Weidmüller

UR20 I/O System Overview

Overview

The Weidmüller u-remote UR20 is a modular IP20 remote I/O system that provides powerful features and industry leading ease of use. The space saving design mounts on DIN rail using a single fieldbus coupler, plus up to 16 I/O modules. Installation ease of use includes removable color coded push in connectors and IO bus to provide DC power to all modules. The webserver interface allows for quick setup without the need to download software. Available protocols include PROFINET, EtherCAT, Modbus TCP, and EtherNet/IP, each with dual RJ-45 ports (10/100 Mbps) supporting daisy-chain topology without an external switch.

The I/O range includes digital I/O (8 or 16 channels), relay outputs, analog inputs, temperature and load cell. A 4-port IO-Link master can also be added to pair with any field bus protocol. Power-feed modules segment current paths as needed, and an empty-slot module reserves space for future expansion.

Features:

- 10A current paths
- Integrated web server in every coupler (accessed via Ethernet)
- Specialty modules include temperature modules (RTD, Thermocouple), strain gauge (24 bit, 4/6-wire), and IO-Link Master
- Slim 11.5mm module width for very high channel/connection density, saving cabinet space
- Powers up to three (3) 4-port IO-Link masters. Power feed modules can be added for input or output bus power
- Temperature range 0–50 °C (when horizontally mounted)

Weidmüller UR20 System Components

Part Number	Price	Description
UR20-FBC-EIP-ECO	$309.00	Bus coupler, 24 VDC, (2) Ethernet (RJ-45) port(s), EtherNet/IP, 100 Mbps.
UR20-FBC-MOD-TCP-ECO	$263.00	Bus coupler, 24 VDC, (2) Ethernet (RJ-45) port(s), Modbus TCP, 100 Mbps.
UR20-FBC-EC-ECO	$263.00	Bus coupler, 24 VDC, (2) Ethernet (RJ-45) port(s), EtherCAT, 100 Mbps.
UR20-FBC-PN-ECO	$315.00	Bus coupler, 24 VDC, (2) Ethernet (RJ-45) port(s), PROFINET, 100 Mbps.
UR20-8DI-P-3W	$88.00	Discrete input module, 8-point, 24 VDC, sinking, 1 common(s), 8 point(s) per common.
UR20-8DI-N-3W	$96.00	Discrete input module, 8-point, 24 VDC, sourcing, 1 common(s), 8 point(s) per common.
UR20-16DI-P	$117.00	Discrete input module, 16-point, 24 VDC, sinking, 1 common(s), 16 point(s) per common.
UR20-16DI-N	$125.00	Discrete input module, 16-point, 24 VDC, sourcing, 1 common(s), 16 point(s) per common.
UR20-8DO-N	$100.00	Discrete output module, 8-point, 24 VDC, sinking, 1 common(s), 8 point(s) per common, 0.5A/point, 4A/module.
UR20-8DO-P	$92.00	Discrete output module, 8-point, 24 VDC, sourcing, 1 common(s), 8 point(s) per common, 0.5A/point, 4A/module.
UR20-16DO-N	$150.00	Discrete output module, 16-point, 24 VDC, sinking, 1 common(s), 16 point(s) per common, 0.5A/point, 8A/module.
UR20-16DO-P	$141.00	Discrete output module, 16-point, 24 VDC, sourcing, 1 common(s), 16 point(s) per common, 0.5A/point, 8A/module.
UR20-8DIO-P-3W-DIAG	$137.00	Discrete combo module, Input: up to (8) points, 24 VDC, sinking/sourcing, Output: up to (8) points, 24 VDC, sourcing, 0.5A/point, 4A/common.
UR20-4RO-CO-255	$145.00	Relay output module, 4-point, 277 VDC/277 VAC, (4) Form C, 4 common(s), 1 point(s) per common, 6A/point, 24A/module.
UR20-2AI-SG-24-DIAG	$468.00	Load cell input module, 2-channel, voltage, 24-bit resolution, input voltage signal range(s) of 0.5–30 mV/VDC. For use with 5 VDC 4- or 6-wire load cells.
UR20-2AI-UI-16	$220.00	Analog input module, 2-channel, current/voltage, 16-bit.
UR20-4AI-UI-16	$306.00	Analog input module, 4-channel, current/voltage, 16-bit.
UR20-4AI-RTD-DIAG	$386.00	Temperature input module, RTD, 4-channel, 16-bit resolution, input RTD type(s): Pt100, Pt200, Pt500, Pt1000, Cu10, Ni100, Ni120, Ni200, Ni500 and Ni1000.
UR20-4AI-TC-DIAG	$386.00	Temperature input module, thermocouple, 4-channel, 16-bit resolution, input thermocouple type(s): J, K, T, N, E, R, S, B, L, U, C.
UR20-2AO-UI-16	$242.00	Analog output module, 2-channel, current/voltage, 16-bit.
UR20-4AO-UI-16	$379.00	Analog output module, 4-channel, current/voltage, 16-bit.
UR20-4COM-IO-LINK	$301.00	IO-Link master, (4) IO-Link capable I/O points, up to (4) discrete I/O points, IO-Link v1.1.2 (compatible with v1.1.3), 2A, 0.5A/port, plastic housing, IP20.
UR20-ES	$34.00	Empty slot module.
UR20-PF-I	$57.00	Power feed module, 24 VDC. For use with Weidmüller UR20 series I/O systems. Introduces power into I/O terminals input power bus for power flow to the right.
UR20-PF-O	$57.00	Power feed module, 24 VDC. For use with Weidmüller UR20 series I/O systems. Introduces power into I/O terminals output power bus for power flow to the right.
UR20-EBK-ACC	$13.00	Weidmuller UR20 series screw-down end bracket, replacement. For use with 35mm DIN rail.

