

ENGINEERING TOMORROW

Application Guide

iC7 Integration into Rockwell Automation[®] Studio 5000[®]

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1 Introduction

1.1 Version History

This guide is regularly reviewed and updated. All suggestions for improvement are welcome.

The original language of this guide is English.

Table 1: Version History

| Version | Remarks |
|------------------------------|---------------|
| AB501135116041, version 0101 | First release |

1.2 **Purpose of this Application Guide**

This application guide is intended for qualified personnel such as:

- Automation engineers.
- Commissioning engineers who have experience of operating with parameters and basic knowledge of the iC7 drive.
- The engineers must have knowledge with Rockwell Automation® Studio 5000®.

This application guide provides information about how to integrate the Danfoss iC7 drives into the Studio 5000° designer tool. The designer tools includes Studio 5000 Logix Designer[®] and Studio 5000 View Designer[®]. The add-on instruction and add-on graphics (faceplate) are not protected and can be modified to serve the specific requirements by the end-user.

Danfoss takes no responsibility for losses due to code faults in these function blocks or for wrong use.

This application guide does not include:

- A description of the Allen-Bradley[®] equipment and Rockwell Automation[®] programming tools that are necessary to handle the application.
- Other tools from Rockwell Automation[®] which are needed for large-scale applications.

NOTE: Refer to the *Rockwell Automation*[®] *programming and operating guide* for further information.

1.3 Additional Resources

Additional resources are available to help understand the features, safely install, and operate the iC7 products:

- Operating guide iC7 Series EtherNet/IP OS7IP.
- Safety guides, which provide important safety information related to installing iC7 drives.
- Installation guides, which cover the mechanical and electrical installation of drives.
- Design guides, which provide technical information to understand the capabilities of the iC7 drives for integration into motor control and monitoring systems.
- Application guides, which provide instructions on setting up the drive for a specific end use.
- Other supplemental publications, drawings, and guides are available at <u>www.danfoss.com</u>.

Latest versions of Danfoss product guides are available for download at https://www.danfoss.com/en/service-and-support/documentation/.

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Introduction

1.4 General

Configuration examples and illustrations made in this guide are based on the default settings of the drive. Special parameter settings to fit the current application are possible, but may conflict with the information provided in this application guide.

1.5 Abbreviations and Acronyms

| Term | Definition |
|------|-----------------------------------|
| ACD | Application code definition |
| AOI | Add-on instruction |
| AOG | Add-on graphic |
| CPU | Central processing unit |
| CTW | Control word |
| EDS | Electronic data sheet |
| НМІ | Human machine interface |
| JSR | Jump to subroutine |
| MAV | Main actual value (Process value) |
| PV | Process value (Main actual value) |
| REF | Reference (Setpoint) |
| SP | Setpoint (Reference value) |
| STW | Status word |
| UDT | User-defined types |

1.6 Trademarks

- MyDrive is a registered trademark of Danfoss A/S.
- Rockwell Automation Studio 5000 is a registered trademark of Rockwell Automation, Inc.
- Studio 5000 is a registered trademark of Rockwell Automation, Inc.
- Studio 5000 Logix Designer is a registered trademark of Rockwell Automation, Inc.
- Studio 5000 View Designer is a registered trademark of Rockwell Automation, Inc.
- PanelView is a registered trademark of Rockwell Automation, Inc.
- CompactLogix is a registered trademark of Rockwell Automation, Inc.
- ControlLogix is a registered trademark of Rockwell Automation, Inc.
- GuardLogix is a registered trademark of Rockwell Automation, Inc.
- Allen-Bradley is a registered trademark of Rockwell Automation, Inc.
- Allen-Bradley GuardLogix is a registered trademark of Rockwell Automation, Inc.
- Allen-Bradley PanelView is a registered trademark of Rockwell Automation, Inc.

Introduction

1.7 Disclaimer

The add-on instruction and add-on graphic is provided "as is" without warranty of any kind, expressed or implied, including, but not limited to, the warranties of merchantability, fitness for a particular purpose, and non-infringement. In no event must the authors or any legal entity part of the Danfoss group be liable for any claim, damages, or other liability. Whether in an action of contract, tort, or otherwise, arising from, out of, or in connection with the software, or the use, or other dealings in the software.

Safety

2 Safety

2.1 Safety Symbols

The following symbols are used in Danfoss documentation.

🛕 DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates information considered important, but not hazard-related (for example, messages relating to property damage).

The guide also includes ISO warning symbols related to hot surfaces and burn hazard, high voltage and electrical shock, and referring to the instructions.

| | ISO warning symbol for hot surfaces and burn hazard |
|---|--|
| 4 | ISO warning symbol for high voltage and electrical shock |
| | ISO action symbol for referring to the instructions |

2.2 General Safety Considerations

The end-user is responsible for addressing any regulatory requirements to the installation. Refer to the *iC7 Design Guide* for further information of the mechanical installation considerations.

\Lambda WARNING

POTENTIAL DAMAGE TO SYSTEMS

Some parameters in system configuration can significantly change the system response and even make the system nonfunctioning. Potential damage to other systems, for example motor, or other components related to motor control can occur if the parameters are not set correctly.

• Make sure to understand the parameters fully before changing any of the parameters in the drive.

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3 Commissioning

3.1 Introduction

The section covers how to integrate a Danfoss iC7 drive into a Studio 5000 Logix Designer[®] project by the use of a provided ESD file. The process involves installing the ESD file, configuring the EtherNet/IP connection, and verifying communication. Furthermore, it shows an example of how to configure custom process data (input/output) for the Danfoss iC7 drives in Studio 5000 Logix Designer[®].

NOTE: The examples in this application guide are based on Allen-Bradley® GuardLogix® controller firmware revision 36 and Allen-Bradley® PanelView™ HMI firmware revision 9.

3.2 Network Configuration

To identify the products and easily commission them on a network, an electronic data sheet (ESD) file is needed for the iC7 drive.

1. Download the ESD file from the website Fieldbus configuration files | Danfoss.

The downloaded file contains a compressed zip file with all the released ESD files for the different iC7 applications.

2. Save and extract the zip file locally on a computer.

The computer must have Rockwell Automation® Studio 5000® installed.

3. Start the windows application Device Description File Installation Tool in the start program folder named Rockwell.



Figure 1: Device Description File Installation Tool

Alternatively, start the tool from the software application Studio 5000 Logix Designer[®] from the menu bar *Tools*, select *Device Description Installation Tool* in the drop-down menu.



Figure 2: Device Description Installation Tool (Optional)

4. Register the device by following the registration wizard of the tool.

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Figure 3: Register a Device Description File

- 5. Add the iC7 drive to the Studio 5000 Logix Designer[®] project, after all files are installed and the hardware catalog in the Studio 5000[®] is updated
- 6. In the Studio 5000 Logix Designer[®] application, click *File* \Rightarrow *New* in the drop-down menu to create a new project.

