UE PRODUCT OVERVIEW

SAFETY, ALARM & EMERGENCY SHUTDOWN

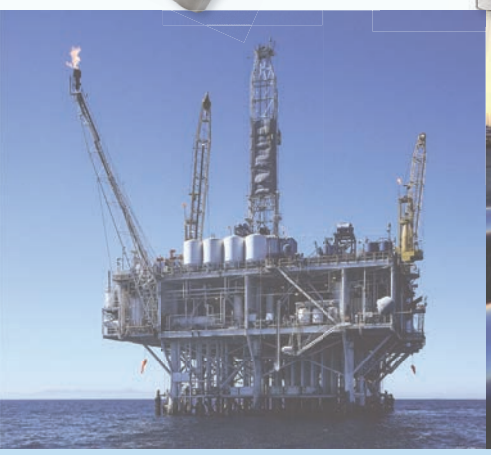
WirelessHART® Gas Detector for Toxic & Combustible Gases

Electronic and Electromechanical Switches for Vacuum, Pressure, Differential Pressure, and Temperature

SIL Certified Switches for Safety Instrumented Systems (SIS)

Industrial Temperature Sensors

Custom OEM Solutions



UNITED ELECTRIC CONTROLS

United Electric Controls is ISO 9001:2015 certified

RoHS compliant

Over 90 Years of Customer-Driven, Reliable Solutions

First WirelessHART Toxic or Combustible Gas Detector

UE partnered with key customers to develop the Vanguard™ wireless, fixed-point gas detector to address the challenge of expanding gas detection coverage in locations that lacked power and signal wire infrastructure. Using WirelessHART, the Vanguard can be quickly installed in O&G extraction and production facilities, terminals, and storage facilities without the need for wiring or trenching.

First SIL 2 Integrated Smart Switch with Transmitter, Safety Relay, Trip Alarm and Logic Solver

As Safety Instrumented Systems (SIS) grew beyond the process plant into field applications, operators often lacked the infrastructure to support a safety system. UE developed the SIL-certified One Series Safety transmitter to allow direct control of a final element without the need for a SIL certified SCADA, PLC, or RTU, while also supplying the data needed from a 4-20 mA transmitter.

Only Loop Powered Electronic Switch with Plugged Port Detection

UE designed its electronic switches with integrated functions like trip delay, trip filter and plugged port detection. The plugged port detection feature addresses a common instrumentation challenge: when pressure switches become plugged due to process debris or build up, or when a block and bleed valve is accidently left closed after maintenance. This could leave operators blind to the actual process conditions. The patented diagnostics within the One Series detect a plugged port quickly and alert the operator to clear the port. This results in increased operational uptime and accurate process and safety monitoring.

Contents

UE Products have been used with the following applications and equipment

Wellhead monitoring	Instrument panels	Heat tracing
Gas flow monitoring	Fire suppression systems	Stack emissions
CO2 injection skids	Chemical feed pumps	Pump protection
Leak detection	Separator system control	Manifold monitoring
Hydraulic monitoring	Line heater control	Pipeline integrity
BOP accumulators	Tank level	Sterilizers
Seal pots	Purge cabinets	Bag house monitoring
Fence line monitoring	Digesters	Safety systems
Isolation rings	Engine stop/start	Boiler tube monitoring
Tubing and casing	Effluent monitoring	Bearing temperature monitoring
Rupture disk monitoring	Lube oil monitoring	Oven temperature control

Vanguard WirelessHART Gas Detector

TCD50 (Base transmitter for Gr C & D / IIB zones)
TCD60 (Base transmitter for Gr A,B,C & D / IIC zones)

WirelessHART HART REGISTERED

TCD50

TCD60

Advantages:

- Toxic or combustible gas monitoring
- Deploy where power is limited
- Eliminates “blind spots” in your wired system
- Improves safety in difficult-to-reach areas
- Reduces installed cost by >50%
- Installs in <1 hour
- Simplifies project engineering
- 5-year battery life - field replaceable

Visit UE’s Product Selector: www.ueonline.com

UE UNITED ELECTRIC CONTROLS

One Series SIL 2 Safety Transmitter with Safety Relay Output

Explosion-proof electronic vacuum, pressure, differential pressure and temperature smart switch and transmitter

