ComAp
The heart of smart control

InteliVision 8

Controller Display Unit for ComAp Controllers

SW version 2.6.0

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Global Guide

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1.1 Clarification of notation

Note: *This type of paragraph calls readers attention to a notice or related theme.*

IMPORTANT: This type of paragraph highlights a procedure, adjustment etc., which can cause a damage or improper function of the equipment if not performed correctly and may not be clear at first sight.

Example: This type of paragraph contains information that is used to illustrate how a specific function works.

1.2 About this guide

InteliVision 8 is a display unit for ComAp InteliGen NT / InteliSys NT / InteliMains or InteliDrive family of controllers. It is designed as a simple, easy to use Plug and Play solution and delivers high visibility of all engine data, monitoring information and trend history in a bright, colorful design.

The new screen features many significant improvements from the original IS-Display including a large **colour TFT display**, which helps visibility and definition for on-screen information. The control interface has also been updated with user-friendly intuitive active buttons - giving users access to more information in less time. InteliVision 8 also includes features based on the USB memory stick, possibility to use own pictures on the Measurement screens, **TRENDS monitoring**, helping the end user to evaluate the history events easily on one screen **in HISTORY screen**, etc..

The InteliVision 8cut-out size is the same as the IS-Display, so InteliVision 8can be easily used as a replacement for (or an alternative to) IS-Display. Regardless of the size it can be also used as a replacement for (or an alternative to) IG-Display or I-RD-CAN.

InteliVision 8 is designed to be connected to a single controller, which means that a multiple gen-set monitoring is not possible at one time. However on CAN if InteliVision 8 is connected to more than one controller it is possible to switch among controllers using a different communication setting in InteliVision 8. Switching time corresponds to the time of a configuration download (from controller to InteliVision 8).

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2.1 Firmware and PC Software Supporting InteliVision 8

Firmware - InteliVision 8 is supported from following versions:

mhx file	ivp file
IS-NT 2.6	InteliVision 8
IG-NT 2.6	
IM-NT 2.9	
ID-DCU-Industrial 2.9	
ID-Mobile-Logger 1.8	
ID-Mobile 1.6	

PC Software - InteliVision 8 is supported from the following versions:

PC Software
GenConfig 2.6
DriveConfig 3.1

Installation Packages - InteliVision 8 is supported from the following versions:

Installation Packages
IGS-NT-Install-Suite 2.6
InteliDrive-Instal-Suite 2.9

2.2 Available Related Documentation

PDF files	Description
InteliVision8-2.6.0 ew Feature List.pdf	New Feature List for InteliVision 8 version 2.0 http://www.comap.cz/products/detail/intelivision8/downloads/#tabs
IGS-NT-3.8.0.-New Features.pdf	New Features List of IG/IS-NT version 3.7.0. https://www.comap.cz/products/detail/inteligen-nt-basebox/downloads/#tabshttps://www.comap-control.com/products/controllers/gen-set-paralleling-controllers
IS2GAS-1.2.0.-New Features.pdf	New Features List of IS2GAS version 1.2.0. https://www.comap.cz/products/detail/inteligen-nt-basebox/downloads/#tabshttps://www.comap-control.com/products/controllers/gen-set-paralleling-controllers

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3.1 IV8 front face

This chapter provides information on how to quickly find important data. To be more familiar with InteliVision 8 menu, **see Operator interface on page 21**

You can see InteliVision 8 front face and layout of all its buttons and LEDs in **IV8 front face (page 9)**

Image 3.1 InteliVision 8 face

Buttons and LEDs		
1	Context buttons	Selects a submenu/sub-options
2	Hot keys	Selects main menu options
3	Navigation buttons	Arrows and buttons for movement + ESC and Enter button
4	Stop	Stops the gen-set
5	Start	Starts the gen-set
6	Horn reset	Deactivates the horn (audible alarm)
7	Power	Power LED indication (green = power is on)
8	Controller mode	Calls controller mode menu (the mode can be changed then by appropriate context button)
9	Fault reset	Acknowledges faults and alarms (active only in Alarm screen)
10	Alarm	Alarm LED indication (yellow = alarm of the first level, e.g. warning, red = alarm of the second level, e.g. shutdown)

Buttons and LEDs		
11	Engine	Engine LED indication (green = the engine is running)
12	MCB	Opens/closes MCB
13	GCB	Opens/closes GCB
14	Status bar	Shows permanently important values

3.2 How to connect IV8 display to IGS-NT or ID controller?

InteliVision 8 can be connected to the controller via:

- CAN
- NT terminal
- RS232/485

3.2.1 To connect to a Controller:

1. Press *Help/Others* button
2. Choose *Communication* by pressing the context button on the right
3. Use → ← to choose ID or IGS-NT Controller, **see How to connect IV8 display to IGS-NT or ID controller? on page 10**
4. Use ↑ ↓ and *Enter* buttons to choose *Connection Type*
5. Use ↑ ↓ and *Enter* buttons to choose *Controller address (address can be automatically detected)*.
6. Use ↑ ↓ and *Enter* buttons to choose *Terminal address (address can be automatically detected)*.
7. Use ↓ and press to confirm the action.

Image 3.2 Communication dialog

Note: *You can also use RS232 port to connect IV8 display to ID Controller or RS232/RS485 port to connect IV8 display to IGS-NT Controller.*

3.2.2 Automatic detection

There is implemented the function “Automatic detection of controller address” **see How to connect IV8 display to IGS-NT or ID controller? on page 10**. The feature helps you quickly find controller or terminal address without knowledge of communication parameters of controller.

Note: *It is recommended to use automatic detection only in case the communication parameters of the controller are not available.*

> **IMPORTANT: During detection phase, InteliVision 8 stops communicating with already connected controller – it is switched to initialization screen – and communication with the actual controller is lost.**

It is possible to detect:

- Controller address and terminal address on CAN
- Terminal address on display terminal or RS485

After detection phase the first available active address of the controller is set. If you go to the list of addresses (press *Enter* on item *Controller Adr.*), you will see green and grey numbers.

- Green colour means that detected controller is active – the address is occupied with communicating controller (it is possible to choose the address).
- Grey colour means the controller was not detected. That means the address:
  - can be used with non-communicating controller – for example controller has set some of parameters incorrectly
  - the address is not occupied with another controller

Image 3.3 Address detection

Terminal address

- Red colour - the address is occupied
- Grey colour - the address can be used (IGS-NT has 4 addresses; ID-DCU has 5 addresses)

NT terminal address

- Red colour - address is occupied
- Green colour - free address

For other information on how to connect IV8 display to a controller, **see Installation on page 71**

3.3 How to enter a password?

There are two ways how to enter a password:

- Use USB stick as a "login key" – **see USB as "login key" on page 61**
- Insert a password manually

To enter a password manually:

1. Press *Help/Others* button
2. Press *Users/Password* button
3. Use ↑ ↓ to go to *Users* field and press *Enter*
4. Use ↑ ↓ to choose a user and press *Enter*
5. Use ↑ ↓ to go to *EnterPassword* field and press *Enter*
6. Enter password and press *Enter*
7. Use ↑ ↓ and confirm the password by pressing *Login* button

Note: *When you try to edit a locked setpoint the login dialog appears automatically.*

Image 3.4 Password dialog

In case you are successful logged on, the icon below appears in the upper right corner.

The icon indicates that user *The Best ComAp User* is logged on with access level 7.

3.4 How to view important values?

No matter where you are in the menu you can see all the time important values (engine speed, power,…) in the status bar at the bottom of the screen. **see How to view important values? on page 13** is visible from each screen.

Image 3.5 Status bar with important values

To see all the values in more detail:

1. Press Measurement button
2. Choose one of the measurement screens (e.g. Power, Mains, Gen, Synchro,…) using context buttons.
3. To go up/down through Measurement screens use ↑ ↓ buttons (even when context menu is active).

Note: *You can use PgDn or PgUp buttons to display quickly context buttons from following page, when ythez are available (context menu has to be active).*

3.5 How to view a controller status?

No matter where you are in the menu you can see the status of the controller at the bottom of the screen:

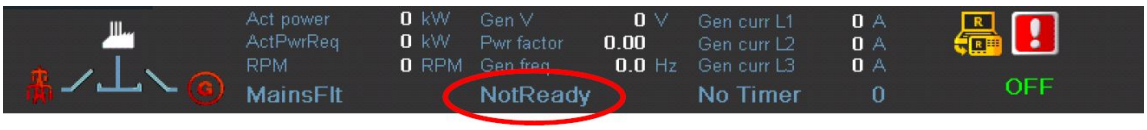


Image 3.6 Controller Status

3.6 How to view a breaker status?

To view a breaker status:

- Directly on breaker buttons
- In block diagram in the status bar
- In Power screen in block diagram

The breaker status LED diode it is possible to see directly on breaker buttons, which are placed at a left bottom corner (in default configuration), **see How to view a breaker status? on page 13**

Image 3.7 MCB, GCB status

Where	
Blue ringlet	Opened
Green ringlet	closed
Red circle	MCB/GCB fail

The breaker status is possible to see also in block diagram in the left side of status bar.

You can also see the breaker in “Power screen”, where a block diagram of a connection type is displayed.

1. Press Measurement button
2. Press Power button (you can find it on the right). **see Measurement screens on page 25**. The scheme with breaker(s) status appears.

Note: *The Power button is available only for connection with IGS-NT controller.*

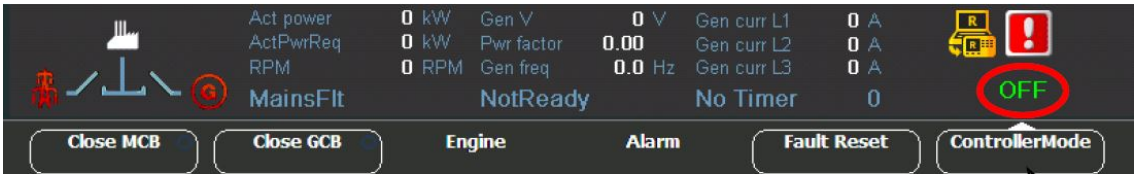
3.7 How to change a Gen-set mode?

To change a gen-set mode:

1. Press *ControllerMode* button at the bottom of IV8 display. Available gen-set modes appear, e.g. TEST, AUT, MAN, OFF.

   Note: *Available gen-set modes depend on the type of used application.*

2. Select a mode by pressing the appropriate context button. After a while the label above ControllerMode button will change.



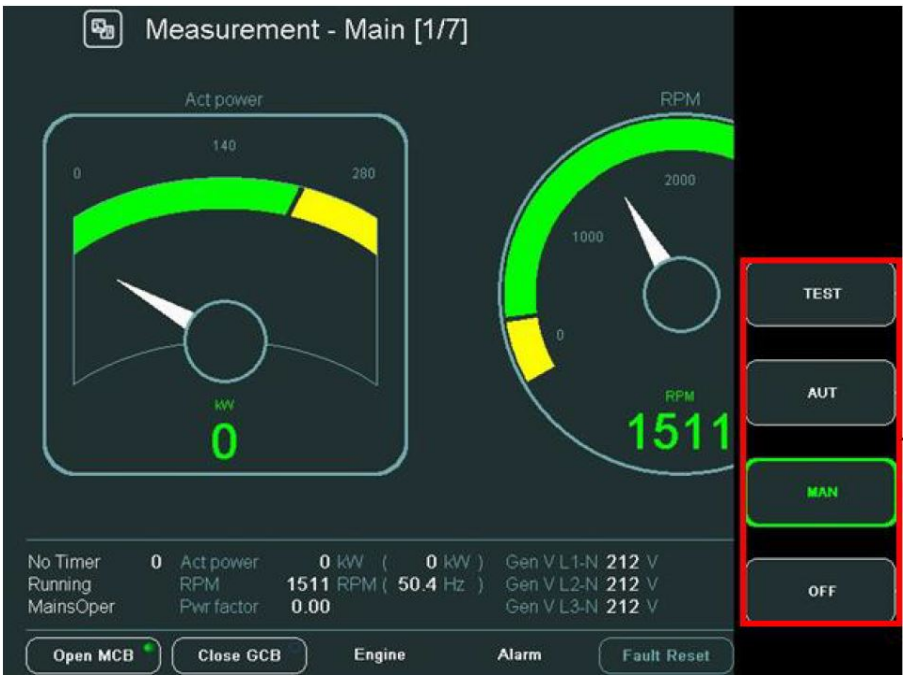


Image 3.8 Change of mode

3.8 How to change setpoints?

To change setpoints:

1. Press *Setpoints* button.
2. To scroll/see all setpoints groups, use PgDn / PgUp buttons to scroll menu (when context menu is active).
3. Select a setpoint group by pressing the context button on the right side of the display (e.g. *Basic settings* button).
4. To select a certain setpoint use PgDn / PgUp and/or ↑ ↓ buttons (when context menu is NOT active) and press *Enter*. A dialog for setpoint value adjustment appears.
5. Use → ← buttons to go to the character position.
6. To change a value of the setpoint use ↑ ↓ buttons and press *Enter*

Note: *If you insert a wrong value (which is e.g. out of range), the field colours in red.*

You can find more information about setpoints in **Setpoints screens (page 40)**

3.9 How to find alarms?

To find alarms:

1. If they do not appear automatically, press *AlarmList* button.
2. To go through alarms press ↑ ↓ or PgDn / PgUp buttons.

You can find more information about alarms in**AlarmList screen (page 43)**.

Note: *When a new alarm appears the AlarmList page is displayed automatically only when the actual GUI position is Home metering screen. From the other GUI location the AlarmList button must be pressed.*

3.10 Communication error

If some communication error occurs, the red stripe at the top of any screen appears. **see Communication error on page 16**. When a communication error relating to the change of a controller address occurs, follow instructions in chapter**How to connect IV8 display to IGS-NT or ID controller? (page 10)** for reconnection.

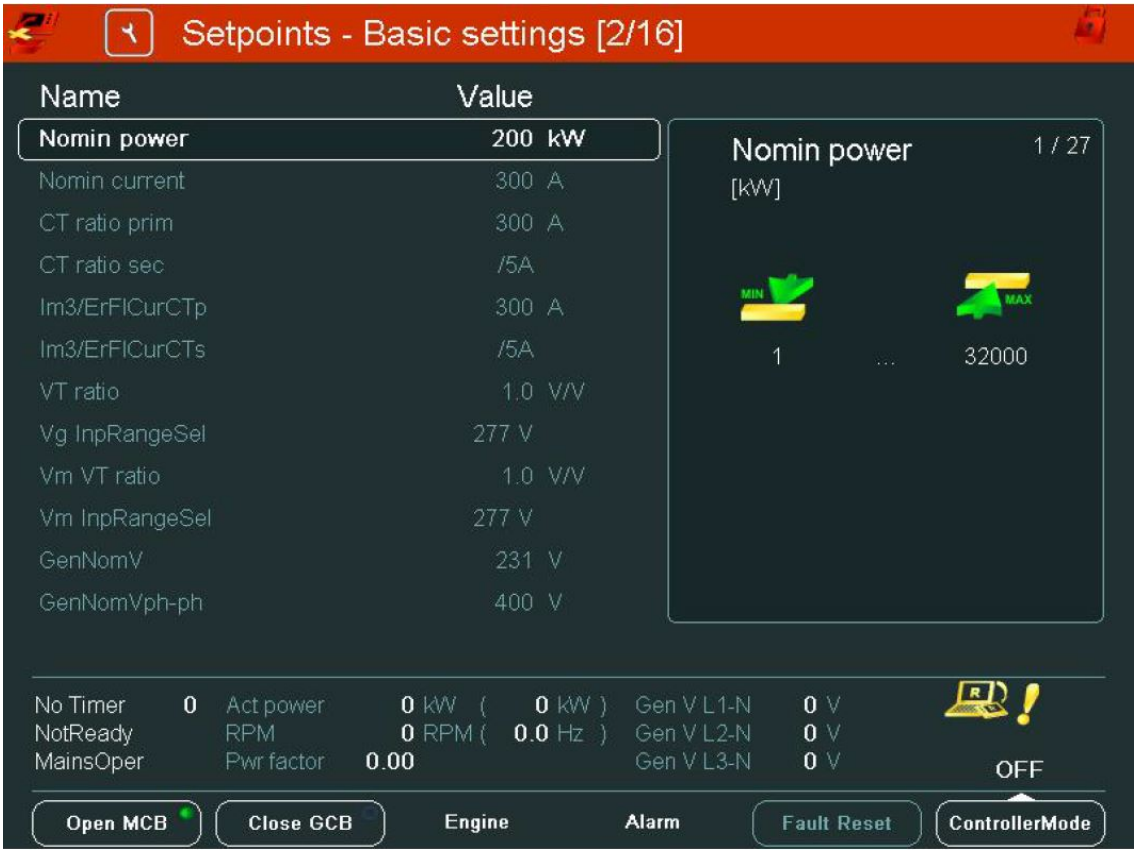


Image 3.9 Communication error

When you correct the communication error, the red stripe disappears but the grey inactive icon of lost communication stays visible. After you press *IV info* button on *Help/Others* screen the inactive icon disappears.

3.11 How to change a password/to save a password/to logout?

To change a controller password:

1. Log-in (**see How to enter a password? on page 12**)
2. Press *Help/Others* button
3. Press *Password*.
4. Use ↑ ↓ to go to *Users* field and press *Enter*.
5. Use ↑ ↓ to choose a user and press *Enter*.
6. Use ↑ ↓ to go to *NewPassword* field and press *Enter*.

7. Use → ←to go to the character position.
8. Use ↑ ↓ to change the value (numbers 1 - 9 are available) and press *Enter*.
9. Use ↑ ↓ to go to *ChangePassword* title and press *Enter* to confirm the password.
10. Use ↑ ↓ to go to *SavePassword* title and press *Enter* to save password to USB stick (if connected).
11. Use ↑ ↓ to go to *Logout* button and press *Enter* in case you want to logout.

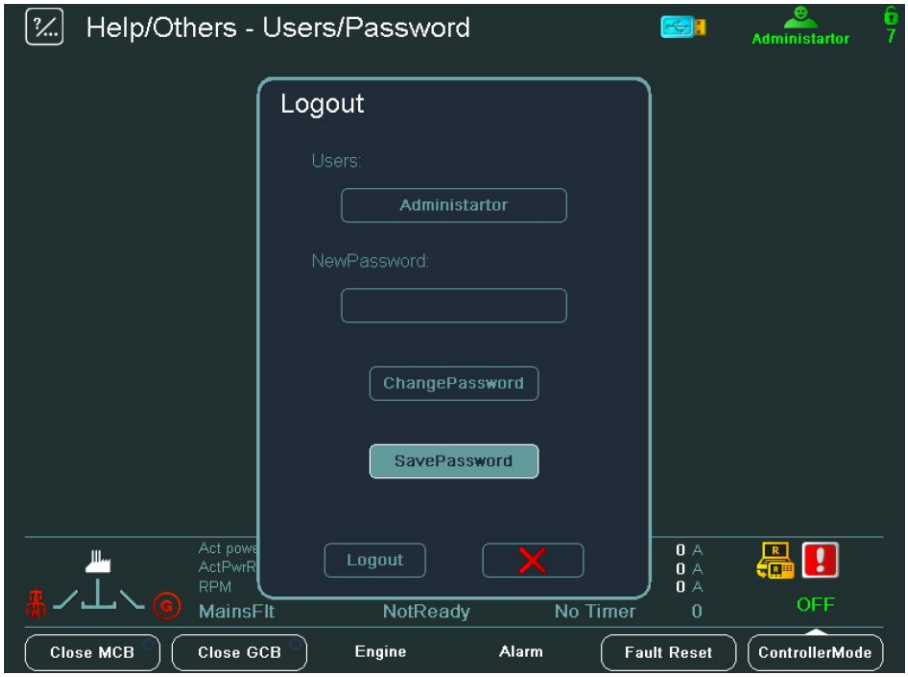


Image 3.10 Logout / change / save password dialog

Note: For IGS-NT: *Only the user with the highest access level is able to reset passwords of other users (not to change passwords). And every user is able to change its own password.*

Note: For ID: *Only the user with the third access level is able to change passwords of other users. And every user is able to change its own password.*

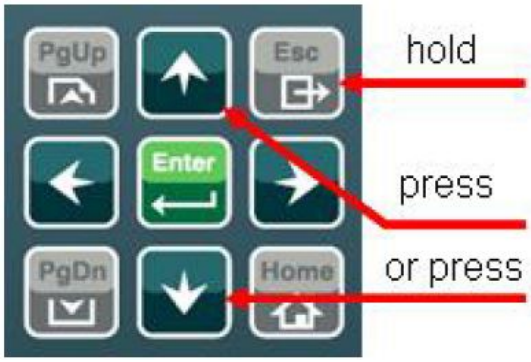
3.12 How to change display brightness?

There are two brightness settings available:

- Day mode
- Night mode (especially for Marine application)

Quick alternation between modes can be done by 2 second pressing the ESC button.

The brightness can be adjusted in the full range of 0 % - 100 % in the both modes **How to change display brightness? (page 17)**, **How to change display brightness? (page 17)**. The brightness of the display can be increased/decreased by holding *Esc* button and repeated pressing ↑ ↓. See picture below:



Pressing *ESC* + *PgUp* buttons or *ESC* + *PgDn* buttons switches between modes, which shall be adjusted, when dialog for changing of intensity brightness is active **How to change display brightness? (page 17)**,**How to change display brightness? (page 17)**.