The following example is based on a Compact GuardLogix® CPU. The following series can also be used:

- CompactLogix[®].
- ControlLogix[®].
- GuardLogix[®].

| 0 | lo Lo | gix Desi | gner | | | |
|-------|-------|----------|------|--------|-------|---------------|
| | File | Edit | View | Search | Logic | Communicati |
| × | *1 | New | | Ctrl+N | 12 | C. |
| | 6 | Open | 13 | Ctrl+O | | |
| | | Close | | | Path | : AB_ETHIP-1\ |
| 00000 | P | Save | | Ctrl+S | oller | No For |

Figure 4: Create a New Project

7. In the menu project types, click the [Logix] icon, and select the corresponding controller in the drop-down menu.

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| 🖇 New Project | | | | | ? | × |
|---------------|-----------|-----------------|---------------------|-----------------|--------------|---|
| Project Types | | | Search | | | × |
| 💰 Logix | ▲ Comp | act GuardLogix® | 5380 Safety Contro | ller | | 1 |
| N View | 50 | 69-L306ERMS2 | Compact GuardLog | gix® 5380 Safet | y Controller | |
| View | 50 | 69-L306ERMS3 | Compact GuardLog | gix® 5380 Safet | y Controller | |
| | 50 | 69-L306ERS2 | Compact GuardLog | gix® 5380 Safet | y Controller | |
| | 50 | 69-L3100ERMS2 | Compact GuardLog | gix® 5380 Safet | y Controller | |
| | 50 | 69-L3100ERMS3 | Compact GuardLog | gix® 5380 Safet | y Controller | |
| | 50 | 69-L3100ERS2 | Compact GuardLog | gix® 5380 Safet | y Controller | |
| | 50 | 69-L310ERMS2 | Compact GuardLog | gix® 5380 Safet | y Controller | |
| | 50 | 69-L310ERMS3 | Compact GuardLog | gix® 5380 Safet | Controller | |
| | 50 | 69-L310ERS2 | Compact GuardLog | gix® 5380 Safet | y Controller | * |
| | 4 | | | | Þ | |
| | Name: | | | | | |
| | Location: | C:\Users\f34740 |)\OneDrive - Danfos | s\Documer ~ | Browse | |
| | | Cancel | Back | Next | Finish | |

Figure 5: Selection of the Controller

- **8.** Enter the name of the project and click the [*Next*] button.
- 9. Select the corresponding revision of the firmware for the corresponding CPU.

Using the latest available revision or update to the latest revision from Rockwell Automation® is recommended.

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| 🗿 New Project | | | ? | × |
|-------------------------------------|---|--------------------|------|------|
| 5069-L310ERMS MyFirstProject_iC7 | 8 Compact GuardLogix® 5380 Safety Cor | ntroller | | |
| Revision: | 36 4 | | | |
| Security Authority: | No Protection | | ¥ | |
| | Use only the selected Security Authority for authorization | authentication and | | |
| Secure With: | Logical Name <controller name=""></controller> | | | |
| | O Permission Set | | u : | |
| Description: | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | Cancel Bac | k Next | Fir | nish |
| | Cancer Dat | IVEAL | - Tu | 1311 |

Figure 6: Selection of Firmware Revision

10. Click the [*Finish*] button to complete the configuration of the CPU.

The new project opens in Studio 5000 Logix Designer®.

- 11. Unfold the menu in the controller organizer window and select the *Ethernet I/P* of the controller.
- **12.** Right-click the *Ethernet I/P* and select *New Module*.



Figure 7: Adding a New Module

- 13. A new Select Module Type window opens, see Figure 8.
- **14.** Select the field *filter* and type the text *iC7*.

This selects the catalog number for the iC7 drive only, with Industry application or Motion application.

NOTE: More applications become visible in the upcoming releases of the iC7 series products.

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15. Select the corresponding application installed in the iC7 drive and click the [*Create*] button.

| C7 | | Clear Fil | ters | | Hide Filters |
|--|--|-----------|--|--|--------------|
| Module Type 20 - Comm-EF AC Drive Dev Analog CIP Motion Sa | e Category Filters R rice afety Track Section | | Module Ty Advanced I Bray Interna Buerkert Flu Danfoss Dri | be Vendor Filters Energy Industries, Inc. ational, Inc uid Control Systems ves A/S | |
| Catalog Number | Description | Ver | ndor | Category | |
| IC7-60+DAAU | iC7-Automation Industry | Dar | nfoss Drives | Communications | |
| 107 00 07 010 | | 00 | 1033 Dires | communications | |
| | | | | | |
| | | | | | |

Figure 8: Select Module Type

- 16. A New Module window opens.
- 17. Select General in the menu and type the name for the iC7 drive in the project, see Figure 9.
- 18. Enter the same IP address from MyDrive® Insight or from the control panel of the iC7 drive.

Refer to appendix <u>7.1 Change the IP Address Settings from MyDrive® Insight</u> for further information of how to change the IP address settings from MyDrive® Insight.

19. Click the [*OK*] button to accept the new module.

The default connection assembly instance is EO 100/150. Click the [*Change*] button to change the connection assembly instance. Refer to the operating guide *iC7 Series EtherNet/IP OS7IP* for further information of difference connection instances supported by the iC7 drive.

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| - General* - Connection - Module Info | General | | | | | |
|---|---------------|---------------|-----------------------|----------|--------------------|--------------------|
| Internet Protocol | Type: | IC /-60+DAAU- | +BAIP iC /-Automation | Industry | | |
| Port Configuration Network | Parent: | Local | S AV S | | | |
| | Name: | My_iC7_Drive | | - | Ethernet Address | |
| | Description: | | | - | O Private Network: | 192.168.1. |
| | | | | | O IP Address: | 192 . 168 . 2 . 11 |
| | | | | | O Host Name: | |
| | | | | - | | |
| | Module Defini | ion | | | | |
| | Revision: | | 1.002 | | | |
| | Electronic Ke | /ing: | Compatible Module | e | | |
| | Connections | | EO 100/150 | | | |
| | | | | | | |
| | | | | Change | | |

Figure 9: New Module

20. Check that the iC7 drive is visible in the *controller organizer* window in the folder I/O Configuration.



Figure 10: iC7 Automation Drive Added in I/O Configuration Menu

21. The corresponding I/O tags are automatically created for the connection instance selected.

Figure 11 show the I/O tags for the connection assembly instance 100/150. There are 4 bytes (SINT-Short Integer) available in each direction (In and Out), corresponding to the STW, MAV, CTW, and REF. From this point, the motor can be controlled using the iC-Speed profile with default settings.

