UM 18 Double Sheet Detector

Ultrasonic Sensors





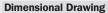
1.6 in ±0.12 in (40 mm ±3 mm)

detection range

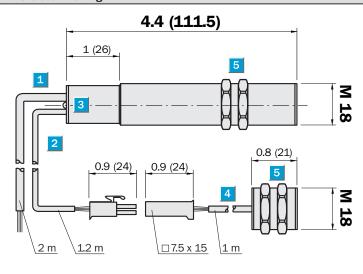
Highlights

- · Double-sheet detection of foils, metal sheets and ultra-fine corrugated cardboard
- Automatic adjustment, no Teach-in necessary
- · Color-independent

- Plug & Play
- 2 PNP outputs for double and misfed-sheets

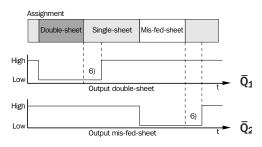






dimensions in inches (mm)

Detection Range



6) Off delay

Adjustments UM 18-20012



- Connection cable 2 m (receiver)
- Connection cable 1.2 m, 2-pin sender and receiver
- 2-color LED indicator, receiver
- Connection cable 1 m, 2-pin sender and receiver
- Fastening nuts, width across 24 mm

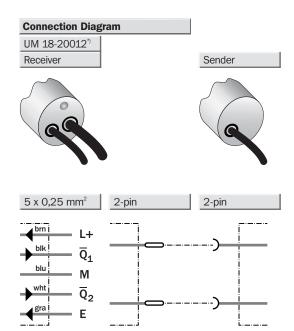
Order information						
Туре	Part no.					
UM 18-20012	6 025 670					

