

TYPE EXAMINATION CERTIFICATE



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[2]

**Equipment or Protective System intended for use
in Potentially Explosive Atmospheres
Directive 94/9/EC**

[3]

Type Examination Certificate Number: **DEMKO 04 ATEX 0330347X Rev. 0**

[4]

Equipment: **Programmable Industrial Controllers – 1734 Series**

[5]

Applicant and Manufacturer: **Rockwell Automation/ Allen Bradley**

[6a]

Applicant Address: **1 Allen-Bradley Drive, Mayfield Heights, OH. 44124 USA**

[6b]

Manufacturer Address: **1201 S 2nd St., Milwaukee, WI 53204 USA**

[7]

This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

[8]

UL International Demko A/S certifies that this equipment has been found to comply with the Essential Health and Safety Requirements that relate to the design of **Category 3** equipment, which is intended for use in potentially explosive atmospheres. These Essential Health and Safety Requirements are given in Annex II to the European Union Directive 94/9/EC of 23 March 1994.

The examination and test results are recorded in confidential report no. **10CA57420**

[9]

Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule of this certificate, has been assessed by reference to Standards:

EN 60079-0:2006

EN 60079-15:2005

[10]

If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

[11]

This Type examination certificate relates only to the design of the specified equipment, and not to specific items of equipment subsequently manufactured.

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The marking of the equipment or protective system shall include the following:



II 3 G Ex nA IIC T4 or Ex nA nL IIC T4 or Ex nC IIC T4

Certification Manager

Jan-Erik Storgaard

This certificate may only be reproduced in its entirety and without any change, schedule included

Date of issue: 2004-02-17

Re-issued: 2011-06-06

Certification Body

UL International Demko A/S, Lyskaer 8, P.O. Box 514, DK-2730 Herlev, Denmark, Tel. +45 44 85 65 65, info.dk@dk.ul.com
www.ul-europe.com

[13]

[14]

Schedule
TYPE EXAMINATION CERTIFICATE No.
DEMKO 04 ATEX 0330347X Rev. 0
Report: 10NK15757

[15]

Description of Equipment:

These devices are open-type programmable controllers for use in industrial applications. Model 1734-IA2 is a two-channel point input module, while Model 1734-IA4 is a four-channel point input module. Model 1734-OA2 is a two-channel point output module, while Model 1734-OA4 is a four-channel point output module. Model 1734-OW2 is a two point relay output module. Model 1734-AENTR is an ethernet adapter that provides connectivity to an Ethernet/IP network with two RJ45 connectors. Model 1734-IE4C is a four-channel analog current input module. Model 1734-IE8C is an eight-channel analog current input module. Model 1734-OE4C is a four-channel current output module.

Most of these devices plug into accessory bases that utilize terminal blocks for electrical connection. The bases are then din-rail mounted. The accessories can be utilized with any of the I/O devices described below.

The devices consist of the following modules:

<u>Module</u>	<u>Protection Method</u>	<u>Description</u>	<u>Electrical Ratings</u>
1734-ACNR	nA nL	Control Net Adapter	Input Requirements: 24Vdc, 425mA; Pointbus Output: 5Vdc, 1A; User Power: 24Vdc, 10A;
1734-ADN	nA nL	I/O Adapter	Dnet Power: 24Vdc, 50mA. Output: 5Vdc, 1A. User Power: 24Vdc, 10A
1734-AENT	nA nL	Ethernet Adapter	Output: 5Vdc, 1A; User Power: 24Vdc, 10A;
1734-EP24DC	nA	Expansion I/O Adapter	Input Requirements: 24Vdc, 400mA/12Vdc, 800mA. Pointbus Output: 5Vdc, 1.3A Field Power: 24Vdc/12Vdc, 10A
1734-FPD	nA	I/O Adapter	User Power: 10A, 24V dc
1734-IB2	nA	2 Point Sink Input	Backplane: 5Vdc, 75 mA; Input: 24Vdc, 5mA.
1734-IB4	nA	4 Point Sink Input	Backplane: 5Vdc, 75 mA; Input: 24Vdc, 5mA.
1734-IE2C	nA	2 Point Analog current input	Input: 24Vdc, 21 mA; Supply: 24 Vdc, 10 mA; Backplane: 5Vdc, 75 mA;
1734-IE2V	nA	2 Point voltage input	Input : 0 to +10V dc, 1 mA Input : -10 to +10Vdc, 1 mA Supply : 24 Vdc, 15 mA Backplane » 5Vdc, 75 mA
1734-IJ	nA	Encoder/ Counter with three 5Vdc inputs.	Backplane: 5Vdc, 160mA; Input: 5Vdc, 19.1mA;
1734-IK	nA	Encoder/ Counter with three 24Vdc inputs.	Backplane: 5Vdc, 160mA; Input: 24Vdc, 10.2mA;
1734-IR2	nA	2 Point RTD Input	Backplane: 5Vdc, 220mA. Input: 0-600 ohms RTD Types: Pt 100 & 200 Ohm Ni 100 & 120 Ohm, Cu 10 Ohm
1734-IT2I	nA	2 Point Isolated Thermocouple Input module	Backplane: 5Vdc, 175mA. Input: +/- 75mVdc.