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| | Controller Tags - My | irstProject_ic/(controller) | × | | | |
|---|-----------------------|-----------------------------|------------|---------|--------------------|----------|
| 0 1 | Scope: 😰 MyFirstProje | ct_iC 🗸 Show: All Tags | | | | |
| Controller MyFirstProject_iC7 | Name = | 🖌 Value 🔶 | Force Mask | Style | Data Type | Class |
| Controller Fault Handler | My_iC7_Drive:C | {} | {} | | _0061:IC7_60DAAUBA | . Standa |
| Power-Up Handler | My_iC7_Drive:11 | {} | {} | | _0061:IC7_60DAAUBA | . Standa |
| 🔺 🖳 Tasks | My_iC7_Drives | 11 0 | | Decimal | BOOL | Standa |
| A the main lask | My_iC7_Drives | 11 {] | {} | Decimal | SINT[4] | Standa |
| SafetyTask (20 ms) | My_iC7_Dri | /e 0 | | Decimal | SINT | Standa |
| SafetyProgram | My_iC7_Dri | /e 0 | | Decimal | SINT | Standa |
| Unscheduled | My_iC7_Dri | /e 0 | | Decimal | SINT | Standa |
| Ungrouped Axes | My_iC7_Dri | /e 0 | | Decimal | SINT | Standa |
| 👂 💼 Alarm Manager | My_iC7_Drive:01 | {} | {} | | _0061:IC7_60DAAUBA | . Standa |
| Assets | My_iC7_Drives | 0 {} | {} | Decimal | SINT[4] | Standa |
| B Logical Model ▲ ⊆ I/O Configuration | My_iC7_Dri | /e 0 | | Decimal | SINT | Standa |
| ✓ | My_iC7_Dri | /e 0 | | Decimal | SINT | Standa |
| [0] 5069-L310ERMS3 MyFirstProject_iC7 | My_iC7_Dri | /e 0 | | Decimal | SINT | Standa |
| A 話 A1, Ethernet 5069-L310ERMS3 MyFirstProject_iC7 | ▶ My_iC7_Dri | /e 0 | | Decimal | SINT | Standa |

Figure 11: I/O Tags for Connection Assembly Instance

22. Select the common settings for the connection instance to change the profile if required. Change the value (101=iC-Speed profile).

Refer to the operating guide *iC7 Series EtherNet/IP OS7IP* for further information of the profile selection.

NOTE: The add-on instruction and add-on graphic in this application guideline is only supporting the iC-Speed profile.

| 0 | Controller Tags - MyFirstProje | ct_iC7(controlle | r) × | | | |
|----|--------------------------------|------------------|---------|----------------|---------|------|
| So | cope: 👰 MyFirstProject_iC 🗸 | Show: All Tags | | | | |
| | Name | == * | Value 🗧 | Force Mask 🔹 🗧 | Style | Dat |
| | ▲ My_iC7_Drive:C | | {} | {} | | _006 |
| | My_iC7_Drive:C.Fieldbe | us_Profile | 101 | | Decimal | UIN |
| | ▲ My_iC7_Drive:I1 | | {} | {} | | _006 |

Figure 12: Change Fieldbus Profile

3.3 Changing Process Data (Optional)

If another assembly instance is selected, for example EO 130/180, additional process data can be configured directly from Studio 5000 Logix Designer[®]. The following example shows how to assign additional process data based on assembly instance 130/150 (80 bytes IN and 80 bytes OUT).

NOTE: Each process data occupies 4 bytes of data, regardless of the data type of each process data. A process data can be configured as a Boolean (1 bit) to a Real (32 bit) value. The programmer must control the data type and the amount of data used for each process data.

- 1. Open the window *Module Properties Local* for the iC7 drive.
- 2. Click the [Change] button.

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| General | General | | |
|---|--|---|--|
| Module Info Internet Protocol Port Configuration Network | Type: Vendor: Parent: Name: | IC7-60+DAAU+BAIP iC7-Automation Industry Danfoss Drives A/S Local My_iC7_Drive | Ethernet Address |
| | Description: | This is the iC7 drive for demonstration purpose. | Private Networ IP Address: Host Name: |
| | Module Defin | nition | |
| | Revision: Electronic K Connections | 1.002 eying: Compatible Module s: EO 100/150 Change | |

Figure 13: Module Properties Local

- 3. The *Module Definition* opens in a new window.
- 4. Select the field *Name* to open the drop-down menu. See Figure 14.
- 5. Select, for example, the assembly instance EO 130/180 in the drop-down menu.

| tronic Keying: | Compatible M | odule | | ~ | | |
|--|--------------|-------|------|-----------------------------------|-------|-----------------|
| Name | | Size | | Data Type | Tag S | uffix |
| EO 100/150 | Input: | 4 | CINT | _0061:IC7_60DAAUBAIP_85D36DB4:I:0 | | My_iC7_Drive:I1 |
| | Output | : 4 | SINT | _0061:IC7_60DAAUBAIP_AAB94180:0:0 | | My_iC7_Drive:01 |
| EO 100/150 IO 150 LO 150 EO 130/180 IO 180 LO 180 | | | | | | |

Figure 14: Module Definition

6. In the field *Data Type*, a [*Change*] button is visible.

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| Data Type | | Та |
|----------------------------|--------|----|
| _0061:IC7_60DAAUBAIP_A78EE | Change | |
| _0061:IC7_60DAAUBAIP_86157 | Change | |

Figure 15: Data Type Field

7. Click the [Change] button for the input (read process data).

A customizable process data array with a capacity of 20 process data opens.

💽 Custom Data Type: _0061:IC7_60DAAUBA... 🗙

Connection: EO 130/180

Data Type: _0061:IC7_60DAAUBAIP_A78EE5E6:I:0

Members:

| P | arameter Nam | Member Name | Data Type |
|---|-----------------|-------------|-----------|
| C | connection Faul | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | R | с I, п |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| 1 | - Not Mapped | | |
| _ | | 102 | |
| [| OK | Cancel | Help |

Figure 16: Custom Data Type (Read Process Data)

8. The available data from the iC7 drive can be mapped into the array for each process data field.

A Maximum of 20 process data can be mapped. See Figure 17 for an example of mapped process data in the input direction.

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| | Custom Data Type: _0061:IC7_60DAAUBA × |
|-----|---|
| Con | nection: EO 130/180 |
| Dat | a Type: _0061:IC7_60DAAUBAIP_A78EE5E6:I:0 |
| Men | nbers: |
| | Parameter Name |
| | Connection Faulted |
| | 9 - Fieldbus Status Word |
| | 3 - Actual Motor Speed |
| | 3230 - VO And Relay Digital Input Status Word |
| | 50 - Motor Shaft Power |
| | 52 - Motor Shaft Speed |
| | 58 - DC-link Voltage |
| | 1 - Not Mapped |

Figure 17: Example of Mapped Process Data (Input)

Cancel

9. Click the [OK] button when the required process data in the input direction is configured.

Help

The Custom Data Type window closes.

1 - Not Mapped 1 - Not Mapped 1 - Not Mapped 1 - Not Mapped 1 - Not Mapped

OK

10. Click the [*Change*] button for the output (write) process data, see Figure 15.

A customizable process data array with a capacity of 20 process data open. See Figure 18 for an example of mapped process data in the output direction.

AB501135116041en-000101 / 136R0371 | **19**

| 1 | Custom Data Type: | _0061:IC7_60DAAUBAI | × |
|---|-------------------|---------------------|---|
| | | | |

Connection: EO 130/180

Data Type: _0061:IC7_60DAAUBAIP_86157B7F:O:0

| Mem | be | rs | : |
|-----|----|----|---|
| | | | |

| Parameter Name | Mer |
|-------------------------------|------|
| 303 - Operation Mode | |
| 13 - Fieldbus Control Word | |
| 15 - Fieldbus Speed Reference | |
| 3404 - Relay T2 | |
| 3405 - Relay T5 | |
| 1 - Not Mapped | |
| | |
| OK Cancel | Help |

Figure 18: Example of Mapped Process Data (Output)

11. Click the [OK] button when the requested process data in the output direction is configured.

The Custom Data Type window closes.