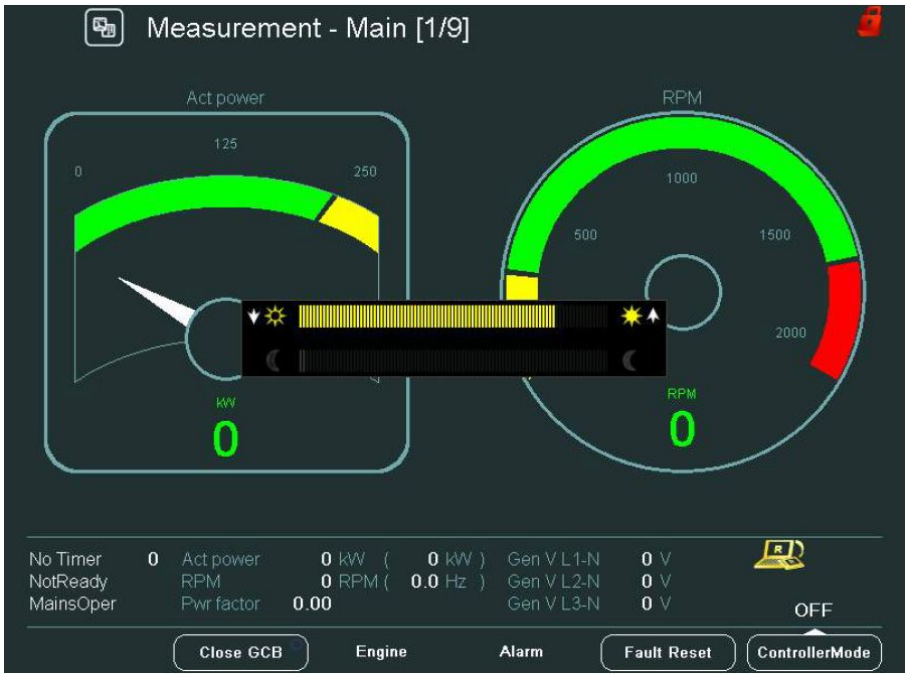


Image 3.11 Day mode brightness setting

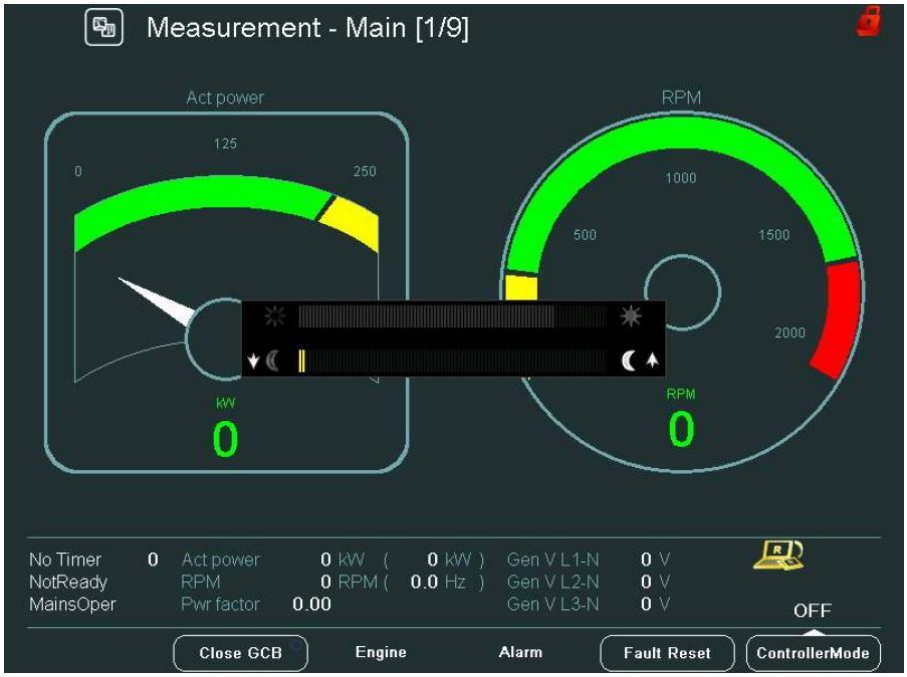


Image 3.12 Night mode brightness setting

3.13 Main icons description

Icons at the TOP of IV Display	
	▶ In IGS-NT controller ▶ Figure + "The Best ComAp User" = User name ▶ Open green lock and = display is NOT locked; user is logged in ▶ 7 = a user has assigned access level 7
	▶ Display or setpoint is locked; user is NOT logged in (with sufficient password level)
	▶ PageMode is On (in History or Trend screen)
	▶ Zoom 10x
	▶ Blue icon = USB stick plugged on ▶ Bed icon = data is written to USB stick ▶ Green icon = data is read from USB stick

Icons at the TOP of IV Display	
	▶ A user used USB stick as "login key"
	▶ Communication is lost
	▶ Now is communication OK, but it was lost in past time

Icons at the Bottom of IV Display	
	▶ Icon is shown = trends are running ▶ Icon is NOT shown = trends are NOT running
	▶ Access lock is active = display is locked for security reasons
	▶ Remote communication (appears when any remote connection to controller is active)
	▶ Blinking exclamation mark = a new alarm occurred. After enter of AlarmList, the exclamation stops blinking
	▶ Blue ringlet = opened
	▶ Green circle = closed
	▶ Red circle = MCB/GCB fail

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This chapter provides information on how to work with InteliVision 8 display in more detail. In the picture **Operator interface (page 21)** you can see InteliVision 8 front face and layout of all its buttons and LEDs.

Note: *When you switch on InteliVision 8 display, Power LED turns on and Engine and Alarm LEDs start to blink for a while during initialization (aprx. from 35s to 1min).*

Image 4.1 InteliVision face overview

Buttons and LEDs		
1	Context buttons	Selects a submenu/sub-options
2	Hot keys	Selects main menu options
3	Navigation buttons	Arrows and buttons for movement + ESC and Enter button
4	Stop	Stops the gen-set
5	Start	Starts the gen-set
6	Horn reset	Deactivates the horn (audible alarm)
7	Power	Power LED indication (green = power is on)
8	Controller mode	Calls controller mode menu (the mode can be changed then by appropriate context button)
9	Fault reset	Acknowledges faults and alarms (active only in Alarm screen)
10	Alarm	Alarm LED indication (yellow = alarm of the first level, e.g. warning, red = alarm of the second level, e.g. shutdown)
11	Engine	Engine LED indication (green = the engine is running)
12	MCB	Opens/closes MCB
13	GCB	Opens/closes GCB
14	Status bar	Shows permanently important values

Image 4.2 Hot keys

Hot Keys		
1	Measurement	Display of actual values (power, synchro, analog. inputs, binary 1/0 cylinders, engines, etc.)
2	Trends	Display of chosen values in graphs/real time trends
3	Setpoints	Setpoints setting
4	AlarmList	List of actuve and/or unacknownledged alarms
5	History	Display of history records
6	Help/Others	Settings/info (users/passwords, communication, languages, IV and controller info, IV settings)

Image 4.3 Navigation buttons

Navigation buttons	
	Quickly goes up among Measurement screens or Setpoints groups (when menu is active) or among Setpoints or History records (when menu is not active)
	Quickly goes down among context menu items or records (similarly as PgUp)
	Escape from any dialog window or menu (cancels an action)
	Jump to Main Measurement screen
	Confirms a value or opens a value adjustment within setting dialogs
	Movement left
	Movement right
	Movement down
	Movement up

Note: *To leave the menu, use Esc, Enter or ↑ ↓ → ← buttons.*

4.1 Measurement screens

On Measurement screens you can see and check various values.

Press Measurement button. Measurement screen appears:

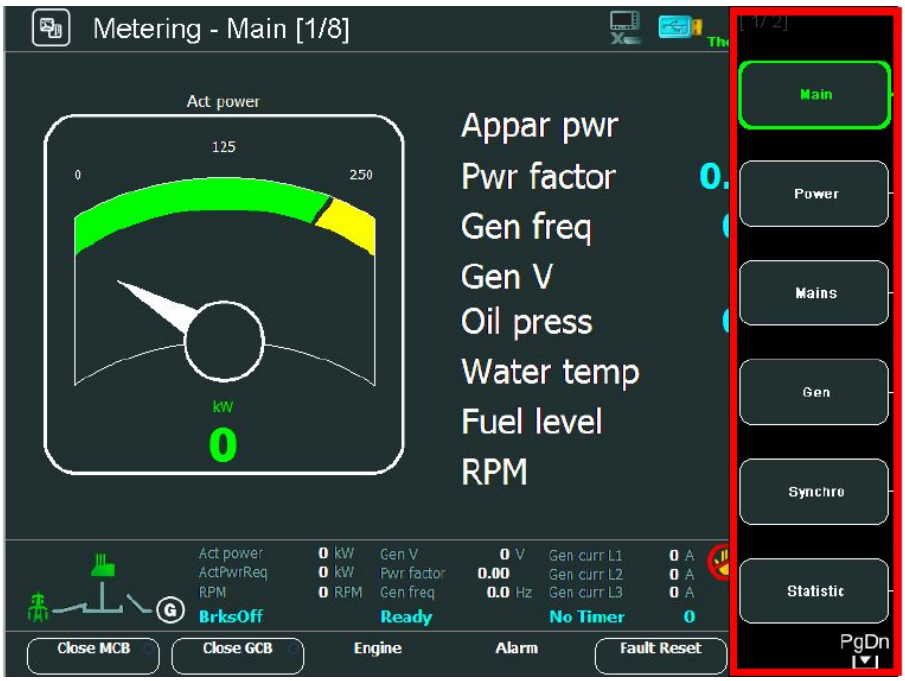

Image 4.4 Context menu in Measurement screen

InteliVision 8 contains 6 context buttons, which you can use directly in context menu. If context menu contains more than 6 items, you have to use *PgDn* and *PgUp* buttons to get to extended context menu.

Note: *The icon* PgDn *in the bottom right hand corner* ***see Measurement screens on page 25*** *indicates possibility to use* PgDn *button to see buttons of the next page context menu.*

To go directly to a concrete Measurement screen, choose the appropriate context button **Measurement screens (page 25)** or use ↑ ↓ buttons to go through measurement screens. Passage through screens is cyclic it means the passage from first screen to last one and vice versa is allowed.

Repeated pressing **Measurement** button or **Context** buttons show/hide **Measurement screens (page 25)**.

Image 4.5 Appearance of context menu

4.1.1 IGS-NT standard measurement screens

IGS-NT standard measurement screens come after each other in the following order:

- Main
- Power
- Mains
- Gen
- Synchroscope
- Statistics
- Analog Inputs
- Binary 1/0

Other screens can follow, depends on controller configuration (ECU, extension modules, etc.).

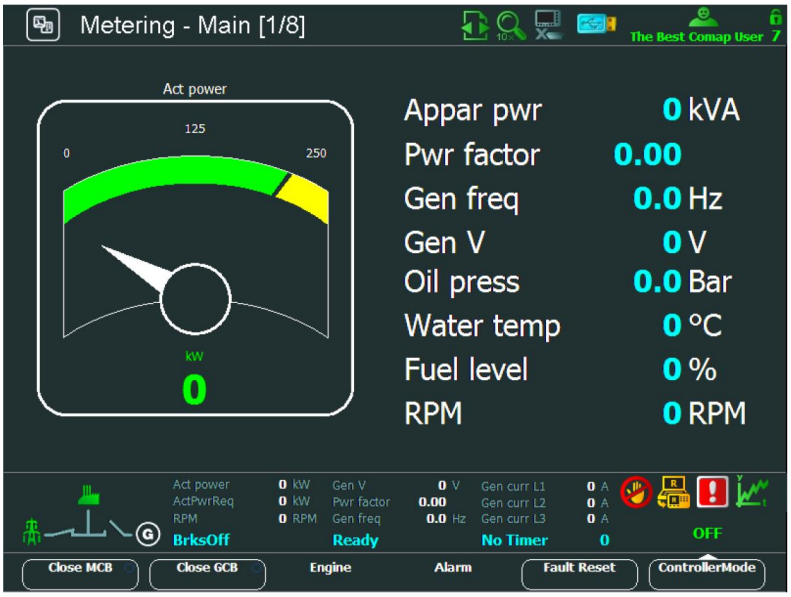

Image 4.6 Main screen

Note: What do numbers in the bracket [1/4] in the top of screen mean? *The first number is the number of a screen sequence The second number is total number of screens in Measurement block.*

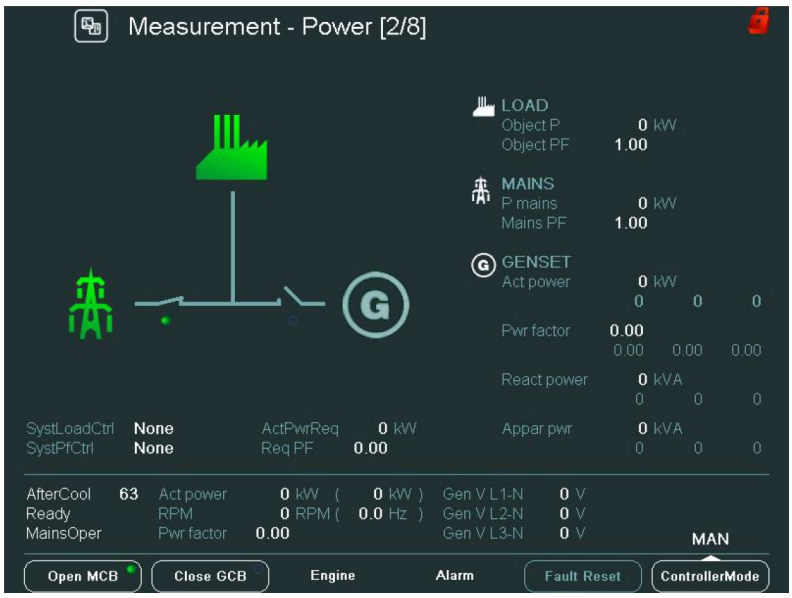

Image 4.7 Power screen

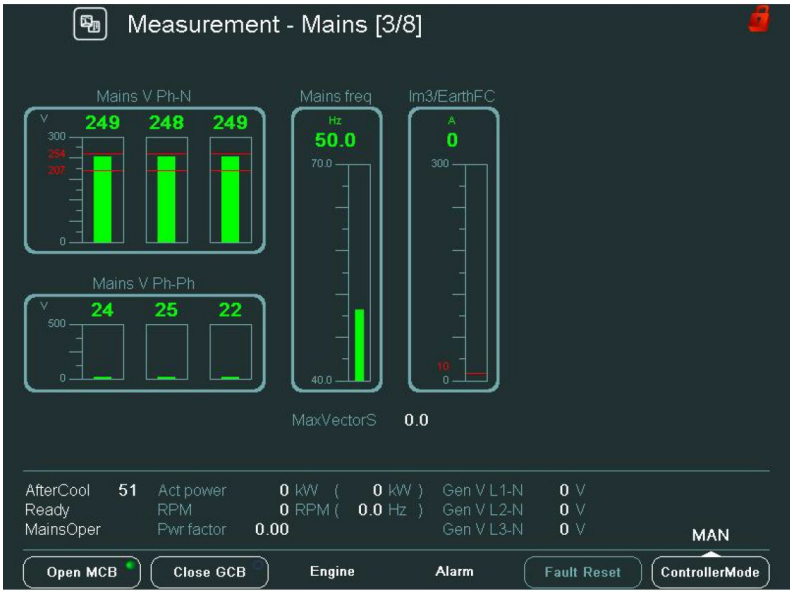

Image 4.8 Main screen

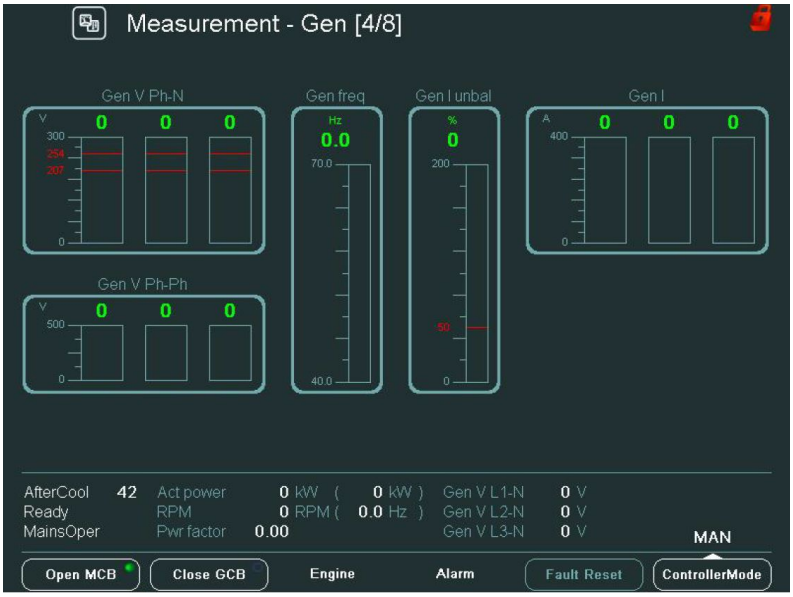

Image 4.9 Gen screen

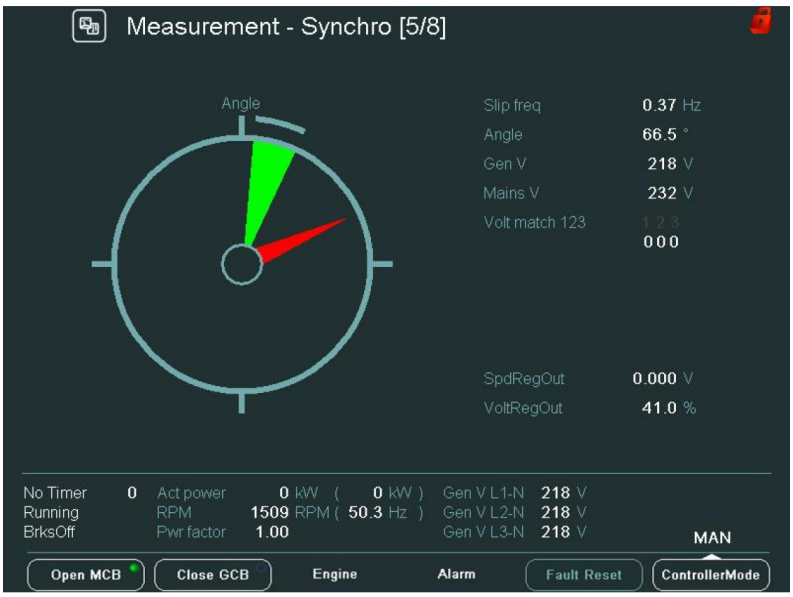

Image 4.10 Synchroscope screen

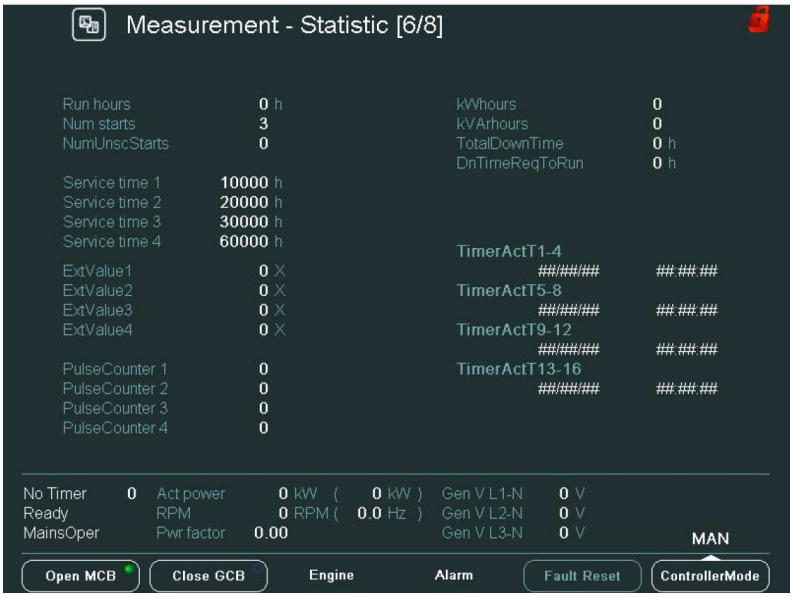

Image 4.11 Statistics screen

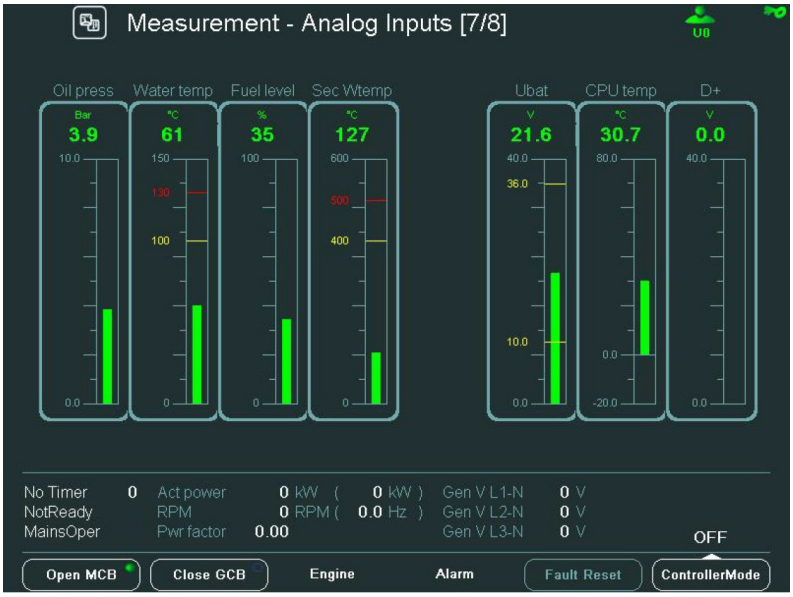

Image 4.12 Analog Inputs screen

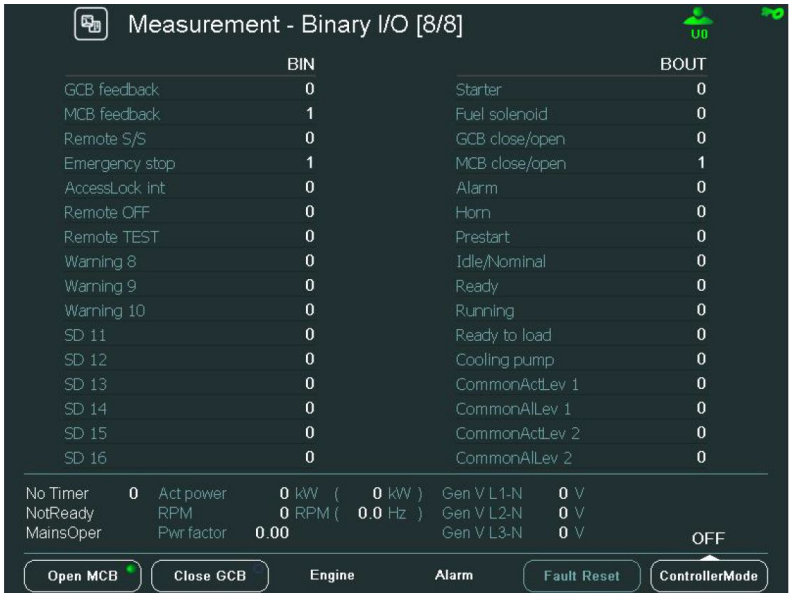

Image 4.13 Binary 1/0 screen

4.1.2 ID measurement screens

ID standard measurement screens come after each other in the following order:

- Main
- Analog inputs
- Binary 1/0
- Statistics

Other screens can follow, depends on controller configuration (ECU, extension modules, etc.).