DUAL SEAL CERTIFIED

Advantages:

- NAMUR NE 43 4-20 mA output. Embedded sensor, logic solver, high-capacity solid-state safety relay, and display reduces complexity
- Simple installation where infrastructure is limited, and in difficult-to-reach applications
- SIL logic solver functions as trip alarm without additional equipment
- Pressure or temperature safety function
- SIL 2 certified, SIL 3 capable
- Ranges to 6,000 psi (414 bar), 200 psid (14 bar), 1,000 °F (538 °C)

One Series SIL 2 Electronic Switches, and Transmitter+Switch

Explosion-proof electronic vacuum, pressure, differential pressure and temperature smart switch

DUAL SEAL CERTIFIED

HART COMMUNICATION PROTOCOL

Advantages:

- Replace electromechanical switches for cost-effective upgrades using existing wires
- Self diagnostics enables predictive maintenance strategies
- Display and keypad provide easy, fast and secure field programming of set point and deadband
- NAMUR standard and HART enabled smart switch and transmitter for process monitoring, alarm, and emergency shutdown
- Provides precise on-off control in Window Mode configuration
- SIL 2 certified, SIL 3 capable
- Ranges to 6,000 psi (414 bar), 200 psid (14 bar), 1,000 °F (538 °C)

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12 Series

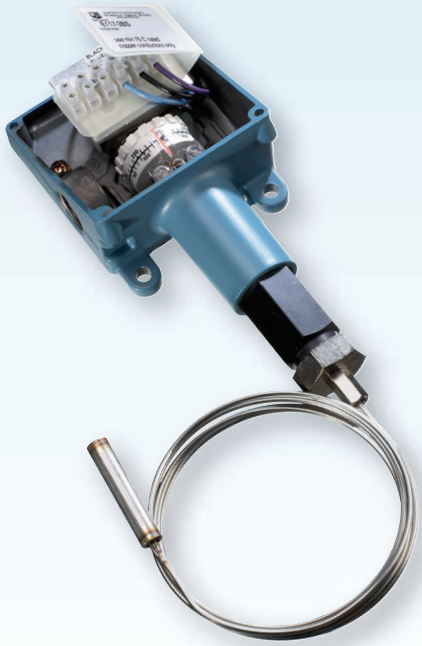
Explosion-proff, dual seal, 316 stainless steel, vibration-resistant pressure, vacuum, differential pressure and temperature electromechanical switch

Advantages:

- Dual seal compliant to ANSI 12.27.01 standards and NEC 501.17
- Corrosion-resistant 316 stainless steel construction
- Snap-acting Belleville spring for vibration resistance and set point stability
- Convenient field setting and adjustment
- Hermetically sealed SPDT or DPDT switches
- SIL 2 certified, SIL 3 capable
- Ranges to 12,500 psi (862 bar), 150 psid (10 bar d), 650 °F (343 °C)

117 Series

Explosion-proof Class I, Div. 2, Zone 2 rated pressure, vacuum, differential pressure and temperature electromechanical switches



Advantages:

- Hazardous location approvals for Class I, Div. 2, Zone 2
- Hermetically-sealed snap switch, SPDT or DPDT outputs
- Welded stainless steel diaphragm or bellows sensors
- Epoxy-coated type 4X enclosure with captive cover screws
- Terminal block wiring
- Ranges to 3,500 psi (241 bar), 500 psid (35 bar d), 640 °F (338 °C)

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120 Series

Explosion-proof pressure, vacuum, differential pressure and temperature electromechanical switch with worldwide agency certifications

Advantages:

- Provides primary or secondary (diverse, redundant technology) for safety, alarm and emergency shutdown functions
- Single SPDT or DPDT or dual SPDT outputs
- Choice of internal or external adjustment
- Wide selection of sensor materials and ranges
- Wide adjustable deadband models
- Easy to wire via dual electrical conduit openings and terminal block
- Heat tracing models
- SIL 2 certified, SIL 3 capable
- Ranges to 6,000 psi (414 bar), 500 psid (35 bar d), 650°F (343°C)

820 Series

Explosion-proof indicating temperature electromechanical switch for industrial heating and cooling applications