- 12. Click the [OK] button in the Module Definition window when the process data in both directions are defined.
- 13. A warning message opens. Click the [Yes] button to accept the changes to the module definition of the iC7 drive.

| Logix D | esigner | X 070 10 |
|---------|---|----------|
| 4 | These changes will cause module data types and properties to change. Data will be set to default values unless it can be recovered from the existing module properties. Verify module properties before Applying changes. | - |
| | Change module definition? Yes No | |

Figure 19: Change the Module Definition of the iC7 Drive

14. The *Module Properties* window for the iC7 drive reopens if Yes is selected.



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| General* | General | | | | |
|---|---|--|---|--|------------------------------------|
| - Connection Module Info Internet Protocol Port Configuration Network | Type: Vendor: Parent: Name: Description: | IC7-60+DAAU+BAIP iC7-Automation Industry Danfoss Drives A/S Local <u>My_IC7_Drive</u> This is the iC7 drive for demonstration purpose. | A | Ethemet Address Private Network: IP Address: Host Name: | 192.168.1. ÷ 192 . 168 . 2 . 11 |
| | Module Defin Revision: Electronic Ke Connections | tion 1.002 sying: Compatible Module :: EO 130/180 Change | | | |

Figure 20: Apply the New Module Properties

- **15.** Click the [*Apply*] and [*OK*] buttons.
- 16. Check that the new process data tags for the input and output are visible in the Controller Tags window.

| Scope: DV Show: All Tags | | | | | | | | | | |
|-----------------------------------|---------|----------------|---------|--------------|--|--|--|--|--|--|
| Name 📰 🔺 | Value 🔶 | Force Mask 🗧 🗧 | Style | Data Type | | | | | | |
| My_iC7_Drive:11 | {} | {} | | _0061:IC7_60 | | | | | | |
| My_iC7_Drive:I1.ConnectionFaulted | 0 | | Decimal | BOOL | | | | | | |
| My_iC7_Drive:I1.Data | {} | {} | Decimal | SINT[80] | | | | | | |
| My_iC7_Drive:11.Data[0] | 0 | | Decimal | SINT | | | | | | |
| My_iC7_Drive:11.Data[1] | 0 | | Decimal | SINT | | | | | | |
| My_iC7_Drive:11.Data[2] | 0 | | Decimal | SINT | | | | | | |
| My_iC7_Drive:11.Data[3] | 0 | | Decimal | SINT | | | | | | |
| My_iC7_Drive:11.Data[4] | 0 | | Decimal | SINT | | | | | | |
| My_iC7_Drive:11.Data[5] | 0 | | Decimal | SINT | | | | | | |
| My_iC7_Drive:11.Data[6] | 0 | | Decimal | SINT | | | | | | |
| My_iC7_Drive:11.Data[7] | 0 | | Decimal | SINT | | | | | | |
| My_iC7_Drive:11.Data[8] | 0 | | Decimal | SINT | | | | | | |
| My_iC7_Drive:11.Data[9] | 0 | | Decimal | SINT | | | | | | |
| My_iC7_Drive:I1.Data[10] | 0 | | Decimal | SINT | | | | | | |
| My_iC7_Drive:I1.Data[11] | 0 | | Decimal | SINT | | | | | | |
| My_iC7_Drive:I1.Data[12] | 0 | | Decimal | SINT | | | | | | |
| My_iC7_Drive:11.Data[13] | 0 | | Decimal | SINT | | | | | | |
| My iC7 Driver11 Data[14] | 0 | | Decimal | SINT | | | | | | |

Figure 21: Input and Output Process Data Tags

17. Select the field Size in the Module Definition window to change the tag data type.

The data type for each tag is visible in the *Module Definition* window.

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| | E: Optional. | Onl | y perfo | orm this pro | cedure if a change of the tag | g data type i | s requi | ired. |
|--|-------------------|------------|----------|-----------------------------|--|------------------|---------|------------------------------------|
| Revision: Bectronic Keying: Connections: | 1 ~ Compatible | Mod | 002 - | | ~ | | | |
| Name | | | Size | | Data Type | | Tag Su | ffix |
| EO 130/180 | Inpu Out | t: out: | 80 80 | SINT | _0061:IC7_60DAAUBAIP_A78EE _0061:IC7_60DAAUBAIP_86157 | Change Change | 1 | My_iC7_Drive:I1 My_iC7_Drive:O1 |
| Select a connect | tion 🗸 | | | SINT INT DINT REAL | | | | |
| | | | | | | | | |

Figure 22: Change of Tag Data Type

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Add-on Instruction

4 Add-on Instruction

4.1 Define Add-on Instruction

The following steps explain how to add an add-on instruction for drives in the Studio 5000 Logix Designer®.

Add-on instructions are predefined programs or functions contained within a single program element that can be used in the PLC program. The add-on instruction is written in ladder language and opens for further extensions or adjustments if required by the end-user.

A basic motor control and monitoring add-on instruction are available for download on the Danfoss web portal, refer to <u>VLT®</u>, <u>VACON®</u>, and iC7 PLC Libraries | Danfoss.

- **NOTE:** Only I/O connections assembly instance 100/150 is supported for the basic add-on instruction, to get the iC7 drive operational.
- 1. Download the file *iC7_Basic_AOI.L5X* from the Danfoss web portal.
- 2. Navigate to the Controller Organizer window.

Start with the creation of a new main routine is recommended.

- 3. Select the folder *Tasks* in the drop-down menu.
- **4.** Right-click the *MainProgram* and select $Add \Rightarrow New Routine$.

| Ромет-ор па | naie | 51 | | | | |
|--|------|-----------------|---------|---|----------------|------------|
| 🔺 <u> Tasks</u> | | | | | | |
| 🔺 🛟 MainTask | | | | | | |
| 🔺 🔓 MainProg | ıram | | | | | |
| 🗸 Paran | | Add | • | B | New Routine | N |
| E Mainl | ¥ | Cut | Ctrl+X | 0 | New Local Tag | Ctrl+W |
| 🔺 🕒 SafetyTask (2 | - | cut | ett i v | × | | current in |
| SafetyPrc | | Сору | Ctrl+C | | New Parameter | |
| Unscheduled | £ | Paste | Ctrl+V | | Import Routine | |
| 🔺 📹 Motion Groups | | Delete | Delete | | | |
| Ungrouped A | | 3 | | | | |
| 👂 💼 Alarm Manager | | Verify | | | | |
| Assets | | Cross Reference | Ctrl+E | | | |
| ha Logical Model ▲ 🚄 I/O Configuratio | | Browse Logic | Ctrl+L | | | |

Figure 23: Creation of New Main Routine

- 5. A new window *New Routine* open.
- 6. Enter the name of the routine in the field Name and click the [OK] button.

The new routine is visible under the MainRoutine.