Note: What do numbers in the bracket [1/4] in the top of screen mean? *The first number is the number of a screen sequence. The second number is total number of screens in Measurement block.*

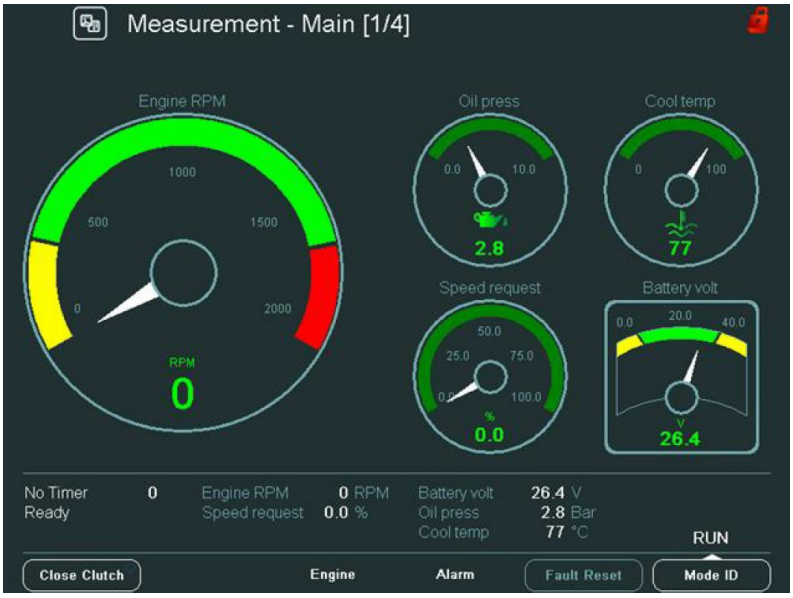

Image 4.14 Main screen

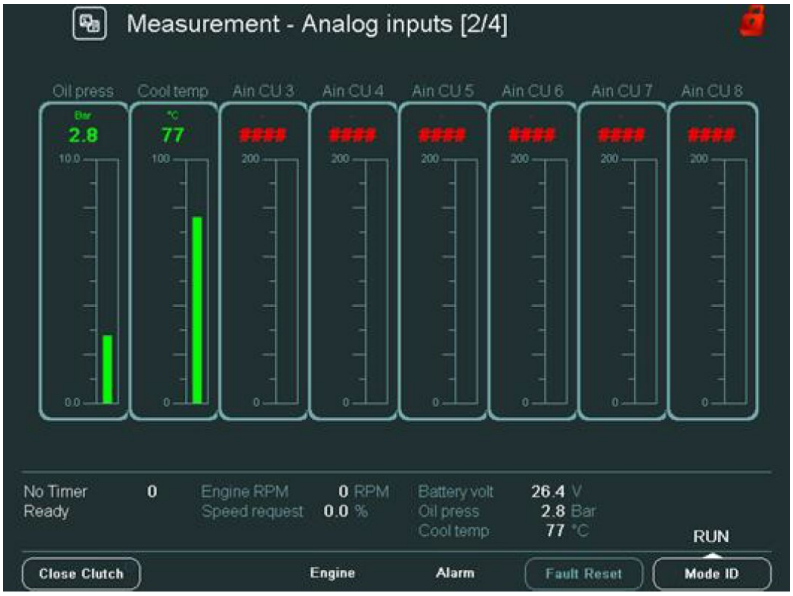

Image 4.15 Analog inputs screen

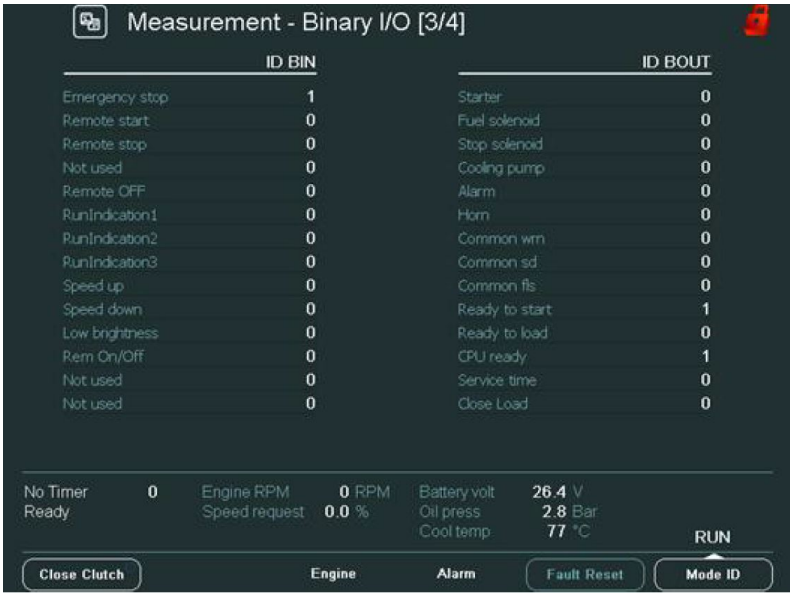

Image 4.16 Binary 1/0 screen

Image 4.17 Statistics screen

4.2 Trends screen

You can display and monitor up to 8 different channels (values) in real time on Trends monitoring screen. All the displayed data are stored in RAM memory or in RAM + USB stick with certain sampling period at the time when trends are running. You can display both analog and binary values.

IMPORTANT: You loose all logged data when:

- you change configuration of controller
- or settings of Trends
- switch off the display and data were logged only to RAM memory

Press *Trends* buttons. Trends screen appears (curves are just and example):

Image 4.18 Trend context menu

***Note:** Buttons **Channels, Settings, Zoom 10x/1x, Markers On/Off** are available only when trends are NOT running.*

4.2.1 Trends context buttons

Trend Context buttons	
Start	Starts trends logging
Channels	Selects displayed values and sets their parameters
Settings	Sets trends properties
Zoom 10x	Switches zoom of curves 1x/10x
Markers On/off	Switches on/off vertical markers**see Vertical markers on page 37**
PageMode On	Switches PageMode on/off (in On Mode the movement of the trend or marker is 10x faster). The icon is displayed in top line of Trend monitoring screen.
Export -> USB	Single export trends to USB
Import <- USB	Import of trends from USB

4.2.2 Trends - channels

On this screen you can set displayed values (channels). Either Analog or Binary values can be assigned to each channel.

Analog value selection

To set displayed values, press *Channels* button. The following screen appears:

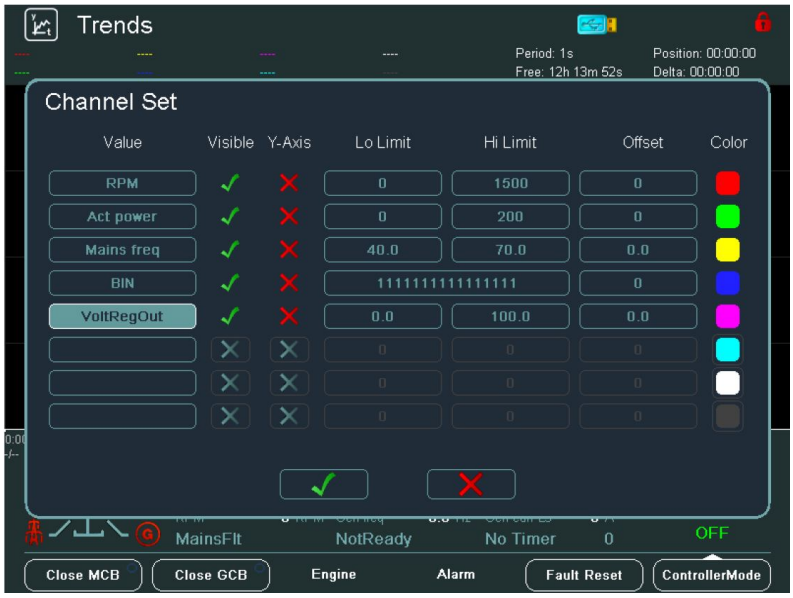

Image 4.19 Channel set menu

To change a value or to choose a new one in unallocated channel, use ↑ ↓ buttons to move up and down in the column *Value* and press *Enter*.

Image 4.20 Channel trends settings

- Use ↑ ↓ buttons in the left column to select a group of values.
- Use → ← buttons to go to the right column, use ↑ ↓ buttons to select a certain value and press *Enter*.

- Use → ← buttons to go to *Visible* column and use *Enter* button to switch on/off channel visibility.
- Use → ← buttons to go to *Y-Axis* column and use Enter button to switch on/off Y-Axis visibility.
- Use → ← buttons to go to *Lo Limit* column and press *Enter*. Here you can set the low limit of the displayed value range.
- In *Lo Limit* screen use → ← buttons to go to a certain position of the field and use ↑ ↓ buttons to change the value. Then press *Enter*. **see Change of the numerical value on page 41**

Note: *Parameters "Low Limit and Hi Limit" are accessible only when analog signal is selected as "Value" in Channel dialog.*

- Similarly set how much the value range will be set away out of zero in the *Offset* column and press *Enter*.
- In the column *Color* choose the color of the trend curve and press *Enter*.

Image 4.21 Choosing of a trend line color

- Use ↓ button to go to  button and confirm the action by pressing *Enter*

Binary value selection

When binary value is selected in Trend channel dialog, there is displayed binary information indicating visibility of particular bits of binary signal in Trend screen **see Trends - channels on page 34**. In default all bits are selected to be logged in Trend window – they are set to 1. A user has possibility to change visibility of the bits in pop-up window:

- The steps 1 – 5 are the same as in paragraph **Trends - channels (page 34)**
- Use → ← buttons to go to "bits" item and press *Enter* button.
- The pop-up window appears **Trends - channels (page 34)**
- Use ↑ ↓ buttons to move within "Visibility column" and set  by pressing *Enter* button in row relating to bit which should not be logged.
- The final selection has to be confirmed by big  button in bottom of pop-up window or cancelled by pressing  button.

Image 4.22 Bits selection in trends

4.2.3 Trends - settings

In this setting dialog you can set trend parameters: grid, sample period, start, run modes of trends and type of storage.

- Press *Settings* button. The following screen appears:

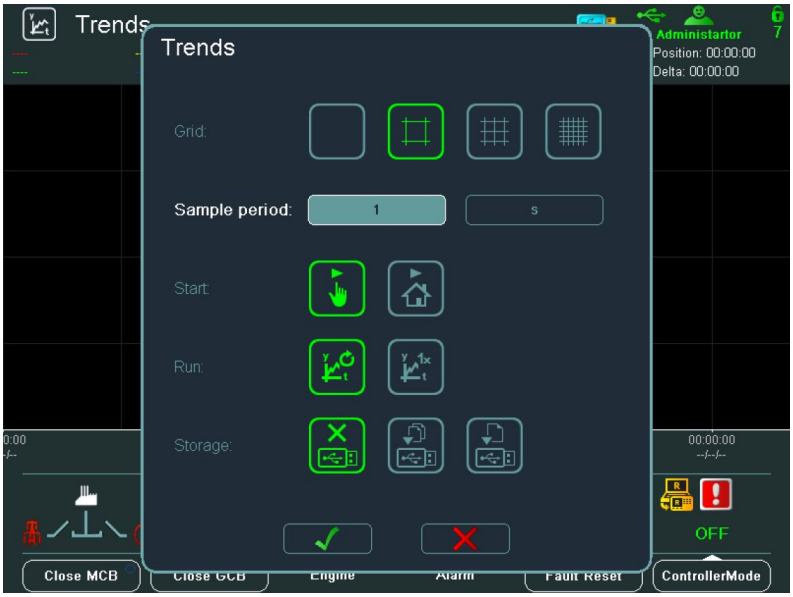

Image 4.23 General settings of trends

- Use ↑ ↓ → ← buttons to choose *Grid* density.
- Similarly choose *Sample period* of trends in seconds (1 second is a minimum; 7200 second i.e. 2h is maximum).
- Choose  button to start trends, using the *Start* button from *Trends Context* menu

or

- choose  button to start trends automatically after you press the home button (Main Measurement) screen.
- Choose  button to set a cyclical logging mode

or

- choose  button to enable trends running unless the trends RAM memory is full.
- Choose  button for logging data only to RAM memory

or

- choose  button for logging data to USB stick and RAM memory, where data is saved to one file (Mode 1). The size of file is 3MB ~ reserved RAM memory for trends. When file is full, the oldest data in file is rewritten by new one. It works as cyclic buffer.

or

- choose  button for logging data to USB stick and RAM memory, where data is progressively saved to more files (Mode 2). The size of file is the same as size of RAM memory reserved for trends. When there is no place for new file, the oldest file is replaced by new one.
- Press  button to confirm or  button to cancel the setting adjustement

Note: *When the trends are in the cyclical mode and the memory is full, the oldest data are overwritten (e.g. when the sampling period is 1 minute and 8 channels are configured, the memory is full approximately in a month).*

4.2.4 Export/import of trends

The function is described in subchapter **Export/import of trends (page 58)**.

4.2.5 Vertical markers

Button Markers ON/OFF activates/deactivates 2 vertical markers. It is possible to measure delta time of logged trends between the markers within one or more screen. It means it is possible to move one of markers out of visible screen.

Initial state after Markers activation (Marker ON) is display the both vertical markers on the actual screen. Movement of Markers is done by pressing → ←. It is possible to move only one of them. Button *Enter* allows switching between Markers.

Note: *When markers are on different screen and you want the both to have on actual screen, just switch OFF and ON Markers again.*

Image 4.24 Vertical Markers in Trends

4.2.6 Scrolling by page

This feature gives a user possibility to browse trends in shorter time. Scrolling by page allows fast movement through trends in case of long time data logging. The feature is accessible by using PgUp/PqDown buttons in Trend Mode. Button PgUp scrolls trend backward in time. Button PqDown scrolls forward in time.

Scrolling of trend is cyclic, it means it is possible to move from last screen to first one and in opposite way. Passage from a last screen to first one is allowed by pressing button:

- PgDn / PgUp if you are using for going though trends these buttons
- combination → ← + PgDn / PgUp if you use arrows for going through trends

Note: *More than one screen of trend should be displayed on screen to be cyclic scrolling active.*

4.2.7 Availability of disk space

Availability of disk space reserved for trends is now displayed in time format. Displayed time information is placed in the upper right corner (see red box in**Availability of disk space (page 38)**). The available space depends on sample period set in menu “Settings”:

Sample period	Time of saturation
1 s	12 hours and 15 min
1 min	30 days and 12 hours
120 min	3669 days

Note: *In case USB stick is plugged to IV8, time information is associated with USB stick free space.*

Image 4.25 Time information of free space for trend logging

When continuous logging of trend is selected, the time information is relating to free space of connected USB storage. The maximal displayed time is 99 years. When value of available space is bigger, information " >99 years" is displayed.

Time format of available space

- dd:hh:mm
- yy:dd:hh
- >99 years

4.3 Setpoints screens

On Setpoints screens you can set various setpoints.

To go to Setpoints screen press *Setpoints* button. Setpoints screen appears:

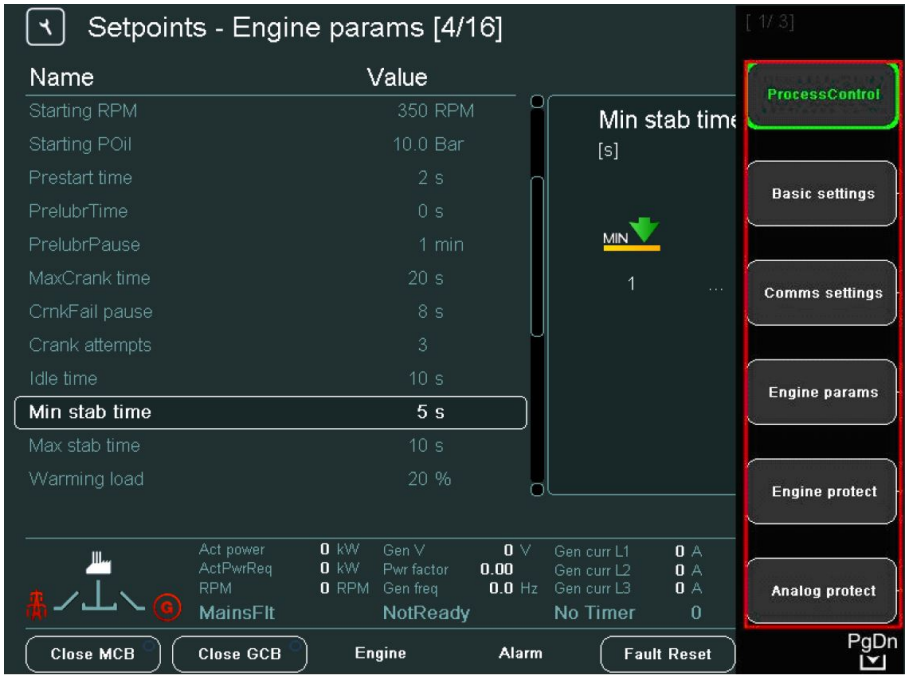

Image 4.26 Setpoints adjustement

Content of the context buttons list depends on the type of the application. To be more familiar with setpoints, see Reference Guide of the specific application (e.g.IGS-NT-SPTM-2.6-Reference Guide.pdf or IGS-NT-MINT-2.6-Reference Guide.pdf or other).

There is also allowed the cyclic movement among Setpoints Screens and also among items in particular Setpoints groups. Scroll bar in the right side of the Setpoints Group determines position in setpoint list.

The value of Setpoint can be:

- Strictly numerical value
- Text list selection
- Strictly text value, where text string can be edited by a user
- Combination of numerical and text value

4.3.1 Change of the numerical value

1. Press the button from the context menu on the right (e.g. *Basic settings*).
2. Use ↑ ↓ to go to a certain setpoint (e.g. Gear teeth) and press Enter.

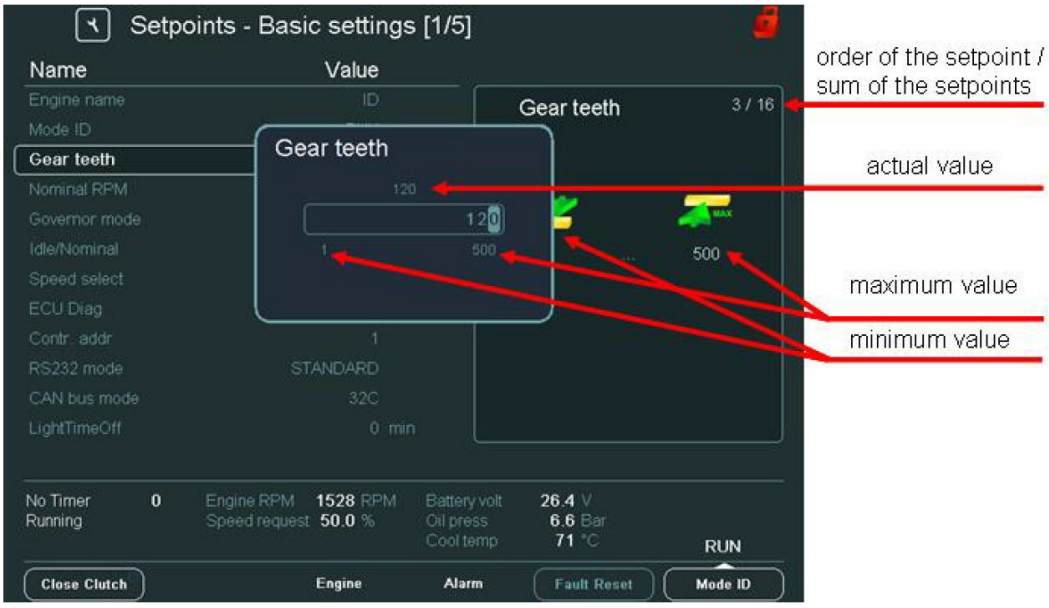

Image 4.27 Edit of setpoint with a numerical value

3. Use → ← buttons to go to a certain position of the field and use ↑ ↓ buttons to change the value. Then press *Enter*. For quicker movement among value positions it is possible to move cyclic through value with using → ←buttons. It means from the highest digit place to the lowest digit place and vice versa.

Note: *If you set the value out of limit, the field will color red and you will not be able to confirm the value.*

4.3.2 Text string selection

1. Press the button from the context menu on the right (e.g. *Basic settings*).
2. Use ↑ ↓ to go to a certain setpoint (e.g. *Governor mode*) and press *Enter*, **see Text string selection on page 42**

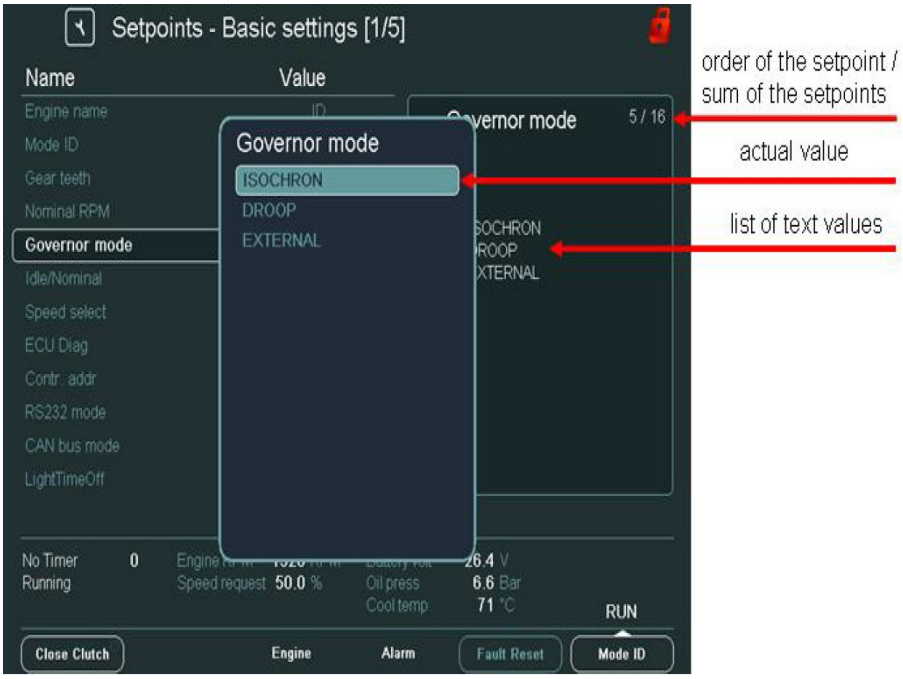

Image 4.28 String value selection

3. Use ↑ ↓ to select the string from the list and press *Enter*.

4.3.3 Text string edit

You can also edit a string of some setpoints, see example for “Engine name” editing below.

