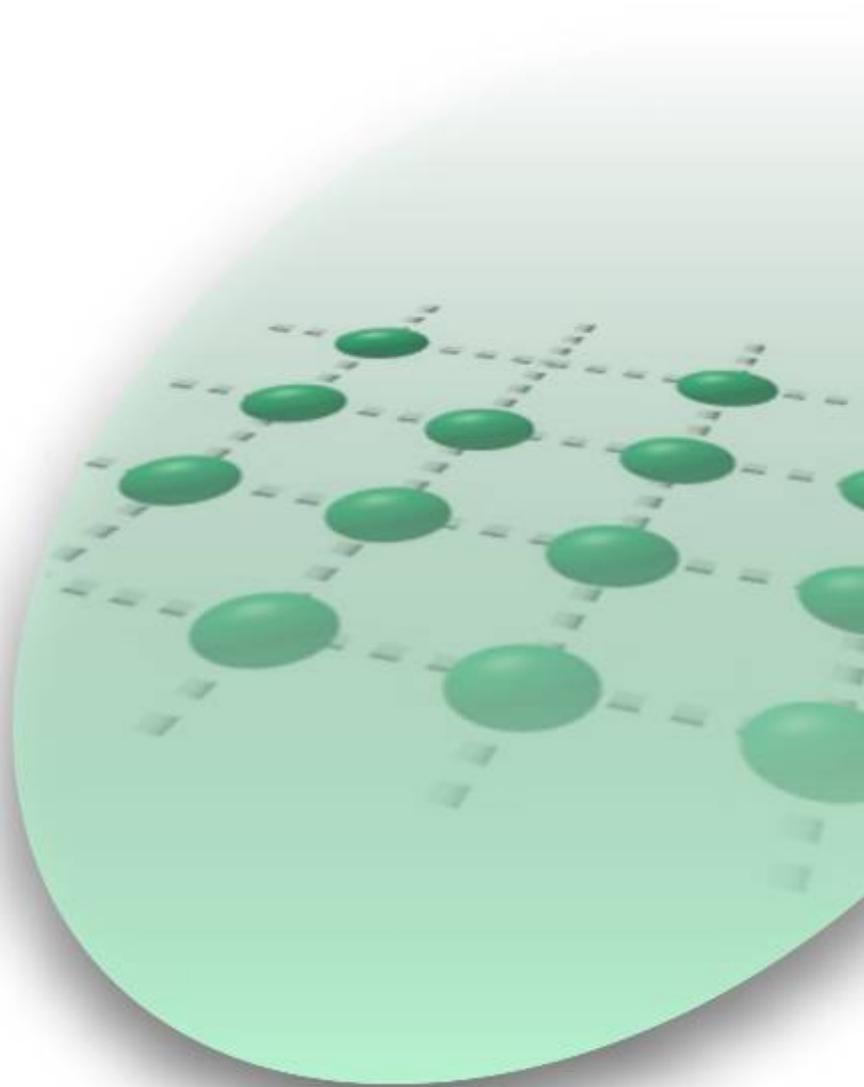
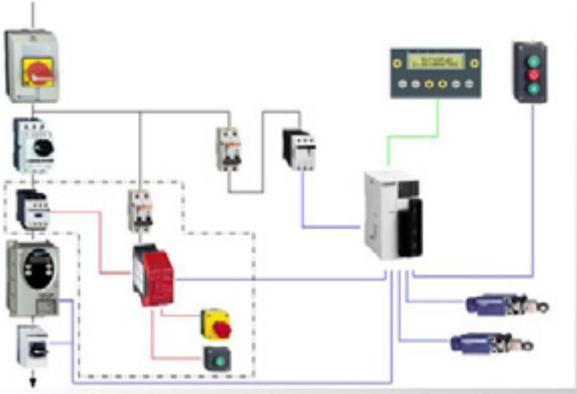


# Twido and Altivar Magelis XBT-N200 and Preventa with Osiswitch *System User Guide*

[source code]



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Telemecanique

**Schneider**  
 **Electric**  
*Building a New Electric World*

Mar 2006

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## Introduction

This document is intended to provide a quick introduction to the described System. It is **not** intended to replace any specific product documentation. On the contrary, it offers additional information to the product documentation, for installing, configuring and starting up the system.

A detailed functional description or the specification for a specific user application is **not** part of this document. Nevertheless, the document outlines some typical applications where the system might be implemented.

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# Abbreviations

Word / Expression	Signification
<b>AC</b>	Alternating Current
<b>Advantys</b>	SE product name for a family of I/O modules
<b>Altivar (ATV)</b>	SE product name for a family of VSDs
<b>CANopen</b>	Name for a communications machine bus system
<b>CB</b>	Circuit Breaker
<b>CoDeSys</b>	Hardware-independent IEC 61131-3 programming software
<b>ConneXium</b>	SE product name for a Family of Transparent Factory devices
<b>DC</b>	Direct Current
<b>EDS</b>	Electronic Data Sheet
<b>E-OFF, E-STOP</b>	Emergency Off switch
<b>Harmony</b>	SE product name for a family of switches and indicators
<b>HMI</b>	Human Machine Interface
<b>I/O</b>	Input/Output
<b>IcIA (ICLA)</b>	SE product name for a compact drive
<b>Lexium/Lexium05/LXM</b>	SE product name for a family of servo-drives
<b>Magelis</b>	SE product name for a family of HMI-Devices
<b>MB - SL</b>	SE name for a serial Modbus communications protocol
<b>Micro</b>	SE product name for a middle range family of PLCs
<b>NIM</b>	SE product name for a Network Interface Module
<b>PC</b>	Personal Computer
<b>Phaseo</b>	SE product name for a family of power supplies
<b>PLC</b>	Programmable Logic Computer
<b>Powersuite</b>	An SE software product for configuring ALTIVAR drives
<b>Premium</b>	SE product name for a middle range family of PLCs
<b>Preventa</b>	SE product name for a family of safety devices
<b>PS1131 (CoDeSys)</b>	SE Product name for PLC programming software with CoDeSys
<b>PS</b>	Power Supply
<b>SE</b>	Schneider Electric
<b>Sycon</b>	SE product name of a Field bus programming software
<b>Telefast</b>	SE product name for a series of distributed I/O devices
<b>Tesys U</b>	SE product name for a decentralised I/O System
<b>Twido</b>	SE product name of a middle range family of PLCs
<b>TwidoSoft</b>	SE product name for a PLC programming software
<b>Unity (Pro)</b>	SE product name for a PLC programming software
<b>Vijeo Designer</b>	An SE software product for programming Magelis HMI devices
<b>VSD</b>	Variable Speed Drive
<b>WxHxD</b>	Dimensions : Width, Height and Depth
<b>XBT-L1000</b>	An SE software product for programming Magelis HMI devices

# Application Source Code

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## Introduction

Examples of the source code used to attain the system function as described in this document can be downloaded from our „Village“ website under [this](#) link.

The example source code is in the form of configuration, application and import files. Use the appropriate software tool to either open or import the files.

