



FRAMEWORK PURCHASE CONTRACT

This framework purchase contract ("**Contract**") was concluded pursuant to section 2079 *et seq.* of the act no. 89/2012 Coll., Civil Code ("**Civil Code**") on the day, month and year stated below by and between:

- (1) **Institute of Physics of the Academy of Sciences of the Czech Republic, a public research institution,**

with its registered office at:

Na Slovance 2, Praha 8, PSČ: 182 21,

registration no.: 68378271,

represented by: prof. Jan Řídký, DrSc. – director

("Buyer"); and

- (2) **INTRAX s.r.o.,**

with its registered office at: V Jámě 699/1, 111 21 Praha,

registration no.: 49243535,

represented by: Ing. Josef Froněk

("Seller").

(The Buyer and the Seller are hereinafter jointly referred to as "**Parties**" and individually as "**Party**".)

WHEREAS

- (A) The Buyer is a public contracting authority and the beneficiary of a grant of the Ministry of Education, Youth and Sports of the Czech Republic for a project „ ELI: EXTREME LIGHT INFRASTRUCTURE – Phase 2“, reg. number: CZ.02.1.01/0.0/0.0/15_008/0000162 ("**Project**"), within the Operational Programme Research, Development and Education.
- (B) For the successful realization of the Project it is necessary to purchase the Objects of Purchase (as defined below) in accordance with the Act no. 134/2016 Coll., on Public Procurement Awarding and Rules for the Selection of Suppliers within the Operational Programme Research, Development and Education.
- (C) The Seller wishes to provide the Objects of Purchase to the Buyer for consideration.
- (D) The Seller's bid for the public procurement entitled "*Power Supply*", whose purpose was to procure the Objects of Purchase ("**Public Procurement**"), was selected by the Buyer as the most suitable.

IT WAS AGREED AS FOLLOWS:



1. BASIC PROVISIONS

- 1.1 Under this Contract the Seller shall (for the whole duration of this Contract), on the basis of written requests, hand over to the Buyer devices, which shall meet requirements listed in Annex 1 (*Technical Specification*) to this Contract (“**Objects of Purchase**”) and shall transfer to the Buyer ownership right to the Objects of Purchase, and the Buyer shall take over the Objects of Purchase and shall pay the Seller the Purchase Price (as defined below), all under the terms and conditions stipulated in this Contract.
- 1.2 Under this Contract the Seller shall also carry out following activities (“**Related Activities**”):
- a) to transport the Objects of Purchase to the place of delivery;
 - b) to verify that the Objects of Purchase meet all requirements stipulated in this Contract;
 - c) to verify that the Objects of Purchase are fully functional; and
 - d) cooperate with the Buyer during the performance of this Contract.

(The Objects of Purchase and the Related Activities are hereinafter jointly referred to as the “**Delivery**”.)

- 1.3 The Seller promises to the Buyer that if for the fulfillment of the requirements of the Buyer under this Contract or the proper operation of the Objects of Purchase are necessary other deliveries and activities not mentioned in this Contract, the Seller shall procure such deliveries or shall carry out such activities at its own expense without any effect on the Purchase Price.

2. WRITTEN REQUESTS

- 2.1 The Seller shall supply the Objects of Purchase on the basis of written requests of the Buyer (“**Requests**”) with the exception of the first delivery. In the first delivery, the Seller shall supply the Objects of Purchase without any Request. The numbers and types of Objects of Purchase in the first delivery are specified in Annex 2 (*Price sheet*) to this Contract.
- 2.2 In each Request the Buyer shall specify the Objects of Purchase that the Buyer wishes to procure and their number.
- 2.3 The Seller shall confirm in writing the acceptance of the Request within one working day from its receipt, at the latest.
- 2.4 By delivering the confirmation of the acceptance of the Request the individual purchase contract is concluded.
- 2.5 The Request is considered to be made in writing even if it was sent via email. The Request is considered as confirmed in writing even if it was confirmed via email.

3. THE PLACE OF DELIVERY

The place of delivery is at the address: ELI Beamlines, Průmyslová 836, post code 252 41, Dolní Břežany, Czech Republic or other address in Dolní Břežany specified by the Buyer prior to the



delivery of Objects of Purchase.

4. DURATION OF THE CONTRACT

4.1 This Contract is concluded for the period of 1 year.

4.2 Under this Contract, the Buyer is not entitled to purchase Objects of Purchase in the total amount that exceeds 2.000.000,- Czech Crowns. This Contract shall terminate also if this amount is reached, i.e. the Buyer cannot purchase more Objects of Purchase without breaching the maximum amount.

