Honeywell

Conductors and Cables

Technical Data

Introduction

NOTE: Unless noted otherwise, all conductors and cables are UL Listed.

This sheet lists Honeywell conductors and cables according to use. Conductors and cables listed here are suitable for use under any appropriate NEC Articles, including:

- 725: Class 1, Class 2, and Class 3 Remote-Control, Signaling, and Power-Limited Circuits
- 760: Fire Protective Signaling Systems
- 800: Communications Circuits

Conductors

Twisted Pair(s) and Triplets

AK3702, AK3703, AK3712, AK3713, AK3754 (Table 1).

Single Conductors

AK3907, AK3908, AK3909, AK3910, AK3911 (Table 1).
Back-plane wire CCT3901 (Table 1).

Cables

Twisted Pair(s) and Triplets

AK3724, AK3726, AK3741A AK3743A AK3749A, AK3750A, AK3751A, AK3752A, AK3781, AK3782 (Table 1).

Twisted Pair(s), Shielded

AK3740A, AK3742A (Table 1).

Intercom Cables

Microphone-type cable for trunk and local intercom uses and electronic temperature-control systems.

AK3602G, AK3603G (Table 1).

Plenum Cables

TWISTED PAIR(S) AND TRIPLETS

Classified as fire-resistant and low-smoke-producing. Suitable for use in ducts, hollow spaces, and plenums.

AK3744C, AK3745C, AK3746C, AK3747C, AK3748C, AK3757C AK3791, AK3792 (Table 1).

SHIELDED PLENUM CABLE

AK3721B (Table 1).

Triaxial Cables

AK3605 (Table 2)

OTHER CABLES

AK3711A – Microcel Bus Cable - Plenum

Consists of two #14 AWG parallel conductors and one twisted 18 AWG pair. Foamed FPR (Flourocopolymer resin) insulation, Low Smoke, Low Flame plenum rated jacket.

AK3608B

Consists of one each AK3702R, AK3702BB, and AK3602G cables wrapped with a PVC jacket. Suitable for indoor exposed wiring (Table 1).

AK3609A (Direct Burial)

Consists of one each AK3702R, AK3702BB, and AK3602G cables wrapped with a corrugated copper rodent barrier and a direct burial jacket (Table 1). Suitable for all below-grade installations and outside aerial applications AK3609A is not UL Listed.

Specifications Tables

NOTE All wiring must be done in accordance with local codes, ordinances, and regulations.

Tables 1 and 2 provide conductor and cable specifications as follows:

- Table 1, Conductors and Cables
- Table 2, Coaxial and Triaxial Cables

Table 1. Conductors and Cables.