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| Name: | My_iC7_Rout | tine | | ОК |
|-------------------------|---------------|--------------------|---|--------|
| Description: | Routine to ex | ecute the iC7 AOI. | | Cancel |
| | | | • | |
| Туре: | E Ladder D | Ladder Diagram | | Help |
| In Program or Phase: | b Main Prog | ~ | | |
| | Assignment: | <none></none> | ~ | |
| Class: | Standard | | | |

Figure 24: Example of New Routine

- 7. In the Controller Organizer window, select the folder Assets in the drop-down menu. See Figure 25.
- 8. Right-click the Add-On Instructions and select Import Add-On Instruction.

| Alarm Manager Assets | | | |
|---|-----|---------------------------|--------------|
| Add-On Instructions | -5- | New Add On Instruction | |
| 🔺 🔙 Data Types | | New Add-on instruction | |
| 📠 User-Defined | | Import Add-On Instruction | N |
| 📠 Strings | V | Cut. | Gerl V |
| Add-On-Defined | db | Cut | Ctri+X |
| Predefined | | Сору | Ctrl+C |
| Module-Defined | £ | Paste | Ctrl+V |
| Trends | | Paste With Configuration | Ctrl+Shift+V |
| The Logical Model | | | |
| I/O Configuration | | | |

Figure 25: Import Add-on Instruction

- 9. A new window Import Add-On Instruction open.
- **10.** Select the AOI file *iC7_Basic_AOI.L5X* and click the [*Open*] button.

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Add-on Instruction

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| Look in | n: 🛅 AOI | ~ | G 🤌 📂 🛄 🗸 | |
|-----------|----------------|----------------------------------|------------------|--------|
| \wedge | Name | ^ | Date modified | Тур |
| Home | 🗄 iC7_Basic_ | AOI.L5X | 28-11-2023 11:22 | Lo |
| Desktop | | | | |
| Libraries | | | | |
| This PC | | | | |
| Network | File name: | iC7_Basic_AOI | ~ | Open |
| Hermonk | Files of type: | Logix Designer XML Files (*.L5X) | ~ | Cancel |

Figure 26: Select Import File

- **11.** A new window *Import Configuration iC7_Basic_AOI.L5X* opens, see Figure 27.
- **12.** Click the [OK] button to start the import of the AOI.

It is possible to change the field *Final Name* and the field *Description* in the add-on instruction properties if necessary.

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| import configuration - ic/_basic_koi. | | | | | ~ |
|---------------------------------------|------------------|---|--------|------------|------|
| Find: Find Within: Final Name | ~ | Find/Replace | | | |
| port Content: | | | | | |
| - 🛋 Add-On Instructions | Configure Add-Or | Instruction Properties | | | |
| | Import Name: | iC7_Basic | | | |
| | Operation: | Create | \sim | 0 | |
| References | | References will be imported as configured in the References fold | ders | | |
| Errors/Warnings | Final Name: | iC7_Basic | ~ | Properties | |
| | Description: | Basic control and monitoring Add- On Instruction for the Danfoss iC7 frequency converters | • | | |
| | Class: | Standard | • | | |
| | Revision: | V0.1 | | | |
| | Vendor: | Danfoss | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | OK Cancel | Help |

Figure 27: Start the Import of the AOI File

13. Check that the corresponding add-on instructions *Logic, User-Defined* types and *Add-On Defined* block become visible as shown in Figure 28.



Figure 28: Import of AOI File Completed

- Add-on Instruction
- **14.** The add-on instruction is now located in the element group and can be added to a rung in the newly created routine. Select the add-on instruction in the *Language Element* bar in the Studio 5000 Logix Designer[®].

| 1 in | | | | |
|---|-------------|------------------|-------------------------|-----------------------------|
| | iC7, Bas | | | |
| Favorites | Add-On | Alarms | Bit | Timer/Counter |
| | | | | |
| | | | | |
| | Favorites | Favorites Add-On | Favorites Add-On Alarms | Favorites Add-On Alarms Bit |

Figure 29: Language Element Bar

15. Drag-drop the logic element *iC7_Basic* add-on instruction to the rung.

The block is visible in the rung as shown in the example Figure 30.

| iC7_Basic | | |
|-----------|----|--------------|
| iC7_Basic | ? |) |
| COAST | ?? | -(READY)- |
| RUN | ?? | (FAULT)- |
| REVERSE | ?? | (WARNING)- |
| Q STOP | ?? | (RUNNING) |
| RESET | ?? | (RUN ON REF) |
| REF VALUE | ?? | |
| MAV | ?? | |
| Data IN | ? | |
| Data OUT | ? | |

Figure 30: Adding Logic Element to Rung

16. Create tags for each element in the block, to configure the iC7_Basic add-on instruction block.

It is possible to create either local or global tags. The following example shows local tags only.

- 17. Select the folder Tasks in the drop-down menu, and open the Parameter and Local Tags see Figure 31.
- **18.** Select the tab *Edit Tags*.

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Add-on Instruction

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| Controller Organizer 🛛 👻 | Ψ× | 🧮 MainProgram | - My_iC7_Routine* 📿 | Program Parameters | and Local Tags - MainPro | gram × |
|--|----|---------------|---------------------|--------------------|--------------------------|-----------|
| a 🖫 | | Scope: 5 Main | Program 🗸 Show: | All Tags | | |
| Controller MyFirstProject_iC7 Controller Tags Controller Fault Handler Power-Up Handler Tasks MainTask LowipProgram | | Name | <u>_</u> ∎ ▲ Usage | Alias For | Base Tag | Data Type |
| Parameters and Local Tags MainRoutine My_iC7_Routine SafetyTask (20 ms) J_ SafetyProgram Unscheduled Motion Groups Ungrouped Axes | b | | | | | |

Figure 31: Program Parameters and Local Tags

19. In the field *Name*, type in for example *Motor_1* and open the field *Data Type* and select the iC7_Basic. Click the [*OK*] button to accept the change.

All required data definition and data types for this instance of the add-on instruction are automatically created with this tag.

| Name | -= | Usage | Alias For | Base Tag | Data Type | Class |
|---------|----|-------|-----------|------------------|-----------|--------------|
| Motor_1 | | Local | | | DINT | Standard |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | Select Data Type | | |
| | | | | Data Types: | | |
| | | | | iC7 Basic | | ОК |
| | | | | | | |
| | | | | HMIBC | | Cancel |
| | | | | C7_Basic | | Help |
| | | | | IMC | | |
| | | | | | | |
| | | | | | | |
| | | | | LEAD LAG | | |
| | | | | Array Dimensions | | |
| | | | | Dim 2 Dim 1 | Dim 0 | |
| | | | | | A 0 | |

Figure 32: Create a Local Tag (Example)

20. Select the new created tag as the operand for the add-on instruction block and select the [Enter] button on the keyboard.

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Add-on Instruction

| iC7_Basic iC7_Basic | Motor_1 🗸 | | - |
|-------------------------------|-----------|-------------|-----------|
| Enter Name Filter | Show: All | Tags | ~ |
| Name _= | Data Type | Usage | Descripti |
| Motor_1 | iC7_Basic | Local | Basic c |
| | | | |
| Show controller tags | | 🛃 Show stan | dard tags |
| ✓ Show Main Program tags | | 🛃 Show safe | ty tags |
| Show parameters from other pr | rogram: | | |
| <none></none> | | ~ | |

Figure 33: Select Tag as Operand

21. Select the corresponding tags from the controller tags table and add this to the block as shown in Figure 34 for the Data_IN and Data_OUT.