---

Extension	File Type	Software Tool Required
<b>AIW</b>	Configuration File	Advantys
<b>CNF</b>	Configuration File	Sycon
<b>CO</b>	CANopen definitions file	Sycon
<b>CSV</b>	Comma Separated Values, Spreadsheet	Twidosoft
<b>CTX</b>		Unity
<b>DCF</b>	Device Configuration File	Advantys
<b>DIB</b>	Device Independent Bitmap	Sycon
<b>DOC</b>	Document file	Microsoft Word
<b>DOP</b>	Project File	Magelis XBTL
<b>EDS</b>	Electronic Data Sheet – Device Definition	Industrial standard
<b>FEF</b>	Export file	PL7
<b>GSD</b>	EDS file (Geraete Stamm Datei)	Profibus
<b>ISL</b>	Island file, project file	Advantys
<b>PB</b>	Profibus definitions file	Sycon
<b>PDF</b>	Portable Document Format - document	Adobe Acrobat
<b>PS2</b>	Export file	Powersuite export file
<b>RTF</b>	Rich Text File - document	Microsoft Word
<b>STU</b>	Project file	Unity studio
<b>STX</b>	Project file	PL7
<b>TLX</b>	Project file	Twinline control tool
<b>TWD</b>	Project file	TwidoSoft
<b>VDZ</b>	Project file	Vijeo Designer
<b>XEF</b>	Export file	Unity Pro
<b>ZM2</b>	Project File	Zeliosoft

---

# Typical applications

## Introduction

Here you will find a list of the typical applications, and their market segments, where this system or subsystem can be applied:

### Industry

- Small automated machine or plant components.
- Remote automation systems used to supplement large and medium-sized machines.

### Buildings/Services

- Goods elevators, e.g., for use in cafeterias or hospitals.
- Climate management in greenhouses.

Application	Description	Image
Freight or goods elevators	This application is used in the implementation of goods elevators, which are for example, used in canteens and hospitals.	
Greenhouses	This application is used to open/close greenhouse windows and shutters to regulate the climate in the greenhouse.	

# System

## Introduction

The system chapter describes the architecture, the dimensions, the quantities and different types of components used within this system.

## Architecture

### General

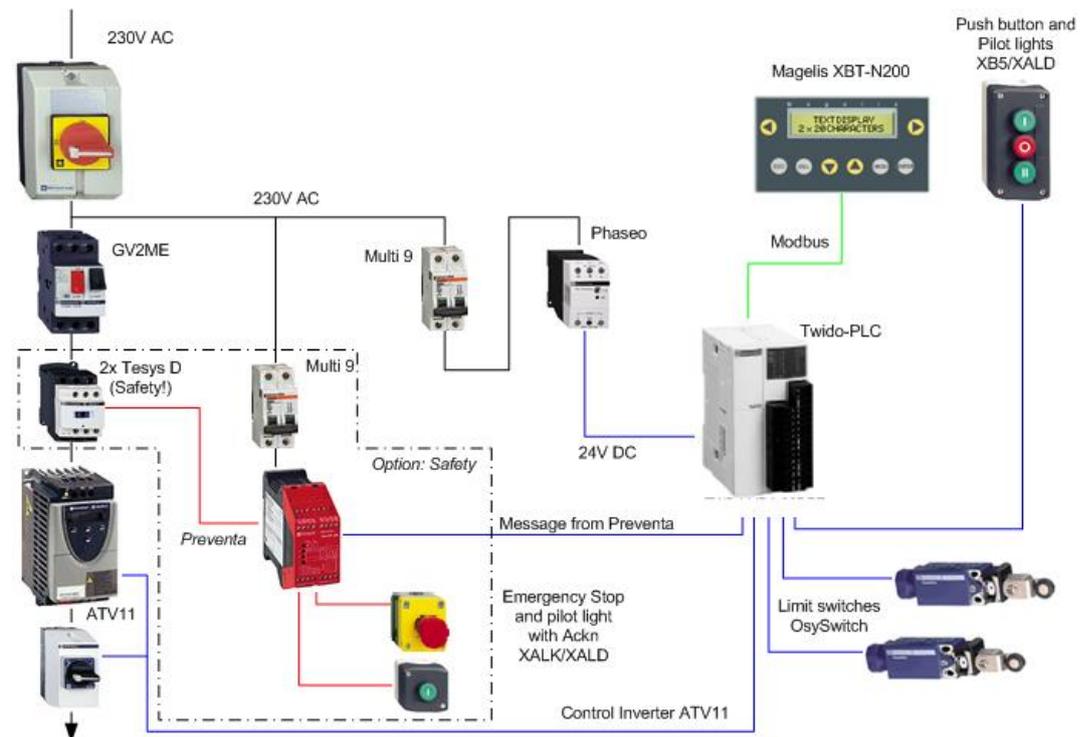
The control section of this application consists of a PLC, which can be controlled via push buttons or a Magelis panel. The load section is implemented using an Altivar VSD, which also controls changes of direction, and an additional lockable maintenance switch, which is located between the drive and the motor.

In this case, an emergency stop switch is used to initiate shut down and ensure the (optional) safety. The emergency stop switch activates a Preventa analyzing unit and, in the event of an emergency, shuts down the redundant conductors before the drive (safety category 3).

The system also has two limit switches, which limit the motor's path of travel.

An additional sensor, which can be used to implement approximate position control via the pulse rate, can be included as an option.

### Layout



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**Components****Hardware:**

- Vario VCD master switch (with red and yellow knob)
- Vario VBF master switch (as maintenance switch with black knob)
- GV2ME motor circuit breaker
- Altivar ATV11 variable speed drive
- XALK locking-type emergency stop switch with rotary unlocking (tamper-proof)
- Phaseo ABL7 power supply unit
- TWIDO modular PLC
- Magelis XBT-N200 compact operator terminal
- XB5 selector switches, push buttons and indicator lamps, from the Harmony Style 5 range
- XCK OsySwitch roller limit switches
- Standard AC motor

**Software:**

- Twidosoft 3.2
  - PowerSuite 1.5 (option)
  - Magelis XBT-L 1000 V4.42
- 

**Quantities of components**

Only one unit is needed per system component to fulfill the requirements of the specified task (with the exception of roller limit switches, contactors and buttons/indicator lamps).  
A detailed list of the required components, including quantities and part numbers, can be found in the Appendix to this SMD (System Manual Document).

---

**Degree of Protection**

Not all of the components used within this configuration have been designed to withstand the full range of environmental conditions in the field. These components will, therefore, require additional protection and are only suitable for installation in a control cabinet. For information about which components are suitable for direct installation on site, please refer to the list provided in the Appendix (column headed "In the field, on site", which also indicates the relevant IP protection class).

---

**Technical data**

Supply voltage	230 V AC
Total supply output	~ 3.5 kW
Motor output	≤ 0.75 kW
Motor brake	No
Connector cross-section	3x 2.5mm <sup>2</sup> (L, N, PE)
Safety category	Cat. 3 (optional)

---

**Safety notice**

In this application example, Category 3 (according to EN 954-1) has been selected for the purpose of ensuring safety. The issue of whether a safety category (1-4) is to be adopted and, if so, which one, will be determined by the system's design and the overall extent to which this system represents a hazard to people and machinery. Safety category 3, based on EN 954-1, is the second highest category there is.

