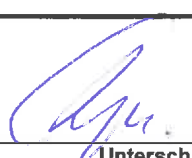



Prüfbericht-Nr.: <i>Test Report No.:</i>	21237405_001	Auftrags-Nr.: <i>Order No.:</i>	0003152278	Seite 1 von 38 Page 1 of 38	
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	200853	Auftragsdatum: <i>Order date:</i>	16.07.2015		
Auftraggeber: <i>Client:</i>	EA ELEKTRO-AUTOMATIK GMBH & CO. KG Helmholtzstrasse 31 - 33, D - 41747 Viersen				
Prüfgegenstand: <i>Test item:</i>	Prewired Rack System				
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	Rack 42 HE for 10x ELR 9750-66 Artikel Nr.: 33130333				
Auftrags-Inhalt: <i>Order content:</i>	Inspection of Prewired Rack Systems				
Prüfgrundlage: <i>Test specification:</i>	EN 60204-1:2006 + A1 + AC Safety of machinery – Electrical equipment of machines – Part 1: General requirements				
Wareneingangsdatum: <i>Date of receipt:</i>	N/A				
Prüfmuster-Nr.: <i>Test sample No.:</i>	N/A				
Prüfzeitraum: <i>Testing period:</i>	14.07.2015 – 07.04.2016				
Ort der Prüfung: <i>Place of testing:</i>	Helmholtzstrasse 31 - 33, D - 41747 Viersen				
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland LGA Products GmbH				
Prüfergebnis*: <i>Test result*:</i>	Pass				
geprüft von / tested by:			kontrolliert von / reviewed by:		
07.04.2016	Rafal Ziecina / SV		27.4.16	Thomas Koester / LL	
Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>	Unterschrift <i>Signature</i>
Sonstiges / Other: - none -					
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>			Details im vorherigen Abschnitt <i>Details in the previous section</i>		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested					
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>					



Prüfbericht-Nr.: 21237405_001
Test Report No.:

Seite 2 von 38
Page 2 of 38

Liste der verwendeten Prüfmittel
List of used test equipment

Prüfmittel <i>Test equipment</i>	Prüfmittel-Nr. / ID-Nr. <i>Equipment No. / ID-No.</i>	Nächste Kalibrierung <i>Next calibration</i>
Measuring Tape	08387	02 / 2016
Measurement was performed in 2015		

Prüfbericht-Nr.: 21237405_001
Test Report No.:

Seite 3 von 38
Page 3 of 38

Produktbeschreibung
Product description

Typeplate



ELEKTRO – AUTOMATIK GmbH & Co.KG
D – 41747 Viersen / Tel.: 02162 – 37850
www.elektroautomatik.de
Made in Germany



ELR Rack 42 HE fuer 10xELR9750 – 66 3U

Nennstrom	3 x 160A	Stromart	AC
Nennspannung	400V L1/L2/L3/N/PE	Betriebsart	continuous
Frequenz	50/60Hz	Sicherung	10x3x25A, 2x16A
Eingang (U)	0 - 750VDC	single unit current	3 x 16A
Eingang (I)	0 - 660A	SCCR	6kA
Eingang (P)	max. 105kW	wiring diagram	33130333_VP_03
Art. – Nr.	33130333	SNR	1395330003



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Made In Germany



ELR Rack 42 HE fuer 10xELR9750 – 66 3U

33130333



1395330003



Remark(s):

- Prewired Rack System was not tested in full load condition equipped with power supplies. Dummies are in place.

