



Technical Standard

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Page 1 (14)

Mondi AG.

Mondi Standard Harmonization

RECOMMENDED MANUFACTURERS FOR ELECTRICAL AND INSTRUMENT EQUIPMENT

Contents	1	General
	2	Electrification
	3	Instrumentation
	4	Control Systems and Fieldbuses
	5	IT and Networking

Distribution

Mondi, AFRY

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1 GENERAL

This document defines the types and manufacturers of electrical, automation and instrumentation equipment which is included in the machine delivery.

All proposed equipment types will be subject to purchaser's approval.

If the delivery includes any electrical or instrumentation equipment other than specified in the list below or **if the manufacturer is not one of those specified in the instructions, the supplier must get approval from the purchaser** for the use of the equipment in question.

EQUIPMENT

MANUFACTURER/SUPPLIER

2 ELECTRIFICATION

2.1 Electrical Equipment Included in Machine Delivery

2.1.1 Rotating Electrical Machines

- | | |
|----------------------------------|---|
| – Squirrel cage induction motors | According to IEC standard
Motors of premium class (0,75-1000kW IE3,
0,12-055kW IE2),
Siemens, ABB, SEW |
| – Gear motors | Auma, SEW |
| – Pulse generators | Leine&Linde, Hubner, Sick |

2.1.2 Power and Control Circuit Field Equipment

- | | |
|---|---|
| – Limit-switches, mechanical | Schneider Electric, Siemens |
| – Proximity switches
Inductive
Capacitive
Magnetic | Schneider Electric, IFM Efector,
Pepperl+Fuchs, Promet, Lovato |
| – Photo cells | Schneider Electric, Sick, Pepperl + Fuchs |
| – Speed guards | Schneider Electric, IFM Electronic,
Pepperl + Fuchs |
| – Multipoint connectors | Harting |

	<u>EQUIPMENT</u>	<u>MANUFACTURER/SUPPLIER</u>
	<ul style="list-style-type: none"> – Safety related switches – Safety switches – Laser proximity switches – Emergency stop buttons – Safety gates/locks – Safety light curtains – Safety rope pull E-stop switches 	ABB, Eaton, PILTZ, Schneider Electric, Siemens
2.2	Equipment Included in Motor, Transformers, Control Circuit Centres	
2.2.1	Low-voltage Power Switchgears	VEO, ABB, Siemens, Schneider, Electric, Eaton, Legrand
2.2.2	Cabinets	Rittal, Valmet, ABB, Honeywell
2.2.3	Cabinets in Process Area	Rittal, Eaton, Hensel, Pawbol, Incobex
2.2.4	Power distribution $\leq 20\text{kV}$ and Control Circuit Equipment	
	– Power transformers with off load tap changer of $\pm 2 \times 2.5\%$	ABB, Siemens, Schneider Electric
	– Transformer grounding resistor	ABB, Siemens, Schneider Electric
	– MV switchgears	ABB, Siemens
	– Power factor correction capacitor banks detuned harmonic filters	ABB, Siemens, Schneider Electric
	– Current limiting reactors	ABB, Siemens, Trench
	– Surge arresters	ABB, Siemens, Schneider Electric
	– Disconnecter switches	ABB, Siemens, Schneider Electric
	– Harmonic filters	ABB, Siemens, Schneider Electric
	– Busbars	ABB, Siemens, Schneider Electric
	– MV/HV sealing ends	ABB, Siemens, Schneider Electric
	– HV insulators	ABB, Siemens, Schneider Electric
	– Low voltage MCC	ABB, Siemens, Schneider Electric
	– Load break switches	ABB, Eaton, Schneider Electric, Siemens