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**Size/Dimensions**

The compact dimensions of the devices used, e.g., the PLC and PS, mean that the components can be installed in a small control cabinet with the following external dimensions: 350 x 350 x 210 mm (WxHxD).  
Furthermore, the display elements used to indicate a "group error" and "no protection" can be built into the door of the control cabinet along with the system master switch and emergency stop master switch.

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# Installation

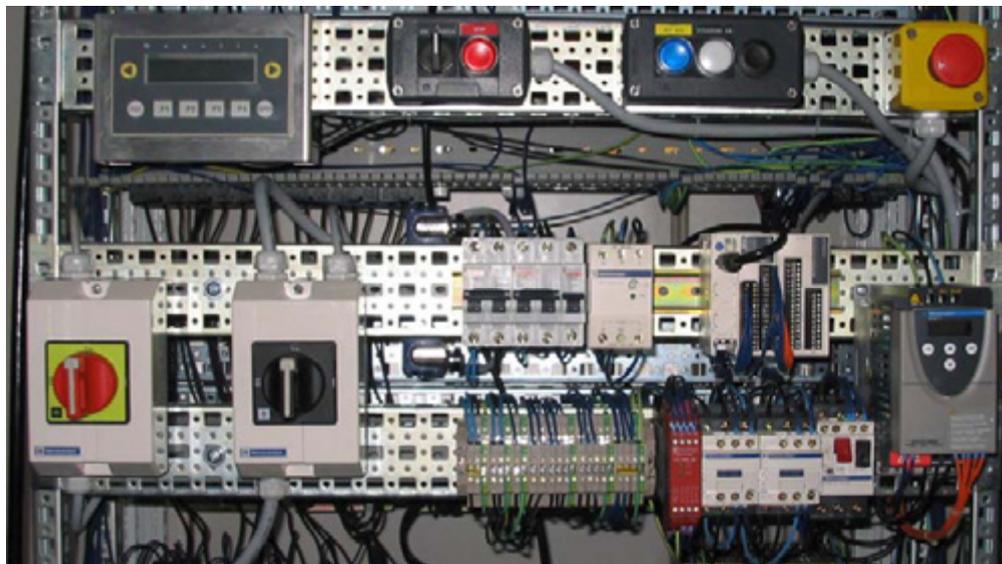
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## Introduction

This chapter describes the steps necessary to set up the hardware and configure the software required to fulfil the described function of the application.

---

## Assembly



## Notes

This application was configured to control the amount of light and climate control in a greenhouse.

The components and I/O points listed below represent a cross-section of the components and signals that are the essential minimum for control and display purposes and a select number of optional inputs and outputs which can be used in conjunction with most typical applications (safety/maintenance switches).

This document does not claim to be comprehensive and **does not absolve users** of their duty to check the safety requirements of their equipment and to ensure compliance with the relevant national or international rules and regulations in this respect.

Safety category 3, which is suggested here as one possible option, is not necessarily required or adequate for every application. A risk analysis normally defines the safety category to be used. A risk analysis, in accordance with the national and/or international standards and regulations in force, must be drawn up and verified for each individual system.

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**PLC wiring**

<b>Twido PLC inputs</b>	<b>Description</b>
DC In 0	Not used, reserved for high-speed counters
DC In 1	Not used, reserved for high-speed counters
DC In 2	Open selector switch
DC In 3	Close selector switch
DC In 4	Stop button
DC In 5	Limit switch open
DC In 6	Limit switch closed
DC In 7	Motor circuit breaker OK
DC In 8	Variable speed drive OK (RC terminal)
DC In 9	Maintenance switch OK (option)
DC In 10	Safety present (option)
DC In 11	Spare

<b>Twido PLC outputs</b>	<b>Description</b>
Trans. Out Q0	PLC ON (24 V)
Trans. Out Q1	Group fault (24 V)
Relay Out Q2	Input LI1 ATV11 (clockwise rotation, close)
Relay Out Q3	Input LI2 ATV11 (counterclockwise rotation, open)
Relay Out Q4	Input LI3 ATV11 (select bit 0, JOG frequency)
Relay Out Q5	Spare (24 V)
Relay Out Q6	Spare (24 V)
Relay Out Q7	Input LI3 ATV11 (select bit 1, JOG frequency)

<b>Twido 24 V supply</b>	<b>Description</b>
Com (inputs)	0 V DC reference voltage
-V	0 V DC reference voltage
Com (+)	+24 V DC
Com 1	+15 V DC (ATV11 potential)
Com 2	+24 V DC
Com 3	+15 V DC (ATV11 potential)

**VSD control circuit wiring**

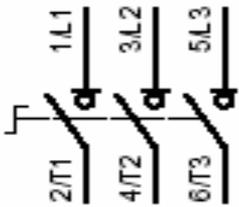
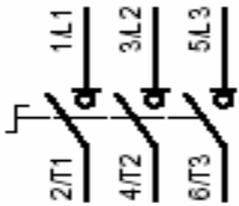
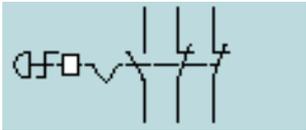
<b>ATV11</b>	<b>Description</b>
LI1	Twido relay Out Q2
LI2	Twido relay Out Q3
LI3	Twido relay Out Q4
LI4	Twido relay Out Q7
RA	+24 V DC
RC	Twido In 8
+15 V	Twido Com 1 and Com 3

