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# КОНТРОЛЛЕРЫ

## Технические характеристики на Excel WEB II



# Excel Web II Control System

PRODUCT  
DATA

HONEYWELL EXCEL 5000 OPEN SYSTEM



## GENERAL

Excel Web II is Honeywell's Ethernet-based, freely-programmable Building Automation controller offering a combination of BACnet IP, BACnet MS/TP, and LONWORKS® communication.

It demonstrates Honeywell's full commitment to reducing total installed cost and total building lifecycle cost for building investors and building operators.

Excel Web II incorporates the two major open standards in today's building industry: BACnet® and LONWORKS®.

As a native BACnet® Building Controller (B-BC), Excel Web II integrates into any 3<sup>rd</sup>-party BACnet® system with low and predictable effort.

Furthermore, Excel Web II (in combination with the IF-LON) is a full LONWORKS® controller. This gives the benefit of making use of the LONWORKS® product portfolios of Honeywell and 3<sup>rd</sup>-party manufacturers.

Excel Web II can host a huge variety of building management applications, be it traditional heating, ventilation, and air conditioning (HVAC) applications, energy management functions, including optimum start/stop, night purge, and maximum load demand, supervisory functions for lighting, sun-blind, heat and energy metering and many other applications.

By virtue of its "peer-to-peer" concept, Excel Web II is not dependent upon the availability of superordinate centrals or application network controllers.

Excel Web II seamlessly integrates into Honeywell's EBI and SymmetrE® front-ends.

## 3RD-PARTY SOFTWARE LICENSES

This product contains software provided by third parties. See also Excel Web II Controller – Third-Party Software Licenses

## FEATURES

- **Reduced the total installed cost:**  
Existing standard Ethernet/LAN infrastructure is used for communication between Excel Web II controllers, 3<sup>rd</sup>-party BACnet® controllers, and BACnet® front-ends. Costs are further reduced by the flexible and optional use of onboard I/Os and Panel Bus I/Os.
- **Universal operation:**  
Via Internet browser, Excel Web II can be operated from any place, from any PC connected to the (Excel Web II) network! An integrated web-server allows local and remote operation by standard browsers.

### NETWORK SECURITY

When operating Excel Web II in IP networks, either private (e.g., VPN) networks must be used or protection against the open Internet (e.g., with external firewalls) must be ensured. See "Network Security" on pg. 6.

- **Reduced cost for service, operation and maintenance:**  
Maintenance or upgrade of Operator Interface Software is superfluous because it resides in Excel Web II, itself (single-source principle).
- **Vendor independence:**  
Communication is based on the following international standards: BACnet/IP (ISO 16484-5); BACnet MSTP (ISO 16484-5); LONWORKS (ISO 14908); Modbus RTU Master; M-M-Bus (EN 1434-3)
- **Trending:** 100 datapoints can be trended.
- **Fast application control:**  
Four selectable control loop priorities (multitasking), selectable control loop cycle times, and event-driven switching tables allow for tailored and highly effective applications control.
- **Reliable control performance:**  
Embedded LINUX ensures reliable, independent, and secure operation, especially for systems with Internet access.
- **Embedded e-mail/SMS alarming:**  
Configurable e-mail alarming options allow alarms to be sent (via network or Internet-DSL connection) to e-mail accounts and thus also to mobile phones.
- **Honeywell CARE tool:**  
Allows re-use of existing applications and application macros, enables highly effective application generation, and supports online application debugging.
- **Flexible mounting options:** Mounting onto wall or onto panel back wall, into panel door, onto panel rail, and into sub-panels (fuse boxes).



# BUS AND PORT CONNECTIONS

## ⚠ WARNING

### Risk of electric shock or equipment damage!

- ▶ Do not touch any live parts in the cabinet!
- ▶ Disconnect the power supply before making connections to or removing connections from terminals of the Excel Web II Controller or Panel Bus I/O modules.
- ▶ Do not reconnect the power supply until you have completed installation.
- ▶ It is prohibited to power the Excel Web II Controller with the same transformer used to power other controllers or devices (e.g., the PW M-Bus Adapter).
- ▶ Observe the rules regarding electrostatic discharge.