EQUIPMENTMANUFACTURER/SUPPLIER

– Circuit breakers 3 - 20 kV	Siemens, ABB
– Circuit breakers $\leq 690/400$ V OEZ	ABB, Eaton, Schneider Electric, Siemens,
– Molded case circuit breakers OEZ	ABB, Eaton, Schneider Electric, Siemens,
– Miniature circuit breakers OEZ	ABB, Eaton, Schneider Electric, Siemens,
– Residual-current devices OEZ	ABB, Eaton, Schneider Electric, Siemens,
– Motor protectors	Siemens, Eaton, Schneider Electric, ABB
– Contactors 6 kV	ABB, Siemens, Schneider Electric
– Contactors ≤ 690 V	Schneider Electric, Eaton, ABB, Siemens
– Intelligent motor controllers	ABB, Siemens, Schneider Electric
– Push buttons	Eaton, Schneider Electric, Siemens, ABB, Kraus & Naimer, Emas, Elektrotechnik, Legrand
– Signal lamps	Eaton, Schneider Electric, Siemens, ABB, Kraus & Naimer, F&F, Legrand
– Control switches	Eaton, Schneider Electric, Siemens, ABB, Kraus & Naimer
– Fused switches	ABB, Siemens, Apator, ETI-Polam, Eaton
– Protective relays	MV: Siemens, ZIV, ABB, Schneider LV: ABB Ref, Schneider Electric (Vamp), Siemens
– Arc protection relays	ABB, Eaton, Schneider Electric (Vamp)
– Power supplies Murr Elektronik	Phoenix, Siemens, ABB, Mean Well, Puls,
– Ground fault monitors	Bender, Schneider Electric
– Thermal relays	ABB, Eaton, Siemens, Schneider Electric, GE POWER, Legrand
– Time relays	ABB, Siemens, Schneider Electric, Eaton

- Auxiliary relays 10A
Auxiliary relays <10A
 - Frequency converters
 - Soft starters
- ABB, Eaton, Siemens, Schneider Electric,
Finder, Omron, Eaton, Phoenix Contact
(11-pin, plug-in relays)
- ABB, Siemens
- ABB

– <u>EQUIPMENT</u>	<u>MANUFACTURER/SUPPLIER</u>
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- | | |
|-------------------------|--|
| ○ Terminal block relays | Phoenix, Weidmuller, Finder |
| – HRC fuse links | ABB, Siemens |
| – Signal converters | ABB, Phoenix, Weidmüller |
| – Safety relays | Pilz, ABB Jokab, Siemens, Schmersal, Siemens, Sick |

2.2.5 Power Distribution ($\geq 110\text{kV}$)

- | | |
|---|-----------------------------------|
| – Transformers | ABB, Siemens, SGB |
| – On Load Tap Changers | MF Reinhausen, ABB, Siemens |
| – Air Insulated Switchgear (AIS): | |
| – Circuit Breakers | ABB / Hitachi, Siemens, Schneider |
| – Disconnecter Switches | ABB / Hitachi, Siemens, Schneider |
| – Disconnecter Switches
+Earthing Switch | ABB / Hitachi, Siemens, Schneider |
| – Current Transformers | ABB / Hitachi, Siemens, Schneider |
| – Voltage Transformers | ABB / Hitachi, Siemens, Schneider |
| – Lightning / Surge Arresters | ABB / Hitachi, Siemens, Bowthorpe |
| – Line Traps | Trench, ABB, Siemens |
| – Support Insulators | ABB / Hitachi, Siemens |
| – Gas Insulated Switchgear (GIS) | ABB / Hitachi, Siemens |

2.2.6 Meters

- | | |
|---------------------------|-----------------------------------|
| – V-, A-meters
72 x 72 | Gossen, CEWE, Lumel, F&F |
| – Wh-meters | ABB, Enermet, Mittrix, Landis+Gyr |

EQUIPMENT

MANUFACTURER/SUPPLIER

2.2.7 Current and Voltage Transformers

- Current transformers
- MV ABB, Artech, Siemens
- LV ABB, Eaton, Siemens

- Voltage transformers
- MV ABB, Artech, Siemens
- LV ABB, Eaton, Siemens

2.2.8 UPS Equipment

- UPS Equipment Schneider Electric (Merlin Gerin), Eaton, ABB, Socomec, Emerson

2.2.9 Building and Lighting Installation To be agreed with the Purchaser

- Outlet centres
- 3-phase socket outlets
- Safety voltage socket outlet
- Fire alarm devices
- Security systems
- HVAC-control devices and systems

	<u>EQUIPMENT</u>	<u>MANUFACTURER/SUPPLIER</u>
2.3	Installation Equipment	
2.3.1	Cable	Acc. to the cable standard MEIA0005
	<ul style="list-style-type: none"> – Cables and cords – Flexible cords – Heat trace cables 	
2.3.2	Cable Trays	Wibe, Niedax, OBO Bettermann, BAKS
2.3.3	Cable Termination Material	Schneider Electric, Phoenix, Weidmüller, Wago
2.3.4	Cable Glands	Polyamide M-trade Hummel HSK-K, Phoenix, Interflex
2.3.5	Terminal Blocks	Phoenix, Weidmüller, Wago
2.3.6	Protection Conduits	
	Acc. to the Instrumentation and Automation Installation Standard MEIA0007 and Electrical Installation Standard MEIA0008.	
2.3.7	Fastening and Marking Equipment	
	<ul style="list-style-type: none"> – Mounting rail for Terminal blocks – Mounting material – Heat shrink sleeving – Cord markers – Cable markers – Terminal markers 	Phoenix, Weidmuller Phoenix, Weidmuller Raychem Phoenix, Weidmuller Phoenix, Fleximark Phoenix, Weidmuller