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz	EN 60204-1:2006 + A1 + AC	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation
1	Scope	Prewired Rack System is in the scope of the standard.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
2	Normative references	informative	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
3	Definitions	informative	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4	General requirements	See below	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.1	General considerations (EN 1050; hazards, safeguarding (EN 292-2 cl. 4), inquiry form etc.)	Risk analysis in accordance to EN ISO 12100 is available.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.2	Selection of equipment	See below	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.2.1	General (compliance with EN or IEC standards)	Safety relevant electrical components internal or external mounted to the machine or rather the control panel itself is checked in accordance to the requirements of the standard.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.2.2	Electrical equipment in compliance with the EN 60439 series	See above	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.3	Electrical supply (+/-10%, +/-1Hz, harmonics, unbalance, impulses, interruption, dips etc.)	Refer to rack models and characteristics on page 3. <i>Note: Not applicable for IT mains supply systems"</i>	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.4	Physical environment and operating conditions	See below	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
4.4.1	General (see annex B)	Indoor use, installation category II (for AC input), pollution degree 2 <i>Note: Not applicable for IT mains supply systems.</i>	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.4.2	Electromagnetic Compatibility (see EMC directive)	Declaration of conformity accordance to the electromagnetic compatibility (EMC) provided.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.4.3	Ambient Air Temperature (5-40°C) (see Annex B)	5 °C to +40 °C	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.4.4	Humidity (30 - 95%)	80 % or less (non-condensing)	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.4.5	Altitude (1000m)	2000 m	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.4.6	Contaminants (see 11.3 and annex B for details)	IP 2X	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.4.7	Ionizing and non-ionizing Radiation (see annex B)	Rack system is not subjected to radiation.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
4.4.8	Vibration, Shock and Bump (see annex B)	Rack system is not subjected to vibration, shock and bump.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
4.5	Transportation and storage (-25 - 55°C / 70°C)	Sufficient information's are stated within the manual. Storage temperature (transport) : -20°C to 70°C Operating temperature: 5°C to 40 °C	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
4.6	Provision for handling (see 13.4.6)	Described within the installation guide. "Transport"	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.7	Installation (EN's for ergonomic design)	Described within the installation guide. Chapter: "First Installation"	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
5	Incoming Supply Conductor Terminations and Devices for Disconnecting and Switching Off		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
5.1	Incoming supply conductor terminations (EN 60445, 5.2, 5.3.1 and 5.3.2d)	The machine is connected to a single power supply circuit. (400 VAC).	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
5.2	Terminal for connection to the external protective earthing system (table 1, 8.2.2 and EN 60445)	Incoming supply circuit conductors are terminated to terminal block (X1) which is accessible on the rear side and which are labelled L1, L2, L3, N and PE. These terminals require cables with cross sections between 25 mm ² and 95 mm ² and a certain tightening torque: min. 15 Nm, max. 20 Nm. Mounting means are provided to separate the incoming supply circuit conductors as far as possible from internal conductors. Incoming supply terminal block and the line side of contactors K1 and K2 are marked with an electrical flash sign.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
5.3	Supply disconnecting (isolating) device		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001
Test Report No.:

Absatz	EN 60204-1:2006 + A1 + AC	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation
5.3.1	<p>General (for each supply)</p>	<p>The cabinet does not provide a disconnecting device. The following information are stated within the manual: "external device (e .g. according to section 5.2 of IEC/EN 60204-1) which enables the cabinet to be disconnect from any power source."</p> <p>The cabinet has an emergency off switch installed on the front door, along with two door contacts (rear door, one for every door wing). These three contacts are in series connection in order to enable the emergency off contactor. It means, the entire cabinet and all units will be immediately switched off and disconnected from AC supply, if:</p> <ul style="list-style-type: none"> • somebody hits the emergency off switch or • somebody opens the rear door or • door opens itself because it was probably not closed thoroughly. <p>It means, for safe and uninterrupted operation of the cabinet it is required to have the rear door closed all the time. It is further more recommended to also keep it locked.</p>	<p>P <input checked="" type="checkbox"/></p> <p>F <input type="checkbox"/></p> <p>N/A <input type="checkbox"/></p> <p>N/T <input type="checkbox"/></p>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
5.3.2	Type - switch-disconnector (EN 60947-3 AC- 23B or DC-23B) - disconnector with auxiliary contact (EN 60947-3) - circuit-breaker (EN 60947-2) - other switching device (EN 60947-1 for isolation, relevant product standards) - plug/socket combination	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
5.3.3	Requirements (IEC 60417-5007, IEC 60417-5008, red handle for E-stop, padlock, stalled motor, etc.)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
5.3.4	Operating handle (0.6-1.7/1.9m)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
5.3.5	Excepted circuits (lighting, undervoltage, UPS, etc.)	No excepted circuits.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
5.4	Devices for switching off for prevention of unexpected start-up (disconnect of 5.3.2, 3.17 and 5.6)	Refer to 5.3	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
5.5	Devices for disconnecting electrical equipment (see 5.3, 5.3.2 and 5.6)	Refer to 5.3	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001
Test Report No.:

Absatz	EN 60204-1:2006 + A1 + AC	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation
5.6	<p>Protection against unauthorized, inadvertent and/or mistaken connection (see 5.4, 5.5 and 5.3.2 d)</p>	<p>Manufacturer Information: <u>External System Disconnect</u> Although the rack system has an emergency stop switch at the top, door interlock switches on the back door, and individual circuit breakers on the front, these switches do not completely disconnect the AC mains from all components and connections inside the rack. AC voltage is still present at the main terminal block.</p> <p>It is the customer's responsibility to provide an adequate disconnecting means in accordance to clause 5.3.2 (EN 60204-1) at the final installation location in order to deenergize the entire rack system completely. The following requirements apply:</p> <ul style="list-style-type: none"> • An additional disconnect method, either a disconnect switch or circuit breaker, must be provided to completely disconnect the AC mains from the cabinet. The AC mains cables must be connected to this external systems disconnect device. • Additionally, customers must also provide an overcurrent protection device. • A licensed electrician must select and install this disconnect device and protection device in accordance all applicable local electrical codes and the ratings nameplate on the cabinet. • The cabinet must be labeled to indicate the location of the disconnect device. The disconnect device must be labeled to indicate the cabinet it supplies. 	<p>P <input checked="" type="checkbox"/></p> <p>F <input type="checkbox"/></p> <p>N/A <input type="checkbox"/></p> <p>N/T <input type="checkbox"/></p>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
6	Protection against electric Shock		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6.1	General	The electrical equipment provides protection for persons from electrical shock. (direct, indirect contact and potential arc-flash)	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6.2	Protection against direct contact		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6.2.1	General (see 6.2, IEC 60364-4 and EN 60529 IP4X/XXB)	System is operating with live parts > 50 V AC.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6.2.2	Protection by enclosures (general > IP4X; a) opened by tool and without disconnect > IP2X inside; b) disconnect with interlock > IP2X inside; c) without tool and without disconnect > IP2X and interlock for barrier)	Live parts are covered and minimum basic insulated. Barriers providing IP 2X at terminals are available. Protection by direct contact from outside the enclosure is provided. NEMA Type (UL or IP) rating of the enclosure is unknown but it was not possible to touch any live parts with the jointed test finger. The rack system is min. NEMA Type I (IP2X) rated.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6.2.3	Protection by insulation of live parts (completely covered)	See above	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6.2.4	Protection against residual voltage (60V/5sec or 60µC/1sec or IP2X)	Electronic loads used without any voltage on the DC terminals.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
6.2.5	Protection by barriers (see 412.2 of IEC 60364-4-41)	No protection by barriers.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
6.2.6	Protection by placing out of reach or protection by obstacles (see 412.4 and 412.3 of IEC 60364-4-41)	No protection by placing out of reach or protection by obstacles.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
6.3	Protection against indirect contact		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6.3.1	General (see 3.27, 6.3.2 to 6.3.3)	Protective bonding is applied for exposed conductive parts. Overcurrent protection devices are provided for automatic disconnection for each unit in the event of a fault.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6.3.2	Prevention of the occurrence of a touch voltage	Automatic disconnection for each unit in the event of a fault.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6.3.2.1	General	See below.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6.3.2.2	Protection by use of class II equipment or by equivalent insulation	No class II equipment.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
6.3.2.3	Protection by electrical separation	Metal parts are connected to protective bonding circuit.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6.3.3	Protection by automatic disconnection of supply	Part of the customers responsibility.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
6.4	Protection by the use of PELV	PELV circuit (24 VDC) is available and supplied by an approved DC power supply in accordance to UL 508 and IEC 60950-1. Secondary side of the power supply is connected to PE bus-bar. PELV conductors lay side by side together with power conductors with same isolation voltage rating.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6.4.1	General requirements (25/60V and 6/15 etc.)	24Vdc	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6.4.2	Sources for PELV	PELV circuit is supplied by an approved DC power supply in accordance to UL 508 and IEC 60950-1.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
7	Protection of Equipment		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
7.1	General	Considered and applied.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
7.2	Overcurrent protection	See below	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
7.2.1	General	Considered.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
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7.2.2	Supply conductor (data for installation protection device)	<p>Manufacturer information:</p> <p>The AC side connection (external fuses, cable types and cross sections) thus have to be done according to local or general provisions and requirements regarding electrical and personnel safety. The cabinet is designed for an output current of typical 160 A (max. 10% more). Recommendation: NH fuses with 160 A. Which cable types and cross sections to use on location cannot be determined by the manufacturer of the device. This must be determined by a specialist who is authorized to install the electrical connection.</p> <p>Recommendation: rubber insulated flexibles, NSGAFÖ, 70 mm².</p>	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
7.2.3	Power circuits (7.2.10, neutral conductor, etc.)	25 A circuit breakers for Unit 1-10.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
7.2.4	Control circuits (connection to safety ground)	Control circuit is sufficient protected against overcurrent by a circuit breaker. (F11 C16A)	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
7.2.5	Socket outlets and their associated conductors (for each socket outlet)	No socket outlets.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
7.2.6	Lighting circuits (unearthed conductor)	No lighting circuits.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
7.2.7	Transformers (see 7.2.10)	No transformers.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
7.2.8	Location of overcurrent protective Devices (conductor, reduction for less 3m and own duct)	The overcurrent protective devices are located on the line side of unit 1 to unit 10. An exception as allowed by this clause is applied at the load side of contactor K1 with all conditions.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
7.2.9	Overcurrent protective devices (must readily available in country of use)	The SCCR is stated with 6 kA. <i>Note: The requirement of this section regarding the available fault current at the point of supply to the machine needs to be considered at the final installation location. The available fault current shall not be greater than 6 kA.</i> <i>A lower breaking capacity is permitted where another protective device (for example the overcurrent protective device for the supply conductors (see 7.2.2) having the necessary breaking capacity is installed on the supply side. In that case, the characteristics of the two devices shall be co-ordinated so that the let-through energy (I2 t) of the two devices in series does not exceed that which can be withstood without damage to the overcurrent protective device on the load side and to the conductors protected by that device.</i>	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input checked="" type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz	EN 60204-1:2006 + A1 + AC	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation
7.2.10	Rating and setting of overcurrent protective devices (as low as possible)	The rated current of circuit breakers is selected as low as possible but adequate for the expected load.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
7.3	Protection of motors against overheating		P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
7.3.1	General (more than 0.5kW, restart not possible)	No motors.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
7.3.2	Overload protection	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
7.3.3	Over-temperature protection (IEC 60034-11)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
7.3.4	Current limiting protection	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
7.4	Abnormal temperature protection (heater protection)	No resistance heating or other circuits that are capable of attaining or causing abnormal temperatures are available. <i>Note: Rack system is tested as a stand-alone cabinet without loads.</i>	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
7.5	Protection against supply interruption or voltage reduction and subsequent restoration (undervoltage device, restart not possible)	Voltage reduction or supply interruption is not considered to cause a hazardous condition or damage to the machine.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
7.6	Motor overspeed protection (see 9.3.2)	No motors. No overspeed protection.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
7.7	Earth fault/residual current protection (see 6.3)	No earth fault/residual current protection. Prewired rack system is connected to PE.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
7.8	Phase sequence protection	No phase sequence protection.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
7.9	Protection against overvoltage due to lightning and to switching surge	No protection against overvoltage due to lightning and switching surges.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
8	Equipotential Bonding		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
8.1	General		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
8.2	Protective conductors		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