[13]

[14]

Schedule
TYPE EXAMINATION CERTIFICATE No.
DEMKO 04 ATEX 0330347X Rev. 0
Report: 10NK57420

Module	Protection Method	Description	Electrical Ratings
1734-IV2	nA	2 Point Source Input	Backplane: 5Vdc, 75 mA; Input: 24Vdc, 5mA.
1734-IV4	nA	4 Point Source Input	Backplane: 5Vdc, 75 mA; Input: 24Vdc, 5mA.
1734-OB2E	nA	24Vdc, 2 Point Output module	Output: 24 Vdc , 1.0A, Pilot Duty; Backplane: 5Vdc, 75mA;
1734-OB4E	nA	24Vdc, 4 Point Output module	Output: 24 Vdc , 1.0A, Pilot Duty; Backplane: 5Vdc, 75mA;
1734-OE2C	nA	2 Point Analog current output	Output: 24Vdc, 21 mA; Supply: 24 Vdc, 70 mA; Backplane: 5Vdc, 75 mA;
1734-OE2V	nA	2 Point Analog voltage output	Output: 0 to +10V dc, 3mA Output: -10 to +10Vdc, 3mA Supply: 24 Vdc, 35 mA; Backplane: 5Vdc, 75 mA;
1734-PDN	nA	I/O Adapter	DNet Power: 24V dc, 400 mA, Class 2; Output: 1.3A, 5 V dc; User Power: 10A, 24V dc,
1734-SSI	nA	24Vdc, 8 Point Thermocouple/RTD Module	Backplane: 110ma, 5Vdc; Field: 750ma,10- 28.8Vdc; Ssi Sensor Power: 750mA, 10-28.8Vdc.
1734-VHSC24	nA	High Speed Counter with three 24Vdc inputs and two outputs.	Backplane: 5Vdc, 180mA; Input: 24Vdc, 10.2mA; Output: 24Vdc, 0.5A, Pilot Duty;
1734-VHSC5	nA	High Speed Counter with three 5Vdc inputs and two outputs.	Backplane: 5Vdc, 180mA; Input: 5Vdc, 19.1ma; Output: 24Vdc, 0.5A, Pilot Duty;
1734-IA2	nA	Two-channel point input	Backplane: 5 Vdc, 75 mA Input: 120 Vac, 10 mA, 50/60 Hz
1734-IA4	nA	Four-channel point input	Backplane: 5 Vdc, 75 mA Input: 120 Vac, 10 mA, 50/60 Hz
1734-OA2	nA	Two-channel point output	Backplane: 5 Vdc, 75 mA Output: 120 Vac, 50/60 Hz 0.75 A maximum per channel, pilot duty 1.5 A maximum per Module at 45°C 1.3 A maximum per Module at 55°C
1734-OA4	nA	Four-channel point output	Backplane: 5 Vdc, 75 mA Output: 120 Vac, 50/60 Hz 0.75 A maximum per channel, pilot duty 2.0 A maximum per Module at 45°C 1.4 A maximum per Module at 55°C
1734-OW2	nC	Two Point Relay output	Backplane: 5Vdc, 80mA; Contact: 24 Vdc, 2A
1734-AENTR	nA nL	Ethernet Adapter	Field Power Supply: 10-28.8 Vdc, 10A max Filed Power Output: 10-28.8Vdc, 9A max. Module Input: 10-28Vdc, 1000mA Pointbus Output: 5Vdc 0.8A max.

