

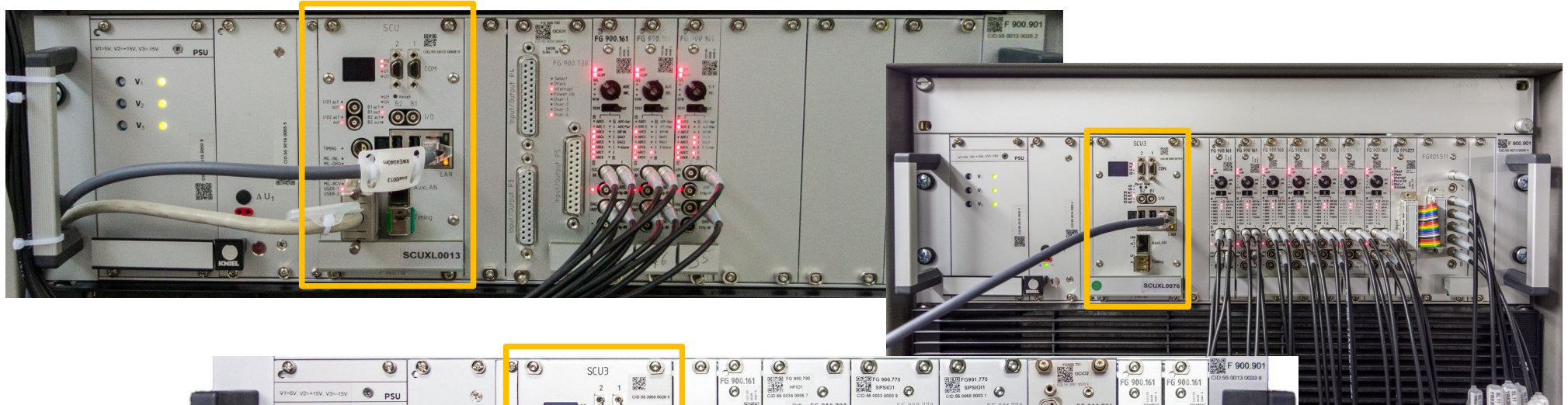
A detailed wireframe 3D model of a particle accelerator complex. It features a large, elongated oval-shaped ring structure in the foreground, with various smaller components, including straight sections and smaller rings, extending into the background.

# Gerätesteuerung / FESA Frontend

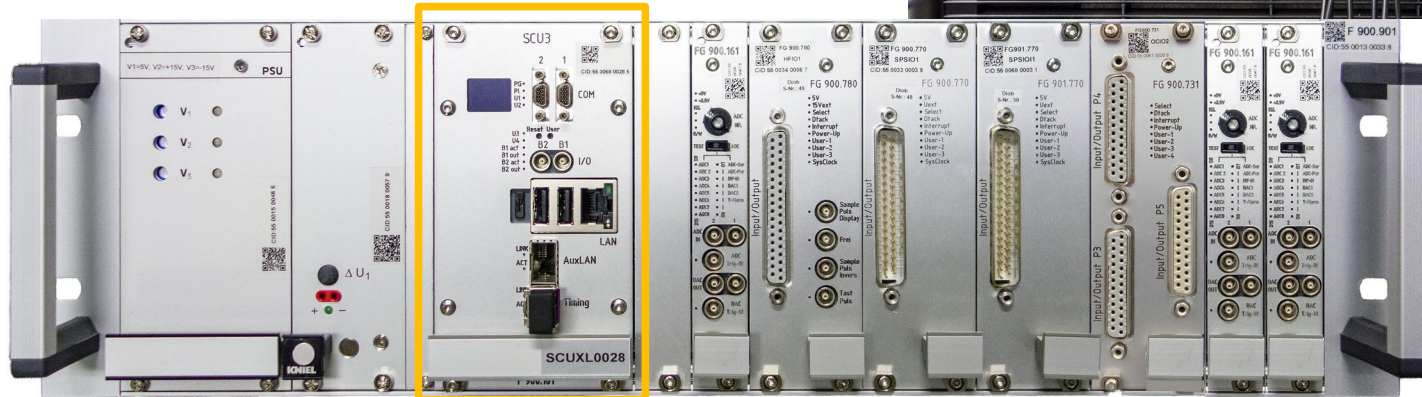
M. Wiebel  
ACO FEC

Darmstadt, 2.12.2024

# Frontends



SCU



CryType11

# Frontends – FESA Zugriff (CLI)

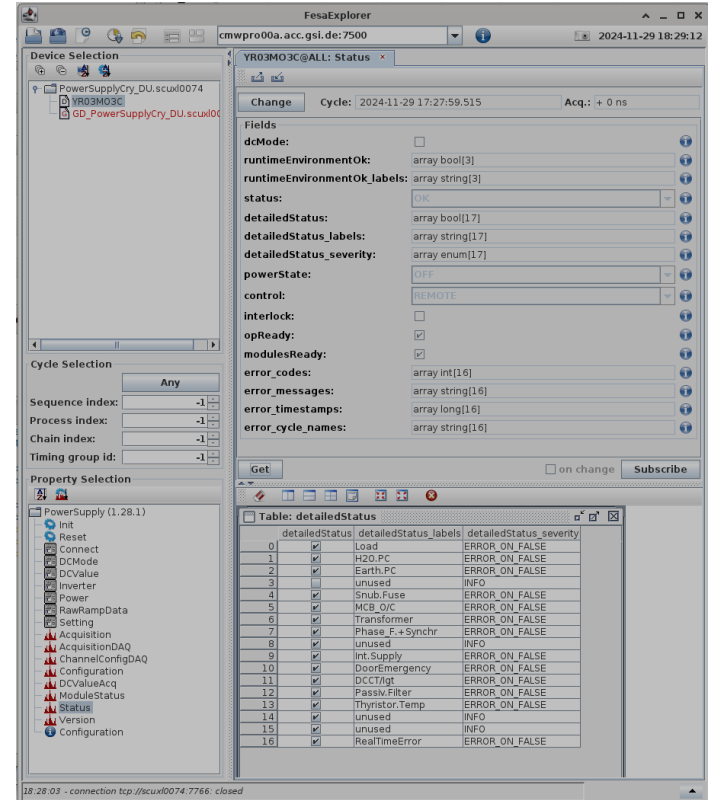
```
NOMEN = YR03M03C (PowerSupplyCry_DU.scux10074 | RampedPS)
TIMDOM = CRYRING_COOLER (211)
|
Status
|-- modulesReady: TRUE | interlock: FALSE | opReady: TRUE
|-- control: REMOTE | powerState: OFF | status: OK
|-- dcMode: False
|-- detailedStatus
|   |-- 0| Load           = 1 ERROR_ON_FALSE
|   |-- 1| H2O.PC        = 1 ERROR_ON_FALSE
|   |-- 2| Earth.PC     = 1 ERROR_ON_FALSE
|   |-- 4| Snub.Fuse    = 1 ERROR_ON_FALSE
|   |-- 5| MCB_0/C      = 1 ERROR_ON_FALSE
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|   |-- 7| Phase_F.+Synchr = 1 ERROR_ON_FALSE
|   |-- 9| Int.Supply   = 1 ERROR_ON_FALSE
|   |-- 10| DoorEmergency = 1 ERROR_ON_FALSE
|   |-- 11| DCCT/Igt   = 1 ERROR_ON_FALSE
|   |-- 12| Passiv.Filter = 1 ERROR_ON_FALSE
|   |-- 13| Thyristor.Temp = 1 ERROR_ON_FALSE
|   |-- 16| RealTimeError = 1 ERROR_ON_FALSE
|-- errorCollection:
   |-- No error in collection.