Configuration

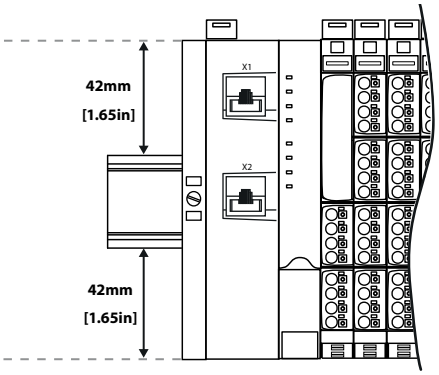
The UR20 station is designed to be installed on a DIN rail (35 × 7.5mm or 35 × 15mm) made from steel or galvanized steel according to EN 60715.

- A maximum of sixteen (16) active modules may be installed in a station with an ECO coupler.
- Connected modules have to be considered as active modules when planning the remote station.
- A maximum of three (3) UR20-4COM-IO-LINK modules may be installed in a UR20 station.

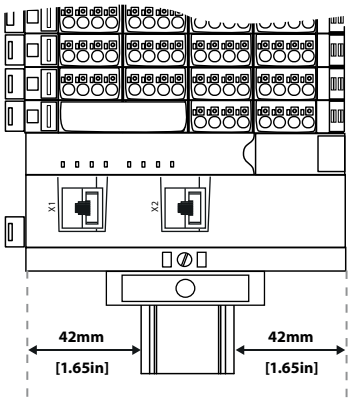
A UR20 station may only be installed in this sequence (starting from the left/ bottom):

1. End bracket
2. Bus coupler
3. Modules
4. End plate and end bracket

DIN Rail Horizontal Mount



DIN Rail Vertical Mount

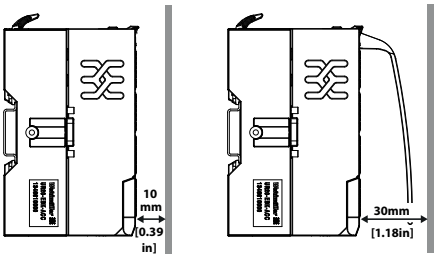


Arrangement of passive modules

Passive modules consist of the power-feed module and empty slot module. In a UR20 station, a maximum of three passive modules may be installed directly behind each other, then an active module must follow. Any number of passive modules can be placed behind the last active module.