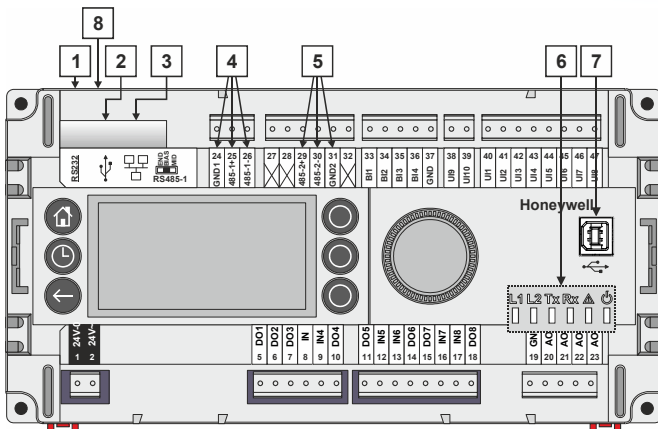


Fig. 2. Models with built-in HMI (top view)

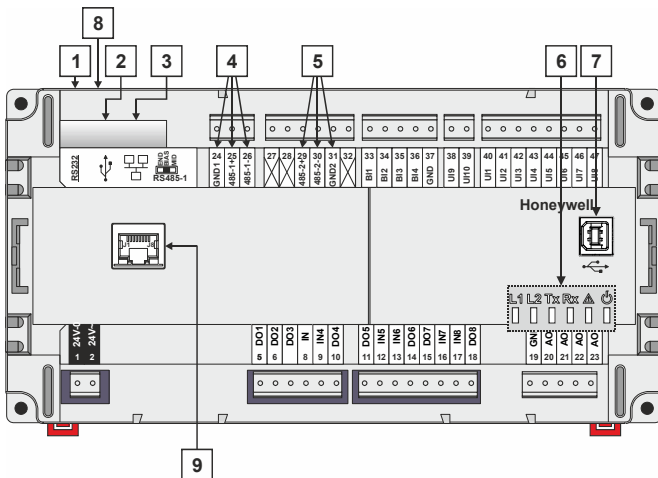


Fig. 3. Models without built-in HMI (top view)

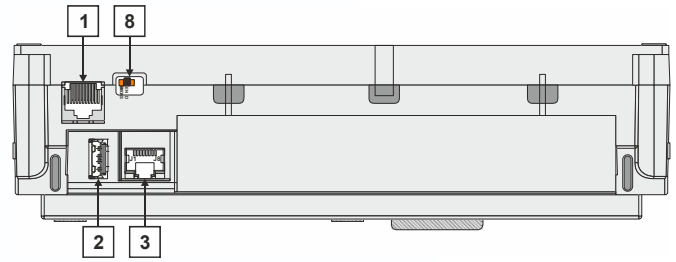


Fig. 4. All models (side view)

### Legend

- 1 RS232 / RJ45 socket (for M-Bus connection and factory debugging)
- 2 USB 2.0 Host Interface (for connection of the IF-LON Interface); max. 500 mA, high speed
- 3 Ethernet / RJ45 socket (for BACnet IP communication); 10/100 Mbit/s; 1 "activity" LED
- 4 RS485-1 (isolated; for BACnet MSTP, Panel Bus, or Modbus RTU Master communication\*)
- 5 RS485-2 (non-isolated; for BACnet MSTP, Panel Bus, or Modbus RTU Master communication\*)
- 6 LEDs
- 7 USB 2.0 Device Interface (for connection to CARE / XW-Online and web browsers, CL-Touch, or other 3<sup>rd</sup>-party touch panels)
- 8 Three-position slide switch (for setting bias and termination resistance of RS485-1)
- 9 RJ45 socket for connection of XL2000HMI-A External HMI – XL2000B3A, XL2014B3B, XL2026B3A, only

\* Modbus R U Master communication is possible on either one of the two RS485 interfaces, but not on both of them concurrently.

## ⚠ WARNING

### Risk of electric shock or equipment damage!

- ▶ It is prohibited to connect any of the RJ45 sockets of the Excel Web II Controller to a so-called PoE-enabled device ("Power over Ethernet").

### M-Bus Connecti

The Excel Web II Controller can function as an M-Bus Master controller. It uses standard PW3/PW20/PW60 converters to connect to the M-Bus devices.

### Wiring Topology

Max. bus length is 350 meters.

M-Bus devices are connected to the bus cable in parallel.