Advantages:

- Indicating temperature control with remote stainless steel bulb and capillary
- Corrosion-resistant epoxy coated aluminum enclosure with Lexan® cover
- Single or dual SPDT switch outputs
- Division 1, explosion-proof models for hazardous locations
- Set point repeatability and indication accuracy ± 1%
- Ranges to 650°F (343°C)

Excela ™

2-wire electronic switch for upgrading legacy instrumentation systems (alarm & shutdown) to improve maintenance, operational and cost efficiency

Advantages:

- Two wire design allows for easy host system integration and lower setup costs
- Easy local programming and integrated functions (e.g., trip filter, passcode) for better control
- LCD display and LED indicator lights for visual status of operational performance
- Rugged, electronic relay design and device diagnostics that improves device reliability
- 316L stainless steel wetted materials
- Ranges to 6,000 psi (414 bar); 200 psid (14 bar d), 1,000°F (538 °C)

100 Series

Single switch, weather-tight, pressure, vacuum, differential pressure, and temperature electromechanical switch

Advantages:

- Wide variety of pressure sensors for media compatibility
- Epoxy-coated enclosure, designed to meet enclosure type 4X requirements
- Pump switch models with wide adjustable deadband
- Tamper-resistant set point “lock”
- Heat tracing models
- SIL 2 certified, SIL 3 capable
- Ranges to 5,000 psi (345 bar), 500 psid (35 bar d), 650 °F (343 °C)

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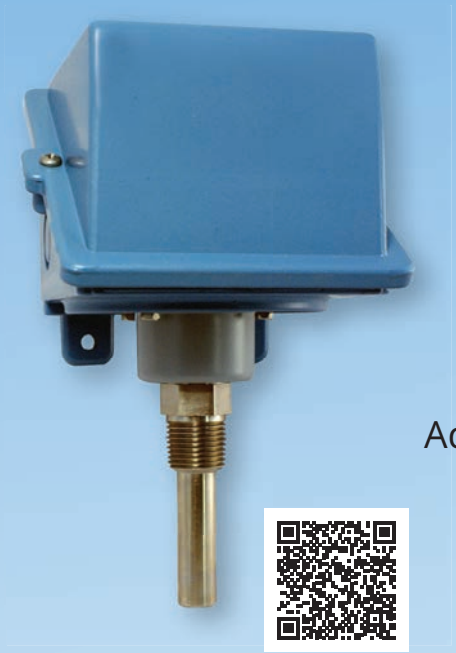


400 Series

FM approved multi-switch, weather-tight pressure, vacuum, differential pressure, and temperature electromechanical switch

Advantages:

- One, two or three switch outputs may be separated up to 100% of range
- Epoxy-coated enclosure, designed to meet enclosure type 4X requirements
- Choice of reference dial or multi-turn hex screw for set point adjustment
- Wide selection of ranges including low pressure models with narrow deadbands
- Ranges to 6,000 psi (414 bar), 200 psid (14 bar d), 650 °F (340 °C)

J6 & J21K Series

Industrial pressure and differential pressure switch with metal bellows sensor

J6

Advantages:

- Reliable, metal bellows sensors
- Welded 316 stainless steel models
- Epoxy-coated enclosure, meeting enclosure 4X requirements
- Single switch (SPDT) output
- J6 (straight pressure) ranges to 6,000 psi (414 bar)
- J21K (differential pressure) ranges to 90 psid (6 bar d)

J21K

54 Series

Economical pressure, vacuum and temperature electromechanical switch for OEMs

Advantages:

- Multiple models and options provide OEM design versatility
- Reference scale or multiple-turn hex adjustment versions
- NEMA 1 Lexan® enclosure or open frame (skeleton) design
- Choice of single or dual SPDT switch outputs
- Ranges to 6,000 psi (414 bar), 650 °F (343 °C)

J40 Series

Skeleton (open frame) pressure electromechanical switch with metal bellows sensor for OEMs

Advantages:

- Compact, open frame (skeleton) design for OEM applications
- Brass or phosphor bronze metal bellows sensors
- Easy external adjustment
- Single switch (SPDT) output
- Optional adjustable deadband switch
- Ranges to 300 psi (21 bar)