5. THE TIME OF DELIVERY

5.1 The Seller shall deliver the Objects of Purchase and shall carry out Related Activities within 10 weeks from the conclusion of the individual purchase contract (i.e. the delivery of the confirmation that the Request was accepted), or, in the case of the first delivery, from the conclusion of this Contract.

5.2 The Seller is entitled to handover the Objects of Purchase during working days between 7:30 and 18:00 hours, unless otherwise agreed by the Parties. Exact working days shall be determined on the basis of mutual agreement. If the agreement is not reached, the Seller shall perform during the last day, on which it is possible to fulfill this Contract in time and the Buyer shall provide to the Seller for this purpose necessary cooperation.

6. THE OWNERSHIP RIGHT

The ownership right to the Objects of Purchase shall be transferred to the Buyer upon the signature of the Handover Protocol (as defined below) by both Parties.

7. PRICE AND PAYMENT TERMS

7.1 The purchase price of Objects of Purchase is stated in Annex 2 (*Price sheet*) to this Contract ("Purchase Price").

7.2 The Purchase Price cannot be exceeded and includes all costs and expenses of the Seller related to the performance of this Contract. The Purchase Price includes, among others, all expenses related to the handover of the Objects of Purchase and execution of Related Activities, costs of copyright, insurance, customs, warranty service and any other costs and expenses connected with the performance of this Contract.

7.3 The Purchase Price for the Objects of Purchase shall be paid in euro on the basis of a tax document – invoice, to the account of the Seller designated in the invoice. The Seller is entitled to issue an invoice after the signature of the Handover Protocol. The copy of the Handover Protocol must be attached to the invoice.

7.4 The Buyer shall realize payments on the basis of duly issued invoices within 30 days from their receipt. The invoice shall be considered to be paid for on the day when the invoiced amount is deducted from the Buyer's account on behalf of the Seller's account.



7.5 The invoice issued by the Seller as a tax document must contain all information required by the applicable laws of the Czech Republic. Invoices issued by the Seller in accordance with this Contract shall contain in particular following information:

- a) name and registered office of the Buyer,
- b) tax identification number of the Buyer,
- c) name and registered office of the Seller,
- d) tax identification number of the Seller,
- e) registration number of the tax document,
- f) scope of the performance (including the reference to this Contract),
- g) the date of the issue of the tax document,
- h) the date of the fulfilment of the Contract,
- i) Purchase Price,
- j) registration number of this Contract, which the Buyer shall communicate to the Seller based on Seller's request before the issuance of the invoice,
- k) declaration that the performance of the Contract is for the purposes of a project „ELI: EXTREME LIGHT INFRASTRUCTURE – Phase 2“, reg. number: CZ.02.1.01/0.0/0.0/15_008/0000162,

and must comply with the double tax avoidance agreements, if applicable.

7.6 In case that the invoice shall not contain the above mentioned information, the Buyer is entitled to return it to the Seller during its maturity period and this shall not be considered as a default. The new maturity period shall begin from the receipt of the supplemented or corrected invoice to the Buyer.

7.7 Last invoice of every calendar year must be delivered to the Buyer on December 15 of that calendar year, at the latest.

8. SELLER'S DUTIES

8.1 The Seller shall ensure that the Objects of Purchase and Related Activities are in compliance with this Contract including all its annexes and applicable legal (e.g. safety), technical and quality norms.

8.2 During the performance of this Contract the Seller proceeds independently. If the Seller receives instructions from the Buyer, the Seller shall follow such instructions unless these are against the law or in contradiction to this Contract. If the Seller finds out or should have found out in professional care was exercised that the instructions are for any reason inappropriate or illegal or in contradiction to this Contract, then the Seller must notify the Buyer.



8.3 All things necessary for the performance of this Contract shall procure the Seller, unless this Contract stipulates otherwise.

9. **HANDOVER OF THE OBJECTS OF PURCHASE**

9.1 Each handover and takeover of the delivered Objects of Purchase shall be realized on the basis of a handover protocol ("**Handover Protocol**").

9.2 If the Objects of Purchase do not meet requirements of this Contract, the Buyer is entitled to refuse the takeover of the Objects of Purchase. In such a case the Seller shall remedy the deficiencies within ten (10) working days, unless Parties agree otherwise. The Buyer is entitled (but not obliged) takeover the Objects of Purchase despite the above mentioned deficiencies, in particular if such deficiencies do not prevent the Buyer in the proper use of the Objects of Purchase. In such a case the Seller and the Buyer shall list the deficiencies in the Handover Protocol, including the manner and the date of their removal (remedy). If the Parties do not reach agreement in the Handover Protocol regarding the date of the removal, the Seller shall remove the deficiencies within ten (10) working days.

