

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Automatic Telephone, Public Address, General Alarm Systems**with type designation(s)
INTRON-D plus

Issued to

INDUSTRONIC Industrie-Electronic GmbH & Co. KG
Wertheim, Germany

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft
LSA Code VII 7.2**IMO A.1021(26) Code on alerts and indicators (2009)****IMO MSC Circ 808****IMO Res. A.694(17) General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids****Application :****See page 2****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Temperature	A*
Humidity	A
Vibration	A
EMC	B*
Enclosure	A*

* unless specifically stated otherwise in Appendix

Issued at **Høvik** on **2018-11-23**This Certificate is valid until **2023-11-22**.DNV GL local station: **Augsburg**Approval Engineer: **Steinar Kristensen**for **DNV GL**

Digitally Signed By: Grimsrud, Jan Tore

Location: DNV GL Høvik, Norway

Jan Tore Grimsrud
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Job Id: **262.1-014482-4**
Certificate No: **TAA000001Y**
Revision No: **2**

Product description

INTRON-D *plus* Public Address (PA), General Alarm (GA), Automatic Telephone and Handsfree voice/Talkback/ Intercom system can be provided as either:

- PA system only
- GA system only
- Integrated PA and GA system
- Automatic Telephone and Handsfree Voice/ Talkback/ Intercom system
- Integrated PA, GA, Automatic Telephone and Handsfree Voice/ Talkback/ Intercom system

When used for PA on passenger vessel or integrated PA and GA on any vessel, the system shall be duplicated. When used for passenger vessels the duplicated parts of the system are to be installed in separate main vertical fire zones.

For further product details and configurations, see Appendix.

Application/Limitation

1. The INTRON-D *plus* system may be used in cargo ships, passenger vessels and mobile offshore units for compliance with the following codes/rules/regulations:
 - SOLAS
 - HSC Code
 - MODU Code
 - DNVGL Statutory Interpretations DNVGL-SI-0364 [Feb 2018]
2. Any PA call station/intercom station/access panel which is not used for emergency PA activation shall have a lower priority than GA.
3. Central cabinet equipment is to be installed in 19" rack(s) with lockable door(s).
4. Call station/intercom stations/access panels with functions for activation of Emergency PA and GA is to be installed in locations with access control.
5. Call station/intercom stations/access with functions for activation of Emergency PA and GA shall be provided with means to avoid unintended use. This can be either cover for protection of keys, or keys shall be pressed for minimum 3 seconds to activate function. Keys shall be clearly labelled.
6. When used as combined PA/GA system, two independent speaker loops are required.
7. System shall operate on a dedicated IP network/LAN, consisting of components listed in this certificate. Installations with interconnection to other networks is subject to separate case-by-case approval.
8. Any Ex-equipment (equipment to be used in areas with explosive atmosphere) listed in this certificate are subject to separate Ex- approvals.

Tests carried out

- Environmental testing: DNVGL-CG-0339 (2016)
- Performance testing: Functional tests according to DNVGL Type Approval programs 848.22 for PA/GA systems, 848.25 for Automatic Telephone systems and 848.26 for Handsfree Voice/Talkback systems.