Visit UE's Product Selector: www.ueonline.com

10 Series

Compact, customizable, cylindrical pressure electromechanical switch for OEMs

Advantages:

- Variety of options to customize design
- 1-1/4” diameter and height as small as 3”
- Most models designed to meet enclosure type 4 requirements
- Factory set or field adjustable with tamper-resistant cover
- Choice of 7 electrical terminations
- Ranges to 7,500 psi (517 bar)
- Proof pressures up to 12,000 psi (827 bar)

24 Series

Compact, economical differential pressure electromechanical switch for OEMs

Advantages:

- Compact, lightweight corrosion-resistant polyester enclosure
- Terminal block wiring
- Available with brass or polysulfone (FDA approved) pressure connections
- OEM capabilities include external adjustment knob with or without reference scale
- Ranges to 45 psid (3 bar d)

800 Series

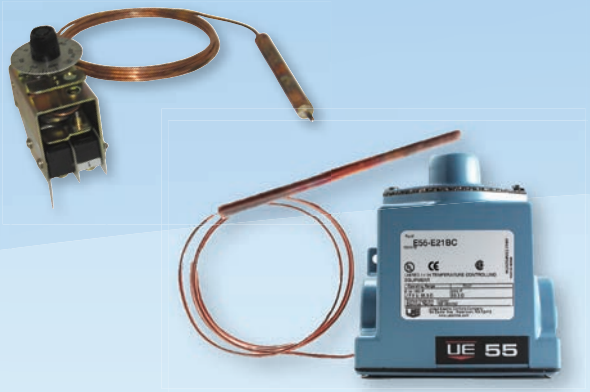
Indicating temperature electromechanical switch for industrial heating and cooling applications

Advantages:

- Indicating temperature control with remote stainless steel bulb and capillary
- Corrosion-resistant Lexan enclosure
- Single or dual SPDT switch outputs
- Set point repeatability and indication accuracy ± 1%
- Ranges to 650 °F (343 °C)

55 Series

Rugged temperature electromechanical switch with external dial



Advantages:

- Panel or surface mount for temperature alarm, emergency shutdown and control functions
- Enclosed or open-frame construction
- Single or dual SPDT switch outputs
- Dual switch output versions can be separated up to 100% of range
- Designed to meet enclosure type 4X requirements
- Heat tracing models
- Ranges to 650 °F (343 °C)

UE APPLIED SENSOR TECHNOLOGIES

Thermocouples, RTD's, and Thermistors for Process & OEM markets

Advantages:

- Standard and made-to-order temperature sensors
- Maximum reliability and long-life thermocouples with a variety of protection tubes
- Heat tracing RTD's with replaceable RTD elements to minimize downtime
- NEMA 4 or explosion-proof heads
- Transmitter heads with 4-20 mA output

The Sensor Box™

Emergency kit with a modular system of sensors, hardware and tools

Advantages:

- Build your own sensor assemblies on-site, within minutes
- Customized to fit your application needs
- Reduce downtime in emergencies
- Eliminate expediting fees
- Lower, more flexible inventory