- Press *Basic settings* button.
- Select *Engine name* setpoint and press *Enter*. The following window appears:

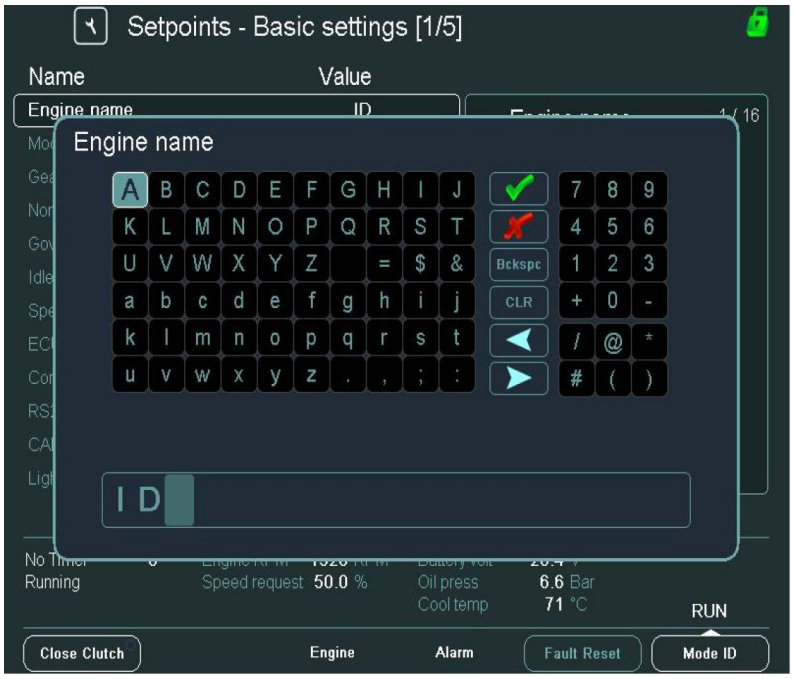

Image 4.29 Edit of setpoint with a string value

- Simply edit the string and press  button.

4.4 AlarmList screen

You can see all alarms on AlarmList screen.

There are two different Alarm types:

- Warning (expressed by yellow color)
- Failure - ShutDown (expressed by red color)

There are two different AlarmList types, one for IGS-NT controllers and the second for ID controllers. First see the description of the AlarmList for IGS-NT controllers.

4.4.1 AlarmList for IGS-NT controllers

When an error occurs, a new alarm appears in the *AlarmList* screen and exclamation mark  appears on the front panel of IV8 display and together with *Alarm* LED start blinking. **see AlarmList for IGS-NT controllers on page 43**. When AlarmList is displayed (Alarms are seen), the exclamation mark stops blinking. The Alarm mark disappears when no alarm is in AlarmList.

Note: *When a new alarm appears* ***AlarmList*** *screen is displayed automatically* ***only*** *when you are in Main Measurement screen. When you are in other screens, you have to press AlarmList button*  *to display* ***AlarmList*** *screen.*

- To go to AlarmList screen, press *AlarmList* button.

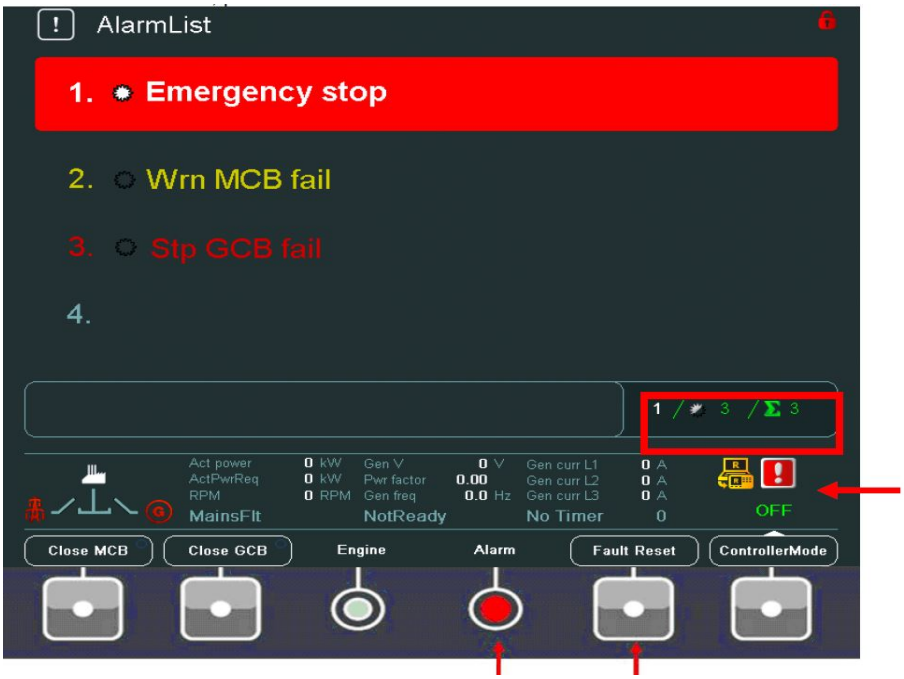

Image 4.30 AlarmList screen for IGS-NT

- Press *Fault Reset* button to confirm all alarms. The *Alarm* LED will stop blinking.
- Resolve the error. The alarm will disappear from the AlarmList and when you resolve all errors, *Alarm* LED will turn off.

Note: *For IGS-NT::Fault Reset button is active all the time (it is possible to confirm alarms from any screen)*

Note: *For ID: Fault Reset button is active only in AlarmList screen. A error must be confirmed with Fault Reset button. If you resolve the error before pressing Fault Reset button, the alarm still remains in the AlarmList (it will turn black) till you press Fault Reset button.*

When the number of alarms is up to 4, the alarms are displayed in bigger font to be better visible from longer distance from IV8.

When the number of alarms is more than up to 16 alarms divided to two columns can be visible on screen **AlarmList for IGS-NT controllers (page 43)**. Message from ECU (when connected) is expressed blue color.

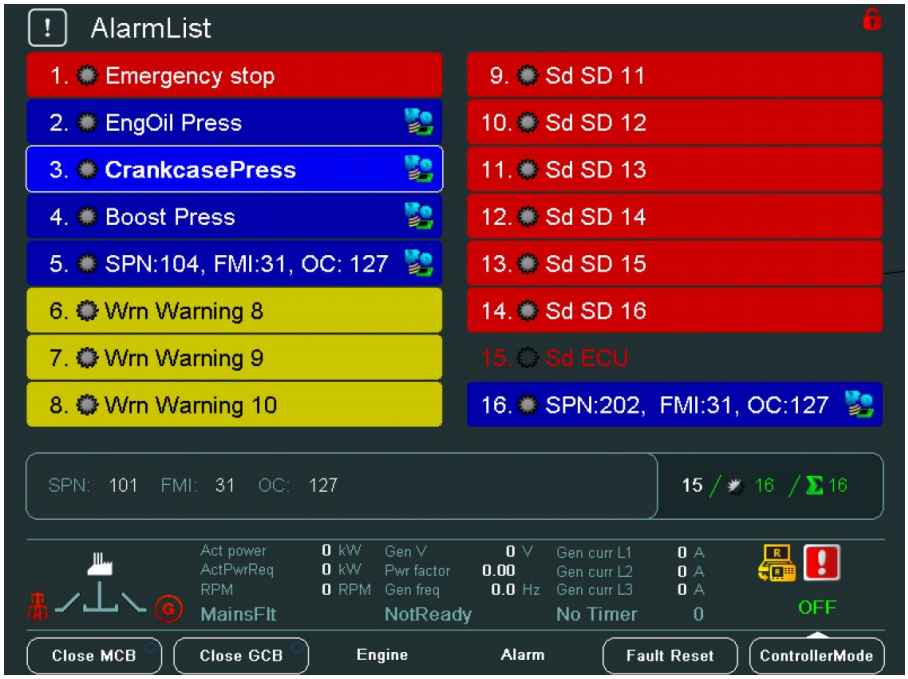

Image 4.31 Alarm List – 16 alarms in AlarmList

Types and colour schema of alarms:

	active not confirmed	active confirmed	non active not confirmed
Shutdown	* Red background + grey star	Red background	* Red text + black star
Warning	* Yellow background and grey star	Yellow background	* Yellow text + black star
Engine mess.	* Blue background and grey star	Blue background	* Blue text + black star

Alarm summary (taken from the left,AlarmList for IGS-NT controllers (page 43))	
White number	Number of active alarms
Halved asterisk	Sum of unacknowledged active and inactive alarms
Sum	Total sum of alarms

Image 4.32 Alarm summary

4.4.2 AlarmList for ID controller

AlarmList for ID controller works analogically in comparison the AlarmList for IGS-NT controllers (see the description above), however there are some differences.

There are two separate columns of alarms **AlarmList for ID controller (page 46)**:

- The left column for ID controller
- The right column for ECU

To move between ID and ECU alarms in *AlarmList* use → ← buttons. *Fault Reset* button confirms either ID or ECU alarms.

Image 4.33 ID controller alarm list

4.5 History screen

On History screen you can see history records.

Press *History* button. History screen appears:

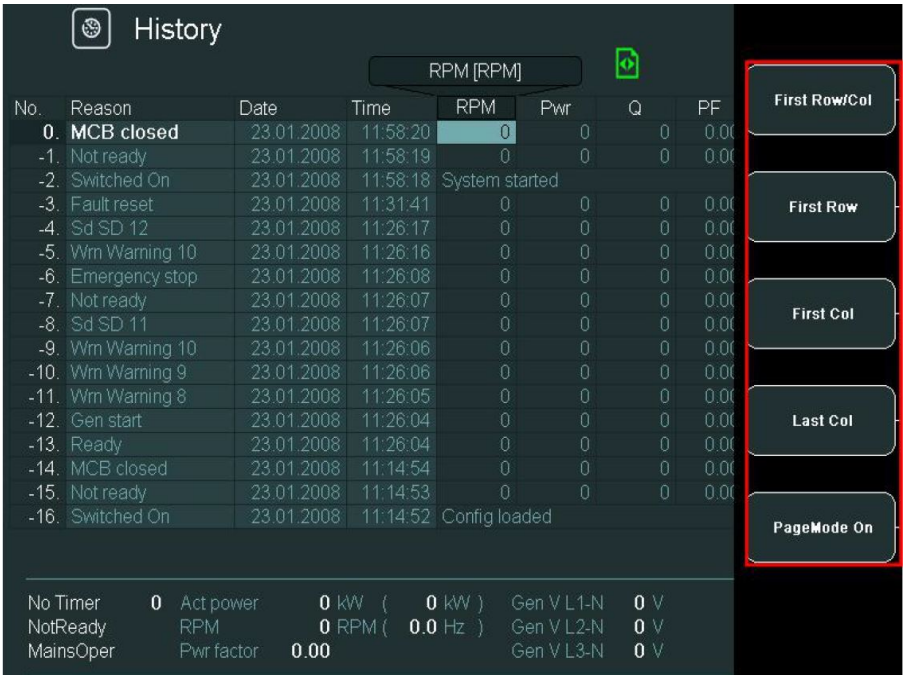

Image 4.34 History screen and history context menu

4.5.1 History context buttons

First Row/Col	Jump to the first moveable column and first row (the first column is **RPM** by default – it is not possible to move columns **Reason, Date** and **Time**)
First Row	Jump to the first row
First Col	Jump to the first column
Last Col	Jump to the last column
PageMode On	When the PageMode is ON you can use → ← buttons to jump by page right or left (quicker movement through columns). Icon at the top of the screen indicates that PageMode is On. **History -> USB** - Automatic export history to csv file to connected USB stick **see Export of history on page 57**

4.5.2 Change of an order of columns

It is also possible to move columns and change their orders in History screen. All columns instead of columns *Reason, Date* and *Time* can be moved. Columns *Reason, Date* and *Time* have fixed positions and their order *cannot be changed.*

- Use → ← buttons to go to the column you want to move and press Enter. The column will turn yellow

Image 4.35 History screen and highlighted shifting column

- Use → ← buttons to move the chosen column to the desired position.
- Press *Enter* to confirm the new position of the column or press *ESC* to cancel the action.

4.5.3 Help/Others screen

In Help/Others submenu you can see context menu**Help/Others screen (page 48)**, **Help/Others screen (page 48)** with other settings (passwords setting, communication setting, language selection, IV8 setting, Export to USB) and information (various helps, IV8 and controller info and etc.).

As number of items in the context menu exceeds the number of context buttons (6) it is necessary to use PgUp and PgDn buttons for navigation within the menu. This feature has been already available in Measurement or Setpoints submenu.

Press *Help/Others* button. Help/Others screen appears:

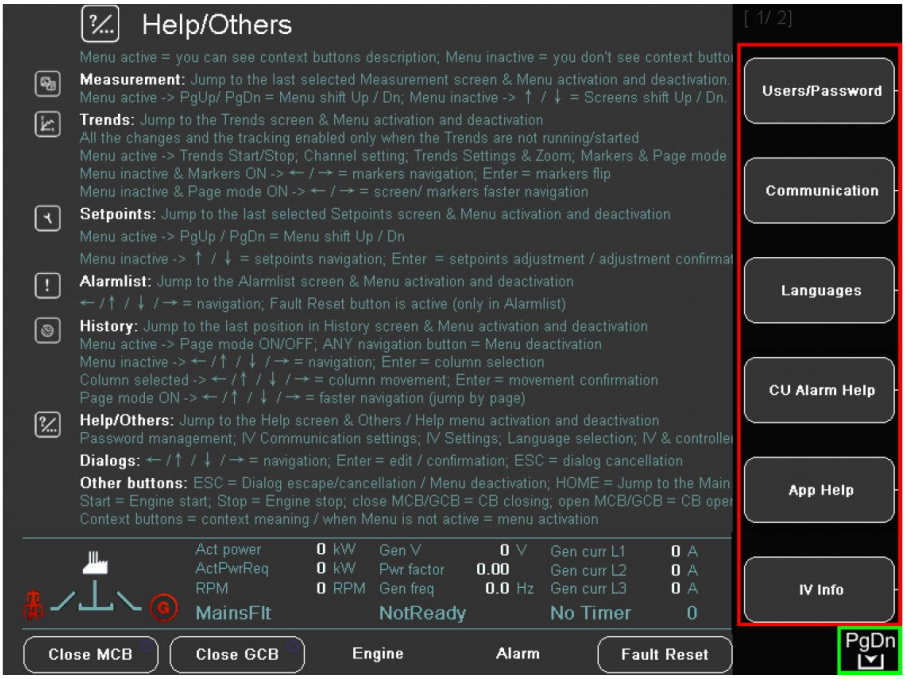

Image 4.36 Help/Others screen – part 1

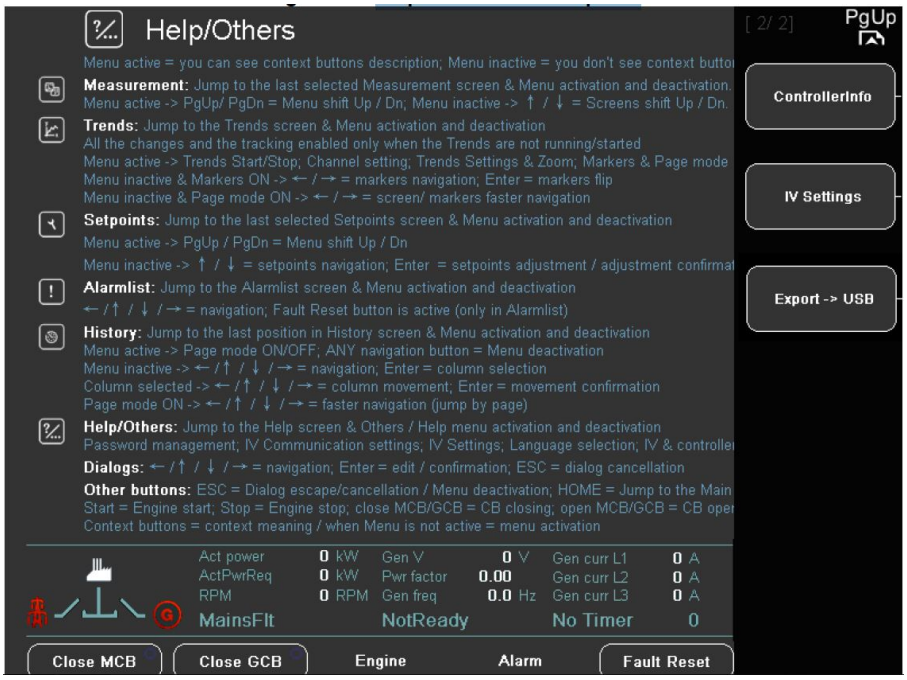

Image 4.37 Help/Others screen – part 2

4.5.4 Help context buttons

Users/Password	Log in/password change/password Save
Communication	Communication (to controller) setting
Languages	Language selection
CU Alarm Help	Alarm help for controller (customizable help, present by default)
App Help	Application help (customizable help, present only by customer request)
IV Info	Info about the display
ControllerInfo	Info about the controller
IV settings	IV8 display settings (backlight time - time period after which display backlight is switched off (in minutes)
Export -> USB	Export of Archive of controller or firmware of InteliVision 8 to USB stick

4.6 Rules for help customization

4.6.1 How it works

InteliVision 8 firmware (InteliVision8.ivp) can consist of more file types (not only InteliVision8.exe) as logo.bmp or ”hlp_xxx.txt” files are. IVP file can be created in IVProg application (from version 1.1), **see IVProg from Genconfig on page 81**.

hlp_xxx can have following structure:	
hlp_nt.txt	Using this file you will replace CU Alarm Help for IGS-NT controllers
hlp_id.txt	Using this file you will replace CU Alarm Help for ID controllers
hlp_app.txt	Using this file you will create Application Help for all controller types
hlp_iv.txt	Using this file you will replace InteliVision help

These 4 help types (above) **are independent on language selection**. It is also possible to use language mutations dependant on language selection. Such mutations are activated when the controller is switched to the given language.

hlp_iv_0x0405.txt	This is Czech version of InteliVision help
hlp_nt_0x040A.txt	This is Spanish version of CU Alarm Help for IGS-NT controllers

The structure in general is:

hlp_<help type or controller type>_<language ID>.txt

<help type or controller type > – obligatory part – can take following values	
app	Application Help – common for all controller types
iv	InteliVision help – common for all controller types
nt	CU Alarm Help for IGS-NT controllers
id	CU Alarm Help for ID controllers (ID-DCU and ID-Mobile)
<language ID>	Optional part

When the language ID specification is:

- not used - it is automatically assigned and used as a default language (English).
- used - it is active when language with the same language ID is chosen in controller settings.

Language ID code can be found for instance in GenConfig/DriveConfig PC software in Languages screen as Locale id code.

Language ID examples:	
0x0405	Czech (CSY)
0x040A	Spanish (ESP)
0x0407	German (DEU)
0x040C	French (FRA)
0x0410	Italian (ITA)
0x0804	Chinese (CHS)
0x0816	Portuguese (PTG)
0x0419	Russian (RUS)

Note: *It is not necessary to know English language ID as it is default language and is used always when language (language ID) is not specified.*

Help selection priorities

InteliVision 8 help searching procedure is following. First when certain language is chosen in controller it looks for help in such a language. In case it is not present it looks for help which is independent on language selection. When these are not present then default helps (which are included in InteliVision8.exe file) are used. The default helps are not customizable.

4.6.2 Text formatting rules

There are several tags which you can use for text formatting.

- Header <h></h>
  - Enclose header text between opening <h> and closing </h> tag to create Header.
- New line
  - Insert <br> tag at the place in text where new line should appear.
  - Do not use paired tag <></> in this case.
- New paragraph <p>
  - Insert <p> tag at the place in text where new paragraph should appear.
  - After this tag there will be new line generated with 1.5 row height.
  - Do not use paired tag <></> in this case.
- New page <np>
  - Insert <np> tag at the place in text where new page should appear.
  - Do not use paired tag <></> in this case.
- Bold text
  - Enclose text between opening and closing tag.

- Italic text
  - Enclose text between opening tag and closing tag.
- Set font color
  - Enclose text between opening <font color="number"> and closing < /font> tag, where "number" is an index of color (0 - 15).
- List of color:

```
    R      G      B
--------------------
{   0,     0,     0}        // 0 Black
{0xA0,  0x10,  0x10}        // 1 Maroon
{   0,  0x80,     0}        // 2 Green
{0x80,  0x80,     0}        // 3 Olive
{   0,     0,  0x80}        // 4 Navy
{0x80,     0,  0x80}        // 5 Purple
{0x76,  0xA9,  0xAA}        // 6 GreyBlue - color of default text
{0xC0,  0xC0,  0xC0}        // 7 Silver
{0x40,  0x40,  0x40}        // 8 Gray
{0xFF,     0,     0}        // 9 Red
{   0,  0xFF,     0}        //10 Lime
{0xFF,  0xFF,     0}        //11 Yellow
{0x20,  0x20,  0xFF}        //12 Blue
{0xFF,     0,  0xFF}        //13 Fuchsia
{   0,  0xFF,  0xFF}        //14 Aqua
{0xFF,  0xFF,  0xFF}        //15 White
```

- „<” = Less then <lt>
  - Insert <lt> tag at the place in text where less then sign “<” should appear.
  - Do not use paired tag in this case.
- „>” = Greater then <gt>
  - Insert <gt> tag at the place in text where greater then sign “>” should appear.
  - Do not use paired tag in this case.

Standard text size is 16 and standard text color is light blue (default InteliVision text color).

4.6.3 Other important rules

- **Do not use Enter** to insert new line in the text file, there is a special tag for creating new line. In case you use Enter in text file (what appears in text editor as 3 new lines) there won’t be new line on InteliVision 8 screen visible, there will be just a rectangle sign. For more details **see Other important rules on page 52**.
- There is no tool for automatic page splitting. It is up to *customer* to decide where to *put beginning of new page*. In case that there is text for three pages and tag for New page <np> is not used, then just first page is visible. There is a limitation for number of pages in customized help.
- *Maximum number* of pages for each of three possible helps (IV, CU Alarm and App help) is 20.
- When the help screen *contains more* then one page, PgUp and PgDn buttons have to be used for navigation between pages within the help (see Picture 2 above, what is 6th page out of 12 as you can see in top right corner of the picture).

- It is essential to use text file with UTF coding. You can either create it (e.g. in PSPad editor http://www.pspad.com) or you can find sample file hlp_nt.txt within the InteliVision8.ivp (v1.1 or higher). The sample file can be easily modified in common windows text editor (notepad).

Help programming example: see Help programming example on page 1.

<h>Header text </h>Enclose header text between opening tag <lt>h<gt> and closing tag <lt>/h<gt> to create Header.<h>New line</h>Do not use paired tag <lt><gt><lt>/<gt> in case you want to have a new line.
After this tag <lt>br<gt> new line with normal high is generated.
<h>New paragraph</h>Do not use paired tag <lt><gt><lt>/<gt> in case you want to have an end of paragraph. <p>After this tag <lt>p<gt> new line with 1.5 row height will be generated. <p><h>Bold text</h>Enclose text between opening tag <lt>b<gt> and closing tag <lt>/b<gt> to get text in BOLD.<h>Italic text</h>Enclose text between opening tag <lt>i<gt> and closing tag <lt>/i<gt> to get text in ITALIC.<h>Set font color </h>Enclose text between opening tag <lt>font color="number"<gt> and closing tag <lt>/font<gt> <p>where "number" is an index of color (0 - 15).<p>
When you press Enter twice there are following signs

and there are no 2 new lines as could be expected.