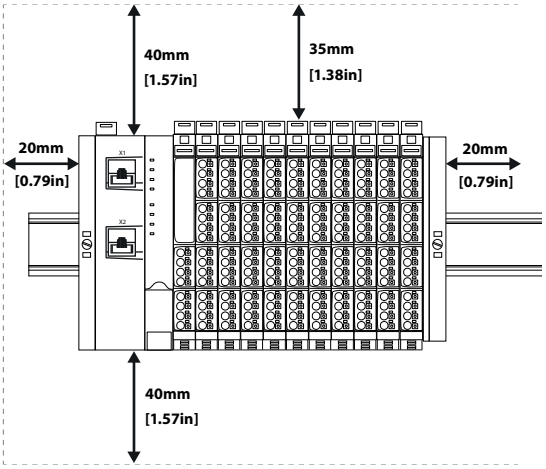
Mounting Clearances

The UR20 must be installed while observing the following minimum distances (see below).

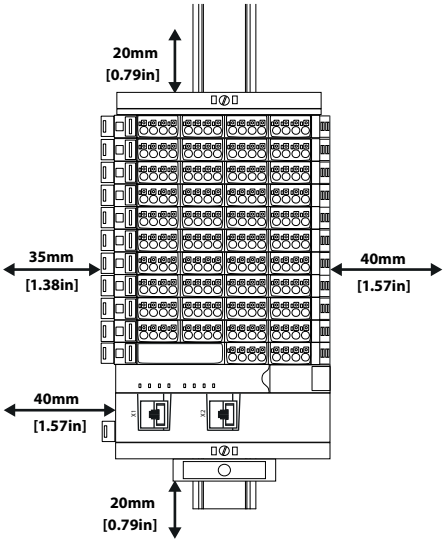


Door Clearance

Horizontal Mounting Clearance



Vertical Mounting Clearance



Weidmüller UR20 Fieldbus Couplers

UR20-FBC-MOD-TCP-ECO

The UR20-FBC-MOD-TCP-ECO fieldbus coupler is a Modbus TCP device according to IEC 61158. As a head module of the UR20 system bus the coupler supports up to 16 active UR20 modules and up to 8 open multi-client connections.

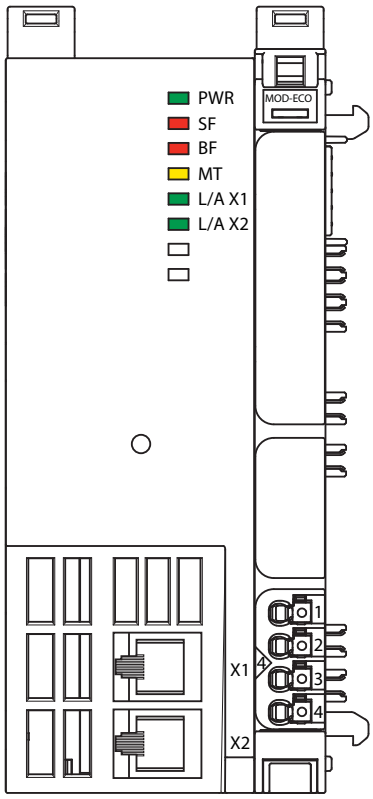
- The two Ethernet ports form an unmanaged 2-port switch that supports a line network structure.
- The coupler can be accessed with a system-independent web server application via Ethernet. Thus all information, such as diagnostics, status values and parameters, can be read and all connected modules can be simulated or forced.
- The station's main power supply is integrated in the coupler.
- Power is supplied via a 4-pole connector.

Technical Specifications - UR20-FBC-MOD-TCP-ECO		
Price		$263.00
Drawing		PDF
System data		
Connection		2 x RJ-45
Configuration interface		Via RJ-45
Fieldbus protocol		Modbus TCP
Open multi-client connections (max)		8
Process data (max)		1 kB
Parameter data (max)		1 kB
Diagnostic data (max)		1 kB
Number of modules (max active)		16
Fieldbus interface		Full/Half duplex, Auto MIDI/X, autonegotiation
Transfer rate (max)		10/100 Mbps
Supply		
Supply voltage for system, inputs and outputs		24 VDC +20% / -15%
Max. feed-in current	***horizontal installation***	10A (0–50 °C [32–122 °F])
	vertical installation	10A (0–45 °C [32–113 °F]) 8A (0–50 °C [32–122 °F])
Current consumption from system current path I_{SYS}		80 mA
Temperature data		
Operation (horizontal installation)		0–50 °C [32–122 °F]
Operation (vertical installation)		0–45 °C [32–113 °F]
Storage, transport		-40 to +85 °C [- 40 to +185 °F]
Connection data		
Type of connection		"PUSH IN"
Conductor cross-section		Single-wired, fine-wired: 0.14–1.5mm^2 [AWG26–16]
Weight		
Weight (operational status)		242g