8.2.1	General (figure 2, all stress, etc.)	The equipment grounding circuit consists of, equipment grounding conductor terminal, grounding conductors and equipment bonding jumpers. Exposed, non-current-carrying conductive parts, material, and equipment likely to be energized are effectively grounded and bonded through the whole rack system construction and are capable of withstanding the highest thermal and mechanical stress that can be caused by fault currents flowing in that part of the circuit.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
8.2.2	Protective conductors (13.2.2, size in accordance with Table 1)	PE conductors are made of copper with green/yellow insulation. Terminals and bonding jumpers are marked with the grounding symbol within the electrical cabinet.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
8.2.3	Continuity of the protective bonding circuit (doors, hinges etc. need conductor, except for PELV etc.)	Refer to 8.2.1	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
8.2.4	Exclusion of switching devices from the protective bonding circuit	The equipment grounding (protective bonding) circuit contains no switches or overcurrent protective devices.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
8.2.5	Parts that need not be connected to the protective bonding circuit (insulation Fure unlikely, 50x50mm ²)	Considered	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
8.2.6	Protective conductor connecting points (IEC 60417- 5019 or green-and-yellow, PE only for supply terminal)	Protective conductors are terminated in accordance with 13.1.1. The protective conductor connecting points have no other function and are not intended, for example, to attach or connect appliances or parts. Each protective conductor connecting point is marked or labelled by using the symbol IEC 60417-5019 (DB:2002-10):	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
8.2.7	Mobile machines	No mobile machine in terms of the clause.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
8.2.8	Additional protective bonding requirements for electrical equipment having earth leakage current higher than 10mA a.c. or d.c.	Rack system is tested without any electronic loads. <i>Note: Each load (ELR 9750-66) is approved in accordance to EN 60950-1. Main PE conductor has a cross section > 10 mm².</i>	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input checked="" type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
8.3	Functional bonding (insulation Fure and EMI, see 4.4.2 and 9.4.3.1)	No functional bonding	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
8.4	Measures to limit the effects of high leakage current	Refer to clause 8.2.8	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input checked="" type="checkbox"/>
9	Control Circuits and Control Functions		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.1	Control circuits		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.1.1	Control circuit supply (transformer, except for less than two controls etc.)	No AC control circuit. DC control circuit (24 VDC) is supplied by a listed dc power supply.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.1.2	Control circuit voltages (< = 277V)	24 VDC	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.1.3	Protection (7.2.4 and 7.2.10)	F11 C16A	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.2	Control functions		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.2.1	Start functions (9.2.5.2)	No manual start or stop of the rack system. To energize (install) each rack module it is necessary to follow the procedure within the installation guide.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.2	Stop functions (category 0, 1, and 2 etc.)	EMS with category 1	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz	EN 60204-1:2006 + A1 + AC	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation
9.2.3	Operating modes (separate action for mode selector functions etc.)	The available rack system is not connected to a control system with different operating modes. Settings can be done at each supported module.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.4	Suspension of safeguards (hold-to-run, speed limiting, range of motion)	No possibility of overriding safeguards.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.5	Operation	Single human action is required to activate an EMS. The emergency stop push-button is mounted on the front of the rack system door and will remove power to contactor K1.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.2.5.1	General (interlock see 9.3)	Considered. Interlocks provided where require. Refer 9.3 Wo sind den interlocks?	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.2.5.2	Start (safeguard in place, interlocks with sequential starting ...)	Considered. Start of an operation is possible only when all of the relevant safety functions and/or protective measures are in place.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.2.5.3	Stop (category depends on risk assessment based on EN 1050 ...)	Stop category 0 provided. Refer to clause 5.3.1 / 5.6	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.2.5.4	Emergency operations (emergency stop, emergency switching off)	See below.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.2.5.4 .1	General	See below.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
9.2.5.4 .2	Emergency stop (see ISO 13850, category 0/1 stop, see 9.2.5.3, 9.2.2)	Single human action is required to activate an EMS. The emergency stop push-button is mounted on the front of the door of the rack system and will remove power to contactor K1.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.2.5.4 .3	Emergency switching off (see IEC 60364-4-53, 536.4)	No EMO. Refer to clause 5.31/5.6	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.5.5	Monitoring of command actions (for hazardous movement)		P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.6	Other control functions		P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.6.1	Hold-to-run controls (continuous actuation)	No hold-to-run controls.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.6.2	Two-hand control (type I, II, and III...)	No two-hand control.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.6.3	Enabling device (see also 10.9)	No enabling control device.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.6.4	Combined start and stop controls (for secondary function only)	No combined start and stop controls.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.7	Cableless control		P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.7.1	General	No cableless control.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
9.2.7.2	Control limitation	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.7.3	Stop (see annex B)	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.7.4	Use of more than one operator control station	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.2.7.5	Battery-powered operator control stations	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.3	Protective interlocks	The rear door of the rack system is interlocked to remove power to contactor K1.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.3.1	Reclosing or resetting of interlocked safeguards (no automatic start...)	Reclosing or resetting of an interlocking safeguard not initiate hazards. Reclosing/resetting by closing door of the rack.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.3.2	Exceeding operating limits	No exceeding of operation limits in the meaning of this clause provided.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.3.3	Operation of auxiliary functions (sensors...)	No operation of auxiliary functions in the meaning of this clause provided.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.3.4	Interlocks between different operations and for contrary motions (interlock against contrary motion)	Different operations or contrary motions not provided.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.3.5	Reverse current braking (time function is not possible...)	No kind of brakes provided.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
9.4	Control functions in case of Failure	see below	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.4.1	General requirements (protective device, proven techniques, redundancy, functional tests...)	Adequate level of performance is available for the emergency stop function and the rear door interlock. According to the manufacturers risk assessment PLr c is required. EMS = each 2nd day Door = each 5th day PL c is archived: refer to report 21230157_001	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.4.2	Measures to minimize risk in the event of failure	See above Considered and applied	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.4.2.1	Use of proven circuit techniques and components (one terminal, de-energizing for stop, positive open operation, design...)	Considered and applied	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.4.2.2	Provisions of partial or complete redundancy (on-line, off-line...)	Considered and applied	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.4.2.3	Provision of diversity (combination of open and closed contacts, different components, electrical and non-electrical systems...)	No such diversity available.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.4.2.4	Provision for functional tests (automatic or manually (17.2 and 18.6)...))	No such test provided and/or require.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.4.3	Protection against operation due to earth faults, voltage interruptions and loss of circuit continuity	Considered. See below.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
9.4.3.1	Earth faults (method a, b, c)	Method (a) used.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
9.4.3.2	Voltage interruptions (7.5...)	No hazards in cause of voltage interruptions.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
9.4.3.3	Loss of circuit continuity	No hazards by loss of circuit continuity.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10	Operator Interface and Machine mounted Control Devices		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
10.1	General	See below	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
10.1.1	General device requirements (IEC 61310 and IEC 60447)	Considered and applied	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
10.1.2	Location and mounting (>= 0.6m...)	EMS: > 0.6 m	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
10.1.3	Protection (IPXXD, EN 60529...)	Considered and applied	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
10.1.4	Position sensors (no damage...)	No position sensors.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.1.5	Portable and pendant control stations	No portable and/or pendant control stations.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.2	Push-buttons	No pushbuttons except of the EMS.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001
Test Report No.:

Absatz	EN 60204-1:2006 + A1 + AC	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation
10.2.1	Colors (table 2, red and yellow!...)	Red is used for emergency stop.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
10.2.2	Markings (IEC 60417, EN 50099...)	No markings.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.3	Indicator lights and displays	No indicator lights and displays	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.3.1	Modes of use (red, yellow, green!...)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.3.2	Colors (EN 50099...)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.3.3	Flashing lights and displays (immediate action...)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.4	Illuminated push-buttons (table 2 and 4...)	No illuminated push-buttons	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.5	Rotary control devices (rotation...)	No rotary control device	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.6	Start devices (inadvertent operation...)	No start button	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.7	Emergency stop devices		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
10.7.1	Location of emergency stop devices (see 9.2.7.3)	The EMS is continuously operable, readily accessible and located on the front side of the rack system.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
10.7.2	Types of emergency stop device (push-button, pull-cord, and pedal-operated)	Self-latching palm-head pushbutton-operated switch with direct opening.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
10.7.3	Colour of actuators (red and yellow)	red color with a yellow background	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
10.7.4	Local operation of the supply disconnecting device to effect emergency stop (disconnecting device based on 5.3.2 a), b) or c); color see 10.7.3)	No additional devices	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.8	Emergency switching off devices	No emergency switching off device.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.8.1	Location of emergency switching off devices	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.8.2	Types of emergency switching off device (push-button operated, pull-cord operated, see EN 60947-5-1)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.8.3	Colour of actuators (Red and Yellow background)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.8.4	Local operation of the supply disconnecting device to effect emergency switching off (see 10.8.3)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
10.9	Enabling control device (position 1/2/3)	No enabling control devices.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
11	Controlgear: location, mounting and enclosures		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
11.1	General requirements	Considered and applied.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
11.2	Location and mounting	Refer to installation guide page 13-17. "Side preparation"	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
11.2.1	Accessibility and maintenance (0.4-2.0m, see 13.4.5)	Items of control equipment are placed and oriented so that they can be identified without moving them or the wiring. Control equipment is mounted so as to facilitate its operation and maintenance from the front. Components are suitable attached to the rack.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
11.2.2	Physical separation or grouping (power circuits, associated control circuits, other)	Just one electrical circuit.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
11.2.3	Heating effects (limits...)	Vents in the front and rear door are essential for ventilation cycle.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
11.3	Degrees of protection (at least IP22 for enclosures of controlgear, see EN 60529...)	Laboratory environment. Vents in the front and rear door are essential for ventilation cycle. The degree of protection is at least IP 2X. Vents diameter: 9 mm	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
11.4	Enclosures, doors and openings (doors <= 0.9m, no openings between liquids and electrical devices, fasteners of captive type...)	Considered and applied.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
11.5	Access to controlgear (see 481.2.4 of IEC 60364-4-81, 0.7m x 2.0m...)	No controlgear. (no electrical operating areas)	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
12	Conductors and Cables		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
12.1	General requirements (EN 60439-1...)	Conductors and cables are selected so as to be suitable for the operating conditions. e.g. voltage, current	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
12.2	Conductors (table 5)	Conductors made of copper. In general no conductors used with cross-sectional less than 1.0mm ² .	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
12.3	Insulation (PVC, 2000V test voltage, 500V for PELV, see IEC 60364- 4-41, class III equipment...)	Insulation type: polyvinyl chloride (PVC);	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
12.4	Current-carrying capacity in normal service (table 5, table 6, and D2...)	Current-carrying capacity in normal service for conductors is selected to the loads in accordance to table 6.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
12.5	Conductor and cable voltage drop (<= 5%...)	Considered and applied	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
12.6	Flexible cables	No flexing applications.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
12.6.1	General (table D.4...)	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
12.6.2	Mechanical rating (15 N/mm ² ...)	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
12.6.3	Flexible cables (table 7, see clause 44 of IEC 60621-3)	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
12.7	Conductor wires, conductor bars and slip-ring assemblies	No conductor wires, conductor bars and slip-ring assemblies.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
12.7.1	Protection against direct contact (see 412.2.2 of IEC 60364-4-41)	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
12.7.2	Protective conductor circuit	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
12.7.3	Protective conductor current collectors	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
12.7.4	Removable current collectors with a disconnecter function (see 8.2.4)	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
12.7.5	Clearances in air	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
12.7.6	Creepage distances	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
12.7.7	Conductor system sectioning	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
12.7.8	Construction and installation of collector wire , collector bar systems and slip-ring assemblies	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
13	Wiring Practices		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
13.1	Connections and routing	See below	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
13.1.1	General requirements (loosening, one terminal, correspond with schematics, no solder, EN 60947-7-1, no cross overs...)	All connections, especially those of the protective bonding circuit, are secured against accidental loosening. The means of connection are suitable for the cross-sectional areas and nature of the conductors being terminated. Only one protective conductor is connected to one terminal connecting point. No soldered connections. Terminals on terminal blocks are plainly marked and labelled to correspond with markings on the diagrams.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
13.1.2	Conductor and cable runs (from terminal to terminal, no strain to termination, ...)	Conductors and cables run from terminal to terminal without splices or joints. The terminations of cables are adequately supported to prevent mechanical stresses at terminations of the conductors. The protective conductor is always placed close to the associated live conductors in order to decrease the impedance of the loop.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
13.1.3	Conductors of different circuits (insulation for highest voltage, separation of live conductors before disconnect or marked with different color...)	Conductors of different circuits are not separated but insulated for the highest applied voltage.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz	EN 60204-1:2006 + A1 + AC	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation
13.1.4	Connection between pick-up converter of an inductive power supply system (as short as possible...)	No connection between pick-up converter of an inductive power supply system.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
13.2	Identification of conductors	See below	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
13.2.1	General requirements	Number, letter and color codes are used for wire identification. Single conductors are marked in accordance to the circuit diagram. The identification of conductors by color is in accordance to the requirements and recommendations of the standard. <i>Note: the grounded conductor of the excepted circuit is not orange with white stripes over the whole length but a white tape is attached at the beginning and end of the conductor which is considered as excepted.</i>	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