# Hardware

## General

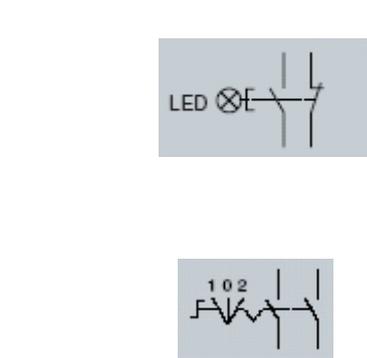
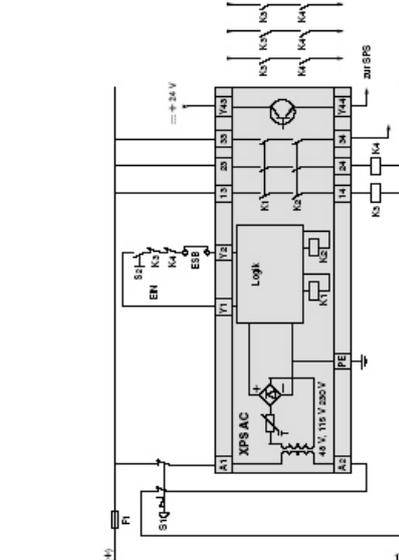
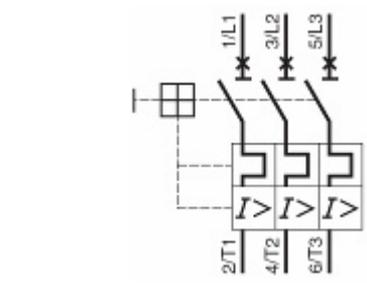
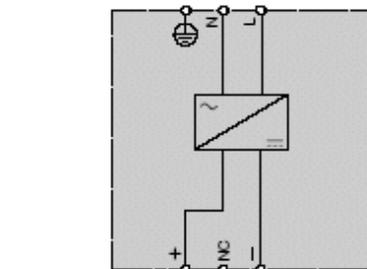
- The components designed for installation in a control cabinet, i.e., Twido PLC, Phaseo power supply unit, emergency stop switching device, line circuit breaker, contactors and motor circuit breaker, can be snapped onto a 35 mm top-hat rail.
- The Altivar variable speed drive can also be installed in a control cabinet, but requires an adapter bracket.
- Emergency stop, master and maintenance switches are designed for backplane assembly in the field; all switches can also be installed directly in a control cabinet (e.g., on control cabinet door) without their enclosing housings.
- There are two options available for mounting XB5 push buttons and indicator lamps:
  1. option: Using a 22 mm hole drilled into the front door of the control cabinet in the appropriate position.
  2. option: Using an XALD housing, which can house up to 5 push buttons or indicator lamps. This XALD is designed for backplane assembly or direct wall mounting.
- 230 V AC wiring between mains switch, emergency stop switch and relay, 24 V supply (primary), as well as motor circuit breaker, load relay and VSD.
- 24 V DC wiring between power supply unit, PLC, push buttons, indicator lamps and VSD control circuit.
- Drive wiring via relay contacts with potential voltage from the drive (neither 24 V DC nor 230/400 V AC).

## Components

<p><b>Mains switch</b></p> <p><b>VCF-02GE</b></p> <p><b>(red/yellow switch)</b></p>		
<p><b>Maintenance switch</b></p> <p><b>VBF-02GE</b></p> <p><b>(black switch)</b></p>		
<p><b>EMERGENCY STOP switch</b></p> <p><b>XALK178G</b></p>		

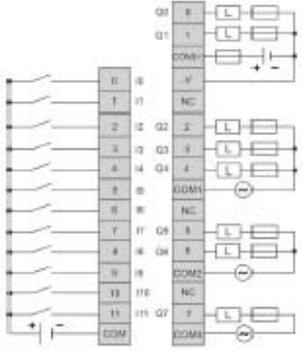
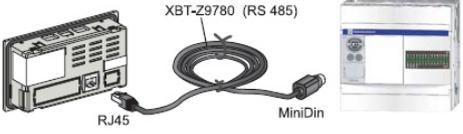
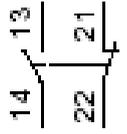
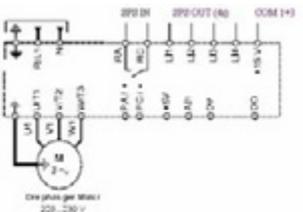
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**Components**  
Contd.

<p><b>Harmony Style 5 selector and push button switch with indicator lamp</b></p> <p><b>XB5</b></p>		
<p><b>EMERGENCY STOP fault relay</b></p> <p><b>XPS AC3721</b></p>		
<p><b>Motor circuit breaker</b></p> <p><b>Circuit breaker GV2-ME16</b></p>		
<p><b>Phaseo power supply unit</b></p> <p><b>ABL7CEM24012</b></p>		

*Continued on next page*

**Components**  
Contd.

<p><b>Twido PLC</b> <b>TWDLMDA 20DRT</b></p>	 <p>TWD LMDA 20DRT</p>	
<p><b>Magelis operator terminal</b> <b>XBT-N200</b></p>		 <p>XBT-Z9780 (RS 485)</p> <p>RJ45 MiniDin</p>
<p><b>Osyris roller limit switch</b> <b>XCD2118P16</b></p>		
<p><b>Altivar ATV11 variable speed drive</b> <b>ATV11PU18M2E</b></p>		 <p>One phase per Motor 200-230 V</p>

# Software

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## General

Software is primarily used for programming the Twido, including creating the configuration for communication and assigning inputs and outputs. The **Twidosoft** programming tool is used for programming.

The HMI application on the Magelis operator terminal is configured using **XBT-L1000** software.

The Altivar 11 variable speed drive can be parameterized using the front operator panel. However, the **PowerSuite** software is a more user-friendly option and can be used for configuring the drive, saving data and quickly restoring existing data/configurations for maintenance purposes.

Powersuite can be used to optimize the parameters online.

To use the software packages, your PC must have the appropriate Microsoft Windows operating system installed:

- Windows 2000 *or*
- Windows XP

The software tools have the following default install paths:

- Twidosoft *C:\Program Files\Schneider Electric\TwidoSoft*
- XBT-L1000 *C:\Program Files\Schneider Electric\XBT-L1000*
- PowerSuite *C:\Program Files\Schneider Electric\PowerSuite*



TwidoSoft V3.2



XBT-L1000 V4.42



PowerSuite V1.5

# Communication

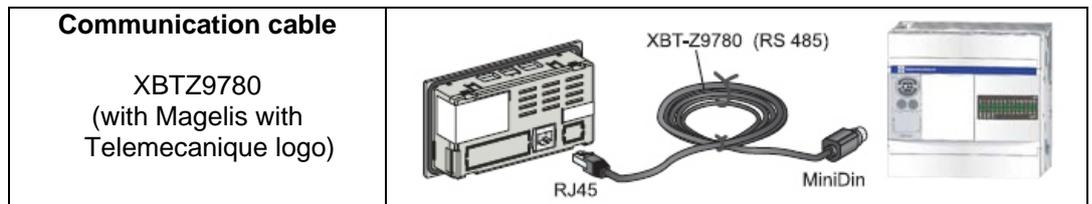
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## General

A Modbus connection is used to exchange data between the Magelis terminal and the Twido PLC. The XBTZ9780 communication cable shown below is needed to connect these two devices. The software driver required for Modbus communication is already contained in the software packages for the Magelis panel and the Twido.

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## Magelis



## Special Note for older Magelis XBT-N200

If you are using a Magelis XBT-N200 terminal **without the Telemecanique logo** (new model) on the front the connection cable to the Twido is **different** from the type shown above.

If your Magelis **DOES NOT** have the Telemecanique logo on the front you must use the cable **XBTZ978** (without a zero!).

If your Magelis has the Telemecanique logo on the front you must use the cable **XBT-Z9780** instead.

The detailed component list in this document refers to the newer XBT-N200 with the Telemecanique logo on the front.

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# Implementation

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## Introduction

The implementation chapter describes all the steps necessary to initialise, to configure, to program and start-up the system to achieve the application functions as listed below.