```

```
NOMEN = YR03M03C (PowerSupplyCry_DU.scux10074 | RampedPS)
TIMDOM = CRYRING_COOLER (211)
|
ModuleStatus
|-- FG900_700 = OK (1)
|-- FG900_710 = OK (1)
|-- TrAlive   = OK (1)
|-- TrLocked  = OK (1)
```

```
NOMEN = GE01MU1 (PowerSupplyEsr_DU.kao2cus11 : scux10231 | RampedHvPS)
TIMDOM = ESR_RING (340)
|
ModuleStatus
|-- MIL       = OK (1)
|-- IFC1      = ERROR (3)
|-- IFC2      = ERROR (3)
|-- TrAlive   = OK (1)
|-- TrLocked  = OK (1)
```

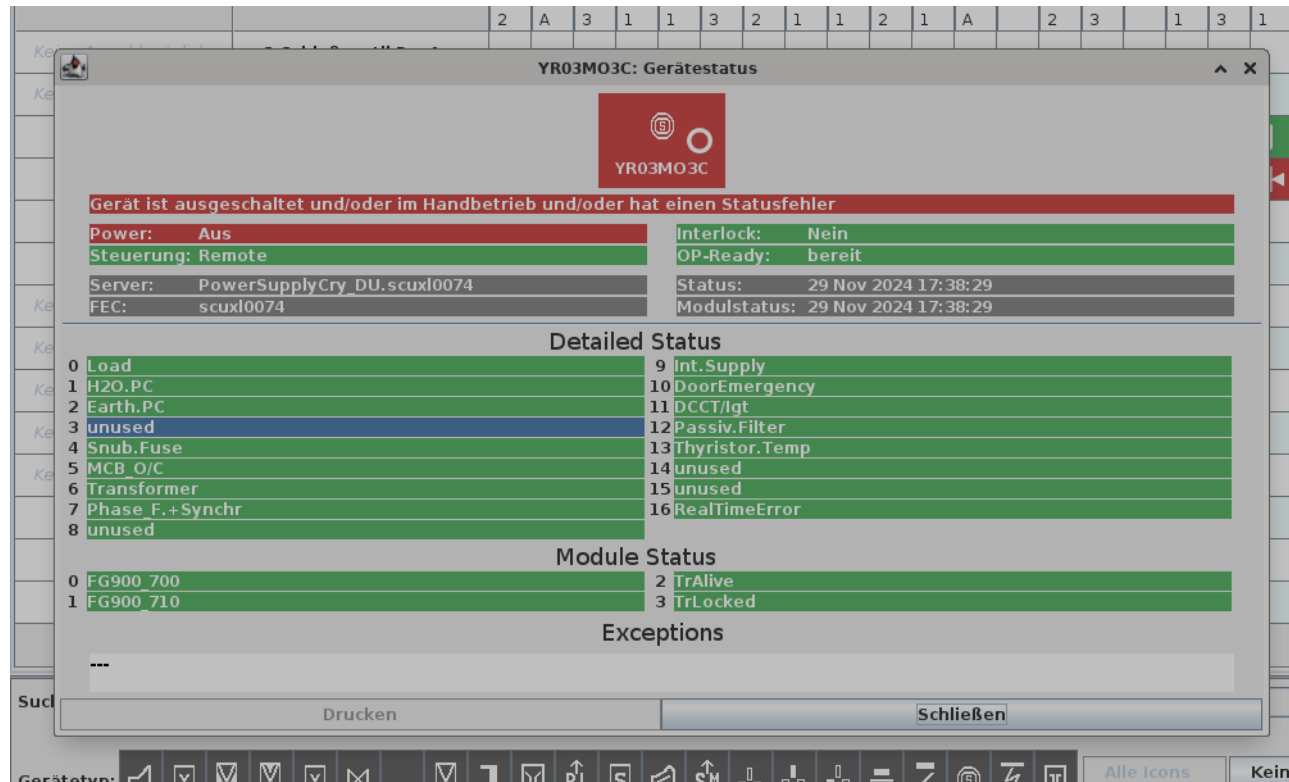
# Frontends – FESA Zugriff (fex)

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|-- errorCollection:
   |-- No error in collection.