Accessories	page					
Cables and connectors	925, 926					
Mounting systems	909					



1.6 in ±0.12 in (40 mm ± 3 mm)	Technical Data	UM 18-	20012				
Sind zone 0.3 in (7 mm), each time before sender and receiver	Installation distance						
and receiver Permissible angle deviation	sender – receiver	1.6 in ±0.12 in (40 mm ± 3 mm)					
Permissible angle deviation ± 45° perpendicular to sheet ### April 20 of M-12 ### Apr	Blind zone	0.3 in (7 mm), each time before sender					
### A Company of the		and receiver					
Double-sheets not completely glued together Diperational area Paper grams per square meter Metal-laminated sheets and films Self-adhesive films, metal sheets Self-adhesive films, metal sheets Self-adhesive films, metal sheets \$ 0.3 mm Ultra-fine corrugated cardboard Supply voltage Vs \$ 12 30 V DC 10 Supply voltage Vs PNP, Vs - 2 V, Imax = 500 mA Double-sheet switching/Q1 10 PNP, Vs - 2 V, Imax = 500 mA Misfed sheet switching output/Q2 10 PNP, Vs - 2 V, Imax = 500 mA Misfed sheet switching output/Q2 10 PNP, Vs - 2 V, Imax = 500 mA Seponse time 10 2.5 ms or 6.5 ms Seponse time 2.5 ms: Vs > 9 V DC Response time 2.5 ms: Vs > 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Standby delay Double-sheet switching output/Q2 10 Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC Response time 2.5 ms: Vs < 5 V DC R	Permissible angle deviation	± 45° perpendicular to sheet					
glued together Paper grams per square meter 20 1200 g/m² Metal-laminated sheets and films ≤ 0.4 mm thickness Self-adhesive films, metal sheets ≤ 0.3 mm Ultra-fine corrugated cardboard Supply voltage V _S 12 30 ∨ DC ² Ripple ± 10% Current consumption ² ≤ 45 mA PNP, V _S −2 V, I _{max} = 500 mA PNP, V _S −2 V, I _{max} = 500 mA Response time ⁴ 2.5 ms or 6.5 ms Pf delay 10 ms Response time 6.5 ms; V _S > 9 ∨ DC Response time 2.5 ms; V _S < 5 ∨ DC Standby delay 300 ms Connection type Cable PVC, 2 m; 5 x 0.25 mm² Sender cable ® PVC, 12 m with 2-pin plug Response rating IP 65 Ambient temperature Operation 41140°F (560°C) Storage 40185°F (4085°C) Approximate weight 9.9 oz (280 g)	Ultrasonic frequency	400 kHz					
Paper grams per square meter 20 1200 g/m²	Resolution	Double-sheets not completely					
Paper grams per square meter 20 1200 g/m² Metal-laminated sheets and films ≤ 0.4 mm thickness Self-adhesive films, metal sheets ≤ 0.3 mm Ultra-fine corrugated cardboard Supply voltage V _S 12 30 V DC ¹¹ Stipple ± 10% Current consumption ² ≤ 45 mA Double-sheet switching/Q ₁ ³⁰ PNP, V _S −2 V, I _{max} = 500 mA Wisfed sheet switching output/Q ₂ ³⁰ PNP, V _S −2 V, I _{max} = 500 mA Wisfed sheet switching output/Q ₂ ³⁰ PNP, V _S −2 V, I _{max} = 500 mA Response time ⁴⁰ 2.5 ms or 6.5 ms Double-sheet switching output/Q ₂ ³⁰ PNP, V _S −2 V, I _{max} = 500 mA Response time ⁴⁰ 2.5 ms or 6.5 ms Double-sheet switching output/Q ₂ ³⁰ PNP, V _S −2 V, I _{max} = 500 mA Response time ⁴⁰ 2.5 ms or 6.5 ms Double-sheet switching output/Q ₂ ³⁰ PNP, V _S −2 V, I _{max} = 500 mA Response time ⁴⁰ 2.5 ms or 6.5 ms Double-sheet switching output/Q ₂ ³⁰ PNP, V _S −2 V, I _{max} = 500 mA Response time ⁴⁰ 2.5 ms or 6.5 ms Double-sheet switching output/Q ₂ ³⁰ PNP, V _S −2 V, I _{max} = 500 mA Response time ⁴⁰ 2.5 ms or 6.5 ms Double-sheet switching output/Q ₂ ³⁰ PNP, V _S −2 V, I _{max} = 500 mA Response time ⁴⁰ Response time ⁴⁰ 2.5 ms or 6.5 ms Double-sheet switching output/Q ₂ ³⁰ PNP, V _S −2 V, I _{max} = 500 mA Response time ⁴⁰ Response time ⁴⁰ 2.5 ms or 6.5 ms Double-sheet switching output/Q ₂ ³⁰ PNP, V _S −2 V, I _{max} = 500 mA Response time ⁴⁰ Response		glued together					
Metal-laminated sheets and films $≤ 0.4 \text{ mm}$ thickness $≤ 0.3 \text{ mm}$ Ultra-fine corrugated cardboard Supply voltage V_S 12 30 V DC 3	Operational area						