10. **WARRANTY**

10.1 The Seller shall provide a warranty of quality of the Objects of Purchase for the period of 24 months. If on the warranty list or other document is the warranty period of longer duration, then this longer warranty period shall have priority over the period stated in this Contract.

10.2 The warranty period shall begin on the day of the signature of the Handover Protocol by both Parties. If the Handover Protocol lists any deficiencies, the warranty period shall begin on the day, which follows the day, in which the last deficiency was removed.

10.3 The Seller shall remove defects that occur during the warranty period free of charge and in the terms stipulated in this Contract.

10.4 If the Buyer ascertains a defect of the Objects of Purchase during the warranty period, the Buyer shall notify such defect without undue delay to the Seller. Defects may be notified on the last day of warranty period, at the latest.

10.5 The Buyer notifies defects in writing via e-mail. The Seller shall accept notifications of defects on the following e-mail address: jfronek@intrax.cz. The Seller shall confirm within 24 hours from the receipt of the notification.

10.6 In the notification the Buyer shall describe the defect and the manner of removal of the defect. The Buyer has the right to:

- a) ask for the removal of the defect by the delivery of new Objects of Purchase or its individual parts, or
- b) ask for the removal of the defect by repair, or
- c) ask for the reasonable reduction of the Purchase Price.

The choice among the above mentioned rights belongs to the Buyer. The Buyer is also entitled to



withdraw from this Contract, if by delivering the Objects of Purchase with defects this Contract is substantially breached.

- 10.7 The Seller shall remove the defect within 10 weeks from its notification, unless Parties agree otherwise.
- 10.8 The Seller shall remove the defect within terms stipulated in this Contract even if the notification of the defect is in his opinion unjustified. In such a case the Seller is entitled to ask for reimbursement of the costs of removal of the defect. If Parties disagree on whether the notification of the defect is justified or not, the Buyer shall ask an expert for the expert's opinion, which shall determine whether the notification of the defect was justified or not. In the case that the expert shall consider the notification as justified, then the Seller shall bear costs of the expert's opinion. If the expert considers the notification to be unjustified, then the Buyer shall reimburse the Seller for verifiably and effectively incurred costs of removal of the defect.
- 10.9 Parties shall execute a protocol on the removal of the defect, which shall contain the description of the defect and the confirmation that the defect was removed. The warranty period shall be extended by a period of time that elapses between the notification of the defect until its removal.
- 10.10 In case that the Seller does not remove the defect within stipulated time or if the Seller refuses to remove the defect, then the Buyer is entitled to remove the defect at his own costs and the Seller shall reimburse these costs within 10 days after the Buyer's request to do so.
- 10.11 The warranty does not cover defects caused by unprofessional manipulation or by the failure to follow Seller's instructions for the operation and maintenance of the Objects of Purchase.

11. REPRESENTATIONS AND WARRANTIES OF THE SELLER

- 11.1 The Seller represents and warrants to the Buyer that
 - a) has all the professional prerequisites necessary for the proper fulfilment of this Contract,
 - b) is fully authorized to perform this Contract, and
 - c) there are no obstacles on the Seller's side that would preclude him from the due performance of this Contract.

12. PENALTIES

- 12.1 If the Seller is in default with the removal of the defect, the Seller shall pay to the Buyer a contractual penalty in the amount of 0,05% of the Purchase Price for every (even commenced) day of default.
- 12.2 The Seller shall pay contractual penalties within fifteen (15) days from the day, on which the Buyer enumerated its claims. The payment of contractual penalties shall not affect the right of the Buyer to damages even to the extent to which such damages exceeds the contractual penalty.
- 12.3 The Buyer is entitled to unilaterally set off claims arising from the contractual penalties against the claim of the Seller for the payment of the Purchase Price.



13. TERMINATION BY NOTICE

- 13.1 The Buyer is entitled to terminate this Contract by a written notice anytime without stating its reasons.
- 13.2 The notice period is one (1) month and shall start on the first day of the month that follows the month in which the Seller received the written notice.