```



The screenshot shows the FesaExplorer application window. The main panel displays the status of the device YR03M03C@ALL. The status is OK, and the power state is OFF. The control is set to REMOTE. The modulesReady flag is checked. The error codes, error messages, error timestamps, and error cycle names are all empty arrays. The detailed status table is visible at the bottom, showing the status of various components.

Index	Component	Value	Severity
0	Load	1	ERROR_ON_FALSE
1	H2O.PC	1	ERROR_ON_FALSE
2	Earth.PC	1	ERROR_ON_FALSE
3	unused		INFO
4	Snub.Fuse	1	ERROR_ON_FALSE
5	MCB_0/C	1	ERROR_ON_FALSE
6	Transformer	1	ERROR_ON_FALSE
7	Phase_F.+Synchr	1	ERROR_ON_FALSE
8	unused		INFO
9	Int.Supply	1	ERROR_ON_FALSE
10	DoorEmergency	1	ERROR_ON_FALSE
11	DCCT/Igt	1	ERROR_ON_FALSE
12	Passiv.Filter	1	ERROR_ON_FALSE
13	Thyristor.Temp	1	ERROR_ON_FALSE
14	unused		INFO
15	unused		INFO
16	RealTimeError	1	ERROR_ON_FALSE



**YR03MO3C: Gerätestatus**

Gerät ist ausgeschaltet und/oder im Handbetrieb und/oder hat einen Statusfehler

Power: Aus	Interlock: Nein
Steuerung: Remote	OP-Ready: bereit
Server: PowerSupplyCry_DU.scuxl0074	Status: 29 Nov 2024 17:38:29
FEC: scuxl0074	Modulstatus: 29 Nov 2024 17:38:29

### Detailed Status

0 Load	9 Int. Supply
1 H2O.PC	10 DoorEmergency
2 Earth.PC	11 DCCT/Igt
3 unused	12 Passiv.Filter
4 Snub.Fuse	13 Thyristor.Temp
5 MCB_O/C	14 unused
6 Transformer	15 unused
7 Phase_F.+Synchr	16 RealTimeError
8 unused	

### Module Status

0 FG900_700	2 TrAlive
1 FG900_710	3 TrLocked

### Exceptions

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Drucken Schließen

- Status abfragen
  - **Alles OK**, **Fehler**, Kommt keiner
- Soll-Daten versorgen
  - **Alles OK**, **Daten falsch**, Gerät nicht erreichbar
- Ist-Daten abfragen
  - **Alles OK**, **keine Daten**, Gerät nicht erreichbar

- **ModulesReady** (Summenbit von ModuleStatus)
  - Status der SCU-Slaves
  - TrAlive / TrLocked
- **Interlock** (Summenbit von detailedInterlock)
  - Liefert Informationen über den Interlockstatus des Geräts
  - RealTimeError
    - Signalisiert, dass ein Fehler getreten ist
    - Verschiedene Fehlerarten
- **Control** (remote/local)
  - Gerät nimmt Sollwerte an, fährt dann aber vor Ort keine Werte?
- **PowerState** (UNKNOWN, ON, OFF)
- **Status** (UNKNOWN, OK, WARNING, ERROR)

opReady

+ (dcMode)

- Kein Timing
  - Gerät hat keinen Status/Status ändert sich nicht
  - Es läuft kein Pattern
  - Es läuft ein Pattern, aber es kommt nicht beim Gerät an
    - Fehlkonfiguration des Geräts (hört auf die falschen Events)?
    - Problem in der Firmware? (**ModuleStatus** TrLocked/TrAlive error)
    - Kabel kaputt?
    - → RB kontaktieren



- Gerät ist freigeschaltet
  - Über MIL-Bus angeschlossen: **ModuleStatus** zeigt Error
  - Mit ACU im Gerät verbaut: Gerät komplett nicht erreichbar
- Gerät war freigeschaltet
  - Über MIL-Bus angeschlossen: SW-Neustart (Init) nötig
  - Mit ACU im Gerät verbaut: Gerät erreichbar

- Gerät (FESA-Klasse) nicht erreichbar [Frontend aber schon]
  - Angemeldet beim Nameserver?