13.2.2	Identification of the protective conductor (60417-IEC-5019 symbol or green-and-yellow...)	PE connection points are marked in accordance with symbol IEC 60417-5019 (DB:2002-10). Conductor isolation with green-yellow covering.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
13.2.3	Identification of the neutral conductor (light blue (3.2.2 of IEC 60446)...))	Neutral conductors are colored light blue. Neutral conductors on the line side of terminal X3 are black with blue stripes at the beginning and end of the associated conductor.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
13.2.4	Identification of other conductors (black > power, red > control, orange > interlock...)	Identification of other conductors are in accordance to the recommendations of the standard.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
13.3	Wiring inside enclosures (IEC 60332, 11.2.1, 8.2.3...)	Raceways (cable ducts) inside the control panel are indicated as flame-retardant with CE mark and an approval to UL 94 flammability rating. Access to wiring is permitted inside the control panel and conductors and cables that do not run in ducts are adequate supported.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
13.4	Wiring outside enclosures		P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
13.4.1	General requirements (individual glands, bushings, ...)	No wiring outside the enclosure except of the incoming supply conductors connected to the copper busbar.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
13.4.2	External ducts (13.5, ...)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
13.4.3	Connection to moving elements of the machine (12.2, 12.6, flexible conduit, 25mm, no metallic conduits, ...)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
13.4.4	Interconnection of devices on the machine (no in series connection of devices...)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
13.4.5	Plug/socket combinations (safety ground first, > 16A must be locked, identification, see 6.2.4 and IEC 60309-1...)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
13.4.6	Dismantling for shipment (protected, ...)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz	EN 60204-1:2006 + A1 + AC	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation
13.4.7	Additional conductors (spare conductors)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
13.5	Ducts, connection boxes and other boxes		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
13.5.1	General requirements (no edges, separation from liquids...)	Available ducts provide a degree of protection suitable for the application. Only for mechanical purposes.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
13.5.2	Percentage fill of duct	Consideration of the percentage fill of ducts is based on the straightness and length of the duct and the flexibility of the conductors.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
13.5.3	Rigid metal conduit and fittings (corrosion...)	No rigid metal conduit and fittings.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
13.5.4	Flexible metal conduit and fittings	No flexible metal conduit and fittings.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
13.5.5	Flexible non-metallic conduit and fittings	No flexible non-metal conduit and fittings.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
13.5.6	Cable trunking systems	No cable trunking systems external to the enclosure.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
13.5.7	Machine compartments and cable trunking systems	No machine compartments and cable trunking systems.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
13.5.8	Connection boxes and other boxes (see 11.3)	No connection- or other boxes.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
13.5.9	Motor connection boxes	No motor connection boxes.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
14	Electric Motors and associated Equipment		P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
14.1	General requirements (EN 60034-1, 7.3, 7.6, 7.2, 5.3, 5.4, 5.5, 7.5, 7.6, 9.4, 11...)	No electric motors and associated equipment.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
14.2	Motor enclosure (EN 60034-5, IP23...)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
14.3	Motor dimensions (IEC 60072-1, IEC 60072-2...)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
14.4	Motor mounting and compartments (EN 60034-1, guarding...)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
14.5	Criteria for motor selection (EN 60034-1, IEC 60146, ...)	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
14.6	Protective devices for mechanical brakes	See above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
15	Accessories and Lighting		P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
15.1	Accessories (socket-outlets based on EN 60309-1, see 6.4, 7.2, 7.3, 5.3.5...)	No accessories, no socket-outlets, no lighting.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
15.2	Local lighting of the machine and equipment	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
15.2.1	General (see 8.2.2, 4.4.2...)	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
15.2.2	Supply (≤ 50V, 250V, one source like transformer, separate overcurrent protection, factory lighting, 7.2.6...)	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
15.2.3	Protection (7.2.6...)	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
15.2.4	Fittings (lampholders based on IEC, ...)	see above	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
16	Marking, warning signs and reference designations		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
16.1	General	Used labels are in accordance to ANSI/UL 969 and therefore sufficient for the use in laboratory environments.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
16.2	Warning signs (IEC 60417-5036, no disconnect, ...)	The rack is plainly visible marked by a warning sign on the enclosure. e.g. IEC 60417-5036 (DB:2002-10) <i>Note: ANSI Z 535-4 symbols are also attached in English and French language because the current rack system will be delivered to France.</i>	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
16.3	Functional identification (IEC 60417, ISO 7000...)	Yellow background of the emergency stop button is labelled.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
16.4	Marking of equipment (name, mark, ratings, IEC 62023...)	Refer to page 3.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
16.5	Reference designation	Control panel devices and components are plainly identified with the same designation as shown on the machine drawings.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
17	Technical Documentation		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
17.1	General (see annex B)	Installation Guide EL Rack 42U: 33 130 333	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
17.2	Information to be provided (description, supply requirements, environment, block diagram, schematics, sequence of operation, inspection, functional tests, maintenance, part lists...)	Considered and applied. Clearly and adequate information provided within the installation guide.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
17.3	Requirements applicable to all documentation (IEC 61082, IEC 61346 IEC 62079, IEC 62027, cross-reference, ...)	See above.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
17.4	Installation documents (supplies, drawing, location, Annex B, interconnection drawing...)	Installation guide provided.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
17.5	Overview diagrams and function diagrams (IEC 61082series ...)	Within installation guide.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
17.6	Circuit diagram (IEC 60617, cross-reference...)	Within installation guide.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
17.7	Operating manual (see also product specific standard, 1.7.4 in Annex I of Machinery Directive...)	Informations are described in the installation guide.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
17.8	Maintenance manual	Information is described in the installation guide.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
17.9	Parts list	Parts list with article numbers is provided.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
18	Verification		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
18.1	General	See below	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
18.2	Verification of conditions for protection by automatic disconnection of supply		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
18.2.1	General		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
18.2.2	Test methods in TN-systems	Considered	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
18.2.3	Application of the test methods for TN-systems	Refer to test protocol 33130333_PE_01.doc <i>Note: Test 2 – Fault loop impedance verification and suitability of the associated overcurrent protective device shall be done at the final end use location.</i>	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
18.3	Insulation resistance tests (500Vdc, > 1 MΩ...)	HV test applied. See below	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input checked="" type="checkbox"/>