[13]

[14]

Schedule
TYPE EXAMINATION CERTIFICATE No.
DEMKO 04 ATEX 0330347X Rev. 0
Report: 10NK15757

Module	Protection Method	Description	Electrical Ratings
1734-IE4C	nA	Four-channel analog current input module	Field Power Supply: 10-28.8Vdc, 20mA, Class 2 Input: 4-20mA or 0-20mA Pointbus Output: 5Vdc, 75mA
1734-IE8C	nA	Eight-channel analog current input module	Field Power Supply: 10-28.8Vdc, 30mA, Class 2 Input: 4-20mA or 0-20mA Pointbus Output: 5Vdc, 75mA
1734-OE4C	nA	Four-channel current output module	Field Power Supply: 10-28.8Vdc, 220mA, Class 2 Output: 4-20mA or 0-20mA Pointbus Output: 5Vdc, 75mA

Accessories:

Module	Description
1734-TB	8-Termination, two-piece terminal base assembly
1734-RTB	8-terminal screw-clamp, removable terminal base
1734-MB	Mounting base
1734-TOP	8-Termination, One-piece mounting base with intergrated terminal locations, screw-clamp
1734-TOP3	8-Termination, One-piece mounting base with intergrated terminal locations, screw-clamp
1734-TOPS	8-Termination, One-piece mounting base with intergrated terminal locations, screw-clamp
1734-TOP3S	8-Termination, One-piece mounting base with intergrated terminal locations, screw-clamp

Temperature range

The relation between ambient temperature and the assigned temperature class is as follows:

Ambient temperature range	Temperature class
-20 °C to +55 °C	T4

Electrical data

The modules are provided with the electrical ratings shown in Table I.

Installation instructions

These devices are provided with installation instructions indicating electrical and ambient ratings, mounting requirements, safety precautions and special conditions for safe use.

Instructions on how the terminal blocks mate with the I/O devices are provided with the Installation Instructions. Both the I/O Modules and the Terminal Blocks have Installation Instructions provided with them.

Routine tests

Routine dielectric strength tests according to EN 60079-15 cl. 34.2.1 are required. Models 1734-OW2, 1734-AENTR, 1734-IE4C, 1734-IE8C and 1734-OE4C do not require routine tests.

[13]

[14]

Schedule
TYPE EXAMINATION CERTIFICATE No.
DEMKO 04 ATEX 0330347X Rev. 0
Report: 10NK57420

[16] Descriptive Documents
 Project Report No.: 10CA57420 (Hazardous Location Testing)

Drawings:

Description:	Drawing No.:	Rev. Level:	Date:
Product Assembly Drawing for module 1734-ACNR	96391071	A01	2002-03-05
Bill of Materials for 1734-ACNR	00414654		2004-03-24
Schematics "MDL, ISOL POWER EP24DC" for modules 1734-ACNR, -ADN, -AENT, -EP24DC. (4 pages)	92422251	A02	2007-04
Schematic "ACN, COMM BASE" for module 1734-ACNR (4 pages)	92427651	A01	2006-11
Schematic "CN BRIDGE" for module 1734-ACNR (7 pages)	92427851	A01	2006-11
Product Assembly Drawing of modules 1734-FPD, -EP24DC, -PDN	97129100	B02	2000-02-14
Bill of Materials for 1734-EP24DC	00414662		2004-03-24
Bill of Materials for 1734-FPD	00414664		2004-03-24
Bill of Materials for 1734-PDN	00414723		2004-03-24
Schematics "MDL, POWER/COMM BASE, PSDC" for modules 1734-FPD, -EP24DC, -PDN (2 pages)	92420051	A01	2006-09
Product Assembly Drawing of module 1734-ADN	97129200	B01	2000-10-02
Bill of Materials for 1734-ADN	00414655		2004-03-24
Schematic "POWER/ COMM BASE" for module 1734-ADN (2 pages)	92426851	A01	2007-04
Schematic "DN BRIDGE MOD" for module 1734-ADN (6 pages)	92427051	A01	2007-04
Product Assembly Drawing for module 1734-AENT (2 pages)	96390271	A03	2003-12-04
Bill of Materials for 1734-AENT	00414657		2004-03-24
Schematic "Point ENET ADPT" for module 1734- AENT (10 pages)	92429451	A01	2006-10
Schematic "Point ENET BASE" for module 1734- AENT (5 pages)	92429251	A01	2006-10
Schematic of "MDL, POWER/COMM, PDN-NI" for module 1734-PDN (5 pages).	92422051	A01	2006-10
Product Assembly Drawing for I/O modules; 1734-IB2, -IB4, -IE2C, -IE2V, -IJ, -IK, -IR2I, -IVE, -IV4, -OB2E, -OB4E, -OB2C, -OB2V, -SSI, -VHSC24, -VHSC5.	95719300	B01	2005-03-29
Bill of Materials for 1734-IB2	00414667	-	2004-03-24
Bill of Materials for 1734-IB4	00414668	-	2004-03-24
Bill of Materials for 1734-IE2C	00414671	-	2004-03-24
Bill of Materials for 1734-IE2V	00414672	-	2004-03-24
Bill of Materials for 1734-IJ	00414675	-	2004-03-24
Bill of Materials for 1734-IK	00414677	-	2004-03-24
Bill of Materials for 1734-IR2	00414684	-	2004-03-24
Bill of Materials for 1734-IT2I	00414689	-	2004-03-24

[13]

[14]

Schedule
TYPE EXAMINATION CERTIFICATE No.
DEMKO 04 ATEX 0330347X Rev. 0
Report: 10NK15757

Drawings Continued:

Description:	Drawing No.:	Rev. Level:	Date:
Bill of Materials for 1734-IV2	00414691	-	2004-03-24
Bill of Materials for 1734-IV 4	00414693	-	2004-03-24
Bill of Materials for 1734-OB2E	00414703	-	2004-03-24
Bill of Materials for 1734-OB4E	00414706	-	2004-03-24
Bill of Materials for 1734-OE2C	00414710	-	2004-03-24
Bill of Materials for 1734-OE2V	00414712	-	2004-03-24
Bill of Materials for 1734-SSI C	00414725	-	2004-03-24
Bill of Materials for 1734-VHSC24	00414727	-	2004-03-24
Bill of Materials for 1734-VHSC5	00414729	-	2004-03-24
Schematic for module 1734-IE2C	92405451	A02	2007-01
Schematic for module 1734-IE2V	92404651	A02	2007-01
Schematic for modules 1734-IJ, -IK, -VHSC24, -VHSC5	92426051	A01	2006-11
Schematic for module 1734-IR2	92401851	A02	2007-01
Schematic for module 1734-IT2I	92402451	A02	2007-01
Schematic for module 1734-OB4E, -OB2E	92410452	A01	2006-11
Schematic for module 1734-OE2C	92403851	A01	2006-02
Schematic for module 1734-OE2V	92403051	A02	2007-01
Schematic for module 1734-SSI	92433051	A01	2006-11
Schematics for module 1734-IB2, -IB4, -IV2, -IV4	92406451	A01	2006-03
Label Artfile (for CE and epsolon mark for all models)	98676620	03	2009-03-25
Typing Instructions for ACNR	9574233623	23	2010-02
Typing Instructions for EP24DC	9573915016	16	2010-02
Typing Instructions for FPD	9573914914	14	2010-02
Typing Instructions for IB2	9575797123	23	2010-02
Typing Instructions for IB4	9575797223	23	2010-02
Typing Instructions for IE2C	9575797315	15	2010-02
Typing Instructions for IE2V	9575797415	15	2010-02
Typing Instructions for IJ	9575791317	17	2010-02
Typing Instructions for PDN	9573914814	14	2010-02
Typing Instructions for SSI	9574234417	17	2010-02
Typing Instructions for IK	9575791417	17	2010-02
Typing Instructions for VHSC5	9575791117	17	2010-02
Typing Instructions for VHSC24	9575791217	17	2010-02
Typing Instructions for OB2E	9575797924	24	2010-02
Typing Instructions for OB4E	9575798023	23	2010-02
Typing Instructions for OE2C	9575798116	16	2010-02
Typing Instructions for OE2V	9575798216	16	2010-02
Typing Instructions for IV2	9578232322	22	2010-02
Typing Instructions for IV4	9578232522	22	2010-02
Typing Instructions for ADN	9574232320	20	2010-02
Typing Instructions for IR2	1000003154603	03	2010-02
Typing Instructions for IT2I	1000003154303	03	2010-02