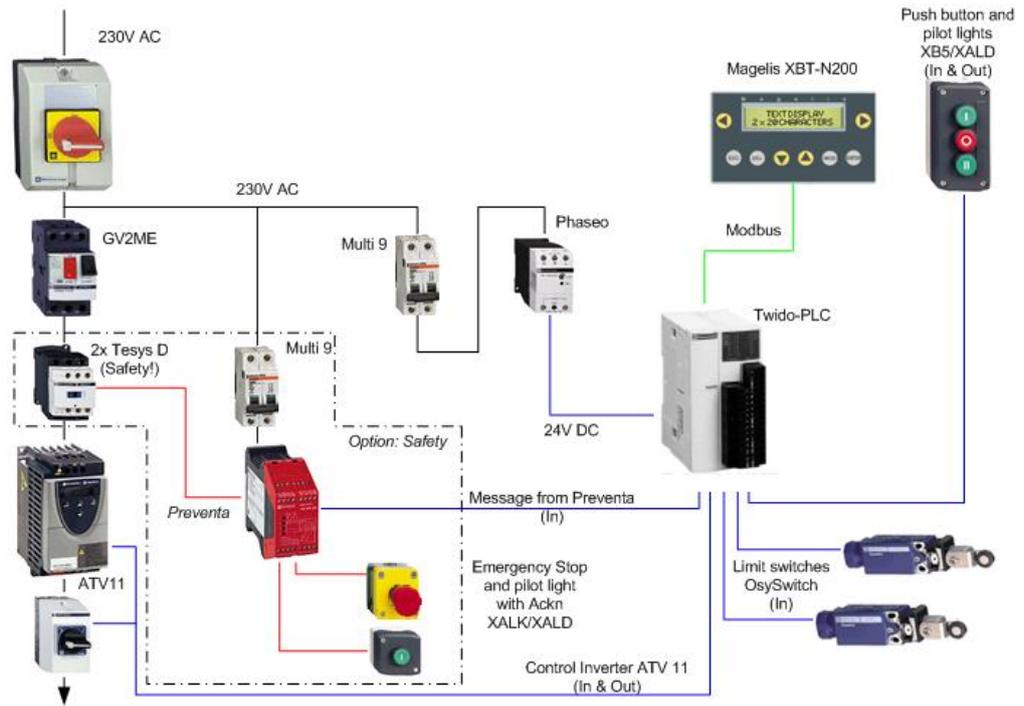
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## Function

### Functional description

1. All the conditions required to clear the group error lamp must be met, i.e., motor circuit breaker and maintenance switch switched on and safety circuit on. The group error message disappears and the Magelis panel is visible on the main screen.
  2. The motor can only be controlled in the “open”/“close” direction if the associated limit switch has not been pressed and no errors are pending.
  3. Push buttons: The selection for opening and closing can be activated via the selector switch. Invoking the motion function starts motion in the selected direction. Motion can be stopped by pressing the stop button, selecting the opposite direction or reaching the limit switch. It will also stop if an error occurs. Although operation is always possible via the push button housing, when this function is used, motion is always made at the lowest speed (1).
  4. Motion can also be activated by entering a “1” in the “open” or “close” parameter, as appropriate. Motion control via the Magelis panel is ignored if the push button housing selector switch is not in the centre position (priority circuit). Entering “0” in the parameter stops the drive, just as if the hardware stop button had been pressed.
  5. Speed pre-selection: The speed for the variable speed drive can be pre-defined via the Magelis terminal. A number from 0 to 3 can be entered (0 = lowest speed). The default setting is 0 and will also return to default when an error occurs.
  6. Faults: Faults are displayed as group errors via a fault indicator lamp or as individual fault messages on the Magelis panel.
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# Layout

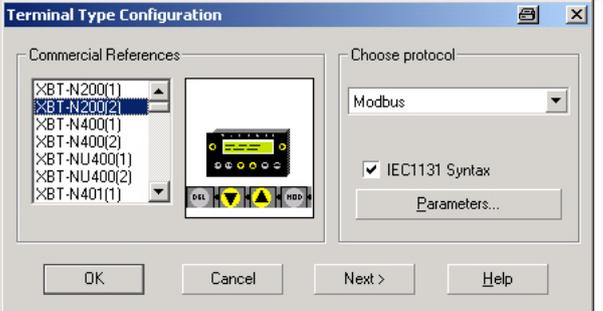
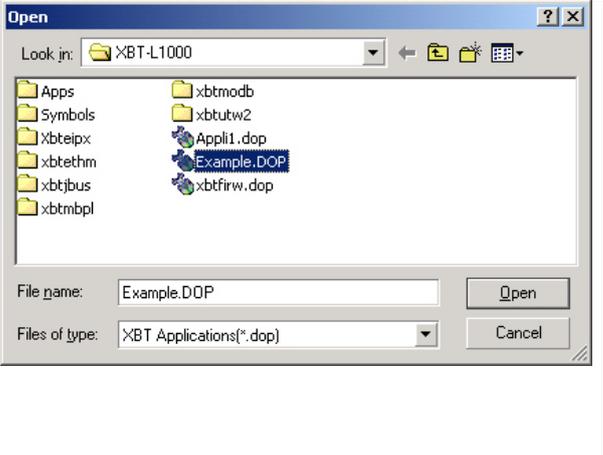


# HMI

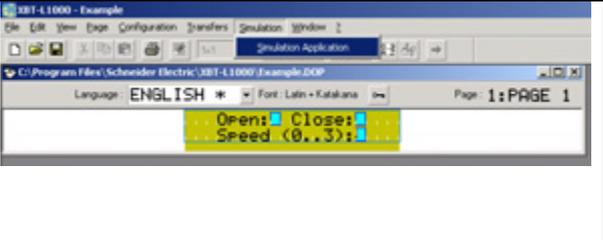
## Introduction

This application features a compact Magelis XBT-N200 HMI, which is interfaced with the PLC via the Modbus protocol. To configure the Magelis, XBT-L1000 software is used. The procedure is explained in the following pages.

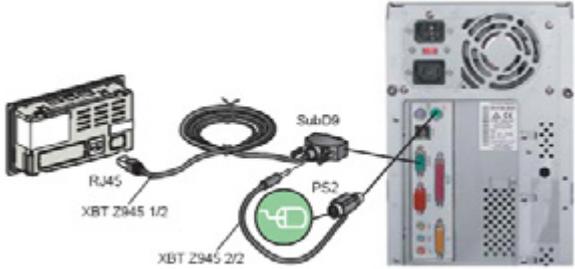
## Programming/ Configuration

<p>1</p>	<p>When the XBT-L1000 program starts up, the configuration screen for creating a new application appears. Click <b>Cancel</b> to exit this dialog.</p>	
<p>2</p>	<p>Select <b>File-&gt;Open</b> to go to the default path <i>C:\Program Files\Schneider Electric\XBT-L1000\Apps</i>.</p> <p>This is where the <b>Example.dop</b> application should be stored.</p> <p>One of the HMI configured screens will appear when terminal programming is invoked.</p>	

## Simulation

<p>1</p>	<p>The behaviour of the terminal can be simulated by selecting <b>Simulation</b> from the menu bar, followed by <b>Simulation Application</b>.</p>	
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## Transferring a program