Self-adhesive films, metal sheets ≤ 0.3 mm Ultra-fine corrugated cardboard Supply voltage V _S 12 30 V DC ³ Sipple ± 10% Current consumption ² ≤ 45 mA Double-sheet switching/Q ₁ ³⁰ PNP, V _S −2 V, I _{max} = 500 mA Wisfed sheet switching output/Q ₂ ³⁰ PNP, V _S −2 V, I _{max} = 500 mA Wesponse time ⁴⁰ 2.5 ms or 6.5 ms Off delay 10 ms V _S at control unit ⁴¹ Response time 6.5 ms: V _S > 9 V DC Response time 2.5 ms: V _S < 5 V DC Standby delay 300 ms Connection type Cable PVC, 2 m; 5 x 0.25 mm ² Sender cable ⁵⁰ PVC, 12 m with 2-pin plug Seceiver cable ⁵⁰ PVC, 1 m with 2-pin plug Sinclosure rating IP 65 Ambient temperature Operation 41140°F (560°C) Approximate weight 9.9 oz (280 g)	Paper grams per square meter	20 1200 g/m²					
Ultra-fine corrugated cardboard Supply voltage V_S 12 30 V DC 1 Sipple \pm 10% Current consumption 2 \leq 45 mA Double-sheet switching/ Q_1 PNP, $V_S - 2$ V, $I_{max} = 500$ mA Wisfed sheet switching output/ Q_2 PNP, $V_S - 2$ V, $I_{max} = 500$ mA Response time 4 2.5 ms or 6.5 ms Off delay 10 ms Response time 6.5 ms: $V_S > 9$ V DC Response time 2.5 ms: $V_S < 5$ V DC Standby delay 300 ms Connection type Cable PVC, 2 m; 5 x 0.25 mm² Sender cable 9 PVC, 12 m with 2-pin plug Receiver cable 9 PVC, 1 m with 2-pin plug Enclosure rating IP 65 Ambient temperature Operation 41140°F (560°C) Storage 40185°F (-4085°C) Approximate weight 9.9 oz (280 g)	Metal-laminated sheets and films	≤ 0.4 mm thickness					
Supply voltage V_S 12 30 V DC 13 Sipple $\pm 10\%$ Current consumption 20 ± 45 mA Double-sheet switching/ Q_1 9 PNP, $V_S - 2$ V, $I_{max} = 500$ mA Wisfed sheet switching output/ Q_2 9 PNP, $V_S - 2$ V, $I_{max} = 500$ mA Response time 9 2.5 ms or 6.5 ms Off delay 10 ms Response time 6.5 ms: $V_S > 9$ V DC Response time 2.5 ms: $V_S < 5$ V DC Standby delay 300 ms Connection type Cable PVC, 2 m; 5 x 0.25 mm² Sender cable 9 PVC, 1.2 m with 2-pin plug Receiver cable 9 PVC, 1 m with 2-pin plug Enclosure rating IP 65 Ambient temperature Operation 41140°F (560°C) Storage -40185°F (-4085°C) Approximate weight 9.9 oz (280 g)	Self-adhesive films, metal sheets	≤ 0.3 mm					
Ripple $\pm 10\%$ Current consumption 2 $\leq 45 \text{mA}$ Couble-sheet switching/ $\mathbf{Q_1}^3$ PNP, $\mathbf{V_S} - 2 \mathbf{V_L}_{\text{max}} = 500 \text{mA}$ Wisfed sheet switching output/ $\mathbf{Q_2}^3$ PNP, $\mathbf{V_S} - 2 \mathbf{V_L}_{\text{max}} = 500 \text{mA}$ Response time 9 2.5 ms or 6.5 ms Off delay 10 ms $\mathbf{V_S}$ at control unit 9 Response time 6.5 ms: $\mathbf{V_S} > 9 \text{V}$ DC Response time 2.5 ms: $\mathbf{V_S} < 5 \text{V}$ DC Standby delay 300 ms Connection type Cable PVC, 2 m; $5 \text{x} 0.25 \text{mm}^2$ Sender cable 9 PVC, 1.2 m with 2-pin plug Receiver cable 9 PVC, 1 m with 2-pin plug Enclosure rating IP 65 Ambient temperature Operation 41140°F (560°C) Storage $-40185^\circ F$ ($-4085^\circ C$) Approximate weight 9.9 oz (280 g)	Ultra-fine corrugated cardboard						
Current consumption 2 $\leq 45 \text{ mA}$ Chouble-sheet switching/ $\mathbf{Q_1}^{3}$ PNP, $V_S - 2 \text{ V}$, $I_{\text{max}} = 500 \text{ mA}$ Wisfed sheet switching output/ $\mathbf{Q_2}^{3}$ PNP, $V_S - 2 \text{ V}$, $I_{\text{max}} = 500 \text{ mA}$ Response time 4 2.5 ms or 6.5 ms Off delay 10 ms I_S at control unit 4 Response time 6.5 ms: $V_S > 9 \text{ V DC}$ Response time 2.5 ms: $V_S < 5 \text{ V DC}$ Standby delay 300 ms Connection type Cable PVC, 2 m; 5 x 0.25 mm² Sender cable 5 PVC, 1.2 m with 2-pin plug Receiver cable 5 PVC, 1 m with 2-pin plug Enclosure rating IP 65 Ambient temperature Operation 41140°F (560°C) Storage -40185°F (-4085°C) Approximate weight 9.9 oz (280 g)	Supply voltage V _S	12 30 V DC ¹⁾					
Double-sheet switching/ Q_1 PNP, $V_S - 2$ V, $I_{max} = 500$ mAWisfed sheet switching output/ Q_2 PNP, $V_S - 2$ V, $I_{max} = 500$ mAResponse time 42.5 ms or 6.5 msOff delay10 ms V_S at control unit 40Response time 6.5 ms: $V_S > 9$ V DCResponse time 2.5 ms: $V_S < 5$ V DCStandby delay300 msConnection typeCable PVC, 2 m; 5×0.25 mm²Sender cable 50PVC, 1.2 m with 2-pin plugReceiver cable 50PVC, 1 m with 2-pin plugEnclosure ratingIP 65Ambient temperatureOperation 41140 °F $(560$ °C)Storage -40185 °F $(-4085$ °C)Approximate weight9.9 oz (280 g)	Ripple	± 10%					