14. RIGHT OF WITHDRAWAL

- 14.1 The Buyer is entitled to withdraw from this Contract or individual purchase contracts without any penalties, if any of the following circumstances occur:
- a) the expenses or the part of the expenses that will arise on the basis of this Contract will be found by the provider of the grant or other control body as ineligible;
 - b) the Seller shall be in delay with the fulfilment of this Contract/individual purchase contracts and such delay lasts more than 1 week;
 - c) the Buyer shall lose a grant for the realization of the Project;
 - d) the insolvency proceeding is initiated against the Seller; or
 - e) the Buyer ascertains that the Seller provided in its bid for the Public Procurement information or documents that do not correspond to the reality and that had or could have had impact on the result of the award procedure, which preceded the conclusion of this Contract.

15. SPECIAL PROVISIONS

By signing this Contract, the Seller becomes a person that must cooperate during the finance control within the meaning of Section 2 letter e) of the act no. 320/2001 Coll., on finance control in the public administration, and shall provide to the Directing Body of the Operational Programme Research, Development and Education or other control bodies access to all parts of the bid, Contract or other documents that are related to the legal relationship formed by this Contract. This duty also covers documents that are subject to the protection in accordance with other acts (business secrets, secret information, etc.) provided that control bodies fulfil requirements stipulated by these acts. The Seller shall secure that all its subcontractors are also obliged to cooperate with control bodies in the above stipulated extent. The possibility of effective control must be preserved until the year 2026.

16. CONFIDENTIALITY

- 16.1 Parties shall not disclose information that shall become available to them in connection with this Contract and its performance and whose disclosure could harm the other Party. Duties of the Buyer ensuing for the applicable legal regulations remain unaffected. The Seller is particularly aware that the Buyer must make this Contract including all its annexes publicly available in accordance with the act no. 134/2016 Coll., on Public Procurement.



17. REPRESENTATIVES OF THE PARTIES

17.1 The Seller appoints following representatives for the communication with the Buyer:

In technical matters:

Name: Ing. Josef Froněk

E-mail: jfronek@intrax.cz

Tel.: +420 602601221

In contractual matters:

Name: Ing. Josef Froněk

E-mail: jfronek@intrax.cz

17.2 Tel.: +420 602601221 The Buyer appoints following representatives for the communication with the Seller:

In technical matters:

Jméno: Pavel Bastl

E-mail: Pavel.Bastl@eli-beamlines.eu

18. FINAL PROVISIONS

18.1 This Contract is governed by the laws of the Czech Republic, especially by the Civil Code.

18.2 All disputes arising out of this Contract or out of legal relations connected with this Contract shall be preferable settled by a mutual negotiation. In case that the dispute is not settled within sixty (60) days, such dispute shall be decided by courts of the Czech Republic in the procedure initiated by one of the Parties.

18.3 The Seller bears the risk of changed circumstances within the meaning of Section 1765 of the Civil Code.

18.4 The Seller takes into account that the Buyer is not in relation to this Contract an entrepreneur, nor the subject matter of this Contract is connected with the business activities of the Buyer.

18.5 The Seller is not entitled to set off any of its claims or his debtor's claims against the Buyer's claims. The Seller is not entitled to transfer its claims against Buyer that arose on the basis or in connection with this Contract on third parties. The Seller is not entitled to transfer rights and duties from this Contract or its part on third parties.

18.6 All modifications and supplements of this Contract must be in writing.

18.7 If any of provisions of this Contract are invalid or ineffective, the Parties are bound to change this Contract in such a way that the invalid or ineffective provision is replaced by a new provision that



- is valid and effective and to the maximum possible extent correspond to the original invalid or ineffective provision.
- 18.8 If any Party breaches any duty under this Contract and knows or should have known about such breach, it shall notify it to the other Party and shall warn such Party of possible consequences of the breach.
- 18.9 This Contract is executed in four (4) counterparts and every Party shall receive two (2) counterparts.
- 18.10 An integral part of this Contract is Annex 1 (*Technical Specification*) and Annex 2 (*Price sheet*). If in Annex 1 (*Technical Specification*) is used term "Contracting Authority", it is meant Buyer and by term "supplier" is meant the Seller.
- 18.11 This Contract shall be valid and effective on the date of the signature of both Parties.

IN WITNESS WHEREOF attach Parties their handwritten signatures:

Buyer

Signature: _____

Name: prof. Jan Řídký, DrSc.