EQUIPMENTMANUFACTURER/SUPPLIER**3 INSTRUMENTATION****3.1 Instrument Equipment Included in Machine Delivery****3.1.1 Local Gauges**

- | | |
|---------------------------|--------------------------------|
| – Pressure gauges | Wika, Nuova Fima |
| – Rotameters: liquid, air | Krohne, ABB, Kytölä, Safematic |
| – Local thermometers | Wika, Nuova Fima |

3.1.2 Switches

- | | |
|---------------------------------------|---|
| – Pressure switches | Barksdale, Bourdon, Danfoss, Norgren, IFM |
| – Flow switches | IFM, Krohne, ABB, Kytölä, Safematic |
| – Temperature switches | Danfoss |
| – Level switches | |
| Float type | Delta-Mobrey, Endress+Hauser, Vega |
| Capacitive | Endress+Hauser, Vega |
| Ultrasonic | Endress+Hauser, Vega |
| Vibration | Endress+Hauser, Vega, Krohne |
| Microwave | Endress+Hauser, Vega |
| Radiometric (Do not use if necessary) | Berthold, VEGA (Ohmart) |

EQUIPMENTMANUFACTURER/SUPPLIER**3.2 Instrument Equipment****3.2.1 Measurements**

- Miniature pressure transmitters Satron, Wika, Klay, Kamstrup, Aplisens
- Level-, pressure- and differential pressure transmitters
 - Flanged and threaded Siemens, Emerson (Rosemount), Satron, Vega, Aplisens, Endress+Hauser
 - Flush mounted Satron, Endress+Hauser
- Level measurements
 - Capacitive Endress+Hauser, Vega
 - Ultrasonic Endress+Hauser, Vega
 - Radiometric Endress+Hauser, Berthold
 - Radar Krohne, Vega
- Mounting and service valves Satron (Pasve), Alnab, Endress+Hauser (SafeMount)
- Temp sensors and transmitters
 - Pt100 and thermocouple Pentronic, Endress+Hauser, Emerson (Rosemount), ABB
 - Transmitters Siemens, PR-Electronics, Krohne, ABB
- Flow measurements
 - Magnetic flow tube Krohne, Emerson (Rosemount), Endress+Hauser, ABB
 - Mass flow Emerson (Rosemount), Endress+Hauser, Krohne
 - Ultrasonic Endress+Hauser, Danfoss
 - Positive-displacement Bopp & Reuther, Siemens
- Consistency measurements:
 - Blade, rotating, optical, micro wave type Valmet, BTG, ABB
- pH-measurements ABB, Endress+Hauser, Emerson (Rosemount)
- Conductivity measurements ABB, Endress+Hauser, Emerson (Rosemount)

EQUIPMENTMANUFACTURER/SUPPLIER

- Weighing systems Schenck, Lahti Precision, Kistler
- Load cells for tension (main drives) ABB
- Belt weight scales
- Radiometric Weighing Schenck, Vega
Schenck, Global Weighing (Philips)

3.2.2 Recorders and Indicators

- Indicators Gossen, Cewe, Nokeval, Kubler, Wika, Jumo

3.2.3 Converters

- Galvanic isolators and converters Phoenix, Circutor, PR Electronics, ABB, Eaton, Pepperl&Fuchs

3.2.4 Actuators

- Pneumatic actuators Neles, Somas, Emerson, Flowserve (NAF)
- Motor actuators Auma

3.2.5 Valves

- Ball, butterfly, ball segment Neles, Somas, Emerson, Flowserve (NAF)
- Knife gate valves Orbinox, Stafsjö, Lohse, Lucaval
- Pinch valves RF, Flowrox
- Globe valves Baker Hughes (Masoneilan), Emerson (Fisher), Samson, Neles
- Small on-off valves for liquid Kitz, IndufLOW, Klinger, Air Torque

3.2.5.1 Positioners

- Electro-pneumatic Neles, Flowserve (NAF)
- Smart (intelligent) electro-pneumatic Neles, Flowserve (NAF), Siemens, ABB, Foxboro Eckardt