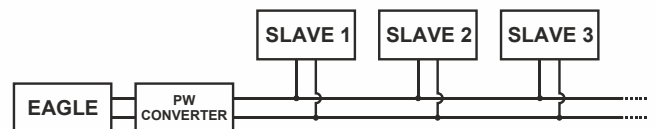


Fig. 5. Allowed M-Bus wiring topology

**Cables**

See section "M-Bus Connection" in Excel Web II Controller – Installation & Commissioning Instructions (EN1B-0555GE51). Use shielded, twisted pair cable J-Y-(St)-Y 2 x 2 x 0,8.

**Shielding**

Shielding is especially recommended when the M-Bus cable is installed in areas with expected or actual electromagnetic noise. Avoiding such areas is to be preferred.

Use shielded, twisted pair cable J-Y-(St)-Y 2 x 2 x 0,8 and connect the shield to a noise-free earth ground – only once per M-Bus connection.

**M-Bus Repeaters**

The M-Bus can be extended to 1,000 meters, depending on the baud rate, and provided that the electrical limitations are observed. For details refer to the Excel Web II - Installation & Commissioning Instructions (EN1B-0555GE51).

For bus length extension, M-Bus repeaters can be used, but have not been tested by Honeywell. Hence, it is the responsibility of the installing / commissioning personnel to ensure proper functioning.

**M-Bus Master Specifications**

**Physical Layer**

RS232 to PW3/PW20/PW60

Physical connector: RS232 / RJ45 socket (see Fig. 4)

Cable order number: XW586

Communication rates: 300, 2,400, and 9,600 Baud are supported, individually per M-Bus

slave.

Max. no. of devices: 60 (excluding the Excel Web II Controller)

Cable and wiring specifications: See Excel Web II – Installation Instructions (EN1B-0555GE51).

**Address Range**

M-Bus slaves can have a primary address between 1 and 250.

**Measurement Cycle**

Individually per M-Bus slave, the measurement cycle can be configured from 1 to 604,800 sec (i.e., 1 second to 7 days).

**M-Bus Communication Failure Indicati**

As soon as the Excel Web II runs an application which includes M-Bus points, it will try to communicate with the M-Bus devices.

If an M-Bus slave does not respond to a message from the Excel Web II Controller, the Excel Web II Controller will repeat the message several times. If the M-Bus slave still does not respond, the Excel Web II will stall the messaging to this M-Bus slave for 60 seconds. After these 60 seconds, the Excel Web II Controller will again address the M-Bus slave. This cycle will be repeated endlessly as long as there is no answer.

If the Excel Web II does not receive any response for ≥ 5 minutes, the mapped datapoint will go to the communication failure condition.

**M-Bus "Unreliable\_Other" Indicati**

Each M-Bus device has a status with 8 bits. The following bits are used to set all mapped datapoints from this M-Bus device to the "Unreliable\_Other" condition.

**Table 1. Bits used to set all mapped datapoints**

Bit	Meaning	Result
0	app.-specific	ignored
1	app.-specific	ignored
2	low power	reliability flag set to Unreliable_Other
3	perm. error	reliability flag set to Unreliable_Other
4	temp. error	reliability flag set to Unreliable_Other
5	manuf.-spec.	ignored
6	manuf.-spec.	ignored
7	manuf.-spec.	ignored

Additionally, each data record has a function field which can indicate the data as "Value with Error." In this case, the corresponding datapoint (not all datapoints) is set to the "Unreliable\_Other" condition.

**NOTE:** The "Unreliable\_Other" condition will result in the

corresponding datapoint value being set to the last valid value. This means that the value from the M-Bus device is not shown in the datapoint; rather, an old value is shown.

**Open Source Library for M-Bus**

The libmbus library is a component of RaditexSCADA that is published as open source, and it is free for anyone to use as long as due credit is given to RaditexSCADA and Raditex Control in derivative work based on the libmbus library.

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**Modbus Connection**

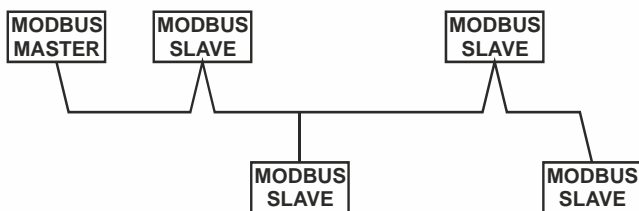
The Excel Web II Controller can function as a Modbus Master.