Position: director

Date: 18. 01. 2017

Institute of Physics
The Czech Academy of Sciences
182 21 Prague 8, Na Slovance 2
Czech Republic

-1-

Seller

Signature: _____

Name: Ing. Josef Froněk

Position: executive director

Date: 10.1.2017



ANNEX 1
TECHNICAL SPECIFICATION

| | | | |
|------------------------------|--|-------------------------|------------|
| Confidentiality Level | <i>BL - Restricted for internal use</i> | TC ID / Revision | 00141073/C |
| Document Status | <i>Document Released</i> | Document No. | N/A |
| WBS code | 4.4 - Control System | | |
| PBS code | SE.BDS.CS.HW.7 | | |
| Project branch | Engineering & Scientific documents (E&S) | | |
| Document Type | Specification (SP) | | |

[RSD product category A]

MTCA.4 Power Supply 1000W

TP16_167



Keywords

N/A


| | Position | Name |
|---------------------------|-----------------|-------------|
| Responsible person | CS Group Leader | Pavel Bastl |
| Prepared by | CS Group Leader | Pavel Bastl |

| RSS TC ID/revision | RSS - Date of Creation | RSS - Date of Last Modification | Systems Engineer |
|--------------------|------------------------|---------------------------------|------------------|
| 011077/A.001 | 13.10.2016 19:47 | 13.10.2016 19:47 | Aleksei Kuzmenko |
| 011077/A.002 | 14.10.2016 10:45 | 14.10.2016 10:45 | Aleksei Kuzmenko |
| 011077/A.003 | 19.10.2016 11:44 | 19.10.2016 11:45 | Aleksei Kuzmenko |

Reviewed By

| Name (Reviewer) | Position | Date | Signature |
|-----------------|---|---------------------------------|-----------|
| Ladislav Půst | Manager installation of technology | NOTICE (RSD product category A) | |
| Luboš Nims | Head of Electrical engineering | NOTICE (RSD product category A) | |
| Jiří Vaculík | Building Team Manager | NOTICE (RSD product category A) | |
| Petr Pivoňka | Control System Engineer | NOTICE (RSD product category A) | |
| Petr Procházka | Safety Coordinator | NOTICE (RSD product category A) | |
| Viktor Fedosov | SE & Planning group leader; Quality Manager (Appointed temporarily) | NOTICE (RSD product category A) | |

Approved by

| Name (Approver) | Position | Date | Signature |
|-----------------|--|------------|--|
| Georg Korn | Science and Technology Manager, Scientific coordinator of RP2-6 | 19.10.2016 | <i>on behalf of G. Korn</i>  |

Revision History / Change Log

| Change No. | Made by | Date | Change description, Pages, Chapters | TC rev. |
|------------|------------|------------|--|---------|
| 1 | A.Kuzmenko | 13.10.2016 | RSD draft creation | A |
| 2 | A.Kuzmenko | 14.10.2016 | RSD update, standard chapters has been added, version for review | B |
| 3 | A.Kuzmenko | 19.10.2016 | Final version for approval | C |

Table of Content

| | |
|---|---|
| 1. Introduction | 4 |
| 1.1. Purpose | 4 |
| 1.2. Scope | 4 |
| 1.3. Terms, Definitions and Abbreviations | 4 |
| 2. Functional, Performance and Design requirements..... | 5 |
| 2.1. General technical requirements | 5 |
| 2.2. Power input requirements | 5 |
| 2.3. Power output requirements | 5 |
| 2.4. Front panel interface requirements | 6 |
| 2.5. Environmental conditions requirements | 6 |
| 3. Safety Requirements | 7 |
| 4. Quality Requirements | 7 |
| 4.1. General Quality Requirements | 7 |

1. Introduction

1.1. Purpose

This Requirements Specification Document (RSD) lists the technical requirements and constraints on product applying in department 97 of ELI project. This can lead to the identification of product interfaces with the ELI science based technology and ELI building facility. This RSD also acts as the parent document for the technical requirements that need to be addressed in lower level design description documents.

1.2. Scope

This RSD contains all of the technical requirements: functional, performance and design, safety and quality requirements for the following product (PBS: SE.BDS.CS.HW.7.41): **MTCA.4 Power supply 1000W** (further "power supply"). This product is a product Category A.

Category A is an Off-the-shelf Product without necessity of modifications and necessity to be subjected to a verification program (review of design, inspection and testing) for ELI applications by the actual project specifications. All verification activities performing by a supplier shall be executed in accordance with the supplier's plan of outgoing inspection and tests. Internal Acceptance Procedure of the product Category A shall be established and applied before the product implementation (operation phase).