EQUIPMENTMANUFACTURER/SUPPLIER**3.2.6 Equipment in Pipelines**

- | | |
|--------------------|--|
| – Orifice plates | Siemens, Seiko, McCrometer (V-cone),
Emerson, Mattech |
| – Nozzles | Siemens, Seiko |
| – Pitot tubes | Annubar, Emerson (Probar) |
| – Vortex (< DN200) | ABB, Emerson (Rosemount),
Endress+Hauser, Yokogawa |

3.2.7 Special Instruments and Analysers

- | | |
|---|-------------------|
| – Brightness | BTG |
| – Ash | BTG |
| – Air content in short circul. | BTG |
| – Cationic demand | BTG |
| – Oil in water | Gestra |
| – Biogas analyzer (Co ₂ , H ₂ S...) | Dräger. Honeywell |
| – Retention | Valmet |
| – Kappa analyser | BTG, Valmet |

3.3 Installation Material

- | | |
|---|-----------------------------------|
| – Solenoid valves | Numatics, Festo, SMC, Norgren |
| – Supply manifold for solenoid valves | Sitek, Numatics |
| – Plug connection | Hirschmann |
| – Proportional valves, I/P converter | Fairchild, Festo, Norgren |
| – Air filters | Sitek, Festo, Norgren |
| – Air regulators | Fairchild, Norgren, Festo, SMC |
| – 3- and 5- valve manifolds | Schneider, Festo, SMC |
| – Air pressure connectors
(pneumatic terminal) | Weidmuller SV, Legris, Festo, SMC |
| – Fittings for plastic tubes | Serto, John Guest, Legris |
| – Fittings for EN 1.4301 / 1.4401 tubes | Parker, Schwer, Swagelok |

EQUIPMENTMANUFACTURER/SUPPLIER**4 CONTROL SYSTEMS AND FIELDBUSES****4.1 Fieldbus Equipment**

- | | |
|------------------------------------|-----------------------------|
| – Profibus Optical link modules | Siemens, Hirschmann |
| – Profibus repeaters | Siemens, Procentec |
| – Profibus bus terminals | Siemens |
| – Profinet/Profibus gateway module | Pepperl+Fuchs, Siemens, ABB |
| – Profinet/Profibus PA couplers | Pepperl+Fuchs, ABB, Siemens |
| – Profinet switches | Siemens, Cisco |
| – Profinet PN/PN couplers | Siemens |
| – IEC 61850 switches | RuggedCom, Moxa, Cisco, ABB |

5 IT AND NETWORKING**5.1 Network Active Devices**

- | | |
|----------------------------|---------------------------------|
| – Ethernet Access switches | Cisco, HPE, Aruba, D-Link, Moxa |
| – WLAN Access Points | Cisco, HPE, Aruba |
| – Firewalls | Cisco, Palo Alto, Check Point |

5.2 Computers

- | | |
|---------------|---------------|
| – Desktop PCs | HP, IBM, Dell |
| – PC Servers | HP, IBM, Dell |

5.3 Display Units

- | | |
|------------|---------------------------------------|
| - Min. 24" | LCD/TFT Samsung, Sony, Eizo, HP, Dell |
|------------|---------------------------------------|

5.4 Printers

- | | |
|-------------------------|----|
| – Black and white laser | HP |
| – Colour laser | HP |
| – Personal inkjet | HP |

5.5 KVM Units

- | | |
|-----------------------------|----------------|
| – KVM extender hubs | Blackbox, Aten |
| – KVM extenders, standalone | Blackbox, Aten |
| – Server switches | Blackbox, Aten |

5.6 Media Converters

- | | |
|--------------------------|--|
| – 1000BASE-T/1000BASE-SX | Allied Telesis, Black Box, Moxa, Siemens |
| – 1000BASE-T/1000BASE-LX | Allied Telesis, Black Box, Moxa, Siemens |

	<u>EQUIPMENT</u>	<u>MANUFACTURER/SUPPLIER</u>
5.7	Network Cabinets	Rittal
5.8	Network Cables According to cable standard MEIA-0005	
	– Fiber optic cables mode OS2 9/125 μm	Multimode OM3/OM4 50/125 μm , Single
	– Cat 6a Horizontal cable	UTP, F/UTP, U/FTP, F/FTP, S/FTP
5.9	HMI Panel	
	– 9"-21"	Siemens