Controllers 750
General Product Information

Controllers 750:
Open – Flexible – Compact

WAGO’s controllers are ideal for a wide variety of applications ranging from industrial, process and building automation to measurement and data collection. Based on the fieldbus couplers for all standard fieldbus systems, they are programmable to IEC 61131-3. Direct connection to a wide range of I/O modules from the WAGO-I/O-SYSTEM 750 optimizes adaptation to the application.

Building Automation

Thanks to specific characteristics, controllers for the BACnet/IP and KNX IP bus systems are optimized for building automation. The diverse product range of stackable I/O modules allows integration of external systems such as lighting control (DALI), sun protection (SMI), wireless switches (EnOcean) and much more.

Marine Systems and Onshore/Offshore Industry

International approvals coupled with industry-specific features permit use in shipbuilding and other harsh sectors. Addressing requirements inherent in specific industries and operating environments has enabled use on marine diesels and in the EMC-sensitive area of a vessel’s bridge. Because the requirements are significantly greater for immunity to interference or emission of interference, along with superior mechanical performance in these sensitive areas, the WAGO-I/O-SYSTEM can readily meet the needs of other industries.

Telecontrol Technology

Standardized IEC 60870-5, IEC 61850 or IEC 61400-25 telecontrol protocols allow the 750 Series Controllers to be used in telecontrol applications.

Starter Kits

For a quick start, WAGO offers every customer the unique opportunity to purchase a starter kit that already contains all the components needed to begin programming and getting to know the controllers. For starter kits, see Section 4.5.

Link between Process Data and IT Application

The controllers ideally combine real-time requirements with IT functionality. They support Modbus/TCP and EtherNet/IP for use in industrial environments. HTTP, HTTPS, SNMP, FTP, BootP, DHCP, DNS and other protocols simplify integration into IT environments. Integrated Web pages and Web-based visualization provide IT applications with real-time process data. Furthermore, the 750 Series Controllers incorporate library functions for email, SOAP, ASP, IP configuration, ETHERNET sockets and file system.

Worldwide Approvals

International approvals for building and industrial automation, as well as the process and marine industries, guarantee worldwide use – even under harsh operating conditions. These recognitions include: ATEX, BR-Ex, IECEx, UL508, UL ANSI/ISA, AEx and numerous marine certifications.

Modular and Expandable

With the WAGO-I/O-SYSTEM 750, the 750 Series Controllers can be expanded to almost any input/output interface. A modular, DIN-rail-mount design permits easy installation, expansion and modification of the I/O node without tools.

The straightforward design prevents installation errors. In addition, proven CAGE CLAMP® technology offers fast, vibration-proof and maintenance-free connections that are independent of operator skill. Depending on the I/O module’s granularity, field levels can be directly wired using 1-, 2-, 3- or 4-wire technology.

Maximum Reliability and Ruggedness

The WAGO-I/O-SYSTEM is engineered and tested for use in the most demanding environments (e.g., temperature cycling, shock/vibration loading and ESD) according to the highest standards. Spring pressure connection technology guarantees continuous operation. Integrated QA measures in the production process and 100% function testing ensure consistent quality.

Advantages:

- Controllers for all prominent fieldbus systems
- Industry-specific features
- Programmable via CODESYS per IEC 61131-3
- Expandable with the comprehensive WAGO-I/O-SYSTEM 750 product range
- Extensive IT integration possibilities
- Tested and approved worldwide
- Maintenance-free
Controllers 750
Versions

Extended Temperature Range
Industrial automation technology is typically operated in temperatures ranging from 0°C to 55°C. However, there are applications that require an extended temperature range. Select controllers are available in an extended temperature range of −20°C to +60°C.

For extreme applications, where even this extended temperature range is not sufficient, the WAGO-I/O-SYSTEM 750 XTR is available.

Interfaces and Types

Housing design (A)
- Including supply module to power downstream I/O modules (a)
- W x H x D (mm) 50.5 x 71.1 x 100

Housing design Eco (B)
- W x H x D (mm) 49.5 x 71.9 x 96.8

Housing design (C)
- Including supply module to power downstream I/O modules (a)
- W x H x D (mm) 61.5 x 71.9 x 100

Housing design (D)
- Including supply module to power downstream I/O modules (a)
- SD card slot for external storage media (e)
- W x H x D (mm) 61.5 x 71.9 x 100

Item Number Key
Explanation of the components of an item number key

<table>
<thead>
<tr>
<th>Item No.: 750-8xx</th>
<th>INTERBUS, DeviceNet, MODBUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x, 1x: 16-bit CPU</td>
<td>BACnet, PROFIBUS, CANopen</td>
</tr>
<tr>
<td>2x, 3x:</td>
<td>ETHERNET</td>
</tr>
<tr>
<td>4x:</td>
<td>ETHERNET Eco</td>
</tr>
<tr>
<td>5x, 6x: 32 bits</td>
<td>ETHERNET, telecontrol tech.,</td>
</tr>
<tr>
<td>7x, 8x: 32-bit multitasking</td>
<td></td>
</tr>
</tbody>
</table>

.../025−000: Extended temperature range of −20 ... +60°C
Controllers 750
Installation Instructions

Power Supply

The internal electronics are powered by the controller. The field-side power supply is electrically isolated via the supply module on the controller or a separate power supply module. The division enables a separate supply for sensors and actuators. Snapping the I/O modules together automatically routes the supply voltages (system power supply 5 VDC via the data contacts and field supply via the optional power jumper contacts). Supply modules with diagnostics enable additional monitoring of the power supply. This ensures a flexible, user-specific supply design for a station.

