| Modul | Klemme | Bez. | Adresse | Funktion |
|---|---|---|---|---|
| | | | | |
| X20AT6402 (6x Thermoelement) | | | | **- 112KF 11** |
| | 11 | TC1+ | | Temperature 1 |
| | 12 | TC1- | | " |
| | 21 | TC2+ | | Temperature 2 |
| | 22 | TC2- | | " |
| | 13 | TC3+ | | Temperature 3 |
| | 14 | TC3- | | " |
| | 23 | TC4+ | | Temperature 4 |
| | 24 | TC4- | | " |
| | 15 | TC5+ | | Temperature 5 |
| | 16 | TC5- | | " |
| | 25 | TC6+ | | Temperature 6 |
| | 26 | TC6- | | " |
| | | | | |
| X20AO4622 (4x Analog OUT) | | | | **- 112KF 12** |
| | 11 | AO1 I+ | | |
| | 12 | AO1 U+ | | Circulation pump Gas flow setpoint 0-100% |
| | 13 | AO1 I-/U- | | " |
| | 21 | AO2 I+ | | Analog out 2 (0(4)-20mA) |
| | 22 | AO2 U+ | | Analog out 2 (0-10V) |
| | 23 | AO2 I-/U- | | " |
| | 14 | AO3 I+ | | |
| | 15 | AO3 U+ | | |
| | 16 | AO3 I-/U- | | |
| | 24 | AO4 I+ | | |
| | 25 | AO4 U+ | | |
| | 26 | AO4 I-/U- | | |
| | | | | |
| X20AO4622 (4x Analog OUT) | | | | **- 112KF 13** |
| | 11 | AO1 I+ | | Analog out 1 (0(4)-20mA) |
| | 12 | AO1 U+ | | Analog out 1 (0-10V) |
| | 13 | AO1 I-/U- | | " |
| | 21 | AO2 I+ | | Analog out 2 (0(4)-20mA) |
| | 22 | AO2 U+ | | Analog out 2 (0-10V) |
| | 23 | AO2 I-/U- | | " |
| | 14 | AO3 I+ | | |
| | 15 | AO3 U+ | | |
| | 16 | AO3 I-/U- | | |
| | 24 | AO4 I+ | | |
| | 25 | AO4 U+ | | |
| | 26 | AO4 I-/U- | | |
| | | | | |
| X20AI4622 (4x Analog IN) | | | | **- 112KF 14** |
| | 11 | AI1 I+ | | $O^2$ Sensor Filter (4-20mA) |
| | 12 | AI1 U+ | | |
| | 13 | AI1 I-/U- | | " |
| | 21 | AI2 I+ | | Oxygen working space Actual value (4-20mA) |
| | 22 | AI2 U+ | | |
| | 23 | AI2 I-/U- | | " |
| | 14 | AI3 I+ | | Pressure sensor Compressed air (4-20mA) |
| | 15 | AI3 U+ | | |
| | 16 | AI3 I-/U- | | " |
| | 24 | AI4 I+ | | Pressure sensor Inert gas (4-20mA) |
| | 25 | AI4 U+ | | |
| | 26 | AI4 I-/U- | | " |
| | | | | |
| X20AI4622 (4x Analog IN) | | | | **- 112KF 15** |
| | 11 | AI1 I+ | | |
| | 12 | AI1 U+ | | Vacuum Actual value (0-10V) |
| | 13 | AI1 I-/U- | | " |
| | 21 | AI2 I+ | | |
| | 22 | AI2 U+ | | Temperature Building platform (0-200°C / 0 ... 10V) |
| | 23 | AI2 I-/U- | | " |
| | 14 | AI3 I+ | | |
| | 15 | AI3 U+ | | |
| | 16 | AI3 I-/U- | | |
| | 24 | AI4 I+ | | |
| | 25 | AI4 U+ | | |
| | 26 | AI4 I-/U- | | |
| | | | | |
| X20SI8110 (8x Safety IN) | | | | **- 115KF 51** |
| | 11 | Pulse 1 | | |
| | 12 | SI 1 | | Emergency stop Channel 1 |
| | 21 | Pulse 2 | | |
| | 22 | SI 2 | | Emergency stop Channel 2 |
| | 13 | Pulse 3 | | |
| | 14 | SI 3 | | Safety gate Process chamber channel 1 |
| | 23 | Pulse 4 | | |
| | 24 | SI 4 | | Safety gate Process chamber channel 2 |
| | 15 | SI 5 | | Feedback emergency stop contactor |
| | 25 | SI 6 | | Feedback operator protection contactor |
| | 16 | SI 7 | | Emergency stop from laser Ch1 |