In general, the RS485 wiring rules must be followed.

**Wiring Topology**

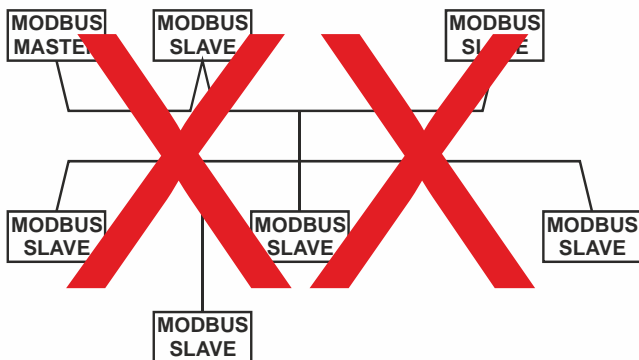
Only daisy-chain wiring topology is allowed.

Short derivation ("stub") cables (with a max. length of 20 m) from the "trunk cable" to the Modbus devices are allowed.



**Fig. 6. Allowed Modbus wiring topology**

Other wiring topologies (e.g., star wiring, or mixed star wiring and daisy chain wiring) are prohibited; this is to avoid communication problems of the physical layer.



**Fig. 7. Prohibited Modbus wiring topology (example)**

**Cables**

See section "EIA 485 Cable Specifications" in Excel Web II Controller – Installation & Commissioning Instructions (EN1B-0555GE51).

Use shielded, twisted pair cable J-Y-(St)-Y 2 x 2 x 0,8.

You must use three-wire Modbus +

- One wire for D0 = Modbus –
- One wire for the signal common

When using one pair for D1 and D0 and one wire of another pair for the signal common, CAT5 cable may also be used. For connection details, see Excel Web II Controller – Installation & Commissioning Instructions (EN1B-0555GE51).

**Shielding**

Shielding is especially recommended when the Modbus cable is installed in areas with expected or actual electromagnetic noise. Avoiding such areas is to be preferred.

Use shielded, twisted pair cable J-Y-(St)-Y 2 x 2 x 0,8 and connect the shield to a noise-free earth ground – only once per Modbus connection.

**RS485 Repeaters**

RS485 repeaters are possible, but have not been tested by Honeywell. Hence, it is the responsibility of the installing / commissioning personnel to ensure proper functioning.

**NOTE:** Each Modbus segment requires its own line polarization and line termination.

**Modbus Master Specifications**

**Modbus Compliance**

As per the Modbus standard, the Excel Web II Controller is a conditionally compliant "regular" Modbus device.

The Excel Web II Controller differs from an unconditionally compliant "regular" Modbus device in that it does not support communication rates of 1.2, 2.4, and 4.8 kBaud (because these communication rates are not market-relevant).

**Physical Layer**

2-wire serial line RS485 (EIA-485) (with additional common)

Communication rates: 9.6, 19.2, 38.4, 57.6, 76.8, and 115.2 kBaud supported.

Max. number of devices: 32

Cable and wiring specifications: See Excel Web II Controller – Installation & Commissioning Instructions (EN1B-0555GE51).

**Communication Mode**

Modbus Master.

**Transmission Mode**

RTU (Remote Terminal Unit)

**Address Range**

Modbus slaves can have an address between 1 and 247. Discrete Inputs, Coils, Input Registers and Holding Registers can have an address between 1 and 9999.

**Function Codes**

The following function codes are supported:

**Table 2. Supported function codes**

function code (hex)	function
02	Read Discrete Inputs
01	Read Coils
05	Write Single Coil
04	Read Input Register
03	Read Holding Register
06	Write Single Register
10	Write Multiple Registers

**Exception Codes**

Upon reception of any of the following exception codes, datapoints of the Excel Web II application will show "no response."

**Table 3. Supported exception codes**

exception code (hex)	function
01	illega function
02	illegal data address
03	illegal data value
04	slave device failure
05	ackn ledge
06	slave device busy

**Register Sizes**

The following Register sizes are supported:

- 16-bit Registers for Discrete inputs, Coils, Input Registers, and Holding Registers
- 32-bit Registers for Input Registers and Holding Registers.

**Data Types**

The following data types are supported:

- Discrete Inputs:
  - BOO
- Coils:
  - BOO
- Input Registers:
  - BOO
  - IN 16, UINT16
  - IN 32, UINT32
  - FLOA
- Holding Registers:
  - BOO
  - IN 16, UINT16
  - IN 32, UINT32
  - FLOA
  - 32-bit floating points can be transmitted as two consecutive 16-bit registers.