  - Läuft die FESA-Klasse auf dem Frontend?
  - → RB kontaktieren
- Frontend (SCU) nicht mehr erreichbar
  - Mögliches Problem:
    - Frontend hat kein Netzwerk mehr oder
    - Frontend ist abgestürzt
  - Lösungen
    - (Nicht ohne zu fragen) vor Ort aus- & einschalten
    - Reset über das Timing-Netzwerk
  - Danach: Pattern anhalten und Daten neu versorgen
  - Tagsüber: FE-Rufbereitschaft anrufen (sonst keine Diagnose mögl.)

- Frontend (SCU) nicht mehr erreichbar
  - Viel schlimmer: Kaputt?
    - Frontend in Absprache mit FEC tauschen
    - FEC muss danach umgetragen werden (DB oder Nomenfile)
    - FEC muss potenziell neu eingerichtet werden

Danach: (Pattern anhalten) und **Daten neu versorgen!**

- Kein Strahl mehr in der Anlage?
  - Pattern anhalten (macht idR auch MASP schon)
  - Reset auf das fehlerhafte Geräte
  - Vollversorgung
- Viele Geräte fallen halbwegs gleichzeitig aus
  - Passt das Timing zu den Daten?
    - Es gab in der Vergangenheit falsche Rampenlängen
    - Falsche Min/Max-Werte in Klassen konfiguriert?
    - ArmFg falsch gesetzt?
    - DcMode des Geräts aktiviert?

- Kein Daten
  - Ist FESA-Klasse erreichbar?
  - Hat FESA-Klasse einen Status/Timing?
    - Event zur Datenaufnahme kam noch nicht vorbei
- Daten falsch
  - Skalierung falsch konfiguriert?
  - Event falsch konfiguriert?

- Fehler zur Laufzeit landen in der **ErrorCollection**
- Die **Error Collection** verschwindet bei einem Neustart
  - Bitte deshalb tagsüber die RB vor einem Neustart kontaktieren, damit Diagnose möglich. Danke. :)

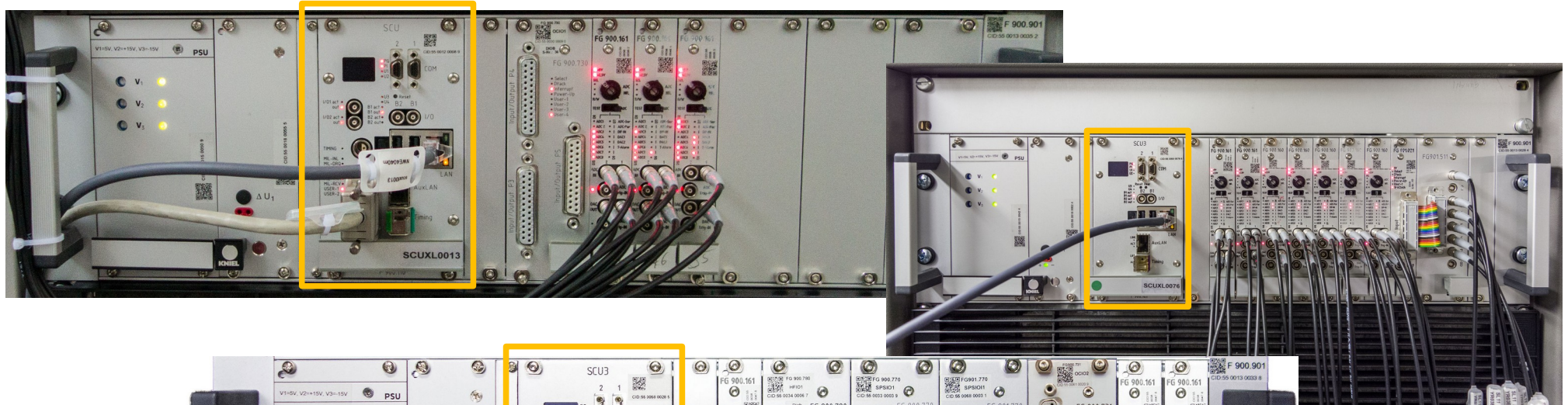
A detailed wireframe model of a particle accelerator, showing a large, elongated oval ring structure with various internal components and smaller structures at the top. The model is rendered in a light gray wireframe style.