	Honeywell Part No. ①	UL/ NEC	AWG (Strand -ing) ②	No. of Conduc-tors	Lay of Twist	Nom-inal Capac-itance pF/ft (pF/m)	Resistance Per Conductor Ω/1000 ft (Ω/km)	Conductor Insulation In. (mm)	Shield	Jacket Insulation In. (mm)	O.D. In. (mm)	Conductor Color	Volt-age Rating (V)	Temper-ature Rating C (F)	Weight Per 1000 ft (lb) (per 305 m [kg])	Maximu m Pull Tension lb (N)
	AK3602G	CMR	20	1 Pair	1 to 2-1/2 in	48.5 (159.1)	10.15 (33.3)	PVC 0.006 (0.2)	Alum-Mylar* with 22 AWG Drain Wire	PVC Beige 0.015 (0.4)	0.140 (3.6)	WHT, RED	300	105C (221F)	18 (8.2)	16.3 (72.4)
	AK3603G	CMR	20	1 Triplet	1 to 2-1/2 in	48.5 (159.1)	10.15 (33.3)	PVC 0.006 (0.2)	Alum-Mylar* with 22 AWG Drain Wire	PVC Beige 0.015 (0.4)	0.135 (3.4)	YEL, BLK, RED	300	105C (221F)	20 (9.1)	25.9 (115)
	AK3608B	CMR	18	1 Pair	1.3 in	25 (82)	6.39 (21)	PVC 0.021 (0.53)	None	PVC Tan 0.042 (1.07)	0.367 (9.3)	RED, YEL	300	60C (140F)	76 (34.5)	150 (666)
			18	1 Pair	1.3 in	25 (82)	6.39 (21)	PVC 0.021 (0.53)				BLK, BLU				
			20	1 Pair Shielded	2 in	35 (114.8)	10.1 (33.1)	PVC 0.006 (0.2)	Alum-Mylar* with 22 AWG Drain Wire			RED, BLK				
	AK3609A	--	18	1 Pair	1.3 in	25 (82)	6.39 (21)	PVC 0.021 (0.53)	None	Virgin Low Density Polyethylene 0.06 (1.52) over Copper Tape Rodent Barrier 0.005 (0.127)	0.478 (12.1)	RED, YEL	300	75C (167F)	112 (50.8)	150 (666)
			18	1 Pair	1.3 in	25 (82)	6.39 (21)	PVC 0.021 (0.53)				BLK, BLU				
			20	1 Pair Shielded	2 in	35 (114.8)	10.1 (33.1)	PVC 0.006 (0.2)	Alum-Mylar* with 22 AWG Drain Wire			RED, BLK				
	AK3702 B,R,N,P,BB, BR ⑤	TFN	18	1 Pair	2 to 2-1/2 in	22 (72.2)	6.52 (21.4)	TFN 0.021 (.053)	None	None	0.165 (4.2)	⑤	600	90C (194F)	20 (9.1)	25.9 (115)
	AK3703 B,R,N,P ⑥	TFN	18	1 Triplet	2-1/2 to 3 in	35 (114.8)	6.52 (21.4)	TFN 0.021 (.053)	None	None	0.18 (4.6)	⑥	600	90C (194F)	30 (13.6)	38.9 (172.7)
	AK3712 B, BB, R, W ④	TFN	16	1 Pair	2 to 2-1/2 in	22 (72.2)	4.1 (13.5)	TFN 0.02 (0.51)	None	None	0.19 (4.8)	④	600	90C (194F)	33 (15)	41.3 (183.4)
	AK3713 N, P ⑥	TFN	16	1 Triplet	2-1/2 to 3 in	35 (114.8)	4.1 (13.5)	TFN 0.02 (0.51)	None	None	0.205 (5.2)	⑥	600	90C (194F)	50 (22.7)	61.9 (274.8)
	AK3721B	CMP	20	1 Pair	2 to 3 in.	38 (124.7)	10.1 (33.1)	0.010 (0.25)	Alum-Mylar* 100%	Foamed FPR 0.018 (.45)	0.130 (3.3)	BLK, WHT	300	60C (140F)	20 (9.1)	16.3 (72.4)
	AK3724	CMR	18	1 Triplet	2-1/2 to 3 in	41.5 (136)	6.52 (21.4)	PVC 0.007 (0.2)	None	PVC Tan 0.022 (0.55)	0.162 (4.1)	YEL, ORG, VIO	300	60C (140F)	42 19.1	38.9 (172.7)
	AK3726	CMR	18	5 conductor twisted	2 to 3 in.	41.5 (136)	6.52 (21.4)	PVC 0.007 (0.2)	None	PVC Tan 0.018 (0.40)	0.184 (4.7)	⑦	300	60C (140F)	70 (31.8)	64.8 (287.7)

Continued

Table 1. Conductors and Cables (Continued).