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Type Approval documentation

Doc. ID	Rev.	Description
FDE-315-042-120	R03	Description: Industronic, Functional description, Digital Voice Processor with up to 4 voice channels
028-007-113	3	Manual: Industronic, Instructions for Desktop Intercom Station, 12 DT 002
028-007-140	3	Manual: Industronic, Instructions for Digital Desktop Intercom Station 10.112 DT 003
028-007-171	2	Manual: Industronic, Instructions for Digital Desktop Intercom Station DTM 010/011
UMN-028-007-218	1	Manual: Industronic, Instructions for Outdoor Intercom Station, DA(E) 0x5
FDA-330-001-452	3	Manual: Industronic, INTRON-D Functions, Direct Two-Way Communication (pre-defined)
FDA-330-001-453	3	Manual: Industronic, INTRON-D Functions, Dynamic Two-Way Communication
FDA-330-001-454	3	Manual: Industronic, INTRON-D Functions, Group Call and All Call
FDA-330-001-451	3	Manual: Industronic, INTRON-D Functions, Overview
GDL-330-001-406	3	Manual: Industronic, INTRON-D <i>plus</i> Commissioning and Troubleshooting
UMN-100-708-102	1	Manual: Industronic, INTRON-D <i>plus</i> , Dial Keypad
UMN-028-007-200	1	Manual: Industronic, Operating Manual for the Digital Explosion-proof Intercom Station of the DX(E) 005 or 015 and DX 005/T6 series
UMN-070-028-008	1	Manual: Industronic, User Manual, 5-port Fast-Ethernet PoE Switch
304-110-320E_EN	3	Manual: Industronic, User Manual, 6 LME 01, 6 LME 01/FA
ECL-ENV-TR-13-039	V01.00	Report: BV, Climatic test report for Intercom Stations
ECL-ENV-TR-13-035	V01.00	Report: BV, Climatic test report for INTRON-D <i>plus</i> Cabinet
ECL-EMC-TR-13-163	V01.00	Report: BV, EMC test report for 12 DT 002 desktop intercom station
ECL-EMC-TR-13-164	V01.00	Report: BV, EMC test report for 15 DTM 010/C6 Intercom station
ECL-EMC-TR-13-165	V01.00	Report: BV, EMC test report for 16 DT 003 Intercom Station
ECL-EMC-TR-13-179	V01.00	Report: BV, EMC test report for 2 DA 015/25 outdoor intercom station
ECL-EMC-TR-13-183	V01.00	Report: BV, EMC test report for 2 DDSI 103 digital dual system interface
ECL-EMC-TR-13-184	V01.00	Report: BV, EMC test report for 2 DDSIX 113 digital dual system interface
ECL-EMC-TR-13-181	V01.00	Report: BV, EMC test report for 2 DX 015 Intercom station
ECL-EMC-TR-13-182	V01.00	Report: BV, EMC test report for 2 DXE 015 Intercom Station
ECL-EMC-TR-13-180	V01.00	Report: BV, EMC test report for 2 DAE 015/25 Intercom Station
ECL-EMC-TR-13-166	V01.00	Report: BV, EMC test report for 36 AP 701H/C8 IP desktop intercom station

Job Id: **262.1-014482-4**
 Certificate No: **TAA000001Y**
 Revision No: **2**

Doc. ID	Rev.	Description
ECL-EMC-TR-13-115	V01.00	Report: BV, EMC test report for INTRON-D <i>plus</i> Cabinet
ECL-ENV-TR-13-036	V01.00	Report: BV, Vibration test report for Intercom Stations
TA848.22	2013-08-19	Report: Industronic, Performance Test Report Industronic INTRON-D <i>plus</i> PA/GA system
EB/TR 1385229	2013-07-17	Report: TÜV, Salt Mist tests for Intercom Stations and DDSI digital interfaces
5001686-9030-0001/185366	2013-07-10	Report: VDE, Vibration Test Central Cabinet
	2014-05-28	Report: Industronic, Performance test report for PA/GA system
	2014-05-28	Report: Industronic, Performance test report for Automatic Telephone System
P321286-1	2014-06-06	Statement: Industronic, Documentation reference for components 6 LMT 01 and 2 DDSIX 113-O
ECL-ENV-TR-14-014	V01.00	Report: BV, Vibration test report for 1DITx 002/0 and 3 MSX 102
ECL-ENV-TR-14-011	V01.00	Report: BV, Vibration test report for Intron-D Plus central cabinet
ECL-ENV-TR-14-008	V01.00	Report: BV, Environmental test report for Intron-D Plus central cabinet
ECL-ENV-TR-14-007	V01.00	Report: BV, Environmental test report for 1DITx 002/0 and 3 MSX 102
ECL-EMC-TR-14-019	V01.00	Report: BV, EMC test report for 1DITx 002/0 and 3 MSX 102
ECL-EMC-TR-14-018	V01.00	Report: BV, EMC test report for Intron-D Plus central cabinet
A-12989	2012-11-19	Certificate: DNV, A-12989 Exicom and Provicom terminal types
UMN-315-026-100	1	Manual: Industronic, Operating manual for 1 DVDM 01 DVD/CD/USB/MP3 Player
UMN-315-024-200	1	Manual: Industronic, Operating manual for 1 TM 03 Synthesizer Tuner



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Marking of product

The Manufacturer and Type Designation to be applied to the equipment in a clearly visible location. In addition the equipment shall be marked with the Type Approval certificate number, serial number, safe distance to magnetic compass, power consumption and/or supply voltage.