Environmental Specifications - UR20-FBC-MOD-TCP-ECO		
Degree of protection (IEC 60529)		IP20
Flammability rating UL 94		V-0
Material of power contacts and data contacts		Ni-Au, 3µm
Humidity	***Operation***	95 %, non-condensing as per IEC 61131-2
	Storage, transport	95 %, non-condensing as per IEC 61131-2
Air pressure	***Operation***	≥ 795 hPa [11.5 psi] (altitude ≤ 2000 m) as per IEC 61131-2
	Storage, transport	≥ 700 hPa [10.2 psi] (altitude ≤ 3000 m) as per IEC 61131-2
Vibration resistance		5 Hz ≤ f ≤ 8.4 Hz: 3.5mm amplitude as per IEC 60068-2-6 8.4 Hz ≤ f ≤ 150 Hz: 1*g* acceleration as per IEC 60068-2-6
Shock resistance		15g over 11 ms, half sinewave, as per IEC 60068-2-27
Potential isolation	***Test voltage***	Max. 28.8 V within one channel 500 VDC field/system (as per EN 60079-15:2017)
	Pollution severity level	2 (as per DIN EN 60664-1:2008)
	Overvoltage category	II (as per DIN EN 50178)
Approvals		CE, RoHS, UKCA, cULus E141197

See the UR20 user manual for the process-data mapping.

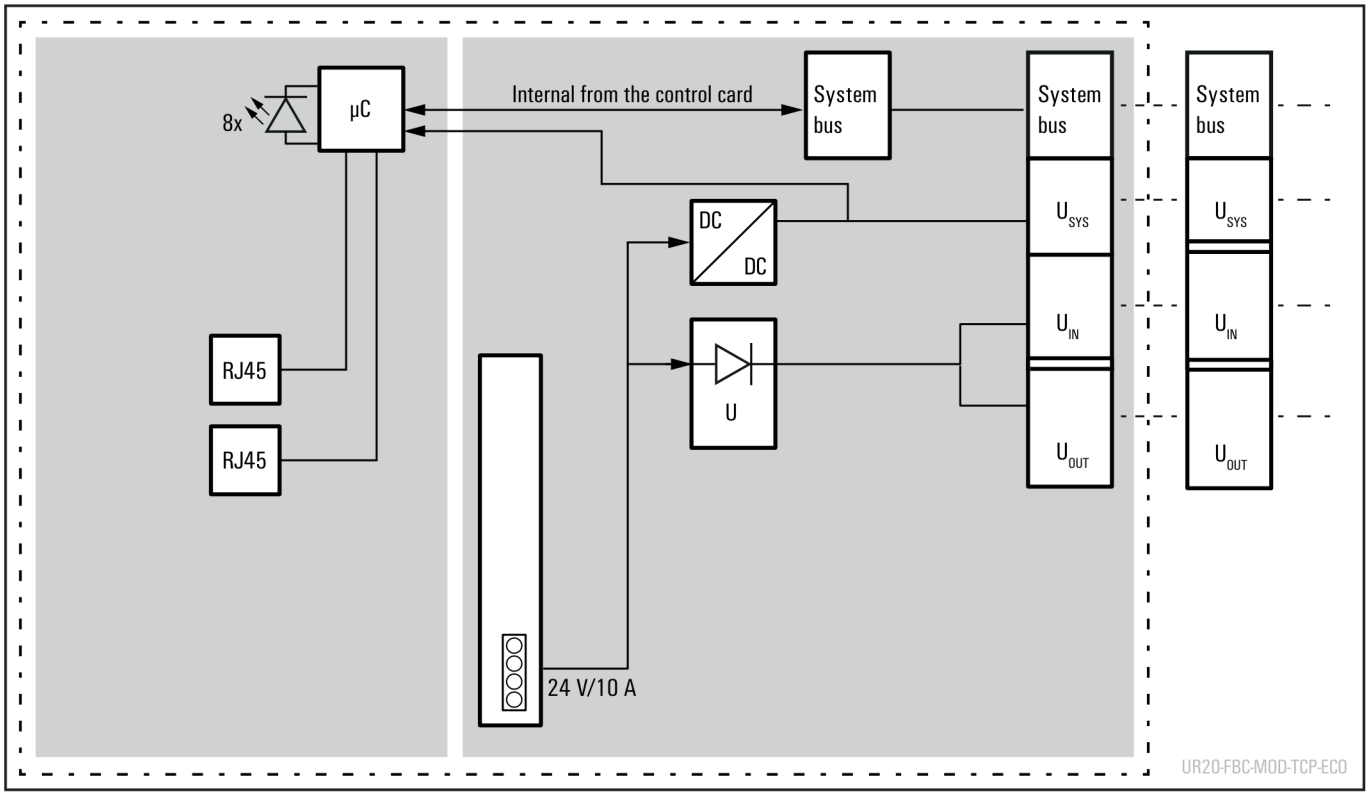
Status Indicators for UR20-FBC-MOD-TCP-ECO