	Honeywell Part No. ①	UL/ NEC	AWG (Strand-ing) ②	No. of Conduc-tors	Lay of Twist	Nom-inal Capac-itance pF/ft (pF/m)	Resistance Per Conductor Ω/1000 ft (Ω/km)	Conductor Insulation In. (mm)	Shield	Jacket Insulation In. (mm)	O.D. In. (mm)	Conductor Color	Volt-age Rating (V)	Temper-ature Rating C (F)	Weight Per 1000 ft (lb) (per 305 m [kg])	Maximu m Pull Tension lb (N)
	AK3740A	FPLR CMR	18	1 Pair	2-1/2 in.	22 (72)	6.5 (21.3)	PVC 0.010 (0.3)	Alum-Mylar* with 20 AWG Drain Wire	PVC Red 0.020 (0.5)	0.163 (4.1)	RED, YEL	300	60C (140F)	31 (14.2)	26 (115.4)
	AK3741A	FPLR CMR	18	1 Pair	3 in.	19 (62.1)	6.5 (21.3)	PVC 0.010 (0.3)	None	PVC Red 0.022 (0.55)	0.164 (4.1)	RED, YEL	300	60C (140F)	21 (9.5)	26 (115.4)
	AK3742A	FPLR CMR	18	2 Pairs	2-1/2 in.	22 (72)	6.5 (21.3)	PVC 0.010 (0.3)	Alum-Mylar* with 20 AWG Drain Wire	PVC Red 0.027 (0.68)	0.27 (6.9)	RED, YEL, BLK, BLU	300	60C (140F)	45 (20.5)	52 (230.9)
	AK3743A	FPLR CMR	18	2 Pairs	3 in.	22 (72)	6.5 (21.3)	PVC 0.010 (0.3)	None	PVC Red 0.027 (0.68)	0.264 (6.7)	RED, YEL, BLK, BLU	300	60C (140F)	42 (19.1)	52 (230.9)
	AK3744C	FPLP, CMP, MPP	18	1 Pair	6 in.	15.5 (50.84)	6.39 (21)	Foamed FPR 0.009 (0.22)	None	FPR Red 0.016 (0.4)	0.150 (3.8)	RED, YEL	300	60C (140F)	28 (12.7)	25.9 (115)
	AK3745C	FPLP, CMP, MPP	18	2 Pair	6 in.	15.5 (50.84)	6.52 (21.4)	Foamed FPR 0.009 (0.22)	None	FPR Red 0.018 (0.5)	0.220 (5.6)	RED, YEL, BLK, BLU	300	60C (140F)	36 (16.4)	51.8 (230)
	AK3746C	FPLP, CMP, MPP	18	1 Triplet	6 in.	15.5 (50.84)	6.52 (21.4)	Foamed FPR 0.009 (0.22)	None	FPR Red 0.016 (0.4)	0.157 (4.0)	RED, YEL, BLU	300	60C (140F)	26 (11.8)	38.9 (172.7)
	AK3747C	FPLP, CL3P, MPP	14	1 Pair	6 in.	21 (68.9)	2.57 (8.4)	Foamed FPR 0.013 (0.33)	None	FPR Red 0.016 (0.4)	0.212 (5.4)	RED, YEL	300	60C (140F)	43 (19.5)	65.7 (291.7)
	AK3748C	FPLP, CL3P, MPP	14	1 Triplet	6 in.	21 (69.9)	2.57 (8.4)	Foamed FPR 0.013 (0.33)	None	FPR Red 0.016 (0.4)	0.33 (8.4)	RED, YEL, BLU	300	60C (140F)	60 (27.3)	98.6 (437.8)
	AK3749A	FPLR CMR	18	1 Triplet	4 in.	22 (72)	6.52 (21.4)	PVC 0.010 (0.3)	None	PVC Red 0.018 (0.5)	0.166 (4.2)	RED, YEL, BLU	300	60C (140F)	26 (11.8)	38.9 (172.7)
	AK3750A	FPLR CMR	16	1 Pair	4 in.	35 (114.8)	4.1 (13.5)	PVC 0.012 (0.3)	None	PVC Red 0.020 (0.5)	0.195 (5)	RED, YEL	300	60C (140F)	27 (12.3)	41.3 (183.4)
	AK3752A	FPLR CL3R	14	1 Pair	4 in.	35 (114.8)	2.57 (8.4)	PVC 0.014 (0.4)	None	PVC Red 0.018 (0.5)	0.226 (5.7)	RED, YEL	300	60C (140F)	40 (18.1)	65.7 (291.7)
	AK3754 B,R,N,P	TFN	14	1 Pair	2 to 4 in	25 (82)	2.57 (8.4)	TFN 0.019 (0.38)	None	None	0.224 (5.7)	⑤	600	90C (194F)	37 (16.8)	25.9 (115)
	AK3757C	FPLP, CMP, MPP	18	1 Pair	6 in.	15.5 (50.84)	6.39 (21)	Foamed FPR 0.009 (0.22)	None	FPR White 0.016 (0.4)	0.150 (3.8)	RED, YEL	300	60C (140F)	28 (12.7)	25.9 (115)
	AK3781	CMR	22	1 Pair	2 to 4 in	14 (45.92)	16.2 (53.2)	Foamed FPR 0.006 (0.2)	None	FPR White 0.010 (.25)	0.116 (2.94)	Blue-White/Blue	300	60C (140F)	10 (4.54)	12.5 (55.5)
	AK3782	CMR	22	2 Pair	2 to 4 in	14 (45.92)	16.2 (53.2)	Foamed FPR 0.006 (0.2)	None	FPR White 0.010 (.25)	0.181 (4.59)	Blue-White/Blue, Orange-White/Orange	300	60C (140F)	16 (7.26)	17 (75.5)
	AK3791	CMP	22	1 Pair	2 to 4 in	14 (45.92)	16.2 (53.2)	FEP 0.006 (0.2)	None	FPR Gray 0.010 (.25)	0.116 (2.94)	Blue-White/Blue	300	60C (140F)	10 (4.54)	14.5 (64.4)
	AK3792	CMP	22	2 Pair	2 to 4 in	14 (45.92)	16.2 (53.2)	FEP 0.006 (0.2)	None	FPR Gray 0.010 (.25)	0.181 (4.59)	Blue-White/Blue, Orange-White/Orange	300	60C (140F)	16 (7.26)	20 (88.8)