# Device Control / FESA Frontend

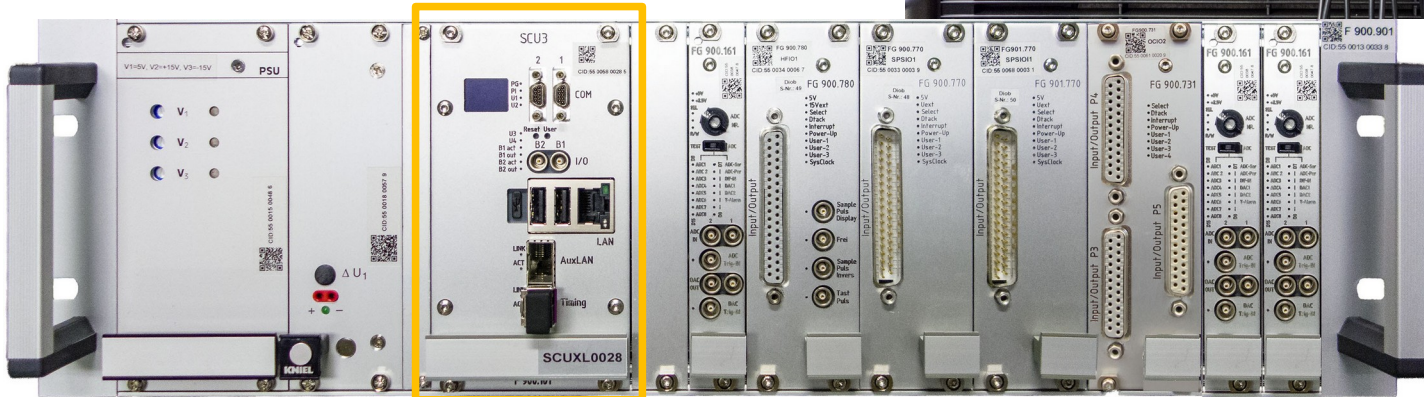
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# Frontends – FESA access (CLI)



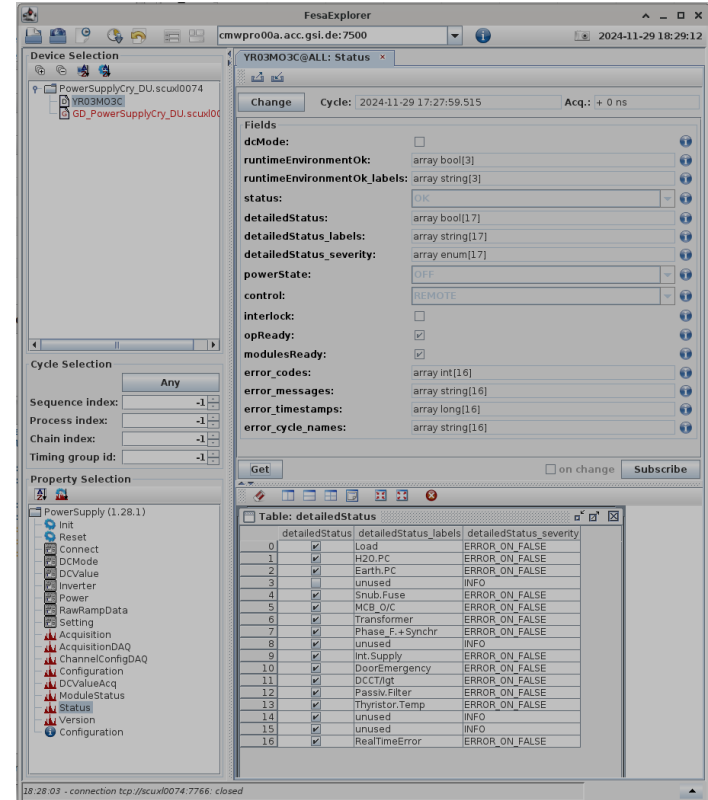
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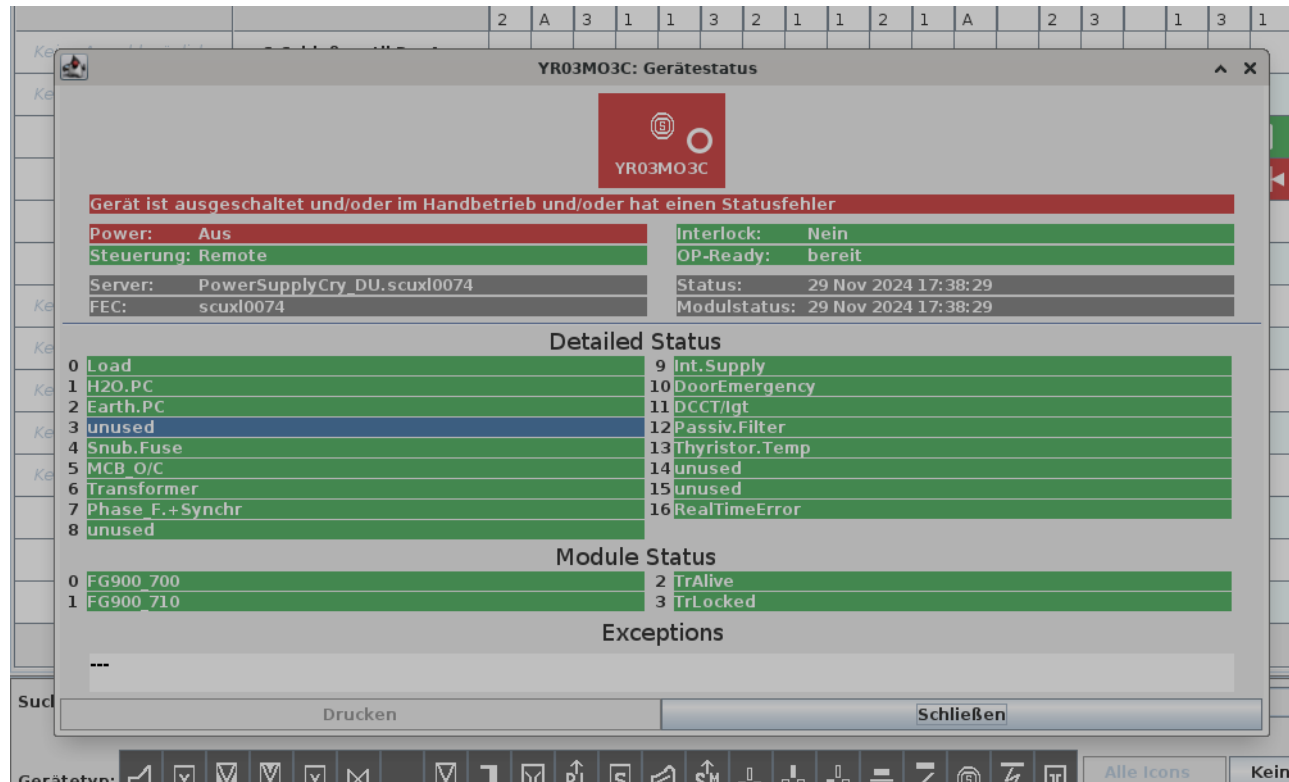
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The screenshot shows the FesaExplorer application window. The main panel displays the status of the device YR03M03C@ALL. The status is OK, and the power state is OFF. The control is set to REMOTE. The modulesReady flag is checked. The error codes, error messages, error timestamps, and error cycle names are all empty arrays. The detailedStatus field is expanded to show a table of error codes and their corresponding labels and severity levels.