1.3. Terms, Definitions and Abbreviations

For the purpose of this document, the following abbreviated terms are applied:

| Abbreviation | Meaning |
|-----------------|---|
| AC | Alternating current |
| AMC | Advanced Mezzanine Card |
| CA | Contracting Authority |
| ELI | Extreme Light Infrastructure |
| IEC | International Electrotechnical Commission |
| IPMI | Intelligent Platform Management Interface |
| MCH | MicroTCA Carrier Hub |
| Micro TCA, MTCA | Micro Telecommunication Computer Architecture |
| MMC | Module Management Controller |
| PICMG | PCI Industrial Computer Manufacturers Group |
| RMS | Root Mean Square |
| RSD | Requirements Specification Document |

2. Functional, Performance and Design requirements

2.1. General technical requirements

- REQ-018978/A
The power supply shall be compliant to Micro TCA standard (MTCA) specification as defined by PICMG standardization organization.
- REQ-018979/A
The power supply shall be compliant to PICMG AMC.0 revision 2.0.
- REQ-018980/A
The power supply shall conform to MTCA IPMI specification version 2.0 revision 1.0.
- REQ-018981/A
The power supply shall conform to PICMG MTCA.0 revision 1.0.
- REQ-018982/A
The power supply form shall be double-width, full-height.
NOTE: Power supplies occupying two neighboring full-height power slots are also permitted.
- REQ-018983/A
The power supply shall support hot-swap functionality through local MMC.
- REQ-018984/A
The power supply shall provide nominal output power of 1000 W.
- REQ-018985/A
The power supply shall provide read out of actual current values for each AMC from MCH. The actual values drawn by each AMC shall be provided.
- REQ-018986/A
The power supply shall support N+1 redundancy in load sharing mode and hot-plugging.

2.2. Power input requirements

- REQ-018987/A
The power supply shall support input voltage in minimal range of (115 – 260) V AC, (50 – 60) Hz.

2.3. Power output requirements

- REQ-018988/A
The power supply shall provide at minimum 16 channels of 12 V payload power (further 'payload supply'). The power supply shall provide 12 payload power channels for Advanced Mezzanine Cards, 2 for Micro TCA Carrier Hubs and 2 for Cooling Units.

REQ-018989/A

The power supply shall provide at minimum 16 channels of 3.3 V management power (further 'management supply'). The power supply shall provide 12 management power channels for Advanced Mezzanine Cards, 2 for Micro TCA Carrier Hubs and 2 for Cooling Units.

REQ-018990/A

The power supply shall provide the continuous maximal power 80 W or more to each of 12 AMC. The power supply shall be capable to provide this amount of power continuously up to power source operation temperature of 49 degrees of Celsius.

REQ-018991/A

The root-mean square (RMS) noise on the 12 V payload supply voltage of the power module shall not exceed 12 mV. The value shall be measured with resistive load and current draw at minimum 1 A.

REQ-018992/A

The power supply shall provide over current protection for payload and management power supplies and for all channels.

REQ-018993/A

The power supply shall provide output short circuit protection for payload and management power and for all channels.

2.4. Front panel interface requirements

REQ-018994/A

The power supply shall provide IEC60320 C14 input power supply connector on front panel.

REQ-018995/A

The supply shall have ON/OFF switch which allows the user to switch ON/OFF the chassis or hot-swap push button on the front panel.

2.5. Environmental conditions requirements

REQ-018996/A

The operating temperature shall be in minimal range (0 – 50) deg. of Celsius.

3. Safety Requirements

REQ-018997/A

The supplier shall supply a Declaration of Conformity for each product type if the appropriate legislation determines the supplier's obligation to have a Declaration of Conformity for the purposes of a Device sale in the Czech Republic.

In such a case the Declaration of Conformity shall comply with Act No. 22/1997 Coll., as amended.

4. Quality Requirements

4.1. General Quality Requirements

REQ-018998/A

The supplier shall provide the Product User Manual in electronic form as part of the delivered product (file format PDF/A). The Manual shall include the instructions and descriptions for the product installation, its maintenance and safe operation.

REQ-018999/A

Supplier shall provide information on executed of outgoing check of the product. At least this information shall comprise declaration about execution of outgoing check and declaration of conformity with technical requirements defined by the product RSD and completeness of the product.

REQ-019000/A

The supplier shall establish and maintain a non-conformance control system compatible with CSN EN ISO 9001: 2010 edition 2.

| | | | |
|------------------------------|---|-------------------------|------------|
| Confidentiality Level | <i>BL - Restricted for internal use</i> | TC ID / Revision | 00137290/C |
| Document Status | <i>Document Released</i> | Document No. | N/A |
| WBS code | <i>4.4 - Control System</i> | | |
| PBS code | <i>SE.BDS.CS.HW.7</i> | | |
| Project branch | <i>Engineering & Scientific documents (E&S)</i> | | |
| Document Type | <i>Specification (SP)</i> | | |

[RSD product category A]