Periodical assessment

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

The scope of the periodical/renewal assessment is to verify that the production quality conditions stipulated for the type approval are complied with and that no alterations are made to the product design or its components and/or materials without appraisal by the Society.

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APPENDIX

Product description

INTRON-D *plus* Public Address and General Alarm System consisting of ¹⁾:

Equipment type	Description	Module	Article no.	SW	Location	
Central Cabinet	Central exchange cabinet, 19"	Rittal TS8 or VX25 series			EMC: Class A (All locations except bridge and open deck)	
	Digital exchange controller	1 DXC 03/O	341-702-100/O	4.8.x		
	Monitoring board for duplex DXC operation	3 DCR 02	341-730-200			
	Monitoring board for duplex DXC operation	Linecard for 12 digital stations	3 DCR 03	341-730-300		
			12 DDL 02	341-710-200		16
	Linecard for 12 analogue stations	12 DAL 03	341-720-300	12		
	Digital interface board for INTRON-D <i>plus</i> central interconnection	12 DXI 03/E	341-749-100	6		
	Digital interface board for INTRON-D <i>plus</i> central interconnection	Digital Audio Processor, up to 4 channels	12 DXI 03/EMD	341-749-500		6
			12 DXI 03/ESD	341-749-600		6
			12 DXI 03/SS	341-749-700		6
			12 DXI 03/MM	341-749-800		6
			4 DAP 01/x	315-042-100/x		11
	Digital Audio Processor, up to 4 channels	Audio Frequency level adaption card	4 DAP 31/x	315-042-200/x		11
			AF level adaption board	342-501-600		
	Analogue Telephone Interface	6 ATI 01	342-301-100			
	Digital I/O board with 8 lines	8 DIO 002	301-435-300	21		
	Digital I/O board with 8 lines	8 DIO 010	301-435-500	12		
	Digital I/O board with 8 lines and isolated power	8 DIO 011	301-435-900	12		
	Relay board	6 ERK 10	342-711-100			
	Relay board Line Monitoring unit	6 EKR 11	342-711-200			
		6 ERK 13	342-711-400			
		6 LME 01	304-110-300	1.x		
		6 LMT 01	304-114-100			
	Line Monitoring unit DC/DC converter	2 GW 01	309-105-100			
	DC/DC converter Power redundancy board for 10 GW x5 DC/DC converter	10 GW 05	309-101-300			
		10 GW 65	309-101-400			
		1 PRM 01	309-101-500			
	Digital power amplifier 2x250W/100V	500 DVE 13	304-124-300	12		
	Digital power amplifier 2x250W/100V	500 DVE 13/120	304-124-300/120	12		
	Digital power amplifier 2x250W/100V	500 DVE 03	304-122-300	11		
	Digital power amplifier 2x250W/100V	500 DVE 03/120	304-122-300/120	11		
	Digital power amplifier 250 W/100 V	250 DVE 13	304-123-300	12		
Digital power amplifier 250 W/100 V	250 DVE 13/120	304-123-300/120	12			
Digital power amplifier 250 W/100 V	250 DVE 03	304-121-300	11			
Digital power amplifier 250 W/100 V	250 DVE 03/120	304-121-300/120	11			
Relay unit for serial control	3 DRU 03	304-128-300				
Digital Control Interface	16 DCI 01	304-127-100	12			
Digital Dual System Interface	2 DDSI 003/x	301-439-500/x	4			
Telephone gateway, ISDN to SIP	Telephone-Gateway Yx S0	342-503-50x				