**Byte and Word Order Transmission**

- Most Significant Byte First (default)
- Lower Significant Byte First
- Most Significant Word first (default)
- Lower Significant Word first

**Bit Unpack**

The Excel Web II allows direct reading of single bits of an Input Register or of a Holding Register into a data-point. In typical situations in which several different status bits of a Modbus slave’s Register need to be read and linked into the Excel Web II application, this allows for very efficient application engineering.

**Number of Stop Bits**

One and two stop bits are supported.

**Error Checking Mode**

Parity checking: No parity, even parity, odd parity.  
 Frame checking: Cyclical redundancy checking (CRC).

**Life Check of Modbus Slaves**

The Excel Web II checks the Modbus every 15 seconds for lost Modbus slaves.

**Message Response Timeout**

20 msec ... 5000 msec.

**Modbus Slaves Measurement Cycle**

The measurement cycle of all addressable Modbus slaves depends upon the number of connected Modbus slaves and the total number of mapped datapoints. The minimum measurement cycle is 500 msec. This cycle time is based upon the read cycle of the datapoint manager in the firmware.

**Modbus Communication Failure Indication**

As soon as the Excel Web II runs an application which includes Modbus points, it will try to communicate with the Modbus devices based on the Modbus to datapoint mapping of the application.

If a Modbus slave does not respond to a message from the Excel Web II controller, the Excel Web II controller will repeat the message two times. If the Modbus slave does not respond to the two message repeats either, the Excel Web II will stall the messaging to this Modbus slave for 15 seconds. After these 15 seconds, the Excel Web II controller will again address the Modbus slave with the same two repeats, if necessary. This cycle will be repeated endlessly.



**WARNING**

**NETWORK SECURITY**

Honeywell hereby expressly states that the Excel Web II controller is not inherently protected against cyber attacks from the Internet and that it is therefore intended solely for use in private, protected networks.

Unprotected Internet connections can expose the Excel Web II controller to cyber attacks from third parties who can then damage it and connected facility components or cause them to malfunction, or who can misuse it for illegal purposes for which the operator may then be held liable.

When directly connected to the Internet, the Excel Web II controller automatically becomes a potential target for cyber attacks. Corresponding protective measures are therefore essential if safe and reliable operation is to be ensured.

If it is not necessary for the Excel Web II controller to be accessible from the Internet, it should be isolated from the Internet via a suitable firewall.

If it is necessary for the Excel Web II controller to be accessible from the Internet (e.g., in order to perform remote maintenance), the use of a coded VPN connection is indispensable. Suitable VPN routers are available from numerous third-party manufacturers in a wide variety of designs, for operation at 230 V or 24 V.

For details, see also Excel Web II Networking Whitepaper (Product Literature No.: EN2B-0394GE51).

## CONTROLLER SPECIFICATIONS

**Table 4. Controller specifications**

<b>Ambient temperature</b>	0 ... 40 °C (wall-mounting) 0 ... 50 °C (cabinet/door mounting)
<b>Storage temperature</b>	-20 ... +70 °C
<b>Humidity</b>	5 ... 95% r.h. non-condensing
<b>Dimensions</b>	See Fig. 9 and Fig. 10.
<b>Degree of protection</b>	IP20 (mounted on walls, with two accessory MVC-80-AC1 covers) IP30 (mounted in cabinet doors, with accessory MVC-80-AC2)
<b>Fire class</b>	V0
<b>Shock protection</b>	Class II
<b>Pollution degree</b>	2
<b>Installation</b>	Class 3
<b>Rated impulse voltage</b>	300 V for SELV, 2500 V for relay outputs
<b>Automatic action</b>	Type 1.C
<b>Software class</b>	Class A
<b>Ball-pressure test temperature</b>	housing parts >75°C terminals >125°C

## Electrical Data

**Table 5. Electrical data**

<b>Power supply</b>	19 ... 29 VAC, 50/60 Hz, or 20 ... 30 VDC
<b>Power consumption</b>	typically dc: 5 W; max. 6 W typically ac: 9 VA; max. 11 VA
<b>Current consumption</b>	typically dc: 210 mA; max. 240 mA typically ac: 370 mA; max. 410 mA

Excel Web II and 24 Vac field devices can obtain their power from the same transformer.