Prüfbericht-Nr.: 21237405_001 Test Report No.:			
Absatz Clause	EN 60204-1:2006 + A1 + AC Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen Measuring results - Remarks	Bewertung Evaluation
18.4	Voltage tests (1000Vac, 1 sec, 500VA...)	Refer to test protocol 33130333_PE_01.doc	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
18.5	Protection against residual voltages (6.2.4...)	The rack system itself has no residual voltage. Note: It is recommended to carry out measurements at the final installation side with loads integrated.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input checked="" type="checkbox"/>
18.6	Functional tests (all safety related functions and components...)	No functional tests have been carried out. Rack system was just equipped with test dummies. <i>Note: before initial start-up of the rack it is recommended to test the correct function of the EMS-switch and the rear door interlock function.</i>	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input checked="" type="checkbox"/>
18.7	Retesting (after modifications...)	Where a portion of the machine and its associated equipment is changed or modified, that portion shall be re-verified and retested as appropriate.	Informative
Annex B	Inquiry Form (Annex B of EN 60204-1) (for information between supplier and user only) - Name of manufacturer: - Name of end user, if applicable: - Order number, if applicable: - Type/Model of machine: - Serial number:		P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

Prüfbericht-Nr.: 21237405_001
Test Report No.:

Absatz	EN 60204-1:2006 + A1 + AC	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation

Table 1: Critical Component List

Object/part no.	Manufacturer/ Trademark	Type/Model	Technical Data	Standard	Mark(s) of Conformity
Control Cabinet	Rittal	TS IT 5508.110 Ser.No.: 004145	HE 42 U	DIN EN 62208	CE, UL, CSA
Cable Duct					
S1, EMS	EATON	M22- PV/KC11/IY	220Vdc, 500Vac, 1S + 1Ö	ISO 13850 IEC/EN 60947-5; UL 508; CSA- C22.2 No. 14- 05; CSA-C22.2 No. 94-91	CE, UL, CSA
S2, S3, Door Interlock	Siemens	3SE5232-0QV40	1S + 2Ö	IEC/EN 60947-5- 1	CE, VDE, UL, CSA
F1-F10, Circuit Breaker	ABB	S203M	K 25A	IEC/EN 60898-1, IEC/EN 60947-2	CE
F11 Circuit Breaker	ABB	S202M	K 16A	IEC/EN 60898-1, IEC/EN 60947-2	CE
X1, Terminal	Phoenix Contact	UKH 95-3L UHK 95-FE UHK 95-BU	1000V, 232 A bei 95 mm ² , CAT III, PD 3	IEC 60947-7-1	CE, UR
K1, Contactor	EATON	DIL MP160 XTCF 160G	160A/AC-1, AC, 4p	IEC/EN 60947-4- 1; UL 508; CSA- C22.2 No. 14-05	CE, UL, CSA
Unit 11 Power Supply	Mean Well	MW-WDR-120- 24	In: 180-550VAC, 254-780VDC, 47-63Hz Out: 24VSC, 5A, 120W	IEC 60950-1	CE, cULus
Unit 1-10 (ELR 9750-66)	Not part of the evaluation				