Power supplies
(MTCA.4 Power Supply 600W)
TP16_167



Keywords

N/A


| | Position | Name |
|---------------------------|-----------------|-------------|
| Responsible person | CS Group Leader | Pavel Bastl |
| Prepared by | CS Group Leader | Pavel Bastl |

| RSS TC ID/revision | RSS - Date of Creation | RSS - Date of Last Modification | Systems Engineer |
|--------------------|------------------------|---------------------------------|------------------|
| 010391/A.001 | 27.07.2016 19:05 | 27.07.2016 19:05 | Aleksei Kuzmenko |
| 010391/A | 27.07.2016 17:22 | 27.07.2016 21:24 | Aleksei Kuzmenko |
| 010391/A.002 | 27.07.2016 17:22 | 08.08.2016 11:56 | Marek Malý |

Reviewed By

| Name (Reviewer) | Position | Date | Signature |
|-------------------|---|---------------------------------|-----------|
| Ladislav Půst | Manager installation of technology | NOTICE (RSD product category A) | |
| Luboš Nims | Head of Electrical engineering | NOTICE (RSD product category A) | |
| Michal Chudožilov | Facility Manager | NOTICE (RSD product category A) | |
| Petr Pivoňka | Control System Engineer | NOTICE (RSD product category A) | |
| Petr Procházka | Safety Coordinator | NOTICE (RSD product category A) | |
| Viktor Fedosov | SE & Planning group leader; Quality Manager (Appointed temporarily) | NOTICE (RSD product category A) | |

Approved by

| Name (Approver) | Position | Date | Signature |
|-----------------|--|------------|---|
| Georg Korn | Science and Technology Manager, Scientific coordinator of RP2-6 | 11/08/2016 |  |

Revision History / Change Log

| Change No. | Made by | Date | Change description, Pages, Chapters | TC rev. |
|------------|------------|------------|--|---------|
| 1 | A.Kuzmenko | 27.07.2016 | RSD draft creation | A |
| 2 | A.Kuzmenko | 27.07.2016 | RSD update, standard chapters has been added, version for review | B |
| 3 | M.Malý | 08.08.2016 | Final version for approval | C |

Table of Content

| | |
|---|---|
| 1. Introduction | 4 |
| 1.1. Purpose | 4 |
| 1.2. Scope..... | 4 |
| 1.3. Terms, Definitions and Abbreviations | 4 |
| 2. General Functional, Performance and Design requirements..... | 5 |
| 2.1. General technical requirements | 5 |
| 2.2. Power input requirements | 5 |
| 2.3. Power output requirements | 6 |
| 2.4. Front panel interface requirements | 6 |
| 2.5. Environmental conditions requirements | 6 |
| 3. Safety Requirements | 7 |
| 4. Quality Requirements | 7 |
| 4.1. General Quality Requirements | 7 |

1. Introduction

1.1. Purpose

This Requirements Specification Document (RSD) lists the technical requirements and constraints on product applying in department 97 of ELI project. This can lead to the identification of product interfaces with the ELI science based technology and ELI building facility. This RSD also acts as the parent document for the technical requirements that need to be addressed in lower level design description documents.

1.2. Scope

This RSD contains all of the technical requirements: functional, performance and design, safety and quality requirements for the following product (PBS: SE.BDS.CS.HW.7.42): **MTCA.4 Power Supply 600W** (further "Product"). This product is a product Category A.

Category A is an Off-the-shelf Product without necessity of modifications and necessity to be subjected to a verification program (review of design, inspection and testing) for ELI applications by the actual project specifications. All verification activities performing by a supplier shall be executed in accordance with the supplier's plan of outgoing inspection and tests. Internal Acceptance Procedure of the product Category A shall be established and applied before the product implementation (operation phase).

1.3. Terms, Definitions and Abbreviations

For the purpose of this document, the following abbreviated terms are applied:

| Abbreviation | Meaning |
|-----------------|---|
| AC | Alternating current |
| AMC | Advanced Mezzanine Card |
| CA | Contracting Authority |
| CU | Cooling Unit |
| ELI | Extreme Light Infrastructure |
| HPM | Hardware Platform Management |
| IEC | International Electrotechnical Commission |
| IPMI | Intelligent Platform Management Interface |
| MCH | MicroTCA Carrier Hub |
| Micro TCA, MTCA | Micro Telecommunication Computer Architecture |
| PICMG | PCI Industrial Computer Manufacturers Group |
| RSD | Requirements Specification Document |