LED	Description	Color	Meaning
PWR	Power LED	Green	Supply voltage connected
		Red	Coupler not yet started completely or hardware error
SF	Collective error	Red	Configuration error, or error in the coupler, or error in a module, or there is a new diagnostic message
		Red flashing	Station in Force mode
BF	Bus failure	Red	No connection to the fieldbus or watchdog time expired
		Red flashing	Configuration error, no connection to the control unit, or error in the parameter set, or firmware update is running, or IP address conflict
MT	Maintenance	Yellow	Error on the system bus or the fieldbus
L/A X1	Connection/Activity	Green / Yellow[1]	Connection established between port X1 of the coupler and another field device
		Green flashing / Yellow flashing[1]	Data being exchanged on port X1
L/A X2	Connection/Activity	Green / Yellow[1]	Connection established between port X2 of the coupler and another field device
		Green flashing / Yellow flashing[1]	Data being exchanged on port X2

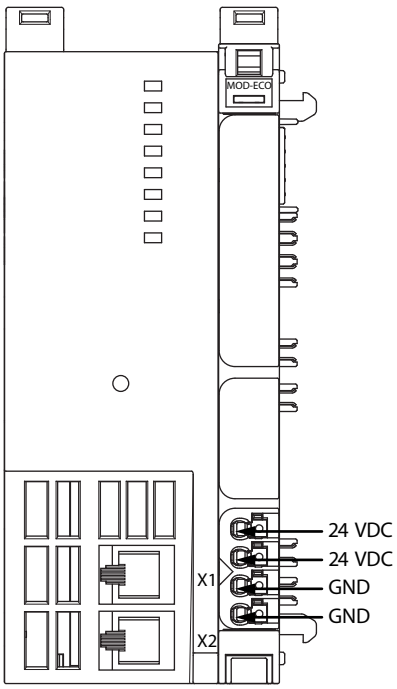
1 - Green: Transfer rate 100 Mbps, Yellow: Transfer rate 10 Mbps

Block Diagram



Block diagram - UR20-FBC-MOD-TCP-ECO

Terminal Connections



***CAUTION:** Risk of material damage! When power supply current demand will be greater than 8A (>8A), all four contacts must be connected with 1.5mm² wiring.*

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UR20 Module Specifications

Environmental Specifications - UR20 I/O Modules		
Degree of protection (IEC 60529)		IP20
Flammability rating UL 94		V-0
Material of power contacts and data contacts		Ni-Au, 3µm
Temperature	***Operation***	-20 + 60 °C [-4 to +140 °F]
	Storage, transport	-40 to +85 °C [-40 to +185 °F]
Humidity	***Operation***	95%, non-condensing as per IEC 61131-2
	Storage, transport	95%, non-condensing as per IEC 61131-2
Air pressure	***Operation***	≥ 795 hPa [11.5 psi] (altitude ≤ 2000 m) as per IEC 61131-2
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