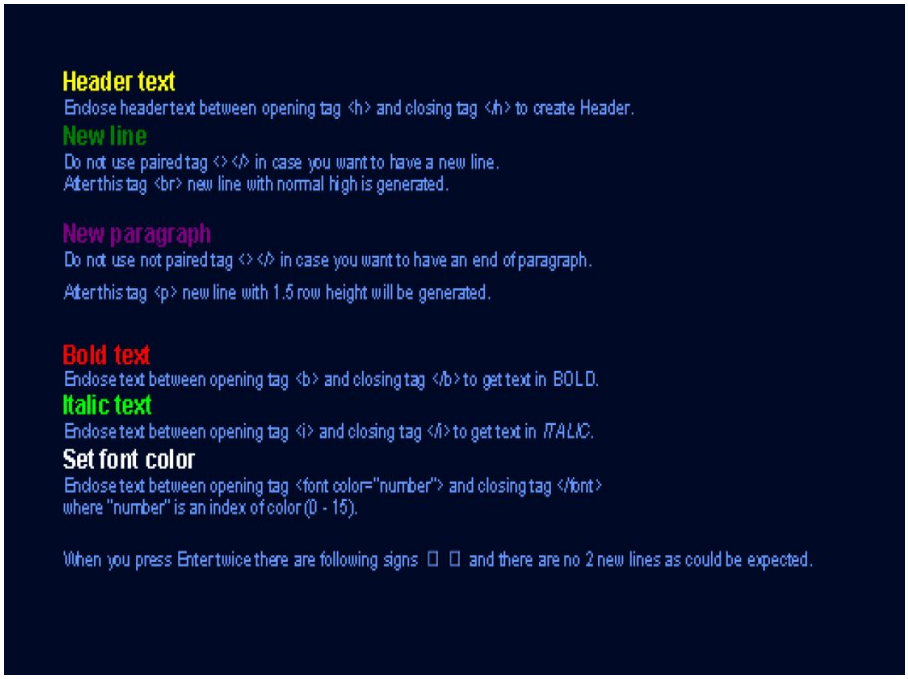

Image 4.38 Help programming example

5 Initial Screen

5.1 Additional information on initial screen 54
5.2 Support of customized logo 55

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Initial screen is screen, which you can see during InteliVision 8 initialization process.

5.1 Additional information on initial screen

As you can see on **Additional information on initial screen (page 54)**, there is an info bar which contains useful and important information about InteliVision 8. This information is visible on init screen before the connection between display and controller unit is established. It means you don't need to connect to any controller to find out following information:

SW Version	SW Version of the running software
HW Version	HW Version of InteliVision unit
Release Date	Running software Release Date
Serial Number	Serial Number of InteliVision unit
Core Version	Core Version (system version)
IVcom SW Version	SW Version of InteliVision communication module

Note: *Information bar is visible until initialization process finish and main measurement screen is displayed.*

Image 5.1 Initial screen (standard logo) with IV information

5.2 Support of customized logo

A customer can use the standard InteliVision 8 logo or his own customized logo on initial screen. This logo is visible only during InteliVision initializations.

Customized logo can be imported within the frame of InteliVision.ivp during firmware upgrade using IVprog (from version 1.1).

Logo requirement:

- Name of the file has to be **"logo.bmp"**
- It has to be in *.bmp format
- Resolution 800x510 pixels
- Colour depth up to 24 bits

Note: *Another name than "logo.bmp" is not supported!*

Note: *Background with* ***logo.bmp*** *picture has been removed from IV info and ControllerInfo screens due to risk that important information wouldn't be visible in combination with different colour structure of customized* ***logo.bmp****.*

Image 5.2 Example of customized logo

6 Features based on USB

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6.5 USB as “login key” 61

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InteliVision 8 display allows using USB stick as USB storage. The USB storage could be used in common way like place where important data could be saved or as quick way how to log in.

InteliVision 8 is equipped by USB port on the back side, which automatically detects plug/unplug on of USB storage.

When USB storage is connected to InteliVision 8 it is indicated by blue icon in the right side of upper status bar **Features based on USB (page 56)**. In opposite case the icon is missing.

During of USB storage operation the blue color of USB icon changes color according to type of operation. When data is exported from InteliVision 8, the icon is red, when data is imported, the icon is green.

Image 6.1 USB stick connected icon

6.1 Directory structure and names of files

All files exported from IV8 are stored in specified location. Directory structure on USB storage is strictly defined**Directory structure and names of files (page 56)**. If directory structure does not exist in connected USB, it is automatically created during the first export of data from IV8 to USB.

If it is necessary directory structure on USB stick can be created also manually (e.g. in case of creating a file with login information). It is not necessary to create manually whole directory structure according to **Directory structure and names of files (page 56)**(e.g. only “InteliVision 8\Password” can be created), the missing folders will be created automatically during first export of data.

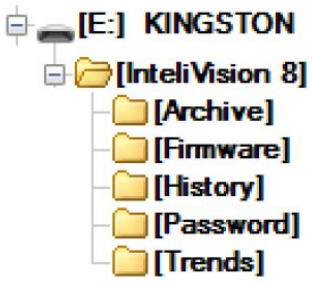

Image 6.2 Directory structure

Processes related to storing of particular data as archives, firmware, trends etc. will automatically save data in to corresponding directory so users can very easily find them.

The name of exported file is created automatically according to data, which should be saved on USB stick.

The name of file is consists of:

- Type of data (archive, history, password etc.)
- Name of genset
- Actual time stamp, which make file unique

To be file generated, GensetName cannot contains invalid alphanumeric letters as for example !"#$%&'()*+,-./:;<=>?@[\]^[and etc.

> **IMPORTANT: In case that Genset name will contains invalid letters, the error message "Disk is write protected" can appear and the file will not be saved!**

6.2 Export of history

User can very easily download and save History from InteliVision 8 to USB storage. For this purpose the new item (Export->USB) was introduced in History context menu. This item is available when the USB storage is plugged in.

The history file is exported to the History folder in dedicated folder structure created automatically after plug in USB storage.

The history file is saved in specific format which looks subsequently:

history-[genset name]-[date--time].csv

> **Example:** history-GenSet1-07-11-11--14-00-22.csv

Export operation is indicated by red color of USB icon and by pop-up window with progress indicator and directory to History folder and name of exported file**see Export of history on page 57**. Even if the export operation finished the pop-up window is still present on the screen and it is necessary to press any key to disappear it.

Image 6.3 Export message

6.3 Export/import of trends

New functions Export and import trend were added to this version. Export allows a user analyze data in Winscope or other third party database SW as Excel, Access etc.

There are two ways how trends could be saved on USB storage:

- Continuous saving of trends
- Single export of trends

In both cases data is saved in to TRENDS dedicated directory on USB.

6.3.1 Continuously saving of trends

Till now trend was saved only to RAM memory and in case of blackout an operator lost all logged data. This feature allows an operator avoid of data loss because they remain on USB stick. During continuous saving data are saved on USB stick every time when 4kB buffer is full. This feature has to be set up in Trends context menu → Settings → Storage**see Continuously saving of trends on page 58**. There are three possibilities, i.e. Memory only, USB Mode 1, USB Mode 2.

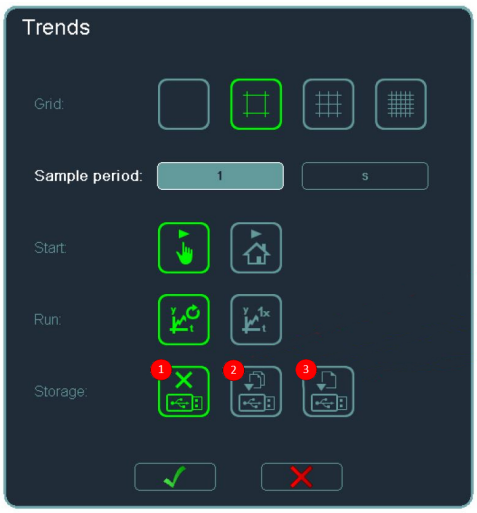

Image 6.4 Settings dialog

Data is saved in file with extension .TRD.

Data is saved with respect to Channel setting. If a user changes “Channel setting”, it will be created another new file where data will be saved. Similarly in case when internal memory is full the new file will be created and internal memory deleted.

In order to avoid USB flash memory degradation (often writing and deleting) the data is not saved earlier that auxiliary buffer is full.

Continuous saving of trend can be conduct in two modes:

- Mode 1
  - data is saved progressively in several files. When capacity of USB storage is exceeded the oldest file is deleted and saving process continues.
- Mode 2
  - saving process is working as cyclic buffer where sata is saved to one file *"trends-circular.TRD"*

6.3.2 Single export of trends

This feature allows to user export trends at one moment. In order to export trends, new Export->USB item in Trends context menu is introduced.

The feature is available when it is met three requirements:

- Trend saving is stopped
- USB is plugged in
- It is defined at least one channel with at least one sample saved

Trend can be exported in different file format i.e. SDT (WinScope) and CSV (Microsoft Excel) –**Single export of trends (page 59)**. Selection of file format can be done in Select exported data format pop-up window which appeared when user press Export->USB item in Trends context menu.

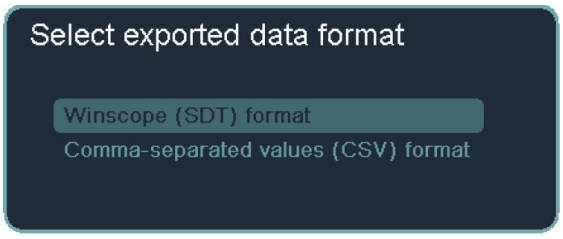

Image 6.5 Select exported file format pop-up window

File format definition:

- trends-[genset name]-[date--time].STD
- trends-[genset name]-[date--time].CSV

Difference between winscope and csv format		
	STD	**CSV**
Channel definition	YES	NO
Channel data	YES	YES
Binary bits	YES	YES
Start/Stop marker	YES	NO

When exported data format is selected, progress of export is indicated in pop-up window. During export, operation, color of USB icon in upper part of screen changes to red.

6.3.3 Import of TRD file

It is possible to import continuously saved data back to InteliVision 8 for example after blackout and etc.

In order to import data go to Trends context menu where Import <- USB item was introduced. Import operation is indicated by green color of USB icon and pop-up window with progress indicator.

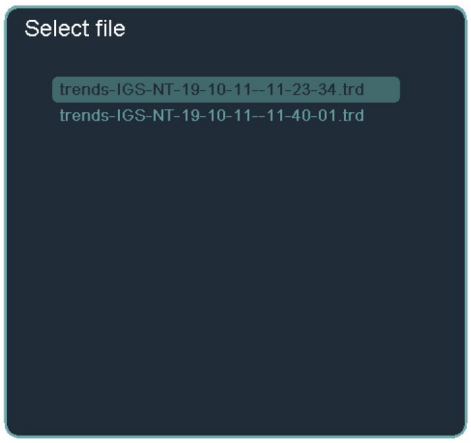

Image 6.6 Import pop-up window

6.4 Export of archive and InteliVision 8 firmware

The possibility to save archive to USB storage is given by new item in Help/Others context menu. The item is called Export->USB and it is available if the USB storage is plugged in. When a user enters this item, the pop-up window (Select exported data) gives you two choices**Export of archive and InteliVision 8 firmware (page 60)**

- Export Controller ANT archive
- Export InteliVision IVP firmware

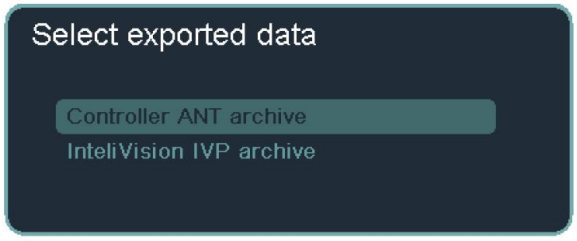

Image 6.7 Pop-up window for archive export

In case of ANT archive exported data is saved to ARCHIVE directory.

Controller file definition:

[genset name]-[Application name]-[SW version].A??

Example: IG-NT-MIN-2.6.ANT

Depends on controller type the file extension could be:

- ANT
- AID
- AIM

Exported archive contains subsequent data:

- Configuration
- Serial number, Identification string and identification of Controller
- Setpoints
- Measurement
- History
- Controller and ECU alarms
- Extension modules list
- Data ID-chip and dongle
- Configuration
- Serial number, Identification string and identification of Controller
- Setpoints
- Measurement
- History
- Controller and ECU alarms
- Extension modules list
- Data ID-chip and dongle

In case of IVP archive exported data is saved to FIRMWARE directory.

InteliVision file definition:

backup-[InteliVision version]-[date--time].IVP

> **Example:** backup-2.0-07-11-11--13-58-16.IVP

6.5 USB as “login key”

This feature allows that a user can log in very quickly to the InteliVision 8 with proper security level without typing of password manually. The login information is automatically loading from USB stick. The login information is saved in PASSWORD folder in file with dedicated file definition:

password-[genset name].txt

> **Example:** password-Genset1.txt

On the first line of password text file has to be written user name and password on second line. The user name is supported in following coding systems such as ASCII, UFT8 and UFT16. The password file can be created directly by InteliVision 8, and procedure for password creation is subsequent:

1. Login in standard way (Help/Others menu → Users/Password)
2. Plug USB
3. Go to logout window (Help/Others menu → Users/Password)

4. Choose *SavePassword* in Logout window (password will be saved automatically to PASSWORD directory on USB) -**see USB as “login key” on page 61**

When you plug in the USB storage with password the Login window automatically appears and after confirmation by Enter button user is logged in InteliVision 8 with proper security level. This status in indicated by green icon in upper right corner of screen**see USB as “login key” on page 61**.

Image 6.8 Icon of login key usage

In case that user unplugs USB after USB login the user will be automatically logout.

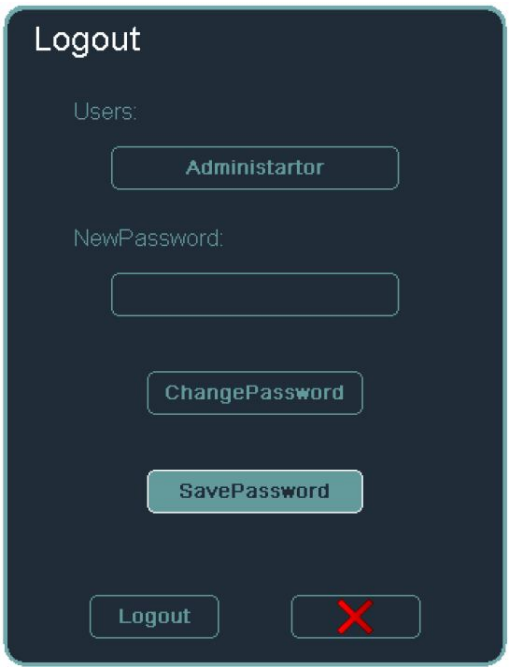

Image 6.9 Save password button in logout dialog

7 Support of user's pictures

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InteliVision 8 comes with very powerful feature – using user's pictures in screen definition. This feature gives a user possibility to create screens with own pictures or to modify default screens **see Support of user's pictures on page 63**, **Support of user's pictures (page 63)**. The screens can be various sizes and can overlap. The feature is available only with IG-NT/IS-NT Std controllers with version 2.6 and higher or IM-NT controller with version 2.9 and higher.

Note: *Own pictures can be used only in Measurement screens*

Now screen modification including work with pictures is much easier in new Graphical Screen Editor, which is part of Genconfig 2.6 and higher.

Before a user wants to use pictures in Screen Editor, all pictures, which a user supposed to use during screens modification, should be packed to so called "Picture package" with IVI extension. A picture package is possible to create in Picture Manager, which can be launched also from Genconfig or IVProg. Picture Manager allow manage more picture packages including uploading package to InteliVision 8.

IMPORTANT: Picture package added in IVProg to I should MANUALY be uploaded IV8 SEPARATELY by using USB cable likewise as during Firmware update.

When Picture Packages is created, package should be linked to Screen Editor to be pictures visible also in screen modification. When picture package is not linked to screen definition, an icon "missing picture"  is displayed in all screens, where pictures were defined.

File name rules

The file should have specific name given by:

prefix_name.extension

- Prefix
  - numeric value in range 1-255
- Name
  - name of picture - the item name is not required
- Extension
  - see "format" bellow

Example: 12_myPicture.jpg

Example: 002_myPicture.bmp

Example: 1.png

Note: *Prefix must be unique. When more pictures will have the same prefix, only one of them will be displayed. When pictures are linked to screen by using Screen editor, correct prefix is automatically created.*

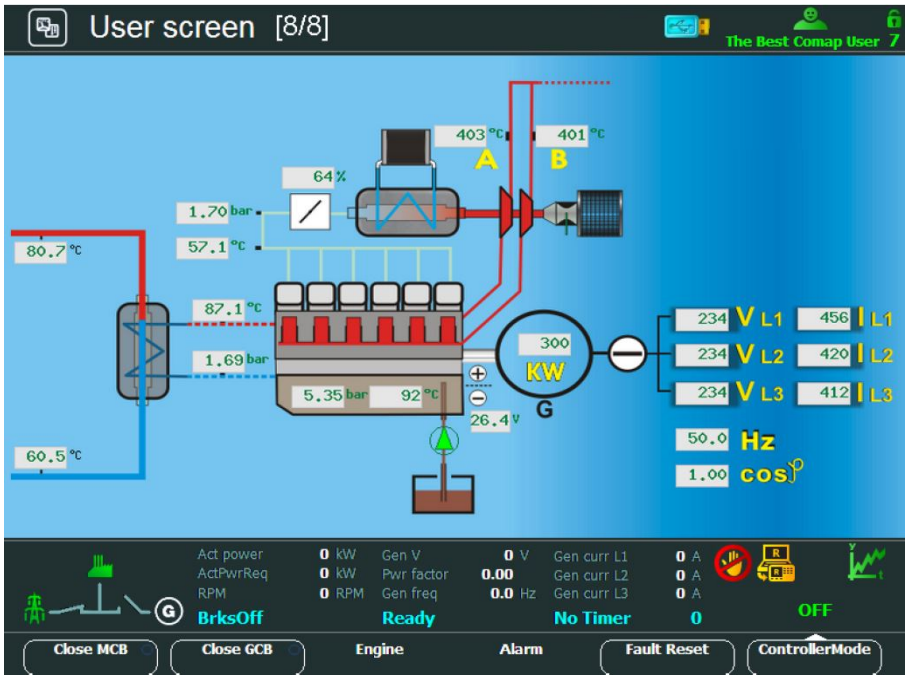

Image 7.1 Using user's Picture for screen definition 1

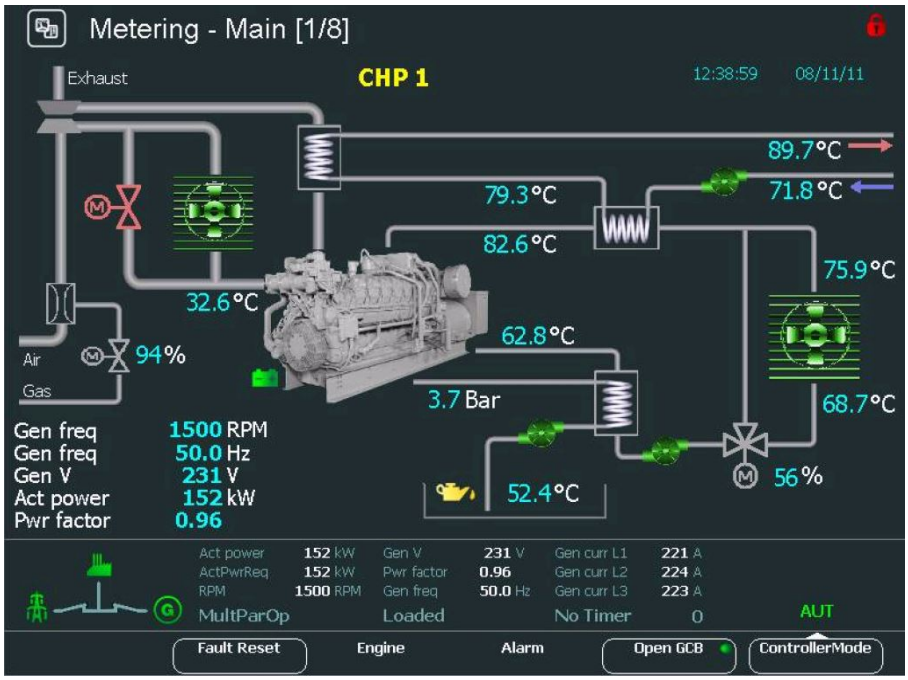

Image 7.2 Using user's Picture for screen definition 2

Supported picture formats:

- BMP
- JPG
- PNG

There are 3 commands in Screen Editor relating to picture:

- scrExternalPicture
  - static picture
- scrExternalPictureBit
  - dynamic picture – displays till 4 pictures in depending on value. The value is given by combination of 2 bits
- scrExternalPictureBitBlink
  - dynamic blinking picture – displays till 4 pictures in depending on value. The value is given by combination of 2 bits. The picture can also be set as blinking. User can choose from 3 blinking speeds and can set inactive picture for blinking.

Size of picture

The size of a picture can be various. However maximal size of a picture to be completely visible can be 800x435 pixels.

Note: *Pictures are NOT automatically resized on maximal size. When bigger picture is used, it will be automatically crop.*

The memory of InteliVision 8 is not unlimited. Amount of pictures which user can use is depended on size of of pictures. Approximately it is possible to use 5-6 pictures of maximal size for one screen.

IV8 has implemented watchdog for size memory. When the limit is increased warning message is displayed.

> **IMPORTANT: User's pictures occupy all memory reserved for pictures and some pictures or other graphical objects might not be visible. Please use only pictures and graphical objects which are really necessary or reduce their resolution. The restriction does not influence other functions and correct operation of InteliVision 8.**

Overlap of pictures

The picture can overlap. Order of pictures is given by order according they were added to modified screen. A picture, whose command is inserted as the last in order, is displayed in foreground.

8 Screen modification

8.1 User definable SoftKeys buttons 66
8.2 Support of color palette 68
8.3 Transparency attribute 69
8.4 Support of Tier 4 Final symbols 70

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InteliVision 8 measurement screens are predefined in each configuration. However if they are not a user convenient, the user can **modified them**. In**Screen modification (page 66)**you can see the example of the screen change.

The user can easily modify the screens himself by drag&drop with using predefined commands and pictures in Graphical Editor, which is available for free in GenConfig. More information how to work with graphical editor you can find in **online help in GenConfig**.