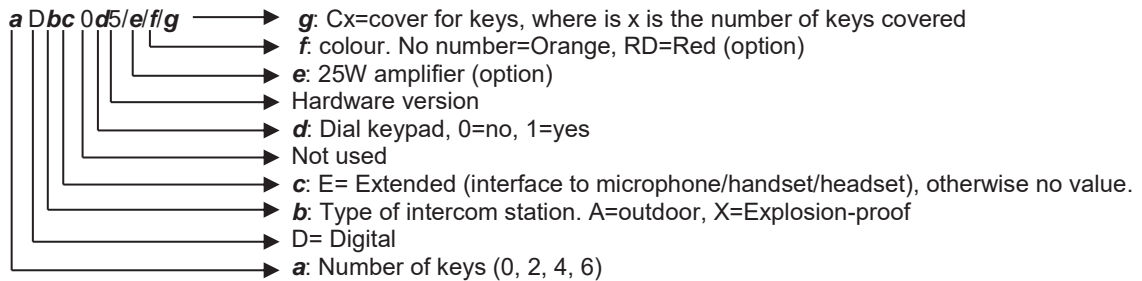
¹⁾ Actual configuration may vary based on requirements for individual installations. Only modules listed in certificate are approved for installation.

Job Id: **262.1-014482-4**
 Certificate No: **TAA000001Y**
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Equipment type	Description	Module	Article no.	SW	Location
Central Cabinet cont.	Zone Control Unit	9 DCI 01	304-127-200	3	EMC: Class A (All locations except bridge and open deck)
		6 LME 01	304-110-300	1.x	
		6 DRU 03	304-128-400		
	Key Switch Board	2 UKS 01	343-041-200		
	Entertainment system	2 MR 02/1HE	315-020-200		
		1 DVDM 01	315-026-100		
		1 TM 03	315-024-200		
	Power Supply	PSE-230/48/xx	309-799-50x		
		PSE-120/48/xx	309-799-50x		
		PSA-230/48/xx or PSA-230/60/xx	309-799-1xx		
		PSA-120/48/xx or PSA-120/60/xx	309-799-1xx		
	Power Switch	3,6 NUS 230	309-640-100		
	End-of-line module	1 ELMC 01	304-110-900		
End-of-line module	1 ELMC 02	304-111-700			
Temperature-controlled cabinet fan	x FL 04 EMV	218-799-4x0			
5-Port Fast-Ethernet PoE Switch	5-Port Fast-Ethernet PoE Switch Offshore	070-028-008			
Call Stations	Digital outdoor intercom station with keypad and 25W amplifier	x DA 0x5 ²	301-49x-xxx	22	Enclosure: Class C (Exposed) Temp: Class D (-25°C to +70°C)
	Digital outdoor intercom station with keypad, 25 W amplifier and external interface	x DAE 0x5 ²	301-49x-xxx	22	
	Digital explosion-proof intercom station with keypad and 25W amplifier	x DX 0x5 ²	301-4xx-xxx	3	
	Digital explosion-proof intercom station with keypad, 25W amplifier and external interface	x DXE 0x5 ²	301-4xx-xxx	3	
Access Panel	Access Panel desktop intercom station with 7" color touch display	xx AP 701 ²	301-051-xxx	1.1.x	
Intercom stations	Digital desktop intercom station	12 DT 002 ²	301-421-200	22	
	Digital desktop intercom station with display	xx DTM 010/O ²	301-471-xxx/O	28	
	Digital desktop intercom station	xx DT 003 ²	301-xxx-xxx	38	
	Digital rack or flush-mounted intercom station	xx DEXx 003 ²	301-60x-xxx 301-7xx-xxx	38	
	Offshore Intouch Station Ex-proof	1 DITXx 0xx/x ²	301-598-xxx/x		
	Microphone Station Ex-proof	x MSXx 1xx/x ²	301-599-xxx/x		
Interface units	Digital dual system interface, IP66, plastic housing	2 DDSI 103	301-439-400	4	Enclosure: Class C (Exposed) Temp: Class D (-25°C to +70°C)
	Digital dual system interface, Ex-proof housing, IP66, aluminium housing	2 DDSIX 113	301-439-700	4	
	Digital dual system interface, Ex-proof housing, IP66, stainless steel housing	2 DDSIX 113/O	301-439-700/O	4	

² See below for description of numbering and available options. Model listed in certificate is considered representative for all options.