	Honeywell Part No. (10)	Wire Type Number	AWG (Strand-ing) ②	No. of Conduc-tors	Lay of Twist	Nom-inal Capac-itance pF/ft (pF/m)	Resistance Per Conductor Ω/1000 ft (Ω/km)	Conductor Insulation In. (mm)	Shield	Jacket Insulation In. (mm)	O.D. In. (mm)	Conductor Color	Volt-age Rating (V)	Temper-ature Rating C (F)	Weight Per 1000 ft (lb) (per 305 m [kg])	Maximu m Pull Tension lb (N)
	AK3907	THHN	12	1	N/A	N/A	1.62 (5.3)	TFN 0.019 (0.38)	None	None	0.13 (3.3)	⑧	600	90C (194F)	24 (10.9)	N/A
	AK3908	THHN	12 19 Strands	1	N/A	N/A	1.62 (5.3)	TFN 0.019 (0.38)	None	None	0.14 (3.6)	⑧	600	90C (194F)	25 (11.4)	N/A
	AK3909	THHN	14	1	N/A	N/A	2.57 (8.4)	TFN 0.019 (0.38)	None	None	0.11 (2.8)		600	90C (194F)	16 (7.3)	N/A
	AK3910	THHN	14 19 Strands	1	N/A	N/A	2.57 (8.4)	TFN 0.019 (0.38)	None	None	0.12 (3.0)		600	90C (194F)	17 (7.7)	N/A
	AK3911	THHN	16 19 Strands	1	N/A	N/A	4.1 (13.5)	TFN 0.019 (0.38)	None	None	0.09 (2.3)		600	90C (194F)	12 (5.4)	N/A
	CCT3901	N/A	26	1	N/A	N/A	42.7 (140.1)	0.0055 (0.14)	None	None	0.027 (0.7)	WHT	N/A	105C (221F)	1.5 (0.7)	N/A

NOTES:

① All ordered directly from Paige Electric – 1-800-677-2443

② All solid conductors unless otherwise noted

③

Temperature Range C (F)	Limits of Error Standard
-101 to –59C (-150 to –75F)	±2%
-59 to 93C (-75 to 200F)	±1.5F
93 to 371C (200 to 700F)	±0.75%

④

Suffix	Base	Mate
B	YEL	BRN
BB	BLK	BLUE
R	YEL	RED
W	BLK	WHT

⑤

Suffix	Base	Mate
B	YEL	BRN
R	YEL	RED
N	YEL	ORG
P	YEL	VIO
BR	BLK	RED
BB	BLK	BLU

⑥

Suffix	Base #1	Base #2	Mate
B	YEL	BLU	BRN
R	YEL	BLU	RED
N	YEL	BLU	ORG
P	YEL	BLU	VIO

⑦ YEL
ORG
VIO
YEL and BRN
VIO and BLK

⑧ Separate colors:
BLU, ORG
RED, TAN,
VIO, GRAY,
BRN, GRN,
BLK, WHT,
YEL, or PINK.

⑨ All cables packaged in standard 1000 ft (304.8 m) rolls except for AK3608, AK3609, and CCT3901, which are packaged as specified on order.

(10) Order from local supplier.

Table 2. Coaxial and Triaxial Cables.