2. General Functional, Performance and Design requirements

2.1. General technical requirements

- REQ-017717/A The product shall be compliant to Micro TCA standard (MTCA) specification as defined by PICMG standardization organization.
- REQ-017718/A The product shall be compliant to MTCA.0 specification.
- REQ-017719/A The product shall be compliant to MTCA.1 (FP0S, FP1D) specification.
- REQ-017720/A The product shall be compliant to AMC.0 specification.
- REQ-017721/A The product shall be compliant to IPMI version 1.5 and version 2.0.
- REQ-017722/A The product shall be compliant to HPM.0.
- REQ-017723/A The product shall be compliant to IEC/EN/UL60950-1 class A.
- REQ-017724/A The product form factor shall be Single-Width, Full-size Module as defined in AMC.0, MTCA.1 specifications.
- REQ-017725/A The product shall provide power supply at minimum for 12 AMC, 2CU and 2 MCH.
- REQ-017726/A The product shall support individual control of management and payload power.
- REQ-017727/A The product shall provide individual current sensors.
- REQ-017728/A The product shall have at minimum 90 % conversion efficiency.
- REQ-017729/A The product shall support N+1 and N+2 redundancy.

2.2. Power input requirements

- REQ-017730/A The product shall support input power supply with minimum voltage range of 110 – 260 V AC at minimum frequency range of 50 – 60 Hz.
- REQ-017731/A The product shall support input under-voltage shutdown.

2.3. Power output requirements

- REQ-017732/A
The product shall provide a minimum 600 W of output power.
- REQ-017733/A
The product shall have at least 16 power output channels.
- REQ-017734/A
The product shall provide 12 V at minimum 6.5 A payload power supply per each channel. The accuracy of payload supply shall not exceed 10%. The inrush current for payload supply shall not exceed 20 A.
- REQ-017735/A
The product shall provide 3.3 V at minimum 150 mA management power supply per each channel. The accuracy of management power supply shall not exceed 5 %.
- REQ-017736/A
The product shall have output over voltage and over temperature protection.
- REQ-017737/A
The product shall have output short circuit protection.
- REQ-017738/A
The product shall have programmable current limiting threshold for each channel.

2.4. Front panel interface requirements

- REQ-017739/A
The product shall have IEC AC power connector on front panel.
- REQ-017740/A
The AC power connector shall have locking mechanism.
- REQ-017741/A
The product shall have load indicator on front panel.
- REQ-017742/A
The product shall have ON/OFF switch on front panel.

2.5. Environmental conditions requirements

- REQ-017743/A
The minimum operational temperature of the product shall be in the range from -5 to 55 degree Celsius.

3. Safety Requirements

REQ-017744/A

The supplier shall supply a Declaration of Conformity for each product type if the appropriate legislation determines the supplier's obligation to have a Declaration of Conformity for the purposes of a Device sale in the Czech Republic.

In such a case the Declaration of Conformity shall comply with Act No. 22/1997 Coll., as amended.

4. Quality Requirements

4.1. General Quality Requirements

REQ-017745/A

The supplier shall provide the Product User Manual in electronic form as part of the delivered product (file format PDF/A). The Manual shall include the instructions and descriptions for the product installation, its maintenance and safe operation.

REQ-017746/A

Supplier shall provide information on executed of outgoing check of the product. At least this information shall comprise declaration about execution of outgoing check and declaration of conformity with technical requirements defined by the product RSD and completeness of the product.

REQ-017747/A

The supplier shall establish and maintain a non-conformance control system compatible with CSN EN ISO 9001: 2010 edition 2.



ANNEX 2
PRICE SHEET



EUROPEAN UNION
European Structural and Investing Funds
Operational Programme Research,
Development and Education



MINISTRY OF EDUCATION,
YOUTH AND SPORTS

ANNEX4
PRICE SHEET

| Item | Description | Quantity | Price per unit € | Total Price € |
|---|----------------------------|----------|---------------------|------------------|
| 1. | NAT-PM-AC600 Power supply | 10 | 987,00 | 9870,00 |
| 2. | NAT-PM-AC1000 Power supply | 10 | 1660,00 | 16600,00 |
| Price CPT Dolní Břežany | | | | 24470,00 |
| VAT 21% | | | | 5558,70 |
| Total Price CPT Dolní Břežany including VAT | | | € | 29998,70 |

Ing.
Josef
Froněk

Digitálně podepsal Ing.
Josef Froněk
DN: c=CZ, o=INTRAX s. r.
o. [IČ 49243535], ou=1,
cn=Ing. Josef Froněk,
serialNumber=P29919,
title=Ředitel
Datum: 2016.11.25
14:04:26 +01'00'