| | 26 | SI 8 | | Emergency stop from laser Ch2 |
| | | | | |
| X20SO9300 (6x Safety OUT) | | | | **- 115KF 52** |
| | 11 | SO 1 | | Emergency stop contactor |
| | 21 | SO 2 | | Operator protection Contactor |
| | 12 | SO 3 | | Enable Axis 1&2 |
| | 22 | SO 4 | | Enable Axis 3&4 |
| | 13 | SO 5 | | Reserve |
| | 23 | SO 6 | | Reserve |
| | 14 | GND | | |
| | 24 | GND | | |
| | 15 | GND | | |
| | 25 | GND | | |
| | 16 | GND | | |
| | 26 | GND | | |
| | | | | |
| X20SC0842 (8x Safety IN) | | | | **- 115KF 53a (Kombimodul)** |
| | 11 | Pulse 1 | | |
| | 12 | SI 1 | | Oxygen working space Alarm |
| | 21 | Pulse 2 | | |
| | 22 | SI 2 | | Button Acknowledge |
| | 13 | Pulse 3 | | |
| | 14 | SI 3 | | Protective door Cover Channel 1 |
| | 23 | Pulse 4 | | |
| | 24 | SI 4 | | Protective door Cover Channel 2 |
| | 15 | SI 5 | | Emergency stop from cell Channel 1 |
| | 25 | SI 6 | | Emergency stop from cell Channel 2 |
| | 16 | SI 7 | | Safety circle from cell Channel 1 |
| | 26 | SI 8 | | Safety circle from cell Channel 2 |
| X20SC0842 (6x Safety OUT) | | | | **- 115KF 53b (Kombimodul)** |
| | 11 | SO 1+ | | Reserve |
| | 12 | SO 1- | | |
| | 21 | SO 2+ | | Reserve |
| | 22 | SO 2- | | |
| | 13 | SO 3+ | | Reserve |
| | 14 | SO 3- | | |
| | 23 | SO 4+ | | Reserve |
| | 24 | SO 4- | | |
| | 15 | SO 5 | | Reserve |
| | 16 | GND | | |
| | 25 | SO 6 | | Reserve |
| | 26 | GND | | |
| | | | | |
| X20DC1976 (Encodermodul) | | | | **- 116KF 61** |
| | 11 | CA-01 | | Encoder A |
| | 12 | CB-01 | | Encoder B |
| | 13 | CR-01 | | Encoder dir |
| | 14 | DI-01 | | Reserve |
| | 15 | +24V | | Reserve |
| | 16 | GND | | Reserve |
| | 21 | n.c. | | n.c. |
| | 22 | n.c. | | n.c. |
| | 23 | n.c. | | n.c. |
| | 24 | DI-02 | | Reserve |
| | 25 | +5V | | Encoder +5V supply |
| | 26 | GND | | Encoder GND supply |

| Modul | Klemme | Name | Address | Function |
|---|---|---|---|---|
| | | | | |
| X20DI6371 (6x Digital IN) | | | | **- 113KF 16** |
| | 11 | DI 1 | | Z-axis End position (-) Down |
| | 21 | DI 2 | | Z-axis End position (+) Top |
| | 12 | DI 3 | | Axis Coater End position (-) |
| | 22 | DI 4 | | Axis Coater End position (+) |
| | 13 | DI 5 | | Axis Coater Ref. (Home) |
| | 23 | DI 6 | | Axis Coater Ref. (Max.) |
| | 14 | +24V DC | | |
| | 24 | +24V DC | | |
| | 15 | +24V DC | | |
| | 25 | +24V DC | | |
| | 16 | +24V DC | | |
| | 26 | +24V DC | | |
| | | | | |
| X20DI6371 (6x Digital IN) | | | | **- 113KF 17** |
| | 11 | DI 1 | | Inert gas chamber OPEN |
| | 21 | DI 2 | | Inert gas chamber CLOSED |
| | 12 | DI 3 | | Inert gas heat exchanger OPEN |
| | 22 | DI 4 | | Inert gas heat exchanger CLOSED |
| | 13 | DI 5 | | Reserve |
| | 23 | DI 6 | | " |
| | 14 | +24V DC | | |
| | 24 | +24V DC | | |
| | 15 | +24V DC | | |
| | 25 | +24V DC | | |
| | 16 | +24V DC | | |
| | 26 | +24V DC | | |
| | | | | |