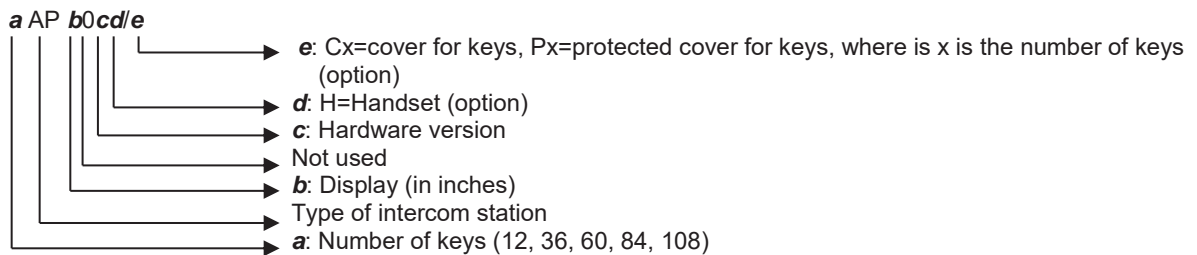
1. Call station model numbering:



Example:
 2 DAE 015/25/RD Digital outdoor intercom station incl. dial keypad, 1 momentary rocker switch (2 keys), 25 W amplifier and interface to microphone/handset/ headset with colour red.

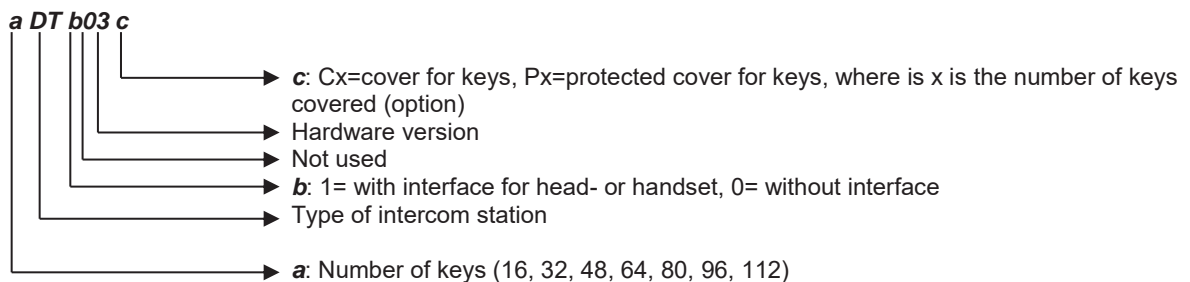
2. Access panel/ Intercom stations/ /Microphone stations model numbering:

AP model



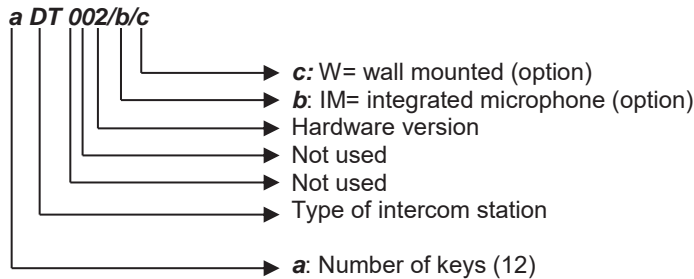
Example:
 36 AP 701H/P6 Access Panel desktop intercom station with 7" color touch display, 36 keys, handset and protected cover for 6 keys.

DT model



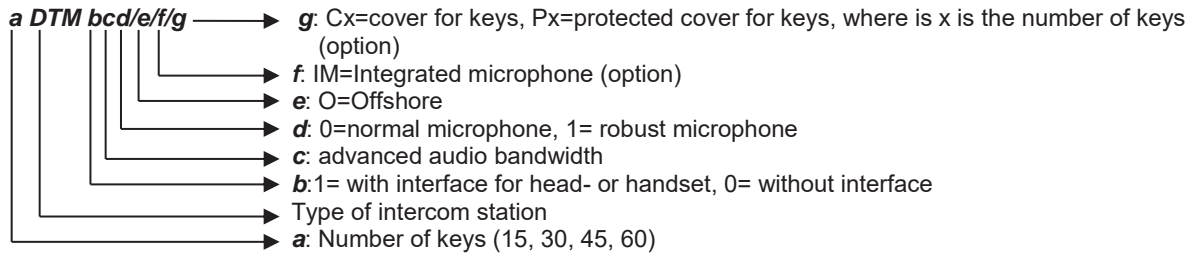
Example:
 16 DT 003 C4 Digital desktop intercom station, with 16 foil keys and cover for 4 keys.

