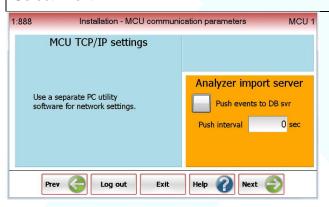


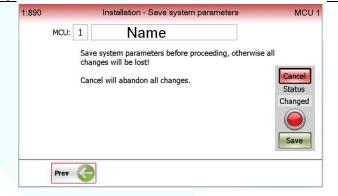


If the EYE Analyzer software is used it can be set on this page how often the information should be transmitted.

Select "Next".

Save the installation settings.





Save a backup of the settings

It is recommended to make a backup of all settings to a SD-Memory Card.

It must have FAT file format which means a maximum size of 2 GB.

Such a Memory-Card is included with the Manual for the EYE system.

It can also be ordered from Eltex, Part No #6738.

Insert the SD-Card in the MMC-slot in the Master Control Unit. From main menu: Select "Service" (Log in is necessary). Then select "Backup/ restore settings". Then select "Backup settings".

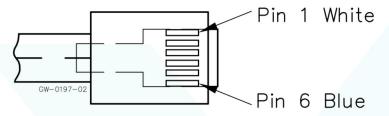
Please note: If there are already a backup file on the memory card it is not possible to save another one. The first one must then be deleted.

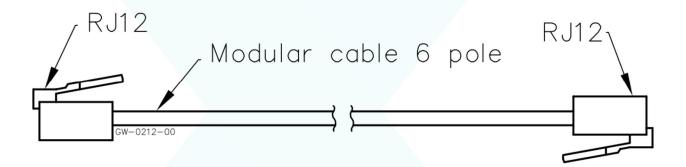
Before starting the machine

- a) Set the parameters. See page 6 in this manual.
- b) When the desired yarns have been threaded, enter the "**Learn**" command. If a Learn push button has been installed just push that one. If not see page 9 in this manual.

How to make the 65300 modular cable

Align the cable this way before crimping.





Notes about the installation



This manual

This manual TH-0362 is intended for EYE system on a creel as a user's manual. The general manual TH-0336 is describing all functions on the EYE system for the use on any type of machine.

We reserve the right to modify design and technical data.

This manual is subject to continuous updates as improvements.

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