| X20DI6371 (6x Digital IN) | | | | **- 113KF 18** |
| | 11 | DI 1 | | *Signal from SP-ICE3 (not used)* |
| | 21 | DI 2 | | Circulation pump Gas flow Operation |
| | 12 | DI 3 | | Circulation pump Gas flow Error |
| | 22 | DI 4 | | Vacuum pump Operation |
| | 13 | DI 5 | | Vacuum pump malfunction |
| | 23 | DI 6 | | Building platform Heating malfunction |
| | 14 | +24V DC | | |
| | 24 | +24V DC | | |
| | 15 | +24V DC | | |
| | 25 | +24V DC | | |
| | 16 | +24V DC | | |
| | 26 | +24V DC | | |
| | | | | |
| X20DI6371 (6x Digital IN) | | | | **- 113KF 19** |
| | 11 | DI 1 | | Vacuum limit value |
| | 21 | DI 2 | | Vacuum disturbance |
| | 12 | DI 3 | | Forced cooling fan Circulation pump Fault |
| | 22 | DI 4 | | Reserve |
| | 13 | DI 5 | | " |
| | 23 | DI 6 | | " |
| | 14 | +24V DC | | |
| | 24 | +24V DC | | |
| | 15 | +24V DC | | |
| | 25 | +24V DC | | |
| | 16 | +24V DC | | |
| | 26 | +24V DC | | |
| | | | | |
| X20DI6371 (6x Digital IN) | | | | **- 113KF 20** |
| | 11 | DI 1 | | Door Unlocking |
| | 21 | DI 2 | | Reserve |
| | 12 | DI 3 | | " |
| | 22 | DI 4 | | " |
| | 13 | DI 5 | | " |
| | 23 | DI 6 | | " |
| | 14 | +24V DC | | |
| | 24 | +24V DC | | |
| | 15 | +24V DC | | |
| | 25 | +24V DC | | |
| | 16 | +24V DC | | |
| | 26 | +24V DC | | |
| | | | | |
| X20DI6371 (6x Digital IN) | | | | **- 113KF 21** |
| | 11 | DI 1 | | Vacuum valve chamber OPEN |
| | 21 | DI 2 | | Vacuum valve chamber CLOSED |
| | 12 | DI 3 | | Vacuum valve Z-axis OPEN |
| | 22 | DI 4 | | Vacuum valve Z-axis CLOSED |
| | 13 | DI 5 | | Reserve |
| | 23 | DI 6 | | " |
| | 14 | +24V DC | | |
| | 24 | +24V DC | | |
| | 15 | +24V DC | | |
| | 25 | +24V DC | | |
| | 16 | +24V DC | | |
| | 26 | +24V DC | | |
| | | | | |
| X20DI6371 (6x Digital IN) | | | | **- 113KF 22** |
| | 11 | DI 1 | | Reserve |
| | 21 | DI 2 | | " |
| | 12 | DI 3 | | " |
| | 22 | DI 4 | | " |
| | 13 | DI 5 | | " |
| | 23 | DI 6 | | " |
| | 14 | +24V DC | | |
| | 24 | +24V DC | | |
| | 15 | +24V DC | | |
| | 25 | +24V DC | | |
| | 16 | +24V DC | | |
| | 26 | +24V DC | | |
| | | | | |
| X20DI6371 (6x Digital IN) | | | | **- 113KF 23** |
| | 11 | DI 1 | | Reserve |
| | 21 | DI 2 | | " |
| | 12 | DI 3 | | " |
| | 22 | DI 4 | | " |
| | 13 | DI 5 | | " |
| | 23 | DI 6 | | " |
| | 14 | +24V DC | | |
| | 24 | +24V DC | | |
| | 15 | +24V DC | | |
| | 25 | +24V DC | | |
| | 16 | +24V DC | | |
| | 26 | +24V DC | | |

| Module | Terminal | Name | Address | Function |
|---|---|---|---|---|
| | | | | |
| X20DO6322 (6x Digital OUT) | | | | **- 114KF 24** |
| | 11 | DO 1 | | Door locking Unlocking |
| | 21 | DO 2 | | Signal-Light red |
| | 12 | DO 3 | | Signal-Light green |
| | 22 | DO 4 | | Signal-Light yellow |
| | 13 | DO 5 | | *Signal to SP-ICE3 (not used)* |
| | 23 | DO 6 | | *$O^2$measuring range* |
| | 14 | GND | | |