<p><b>1</b></p>	<p>In order to transfer the program from the PC to the terminal, the two must be connected to one another via the XBT-Z945 communication cable. The add-on-cable (XBT-Z945 2/2) between the SUB-D9 connector and the mouse adaptor is needed because the cable delivers also the power supply for the terminal.</p>	
<p><b>2</b></p>	<p>The application is transferred to the Magelis terminal by selecting <b>Transfers</b> from the menu bar, followed by <b>Export</b>.</p> <p>Before the download begins, a message appears, which you should confirm with <b>OK</b>.</p> <p>Two other windows will follow; the first informs you of the progress of the download and the second tells you that the transfer has been completed successfully.</p> <p>Confirm the action by pressing the <b>OK</b> button.</p>	
<p><b>3</b></p>	<p>You can now disconnect the programming cable from the Magelis terminal and re-insert the communication cable used for the link to the Twido. If the PLC is active, a "Connection in progress" message will appear on the panel shortly after the connection is made. This message disappears once the bus connection has been established successfully and the application is then displayed.</p>	

# PLC

## Introduction

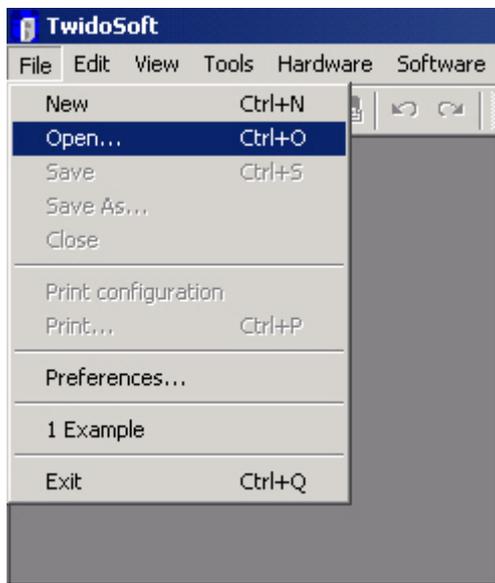
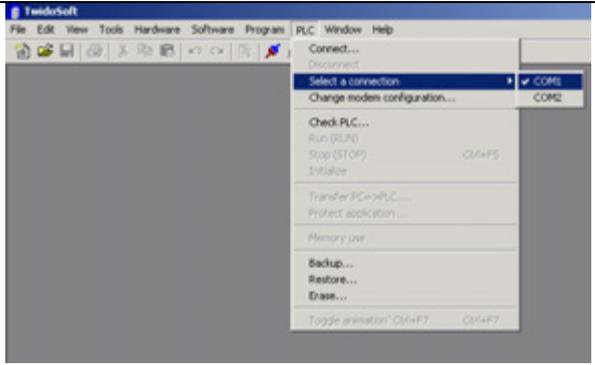
The PLC chapter describes how to initialize, parameterize and load the program to the PLC in order to implement the functional description described above. The PLC program is created with Twidosoft.

## Pre-conditions

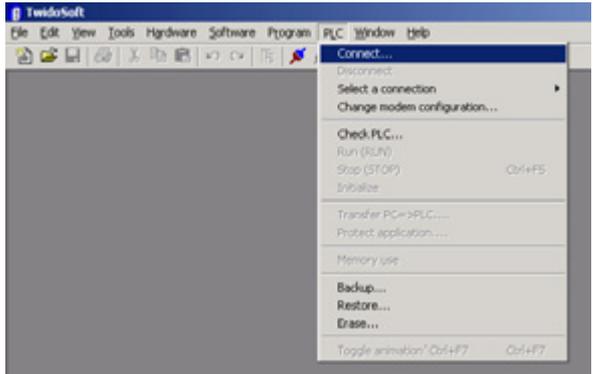
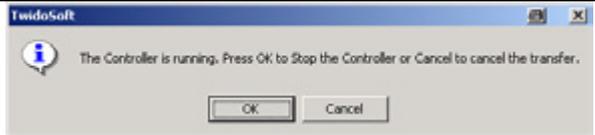
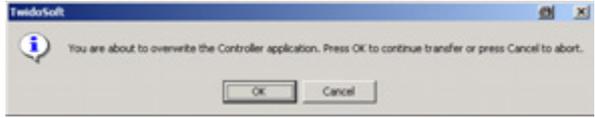
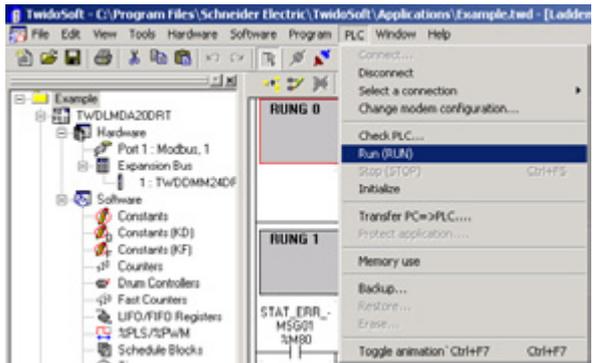
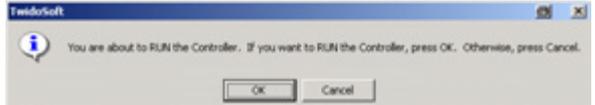
The following conditions must be met in order to carry out the steps described below:

- The Twidosoft programming tool is installed on your PC
- The "Example.twd" Twidosoft project is available in the default directory that has been set up (C:\Program Files\Schneider Electric\TwidoSoft\Applications)
- The Twido PLC is switched on and supplied with power
- The PLC and the PC are linked to one another via the PC <> Twido programming cable (TSXPCX1031).

## Setting up communication

<p>1</p> <p>Once the Twido programming software has been launched, start by calling up the "Example.twd" PLC program.</p> <p>To do this, select:</p> <p><b>File-&gt;Open</b></p> <p>The "Application" default directory in which the file should be located is displayed.</p>	 <p>The screenshot shows the TwidoSoft application window with the 'File' menu open. The 'Open...' option is highlighted in blue. Other visible options include 'New', 'Save', 'Close', 'Print configuration', 'Print...', 'Preferences...', '1 Example', and 'Exit'.</p>
<p>2</p> <p>Once the program has been loaded, communication with the PLC must be set up. Select the</p> <p><b>PLC-&gt;Select a connection</b></p> <p>menu items to reach the selection dialog for the port being used; in this case, COM1.</p>	 <p>The screenshot shows the TwidoSoft application window with the 'PLC' menu open. The 'Select a connection' option is highlighted in blue. A sub-menu is visible showing 'COM1' and 'COM2' as options, with 'COM1' selected.</p>

## Transferring and running a program

<p>1</p>	<p>In order to transfer the program, the PLC and the PC must remain connected to one another via the communication cable. Once this has been carried out, select</p> <p><b>PLC-&gt;Connect</b></p> <p>from the menu, in order to create an online connection to the PLC so that you can download the program.</p>	
<p>2</p>	<p>Before a program is downloaded to the PLC for the first time, Twidosoft informs you that the program and the PLC content are different. In this case, click on <b>PC-&gt; Controller</b> to transfer the program to the PLC.</p>	
<p>3</p>	<p>If an application is already on the controller and running, Twidosoft asks you if it may stop the PLC and overwrite the existing application. Press <b>OK</b> to stop the controller and download the application.</p>	
<p>4</p>	<p>Now click on <b>OK</b> to overwrite the existing application in the controller.</p>	
<p>5</p>	<p>When the transfer is completely finished the controller needs to be started.</p> <p>Select</p> <p><b>PLC-&gt;Run</b></p> <p>or click on the run icon in the toolbar.</p>	
<p>6</p>	<p>To confirm the run action on the controller please click the <b>OK</b> button.</p>	

# Data exchange

## Introduction

In this chapter, the individual points between which data is transferred via a bus system, (e.g., Modbus, Modbus Plus or TCP/IP) and that are not linked to digital or analog hardware interfaces, are listed.