The current supply to the electronics is limited by a maximum value. This value is dependent on the controller used. If the sum of the internal current demand of all the I/O modules should exceed this value, an additional system supply module is necessary. Even in this case, power supply to the field-side supply of 10 A may not be exceeded. However, different power supply modules allow a new power supply, formation of potential groups and the implementation of emergency stops.

Interference-Free in Safety-Related Applications

To easily and safely perform cost-effective, centralized deactivation of complete actuator groups, the actuator’s power supply can be switched off using a safety switching device. This can either be performed for each individual actuator or by turning off the power supply to a group of control outputs.

In the event of failure, ensure that no interference from other current or power circuits occurs – even when the control voltage is switched off – so the defined safety function properties (logic and time response) remain unchanged.

Notice:

WAGO’s interference-free I/O modules are not a component of the safety function and do not replace the safety switching device! When using the components in safety functions, the corresponding notes must be observed in the relevant manual.

Notes

Additional steps must be implemented based on where the I/O system is installed:

- Specific power and field-side power supply filters (750-624 or 750-626) are required for marine and onshore/offshore applications.
- A specific supply module (750-606) is required to operate intrinsically safe Ex i modules.

Some modules are designed to provide interference-free safety functionality. These modules comply with safety requirements up to Category 4 of DIN EN ISO 13849-1:2007. Safety category and performance level depend solely on the safety components and their wiring.

Notice:

Additionally, both a supply module and a field-side power supply filter are recommended when operating intrinsically safe Ex i modules for marine and onshore/offshore applications. As part of operating safety-related I/O modules, PELV/SELV power supply units must be used for 24 VDC supply of electronics and field. In addition, specific power and field-side power supply filters must be provided (750-626).

Please refer to the manual for details about the power supply’s design.

Example: 2-channel, double-pole power supply disconnection
### Controllers 750
### Standards and Rated Conditions

#### General Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage (system)</td>
<td>24 VDC (−25 … +30 %)*</td>
</tr>
<tr>
<td>Isolation</td>
<td>500 V (system/supply)</td>
</tr>
<tr>
<td>Surrounding air temperature (operation)</td>
<td>0 … +55 °C</td>
</tr>
<tr>
<td>Surrounding air temperature (operation) for versions with an extended temperature range</td>
<td>−20 … +60 °C</td>
</tr>
<tr>
<td>Surrounding air temperature (storage)</td>
<td>−40 … +85 °C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>95 % (non condensing)</td>
</tr>
<tr>
<td>Relative humidity for versions with an extended temperature range</td>
<td>Max. 95 %, short-term condensation per Class 3K6 / IEC EN 60721-3-3 and E DIN 40046-721-3, taking a temperature range of −20 to +60 °C into consideration (except wind-driven precipitation, water and ice formation)</td>
</tr>
<tr>
<td>Operating altitude</td>
<td>0 … 2000 m</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>2 per IEC 61131-2</td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>0.5g (4g for all marine-certified controllers) per IEC 60068-2-6</td>
</tr>
<tr>
<td>Shock resistance</td>
<td>15g per IEC 60068-2-27</td>
</tr>
<tr>
<td>EMC immunity to interference</td>
<td>Per EN 61000-6-2</td>
</tr>
<tr>
<td>EMC emission of interference</td>
<td>Per EN 61000-6-3, EN 61000-6-4</td>
</tr>
<tr>
<td>Protection type</td>
<td>IP20</td>
</tr>
<tr>
<td>Mounting type</td>
<td>DIN-35 rail mounting</td>
</tr>
<tr>
<td>Housing material</td>
<td>Polycarbonate; polyamid 6.6</td>
</tr>
<tr>
<td>Exposure to pollutants</td>
<td>Per IEC 60068-2-42 and IEC 60068-2-43</td>
</tr>
<tr>
<td>Permissible SO₂ contaminant concentration at a relative humidity &lt; 75 %</td>
<td>25 ppm</td>
</tr>
<tr>
<td>Permissible H₂S contaminant concentration at a relative humidity &lt; 75 %</td>
<td>10 ppm</td>
</tr>
<tr>
<td>Connection technology</td>
<td>CAGE CLAMP®</td>
</tr>
<tr>
<td>Conductor cross sections; strip length for standard controllers: Eco Controllers:</td>
<td>0.08 … 2.5 mm²/28 … 14 AWG; 8 … 9 mm / 0.31 … 0.35 inch</td>
</tr>
<tr>
<td>Current carrying capacity (power jumper contacts)</td>
<td>10 A</td>
</tr>
</tbody>
</table>

#### Approvals

Overview of the approvals in the article comparison in Section 11, Technical Appendix, or online at www.wago.com