	Honeywell Part No. ①	AWG (Strand-ing) ②	Conduc-tors In. (mm)	Core Insulation In	Conductor Insulation In. (mm)	Number of Shields/Material	Shield Cover-age	Nominal O.D. In. (mm)	Jacket Insulation In. (mm)	Tem-perature Rating C (F)	Weight Per 1000 ft (lb) (per 305 m [kg])	Maxi-mum Pull Tension lb (N)	Resistance Per Conductor Ω/1000 ft (Ω/km)	Nominal Impedance (Ω)	Nominal Capac-itance pF/ft (pF/m)	Nominal Propagation Velocity	Shield DC Resistance Ω/1000 ft (Ω/km)	Volt-age Rating (V)	100% sweep Tested
	AK3605	18 16 Strands (16 x 30)	Triax	N/A	Cellular Polyethylen e 0.038 (0.97)	Alum-Mylar* with 4-24 AWG Tinned Cooper Drain Wires	N/A	0.32 (8.1)	PVC Black 0.04 (1.02)	-20 to 80C (-4 to 176F)	60 (27)	40 (178)	13 (42.7)	50	28.5 (93.5)	N/A	N/A	300	N/A

* Trademark of DuPont Company ②AU solid conductors unless otherwise noted.

Determining Conduit Size

The appropriate conduit size is determined by first calculating the total cross-sectional area of the conductors required. Table 3 lists the conduit's inside diameter and equivalent cross-sectional area. The conduit's fill factor must also be considered. The conduit fill factor percentage is 53 percent for one conductor, 31 percent for two conductors, and 40 percent for more than two conductors.

Use Tables 1 through 3 and the following formula to determine the outside diameter of each conductor, the total cross-sectional area for the conductors, the conduit fill factor, and the conduit size required for the conductors.

$$\mathbf{AC = (NA_{W1} + NA_{W2} + NA_{W3} + ... + NA_{WN}) \div F}$$

Where:

- O.D. = Outside Diameter
- A_W = Cross-sectional area (in square inches) of a given conductor including insulation
- N = Number of conductors of a given cross-sectional area
- A_C = Total Conductor cross-sectional area (in square inches)
- F = Fill factor, in decimals. The conduit fill factor percentage is 53 percent (0.51) for one conductor, 31 percent (0.31) for two conductors, and 40 percent (0.4) for more than two conductors.

EXAMPLE: Four AK3702 and seven AK3712 cables need to be run in what size conduit?

Where:

AK3702 O.D. = 0.172 in. (from Table 1)
AK3712 O.D. = 0.194 in. (from Table 1)

Cross-sectional area = π (O.D. + 2)^2
Cross-sectional area of AK3702 = A_{Wl}
A_{Wl} = 3.14 x (0.172 ÷ 2)^2 = 0.023 square inches
Cross-sectional area of AK3712 = A_{W2}
A_{W2} = 3.14 x (0.194 ÷ 2)^2 = 0.03 square inches

Fill factor for more than two conductors (F) = 40% = 0.4

Then:

A_C = [(NA_{W1}) + (NA_{W2})] ÷ F
A_C = [(4 x 0.023) + (7 x 0.03)] ÷ 0.4
A_C = 0.755 square inches

From Table 3 (Internal Area in Square Inches column), select the conduit size with the internal area in square inches closest, but larger than, 0.755 square inches. The table indicates that a 1-in. rigid (0.864 square inches) or flexible conduit (0.785 square inches) is required for the cable mn.

NOTE: For additional information and examples, refer to NEC Chapter 9 and the NEC Handbook.

Table 3. Electrical Conduit, Inside Diameter and Cross-Sectional Area.

	Rigid Conduit or Tubing		Flexible Conduit	
Conduit Trade Size	**Internal Diameter in Inches**	**Internal Area in Square Inches**	**Internal Diameter in Inches (Nominal)**	**Internal Area in Square Inches (Nominal)**
3/8	N/A	N/A	0.375	0.110
1/2	0.622	0.304	0.625	0.307
3/4	0.824	0.533	0.8125	0.518
1	1.049	0.864	1.00	0.785
1-1/4	1.380	1.496	1.250	1.227
1-1/2	1.610	2.036	1.500	1.767
2	2.067	3.356	2.00	3.142
2-1/2	2.469	4.788	2.500	4.909
3	3.068	7.393	3.00	7.069
3-1/2	3.548	9.887	3.500	9.621
4	4.026	12.730	4.000	12.566
4-1/2	4.506	15.946	N/A	N/A
5	5.047	20.005	N/A	N/A
6	6.065	28.890	N/A	N/A

Honeywell

Home and Building Control
Honeywell Inc.
Honeywell Plaza
P.O. Box 524
Minneapolis, MN 55408-0524

Home and Building Control
Honeywell Limited-Honeywell Limitée
740 Ellesmere Road
Scarborough, Ontario
M1P 2V9

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74-1877 MLF TAB: III.B.2 Rev. 4-92 Printed in USA