The Data_IN and Data_OUT operands are the I/O assembly instances from the drive, which is created as tag information as controller tags. The Data_IN tag selected here is the connection assembly instance 150 and the Data_OUT is the connection assembly instance 100.



Figure 34: Adding Controller Tags Table to the Block

22. If the configuration is successfully completed, it must look similar as the example, see Figure 35.

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Figure 35: Configuration of the Block Completed

- **23.** Open *MainRoutine* and add a call to the new routine using a jump to subroutine (JSR) command. Find the command in the *Program Control Elements* section.
- **24.** Enter the corresponding subroutine in the element where the iC7 add-on instruction is located, and delete other instruction parameters in the element.



Figure 36: Execute the New Created Routine

25. Click the icon [Verify Controller] and check that the output is without any errors or warnings.



Figure 37: Verify Controller

26. Select the Controller Status and click [Download] in the drop-down menu.

NOTE: It is possible that the connection from Studio 5000[®] already is established. Alternatively, select the *Go Online* and accept to download the program to the controller when the information message appears.

It is possible that a Studio 5000[®] connection is already established.

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Add-on Instruction



| N I C Date | | | |
|-------------------------------------|---|--|-----------------|
| Fau | . <non< th=""><th>ie></th><th></th></non<> | ie> | |
| Offline | Ē 🗸 | No Forces | ▶ No Edit |
| | | Go Online | n in the second |
| | | Upload | |
| rstProject_iC7 | | Download | |
| ags ault Handler landler | | Program Mode Run Mode Test Mode | |
| gram meters and Local Routine | l Ta | Clear Faults Go To Faults Controller Prope | rties |
| Figure 38: Download | the Proc | gram to Controller | |

27. The controller allows online access for monitoring and modifying add-on instruction tags after program download.



Figure 39: Change or Monitor Tags

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Add-on Instruction

4.1.1 **Definition of I/O Data**

Table 2: Definition of I/O Data

| Input/ output | I/O data definition | Data type | Description | |
|------------------|------------------------|-----------|---|--|
| | IC7_Basic | UDT | Instance tag for the add-on instruction. | |
| Input | COAST_INV | Bool | Coast stop inverse. If false, this will coast the motor. | |
| | RUN | Bool | Motor start/stop. If true, the motor will start/run. If false, the motor performs a ramp stop. | |
| | | | NOTE: This function depends on index <i>5.8.6.2.x Ramp 1 settings</i> . | |
| | REVERSE | Bool | Reverse the motor direction. If true, the motor starts spinning in the reverse direction. | |
| | Q_STOP | Bool | Quick stop. If true, perform a quick stop ramp. | |
| | | | NOTE: This function is depending on index <i>5.7.3.x Quick stop settings</i> ⁽¹⁾ . | |
| | RESET | Bool | Reset an occurrence. If true, a present fault can be reset, if the conditions for the reset of the fault/faults are met. | |
| | | | NOTE: Fault acknowledge (reset). $0 \Rightarrow 1=$ Acknowledge faults. Acknowledging is edge triggered, when changing from logic 0 to logic 1. $0 =$ No function. | |
| | REF_VALUE | Real | Added value gives the reference value in percentage based on N2 definition (-200% - +200%). | |
| | | | NOTE: Note: Only 0–200% is possible due to the reverse function. This function depends on the index <i>5.8.3.x Speed limits</i> ⁽¹⁾ . | |
| Output | READY | Bool | If true, the motor is ready to start and run. If false, the motor cannot start, since the raised conditions for a start command are not fulfilled. | |
| | | | NOTE: Refer to section <u>6.1 Troubleshooting with the Basic Drive Function Block</u> for clarification on root-cause finding for missing start condition. | |
| | FAULT | Bool | If true, a fault/alarm is present, and the motor is stopped. If false, the drive is fully op- erational. | |
| | WARNING | Bool | If true, a warning is present, but it is still possible to control the motor, maybe with limited performance. If false, no warning is present, and the motor is fully operational. | |
| | RUNNING | Bool | The motor is started and is heading or performing the requested reference value. | |
| | RUN_ON_REF | Bool | The main actual value matches the requested reference value. | |
| | MAV | Real | The estimated rotor speed of the motor is controlled in open-loop conditions. | |
| | | | NOTE: The value depends on index <i>4.3.4.x settings</i> ⁽¹⁾ . | |

1) The index number and name depends on the current application installed in the iC7 drive. The number in the table is valid for iC7-Automation with Industry Application installed.

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Add-on Graphic

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5 Add-on Graphic

5.1 Define Add-on Graphics

The add-on instruction is support by a corresponding faceplate, named add-on graphics (AOG) in Studio 5000[®]. The add-on graphic is fully compatible with the add-on instruction. The following example shows how to implement the add-on graphic in Studio 5000 View Designer[®].

- 1. Open the Studio 5000 View Designer®.
- **2.** Select *Create* \Rightarrow *New Project*.
- 3. Open the desired HMI panel for editing.

Figure 40 is an example of a new project with the 6.5" PanelView 5510 selected. The entered name is My_HMI_Panel and the selected version is 9, which corresponds to the firmware installed in the Allen-Bradley[®] PanelViewTM HMI Panel.

4. Enter the name of the project in the field *Name*.

Name in this example (My_HMI_Panel).

5. Check the corresponding version of the firmware of the HMI panel.

Version in this example (Version 9).

6. Click the [*Finish*] button.



Figure 40: New Project

7. A new window Project Properties open.

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Add-on Graphic

- 8. Define the interface configuration from the HMI panel to the controller.
 - Controller[0] Reference Name:
 - A unique name assigned for the controller reference. For example, MyController.
 - Logix Project File:
 - Studio 5000 Logix Designer[®] project file, where the add-on instruction is located. In the example, the selected ACD (Application Code Definition) file is the one selected from the previous section *MyFirstProject_iC7.ACD*.
 - HMI to Controller Path:
 - Path where the controller is located. In the example, the IP address 192.168.0.10, slot 0 of the Compact GuardLogix[®] setup.
 - Emulator to Controller Path:
 - If no real HMI panel exists, select the emulator path where the controller is located. The HMI panel can then be emulated from the Studio 5000 View Designer[®] environment.

| poplication onfigure target HMI evice settings eferences eate and configure ntroller references og On Method onfigure how users g on enguage onfigure language ttings | * | Controller[0] Reference Name Logix Project File: HMI to Controller Path: Emulator to Controller Path: Controller Reference Name: | e: MyController 192.168.2.10 Demo\192.168.2 | Slot: 0 | · · · | × |
|--|---|--|---|---|---|---|
| eferences eate and configure ntroller references on Method onfigure how users g on onfigure language ttings | * | Logix Project File: HMI to Controller Path: Emulator to Controller Path: Controller Reference Name: | 192.168.2.10 Demo\192.168.2 | Slot: 0 | · · | |
| og On Method onfigure how users g on onguage onfigure language ttings | * | Controller Reference Name: | | | | |
| nguage nfigure language ttings | | | | | | |
| | | | | | | |
| Bage & Capacity oplication usage id capacity | | | | | | |
| | | | | | | |
| | age & Capacity olication usage d capacity | age & Capacity olication usage d capacity | age & Capacity olication usage i capacity | age & Capacity olication usage i capacity | age & Capacity olication usage d capacity | age & Capacity olication usage i capacity |

Figure 41: Interface Configuration from HMI Panel to Controller

9. Click the [OK] or [Apply] button when all the entries are created and selected.

The default screen becomes visible in Studio 5000 View Designer[®]. The 1st user-defined screen (*Screen_001*) is visible, and it is now possible to design the HMI application as required.