This list defines:

- The devices concerned in each case
- The direction of transfer
- The symbolic name *and*
- The direct bus address on the device concerned.

## Reading and writing the data direction

Device 1 XBT-N200 (Modbus master)		Device 2 Twido (Modbus slave)	
Address	Designation	Address	Designation
%MW0:X0	Open	%MW0:X0	RMT_CMD_OPEN
%MW0:X1	Close	%MW0:X1	RMT_CMD_CLOSE
%MW1	Speed	%MW1	RMT_SPEED

## Data direction (device 1 reads from device 2)

Device 1 XBT-N200 (Modbus master)		Device 2 Twido (Modbus slave)	
Address	Designation	Address	Designation
%MW101=2	Safety not OK	%M80	ERR_STAT_MESS01
%MW101=3	Motor protection off	%M81	ERR_STAT_MESS02
%MW101=4	Variable speed drive error	%M82	ERR_STAT_MESS03
%MW101=5	Maintenance switch off	%M83	ERR_STAT_MESS04
%MW101=6	Limit switch error	%M84	ERR_STAT_MESS05
%MW101=7	Spare error	%M85	ERR_STAT_MESS06

# Devices

## Introduction

This chapter describes the steps required to initialise and configure the devices to attain the described system function.

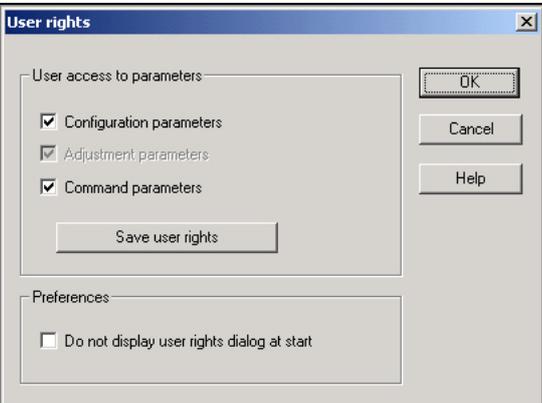
PowerSuite software is used to initialize and parameterize the devices.

## General

The ATV11 parameters can be entered via the front panel on the device itself. However, using PowerSuite allows you to:

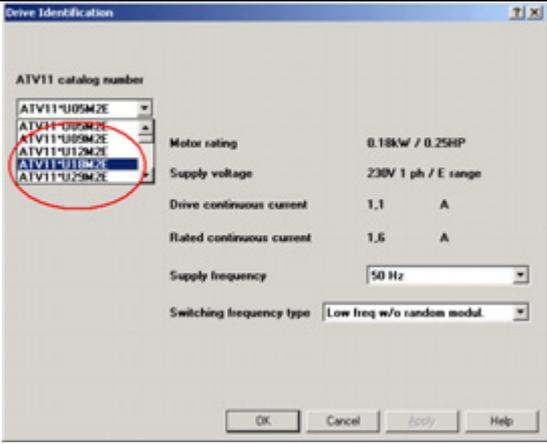
- save the data on your PC
- print out the documentation *and*
- optimize the parameters online.

## Configuration

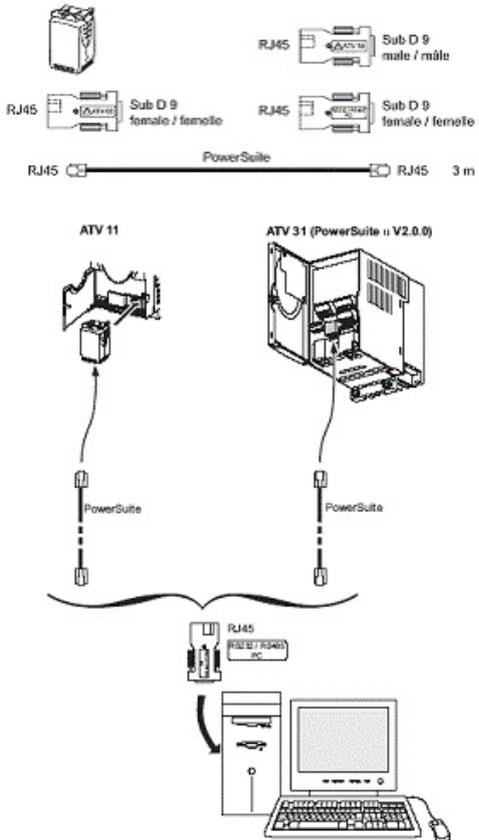
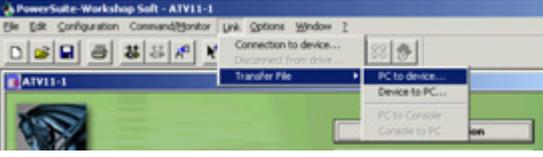
<p><b>1</b></p>	<p>The window opposite appears once the program has started up.</p> <p>Once you have read the warning message, advance to the next screen using the shortcut <b>Alt+F</b>.</p>	
<p><b>2</b></p>	<p>The next dialog allows you to define general user rights. You do not have to make any changes in this dialog.</p> <p>Proceed to the selection of the type of VSD by clicking <b>OK</b>.</p>	
<p><b>3</b></p>	<p>Select the device type in this window. In this example, we select ATV 11.</p>	

Continued on next page

**Configuration**  
Contd.

<p><b>4</b></p>	<p>The models available in the ATV11 series are displayed in the drop-down list on the left of the dialog (circled in red). Select the appropriate variable speed drive by clicking on its part number.</p> <p>The values assigned to the device are displayed on the right-hand side; only the frequency should be set here in accordance with the actual conditions. Next, select <b>Apply</b> and <b>OK</b> in order to transfer the configuration.</p>	
<p><b>5</b></p>	<p>Here you could make further settings; however, in this example we use the default values.</p>	
<p><b>6</b></p>	<p>Once this procedure has been completed, you can store the parameters on the PC. Use the diskette icon in the toolbar (or the corresponding menu item).</p>	