## Mechanical Data

**Housing Dimensions (L x B x T):** 215.5 x 110 x 61 mm

**Housing Material:** ABS blend; flame retardant V0

**Weight:** 0.6 kg (without packaging)

**Protection Class:** IP 20



## MODELS

- XL2000B0A (without onboard I/Os, and 600 I/Os; XL2000HMI-A External HMI cannot be connected)
- XL2000B2A (with HMI, without onboard I/Os, and 600 I/Os; XL2000HMI-A External HMI cannot be connected)
- XL2000B3A (without onboard I/Os, and 600 I/Os; with RJ45 socket for connection of XL2000HMI-A External HMI)
- XL2014B0A (with 14 onboard I/Os and 52 I/Os in total\*; XL2000HMI-A External HMI cannot be connected)
- XL2014B0B (with 14 onboard I/Os and 52 I/Os in total\*; XL2000HMI-A External HMI cannot be connected)
- XL2014B2B (with HMI, 14 onboard I/Os, and 52 I/Os in total\*; XL2000HMI-A External HMI cannot be connected)
- XL2014B3B (with 14 onboard I/Os and 52 I/Os in total\*; with RJ45 socket for connection of XL2000HMI-A External HMI)
- XL2026B0A (with 26 onboard I/Os and 600 I/Os in total\*; XL2000HMI-A External HMI cannot be connected)
- XL2026B2A (with HMI, 26 onboard I/Os, and 600 I/Os in total\*; XL2000HMI-A External HMI cannot be connected)
- XL2026B3A (with 26 onboard I/Os and 600 I/Os in total\*; with RJ45 socket for connection of XL2000HMI-A External HMI)

\*I/Os in total include onboard I/Os, I/Os via Panel Bus, and I/Os via LonWORKS Bus.

**Table 7. Overview of models**

feature	description	max. cable length	order no.						
			XL2014B2B	XL2014B3B	XL2026B2A	XL2026B3A	XL2000B2A	XL2000B3A	
<b>UI</b>	NTC20kΩ / 0...10V / slow BI	400 m	4	4	8	8	-	-	
	NTC20kΩ / 0...10V fix pull-up / slow BI	400 m	-	-	2	2	-	-	
<b>BI</b>	open = 24 V / closed 2.0 mA / totalizer 15 Hz	400 m	4	4	4	4	-	-	
<b>AO</b>	0..11 V (max. 1 mA)	400 m	2	2	4	4	-	-	
<b>BO</b>	Relay N.O. contact	400 m	3	3	4	4	-	-	
	Relay N.O. contact (high in-rush)	400 m	1	1	1	1	-	-	
	Relay N.O. contact with one common	400 m	-	-	3	3	-	-	
<b>bus interfaces</b>	RS485-1, isolated, BACnet MS/TP, Panel Bus, or Modbus RTU Master communication	*1000	1	1	1	1	1	1	
	RS485-2, non-isolated, BACnet MS/TP, Panel Bus, or Modbus RTU Master communication	*1000	1	1	1	1	1	1	
	Ethernet / RJ45 socket	e-mail communication, browser access	100 m	1	1	1	1	1	1
		BACnet IP communication	100 m	1	1	1	1	1	1
	USB 2.0 Device Interface (as Network Interface)	3 m	1	1	1	1	1	1	
	USB 2.0 Host Interface (max. 500 mA)	3 m	1	1	1	1	1	1	
	RS232 M-Bus communication via PW3 / PW20 / PW60 converters	*350	1	1	1	1	1	1	
<b>user interface</b>	HMI with graphic LCD	--	X	-	X	-	X	-	
	Fast Access buttons	--	6	-	6	-	6	-	
	push and turn button	--	1	-	1	-	1	-	
<b>HMI</b>	power LED (green)	--	1	1	1	1	1	1	
	status LED (red, controllable by firmware)	--	1	1	1	1	1	1	
	applications-specific LED L1 (yellow)	--	1	1	1	1	1	1	
	USB LED L2 (yellow)	--	1	1	1	1	1	1	
	bus status LEDs (for isolated RS485-1 interface)	--	2	2	2	2	2	2	
<b>HMI socket</b>	RJ45 socket for connection of XL2000HMI-A External HMI	5 m	--	X	--	X	--	X	

\* Depending upon baud rate. For max. cable lengths, see Excel Web II – Installation & Commissioning Instructions (Product Literature No.: EN1B-0555GE51).