5.1.1 Working with the Add-on Graphic

1. Open the *View Designer* and select $File \Rightarrow$ *Import Project*.

Before using the add-on graphical faceplate in the Studio 5000 View Designer® tool, it must be imported.

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| \odot | View Designer - | My_HMI_F | Panel [7' |
|---------|-----------------|----------|-----------|
| File | Edit View | Project | Comm |
| *D | New Project | Ctr | I+N |
| 6 | Open Project | Ctr | l+0 |
| | Close Project | | |
| | Save Project | Ctr | I+S |
| | Save Project As | | |
| | Import Project | 1 | |
| | Export Project | ι | 3 |
| | Recent Projects | | • |

Figure 42: Import Project

2. Find the location of the downloaded add-on graphic file.

In this example *iC7 Rockwell* > *AOG* > *iC7_Basic_Template*, see Figure 43.

3. Select the *ViewApplication.hmi* file and click the [*Open*] button.

The import of the add-on graphic starts.

| | | | ≣ ▾ 🔲 🧯 |
|----------------------|------------------|-------------|---------|
| Name | Date modified | Туре | Size |
| Assets | 05-09-2024 14:30 | File folder | |
| Navigation Menu | 05-09-2024 14:30 | File folder | |
| Predefined Screens | 05-09-2024 14:30 | File folder | |
| User-Defined Screens | 05-09-2024 14:30 | File folder | |
| ViewApplication.hmi | 28-11-2023 15:11 | HMI File | 1 KB |
| | | | |
| | | | |

Figure 43: Import Add-on Graphic

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Add-on Graphic

4. A message appears when all items for the add-on graphic are correctly imported. Click the [OK] button to complete the import.



Figure 44: Add-on Graphic Imported Successfully



5. Open the Project Explorer window from the Studio 5000 View Designer®.

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Figure 45: Project Explorer Window

- 6. Select Assets \Rightarrow Add-On Graphics in the drop-down menu, and check that 1 new element *i*C7_Basic is added.
- 7. Select User-Defined Screens in the drop-down menu and check that 2 new elements Motors and Popup_Motor_1 are added.
- 8. Select Assets \Rightarrow Add-On Graphics \Rightarrow iC7_Basic right-click and open.
- 9. Add the user-defined type *iC7-Basic* from the add-on instruction in the *Property Definition*.

The link to the add-on instruction in the Studio 5000 Logix Designer® project is a precondition.

| ★ > User-Defined > MyController Name ▲ Description iC7_Basic Basic control and monitoring Add-On Instruc Read_iC_Speed_Prof Status word and main actual value definition Write_iC_Speed_Pro Control word and main reference value defin | Image: Angle Angl | | Q▼ Search | v |
|---|---|--|---|---------------------------|
| Name Description iC7_Basic Basic control and monitoring Add-On Instruc Read_iC_Speed_Prof Status word and main actual value definition Write_iC_Speed_Pro Control word and main reference value defin | Name ▲ Description iC7_Basic Basic control and monitoring Add-On Instruc Read_iC_Speed_Prof Status word and main actual value definition Write_iC_Speed_Pro Control word and main reference value defin | | ♠ > User-Defined > MyController | |
| iC7_Basic Basic control and monitoring Add-On Instruc Read_iC_Speed_Prof Status word and main actual value definition Write_iC_Speed_Pro Control word and main reference value defin | iC7_Basic Basic control and monitoring Add-On Instruc Read_iC_Speed_Prof Status word and main actual value definition Write_iC_Speed_Pro Control word and main reference value defin gn Property Definition | | Name A Description | |
| Read_iC_Speed_Prof Status word and main actual value definition Write_iC_Speed_Pro Control word and main reference value defin | Read_iC_Speed_Prof Status word and main actual value definition Write_iC_Speed_Pro Control word and main reference value defin | | iC7_Basic Basic control and more | nitoring Add-On Instruc |
| Write_iC_Speed_Pro Control word and main reference value defin | Write_iC_Speed_Pro Control word and main reference value defin | | Read_iC_Speed_Prof Status word and main | n actual value definition |
| | gn / Property Definition | | Write_iC_Speed_Pro Control word and ma | ain reference value defin |

Figure 46: Adding User-defined Type File

- 10. The add-on graphic screen can be closed after the UDT is selected as the data type.
- 11. Open the user-defined screen Motors and select the text field Motor name.

In the *Properties* window of the selection, the binding to the instance of the given function block of the add-on instruction must be provided.

12. In *Properties* \Rightarrow *General* \Rightarrow *Text*, click the 3 dots to open the selection window.

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Figure 47: User-Defined Screen Properties (Motors)

- 13. Select the @Name attribute for the given function block. Close the user-defined screen.
- **14.** Open the user-defined screen *Popup_Motor_1*.
- **15.** In the *Properties* \Rightarrow *General* \Rightarrow *i*C7_*Basic* click the 3 dots to open the selection window.

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Figure 48: User-Defined Screen Properties (Popup_Motor_1)

- **16.** Select the name *Motor_1* to get the linking enabled from the instance of the add-on instruction function block. Close the user-defined screen.
- **17.** Click the [*Verify*] icon to verify the project.

Save the project frequently is recommended. Click the [Disk] icon on the menu bar to save the project.



Figure 49: Verify the Project

18. The verified project must be without any errors or warnings.

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Figure 50: Project Verified Message

- 19. In the Project Explorer, select the drop-down menu on the folder User-Defined Screens.
- 20. Right-click the file Motors and select New Shortcut in the drop-down menu.

A new screen with the name Motors appears in the Navigation Menu in Project Explorer.



Figure 51: Shortcut of the Motors File

21. Right-click the new screen *Motors* and select *Set as Home* in the drop-down menu.

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Figure 52: Set the New Screen as Home

22. Click the [Emulate] button on the menu bar to emulate the project.

Alternatively, the project can be downloaded to a real HMI panel if present. Click the [Download current application to selected HMI device] button, located next to the [Emulate] button. In this example, the [Emulate] button is used.



Figure 53: Emulate the Project

23. When the emulator is started, the defined home screen appears.

The name of the motor appears as the given name in the instance of the add-on instruction function block. When selecting the motor, the add-on graphic faceplate appears for the specific motor.