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10	DoorEmergency	ERROR_ON_FALSE
11	DCCT/Igt	ERROR_ON_FALSE
12	Passiv.Filter	ERROR_ON_FALSE
13	Thyristor.Temp	ERROR_ON_FALSE
14	unused	INFO
15	unused	INFO
16	RealTimeError	ERROR_ON_FALSE



**YR03MO3C: Gerätestatus**

Gerät ist ausgeschaltet und/oder im Handbetrieb und/oder hat einen Statusfehler

Power: Aus	Interlock: Nein
Steuerung: Remote	OP-Ready: bereit
Server: PowerSupplyCry_DU.scuxl0074	Status: 29 Nov 2024 17:38:29
FEC: scuxl0074	Modulstatus: 29 Nov 2024 17:38:29

### Detailed Status

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3 unused	12 Passiv.Filter
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5 MCB_O/C	14 unused
6 Transformer	15 unused
7 Phase_F.+Synchr	16 RealTimeError
8 unused	

### Module Status


0 FG900_700	2 TrAlive
1 FG900_710	3 TrLocked

### Exceptions

---

Drucken Schließen

- Query status
  - **OK**, **Error**, None coming
- Supply ref data
  - **OK**, **data incorrect**, device cannot be reached
- Query actual data
  - **OK**, **no data**, device cannot be reached

- **ModulesReady** (sum bit of ModuleStatus)
    - Status of the SCU slaves
    - TrAlive / TrLocked
  - **Interlock** (sum bit of detailedStatus)
    - Provides information about the interlock status
    - RealTimeError
    - Signals that a ( )
    - Various causes
  - **Control** (remote/local)
    - Device accepts set values, but then does not run any values locally?
  - **PowerState** (UNKNOWN, ON, OFF)
  - **Status** (UNKNOWN, OK, WARNING, ERROR)
- 

- No timing
  - Device has no status/status does not change
  - No pattern is running
    - A pattern is running, but it does not reach the device
    - Misconfiguration of the device (listens to the wrong events)?
    - Problem in the firmware? (**ModuleStatus** TrLocked/TrAlive error)
  - Cable broken?
  - → Contact RB

- Device is disabled
  - Connected via MIL bus: **ModuleStatus** shows Error
  - With ACU installed in the device: Device completely inaccessible
- Device was disabled
  - Connected via MIL bus: SW restart (Init) necessary
  - With ACU installed in the device: Device accessible

- Device (FESA class) not available [but frontend is]
  - Device known to the name server?
  - Is the FESA class running on the frontend?
  - → Contact RB
- Frontend (SCU) no longer available
  - Possible problem:
    - Frontend no longer has network or
    - Frontend has crashed
  - Solutions
    - (Not without asking) switch off & on on site
    - Reset via the timing network
  - Afterwards: Stop pattern and resupply data
  - During the day: Call FE on-call service (otherwise no diagnosis possible)



- Frontend (SCU) no longer accessible
  - Much worse: Broken?
    - Replace frontend in consultation with FEC
    - FEC must then be transferred (DB or nomenclature file)
    - FEC must potentially be set up again

Then: (stop pattern) and **resupply data!**

- No more beam in the accelerator?
  - Stop pattern (usually MASP already does this)
    - Reset to the faulty device
    - Full supply
- Many devices fail at the same time
- Does the timing match the data?
  - There were incorrect ramp lengths in the past
  - Incorrect min/max values configured in classes?
  - ArmFg set incorrectly?
  - DcMode of the device activated?

- No data
  - Can the FESA class be reached?
  - Does FESA class have a status/timing?
    - Event for data acquisition has not yet passed
- Data incorrect
  - Scaling configured incorrectly?
  - Event configured incorrectly?

- Errors at runtime end up in the **ErrorCollection**
- The **ErrorCollection** disappears after a restart
  - Therefore, please contact the RB during the day before a restart so that diagnosis is possible. Thank you. :)