Quick Selection Guide for UE Products

PRODUCT SERIES	J6	10	12	J21K	24	J40	54	55	100	117	120	400	800	820E/822E	One Series					Excela	Vanguard
															1XSWLL	1XSWHL XSWHH	1XTXSW	1XTX00	ONE Safety (2SLP)		
PAGE	11	9	6	11	9	11	10	10	8	6	7	8	12	7	5	5	5		5	8	4
VARIABLE																					
Pressure	●	●	●			●	●		●	●	●	●			●	●	●	●	●	●	
Vacuum	●		●	●		●	●		●	●	●	●			●	●	●	●	●	●	
Differential Pressure			●	●	●				●	●	●	●			●	●	●	●	●	●	
Temperature			●				●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Gas																					●
ENCLOSURE																					
Open frame						●	●	●													
Enclosure Type 1 Gen. Purpose		●		●	●		●						●								
Enclosure Type 4 Watertight		●											☆	●							
Enclosure Type 4X Watertight	●		●	☆				●	●	●	●	●			●	●	●	●	●	●	●
Zone 0, Intrinsically Safe	☆	☆	☆	☆					☆	☆	☆	☆			●						
Division 1 Zone 1, Hazardous Location, IP 66 Rating			●								●			●	●	●	●	●	●		●
Division 2 Zone 2, Hazardous Location, IP 65 Rating			●							●	●			●	●	●	●	●			●
OUTPUT																					
Single Switch SPDT	●	●		●	●	●	●	●	●		●	●	●	●	SPST	SPST			SPST	●	
Dual Switch SPDT							●	●			●	●	●	●			2 X SPST				
Triple Switch SPDT												●									
DPDT									☆		☆	☆									
Dual Switch DPDT												☆									
Adjustable Deadband	☆			☆		☆	☆		☆		☆	☆			●	●	●		●	●	
Hermetically-Sealed Switch SPDT			●							●	☆										
Hermetically-Sealed Switch DPDT			●							☆	☆										
4 to 20 mA, HART HART																	●	●			
Wireless HART WirelessHART																					●
SENSORS																					
Welded Stainless Steel Diaphragm			●						●	●	●	●			●	●	●	●	●	●	
Stainless Steel Bellows	●			●			●		●	●	●	●									
Elastomer Diaphragm		●	●		●		●		●	●	●	●									
Brass/Bronze Bellows	●			●		●	●		●	●	●	●									
Piston	●	●	●				●		●		●	●									
Process Alloy			☆						☆	☆	☆										
Local Temperature Mount			●				●		●	●	●				●	●	●	●	●	●	
Remote Temp. Mount			●				●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Toxic (H_2S, CO, NH_3)																					●
Combustible (CH_4, C_3H_8, LEL%)																					●
MISCELLANEOUS																					
Terminal Block					●					●	●		☆	●	●	●	●	●	●	●	
Visual Indication*					☆			☆	☆		☆	☆	●	●	●	●	●	●	●	●	●
Dual Seal Certified			●												☆	☆	☆	☆	☆		
SIL 2 Certified			☆						☆		☆				●	●			●		
Battery Operated																					●

* Visual indication may be through a pilot light option or display of process pressure or temperature readings.

● Available
☆ Option

Certification Guide* for UE Products

CERTS / APROVALS		J6	10	12	J21K	24	J40	54	55	100	117	120	400	800	820/822E	One Series: 1XSWLL	One Series: 1XSWHL XSWHH 1XTXSW & 1XTX00	One Series: ONE Safety (2SLP)	Excela	Vanguard: TCD50	Vanguard: TCD60
NORTH AMERICA																					
FM	FM												●								
c UL us	UL Mark	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	CL I, Grp A			●												●	●				
	CL I, Grp B											●			●		●	●			
c ETL us Intertek	Intertek Ex db ia [ia] IIB T4 Gb IP66																			●	
	Intertek Ex db ia [ia] IIC																				●
CSA	CRN	●	●	●	●	●	●	●		●	●	●	●			●	●	●			
Enclosure Rating			Type 4	4X						4X	4X	4X				4X	4X	4X	4X	4X	4X
EUROPE																					
Ex CE	ATEX Ex ia	●	●	●	●					●	●	●	●			●				●	●
	ATEX Ex nA															●	●				
	ATEX Ex db			●								●			●	●	●	●		●	●
	ATEX Ex tb			●								●			●	●	●	●			
Electromagnetic Compatibility (EMC)	2014/30/EU															●	●	●			
Low Voltage Directive (LVD)	2014/35/EU	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●
Pressure Equipment Directive (PED)	2014/68/EU	●	●	●	●	●	●	●		●	●	●	●		●	●	●	●			
Enclosure Rating				IP66								IP66			IP66	IP66	IP66	IP66	IP66	IP66	IP66
INTERNATIONAL																					
IEC IECEx	IEC Ex ia	●	●	●	●					●	●	●	●			●				●	●
	IEC Ex nA															●	●				
	IEC Ex db			●								●			●	●	●	●		●	●
	IEC Ex tb			●								●			●	●		●			
Enclosure Rating				IP66								IP66			IP66	IP66	IP66	IP66	IP66	IP66	IP66
SIL																					
CERTIFIED SIL 3 CAPABLE	SIL			●						●		●				●		●			