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Vew 5000 Emulator (PanelView 5510 6.5?) Yhy_HMI_Panel

Figure 54: Defined Home Screen





Figure 55: Add-on Graphic Face Plate Default Settings

1 Enable/disable motor control.

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Add-on Graphic

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Figure 56: Add-on Graphic Face Plate for the Specific Motor

- The green rectangular shape around the button [Start] 2
 [indicates that the motor is ready to start. The [Start]
 button can be selected.
- 3 *PV* (Process-Value) specifies the main actual value (MAV) of the motor speed.
- **25.** When the reference speed is reaching the main actual value speed, a green rectangular shape appears around the value field *SP*. This indicates that the motor is on-reference target.

SP (Set-Point) specifies the speed reference (REF).

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Add-on Graphic

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Figure 57: On-reference Target

26. Close the add-on graphic on the cross in the upper right corner.

Adjust the size and shape of the add-on graphic faceplate in the Studio 5000 View Designer[®] to fit any HMI panel of the PanelView[™] 5000 series.

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Troubleshooting

6 Troubleshooting

6.1 Troubleshooting with the Basic Drive Function Block

The following flow chart can be used for troubleshooting with the basic drive function block.



Figure 58: Troubleshooting with the Basic Drive Function Block

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7 Appendix

7.1 Change the IP Address Settings from MyDrive® Insight

IPv4 settings are configured in MyDrive® Insight.

1. Open MyDrive[®] Insight.

The IP address settings for the interface X1/X2 are available in the menu folder 10 Connectivity, see Figure 59.

- **2.** Open the drop-down menu 10 Connectivity \Rightarrow 10.2.3 Ethernet Interface X1/X2 Settings.
- 3. Select the submenu IPv4 Settings.





4. This example shows a manually entered static IP address for simplicity.

IP address settings can also be configured automatically from a DHCP server (Automatic, default setting).

| is menu enables IP configuration of the interface. | |
|--|---|
| Interface X1/X2 MAC Address | MAC address of Interface X1/X2. |
| 00:1B:08:46:24:DA | |
| IPv4 Addressing Method | IP addressing method for the interface. |
| Static IP | |
| Requested IPv4 Address | Requested IPv4 address for the interface. |
| 192.168.2.11 | |
| Requested IPv4 Subnet Mask | Requested IPv4 subnet mask for the interfac |
| 255.255.255.0 | |

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5. Click the [Apply] button in the lower right corner after the IP address is changed.



Figure 61: Apply the IP Address Settings

6. Open the submenu *IPv4 Status* to verify the new configured IP address settings.

| Q Search | | |
|--|---|---|
| | IPv4 Status | |
| III Overview | This menu contains information about the IP configuration of the interface. | |
| a 1 Grid | Interface X1/X2 MAC Address | MAC address of Interface V1/VC |
| 2 Power Conversion & DC Link | 00.18-08-46-24-DA | MAC address of interface X1/X2. |
| | 00,10,00,40,24,04 | • ; |
| 3 Filters & Brake Chopper | IPv4 Addressing Method | IP addressing method for the interface. |
| 🖿 4 Motor | Static IP | |
| 5 Application | | |
| | Actual IPv4 Address | Actual IPv4 address for the interface. |
| 6 Maintenance & Service | 192.168.2.11 | |
| 7 Functional Safety | Actual IPv4 Subnet Mask | Actual IDu4 subact mask for the interface |
| 8 Customization | 255.255.255.0 | Actual IF V4 Sublict mask for the interface. |
| 9 1/0 | Actual IPv4 Gateway Address | Actual IDu4 actaurau address for the interface |
| 10 Connectivity | 0.0.0.0 | Actual IF 14 gateway address for the interface. |
| Integrated Communication | DHCP Server | Displaye the ID address of the DHCD or BOOTD server for the interface |
| ∧ ■ 10.2 Communication interfaces | 0.0.0.0 | proproye the in address of the prior of booth server for the interface. |
| 10.2.1 Host Settings | Actual DNS Server 1 | Actual Domain Name Server 1 for the interface |
| ✓ ■ 10.2.2 Ethernet Interface X0 | 0.0.0.0 | status portant tante certer i tor alle interface. |
| ∧ ■ 10.2.3 Ethernet Interface X1/X2 Settings | Actual DNS Server 2 | Actual Domain Name Server 2 for the interface |
| IPv4 Settings | 0.0.0.0 | Actual portain runic oci ver 2 for alle lifterface. |
| IDud Otatus | | |

Figure 62: Verify the Configured IP Address Settings

- 7. Open the menu 10.3 Protocols \Rightarrow 10.3.4 Ethernet/IP \Rightarrow 10.3.4.1 Status.
- 8. Select the Ethernet/IP Report to view the connection status from the EtherNet/IP status report in MyDrive® Insight.

View the connection status when the connection between the controller and the iC7 drive is established. The report provides a static data snapshot and does not update automatically. Update the report to view the latest data.

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| ~ | | EtherNet/IP State | ls |
|---|--|--------------------------|-----------------|
| | 7 Functional Safety | Toront ID: 100 140 0 11 | |
| _ | 9 Customization | Target IP: 192.168.2.11 | |
| - | o Gustomization | Connection #1 | |
| | 9 /O | | |
| _ | 10 Connectivity | Connection type | Exclusive Owner |
| - | To connectivity | Connection ID | Dx0007 |
| ~ | Integrated Communication | Scoppor ID | 102 168 2 10 |
| | | Broducing PBI [mc] | 192.108.2.10 |
| | 10.2 Communication interfaces | Consuming RPI [ms] | 20 |
| | | Producing assembly | 150 |
| | 10.2.1 Host Settings | Consuming assembly | 100 |
| | I0.2.2 Ethernet Interface X0 | Assembly 150 T->0 | |
| | 10.2.3 Ethernet Interface X1/X2 Settings | Parameter | Value |
| | _ | Fieldbus Status Word | 0x0607 |
| | IPv4 Settings | Actual Motor Speed | 0 |
| | IPv4 Status | Assembly 100 O->T | |
| | - 10.0 4 Filterent wet | Parameter | Value |
| | IO.2.4 Ethemet port X0 | Fieldbus Control Word | 0x0438 |
| | 10.2.5 Ethernet port X1 | Fieldbus Speed Reference | e 8192 |
| | ✓ ■ 10.2.6 Ethernet port X2 | | |
| | V 🖿 10.2.7 Port Mirroring | | |
| | 🔨 🚞 10.3 Protocols | | |
| | 10.3.1 General Settings | | |
| | ∧ ■ 10.3.4 EtherNet/IP | | |
| | ∧ 🖿 10.3.4.1 Status | | |
| | | | |

Figure 63: EtherNet/IP Status Report

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Any information, including, but not limited to information on selection of product, its application or use, product design, weight, dimensions, capacity or any other technical data in product manuals, catalog descriptions, advertisements, etc. and whether made available in writing, orally, electronically, online or via download, shall be considered informative, and is only binding if and to the extent, explicit reference is made in a quotation or order confirmation. Danfoss cannot accept any responsibility for possible errors in catalogs, brochures, videos and other material. Danfoss reserves the right to alter its products without notice. This also applies to products ordered but not delivered provided that such alterations can be made without changes to form, fit or function of the product. All trademarks in this material are property of Danfoss A/S or Danfoss group companies. Danfoss and the Danfoss logo are trademarks of Danfoss A/S. All rights reserved.

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