12 DT model



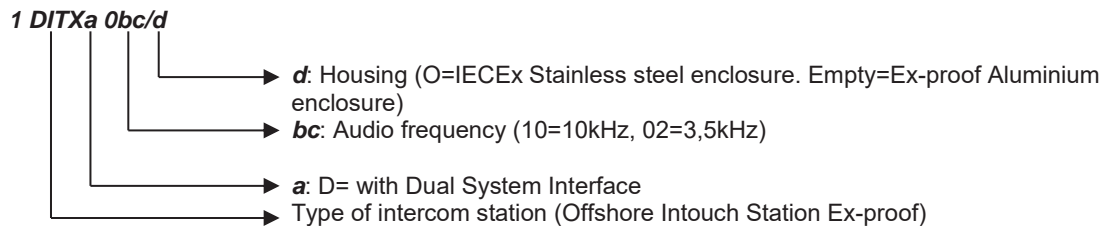
Example:
 12 DT 002/IM/W Digital desktop intercom station, with 12 keys, integrated microphone for wall mounting.

DTM model



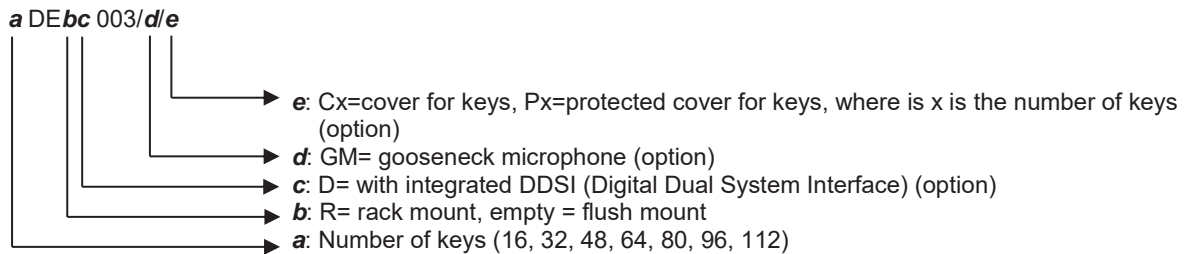
Example:
 15 DTM 010/P6 Digital desktop intercom station with 15 foil keys and protected cover for 6 keys.

DITX model



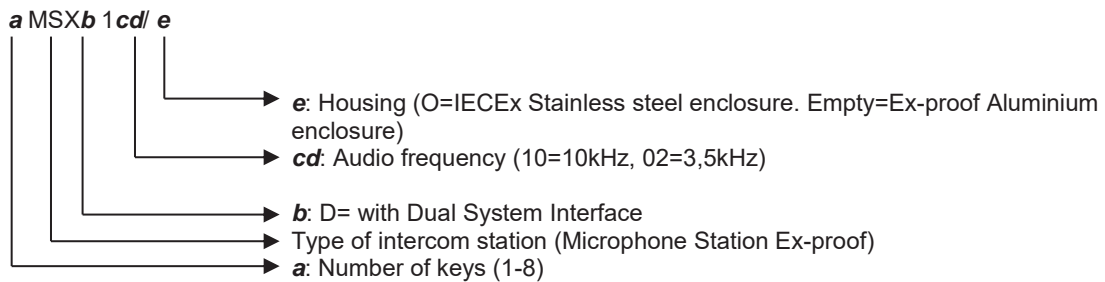
Example:
 1 DITX 002/O Offshore Intouch Station Ex-proof, 2,5kHz Audio Frequency and IECEX stainless steel enclosure.

DE/DER model



Example:
12 DER 003/C6 Digital rack mount intercom station with 12 keys and cover for 6 keys

MSX model



Example:
3 MSX 102 Microphone station with 3 keys, 2,5kHz Audio Frequency and Ex-proof aluminium enclosure