

# Electric Wire and cable business

## OKI Robot Cable Series

All-purpose robot cable

### ORV cable series

Fixed

Swinging bending

Sliding bending

UL 758 Style 20276 80°C 30 V

Using heat-resistant PVC to insulate the core wires makes them suitable for robot moving parts (excluding torsion).

#### Features

- Making the conductor a small-diameter wire improves the bending characteristics, which make this cable optimal for use in the moving parts of robots and other devices. (\*Cannot be used for torsion load applications.)
- Oil-proof materials are used in the cable coating.
- Environmentally friendly. Compliant with the RoHS directive.



#### Specifications

##### Material/configuration

Conductor	Tin-plated, soft copper, twisting cable
Insulator	Heat-resistant PVC
Insulator identification	According to (Table 1) and (Table 2)
Shielding	Tin-plated, soft copper cable; braided
Sheath material (sheath color)	Oil-proof PVC (black matte)

##### Usage environment

Application	Fixed and moving parts between equipment and within equipment indoors
Operation temperature range	-10 to 80°C

##### Line-up

Shielding	Twisted pair type	Layer-twisted type
Without shielding	—	Conductor size: 0.25 to 0.59 sq. mm Number of core wires: 2 to 40
With shielding	Conductor size: 0.25 to 0.59 sq. mm Number of pairs: 1 to 10	—

##### Applicable standards

UL758 Style 20276 (Rating: 80°C, 30 V)

##### Sheath labeling

ORV AWG □ △△ OKI ELECTRIC CABLE AWM 20276 80C 30V VW-1

□ : Conductor size (AWG) 24/22/20 △△ : Without shielding: No indication/With shielding: -SV

#### Special characteristics

##### Electrical performance

Conductor cross-sectional area	Conductor resistance Ω/km (20°C)	Insulator resistance MΩ-km (20°C)	Withstand voltage V·1 minute interval
0.25 sq. mm (AWG24)	98 or less	10 or more	AC 500
0.35 sq. mm (AWG22)	63 or less	10 or more	AC 500
0.59 sq. mm (AWG20)	40 or less	10 or more	AC 500

##### Mobility

Mode	Performance	Test conditions
Sliding bending	10 million times or more	Bend radius R: about 6 times the outer diameter of the cable Sliding speed: 70 times per minute Movement distance: 350 mm
Swinging bending	10 million times or more	Bend radius R: about 8 times the outer diameter of the cable Bend angle: ±90° Bend speed: 40 times per minute Load: 4.9 N Count: one round trip is one count

Note. Under OkI test conditions and methods. For details, see page 3.  
These values are for reference only and are not guaranteed values.

## Line-up

### Display of product name

- Multi-core cable without shielding: ORV-AWG (1) × (2) C (20276) (1): AWG size (2): Number of core wires (See the chart below.)
- Multi-pair cable with shielding: ORV-AWG (1) × (2) P (S) (20276) (1): AWG size (2): Number of pairs (See the chart below.)

### Construction

#### Multi-core cable without shielding

sq. mm	Conductor		Core wire diameter mm	(2) Number of core wires	Outer diameter mm	Approximate weight kg/km	Permitted electric current* A (30°C)				
	(1) AWG size	Configuration									
0.25	24	48/0.08	1.3	2	4.6	28	5.0				
				3	4.9	29	4.3				
				4	5.3	35	3.9				
				5	5.9	41	3.6				
				6	6.3	48	3.3				
				8	7.2	60	3.0				
				10	7.8	69	2.8				
				12	7.8	76	2.6				
				16	8.6	97	2.3				
				20	9.7	105	2.2				
				30	11.2	165	1.8				
				40	12.8	220	1.6				
				0.35	22	72/0.08	1.5	2	5.0	29	6.5
								3	5.2	34	5.6
4	5.6	42	5.0								
5	6.4	51	4.7								
6	6.8	59	4.4								
8	7.9	76	3.9								
10	8.5	87	3.6								
12	8.6	96	3.3								
16	9.4	125	3.0								
20	10.5	150	2.8								
30	12.2	220	2.4								
40	14.4	290	2.2								
0.59	20	119/0.08	1.8					2	5.6	38	8.4
								3	5.9	47	7.3
				4	6.3	56	6.6				
				5	7.2	69	6.1				
				6	7.7	81	5.7				
				8	9.0	105	5.1				
				10	9.9	125	4.7				
				12	9.9	140	4.4				
				16	10.9	180	3.9				
				20	12.9	230	3.7				

#### Multi-pair cable with shielding

sq. mm	Conductor		Core wire diameter mm	(2) Number of pairs	Outer diameter mm	Approximate weight kg/km	Permitted electric current* A (30°C)				
	(1) AWG size	Configuration									
0.25	24	48/0.08	1.3	1	5.3	37	5.0				
				2	6.4	56	3.9				
				3	7.3	68	3.3				
				4	7.9	80	3.0				
				5	8.9	105	2.8				
				6	9.5	120	2.6				
				7	10.1	135	2.4				
				8	11.1	155	2.3				
				10	11.1	165	2.2				
				0.35	22	72/0.08	1.5	1	5.7	43	6.5
								2	6.8	64	5.0
								3	8.1	89	4.4
								4	8.7	105	3.9
								5	9.4	125	3.6
0.59	20	119/0.08	1.8	1	6.3	54	8.4				
				2	7.7	85	6.6				

\*The permitted electric current value is calculated with a straight installation in air. It is not a guaranteed value.

### Cross-section view (example)



(Table 1) Configuration of multi-core cable without shielding

Core wire no.	Insulator body color	1 pitch Dot mark	Dot mark color	Core wire no.	Insulator body color	1 pitch Dot mark	Dot mark color
1	Orange	-	Red	21	Orange	---	Red
2	Orange	-	Black	22	Orange	---	Black
3	Gray	-	Red	23	Gray	---	Red
4	Gray	-	Black	24	Gray	---	Black
5	White	-	Red	25	White	---	Red
6	White	-	Black	26	White	---	Black
7	Yellow	-	Red	27	Yellow	---	Red
8	Yellow	-	Black	28	Yellow	---	Black
9	Pink	-	Red	29	Pink	---	Red
10	Pink	-	Black	30	Pink	---	Black
11	Orange	--	Red	31	Orange	----	Red
12	Orange	--	Black	32	Orange	----	Black
13	Gray	--	Red	33	Gray	----	Red
14	Gray	--	Black	34	Gray	----	Black
15	White	--	Red	35	White	----	Red
16	White	--	Black	36	White	----	Black
17	Yellow	--	Red	37	Yellow	----	Red
18	Yellow	--	Black	38	Yellow	----	Black
19	Pink	--	Red	39	Pink	----	Red
20	Pink	--	Black	40	Pink	----	Black

(Table 2) Configuration of multi-pair cable with shielding

Corresponding no.	Insulator body color	1 pitch Dot mark	Dot mark color	
			No.1 core wire	No.2 core wire
1	Orange	-	Red	Black
2	Gray	-	Red	Black
3	White	-	Red	Black
4	Yellow	-	Red	Black
5	Pink	-	Red	Black
6	Orange	--	Red	Black
7	Gray	--	Red	Black
8	White	--	Red	Black
9	Yellow	--	Red	Black
10	Pink	--	Red	Black