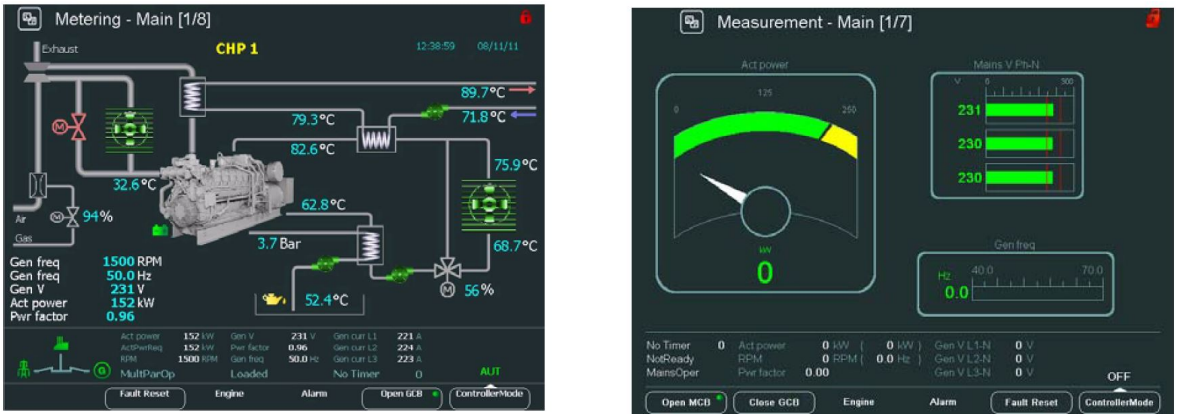

Image 8.1 Modification of the main screen of InteliVision 8

8.1 User definable SoftKeys buttons

The user has possibility to assign various functions to SoftKeys buttons - buttons on the bottom of Intelivision **see User definable SoftKeys buttons on page 66**. Different functions can be assigned to any SoftKeys button of any screen. The functions can be easily defined in new graphical Screen Editor (SE).

Pre-defined functions

- Fast jump to any Measurement & Setpoints screen – SoftKeyLink command in Screen Editor
- Binary signal activation - SoftKeyCmd command in Screen Editor
  - Set button - each press of a button sets binary signal to 1
  - Reset button - each press of a button sets binary signal to 0
  - Toggle button - 1. press set binary signal to 1 or 0 and next press set value to opposite value. Initial value can be defined.
  - Pulse generator (the button generates pulse 1)
- Genset commands (start, stop, MCB on, faultReset etc.) - SoftKeyCmd command in Screen Editor

See example in **User definable SoftKeys buttons (page 66)**. The first button is associated with fast link to “Engine protection” in Setpoints Menu, the second button is associated with fast link to Binary I/O in Measurement and the third button is associated with RemoteSwitch 1, which is used as toggle button. Labels on buttons are customizable.

Note: *The name of buttons Horn, Start, Stop is not possible to change.*

Note: *Functions and Commands assigned to buttons in IV8 of actual archives are default.*

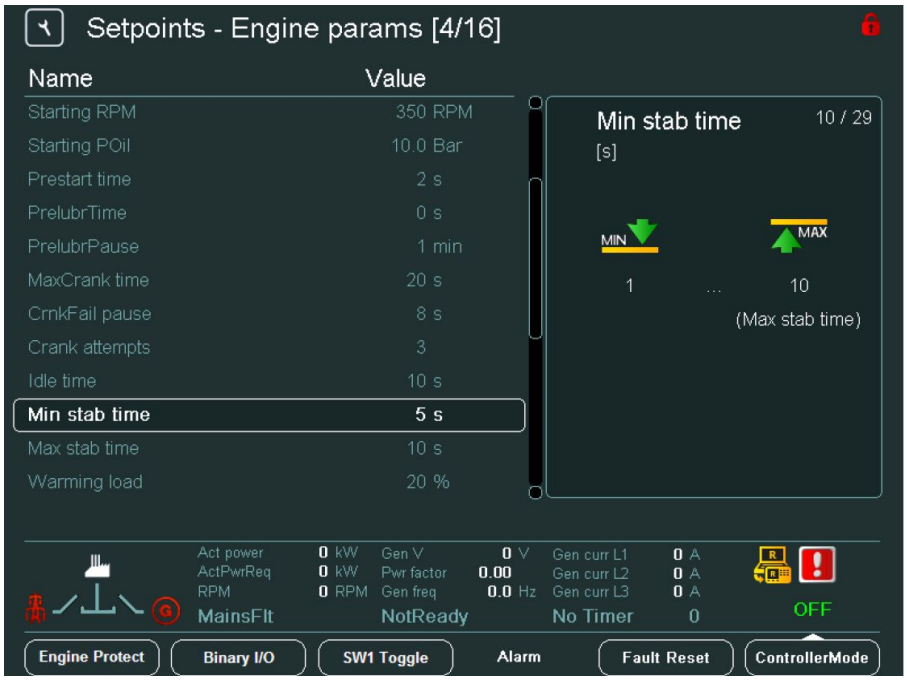

Image 8.2 User buttons

8.2 Support of color palette

Older SW versions of IV8 (lower than 2.0) supported only 16 colors, which could be chosen as text color of variables and values during screen modification or color of line objects etc.. Current version supports 255 new color plus color from previous IV8 version. All color can be chosen from color palette implemented in Screen Editor **see Support of color palette on page 68**.

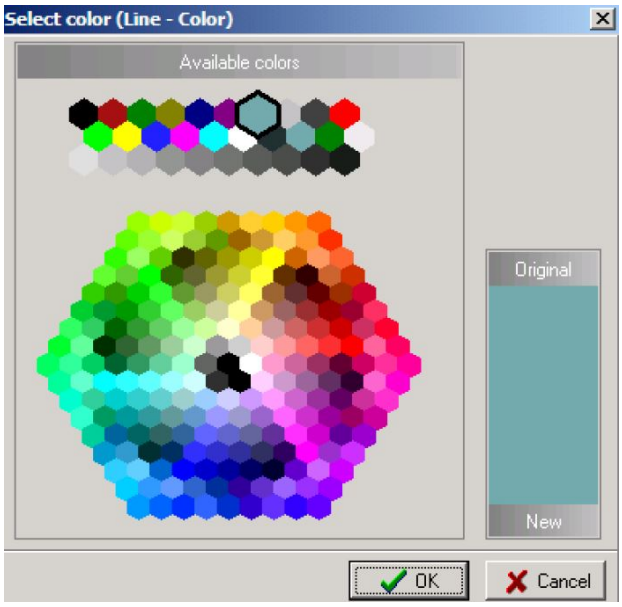

Image 8.3 Color palette

8.3 Transparency attribute

New attribute “transparency” was added” to Measurement objects. It means that each graphical object can have transparent background.**Transparency attribute (page 69)** how this parameter is possible to use.

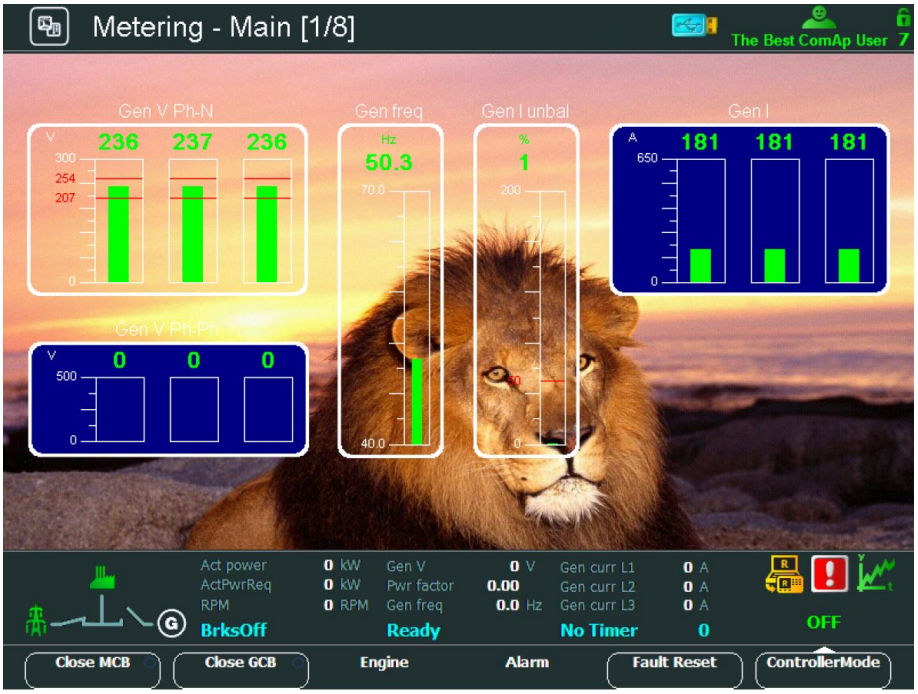

Image 8.4 Transparency

8.4 Support of Tier 4 Final symbols

InteliVision 8 is ready to use in projects requiring the fullfillment of the Tier 4 Final standard. InteliVision 8 supports the symbols concerned to the Tier 4 Final regulation. **see Support of Tier 4 Final symbols on page 70**.

Image 8.5 Tier 4 Final symbols (Illustrative Picture)

Note: *The entire list of the available Tier 4 Final icons are accessible in the Screen Editor utility in GenConfig.*

9 Installation

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9.1 Terminals and dimensions

Image 9.1 Terminal dimension

9.2 Mounting system

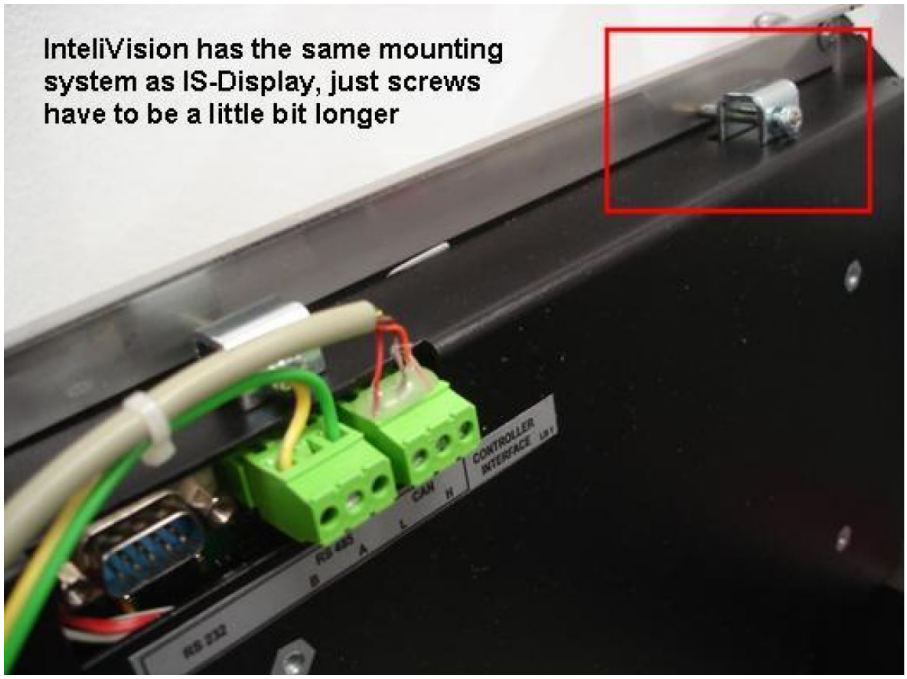

Image 9.2 Mounting system

9.3 Recommended wiring

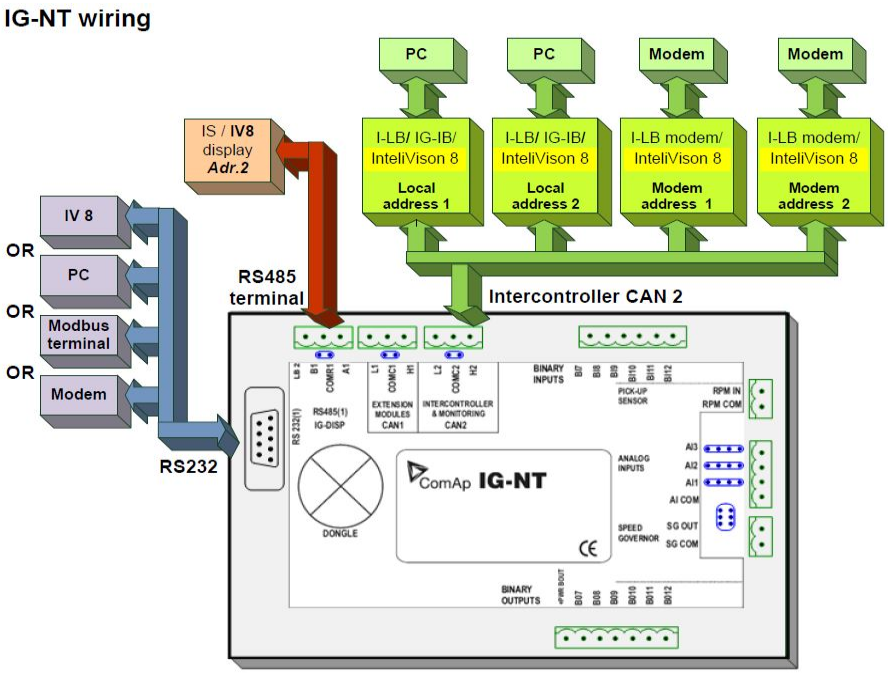

Image 9.3 IG-NT wiring

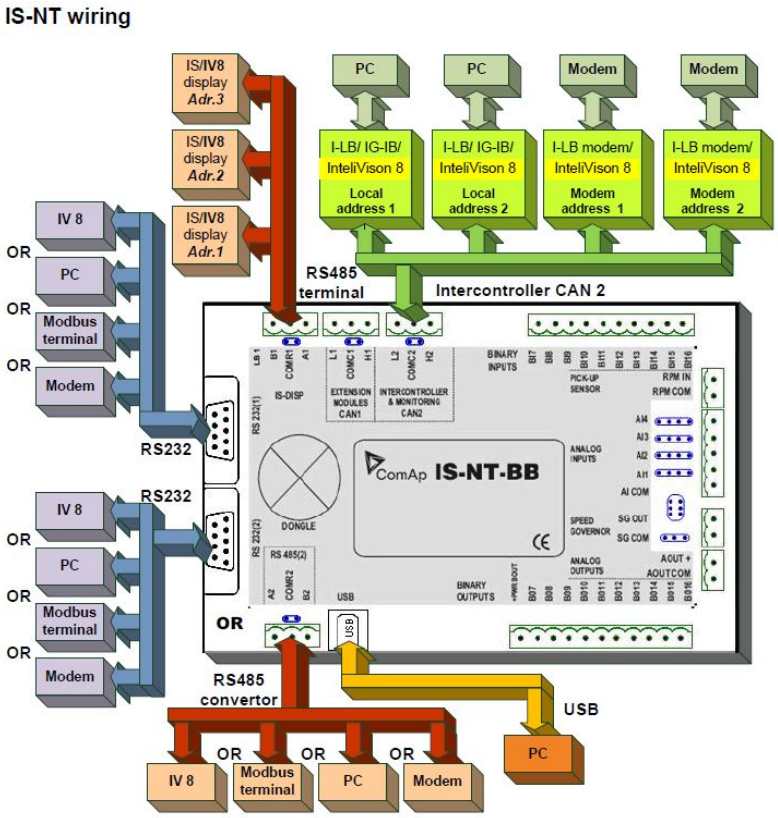

Image 9.4 IS-NT wiring

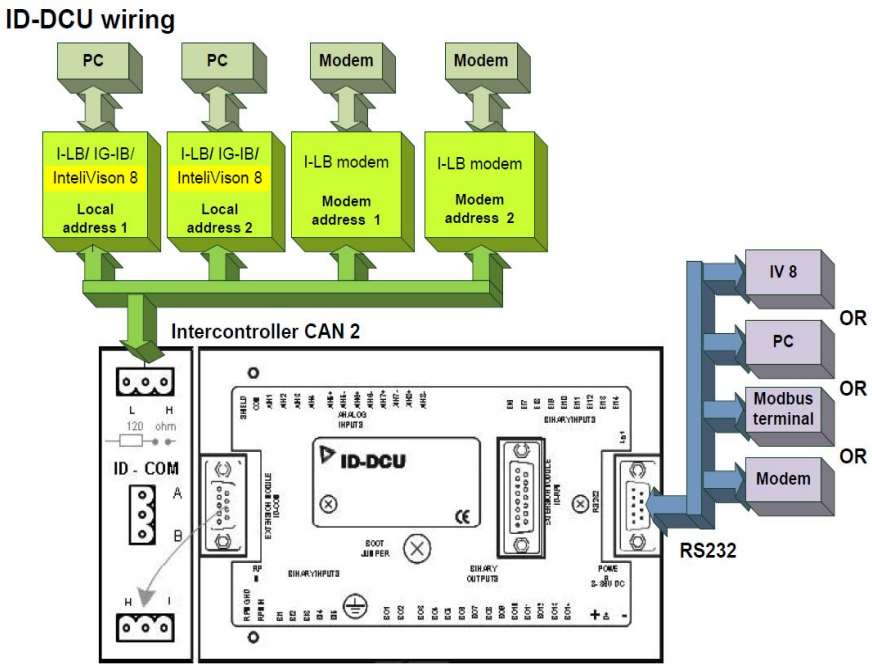

Image 9.5 InteliDrive DCU wiring

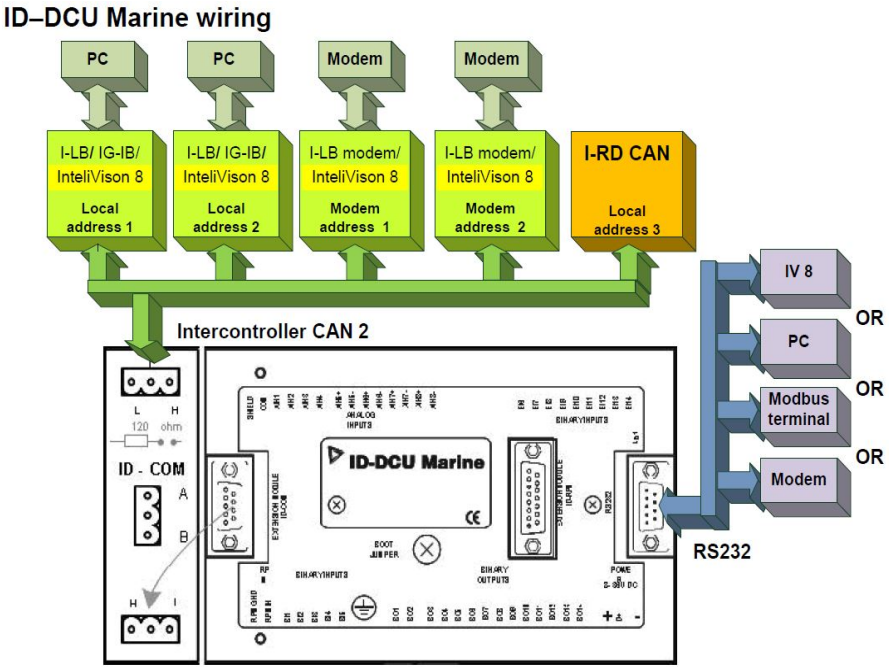

Image 9.6 InteliDrive – DCU Marine wiring

9.3.1 ID-Mobile wiring

InteliVision 8 can be connected also to ID-Mobile. ID-Mobil has 2 communication interfaces, which can be used for communication with InteliVision 8:

- RS485
- CAN2

Since ID-Mobile has a waterproof cover, it has not free-accessible communication ports. All ports and inputs/output are merged to 2 large waterproof connectors.

Image 9.7 ID-Mobile and connectors

The following table shows the occupancy particular pins relating to communication ports in the connector.

PIN nr.	Description
85	RS485A
86	RS COM
87	RS485B
91	CAN2H
92	CAN2-COM
93	CAN2L

Image 9.8 Description of pins of ID-Mobile relating to communication with InteliVision

Note: *Only 2 InteliVisions 8 can be installed to CAN2 with using one ID-Mobile.*

Note: *Only 1 InteliVision 8 can be installed on RS485.*

9.4 Modules' address combination on CAN (IG/IS-NT, ID)

The following CAN addresses are used for modules connected to CAN2 (intercontroller CAN bus). There **cannot be** more modules using the **same address** connected at the same time, if they would be there, **communication failure** all of modules with the same CAN address appears.

CAN address can be changed using jumpers, configuration program or from the display - refer to the corresponding chapter or reference guide for detailed description.

Real CAN2 Address	IG-MU	I-LB	I-LB (modem)	I-LB+	IG-IB (IBConfig <1,5)	IG-IB (IBConfig >1,6)	IV 8	I-RD-CAN
122			addr. 2				addr. 4	addr. 4
123	addr. 2	addr. 2		addr. 1	addr. 1	addr. 2	addr. 2	addr. 2
124	addr. 1	addr. 1		addr. 2	addr. 2	addr. 1	addr. 1	addr. 1
125	modem		addr. 1				addr. 3	addr. 3

Image 9.9 CAN2 Address occupation

Note: *Please note that USB port is using its CAN address only if an external device is connected to the USB port of I-LB+. Make sure that other device (e.g. IG-IB) is not using the same CAN address as USB port of an I-LB+, because using USB port could interrupt CAN communication.*

Note: *Please note that addresses 1 and 2 (123, 124) are exchanged in versions IBConfig ≤ 1.5 and IBConfig ≥ 1.6* ***see Modules' address combination on CAN (IG/IS-NT, ID) on page 75****.*

Note: *ID-Mobile and ID-DCU industrial support only 2 InteliVisions on CAN2*

Note: *There can be up to 5 I-RD-CAN displays on CAN2 bus. The fifth for I-RD-CAN has Addr. 5 and this address corresponds to real CAN2 address 121.*

9.4.1 IGS-NT controllers and 4 InteliVisions 8 on CAN2

Up to 4 InteliVision 8 can be installed on CAN2 with using one from IGS-NT.

First two addresses **Addr.1** and **Addr.2** are possible to use directly as InteliVision 8 terminal address without any special settings, in case that these addresses are not used with other compoment on CAN2 (e.g. IG-IB etc.).

The third and the fourth InteliVision 8 use so called **„Modem address"** for connection on CAN2. InteliVision 8 shares these addresses with Modem. Each Modem address can be occupied either only with InteliVision 8 or only with Modem. It is **not possible** to use them simultaneously.

If the third and fourth addresses have to be used by InteliVision 8, the addresses have to be enabled by the appropriate setpoints - **CanAddrSwitch1** and **CanAddrSwitch2**.

Note: *There are Setpoints CanAddrSwitch1 and CanAddrSwitch2 in IGS-NT 2.4, which allow switching between modem address and terminal IV8 address.*

The setpoints are placed in Setpoints → Comms settings.

- CanAddrSwitch1
  - Modem address 1 (default value)
  - InteliVision 8 - Terminal #3
- CanAddrSwitch2
  - Modem address 2 (default value)
  - InteliVision 8 - Terminal #4

In summary, a user can decide if he uses max. 2 InteliVisions 8 and 2 modems on CAN2 bus or uses modem addresses for connection of 2 additional InteliVisions 8 on CAN2 – totally he has 4 InteliVisions on CAN2.