| | 24 | GND | | |
| | 15 | GND | | |
| | 25 | GND | | |
| | 16 | GND | | |
| | 26 | GND | | |
| | | | | |
| X20DO6322 (6x Digital OUT) | | | | **- 114KF 25** |
| | 11 | DO 1 | | Inert gas chamber |
| | 21 | DO 2 | | Inert gas heat exchanger |
| | 12 | DO 3 | | Inert gas Main valve |
| | 22 | DO 4 | | Vacuum valve Chamber |
| | 13 | DO 5 | | Vacuum valve Z-axis |
| | 23 | DO 6 | | Reserve Gas flow Valve 6 |
| | 14 | GND | | |
| | 24 | GND | | |
| | 15 | GND | | |
| | 25 | GND | | |
| | 16 | GND | | |
| | 26 | GND | | |
| | | | | |
| X20DO6322 (6x Digital OUT) | | | | **- 114KF 26** |
| | 11 | DO 1 | | Reserve Gas flow Valve 7 |
| | 21 | DO 2 | | Reserve Gas flow Valve 8 |
| | 12 | DO 3 | | Reserve Gas flow Valve 9 |
| | 22 | DO 4 | | Reserve Gas flow Valve 10 |
| | 13 | DO 5 | | Reserve Gas flow Valve 11 |
| | 23 | DO 6 | | Reserve Gas flow Valve 12 |
| | 14 | GND | | |
| | 24 | GND | | |
| | 15 | GND | | |
| | 25 | GND | | |
| | 16 | GND | | |
| | 26 | GND | | |
| | | | | |
| X20DO6322 (6x Digital OUT) | | | | **- 114KF 27** |
| | 11 | DO 1 | | Reserve Gas flow Valve 13 |
| | 21 | DO 2 | | Reserve Gas flow Valve 14 |
| | 12 | DO 3 | | Reserve Gas flow Valve 15 |
| | 22 | DO 4 | | Reserve Gas flow Valve 16 |
| | 13 | DO 5 | | Reserve Gas flow Valve 17 |
| | 23 | DO 6 | | Reserve Gas flow Valve 18 |
| | 14 | GND | | |
| | 24 | GND | | |
| | 15 | GND | | |
| | 25 | GND | | |
| | 16 | GND | | |
| | 26 | GND | | |
| | | | | |
| X20DO6322 (6x Digital OUT) | | | | **- 114KF 28** |
| | 11 | DO 1 | | Circulation pump Gas flow |
| | 21 | DO 2 | | Vacuum pump |
| | 12 | DO 3 | | Building platform Heating |
| | 22 | DO 4 | | *Laser External (not used)* |
| | 13 | DO 5 | | *Laser System (not used)* |
| | 23 | DO 6 | | Reserve |
| | 14 | GND | | |
| | 24 | GND | | |
| | 15 | GND | | |
| | 25 | GND | | |
| | 16 | GND | | |
| | 26 | GND | | |
| | | | | |
| X20DO6322 (6x Digital OUT) | | | | **- 114KF 29** |
| | 11 | DO 1 | | Reserve |
| | 21 | DO 2 | | " |
| | 12 | DO 3 | | " |
| | 22 | DO 4 | | " |
| | 13 | DO 5 | | " |
| | 23 | DO 6 | | " |
| | 14 | GND | | |
| | 24 | GND | | |
| | 15 | GND | | |
| | 25 | GND | | |
| | 16 | GND | | |
| | 26 | GND | | |
| | | | | |
| X20DO6322 (6x Digital OUT) | | | | **- 114KF 30** |
| | 11 | DO 1 | | Reserve |
| | 21 | DO 2 | | " |
| | 12 | DO 3 | | " |
| | 22 | DO 4 | | " |
| | 13 | DO 5 | | " |
| | 23 | DO 6 | | " |
| | 14 | GND | | |
| | 24 | GND | | |
| | 15 | GND | | |
| | 25 | GND | | |
| | 16 | GND | | |
| | 26 | GND | | |
| | | | | |
| X20DO6322 (6x Digital OUT) | | | | **- 114KF 31** |
| | 11 | DO 1 | | Reserve |
| | 21 | DO 2 | | " |
| | 12 | DO 3 | | " |
| | 22 | DO 4 | | " |
| | 13 | DO 5 | | " |
| | 23 | DO 6 | | " |
| | 14 | GND | | |
| | 24 | GND | | |
| | 15 | GND | | |
| | 25 | GND | | |
| | 16 | GND | | |
| | 26 | GND | | |