## Transferring parameters

<p><b>1</b></p>	<p>Check the connection between the PC and the Altivar.</p>	 <p>The diagram illustrates the physical connection for parameter transfer. At the top, it shows three types of RJ45 cables: a male-to-male cable, a female-to-female cable, and a male-to-female cable. Below these is a 3m PowerSuite cable. The middle section shows two Altivar units: an ATV 11 and an ATV 31 (PowerSuite v2.0.0). Each unit is connected to a PowerSuite cable. At the bottom, a PC is shown connected to the PowerSuite cables via an RJ45 network interface card.</p>
<p><b>2</b></p>	<p>You can now transfer the parameters to the ATV by selecting:</p> <p><b>Link-&gt;Transfer File</b></p> <p>and then</p> <p><b>PC to device.</b></p>	 <p>The screenshot shows the 'PowerSuite-Workshop Soft - ATV11-1' application window. The 'Link' menu is open, and the 'Transfer File' option is selected. A sub-menu is displayed with the following options: 'PC to device...', 'Device to PC...', 'PC to Console', and 'Console to PC'. The 'PC to device...' option is highlighted.</p>

## Appendix

### Detailed components list

#### Hardware components

Item	No.	Description	Part no.	Rev./ Vers.
1.1	1	Master switch	VCF02GE	V3.2
1.2	1	Emergency stop switch housing	XALK178G	
1.3	1	Preventa emergency stop relay, cat. 3	XPSAC3721	
1.4	2	Contactor, 9 A, 24 V DC operated, 3-pole, AC3, 1x NO + 1x NC	LC1D09BD	
1.5	1	2-button push button housing, empty	XALD02	
1.6	1	Selector switch, 3 positions, locking-type	XB5AD33	
1.7	1	Label holder 30x40 "forward-0-back"	ZBY2384	
1.8	1	Illuminated button red, flat	ZB5AW343	
1.9	1	Auxiliary switch module with red LED + 1 auxiliary switch (1x NO)	ZB5AW0B42	
1.10	1	Label holder 30x40 "stop"	ZBY2304	
1.11	1	3-button push button housing empty	XALD03	
1.12	1	Illuminated button blue, flat	ZB5AW363	
1.13	1	Auxiliary switch module with blue LED + 1 auxiliary switch (1x NO)	ZB5AW0B61	
1.14	1	Label holder 30x40 "emergency stop"	ZBY2330	
1.15	1	Indicator lamp white, flat	XB5AVB1	
1.16	1	Label holder 30x40 "on"	ZBY2311	
1.17	2	Position switch Universal (final positions)	XCKP2118P16	
1.18	2	Miniature circuit breaker C60N 1P 2A C	23726	
1.19	1	Miniature circuit breaker C60N 1P+N 1A C	24183	
1.20	1	Phaseo power supply 24 V DC/1.2 A	ABL7CEM24012	
1.21	1	Twido PLC modular device with 20 I/Os	TWDLMDA20DRT	
1.22	1	XBT-N Magelis compact operator terminal	XBTN-200	
1.23	1	Magelis/PLC connection cable	XBTZ9780	
1.24	1	Motor circuit breaker, 9 to 14 A, adjustable	GV2ME16	
1.25	1	Maintenance switch	VBF02GE	
1.26	1	Auxiliary contact block for maintenance switch	VZ7	
1.27	1	Altivar ATV11 variable speed drive	ATV11PU18M2E	

#### Software components

Item	No.	Description	Part no.	Rev./ Vers.
2.1	1	Twidosoft programming software incl. cable	TWDSPU1001V10M	3.2
2.2	1	Twidosoft programming software	TWDSPU1002V10M	3.2
2.3	1	Twido programming cable	TSXPCX1031	4.42
2.4	1	Magelis configuration software (complete version)	XBTL-1000	
2.5	1	Magelis programming cable	XBTZ945	1.5
2.6	1	PowerSuite parameterization software	VW3A8104	
2.7	1	Altivar set of connection accessories	VW3A8106	

## Component protection classes

Recommended installation locations/ Protection class	Components	In the field, on site	Front IP 65	Control Cabinet IP 20
		IP 55/IP 65		
	Master and maintenance switch	X		
	Emergency stop switch housing	X		
	Contactors, 9 A, 24 V DC operated, 3-pole AC 3, 1x NO + 1x NC			X
	2-button/3-button push button housing, empty	X		
	Selector switch, 3 positions		X	
	Illuminated buttons, all colors, flat		X	
	Auxiliary switch module with LED + 1 auxiliary switch (1x NO), all colors			X
	Label holder 30x40, all texts	X		
	Position switch Universal	X		
	Miniature circuit breaker, all types and ratings			X
	Motor protection switch, all types and ratings			X
	Phase power supply 24 V DC/1.2 A			X
	Preventa emergency stop relay			
	Twido PLC			X
	Magelis XBT-N200		X	

## Characteristics for the complete system

### General

The data listed below relates to the system and its features as described and specified in this document. The values represented are determined by, for example,:

- The number of I/O points
- The number of bus nodes (if present)
- The number of instructions/operations
- Memory usage

### Scan time and cycle time

A cycle time of 2 ms was not exceeded with the present configuration including the required application code. The memory usage of the Twido PLC specified and used in this document was 18% for system/configuration data and 2% for the logic component.

Trials with additional integrated extension modules (a digital I/O module with 16 inputs and 8 relay outputs as well as an analog module with 1 output and 2 inputs, which was used as the I/O level for 2 PID controllers) showed that the cycle time could increase to a maximum of 6 ms. When using these two additional extension modules, memory usage for system data rose to 22% but, as expected, memory usage of the logic component did not change.

# Component Features

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## Twido PLC



TWD LMDA 20DRT

The PLC used in this example comprises the power base of a Twido modular PLC and a programming set comprising software and a programming cable (TWDLMDA20DRT + TWDSPU1001V10M):

- 24 V DC
- 12 digital inputs
- 8 digital relay outputs
  - Can be extended up to a maximum of 7 modules (analog and communication modules are also possible)

3 programming languages:

- Ladder Language (LD)
- Instruction List (IL)
- Sequential Function Chart/Grafset (SFC)

Predefined functions:

- Drum controller
- High-speed counter up to 5 kHz
- Very high-speed counter up to 20 kHz
- Frequency meter 1 to 20 kHz
- Register areas for LIFO/FIFO execution
- PWM/PCS output
- External PLC start
- PID controller

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## Phaseo power supply unit ABL7CEM24012



- 100 to 240 V AC/24 V DC
  - 1.2 A secondary
  - Short-circuit-proof
-

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**Altivar VSD****ATV11 HU18M2E**

- 0.75 kW, 230 V AC, single-phase
- Integrated class B EMC filter
- Temperature range: -10 to + 50°C
- Speed range from 1 to 20 (0 to 200 Hz)
- Speed control with flow vector check
- Protection of drive and motor
- Compact design, side-by-side installation also possible on a top-hat rail

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**Circuit  
breaker****GV2ME16**

- 9 to 14 A
  - Thermal and magnetic (170 A) activation
  - Lockable
-

# Contact

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As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.