9.4.2 ID-DCU Marine controller and up to 8 InteliVisions 8 on CAN2

4 InteliVision on CAN2

Currently, the maximal number of the IV 8 displays has been increased up to 4 IV 8 with using **one** ID-DCU-Marine controller on the same CAN2 bus or up to 8 InteliVisions 8 with using two ID-DCU-Marine controllers separated by I-CR (Comap CAN repeater) on the same CAN2 bus **see ID-DCU Marine controller and up to 8 InteliVisions 8 on CAN2 on page 76**. This feature is supported from firmware version **ID-DCU-Marine-1.7 or newer**.

CAN addresses Addr.1, Addr.2 and Addr.4 are possible to use directly as InteliVision terminal address without any settings. .

The fourth InteliVision 8 uses so called „**Modem address**" for connection on CAN2. InteliVision 8 shares this address with Modem, but only one of them can use this address at one time (not possible to use them simultaneously).

Addr.3 is configurable by setpoint **5thRemPan**.

5thRemPan

- ENABLE
  - (Addr.3 can be used by InteliVision 8)
- DISABLE(default value)
  - (Addr.3 is used by Modem)

Note: *There can be maximally up to 4 InteliVision displays on the same CAN2 bus.*

Note: *If it is necessary I-RD CAN can be connected to CAN2 as the fifth display.*

Up to 8 InteliVision on CAN2

If it is necessary **up to 8 InteliVisions** can be connected on the same CAN2 bus **ID-DCU Marine controller and up to 8 InteliVisions 8 on CAN2 (page 76)** with using two ID-DCU-Marine controllers, which **are separated by I-CR** (ComAp CAN repeater). This feature is supported form firmware version **ID-DCU-Marine-1.7 or newer**.

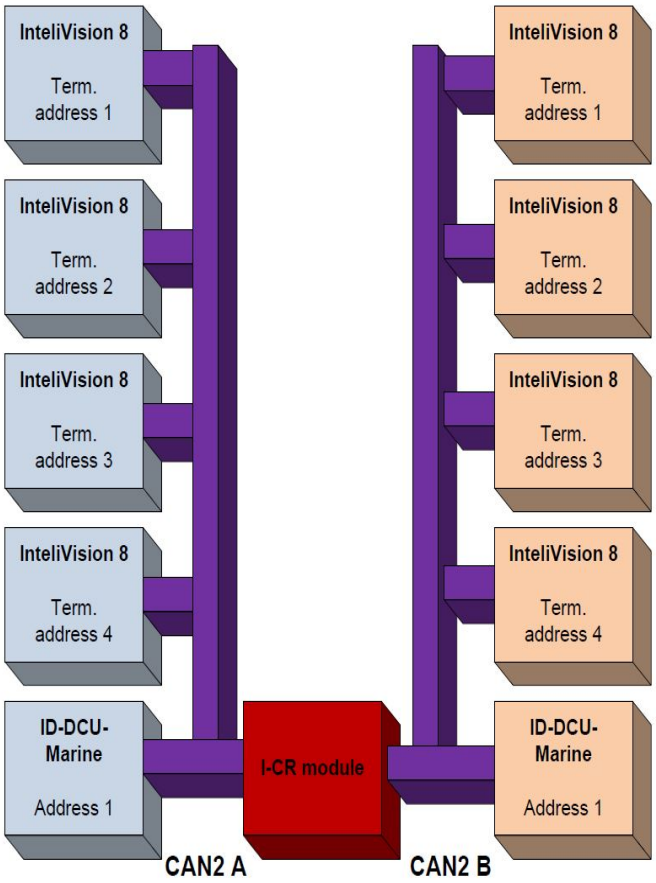

Image 9.10 ID-DCU Marine and 8 InteliVisions 8 on CAN2

The fourth InteliVision 8 (terminal addr. 3) has to be enabled in the same way as was described above in the chapter **ID-DCU Marine controller and up to 8 InteliVisions 8 on CAN2 (page 76)**

Note: *If it is necessary I-RD CAN can be connected to CAN2 as the fifth display.*

10 InteliVision 8 programming

10.1 ActiveSync 78
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10.3 IVProg running 80
10.3.1 IVProg from Genconfig 81
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10.3.3 IVProg and command line 91

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To program InteliVision 8 display use IVProg tool which can be started from GenConfig or DriveConfig PC tools. At this time IVProg 1.4 is available. The IVProg tool is included either in IGS-NT-Install-suite 2.6 and higheror in ID-DCU-Industrial-Install-2.9 installation packages at this time and it is installed automatically.

To make IVProg running you also need to install **Microsoft ActiveSync** (*for Windows XP*) or **Microsoft Windows Mobile Device Center** (*WMDC; for Windows Vista or WIN7*). You can download these drivers from Microsoft web page https://www.microsoft.com/. To install these drivers properly, follow Microsoft instructions.

IVprog SW support 64-bit Windows Vista and Windows 7.

10.1 ActiveSync

When InteliVision 8 is not connected, ActiveSync is not taking any action (except showing the grey icon in the tray). When you connect InteliVision 8 display to your PC (using USB cable type A-B) ActiveSync starts to connect. After the connection is established, the tray icon gets green and the following (Set Up a Partnership) window for synchronization setting appears:

Image 10.1 ActiveSync Partnership window

It is enough to press "**No**" for InteliVision 8 upgrade purpose and press **Next**. Also main ActiveSync window appears.

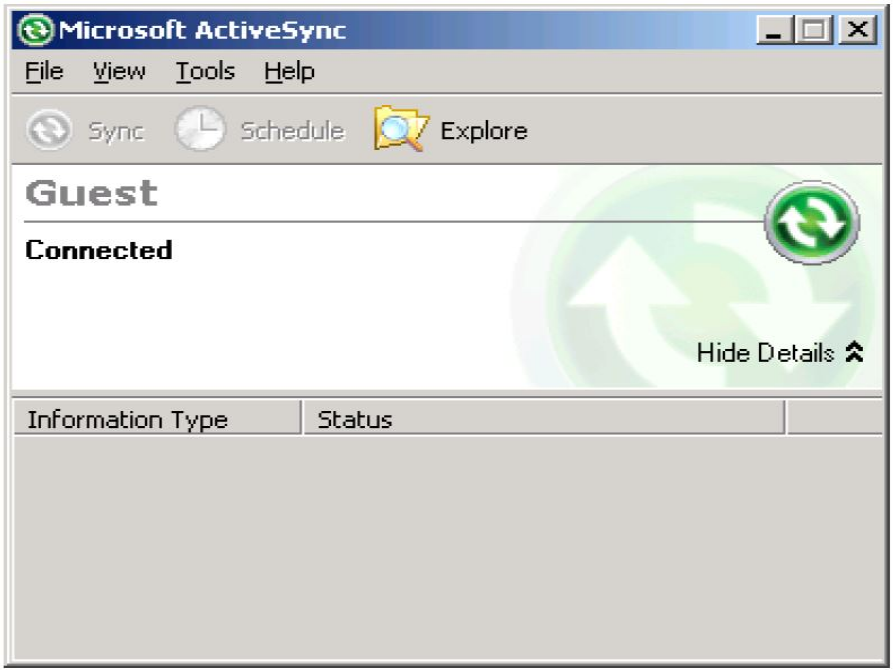


Image 10.2 ActiveSync Main window

If you need you can change the communication settings (**File-> Connection Settings**...).**see ActiveSync on page 78**.

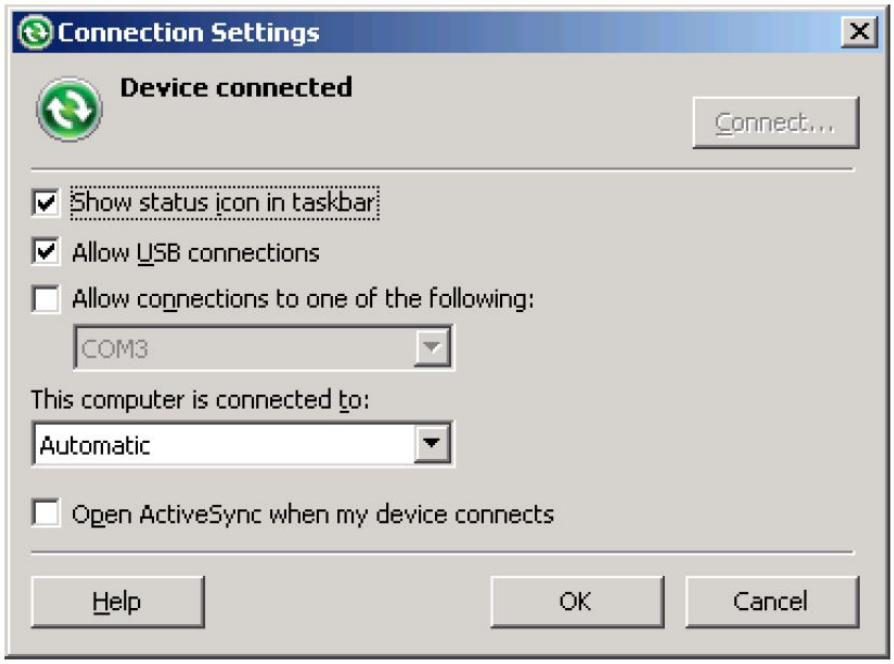


Image 10.3 ActiveSync connection setings

10.2 Windows Mobile Device Center (WMDC)

WMDC for Windows Vista should be installed from Microsoft web page. WMDC installation package can be found on Microsoft web page: https://www.microsoft.com/cs-cz/windows/windows-10-mobile-upgrade

Validation whether the Microsoft software is genuine (using ActiveX) is requested during downloading and subsequent WDMC installation. You can find detailed description of that process on the page mentioned above.

Note: *If you use Windows Vista, SP1 has to be installed to make the IVProg running properly.*

WMDC behavior is analogical to ActiveSync behavior (except you don't have to Set Up a Partnership).

Note: *To see what PC software versions support IV, see Firmware and PC Software Supporting InteliVision 8 chapter.*

Image 10.4 Window Mobile device center

10.3 IVProg running

IVprog is tool, which serves for programming of InteliVision 8. When ActiveSync (or WMDC) connection between InteliVision 8 and PC is established, IVProg can be started.

There are 3 ways how to start IVProg or its functions

- From GenConfig and DriveConfig
- File association
- Start from command line

10.3.1 IVProg from Genconfig

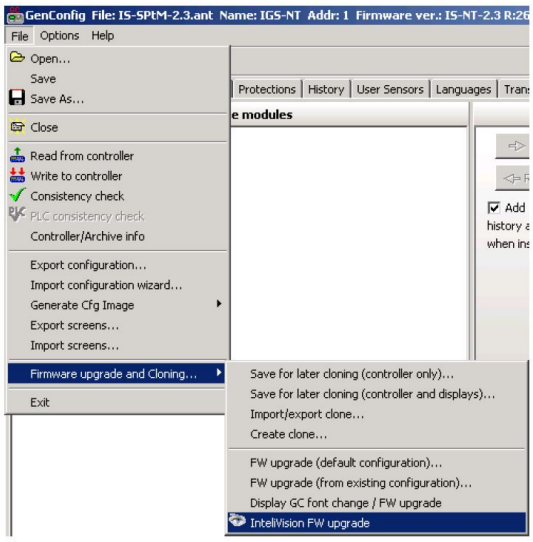


Image 10.5 GenConfig and InteliVision 8 SW upgrade

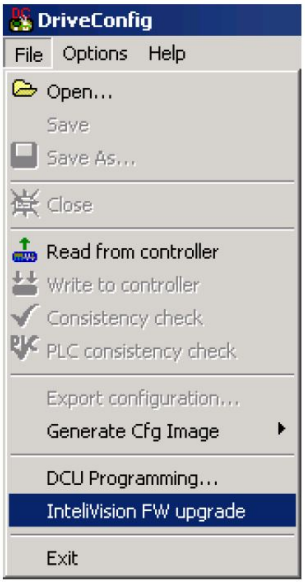


Image 10.6 DriveConfig and InteliVision 8 SW upgrade

When you start IVProg the following window appears:

Image 10.7 IVProg main window

There are several possibilities in what you can do in IVProg:

- **Read firmware (page 83)**
- **Write firmware (page 83)**
- **Manage firmware (page 85)**
- **Read pictures (page 87)**
- **Write pictures (page 88)**
- **Manage pictures (page 89)**

Read firmware

The function allows reading and saving of current firmware in InteliVision 8. When you click on Read Firmware button “Save As” window appears **Read firmware (page 83)**and you can choose a location where you would like to save the downloaded firmware.

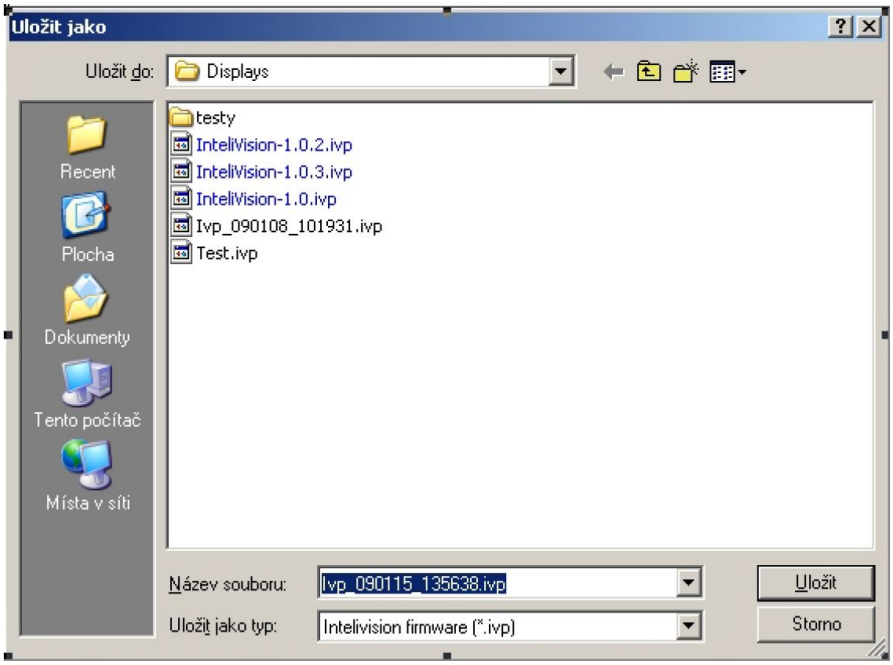


Image 10.8 “Save as” option for InteliVision 8 firmware

Default location for firmware saving is:

c:\Documents and Settings\All Users\Dokuments\ComAp PC Suite\Tools\IVProg\

Name of the firmware is automatically created and it contains information about date and time: Ivp_ <YYMMDD>_<HHMMSS>.ivp.

Write firmware

The selected firmware is uploaded to InteliVision 8 by touch of this button.

Firstly window for selection of IV8 firmware appears. After choosing the appropriate firmware and its confirmation, a warning message, if cable between PC and InteliVision is connected, appears **Write firmware (page 83)**.

Image 10.9 Warning message relating to connection

In case your PC is not connected to InteliVision 8, you should first create the connection using USB A/B cable and then you can press OK. In case the connection is already established just press OK.

If the chosen firmware is older than the one which is present in InteliVision 8 the following message appears:

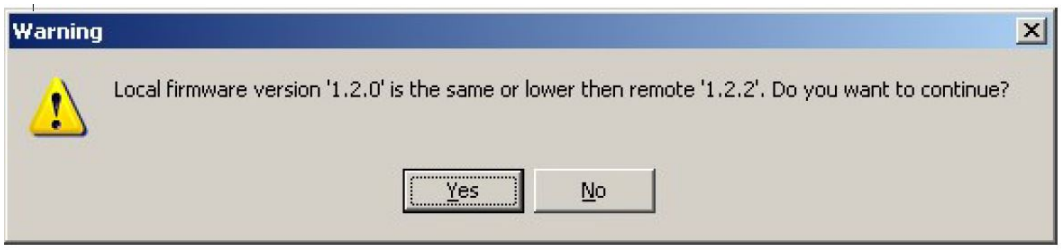


Image 10.10 Warning on old version of InteliVision 8 firmware

After message confirmation, InteliVision 8 firmware is automatically backuped from InteliVision 8 to PC.

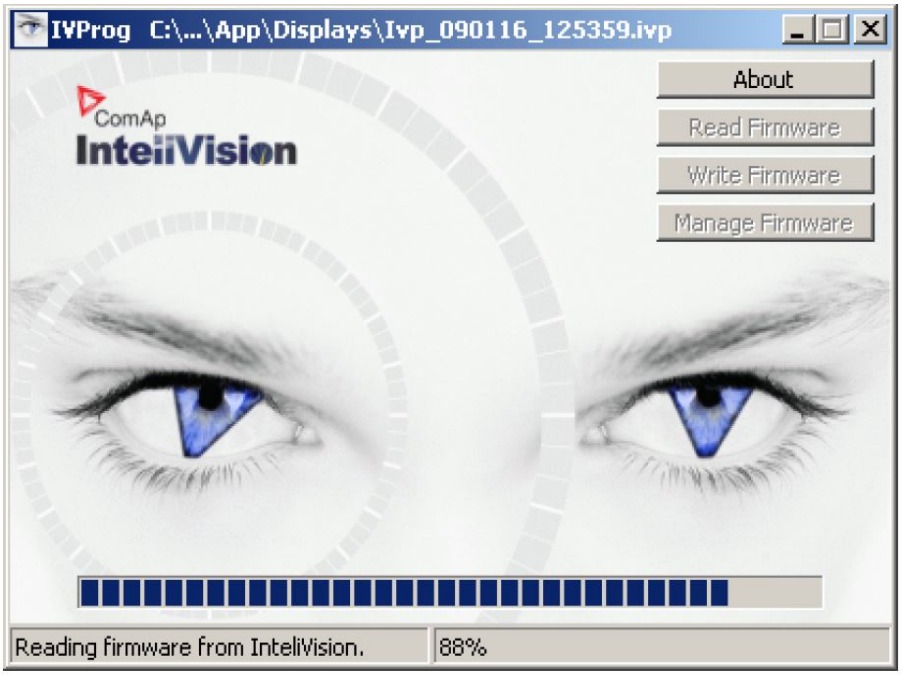


Image 10.11 Automatic backup of InteVision 8 firmware

The backup firmware you can find in:

c:\Documents and Settings\All Users\Dokuments\ComAp PC Suite\Tools\IVProg\

After that window, which compares files contained in an old and a new firmware, appears. Left side corresponds to old firmware version and right side corresponds to the new firmware version. In this step files cannot be modified, so if some files in new firmware are missing or redundant, press cancel and choose the option “manage firmware” from the main window, where you can add/remove files.

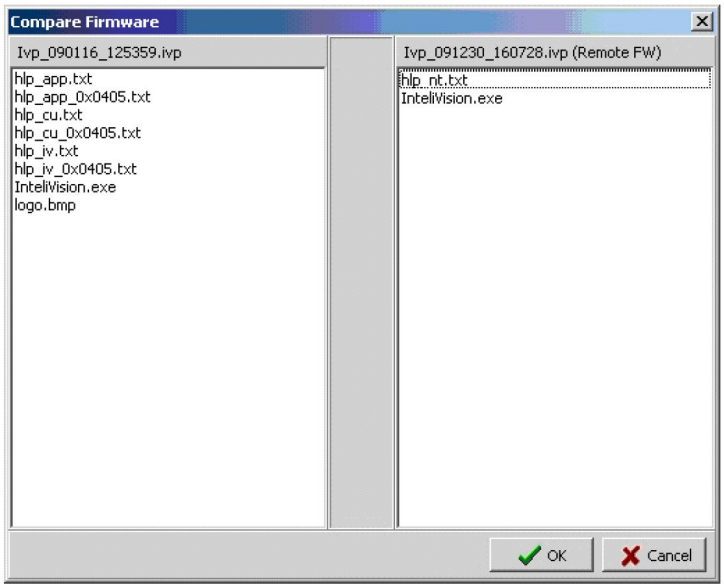


Image 10.12 Comparison of an old and a new firmware

When you press “OK”, selected firmware in previous step, starts to upload.

When uploading of selected firmware is finished, the following message appears:

Image 10.13 Message noticing end of upload process

Manage firmware

This function allows modifying of InteliVision 8 firmware content. InteliVision firmware can consist of following files and it is up to customer to decide what files should be included in the firmware and which not. The only obligatory file which has to be present is InteliVision.exe file all the others are optional.

InteliVision.exe	Obligatory file
Logo.bmp	Optional file
hlp_iv.txt	Optional file
hlp_app.txt	Optional file
hlp_nt.txt	Optional file
hlp_id.txt	Optional file
hlp_xx_langID	Optional file, where xx = (iv/app/nt/id), langID = ID of any supported language
pictures.ivi	Optional file (package of pictures)

See more details about help and logo customizing in chapter **Rules for help customization (page 50)**

When you click on **Manage firmware (page 85)** button “Select firmware” window appears (picture below).

Default firmware location is the same as for firmware saving.

c:\Documents and Settings\All Users\Dokuments\ComAp PC Suite\Tools\IVProg

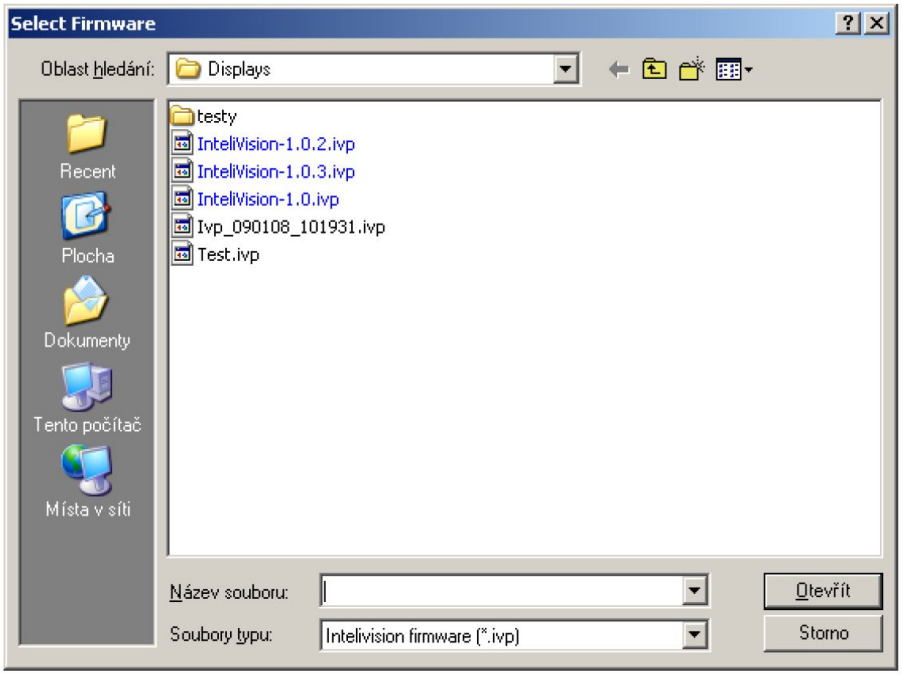


Image 10.14 Selection of firmware

When firmware is chosen a new window for firmware modification appears.