[13]

[14]

Schedule
TYPE EXAMINATION CERTIFICATE No.
DEMKO 04 ATEX 0330347X Rev. 0
Report: 10NK57420

Drawings Continued:

Description:	Drawing No.:	Rev. Level:	Date:
Typing instructions for 1734-AENT	95757958 23	23	2010-02
Drawing label, typing instructions for 1734-ADN	9574232320	20	2010-02
Label Layout Point I/O (marking template for all models)	95794301_04	04	2010-02
Installation Instructions for –ACNR	1734-IN582C-EN-P	C	2010-02
Installation Instructions for –ADN	1734-IN026B-EN-P	B	2010-02
Installation Instructions for –AENT	1734-IN590C-EN-P	C	2010-02
Installation Instructions for –EP24DC	1734-IN058C-EN-P	C	2010-02
Installation Instructions for –FPD	1734-IN059D-EN-P	D	2010-02
Installation Instructions for –IB2, -IB4	1734-IN051G-EN-P	G	2010-02
Installation Instructions for –IE2C, -IE2V	1734-IN027B-EN-P	B	2010-02
Installation Instructions for –IJ, -IK	1734-IN005F-EN-P	F	2010-02
Installation Instructions for –IR2, -IT21	1734-IN011F-EN-P	F	2010-02
Installation Instructions for –IV2, -IV4	1734-IN052E-EN-P	E	2010-02
Installation Instructions for –OB2E, -OE4E	1734-IN056F-EN-P	F	2010-02
Installation Instructions for –OE2C, -OE2V	1734-IN002D-EN-P	D	2010-02
Installation Instructions for –PDN	1734-IN057E_-EN-P	E	2010-02
Installation Instructions for –SSI	1734-IN581D-EN-P	D	2010-02
Installation Instructions for –VHSC24, -VHSC5	1734-IN003F_-EN-E	F	2010-02
BOM Header Point IO for all models (13 pages)	10000081832	-	2009-10-21
1734-IA2 and 1734-IA4 Schematic (6 pages)	92420252	03	2008-06-10
1734-IA2, 1734-IA4 Installation Instructions (24 sheets)	1734-IN010D-EN-E	E	-
1734-OA2 and 1734- OA4 Schematic (6 pages)	92421052	A01	2007-02
1734-OA2, 1734-OA4 Installation Instructions (24 sheets)	1734-IN009E-EN-E	E	-
1734-IA2 Labels Typing Instructions (1 sheet)	95300164	09	2010-11
1734-IA4 Labels Typing Instructions (1 sheet)	95300165	09	2010-11
1734-OA2 Labels Typing Instructions (1 sheet)	95300162	10	2010-11
1734-OA4 Labels Typing Instructions (1 sheet)	95300163	10	2010-11
1734-IA2, 1734-IA4, 1734-OA2 and 1734-OA4 Label Art File (1 sheet)	98676620	03	2009-03-25
1734-IA2, 1734-IA4, 1734-OA2, 1734-OA4 and 1734-OW2 Label Layout (1 sheet)	95794301	03	2009-03-25
1734-IA2, 1734-IA4 Spacings Measurements (3 Pages)	92420392	01	2010-11-17
1734-OA2, 173-OA4 Spacings Measurements(3 Pages)	92421192	01	2010-11-16
1734-IA2 CertSpec Document – Critical Comp. List (4 Pages)	10000016189	01-002	2011-02-07
1734-IA4 CertSpec Document – Critical Comp. List (4 Pages)	10000016191	01-002	2011-02-07
1734-OA2 CertSpec Document – Critical Comp. List (6 Pages)	10000016236	03-002	2011-02-07
1734-OA4 CertSpec Document – Critical Comp. List (4 Pages)	10000016238	03-003	2011-02-07