# DIMENSIONS

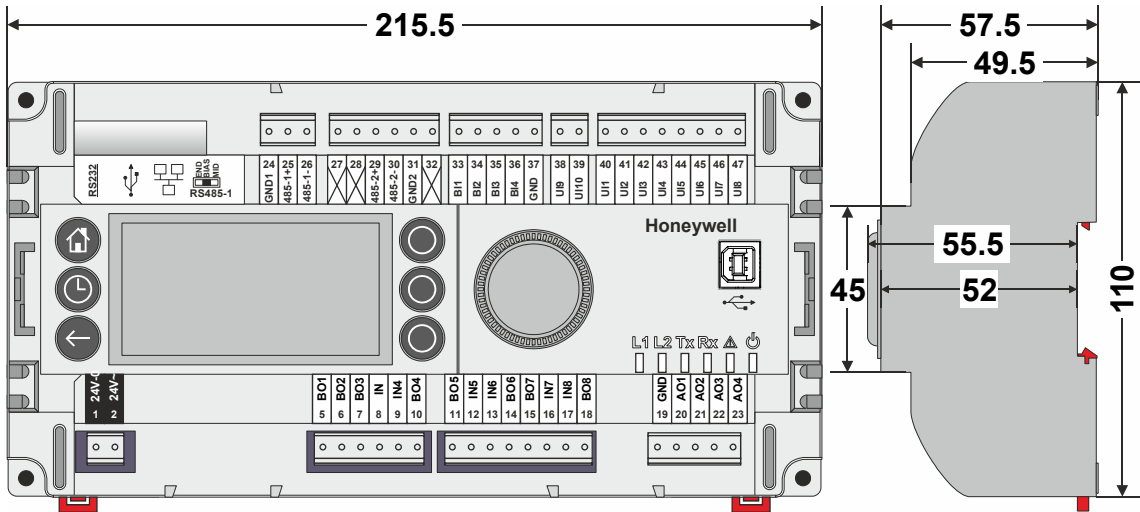


Fig. 9. Excel Web II Controller with built-in HMI, dimensions (in mm)

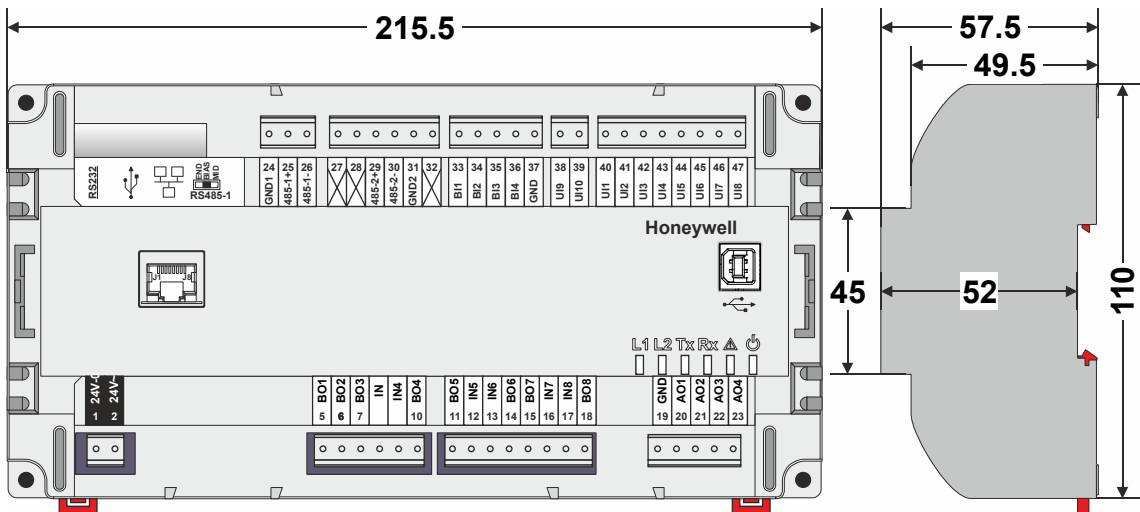


Fig. 10. Excel Web II Controller with RJ45 socket for connection of XL2000HMI-A External HMI, dimensions (in mm)

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