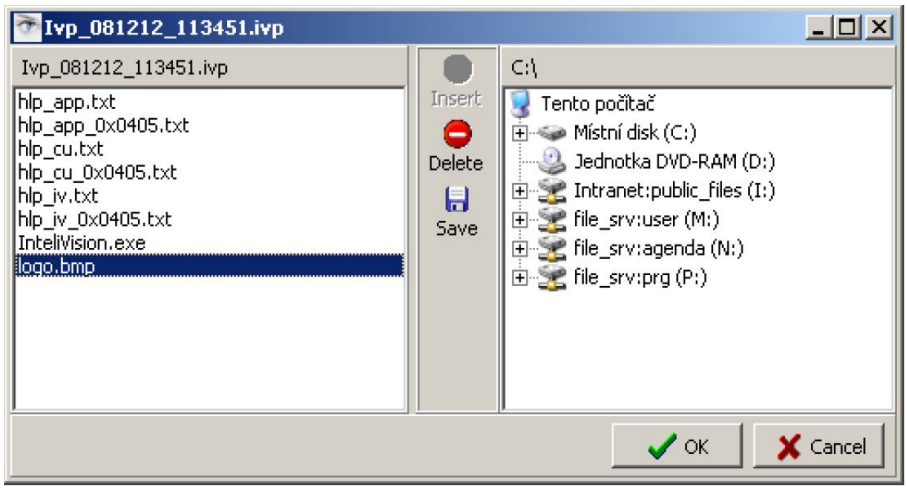


Image 10.15 Window for firmware modification

You can see the content of the firmware which is being modified on the left side and content of your computer on the right side. You can do following changes with selected firmware.

	Insert	File from your computer to the firmware (inserted files will be added to selected firmware)
	Delete	Selected file from the firmware
	Save	(Extract) selected firmware file from firmware to your computer

When you finish the firmware modification just press OK and modified firmware will be saved, except the situation InteliVision.exe file is not present (was deleted from the modified firmware and wasn't replaced by new one) in such case it is not possible to press OK (save the modified firmware).

Read pictures

This function allows downloading pictures which are currently present in IV8 to your PC. When you click on Read Pictures button "Save As" window appears (see the picture below) and you can choose a location where you would like to save the downloaded pictures.

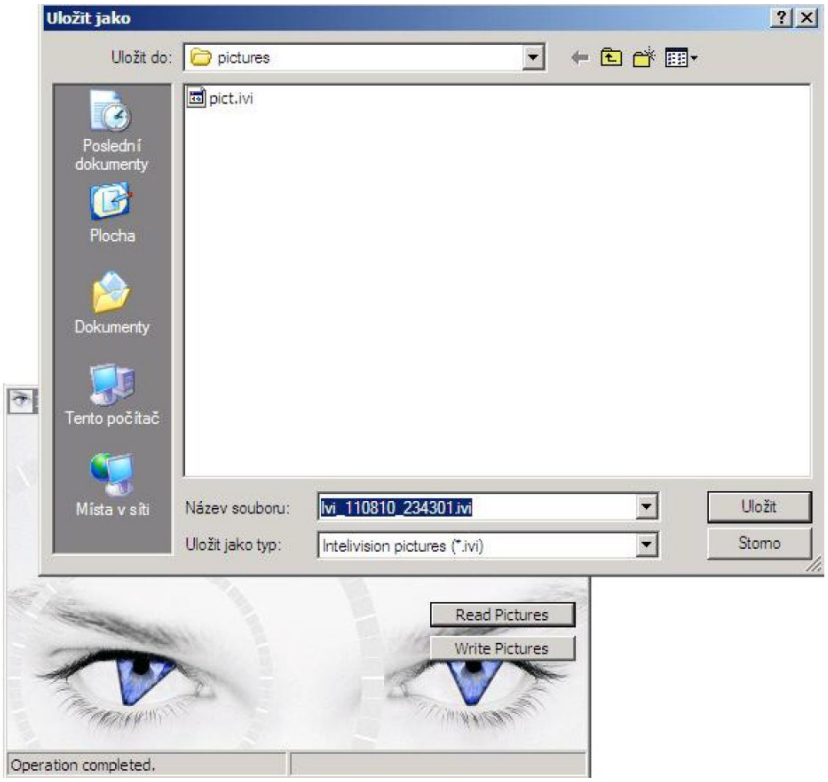


Image 10.16 Downloading of IVI package of pictures

Name of the IVI package is automatically created and it contains information about date and time: Ivi_<YYMMDD>_<HHMMSS>.ivi.

Write pictures

This function allows uploading pictures, which user used in screen modification, from PC to IV8. The pictures have to be zipped to file with IVI extension. When you click on “Write Pictures” button “Select” window appears (see the picture below) and you can choose a location where your IVI package is prepared.

Note: *Image Manager can be launched directly from Screen Editor or from IVProg.*

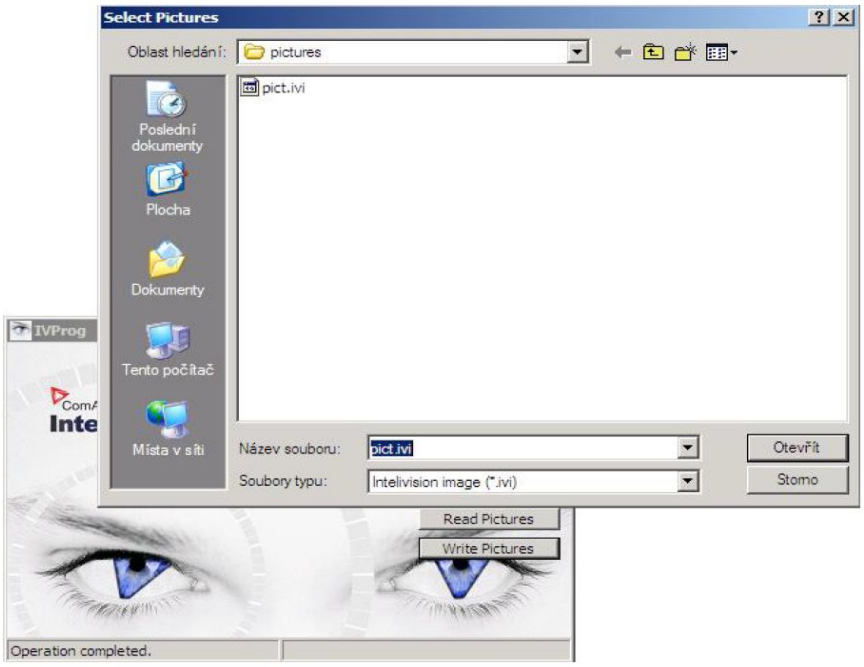
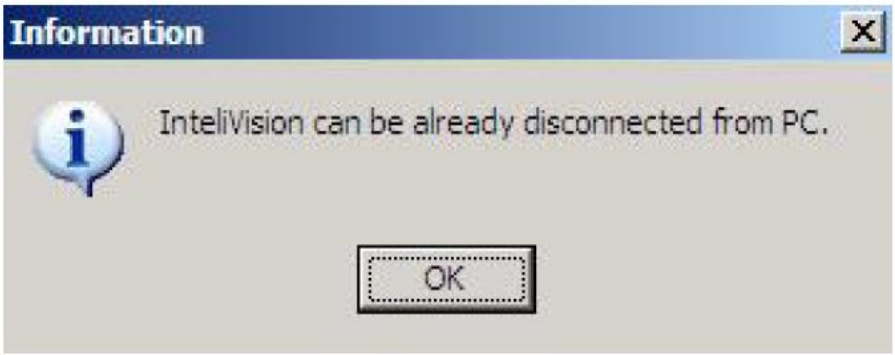


Image 10.17 Uploading of IVI package of pictures

When uploading is finished correctly, following dialog appears. In other case, error dialog appears:



Manage pictures

This function launches Picture package Manager **see Manage pictures on page 89**, where package of pictures can be modified.

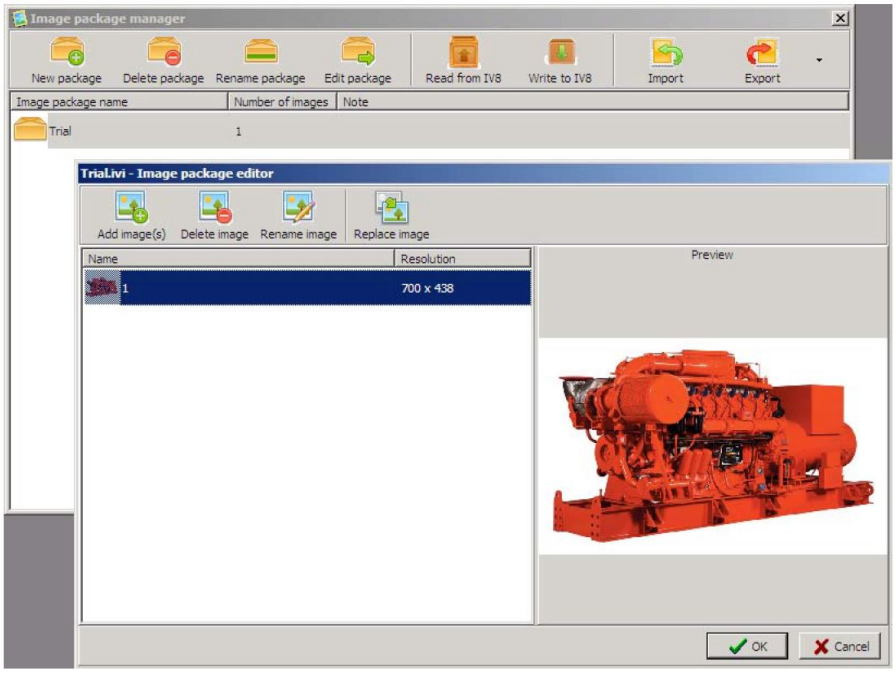


Image 10.18 Image picture Manager and Editor

This Image Manager contains following functions:

- New package
- Delete package
- Rename package
- Edit package - Picture package editor is launched in a new window **see Manage pictures on page 89**.
  There are several functions:
  - Add images
  - Delete image
  - Rename image
  - Replace image
- Read from IV8
  - a package is read from IV8
- Write to IV8
  - a package is written to IV8
- Import package
  - open a picture package to user's location
- Export package
  - save a picture package to user's location
    - whole image package
    - individual image files
    - images for IV8 - Images, which are used in Screen configuration.

Above functions help you with managing of pictures, which are supposed to be uploaded to IV8.

Picture Package Manager is possible to launch also from Screen Editor.

Note: *When package is read/written to IV8, InteliVision 8 has to be connected with PC with A/B USB cable.*

10.3.2 IVProg and file association

IVP file (firmware) and an IVI files (package of pictures) are associated with IVprog application and according to their extension corresponding function is automatically started.

Associated extension	
*.IVP	- chosen IVP firmware is uploaded to IV8 after user confirmation
*.IVI	- "Picture Manager" will be started and user can easily manage package of pictures

IVI file can be created in Picture Manager or manually.

Note: *To be possible correctly open IVI file (picture package), pictures in IVI file should be named according to specified rules. For more information see NFL InteliVision 8 2.0.*

Note: *Pictures used in Screen editor are named automatically.*

10.3.3 IVProg and command line

IVProg and its specific functions can be started from command line by using parameters Pictures intended for uploading to IV8 have to be zipped to a file with IVI extension.

Supported functions for IVProg command line:

- Uploading/downloading of package of user's pictures to/from IV8
- Uploading/downloading of firmware to/from IV8
- Launching of IVProg graphical interface

Detail description of commands:

- Uploading of package of user's pictures to IV8 (IVI file)
  - IVProg.exe -w inputPicturesFilename.ivi
- Downloading Uploading of package of user's pictures from IV8 (IVI file)
  - IVProg.exe -r C:\DirName\outputPicturesFilename.ivi
- Uploading of firmware to IV8 (IVP file)
  - IVProg.exe -w inputFirmwareFilename.ivp
- Downloading of firmware from IV8 (IVP file)
  - IVProg.exe -r C:\DirName\outputFirmwareFilename.ivp
- Start of HELP for IVprog command line:
  - IVProg.exe –h
- Start I**VProg.exe** without parameter for IVProg graphical interface.

11 Technical data

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The device is intended to be used in the engine room or on the engine directly.

11.1 Power supply

Value	Controller	IV Display
Voltage supply	8-36V DC	8-36V DC
Consumption depends on supply voltage	0,4A at 8VDC	1A at 8VDC
	0,15A at 24VDC	0,35A at 24VDC
	0,1A at 36VDC	0,25A at 36VDC
Power dissipation		9 W

11.2 Operating conditions

Operating temperature	-20...+70°C
Storage temperature	-30...+80°C
Flash memory data retention time	10 years
Protection front panel	IP65
Humidity	95% without condensation
	IEC/EN 60068-2-30

11.3 Climatic, mechanical and EMC standards

InteliVision 8 fulfill following standards:

- CE Standard conformity
- Low Voltage Directive: 2006/95/EC
- EMC directive: 2004/108/EEC

<table>
<tr><th>Name of test</th><th>Procedure</th><th>Notes</th></tr>
<tr><td>External Power supply</td><td>EN 61000-4-11</td><td></td></tr>
<tr><td>Power supply variation</td><td>EN 61000-4-11</td><td></td></tr>
<tr><td>Low temperature</td><td>EN 60068-2-1, Ab, Ad</td><td>-20°C/ 16h</td></tr>
<tr><td>Cyclic damp heat test</td><td>EN 60068-2-30, Db</td><td></td></tr>
<tr><td>Dry heat</td><td>EN 60068-2-2, Ab, Ad</td><td>70°C/ 16h</td></tr>
<tr><td>Sinusoidal vibration</td><td>EN 60068-2-6 test Fc</td><td>5Hz - 25Hz/ ±1,6mm; 25Hz - 100Hz / 4g</td></tr>
<tr><td>Flammability</td><td>EN 60695-11-5:05</td><td></td></tr>
<tr><td>High Voltage</td><td>Germanische Lloyd spec., VI-Part 7, §14</td><td>Power supply terminals against box: Uef. 572 V; duration 1 min</td></tr>
<tr><td>Insulation resistance</td><td>Germanische Lloyd spec., VI-Part 7, §13</td><td></td></tr>
<tr><td>Electrostatic discharge</td><td>EN 61000-4-2</td><td>6kV contact discharge; 8kV air discharge</td></tr>
<tr><td>Radiated elmag. field immunity</td><td>EN 61000-4-3</td><td></td></tr>
<tr><td>Fast low energy transients/bursts</td><td>EN 61000-4-4</td><td>
<table>
<tr><th></th><th>Power connections</th><th>Data, control and communications connections</th></tr>
<tr><td>Severity level</td><td colspan="2">3</td></tr>
<tr><td>Coupling</td><td colspan="2">line / earth</td></tr>
<tr><td>Test voltage (open circuit)</td><td>2 kV</td><td>1 kV</td></tr>
<tr><td>Polarity</td><td colspan="2">positive / negative</td></tr>
<tr><td>Repetition rate of pulses</td><td>5 kHz</td><td>5 kHz</td></tr>
<tr><td>Waveshape of voltage</td><td colspan="2">5 / 50 ns</td></tr>
<tr><td>Burst-duration</td><td colspan="2">15 ms</td></tr>
<tr><td>Burst-period</td><td colspan="2">300 ms</td></tr>
<tr><td>Test duration per polarity and test point</td><td colspan="2">5 Minuten</td></tr>
</table>
</td></tr>
<tr><td>Slow high energy transient/surges</td><td>EN 61000-4-5</td><td>
<table>
<tr><th rowspan="2"></th><th colspan="2">Coupling</th></tr>
<tr><th>line / line</th><th>line / earth</th></tr>
<tr><td>Severity level</td><td colspan="2">2</td></tr>
<tr><td>Test voltage (open circuit)</td><td>0,5 kV</td><td>1 kV</td></tr>
<tr><td>Polarity</td><td colspan="2">positive / negative</td></tr>
<tr><td>Waveshape of voltage</td><td colspan="2">1,2 / 50 µs</td></tr>
<tr><td>Repetition rate</td><td colspan="2">max. 1 pulse / minute</td></tr>
<tr><td>Test duration per test point</td><td colspan="2">min. 5 pulses/ Polarity</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Name of test</th><th>Procedure</th><th>Notes</th></tr>
<tr><td>Conducted high frequency interference</td><td>EN 61000-4-6</td><td>
<table>
<tr><td>Severity level</td><td>2</td></tr>
<tr><td>Coupling</td><td>line / earth</td></tr>
<tr><td>Carrier signal (open circuit)</td><td>3 V_{eff} (130 dBµV) [1]</td></tr>
<tr><td>Frequency range</td><td>150 kHz to 80 MHz</td></tr>
<tr><td>Modulation</td><td>AM 80% at 1000 Hz sinewave [2]</td></tr>
<tr><td>Sweep rate</td><td>≤ 1,5 × 10^{-3} dec/s (1%/ 3s)</td></tr>
<tr><td colspan="2">1 For equipment installed on bridge deck and deck zone the test levels shall be increased to 10 V_{eff} for spot frequencies in accordance with IEC 60945 at 2 MHz, 3 MHz, 4 MHz, 6,2 MHz, 8,2 MHz, 12,6 MHz, 16,5 MHz, 18,8 MHz, 22 MHz, 25 MHz.
2 If for tests of equipment an input signal with a modulation frequency of 1000 Hz is necessary a modulation frequency of 400 Hz should be chosen.</td></tr>
</table>
</td></tr>
<tr><td>Conducted emissions</td><td>CISPR 16-1, CISPR 16-2</td><td>
<table>
<tr><th>Site</th><th>Frequency range</th><th>Limits</th></tr>
<tr><td>Bridge and open deck zone
– EMC 1 [1]</td><td>10 kHz – 150 kHz
150 kHz – 350 kHz
350 kHz – 30 MHz</td><td>96 dBµV – 50 dBµV
60 dBµV – 50 dBµV
50 dBµV</td></tr>
</table>
</td></tr>
<tr><td>Radiated emission from enclosure</td><td>CISPR 16-1, CISPR 16-2</td><td>
<table>
<tr><th>Site</th><th>Frequency range</th><th>Limits</th></tr>
<tr><td>Bridge and open deck zone
– EMC 1 [1]</td><td>150 kHz – 300 kHz
300 kHz – 30 MHz
30 MHz – 2 GHz
except for:
156 MHz – 165 MHz</td><td>80 dBµV/m – 52 dBµV/m
52 dBµV/m – 34 dBµV/m
54 dBµV/m

24 dBµV/m</td></tr>
</table>
</td></tr>
<tr><td>Conducted low frequency interference</td><td>Germanische Lloyd spec., VI-Part 7, §20</td><td></td></tr>
</table>

11.4 Dimensions and weight

Dimension	Front panel 289,5 x 186mm
	Rear cover 278,60 x 175,6x33,60mm
	InteliVision 8 cutout 178 x 282mm
Weight	1600g

11.5 Communication interface

- RS232 Interface
  - Maximal distance 10m
  - Speed up to 57,6kBd
- RS485 Interface
  - Galvanic separated
  - Maximal distance 1000m
  - Speed up to 57,6kBd
  - Only 1 IV8 is possible connect on RS485 (only 1 Master can be connected)
- CAN Bus Interface
  - Galvanic separated
  - Maximal CAN bus lenght 200m Speed 250kBd
  - Nominal impedance 120Ω
  - Cable type twisted pair (shielded)

For other details see controllers installation guides (**IGS-NT-2.6-Installation Guide.pdf** and **ID-DCU-Industrial-2.9.pdf**) and **ID-Mobile-1.1 Reference Guide r1.pdf**.

USB Slave

USB slave (for system administration only) is accessible without cover removal.

USB Master

USB Master is determined for features based on USB. See chapter**Features based on USB (page 56)**.

11.6 Operating system

Windows CE 6.0 operating system

11.7 LCD display

- 8" color TFT display with resolution of 800 × 600 pixels
- LCD display active area dimension 162x121,5mm
- Pixel size 0.2025(W) x 0.2025(H) mm
- Display lifetime at least 20.000h (display will be switched off when inactive)

Item	Symbol	Condition	Values			Unit	Remark
			Min.	Typ.	Max.		
Viewing angle (CR>10)	θL	Φ=180°(9 o'clock)	60	70	-	degree	Note 1
	θR	Φ=0°(3 o'clock)	60	70	-		
	θT	Φ=90°(12 o'clock)	40	50	-		
	θB	Φ=270°(6 o'clock)	60	70	-		
Contrast ratio	CR	Normal	400	500	-		Note 2
Luminance	L	θ=Φ=0°	300	350	-	cd/m²	Note 3

Note: *Definition of viewing angle range:*

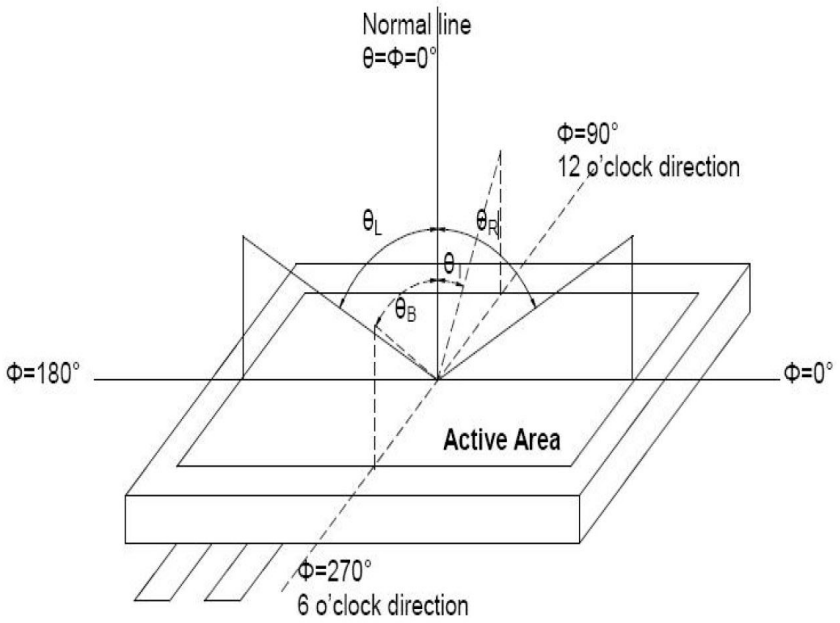

Table 11.1 Viewing angle range definition

Note: *Definition of contrast ratio*
Contrast ratio (CR) = Luminance measured when LCD on the "Black" state / Luminance measured when LCD on the „White" state.

Note: *All input terminals LCD panel must be ground while measuring the center area of the panel. The LED driving condition is IL=20mA of which each LED module is 3 LED serial.*