Wisfed sheet switching output/ Q_2^{3} PNP, $V_S - 2 V$, $V_{max} = 500 \text{ mA}$ Response time 4 2.5 ms or 6.5 ms Off delay 10 ms Response time 6.5 ms: $V_S > 9 V$ DC Response time 2.5 ms: $V_S < 5 V$ DC Standby delay 300 ms Connection type Cable PVC, 2 m; 5 x 0.25 mm² Sender cable 50 PVC, 1.2 m with 2-pin plug Receiver cable 50 PVC, 1 m with 2-pin plug Enclosure rating IP 65 Ambient temperature Operation 41140°F (560°C) Storage $^{-4}0185$ °F ($^{-4}085$ °C) Approximate weight 9.9 oz (280 g)	Current consumption 2)	≤ 45 mA					
Response time $^{4)}$ 2.5 ms or 6.5 ms Off delay 10 ms Response time 6.5 ms: $V_S > 9 \text{ V DC}$ Response time 2.5 ms: $V_S < 5 \text{ V DC}$ Standby delay 300 ms Connection type Cable PVC, 2 m; 5 x 0.25 mm² Sender cable $^{5)}$ PVC, 1.2 m with 2-pin plug Receiver cable $^{5)}$ PVC, 1 m with 2-pin plug Enclosure rating IP 65 Ambient temperature Operation 41140°F (560°C) Storage -40185°F (-4085°C) Approximate weight 9.9 oz (280 g)	Double-sheet switching/Q ₁ ³⁾	PNP, $V_S - 2 V$, $I_{max} = 500 \text{ mA}$					
The field of the second of th	Misfed sheet switching output/Q2 3)	PNP, $V_S - 2 V$, $I_{max} = 500 \text{ mA}$					
Response time 6.5 ms: $V_S > 9 \text{ V DC}$ Response time 2.5 ms: $V_S < 5 \text{ V DC}$ Standby delay 300 ms Connection type Cable PVC, 2 m; $5 \times 0.25 \text{ mm}^2$ Sender cable $^{5)}$ PVC, 1.2 m with 2-pin plug Receiver cable $^{5)}$ PVC, 1 m with 2-pin plug Enclosure rating IP 65 Ambient temperature Operation 41140°F (560°C) Storage $^{-4}0185^{\circ}\text{F}$ ($^{-4}085^{\circ}\text{C}$) Approximate weight Response time 6.5 ms: $V_S > 9 \text{ V DC}$ Response time 6.5 ms: $V_S < 5 \text{ V DC}$ Response time 6.5 ms: $V_S < 5 \text{ V DC}$ Storage $^{-5}$ Response time 6.5 ms: $V_S < 5 \text{ V DC}$ Response time 6.5 ms: $V_S < 5 \text{ V DC}$ Response time 6.5 ms: $V_S < 5 \text{ V DC}$ Response time 6.5 ms: $V_S < 5 \text{ V DC}$ Storage $^{-5}$ Approximate weight	Response time 4)	2.5 ms or 6.5 ms					
Response time 2.5 ms: $V_S < 5 \text{ V DC}$ Standby delay 300 ms Connection type Cable PVC, 2 m; $5 \times 0.25 \text{ mm}^2$ Sender cable $^{5)}$ PVC, 1.2 m with 2-pin plug Receiver cable $^{5)}$ PVC, 1 m with 2-pin plug Enclosure rating IP 65 Ambient temperature Operation 41140°F (560°C) Storage -40185°F (-4085°C) Approximate weight 9.9 oz (280 g)	Off delay	10 ms					
Standby delay 300 ms Connection type Cable PVC, 2 m; 5 x 0.25 mm² Connection type Cable PVC, 2 m; 5 x 0.25 mm² Cable PVC, 1.2 m with 2-pin plug Cable PVC, 1 m with 2-pin plug Cable	V _S at control unit ⁴⁾	Response time 6.5 ms: V _S > 9 V DC					
Connection type Cable PVC, 2 m; 5 x 0.25 mm² Sender cable 50 PVC, 1.2 m with 2-pin plug Receiver cable 50 PVC, 1 m with 2-pin plug Enclosure rating IP 65 Ambient temperature Operation 41140°F (560°C) Storage -40185°F (-4085°C) Approximate weight 9.9 oz (280 g)		Response time 2.5 ms: $V_S < 5 \text{ V DC}$					
PVC, 1.2 m with 2-pin plug PVC, 1.2 m with 2-pin plug PVC, 1 m with 2	Standby delay	300 ms					
Receiver cable 5 PVC, 1 m with 2-pin plug Enclosure rating IP 65 Ambient temperature Operation 41140°F (560°C) Storage -40185°F (-4085°C) Approximate weight 9.9 oz (280 g)	Connection type	Cable PVC, 2 m; 5 x 0.25 mm ²					
IP 65	Sender cable 5)	PVC, 1.2 m with 2-pin plug					
Ambient temperature Operation 41140°F (560°C) Storage -40185°F (-4085°C) Approximate weight 9.9 oz (280 g)	Receiver cable 5)	PVC, 1 m with 2-pin plug					
Storage -40185°F (-4085°C) Approximate weight 9.9 oz (280 g)	Enclosure rating	IP 65					
Approximate weight 9.9 oz (280 g)	Ambient temperature	Operation 41140°F (560°C)					
		Storage -40185°F (-4085°C)					
Housing material Nickel-plated brass	Approximate weight	9.9 oz (280 g)					
	Housing material	Nickel-plated brass					

- 1) Limit values
- 2) Without load 3) Outputs short-circuit protected, Opener; no switching hysteresis
- $^{4)}$ If the control line is laid against a ground, $^{}$ 5) Not reverse-polarity protected the response time is 2.5 ms. If the control line is laid against L+, the response time is 6.5 ms.



*) Sender/receiver pair: Individual components on request