* See www.ueonline.com for specific product certifications
Ex d = Flame-Proof
Ex tb = Dust Protected
Ex ia = Intrinsic Safety
Ex nA = Non-Arcing
Ex tb = Dust Protected

CL 1, Groups A - Class 1, Groups A, B, C, D; Class II, Groups E, F, G: Class III
CL I, Groups B = Class 1, Groups B,C,D; Class II, Groups E, F, G; CLass III
● Available
☆ Option

CERTS / APROVALS		J6	10	12	J21K	24	J40	54	55	100	117	120	400	800	820/822E	ONE SERIES 1XSWLL	ONE SERIES 1XSWHL XSWHH 1XTXSW & 1XTX00	ONE SERIES ONE Safety (2SLP)	Excela	Vanguard
BRAZIL																				
	INMETRO Ex ia			☆						☆	☆	☆	☆			☆				
	INMETRO Ex nA															☆				
	INMETRO Ex db			☆								☆			☆	☆	☆	☆		
	INMETRO Ex tb			☆								☆			☆	☆	☆	☆		
CHINA																				
	CCC / Ex ia	☆	☆	☆	☆					☆	☆	☆	☆			☆				
	CCC / Ex ec															☆	☆			
	CCC / Ex db			☆								☆		☆		☆	☆	☆		
	CCC / Ex tb			☆								☆		☆		☆	☆	☆		
INDIA																				
	PESO Ex d			□								□			□	□	□	□		●
	PESO Ex ia	□	□	□	□					□	□	□	□			□				●
KOREA																				
	KOSHA/KGS Ex d			☆								☆			☆	☆	☆			☆
	KOSHA/KGS Ex tb											☆								
	KOSHA/KGS Ex ia															☆				☆
RUSSIA, KAZAKHSTAN, BELARUS, ARMENIA, KYRGYZSTAN																				
	EAC Ex db			●								●			●	●	●	●		●
	EAC Ex tb			●								●			●	●	●	●		●
	EAC Ex ia	●	●	●	●					●	●	●	●			●				
TAIWAN																				
	ITRI											●				●	●			
UKRAINE																				
	UkrEx			●								●			●					
UNITED ARAB EMIRATES (UAE)																				
	ECAS / Ex ia	□	□	□	□					□	□	□	□			□				
	ECAS / Ex db			□								□		□		□	□	□		
	ECAS / Ex tD			□								□		□		□	□	□		
	ECAS / Ex nA															□	□			
UNITED KINGDOM																				
	* UKCA / Ex ia	☆	☆	☆	☆					☆	☆	☆	☆			☆				☆
	* UKCA / Ex db			☆								☆			☆	☆	☆	☆		☆
	* UKCA / Ex tb			☆								☆			☆	☆	☆	☆		
	* UKCA / Ex nA															☆	☆			

Ex d = Flame-Proof
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CL 1, Groups A - Class 1, Groups A, B, C, D; Class II, Groups E, F, G: Class III
CL I, Groups B = Class 1, Groups B,C,D; Class II, Groups E, F, G; CLass III

● Available
☆ Option
□ Contact UE

RoHS compliant

While United Electric Controls works towards full RoHS compliance with all of our products, most equipment and applications that include UE products are in RoHS exempt Category 9. If you are planning to install UE products in equipment that needs to comply, please contact us immediately so we may assist in your compliance goals.

United Electric Controls is a privately held corporation headquartered in Watertown, MA, USA, with a rich history of over 90 years in providing protection for plant assets and people. Our gas detection, and vacuum, pressure, differential pressure and temperature switches, transmitters, and sensors are specifically designed to meet harsh and hazardous safety, alarm, and emergency shutdown (ESD) applications; and includes certified safety switches per IEC 61508. UE serves the Chemical & Petrochemical, Power, Oil & Gas industries, as well as many challenging OEM applications.

Call us at +1 617-926-1000 to speak to an application engineer who can help answer your application questions.
Please visit www.ueonline.com to use our product selector, find one of our 140+ worldwide distributors, access technical resources and helpful videos, and for further information about United Electric Controls.

UE UNITED ELECTRIC CONTROLS

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