[13]
[14]

Schedule
TYPE EXAMINATION CERTIFICATE No.
DEMKO 04 ATEX 0330347X Rev. 0
Report: 10NK15757

Drawings Continued:

Description:	Drawing No.:	Rev. Level:	Date:
Schematics for 1734-OW2 (6 pages)	92409252	A01	2007-04
Drawing label, typing instructions for 1734-OW2	10000099065	02	2011-04
Installation Instructions for 1734-OW2 (27 pages)	1734-IN055E-EN-E		2011-05
CertSpec Sheet (BOM) (4 pages)	95759449	D06-009	2011-04-05
1734-AENTR, 1734-IE4C, 1734-IE8C and 1734-OE4C Label Art File (1 Page)	98676122-00	00	2007-11-14
1734-AENTR Typing Instructions (1 Page)	95300180 08	08	2011-04
1734-AENTR Installation Instructions (24 Pages)	1734-IN040B-EN-P	-	2011-04
1734-AENTR Critical Component List (8 Pages)	10000080822	03-004	2011-03-02
1734-AENTR Base Schematic (11 Pages)	10000015200	01	2008-12-12
1734-AENTR CPU Schematic (15 Pages)	10000007913	02	2008-12-12
1734-AENTR Power Supply Schematic (4 Pages)	92422251	A02	2007-04
1734-IE4C Typing Instructions (1 Page)	95320015-04	04	2011-04
1734-IE4C Installation Instructions (24 Pages)	1734-IN032B-EN-P	-	2011-05
1734-IE4C Critical Component List (8 Pages)	10000105012	01-003	2011-03-02
1734-IE4C Schematic (8 Pages)	10000007968	01	2008-01-28
1734-IE8C Typing Instructions (1 Page)	95320029-04	04	2011-05
1734-IE8C Installation Instructions (24 Pages)	1734-IN033B-EN-P	-	2011-04
1734-IE8C Critical Component List (8 Pages)	10000105266	01-003	2011-03-02
1734-IE8C Schematics (8 Pages)	10000007966	01	2008-01-23
1734-OE4C Typing Instructions (1 Page)	95300179 03	03	2011-04
1734-OE4C Installation Instructions (20 Pages)	1734-IN034B-EN-P	-	2011-04
1734-OE4C Critical Component List (8 Pages)	10000104786	01-003	2011-03-02
1734-OE4C Schematic (7 Pages)	10000007964	01	2008-01-21
1734-TOP, -TOPS, -TOP3, -TP3S Terminal Bases Installation Instructions (12 Pages)	1743-IN028B-EN-P	-	2010-04
1734-TB Wiring Bases Installation Instructions (2 Pages)	1734-IN511B-EN-P	-	2001-03

[17]

Special conditions for safe use:

- The system shall be mounted in an enclosure with a minimum ingress protection rating of at least IP54 as defined in EN60529 and used in area of not more than pollution degree 2, as defined in IEC 60664-1.
- Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40%.
- Earthing is accomplished through mounting of modules on rail.
- Subject devices are for operation in Ambient Temperature Range: -20 °C to +55 °C
- Subject devices plug into accessory bases that utilize terminal blocks for electrical connection except for Model 1734-AENTR. The bases are then din-rail mounted.
- For Model 1734-OW2, the conductors must be used with minimum conductor temperature rating of 85°C.
- For Model 1734-IE4C, the conductors must be used with minimum conductor temperature rating of 92°C.
- For Model 1734-IE8C, the conductors must be used with minimum conductor temperature rating of 94°C.
- For Model 1734-OE4C, the conductors must be used with minimum conductor temperature rating of 100°C.

[18]

Essential Health and Safety Requirements

Met by compliance with the standards EN 60079-0:2006, EN 60079-15:2006.

Additional information

These devices have been additionally evaluated to EN 60079-0:2006 and EN 60079-15:2005 and are now marked with the symbol Ex instead of EEx.